

**AUTHORIZATION TO DISCHARGE UNDER THE  
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM**

In compliance with the provisions of the Federal Clean Water Act as amended, 33 U.S.C. §§ 1251 et seq. (the "CWA"),

**Star Island Corporation**

is authorized to discharge from the facility located at

**Star Island Wastewater Treatment Facility  
Star Island (Isles of Shoals)  
Rye, New Hampshire 03870**

to receiving water named

**Atlantic Ocean**

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

This permit shall become effective on the first day of the calendar month immediately following 60 days after signature.<sup>1</sup>

This permit expires at midnight, five years from the last day of the month preceding the effective date.

This permit supersedes the permit issued on June 1, 2010.

This permit consists of **Part I** including the cover page(s) **Attachment A** (Marine Acute Toxicity Test Procedure and Protocol, July 2012) and **Part II** (NPDES Part II Standard Conditions, April 2018).

Signed this        day of

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Ken Moraff, Director  
Water Division  
Environmental Protection Agency  
Region 1  
Boston, MA

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<sup>1</sup> Pursuant to 40 Code of Federal Regulations (C.F.R.) § 124.15(b)(3), if no comments requesting a change to the Draft Permit are received, the permit will become effective upon the date of signature.

## PART I

## A. EFFLUENT LIMITATIONS AND MONITORING

1. During the period beginning on the effective date and lasting through the expiration date, from April 1<sup>st</sup> through November 30<sup>th</sup>, the Permittee is authorized to discharge treated effluent through Outfall Serial Number 001 to the Atlantic Ocean. The discharge shall be limited and monitored as specified below; the receiving water and the influent shall be monitored as specified below.

Effluent Characteristic	Effluent Limitation			Monitoring Requirements <sup>1,2,3</sup>	
	Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type <sup>4</sup>
Effluent Flow <sup>5</sup>	0.0175 MGD	---	Report MGD	Continuous	Recorder
BOD <sub>5</sub>	30 mg/L 3.8 lb/day	45 mg/L 5.6 lb/day	50 mg/L 6.3 lb/day	2/week	Composite
BOD <sub>5</sub> Removal	≥ 85 %	---	---	---	Calculation
TSS	30 mg/L 4.4 lb/day	45 mg/L 6.6 lb/day	50 mg/L 7.3 lb/day	2/week	Composite
TSS Removal	≥ 85 %	---	---	---	Calculation
pH Range <sup>6</sup>	6.5- 8.0 S.U.			1/day	Grab
Total Residual Chlorine <sup>7,8</sup>	0.64 mg/L	---	1 mg/L	2/day	Grab
<i>Enterococci</i> <sup>8</sup>	35/100 mL	---	104/100 mL	Daily	Grab
Fecal Coliform Bacteria <sup>8</sup>	14/100 mL	---	---	3/week	Grab
Fecal Coliform Bacteria <sup>8,9</sup> (% of samples > 43/100 mL)	---	---	≤ 10%	3/week	Grab
Perfluorohexanesulfonic acid (PFHxS) <sup>10</sup>	---	---	Report ng/L	2/year	Composite
Perfluorononanoic acid (PFNA) <sup>10</sup>	---	---	Report ng/L	2/year	Composite
Perfluorooctanesulfonic acid (PFOS) <sup>10</sup>	---	---	Report ng/L	2/year	Composite
Perfluorooctanoic acid (PFOA) <sup>10</sup>	---	---	Report ng/L	2/year	Composite

Effluent Characteristic	Effluent Limitation			Monitoring Requirements <sup>1,2,3</sup>	
	Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type <sup>4</sup>
<b>Whole Effluent Toxicity (WET) Testing<sup>11, 12</sup></b>					
LC <sub>50</sub>	---	---	≥100%	1/permit term	Composite
Hardness	---	---	Report mg/L	2/year	Composite
Ammonia Nitrogen	---	---	Report mg/L	2/year	Composite
Total Cadmium	---	---	Report mg/L	2/year	Composite
Total Copper	---	---	Report mg/L	2/year	Composite
Total Nickel	---	---	Report mg/L	2/year	Composite
Total Lead	---	---	Report mg/L	2/year	Composite
Total Zinc	---	---	Report mg/L	2/year	Composite
Total Organic Carbon	---	---	Report mg/L	2/year	Composite

Ambient Characteristic <sup>13</sup>	Reporting Requirements			Monitoring Requirements <sup>1,2,3</sup>	
	Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type <sup>4</sup>
Hardness	---	---	Report mg/L	2/year	Grab
Ammonia Nitrogen	---	---	Report mg/L	2/year	Grab
Total Cadmium	---	---	Report mg/L	2/year	Grab
Total Copper	---	---	Report mg/L	2/year	Grab
Total Nickel	---	---	Report mg/L	2/year	Grab
Total Lead	---	---	Report mg/L	2/year	Grab
Total Zinc	---	---	Report mg/L	2/year	Grab
Total Organic Carbon	---	---	Report mg/L	2/year	Grab
pH <sup>14</sup>	---	---	Report S.U.	2/year	Grab
Temperature <sup>14</sup>	---	---	Report °C	2/year	Grab

Influent Characteristic	Reporting Requirements			Monitoring Requirements <sup>1,2,3</sup>	
	Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type <sup>4</sup>
BOD <sub>5</sub>	Report mg/L	---	---	2/month	Composite
TSS	Report mg/L	---	---	2/month	Composite
Perfluorohexanesulfonic acid (PFHxS) <sup>10</sup>	---	---	Report ng/L	2/year	Composite
Perfluorononanoic acid (PFNA) <sup>10</sup>	---	---	Report ng/L	2/year	Composite
Perfluorooctanesulfonic acid (PFOS) <sup>10</sup>	---	---	Report ng/L	2/year	Composite
Perfluorooctanoic acid (PFOA) <sup>10</sup>	---	---	Report ng/L	2/year	Composite

Sludge Characteristic	Reporting Requirements			Monitoring Requirements <sup>1,2,3</sup>	
	Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type <sup>4</sup>
Perfluorohexanesulfonic acid (PFHxS) <sup>15</sup>	---	---	Report ng/g	2/year	Composite
Perfluorononanoic acid (PFNA) <sup>15</sup>	---	---	Report ng/g	2/year	Composite
Perfluorooctanesulfonic acid (PFOS) <sup>15</sup>	---	---	Report ng/g	2/year	Composite
Perfluorooctanoic acid (PFOA) <sup>15</sup>	---	---	Report ng/g	2/year	Composite

2. During the period beginning on the effective date and lasting through the expiration date, from April 1<sup>st</sup> through November 30<sup>th</sup>, the Permittee is authorized to discharge RO reject water through Outfall Serial Number 002 to Atlantic Ocean. The discharge shall be limited and monitored as specified below.

Effluent Characteristic	Effluent Limitation			Monitoring Requirements <sup>1,2,3</sup>	
	Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type <sup>4</sup>
Effluent Flow <sup>5</sup>	0.08 MGD	---	Report	Daily	Recorder
TSS	30 mg/L 20 lb/day	Report mg/L	50 mg/L	1/week	Composite
pH Range <sup>6</sup>	6.5 - 8.0 S.U.			1/day	Grab

Footnotes (applicable to tables in Part I.A.1 and Part I.A.2):

1. Effluent samples shall yield data representative of the discharge. A routine sampling program shall be developed in which samples are taken at the same location, same time and same days of the week each month. Occasional deviations from the routine sampling program are allowed, but the reason for the deviation shall be documented as an electronic attachment to the applicable discharge monitoring report. The Permittee shall report the results to the Environmental Protection Agency Region 1 (EPA) and the State of any additional testing above that required herein, if testing is in accordance with 40 CFR Part 136.
2. In accordance with 40 CFR § 122.44(i)(1)(iv), the Permittee shall monitor according to sufficiently sensitive test procedures (i.e., methods) approved under 40 CFR Part 136 or required under 40 CFR chapter I, subchapter N or O, for the analysis of pollutants or pollutant parameters (except WET). A method is “sufficiently sensitive” when: 1) The method minimum level (ML) is at or below the level of the effluent limitation established in the permit for the measured pollutant or pollutant parameter; or 2) The method has the lowest ML of the analytical methods approved under 40 CFR Part 136 or required under 40 CFR chapter I, subchapter N or O for the measured pollutant or pollutant parameter. The term “minimum level” refers to either the sample concentration equivalent to the lowest calibration point in a method or a multiple of the method detection limit (MDL), whichever is higher. Minimum levels may be obtained in several ways: They may be published in a method; they may be based on the lowest acceptable calibration point used by a laboratory; or they may be calculated by multiplying the MDL in a method, or the MDL determined by a laboratory, by a factor.
3. When a parameter is not detected above the ML, the Permittee must report the data qualifier signifying less than the ML for that parameter (e.g., < 50 µg/L, if the ML for a parameter is 50 µg/L). For reporting an average based on a mix of values detected and not detected, assign a value of “0” to all non-detects for that reporting period and report the average of all the results.
4. A “grab” sample is an individual sample collected in a period of less than 15 minutes.

A “composite” sample is a composite of at least twenty-four (24) grab samples taken during one consecutive 24-hour period, either collected at equal intervals and combined proportional to flow or continuously collected proportional to flow.

A “composite” sample for sludge requirements must be representative of the sludge. The permittee should refer to EPA’s POTW Sludge Sampling and Analysis Guidance Document<sup>2</sup> for sampling guidance specific to the physical characteristics of the sludge at their facility.

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<sup>2</sup>USEPA, 1989, “POTW Sludge Sampling and Analysis Guidance Document,” EPA 833-B-89-100,

5. The effluent flow limit is an average monthly limit, reported in million gallons per day (MGD). The maximum daily flows in MGD shall also be reported.

Within 1 year of the effective date of the Final Permit, the effluent flow shall be continuously measured and recorded using a flow meter and totalizer. In the interim, the permittee shall measure flow daily using a calculation. The average monthly limits of 0.0175 MGD for Outfall 001 and 0.08 MGD for Outfall 002 are in effect on the effective date of the permit regardless of the sample type.

6. The pH shall be within the specified range at all times. The minimum and maximum pH sample measurement values for the month shall be reported in standard units (S.U.). See Part I.F.1. below for a provision to modify the pH range.
7. The Permittee shall minimize the use of chlorine while maintaining adequate bacterial control. Monitoring for total residual chlorine (TRC) is only required for discharges which have been previously chlorinated, or which contain residual chlorine.

Chlorination and dechlorination systems shall include an alarm system for indicating system interruptions or malfunctions. Any interruption or malfunction of the chlorine dosing system that may have resulted in levels of chlorine that were inadequate for achieving effective disinfection, or interruptions or malfunctions of the dechlorination system that may have resulted in excessive levels of chlorine in the final effluent shall be reported with the monthly DMRs and in accordance with reporting requirements in Part I.H.10. Special Conditions and Part II Standard Conditions. The report shall include the date and time of the interruption or malfunction, the nature of the problem, and the estimated amount of time that the reduced levels of chlorine or dechlorination chemicals occurred.

8. The monthly average limit for *enterococci* and Fecal Coliform are expressed as a geometric mean. *Enterococci* and Fecal Coliform monitoring shall be conducted concurrently with TRC monitoring.
9. The Average Monthly value for Fecal Coliform shall be determined by calculating the geometric mean using the daily sample results. As a Daily Maximum, not more than 10 percent of the collected samples (over a monthly period) shall exceed a Most Probable Number (MPN) of 43 per 100 mL for the 5-tube decimal dilution test. Each month the percentage of collected samples that exceed an MPN of 43 per 100 mL for the 5-tube decimal dilution test shall be reported as the Daily Maximum value. Furthermore, all Fecal Coliform data collected must be submitted with the monthly Discharge Monitoring Reports (DMRs).
10. Report in nanograms per liter (ng/L). This reporting requirement for the listed PFAS parameters takes effect the first full calendar quarter following 6 months after

EPA notifies the permittee that an EPA multi-lab validated method for wastewater is available.

11. The Permittee shall conduct an acute toxicity test (LC<sub>50</sub>) in accordance with test procedures and protocols specified in **Attachment A** of this permit. LC<sub>50</sub> is defined in Part II.E. of this permit. The Permittee shall test the inland silverside minnow, *Menidia beryllina*, and mysid shrimp, *Americamysis bahia*. Toxicity test samples shall be collected, and the test completed during July of Year 1 of the permit term. The complete report for each toxicity test shall be submitted as an attachment to the August DMR submittal which includes the results for that toxicity test.
12. For Part I.A.1., Whole Effluent Toxicity Testing, the Permittee shall conduct the analyses specified in Attachment A, Part IV. CHEMICAL ANALYSIS for the effluent sample. If toxicity test(s) using the receiving water as diluent show the receiving water to be toxic or unreliable, the Permittee shall follow procedures outlined in **Attachment A**, Section IV., DILUTION WATER. Minimum levels and test methods are specified in **Attachment A**, Part VI. CHEMICAL ANALYSIS.
13. For Part I.A.1., Ambient Characteristic, the Permittee shall conduct analyses specified in **Attachment A**, Part VI. CHEMICAL ANALYSIS for the receiving water sample collected as part of the WET testing requirements. Such samples shall be taken from the receiving water at a point immediately outside of the permitted discharge's zone of influence at a reasonably accessible location, as specified in **Attachment A**. Minimum levels and test methods are specified in **Attachment A**, Part VI. CHEMICAL ANALYSIS.
14. A pH and temperature measurement shall be taken of each receiving water sample at the time of collection and the results reported on the appropriate DMR. These pH and temperature measurements are independent from any pH and temperature measurements required by the WET testing protocols.
15. Report in nanograms per gram (ng/g). This reporting requirement for the listed PFAS parameters takes effect the first full calendar quarter following 6 months after EPA notifies the permittee that an EPA multi-lab validated method for sludge is available.

**Part I.A. continued.**

3. The discharge shall not cause a violation of the water quality standards of the receiving water.
4. The permit will be modified or revoked at any time if new data indicates that there may be unreasonable degradation of the marine environment in accordance with 40 CFR 125.123(d)(4)
5. The discharge shall be free from substances in kind or quantity that settle to form harmful benthic deposits; float as foam, debris, scum or other visible substances; produce odor, color, taste or turbidity that is not naturally occurring and would render the surface water unsuitable for its designated uses; result in the dominance of nuisance species; or interfere with recreational activities.
6. Tainting substances shall not be present in the discharge in concentrations that individually or in combination are detectable by taste and odor tests performed on the edible portions of aquatic organisms.
7. The discharge shall not result in toxic substances or chemical constituents in concentrations or combinations in the receiving water that injure or are inimical to plants, animals, humans or aquatic life; or persist in the environment or accumulate in aquatic organisms to levels that result in harmful concentrations in edible portions of fish, shellfish, other aquatic life, or wildlife that might consume aquatic life.
8. The discharge shall not result in benthic deposits that have a detrimental impact on the benthic community. The discharge shall not result in oil and grease, color, slicks, odors, or surface floating solids that would impair any existing or designated uses in the receiving water.
9. The discharge shall not result in an exceedance of the naturally occurring turbidity in the receiving water by more than 10 NTUs.
10. The Permittee must provide adequate notice to EPA-Region 1 and the State of the following:
  - a. Any new introduction of pollutants into the facility from an indirect discharger which would be subject to Part 301 or Part 306 of the Clean Water Act if it were directly discharging those pollutants or in a primary industry category (see 40 CFR Part 122 Appendix A as amended) discharging process water; and
  - b. Any substantial change in the volume or character of pollutants being introduced into that facility by a source introducing pollutants into the facility at the time of issuance of the permit.
  - c. For purposes of this paragraph, adequate notice shall include information on:

- i. The quantity and quality of effluent introduced into the facility; and
- ii. Any anticipated impact of the change on the quantity or quality of effluent to be discharged from the facility.

11. Pollutants introduced into the facility by a non-domestic source (user) shall not pass through the facility or interfere with the operation or performance of the works.

## **B. UNAUTHORIZED DISCHARGES**

1. This permit authorizes discharges only from the outfalls listed in Part I.A.1 and I.A.2, in accordance with the terms and conditions of this permit. Discharges of wastewater from any other point sources, including sanitary sewer overflows (SSOs), are not authorized by this permit in accordance with Part II.D.1.e.(1) (24-hour reporting). See Part I.G below for reporting requirements.
2. The Permittee must provide notification to the public within 24 hours of becoming aware of any unauthorized discharge, except SSOs that do not impact a surface water or the public. Such notification shall include the location and description of the discharge; estimated volume; 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.

## **C. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM**

The permit standard condition for “Proper Operation and Maintenance” are found at 40 CFR §122.41(e). These require proper operation and maintenance of permitted wastewater systems and related facilities to achieve permit conditions. Similarly, the permittee has a “duty to mitigate” as stated in 40 CFR §122.41(d). This requires the permittee to take all reasonable steps to minimize or prevent any discharge in violation of the permit which has the reasonable likelihood of adversely affecting human health or the environment.

### **1. Maintenance Staff**

The Permittee shall provide an adequate staff to carry out the operation, maintenance, repair, and testing functions required to ensure compliance with the terms and conditions of this permit.

### **2. Preventive Maintenance Program**

The Permittee shall maintain an ongoing preventive maintenance program to prevent overflows and bypasses caused by malfunctions or failures of the sewer system infrastructure. The program shall include an inspection program designed to identify all potential and actual unauthorized discharges.

**D. ALTERNATE POWER SOURCE**

In order to maintain compliance with the terms and conditions of this permit, the Permittee shall provide an alternative power source(s) sufficient to operate the portion of the publicly owned treatment works it owns and operates, as defined in Part II.E.1 of this permit.

**E. SLUDGE CONDITIONS**

1. The Permittee shall comply with all existing federal and state laws and regulations that apply to sewage sludge use and disposal practices, including EPA regulations promulgated at 40 CFR Part 503, which prescribe “Standards for the Use or Disposal of Sewage Sludge” pursuant to § 405(d) of the CWA, 33 U.S.C. § 1345(d).
2. If both state and federal requirements apply to the Permittee’s sludge use and/or disposal practices, the Permittee shall comply with the more stringent of the applicable requirements.
3. The requirements and technical standards of 40 CFR Part 503 apply to the following sludge use or disposal practices:
  - a. Land application - the use of sewage sludge to condition or fertilize the soil
  - b. Surface disposal - the placement of sewage sludge in a sludge only landfill
  - c. Sewage sludge incineration in a sludge only incinerator
4. The requirements of 40 CFR Part 503 do not apply to facilities which dispose of sludge in a municipal solid waste landfill. 40 CFR § 503.4. These requirements also do not apply to facilities which do not use or dispose of sewage sludge during the life of the permit but rather treat the sludge (e.g., lagoons, reed beds), or are otherwise excluded under 40 CFR § 503.6.
5. The 40 CFR Part 503 requirements include the following elements:
  - a. General requirements
  - b. Pollutant limitations
  - c. Operational Standards (pathogen reduction requirements and vector attraction reduction requirements)
  - d. Management practices
  - e. Record keeping
  - f. Monitoring
  - g. Reporting

Which of the 40 CFR Part 503 requirements apply to the Permittee will depend upon the use or disposal practice followed and upon the quality of material produced by a facility. The EPA Region 1 guidance document, “EPA Region 1 - NPDES Permit Sludge Compliance

Guidance” (November 4, 1999), may be used by the Permittee to assist it in determining the applicable requirements.<sup>3</sup>

6. The sludge shall be monitored for pollutant concentrations (all Part 503 methods) and pathogen reduction and vector attraction reduction (land application and surface disposal) at the following frequency. This frequency is based upon the volume of sewage sludge generated at the facility in dry metric tons per year, as follows:

less than 290	1/ year
290 to less than 1,500	1 /quarter
1,500 to less than 15,000	6 /year
15,000 +	1 /month

Sampling of the sewage sludge shall use the procedures detailed in 40 CFR § 503.8.

7. Under 40 CFR § 503.9(r), the Permittee is a “person who prepares sewage sludge” because it “is ... the person who generates sewage sludge during the treatment of domestic sewage in a treatment works ....” If the Permittee contracts with *another* “person who prepares sewage sludge” under 40 CFR § 503.9(r) – i.e., with “a person who derives a material from sewage sludge” – for use or disposal of the sludge, then compliance with Part 503 requirements is the responsibility of the contractor engaged for that purpose. If the Permittee does not engage a “person who prepares sewage sludge,” as defined in 40 CFR § 503.9(r), for use or disposal, then the Permittee remains responsible to ensure that the applicable requirements in Part 503 are met. 40 CFR § 503.7. If the ultimate use or disposal method is land application, the Permittee is responsible for providing the person receiving the sludge with notice and necessary information to comply with the requirements of 40 CFR § 503 Subpart B.
8. Compliance with the requirements of this permit or 40 CFR Part 503 shall not eliminate or modify the need to comply with applicable requirements under RSA 485-A and Env-Wq 800, New Hampshire Sludge Management Rules.

## F. SPECIAL CONDITIONS

1. Provision to Modify pH Range

The pH range may be modified if the Permittee satisfies conditions set forth in Part I.H.5 below. Upon notification of an approval by NHDES, EPA will review and, if acceptable, will submit written notice to the Permittee of the permit change. The modified pH range will not be in effect until the Permittee receives written notice from EPA.

2. Discharge of Unused Portion of Uncontaminated Storage Waters

<sup>3</sup> This guidance document is available upon request from EPA Region 1 and may also be found at: <http://www.epa.gov/region1/npdes/permits/generic/sludgeguidance.pdf>

Each November, the permittee is allowed to bypass its secondary biological treatment system (physical, biological and chemical components) with a one-time batch discharge through Outfall 001 of the unused portion of uncontaminated storage waters (captured rainwater, drinking water and saltwater pumped from the nearby Atlantic Ocean) as long as no substance has been added to those waters during their on-island storage. However, if any substance has been added to those waters while in on-island storage, this bypass provision is not applicable. All discharges of the unused portion of uncontaminated storage waters must pass through Outfall 001 hereby defined as that pipe through which treated effluent from the Star Island's treatment works discharges into the Atlantic Ocean. This batch discharge is exempt from all requirements in Part I.A.1., but is not exempt from other provisions in this permit.

In addition, with each November's DMR, the permittee is required to submit a signed written statement certifying that the discharged waters were the unused portion of uncontaminated storage waters and were composed solely of captured rainwater, drinking water, and salt water to which no substance had been added while in on-island storage. With that certification statement, the permittee shall also include the approximate quantity (gallons) of each water type (captured rainwater, drinking water and saltwater) discharges, including date(s) and elapsed time (hours and minutes) needed to complete this discharge.

### 3. Reverse Osmosis Desalination Facility Best Management Practices

The Permittee shall develop, implement, and maintain a Best Management Practices (BMP) Plan for the reverse osmosis desalination facility designed to reduce or prevent the discharge of pollutants in the brine and filter backwash discharges to waters of the United States. The BMP Plan shall be a written document that is consistent with the terms of the permit and identifies and describes the BMPs employed by the facility in operating wastewater controls.

The BMP Plan shall be updated and certified by the Permittee within 90 days after the issued permit becomes effective. The Permittee shall certify the BMP Plan has been prepared, that it meets the requirements of this permit, and that it reduces the pollutants discharged in the brine and filter backwash discharges to the extent practicable. The BMP Plan and certification shall be signed in accordance with the requirements in 40 CFR §122.22. A copy of the BMP Plan and certification shall be maintained at the facility and made available to EPA and NHDES upon request.

Further, the permittee shall amend the Plan within 30 days following any change in facility design, construction, operation, or maintenance which affects the potential for the discharge of pollutants into surface waters or after the EPA and/or NHDES-WD determine certain changes are required following an event that results in non-compliance, a facility inspection, or review of the Plan. The permittee shall place in the Plan a written documentation of each amended change along with a brief description stating the reason for the amendment; include the date the change triggering the amendment occurred. The permittee shall also document the date the amended Plan was implemented.

The Permittee shall include, at a minimum, the following items:

- a. A description of the pollution control equipment (if any) and procedures used to minimize the discharge to surface waters of suspended solids, floating solids, foam, visible oil sheen, and settleable solids, in order to comply with the permit requirements.
- b. Preventative maintenance procedures to ensure equipment failures are avoided.
- c. A description of where the solid material removed from the influent strainers is to be placed, stored, or deposited of as well as the techniques used to prevent the removed solids from reentering the surface waters from any on site storage. If the material is to be removed from the site, describe who receives the material and its method of disposal and/or reuse.
- d. A description of the training to be provided for employees to assure they understand the goals, objectives, and procedures of the BMP Plan, the requirements of the NPDES Permit, and their individual responsibilities for complying with the goals and objectives of the BMP Plan and the NPDES Permit.
- e. Documentation of operational and preventative maintenance activities, equipment inspections, procedure audits, and personnel training. Also records of the calculations done at the time of sampling must be maintained at the facility so that an inspector may verify that the sampling was properly conducted.

All documentation of BMP activities shall be kept at the facility for at least three years and provided to EPA or NHDES upon request.

4. Outfall Pipe Requirements

The WWTF and reverse osmosis treatment system outfall pipes, which are removed each autumn and put back in place each spring, shall be installed at the approved location in the cove southwest from the hotel. The outfall pipes shall be installed as described below.

The WWTF outfall pipe shall have the following characteristics:

Minimum distance from the shore at spring low tide	110 feet
Approximate discharge port height (off the bottom)	4 inches
Port diameter	3 inches
Port angle from horizontal	0 degrees (laid flat)
Angle from shoreline	Approximately perpendicular to shoreline

The reverse osmosis outfall pipe shall have the following characteristics:

Minimum distance from the shore at spring low tide	110 feet
Approximate discharge port height (off the bottom)	5 feet
Port diameter	3 inches
Port angle from horizontal	60 degrees up from horizontal
Angle from shoreline	Approximately perpendicular from the shoreline

5. NHDES Shellfish Notification Procedures

The Permittee shall immediately notify the Shellfish Section of NHDES-WD of possible high bacteria/virus loading events from the facility or its sewage collection infrastructure. Such events include:

- a. Any lapse or interruption of normal operation of the POTW disinfection system, or other event that results in discharge of sewage from the POTW or sewer infrastructure (pump stations, sewer lines, manholes, etc.) that has not undergone full disinfection as specified in this permit;
- b. Average daily flows in excess of the POTW's average daily design flow of 0.0175 MGD; and
- c. Daily post-disinfection effluent sample result of 14 fecal coliform/100 mL or greater. Notification shall also be made for instances where NPDES-required bacteria sampling is not completed, or where the results of such sampling are invalid.

Notification shall be made using the program's cell phone number. If Shellfish Program staff are not available to answer the phone, leave a message describing the issue or situation and provide your contact information, including phone number. Then, call the Shellfish Program's pager and enter a call back number. Upon initial notification of a possible high bacteria/virus loading event, Shellfish Program staff will determine the most suitable interval for continued notification and updates on an event-by-event basis.

NHDES - Shellfish Program  
Cell Phone: 603-568-6741  
Pager: 603-771-9826

**G. REPORTING REQUIREMENTS**

Unless otherwise specified in this permit, the Permittee shall submit reports, requests, and information and provide notices in the manner described in this section.

1. Submittal of DMRs Using NetDMR

The Permittee shall continue to submit its monthly monitoring data in discharge monitoring reports (DMRs) to EPA and the State electronically using NetDMR no later than the 15th day of the month. When the Permittee submits DMRs using NetDMR, it is not required to submit hard copies of DMRs to EPA or the State. NetDMR is accessible through EPA's Central Data Exchange at <https://cdx.epa.gov/>.

2. Submittal of Reports as NetDMR Attachments

Unless otherwise specified in this permit, the Permittee shall electronically submit all reports to EPA as NetDMR attachments rather than as hard copies. This includes the NHDES Monthly Operating Reports (MORs). *See* Part I.G.6. for more information on State reporting. Because the due dates for reports described in this permit may not coincide with the due date for submitting DMRs (which is no later than the 15th day of the month), a report submitted electronically as a NetDMR attachment shall be considered timely if it is electronically submitted to EPA using NetDMR with the next DMR due following the report due date specified in this permit.

3. Submittal of Biosolids/Sewage Sludge Reports

By February 19 of each year, the Permittee must electronically report their annual Biosolids/Sewage Sludge Report for the previous calendar year using EPA's NPDES Electronic Reporting Tool ("NeT"), or another approved EPA system, which is accessible through EPA's Central Data Exchange at <https://cdx.epa.gov/>.

4. Submittal of Requests and Reports to EPA Water Division (WD)

- a. The following requests, reports, and information described in this permit shall be submitted to the NPDES Applications Coordinator in EPA Water Division (WD):
- b. Transfer of permit notice;
- c. Request for changes in sampling location;
- d. Request for reduction in testing frequency;
- e. These reports, information, and requests shall be submitted to EPA WD electronically at [R1NPDESReporting@epa.gov](mailto:R1NPDESReporting@epa.gov).

5. Submittal of Reports to EPA Enforcement and Compliance Assurance Division (ECAD) in Hard Copy Form

- a. The following notifications and reports shall be signed and dated originals, submitted as hard copy, with a cover letter describing the submission:
  - (1) Written notifications required under Part II.B.4.c for bypasses, and Part II.D.1.e for sanitary sewer overflows (SSOs). Beginning on 21 December 2025, such notifications must be done electronically using EPA's NPDES Electronic Reporting Tool ("NeT"), or another approved

EPA system, which will be accessible through EPA's Central Data Exchange at <https://cdx.epa.gov/>.

- b. This information shall be submitted to EPA ECAD at the following address:

U.S. Environmental Protection Agency  
Enforcement and Compliance Assurance Division  
Water Compliance Section  
5 Post Office Square, Suite 100 (04-SMR)  
Boston, MA 02109-3912

#### 6. State Reporting

Unless otherwise specified in this permit or by the State, duplicate signed copies of all reports, information, requests or notifications described in this permit, including the reports, information, requests or notifications described in Parts I.G.3 through I.G.4 shall also be submitted to the New Hampshire Department of Environmental Services, Water Division (NHDES-WD) electronically to the Permittee's assigned NPDES inspector at NHDES-WD or as a hardcopy to the following address:

New Hampshire Department of Environmental Services  
Water Division  
Wastewater Engineering Bureau  
29 Hazen Drive, P.O. Box 95  
Concord, New Hampshire 03302-0095

#### 7. Verbal Reports and Verbal Notifications

- a. Any verbal reports or verbal notifications, if required in Parts I and/or II of this permit, shall be made to both EPA and to the State. This includes verbal reports and notifications which require reporting within 24 hours (e.g., Part II.B.4.c.(2), Part II.B.5.c.(3), and Part II.D.1.e).
- b. Verbal reports and verbal notifications shall be made to:

EPA ECAD at 617-918-1510  
and  
NHDES Assigned NPDES Inspector at 603-271-1493

#### H. STATE 401 CERTIFICATION CONDITIONS

1. The Permittee shall not at any time, either alone or in conjunction with any person or persons, cause directly or indirectly the discharge of waste into the said receiving water unless it has been treated in such a manner as will not lower the legislated water quality classification of, or interfere with the uses assigned to, said water by the New Hampshire Legislature (RSA 485-A:12).

2. This NPDES discharge permit is issued by EPA under federal law. Upon final issuance by EPA, the New Hampshire Department of Environmental Services-Water Division (NHDES-WD) may adopt this permit, including all terms and conditions, as a state permit pursuant to RSA 485-A:13.
3. EPA shall have the right to enforce the terms and conditions of this permit pursuant to federal law and NHDES-WD shall have the right to enforce the permit pursuant to state law, if the permit is adopted. Any modification, suspension, or revocation of this permit shall be effective only with respect to the agency taking such action and shall not affect the validity or status of the permit as issued by the other agency.
4. Pursuant to New Hampshire Statute RSA 485-A:13,I(c), any person responsible for a bypass or upset at a *wastewater facility* shall give immediate notice of a bypass or upset to all public or privately owned water systems drawing water from the same receiving water and located within 20 miles downstream of the point of discharge regardless of whether or not it is on the same receiving water or on another surface water to which the receiving water is tributary. Wastewater facility is defined at RSA 485-A:2XIX as the structures, equipment, and processes required to collect, convey, and treat domestic and industrial wastes, and dispose of the effluent and sludge. The Permittee shall maintain a list of persons, and their telephone numbers, who are to be notified immediately by telephone. In addition, written notification, which shall be postmarked within 3 days of the bypass or upset, shall be sent to such persons.
5. The pH range of 6.5 to 8.0 Standard Units (S.U.) must be achieved in the final effluent unless the Permittee can demonstrate to NHDES-WD: 1) that the range should be widened due to naturally occurring conditions in the receiving water; or 2) that the naturally occurring receiving water pH is not significantly altered by the Permittee's discharge. The scope of any demonstration project must receive prior approval from NHDES-WD. In no case, shall the above procedure result in pH limits outside the range of 6.0 to 9.0 S.U., which is the federal effluent limitation guideline regulations for pH for secondary treatment and is found in 40 CFR § 133.102(c).
6. Pursuant to New Hampshire Code of Administrative Rules, Env-Wq 703.07(a):
  - a. Any person proposing to construct or modify any of the following shall submit an application for a sewer connection permit to the department:
    - (1) Any extension of a collector or interceptor, whether public or private, regardless of flow;
    - (2) Any wastewater connection or other discharge in excess of 5,000 gpd;
    - (3) Any wastewater connection or other discharge to a WWTP operating in excess of 80 percent design flow capacity or design loading capacity based on actual average flow or loading for 3 consecutive months;
    - (4) Any industrial wastewater connection or change in existing discharge of industrial wastewater, regardless of quality or quantity;

- (5) Any sewage pumping station greater than 50 gpm or serving more than one building; or
  - (6) Any proposed sewer that serves more than one building or that requires a manhole at the connection.
7. For each new or increased discharge of industrial waste to the POTW, the Permittee shall submit, in accordance with Env-Wq 305.10(a) an “Industrial Wastewater Discharge Request.”
8. Pursuant to Env-Wq 305.15(d) and 305.16(f), the Permittee shall not allocate or accept for treatment more than 90 percent of the headworks loading limits of the facility.
9. Pursuant to Env-Wq 305.21, at a frequency no less than every five years, the Permittee shall submit to NHDES:
  - a. A copy of its current sewer use ordinance if it has been revised without department approval subsequent to any previous submittal to the department or a certification that no changes have been made.
  - b. A current list of all significant indirect dischargers to the POTW. At a minimum, the list shall include for each significant indirect discharger, its name and address, the name and daytime telephone number of a contact person, products manufactured, industrial processes used, existing pretreatment processes, and discharge permit status.
  - c. A list of all permitted indirect dischargers; and
  - d. A certification that the municipality is strictly enforcing its sewer use ordinance and all discharge permits it has issued.
10. When the effluent discharged for a period of three (3) consecutive months exceeds 80 percent of the 0.0175 MGD design flow (0.013 MGD) or design loading capacity, the Permittee shall submit to the permitting authorities a projection of flows and loadings up to the time when the design capacity of the treatment facility will be reached, and a program for maintaining satisfactory treatment levels consistent with approved water quality management plans. Before the design flow will be reached, or whenever treatment necessary to achieve permit limits cannot be assured, the Permittee may be required to submit plans for facility improvements.
11. Fecal Coliform – Daily post-disinfection effluent grab samples shall be collected and analyzed for fecal coliform using an EPA-approved analytical method (published in 40 CFR Part 136) that meets the timeliness requirements of the NHDES Shellfish Program. Results shall be reported to NHDES each month in accordance with state reporting requirements in Part I.G.6.

**ATTACHMENT A**

**MARINE ACUTE**

**TOXICITY TEST PROCEDURE AND PROTOCOL**

**I. GENERAL REQUIREMENTS**

The permittee shall conduct acceptable acute toxicity tests in accordance with the appropriate test protocols described below:

- **2007.0 - Mysid Shrimp (Americamysis bahia) definitive 48 hour test.**
- **2006.0 - Inland Silverside (Menidia beryllina) definitive 48 hour test.**

Acute toxicity data shall be reported as outlined in Section VIII.

**II. METHODS**

The permittee shall use the most recent 40 CFR Part 136 methods. Whole Effluent Toxicity (WET) Test Methods and guidance may be found at:

<http://water.epa.gov/scitech/methods/cwa/wet/index.cfm#methods>

The permittee shall also meet the sampling, analysis and reporting requirements included in this protocol. This protocol defines more specific requirements while still being consistent with the Part 136 methods. If, due to modifications of Part 136, there are conflicting requirements between the Part 136 method and this protocol, the permittee shall comply with the requirements of the Part 136 method.

**III. SAMPLE COLLECTION**

A discharge and receiving water sample shall be collected. The receiving water control sample must be collected immediately upstream of the permitted discharge's zone of influence. The acceptable holding times until initial use of a sample are 24 and 36 hours for on-site and off-site testing, respectively. A written waiver is required from the regulating authority for any holding time extension. Sampling guidance dictates that, where appropriate, aliquots for the analysis required in this protocol shall be split from the samples, containerized and immediately preserved, or analyzed as per 40 CFR Part 136. EPA approved test methods require that samples collected for metals analyses be preserved immediately after collection. Testing for the presence of total residual chlorine<sup>1</sup> (TRC) must be analyzed immediately or as soon as possible, for all effluent samples, prior to WET testing. TRC analysis may be performed on-site or by the toxicity testing laboratory and the samples must be dechlorinated, as necessary, using sodium thiosulfate

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<sup>1</sup> For this protocol, total residual chlorine is synonymous with total residual oxidants.  
(July 2012)

prior to sample use for toxicity testing. If performed on site the results should be included on the chain of custody (COC) presented to WET laboratory.

Standard Methods for the Examination of Water and Wastewater describes dechlorination of samples (APHA, 1992). Dechlorination can be achieved using a ratio of 6.7 mg/L anhydrous sodium thiosulfate to reduce 1 mg/L chlorine. If dechlorination is necessary, a thiosulfate control consisting of the maximum concentration of thiosulfate used to dechlorinate the sample in the toxicity test control water must also be run in the WET test.

All samples submitted for chemical and physical analyses will be analyzed according to Section VI of this protocol. Grab samples must be used for pH, temperature, and total residual chlorine (as per 40 CFR Part 122.21).

All samples held for use beyond the day of sampling shall be refrigerated and maintained at a temperature range of 0-6° C.

#### **IV. DILUTION WATER**

Samples of receiving water must be collected from a reasonably accessible location in the receiving water body immediately upstream of the permitted discharge's zone of influence. Avoid collection near areas of obvious road or agricultural runoff, storm sewers or other point source discharges and areas where stagnant conditions exist. EPA strongly urges that screening for toxicity be performed prior to the set up of a full, definitive toxicity test any time there is a question about the test dilution water's ability to achieve test acceptability criteria (TAC) as indicated in Section V of this protocol. The test dilution water control response will be used in the statistical analysis of the toxicity test data. All other control(s) required to be run in the test will be reported as specified in the Discharge Monitoring Report (DMR) Instructions, Attachment F, page 2, Test Results & Permit Limits.

The test dilution water must be used to determine whether the test met the applicable TAC. When receiving water is used for test dilution, an additional control made up of standard laboratory water (0% effluent) is required. This control will be used to verify the health of the test organisms and evaluate to what extent, if any, the receiving water itself is responsible for any toxic response observed.

If dechlorination of a sample by the toxicity testing laboratory is necessary a "sodium thiosulfate" control, representing the concentration of sodium thiosulfate used to adequately dechlorinate the sample prior to toxicity testing, must be included in the test.

If the use of alternate dilution water (ADW) is authorized, in addition to the ADW test control, the testing laboratory must, for the purpose of monitoring the receiving water, also run a receiving water control.

If the receiving water is found to be, or suspected to be toxic or unreliable, ADW of known quality with hardness similar to that of the receiving water may be substituted. Substitution is

species specific meaning that the decision to use ADW is made for each species and is based on the toxic response of that particular species. Substitution to an ADW is authorized in two cases. The first case is when repeating a test due to toxicity in the site dilution water requires an **immediate decision** for ADW use by the permittee and toxicity testing laboratory. The second is when two of the most recent documented incidents of unacceptable site dilution water toxicity require ADW use in future WET testing.

For the second case, written notification from the permittee requesting ADW use **and** written authorization from the permit issuing agency(s) is required **prior to** switching to a long-term use of ADW for the duration of the permit.

Written requests for use of ADW must be mailed with supporting documentation to the following addresses:

Director  
Office of Ecosystem Protection (CAA)  
U.S. Environmental Protection Agency, Region 1  
Five Post Office Square, Suite 100  
Mail Code OEP06-5  
Boston, MA 02109-3912

and

Manager  
Water Technical Unit (SEW)  
U.S. Environmental Protection Agency  
Five Post Office Square, Suite 100  
Mail Code OES04-4  
Boston, MA 02109-3912

Note: USEPA Region 1 retains the right to modify any part of the alternate dilution water policy stated in this protocol at any time. Any changes to this policy will be documented in the annual DMR posting.

*See the most current annual DMR instructions which can be found on the EPA Region 1 website at <http://www.epa.gov/region1/enforcementandassistance/dmr.html> for further important details on alternate dilution water substitution requests.*

## **V. TEST CONDITIONS AND TEST ACCEPTABILITY CRITERIA**

EPA Region 1 requires tests be performed using four replicates of each control and effluent concentration because the non-parametric statistical tests cannot be used with data from fewer replicates. The following tables summarize the accepted Americamysis and Menidia toxicity test conditions and test acceptability criteria:

**EPA NEW ENGLAND EFFLUENT TOXICITY TEST CONDITIONS FOR THE MYSID, AMERICAMYSIS BAHIA 48 HOUR TEST<sup>1</sup>**

---

1. Test type	48hr Static, non-renewal
2. Salinity	25ppt $\pm$ 10 percent for all dilutions by adding dry ocean salts
3. Temperature ( $^{\circ}$ C)	20 $^{\circ}$ C $\pm$ 1 $^{\circ}$ C or 25 $^{\circ}$ C $\pm$ 1 $^{\circ}$ C, temperature must not deviate by more than 3 $^{\circ}$ C during test
4. Light quality	Ambient laboratory illumination
5. Photoperiod	16 hour light, 8 hour dark
6. Test chamber size	250 ml (minimum)
7. Test solution volume	200 ml/replicate (minimum)
8. Age of test organisms	1-5 days, <u><math>\leq</math> 24 hours age range</u>
9. No. Mysids per test chamber	10
10. No. of replicate test chambers per treatment	4
11. Total no. Mysids per test concentration	40
12. Feeding regime	Light feeding using concentrated <u>Artemia</u> naupli while holding prior to initiating the test
13. Aeration <sup>2</sup>	None
14. Dilution water	5-30 ppt, +/- 10%; Natural seawater, or deionized water mixed with artificial sea salts
15. Dilution factor	$\geq$ 0.5
16. Number of dilutions <sup>3</sup>	5 plus a control. An additional dilution at the permitted effluent concentration (%)

effluent) is required if it is not included in the dilution series.

- |                            |   |
|----------------------------|---|
| 17. Effect measured        | Mortality - no movement of body appendages on gentle prodding   |
| 18. Test acceptability     | 90% or greater survival of test organisms in control solution   |
| 19. Sampling requirements  | For on-site tests, samples are used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples must be first used within 36 hours of collection. |
| 20. Sample volume required | Minimum 1 liter for effluents and 2 liters for receiving waters   |
- 

Footnotes:

- <sup>1</sup> Adapted from EPA 821-R-02-012.
- <sup>2</sup> If dissolved oxygen falls below 4.0 mg/L, aerate at rate of less than 100 bubbles/min. Routine D.O. checks are recommended.
- <sup>3</sup> When receiving water is used for dilution, an additional control made up of standard laboratory dilution water (0% effluent) is required.

**EPA NEW ENGLAND TOXICITY TEST CONDITIONS FOR THE INLAND SILVERSIDE, MENIDIA BERYLLINA 48 HOUR TEST<sup>1</sup>**

---

1. Test Type	48 hr Static, non-renewal
2. Salinity	25 ppt $\pm$ 10 % by adding dry ocean salts
3. Temperature	20°C $\pm$ 1°C or 25°C $\pm$ 1°C, temperature must not deviate by more than 3°C during test
4. Light Quality	Ambient laboratory illumination
5. Photoperiod	16 hr light, 8 hr dark
6. Size of test vessel	250 mL (minimum)
7. Volume of test solution	200 mL/replicate (minimum)
8. Age of fish	9-14 days; 24 hr age range
9. No. fish per chamber	10 (not to exceed loading limits)
10. No. of replicate test vessels per treatment	4
11. Total no. organisms per concentration	40
12. Feeding regime	Light feeding using concentrated <u>Artemia</u> nauplii while holding prior to initiating the test
13. Aeration <sup>2</sup>	None
14. Dilution water	5-32 ppt, +/- 10% ; Natural seawater, or deionized water mixed with artificial sea salts.
15. Dilution factor	$\geq$ 0.5
16. Number of dilutions <sup>3</sup>	5 plus a control. An additional dilution at the permitted concentration (% effluent) is required if it is not included in the dilution series.
17. Effect measured	Mortality-no movement on gentle prodding.

18. Test acceptability	90% or greater survival of test organisms in control solution.
19. Sampling requirements	For on-site tests, samples must be used within 24 hours of the time they are removed from the sampling device. Off-site test samples must be used within 36 hours of collection.
20. Sample volume required	Minimum 1 liter for effluents and 2 liters for receiving waters.

---

Footnotes:

- <sup>1</sup> Adapted from EPA 821-R-02-012.
- <sup>2</sup> If dissolved oxygen falls below 4.0 mg/L, aerate at rate of less than 100 bubbles/min. Routine D.O. checks recommended.
- <sup>3</sup> When receiving water is used for dilution, an additional control made up of standard laboratory dilution water (0% effluent) is required.

V.1. Test Acceptability Criteria

If a test does not meet TAC the test must be repeated with fresh samples within 30 days of the initial test completion date.

V.2. Use of Reference Toxicity Testing

Reference toxicity test results and applicable control charts must be included in the toxicity testing report.

In general, if reference toxicity test results fall outside the control limits established by the laboratory for a specific test endpoint, a reason or reasons for this excursion must be evaluated, correction made and reference toxicity tests rerun as necessary as prescribed below.

If a test endpoint value exceeds the control limits at a frequency of more than one out of twenty then causes for the reference toxicity test failure must be examined and if problems are identified corrective action taken. The reference toxicity test must be repeated during the same month in which the exceedance occurred.

If two consecutive reference toxicity tests fall outside control limits, the possible cause(s) for the exceedance must be examined, corrective actions taken and a repeat of the reference toxicity test must take place immediately. Actions taken to resolve the problem must be reported.

### V.2.a. Use of Concurrent Reference Toxicity Testing

In the case where concurrent reference toxicity testing is required due to a low frequency of testing with a particular method, if the reference toxicity test results fall slightly outside of laboratory established control limits, but the primary test met the TAC, the results of the primary test will be considered acceptable. However, if the results of the concurrent test fall well outside the established **upper** control limits i.e.  $\geq 3$  standard deviations for IC25s and LC50 values and  $\geq$  two concentration intervals for NOECs or NOAECs, and even though the primary test meets TAC, the primary test will be considered unacceptable and must be repeated.

## **VI. CHEMICAL ANALYSIS**

At the beginning of the static acute test, pH, salinity, and temperature must be measured at the beginning and end of each 24 hour period in each dilution and in the controls. The following chemical analyses shall be performed for each sampling event.

---

<u>Parameter</u>	<u>Effluent</u>	<u>Diluent</u>	<u>Minimum Level for effluent<sup>*1</sup> (mg/L)</u>
pH	x	x	---
Salinity	x	x	ppt(o/oo)
Total Residual Chlorine <sup>*2</sup>	x	x	0.02
Total Solids and Suspended Solids	x	x	---
Ammonia	x	x	0.1
Total Organic Carbon	x	x	0.5
<u>Total Metals</u>			
Cd	x	x	0.0005
Pb	x	x	0.0005
Cu	x	x	0.003
Zn	x	x	0.005
Ni	x	x	0.005

---

### Superscript:

\*1 These are the minimum levels for effluent (fresh water) samples. Tests on diluents (marine waters) shall be conducted using the Part 136 methods that yield the lowest MLs.

\*2 Either of the following methods from the 18th Edition of the APHA Standard Methods for the Examination of Water and Wastewater must be used for these analyses:

- Method 4500-Cl E Low Level Amperometric Titration (the preferred method);
- Method 4500-CL G DPD Photometric Method.

## **VII. TOXICITY TEST DATA ANALYSIS**

### LC50 Median Lethal Concentration

An estimate of the concentration of effluent or toxicant that is lethal to 50% of the test organisms during the time prescribed by the test method.

Methods of Estimation:

- Probit Method
- Spearman-Karber
- Trimmed Spearman-Karber
- Graphical

See flow chart in Figure 6 on page 73 of EPA 821-R-02-012 for appropriate method to use on a given data set.

### No Observed Acute Effect Level (NOAEL)

See flow chart in Figure 13 on page 87 of EPA 821-R-02-012.

## **VIII. TOXICITY TEST REPORTING**

A report of results must include the following:

- Toxicity Test summary sheet(s) (Attachment F to the DMR Instructions) which includes:
  - Facility name
  - NPDES permit number
  - Outfall number
  - Sample type
  - Sampling method
  - Effluent TRC concentration
  - Dilution water used
  - Receiving water name and sampling location
  - Test type and species
  - Test start date
  - Effluent concentrations tested (%) and permit limit concentration
  - Applicable reference toxicity test date and whether acceptable or not
  - Age, age range and source of test organisms used for testing
  - Results of TAC review for all applicable controls
  - Permit limit and toxicity test results
  - Summary of any test sensitivity and concentration response evaluation that was conducted

Please note: The NPDES Permit Program Instructions for the Discharge Monitoring Report Forms (DMRs) are available on EPA's website at

<http://www.epa.gov/NE/enforcementandassistance/dmr.html>

In addition to the summary sheets the report must include:

- A brief description of sample collection procedures;
- Chain of custody documentation including names of individuals collecting samples, times and dates of sample collection, sample locations, requested analysis and lab receipt with time and date received, lab receipt personnel and condition of samples upon receipt at the lab(s);
- Reference toxicity test control charts;
- All sample chemical/physical data generated, including minimum levels (MLs) and analytical methods used;
- All toxicity test raw data including daily ambient test conditions, toxicity test chemistry, sample dechlorination details as necessary, bench sheets and statistical analysis;
- A discussion of any deviations from test conditions; and
- Any further discussion of reported test results, statistical analysis and concentration-response relationship and test sensitivity review per species per endpoint.

NPDES PART II STANDARD CONDITIONS  
(April 26, 2018)<sup>1</sup>

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<sup>1</sup>Updated July 17, 2018 to fix typographical errors.

NPDES PART II STANDARD CONDITIONS  
(April 26, 2018)

A. GENERAL REQUIREMENTS

1. Duty to Comply

The Permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act (CWA or Act) and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

- a. The Permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.
- b. Penalties for Violations of Permit Conditions: The Director will adjust the civil and administrative penalties listed below in accordance with the Civil Monetary Penalty Inflation Adjustment Rule (83 Fed. Reg. 1190-1194 (January 10, 2018) and the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note. See Pub. L. 114-74, Section 701 (Nov. 2, 2015)). These requirements help ensure that EPA penalties keep pace with inflation. Under the above-cited 2015 amendments to inflationary adjustment law, EPA must review its statutory civil penalties each year and adjust them as necessary.

(1) Criminal Penalties

- (a) *Negligent Violations.* The CWA provides that any person who negligently violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to criminal penalties of not less than \$2,500 nor more than \$25,000 per day of violation, or imprisonment of not more than 1 year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than \$50,000 per day of violation or by imprisonment of not more than 2 years, or both.
- (b) *Knowing Violations.* The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than \$5,000 nor more than \$50,000 per day of violation, or by imprisonment for not more than 3 years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than \$100,000 per day of violation, or imprisonment of not more than 6 years, or both.
- (c) *Knowing Endangerment.* The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 303, 306, 307, 308, 318, or 405 of the Act and who knows at that time that he or she is placing another person in imminent danger of death or serious bodily injury shall upon conviction be subject to a fine of not more than \$250,000 or by imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing

## NPDES PART II STANDARD CONDITIONS

(April 26, 2018)

endangerment violation, a person shall be subject to a fine of not more than \$500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in Section 309(c)(3)(B)(iii) of the Act, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than \$1,000,000 and can be fined up to \$2,000,000 for second or subsequent convictions.

- (d) *False Statement.* 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, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than \$20,000 per day of violation, or by imprisonment of not more than 4 years, or both. The Act further 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 non-compliance 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.
- (2) *Civil Penalties.* The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a civil penalty not to exceed the maximum amounts authorized by Section 309(d) of the Act, the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).
- (3) *Administrative Penalties.* The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to an administrative penalty as follows:
- (a) *Class I Penalty.* Not to exceed the maximum amounts authorized by Section 309(g)(2)(A) of the Act, the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).
- (b) *Class II Penalty.* Not to exceed the maximum amounts authorized by Section 309(g)(2)(B) of the Act the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

### 2. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. 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

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condition.

3. 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.

4. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the Permittee from responsibilities, liabilities or penalties to which the Permittee is or may be subject under Section 311 of the CWA, or Section 106 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA).

5. Property Rights

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

6. Confidentiality of Information

a. In accordance with 40 C.F.R. Part 2, any information submitted to EPA 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, EPA may make the information available to the public without further notice. If a claim is asserted, the information will be treated in accordance with the procedures in 40 C.F.R. Part 2 (Public Information).

b. Claims of confidentiality for the following information will be denied:

- (1) The name and address of any permit applicant or Permittee;
- (2) Permit applications, permits, and effluent data.

c. Information required by NPDES application forms provided by the Director under 40 C.F.R. § 122.21 may not be claimed confidential. This includes information submitted on the forms themselves and any attachments used to supply information required by the forms.

7. 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.)

8. State Authorities

Nothing in Parts 122, 123, or 124 precludes more stringent State regulation of any activity

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covered by the regulations in 40 C.F.R. Parts 122, 123, and 124, whether or not under an approved State program.

9. Other Laws

The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations.

B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. 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. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a Permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

2. 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.

3. Duty to Mitigate

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

4. Bypass

a. Definitions

- (1) *Bypass* means the intentional diversion of waste streams from any portion of a treatment facility.
- (2) *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. *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 (c) and (d) of this Section.

c. Notice

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- (1) *Anticipated bypass.* If the Permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass. As of December 21, 2020 all notices submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or if required to do so by state law.
- (2) *Unanticipated bypass.* The Permittee shall submit notice of an unanticipated bypass as required in paragraph D.1.e. of this part (24-hour notice). As of December 21, 2020 all notices submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or required to do so by law.

### d. *Prohibition of bypass.*

- (1) 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;
  - (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 back-up 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 preventative maintenance; and
  - (c) The Permittee submitted notices as required under paragraph 4.c of this Section.
- (2) 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 4.d of this Section.

### 5. Upset

- a. *Definition.* *Upset* means an exceptional incident in which there is an 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

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improper operation.

- b. *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 B.5.c. 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.
- c. *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:
  - (1) An upset occurred and that the Permittee can identify the cause(s) of the upset;
  - (2) The permitted facility was at the time being properly operated; and
  - (3) The Permittee submitted notice of the upset as required in paragraph D.1.e.2.b. (24-hour notice).
  - (4) The Permittee complied with any remedial measures required under B.3. above.
- d. *Burden of proof.* In any enforcement proceeding the Permittee seeking to establish the occurrence of an upset has the burden of proof.

### C. MONITORING REQUIREMENTS

#### 1. Monitoring and Records

- a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
- b. Except for records of monitoring information required by this permit related to the Permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least 5 years (or longer as required by 40 C.F.R. § 503), the Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for 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 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.
- c. Records of monitoring information shall include:
  - (1) The date, exact place, and time of sampling or measurements;
  - (2) The individual(s) who performed the sampling or measurements;
  - (3) The date(s) analyses were performed;
  - (4) The individual(s) who performed the analyses;
  - (5) The analytical techniques or methods used; and
  - (6) The results of such analyses.
- d. Monitoring must be conducted according to test procedures approved under 40 C.F.R. § 136 unless another method is required under 40 C.F.R. Subchapters N or O.
- e. The Clean Water Act provides that any person who falsifies, tampers with, or

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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, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than \$20,000 per day of violation, or by imprisonment of not more than 4 years, or both.

2. Inspection and Entry

The Permittee shall allow the Director, or an authorized representative (including an authorized contractor acting as a representative of the Administrator), upon presentation of credentials and other documents as may be required by law, to:

- a. 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;
- b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
- d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

D. REPORTING REQUIREMENTS

1. Reporting Requirements

- a. *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. Notice is required only when:
  - (1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 C.F.R. § 122.29(b); or
  - (2) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements at 40 C.F.R. § 122.42(a)(1).
  - (3) The alteration or addition results in a significant change in the Permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.
- b. *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 permit requirements.

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- c. *Transfers.* This permit is not transferable to any person except after 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 the Clean Water Act. *See* 40 C.F.R. § 122.61; in some cases, modification or revocation and reissuance is mandatory.
- d. *Monitoring reports.* Monitoring results shall be reported at the intervals specified elsewhere in this permit.
  - (1) Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Director for reporting results of monitoring of sludge use or disposal practices. As of December 21, 2016 all reports and forms submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or if required to do so by State law.
  - (2) If the Permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 C.F.R. § 136, or another method required for an industry-specific waste stream under 40 C.F.R. Subchapters N or O, the results of such monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Director.
  - (3) Calculations for all limitations which require averaging or measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.
- e. *Twenty-four hour reporting.*
  - (1) The Permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Permittee becomes aware of the circumstances. A written report shall also be provided within 5 days of the time the Permittee becomes aware of the circumstances. The written report 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. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports must include the data described above (with the exception of time of discovery) as well as the type of event (combined sewer overflows, sanitary sewer overflows, or bypass events), type of sewer overflow structure (e.g., manhole, combined sewer overflow outfall), discharge volumes untreated by the treatment works treating domestic sewage, types of human health and environmental impacts of the sewer overflow event, and whether the noncompliance was related to wet weather. As of December 21, 2020 all

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reports related to combined sewer overflows, sanitary sewer overflows, or bypass events submitted in compliance with this section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to electronically submit reports related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section by a particular permit or if required to do so by state law. The Director may also require Permittees to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section.

- (2) The following shall be included as information which must be reported within 24 hours under this paragraph.
    - (a) Any unanticipated bypass which exceeds any effluent limitation in the permit. *See* 40 C.F.R. § 122.41(g).
    - (b) Any upset which exceeds any effluent limitation in the permit.
    - (c) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in the permit to be reported within 24 hours. *See* 40 C.F.R. § 122.44(g).
  - (3) The Director may waive the written report on a case-by-case basis for reports under paragraph D.1.e. of this Section if the oral report has been received within 24 hours.
- f. *Compliance Schedules.* Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.
- g. *Other noncompliance.* The Permittee shall report all instances of noncompliance not reported under paragraphs D.1.d., D.1.e., and D.1.f. of this Section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph D.1.e. of this Section. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports shall contain the information described in paragraph D.1.e. and the applicable required data in Appendix A to 40 C.F.R. Part 127. As of December 21, 2020 all reports related to combined sewer overflows, sanitary sewer overflows, or bypass events submitted in compliance with this section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), §122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to electronically submit reports related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section by a particular permit or if required to do so by state law. The Director may also require Permittees to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this Section.
- h. *Other information.* Where the Permittee becomes aware that it failed to submit any

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relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information.

- i. *Identification of the initial recipient for NPDES electronic reporting data.* The owner, operator, or the duly authorized representative of an NPDES-regulated entity is required to electronically submit the required NPDES information (as specified in Appendix A to 40 C.F.R. Part 127) to the appropriate initial recipient, as determined by EPA, and as defined in 40 C.F.R. § 127.2(b). EPA will identify and publish the list of initial recipients on its Web site and in the FEDERAL REGISTER, by state and by NPDES data group (see 40 C.F.R. § 127.2(c) of this Chapter). EPA will update and maintain this listing.

### 2. Signatory Requirement

- a. All applications, reports, or information submitted to the Director shall be signed and certified. *See* 40 C.F.R. §122.22.
- b. The CWA 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 non-compliance 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.

### 3. Availability of Reports.

Except for data determined to be confidential under paragraph A.6. above, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the State water pollution control agency and the Director. As required by the CWA, effluent data shall not be considered confidential. Knowingly making any false statements on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the CWA.

## E. DEFINITIONS AND ABBREVIATIONS

### 1. General Definitions

For more definitions related to sludge use and disposal requirements, see EPA Region 1's NPDES Permit Sludge Compliance Guidance document (4 November 1999, modified to add regulatory definitions, April 2018).

*Administrator* means the Administrator of the United States Environmental Protection Agency, or an authorized representative.

*Applicable standards and limitations* means all, State, interstate, and federal standards and limitations to which a "discharge," a "sewage sludge use or disposal practice," or a related activity is subject under the CWA, including "effluent limitations," water quality standards, standards of performance, toxic effluent standards or prohibitions, "best management practices," pretreatment standards, and "standards for sewage sludge use or disposal" under Sections 301, 302, 303, 304, 306, 307, 308, 403 and 405 of the CWA.

*Application* means the EPA standard national forms for applying for a permit, including any additions, revisions, or modifications to the forms; or forms approved by EPA for use in

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“approved States,” including any approved modifications or revisions.

*Approved program* or *approved State* means a State or interstate program which has been approved or authorized by EPA under Part 123.

*Average monthly discharge limitation* means the highest allowable average of “daily discharges” over a calendar month, calculated as the sum of all “daily discharges” measured during a calendar month divided by the number of “daily discharges” measured during that month.

*Average weekly discharge limitation* means the highest allowable average of “daily discharges” over a calendar week, calculated as the sum of all “daily discharges” measured during a calendar week divided by the number of “daily discharges” measured during that week.

*Best Management Practices (“BMPs”)* means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of “waters of the United States.” BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

*Bypass* see B.4.a.1 above.

*C-NOEC* or “*Chronic (Long-term Exposure Test) – No Observed Effect Concentration*” means the highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specified time of observation.

*Class I sludge management facility* is any publicly owned treatment works (POTW), as defined in 40 C.F.R. § 501.2, required to have an approved pretreatment program under 40 C.F.R. § 403.8 (a) (including any POTW located in a State that has elected to assume local program responsibilities pursuant to 40 C.F.R. § 403.10 (e)) and any treatment works treating domestic sewage, as defined in 40 C.F.R. § 122.2, classified as a Class I sludge management facility by the EPA Regional Administrator, or, in the case of approved State programs, the Regional Administrator in conjunction with the State Director, because of the potential for its sewage sludge use or disposal practice to affect public health and the environment adversely.

*Contiguous zone* means the entire zone established by the United States under Article 24 of the Convention on the Territorial Sea and the Contiguous Zone.

*Continuous discharge* means a “discharge” which occurs without interruption throughout the operating hours of the facility, except for infrequent shutdowns for maintenance, process changes, or similar activities.

*CWA* means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Public Law 92-500, as amended by Public Law 95-217, Public Law 95-576, Public Law 96-483 and Public Law 97-117, 33 U.S.C. 1251 *et seq.*

*CWA and regulations* means the Clean Water Act (CWA) and applicable regulations promulgated thereunder. In the case of an approved State program, it includes State program requirements.

*Daily Discharge* means the “discharge of a pollutant” measured during a calendar day or any

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other 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the “daily discharge” is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurements, the “daily discharge” is calculated as the average measurement of the pollutant over the day.

*Direct Discharge* means the “discharge of a pollutant.”

*Director* means the Regional Administrator or an authorized representative. In the case of a permit also issued under Massachusetts’ authority, it also refers to the Director of the Division of Watershed Management, Department of Environmental Protection, Commonwealth of Massachusetts.

*Discharge*

- (a) When used without qualification, *discharge* means the “discharge of a pollutant.”
- (b) As used in the definitions for “interference” and “pass through,” *discharge* means the introduction of pollutants into a POTW from any non-domestic source regulated under Section 307(b), (c) or (d) of the Act.

*Discharge Monitoring Report (“DMR”)* means the EPA uniform national form, including any subsequent additions, revisions, or modifications for the reporting of self-monitoring results by Permittees. DMRs must be used by “approved States” as well as by EPA. EPA will supply DMRs to any approved State upon request. The EPA national forms may be modified to substitute the State Agency name, address, logo, and other similar information, as appropriate, in place of EPA’s.

*Discharge of a pollutant* means:

- (a) Any addition of any “pollutant” or combination of pollutants to “waters of the United States” from any “point source,” or
- (b) Any addition of any pollutant or combination of pollutants to the waters of the “contiguous zone” or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation.

This definition includes additions of pollutants into waters of the United States from: surface runoff which is collected or channeled by man; discharges through pipes, sewers, or other conveyances owned by a State, municipality, or other person which do not lead to a treatment works; and discharges through pipes, sewers, or other conveyances, leading into privately owned treatment works. This term does not include an addition of pollutants by any “indirect discharger.”

*Effluent limitation* means any restriction imposed by the Director on quantities, discharge rates, and concentrations of “pollutants” which are “discharged” from “point sources” into “waters of the United States,” the waters of the “contiguous zone,” or the ocean.

*Effluent limitation guidelines* means a regulation published by the Administrator under section 304(b) of CWA to adopt or revise “effluent limitations.”

*Environmental Protection Agency (“EPA”)* means the United States Environmental Protection

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Agency.

*Grab Sample* means an individual sample collected in a period of less than 15 minutes.

*Hazardous substance* means any substance designated under 40 C.F.R. Part 116 pursuant to Section 311 of CWA.

*Incineration* is the combustion of organic matter and inorganic matter in sewage sludge by high temperatures in an enclosed device.

*Indirect discharger* means a nondomestic discharger introducing “pollutants” to a “publicly owned treatment works.”

*Interference* means a discharge (see definition above) which, alone or in conjunction with a discharge or discharges from other sources, both:

- (a) Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and
- (b) Therefore is a cause of a violation of any requirement of the POTW’s NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resources Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to Subtitle D of the SDWA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

*Landfill* means an area of land or an excavation in which wastes are placed for permanent disposal, and that is not a land application unit, surface impoundment, injection well, or waste pile.

*Land application* is the spraying or spreading of sewage sludge onto the land surface; the injection of sewage sludge below the land surface; or the incorporation of sewage sludge into the soil so that the sewage sludge can either condition the soil or fertilize crops or vegetation grown in the soil.

*Land application unit* means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for agricultural purposes or for treatment and disposal.

*LC<sub>50</sub>* means the concentration of a sample that causes mortality of 50% of the test population at a specific time of observation. The LC<sub>50</sub> = 100% is defined as a sample of undiluted effluent.

*Maximum daily discharge limitation* means the highest allowable “daily discharge.”

*Municipal solid waste landfill (MSWLF) unit* means a discrete area of land or an excavation that receives household waste, and that is not a land application unit, surface impoundment, injection well, or waste pile, as those terms are defined under 40 C.F.R. § 257.2. A MSWLF unit also may receive other types of RCRA Subtitle D wastes, such as commercial solid waste, nonhazardous sludge, very small quantity generator waste and industrial solid waste. Such a landfill may be

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publicly or privately owned. A MSWLF unit may be a new MSWLF unit, an existing MSWLF unit or a lateral expansion. A construction and demolition landfill that receives residential lead-based paint waste and does not receive any other household waste is not a MSWLF unit.

### *Municipality*

- (a) When used without qualification *municipality* means a city, town, borough, county, parish, district, association, or other public body created by or under State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under Section 208 of CWA.
- (b) As related to sludge use and disposal, *municipality* means a city, town, borough, county, parish, district, association, or other public body (including an intermunicipal Agency of two or more of the foregoing entities) created by or under State law; an Indian tribe or an authorized Indian tribal organization having jurisdiction over sewage sludge management; or a designated and approved management Agency under Section 208 of the CWA, as amended. The definition includes a special district created under State law, such as a water district, sewer district, sanitary district, utility district, drainage district, or similar entity, or an integrated waste management facility as defined in Section 201 (e) of the CWA, as amended, that has as one of its principal responsibilities the treatment, transport, use or disposal of sewage sludge.

*National Pollutant Discharge Elimination System* means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318, and 405 of the CWA. The term includes an “approved program.”

*New Discharger* means any building, structure, facility, or installation:

- (a) From which there is or may be a “discharge of pollutants;”
- (b) That did not commence the “discharge of pollutants” at a particular “site” prior to August 13, 1979;
- (c) Which is not a “new source;” and
- (d) Which has never received a finally effective NPDES permit for discharges at that “site.”

This definition includes an “indirect discharger” which commences discharging into “waters of the United States” after August 13, 1979. It also includes any existing mobile point source (other than an offshore or coastal oil and gas exploratory drilling rig or a coastal oil and gas exploratory drilling rig or a coastal oil and gas exploratory drilling rig or a coastal oil and gas developmental drilling rig) such as a seafood processing rig, seafood processing vessel, or aggregate plant, that begins discharging at a “site” for which it does not have a permit; and any offshore or coastal mobile oil and gas exploratory drilling rig or coastal mobile oil and gas developmental drilling rig that commences the discharge of pollutants after August 13, 1979, at a “site” under EPA’s permitting jurisdiction for which it is not covered by an individual or general permit and which is located in an area determined by the Director in the issuance of a final permit to be in an area of biological concern. In determining whether an area is an area of biological concern, the Director shall consider the factors specified in 40 C.F.R. §§ 125.122 (a) (1) through (10).

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An offshore or coastal mobile exploratory drilling rig or coastal mobile developmental drilling rig will be considered a “new discharger” only for the duration of its discharge in an area of biological concern.

*New source* means any building, structure, facility, or installation from which there is or may be a “discharge of pollutants,” the construction of which commenced:

- (a) After promulgation of standards of performance under Section 306 of CWA which are applicable to such source, or
- (b) After proposal of standards of performance in accordance with Section 306 of CWA which are applicable to such source, but only if the standards are promulgated in accordance with Section 306 within 120 days of their proposal.

*NPDES* means “National Pollutant Discharge Elimination System.”

*Owner or operator* means the owner or operator of any “facility or activity” subject to regulation under the NPDES programs.

*Pass through* means a Discharge (see definition above) which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW’s NPDES permit (including an increase in the magnitude or duration of a violation).

*Pathogenic organisms* are disease-causing organisms. These include, but are not limited to, certain bacteria, protozoa, viruses, and viable helminth ova.

*Permit* means an authorization, license, or equivalent control document issued by EPA or an “approved State” to implement the requirements of Parts 122, 123, and 124. “Permit” includes an NPDES “general permit” (40 C.F.R § 122.28). “Permit” does not include any permit which has not yet been the subject of final agency action, such as a “draft permit” or “proposed permit.”

*Person* means an individual, association, partnership, corporation, municipality, State or Federal agency, or an agent or employee thereof.

*Person who prepares sewage sludge* is either the person who generates sewage sludge during the treatment of domestic sewage in a treatment works or the person who derives a material from sewage sludge.

*pH* means the logarithm of the reciprocal of the hydrogen ion concentration measured at 25° Centigrade or measured at another temperature and then converted to an equivalent value at 25° Centigrade.

*Point Source* means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff (see 40 C.F.R. § 122.3).

*Pollutant* means dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials

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(except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 *et seq.*)), heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. It does not mean:

- (a) Sewage from vessels; or
- (b) Water, gas, or other material which is injected into a well to facilitate production of oil or gas, or water derived in association with oil and gas production and disposed of in a well, if the well is used either to facilitate production or for disposal purposes is approved by the authority of the State in which the well is located, and if the State determines that the injection or disposal will not result in the degradation of ground or surface water resources.

*Primary industry category* means any industry category listed in the NRDC settlement agreement (*Natural Resources Defense Council et al. v. Train*, 8 E.R.C. 2120 (D.D.C. 1976), *modified* 12 E.R.C. 1833 (D.D.C. 1979)); also listed in Appendix A of 40 C.F.R. Part 122.

*Privately owned treatment works* means any device or system which is (a) used to treat wastes from any facility whose operator is not the operator of the treatment works and (b) not a “POTW.”

*Process wastewater* means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.

*Publicly owned treatment works (POTW)* means a treatment works as defined by Section 212 of the Act, which is owned by a State or municipality (as defined by Section 504(4) of the Act). This definition includes any devices and systems used in the storage, treatment, recycling and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes and other conveyances only if they convey wastewater to a POTW Treatment Plant. The term also means the municipality as defined in Section 502(4) of the Act, which has jurisdiction over the indirect discharges to and the discharges from such a treatment works.

*Regional Administrator* means the Regional Administrator, EPA, Region I, Boston, Massachusetts.

*Secondary industry category* means any industry which is not a “primary industry category.”

*Septage* means the liquid and solid material pumped from a septic tank, cesspool, or similar domestic sewage treatment system, or a holding tank when the system is cleaned or maintained.

*Sewage Sludge* means any solid, semi-solid, or liquid residue removed during the treatment of municipal waste water or domestic sewage. Sewage sludge includes, but is not limited to, solids removed during primary, secondary, or advanced waste water treatment, scum, septage, portable toilet pumpings, type III marine sanitation device pumpings (33 C.F.R. Part 159), and sewage sludge products. Sewage sludge does not include grit or screenings, or ash generated during the incineration of sewage sludge.

*Sewage sludge incinerator* is an enclosed device in which only sewage sludge and auxiliary fuel are fired.

*Sewage sludge unit* is land on which only sewage sludge is placed for final disposal. This does

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not include land on which sewage sludge is either stored or treated. Land does not include waters of the United States, as defined in 40 C.F.R. § 122.2.

*Sewage sludge use or disposal practice* means the collection, storage, treatment, transportation, processing, monitoring, use, or disposal of sewage sludge.

*Significant materials* includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substance designated under Section 101(14) of CERCLA; any chemical the facility is required to report pursuant to Section 313 of title III of SARA; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with storm water discharges.

*Significant spills* includes, but is not limited to, releases of oil or hazardous substances in excess of reportable quantities under Section 311 of the CWA (see 40 C.F.R. §§ 110.10 and 117.21) or Section 102 of CERCLA (see 40 C.F.R. § 302.4).

*Sludge-only facility* means any “treatment works treating domestic sewage” whose methods of sewage sludge use or disposal are subject to regulations promulgated pursuant to section 405(d) of the CWA, and is required to obtain a permit under 40 C.F.R. § 122.1(b)(2).

*State* means any of the 50 States, the District of Columbia, Guam, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, the Commonwealth of the Northern Mariana Islands, the Trust Territory of the Pacific Islands, or an Indian Tribe as defined in the regulations which meets the requirements of 40 C.F.R. § 123.31.

*Store or storage of sewage sludge* is the placement of sewage sludge on land on which the sewage sludge remains for two years or less. This does not include the placement of sewage sludge on land for treatment.

*Storm water* means storm water runoff, snow melt runoff, and surface runoff and drainage.

*Storm water discharge associated with industrial activity* means the discharge from any conveyance that is used for collecting and conveying storm water and that is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant.

*Surface disposal site* is an area of land that contains one or more active sewage sludge units.

*Toxic pollutant* means any pollutant listed as toxic under Section 307(a)(1) or, in the case of “sludge use or disposal practices,” any pollutant identified in regulations implementing Section 405(d) of the CWA.

*Treatment works treating domestic sewage* means a POTW or any other sewage sludge or waste water treatment devices or systems, regardless of ownership (including federal facilities), used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated for the disposal of sewage sludge. This definition does not include septic tanks or similar devices.

For purposes of this definition, “domestic sewage” includes waste and waste water from humans or household operations that are discharged to or otherwise enter a treatment works. In States where there is no approved State sludge management program under Section 405(f) of the CWA, the Director may designate any person subject to the standards for sewage sludge use and

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disposal in 40 C.F.R. Part 503 as a “treatment works treating domestic sewage,” where he or she finds that there is a potential for adverse effects on public health and the environment from poor sludge quality or poor sludge handling, use or disposal practices, or where he or she finds that such designation is necessary to ensure that such person is in compliance with 40 C.F.R. Part 503.

*Upset* see B.5.a. above.

*Vector attraction* is the characteristic of sewage sludge that attracts rodents, flies, mosquitoes, or other organisms capable of transporting infectious agents.

*Waste pile or pile* means any non-containerized accumulation of solid, non-flowing waste that is used for treatment or storage.

*Waters of the United States or waters of the U.S.* means:

- (a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
- (b) All interstate waters, including interstate “wetlands;”
- (c) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, “wetlands”, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:
  - (1) Which are or could be used by interstate or foreign travelers for recreational or other purpose;
  - (2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
  - (3) Which are used or could be used for industrial purposes by industries in interstate commerce;
- (d) All impoundments of waters otherwise defined as waters of the United States under this definition;
- (e) Tributaries of waters identified in paragraphs (a) through (d) of this definition;
- (f) The territorial sea; and
- (g) “Wetlands” adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) through (f) of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 C.F.R. § 423.11(m) which also meet the criteria of this definition) are not waters of the United States. This exclusion applies only to manmade bodies of water which neither were originally created in waters of the United States (such as disposal area in wetlands) nor resulted from the impoundment of waters of the United States. Waters of the United States do not include prior converted cropland.

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Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA.

*Wetlands* means those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

*Whole Effluent Toxicity (WET)* means the aggregate toxic effect of an effluent measured directly by a toxicity test.

*Zone of Initial Dilution (ZID)* means the region of initial mixing surrounding or adjacent to the end of the outfall pipe or diffuser ports, provided that the ZID may not be larger than allowed by mixing zone restrictions in applicable water quality standards.

2. Commonly Used Abbreviations

BOD	Five-day biochemical oxygen demand unless otherwise specified
CBOD	Carbonaceous BOD
CFS	Cubic feet per second
COD	Chemical oxygen demand
Chlorine	
Cl <sub>2</sub>	Total residual chlorine
TRC	Total residual chlorine which is a combination of free available chlorine (FAC, see below) and combined chlorine (chloramines, etc.)
TRO	Total residual chlorine in marine waters where halogen compounds are present
FAC	Free available chlorine (aqueous molecular chlorine, hypochlorous acid, and hypochlorite ion)
Coliform	
Coliform, Fecal	Total fecal coliform bacteria
Coliform, Total	Total coliform bacteria
Cont.	Continuous recording of the parameter being monitored, i.e. flow, temperature, pH, etc.
Cu. M/day or M <sup>3</sup> /day	Cubic meters per day
DO	Dissolved oxygen

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kg/day	Kilograms per day
lbs/day	Pounds per day
mg/L	Milligram(s) per liter
mL/L	Milliliters per liter
MGD	Million gallons per day
Nitrogen	
Total N	Total nitrogen
NH <sub>3</sub> -N	Ammonia nitrogen as nitrogen
NO <sub>3</sub> -N	Nitrate as nitrogen
NO <sub>2</sub> -N	Nitrite as nitrogen
NO <sub>3</sub> -NO <sub>2</sub>	Combined nitrate and nitrite nitrogen as nitrogen
TKN	Total Kjeldahl nitrogen as nitrogen
Oil & Grease	Freon extractable material
PCB	Polychlorinated biphenyl
Surfactant	Surface-active agent
Temp. °C	Temperature in degrees Centigrade
Temp. °F	Temperature in degrees Fahrenheit
TOC	Total organic carbon
Total P	Total phosphorus
TSS or NFR	Total suspended solids or total nonfilterable residue
Turb. or Turbidity	Turbidity measured by the Nephelometric Method (NTU)
µg/L	Microgram(s) per liter
WET	“Whole effluent toxicity”
ZID	Zone of Initial Dilution

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
NEW ENGLAND - REGION 1  
5 POST OFFICE SQUARE, SUITE 100  
BOSTON, MASSACHUSETTS 02109-3912**

**FACT SHEET**

**DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)  
PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES PURSUANT TO  
THE CLEAN WATER ACT (CWA)**

**NPDES PERMIT NUMBER:** NH0101028

**PUBLIC NOTICE START AND END DATES:** March 17, 2021 – April 16, 2021

**NAME AND MAILING ADDRESS OF APPLICANT:**

Star Island Corporation  
30 Middle Street  
Portsmouth, New Hampshire 03801

**NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:**

Star Island Wastewater Treatment Facility  
Star Island (Isles of Shoals)  
Rye, New Hampshire 03870

**RECEIVING WATER AND CLASSIFICATION:**

Atlantic Ocean (01060003)  
Class B

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## 1.0 Proposed Action

The above-named applicant (the Permittee) has applied to the U.S. Environmental Protection Agency (EPA) for reissuance of a National Pollutant Discharge Elimination System (NPDES) permit to discharge from the Star Island Wastewater Treatment Facility (the Facility) and Reverse Osmosis (RO) Desalination Facility into the designated receiving water.

The permit currently in effect was issued on June 1, 2010 with an effective date of June 1, 2010 and expired on June 1, 2015 (the 2010 Permit). The Permittee filed an application for permit reissuance with EPA, dated December 1, 2014, as required by 40 Code of Federal Regulations (CFR) § 122.6. Since the permit application was deemed timely and complete by EPA on October 22, 2015, the Facility's 2010 Permit has been administratively continued pursuant to 40 CFR § 122.6 and § 122.21. The Permittee submitted an updated permit application on January 27, 2020.

The NPDES Permit is issued by EPA under federal law, New Hampshire construes Title L, Water Management and Protection, Chapters 485-A, Water Pollution and Waste Disposal, to authorize the New Hampshire Department of Environmental Services (NHDES) to "consider" a federal NPDES permit to be a State surface water discharge permit. As such, all the terms and conditions of the permit may, therefore, be incorporated into and constitute a discharge permit issued by NHDES.

## 2.0 Statutory and Regulatory Authority

Congress enacted the Federal Water Pollution Control Act, codified at 33 U.S.C. § 1251-1387 and commonly known as the Clean Water Act (CWA), "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." CWA § 101(a). To achieve this objective, the CWA makes it unlawful for any person to discharge any pollutant into the waters of the United States from any point source, except as authorized by specific permitting sections of the CWA, one of which is § 402. *See* CWA §§ 301(a), 402(a). Section 402(a) established one of the CWA's principal permitting programs, the NPDES Permit Program. Under this section, EPA may "issue a permit for the discharge of any pollutant or combination of pollutants" in accordance with certain conditions. CWA § 402(a). NPDES permits generally contain discharge limitations and establish related monitoring and reporting requirements. *See* CWA § 402(a)(1) and (2). The regulations governing EPA's NPDES permit program are generally found in 40 CFR §§ 122, 124, 125, and 136.

"Congress has vested in the Administrator [of EPA] broad discretion to establish conditions for NPDES permits" in order to achieve the statutory mandates of Section 301 and 402. *Arkansas v. Oklahoma*, 503 U.S. 91, 105 (1992). *See also* 40 CFR §§ 122.4(d), 122.44(d)(1), and 122.44(d)(5). CWA §§ 301 and 306 provide for two types of effluent limitations to be included in NPDES permits: "technology-based" effluent limitations (TBELs) and "water quality-based" effluent limitations (WQBELs). *See* CWA §§ 301, and 304(d); 40 CFR Parts 122, 125, 131.

## 2.1 Technology-Based Requirements

Technology-based limitations, generally developed on an industry-by-industry basis, reflect a specified level of pollutant reducing technology available and economically achievable for the type of facility being permitted. *See* CWA § 301(b). As a class, publicly owned treatment works (POTWs) must meet performance-based requirements based on available wastewater treatment technology. *See* CWA § 301(b)(1)(B). The performance level for POTWs is referred to as “secondary treatment.” Secondary treatment is comprised of technology-based requirements expressed in terms of BOD<sub>5</sub>, TSS and pH. *See* 40 CFR Part 133.

Under CWA § 301(b)(1), POTWs must have achieved effluent limits based upon secondary treatment technology by July 1, 1977. Since all statutory deadlines for meeting various treatment technology-based effluent limitations established pursuant to the CWA have expired, when technology-based effluent limits are included in a permit, compliance with those limitations is from the date the issued permit becomes effective. *See* 40 CFR § 125.3(a)(1).

EPA has not promulgated effluent guidelines for privately owned treatment works treating domestic sewage, as defined in 40 CFR 122. In accordance with Section 401(a) of the CWA and regulations at 40 CFR 125.3(c), EPA has made a best professional judgment (BPJ) determination to use the secondary treatment requirements for publicly owned treatment works (POTWs) set forth at 40 CFR Part 133 as the appropriate technology based effluent limits for privately owned treatment works treating domestic sewage.

## 2.2 Water Quality Based Requirements

The CWA and federal regulations also require that permit effluent limits based on water quality considerations be established for point source discharges when such limitations are necessary to meet state or federal water quality standards that are applicable to the designated receiving water. This is necessary when less stringent TBELs would interfere with the attainment or maintenance of water quality criteria in the receiving water. *See* CWA § 301(b)(1)(C) and 40 CFR §§ 122.44(d)(1), 122.44(d)(5).

### 2.2.1 Water Quality Standards

The CWA requires that each state develop water quality standards (WQSs) for all water bodies within the State. *See* CWA § 303 and 40 CFR § 131.10-12. Generally, WQSs consist of three parts: 1) the designated use or uses assigned for a water body or a segment of a water body; 2) numeric or narrative water quality criteria sufficient to protect the assigned designated use(s); and 3) antidegradation requirements to ensure that once a use is attained it will not be degraded and to protect high quality and National resource waters. *See* CWA § 303(c)(2)(A) and 40 CFR § 131.12. The applicable State WQSs can be found in the New Hampshire Code of Administrative Rules, Surface Water Quality Standards, Chapter Env-Wq 1700, *et seq.* *See also generally*, N.H. Rev. Stat. Title L, Water Management and Protection, Chapters 485-A, Water Pollution and Waste Disposal.

As a matter of state law, state WQSs specify different water body classifications, each of which is associated with certain designated uses and numeric and narrative water quality criteria. When using chemical-specific numeric criteria to develop permit limitations, acute and chronic aquatic life criteria and human health criteria are used and expressed in terms of maximum allowable in-stream pollutant concentrations. In general, aquatic-life acute criteria are considered applicable to daily time periods (maximum daily limit) and aquatic-life chronic criteria are considered applicable to monthly time periods (average monthly limit). Chemical-specific human health criteria are typically based on lifetime chronic exposure and, therefore, are typically applicable to average monthly limits.

When permit effluent limitation(s) are necessary to ensure that the receiving water meets narrative water quality criteria, the permitting authority must establish effluent limits in one of the following three ways: 1) based on a “calculated numeric criterion for the pollutant which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and fully protect the designated use,” 2) based on a “case-by-case basis” using CWA § 304(a) recommended water quality criteria, supplemented as necessary by other relevant information; or, 3) in certain circumstances, based on use of an indicator parameter. *See* 40 CFR § 122.44(d)(1)(vi)(A-C).

### **2.2.2 Antidegradation**

Federal regulations found at 40 CFR § 131.12 require states to develop and adopt a statewide antidegradation policy that maintains and protects existing in-stream water uses and the level of water quality necessary to protect these existing uses. In addition, the antidegradation policy ensures maintenance of high quality waters which exceed levels necessary to support propagation of fish, shellfish, and wildlife and to support recreation in and on the water, unless the State finds that allowing degradation is necessary to accommodate important economic or social development in the area in which the waters are located.

The New Hampshire Antidegradation Policy, found at Env-Wq 1708, applies to any new or increased activity that would lower water quality or affect existing or designated uses, including increased loadings to a water body from an existing activity. The antidegradation regulations focus on protecting high quality waters and maintaining water quality necessary to protect existing uses. Discharges that cause “significant degradation” are defined in NH WQS (Env-Wq 1708.09(a)) as those that use 20% or more of the remaining assimilative capacity for a water quality parameter in terms of either concentration or mass of pollutants or flow rate for water quantity. When NHDES determines that a proposed increase would cause a significant impact to existing water quality, the applicant must provide documentation to demonstrate that the lowering of water quality is necessary, that it will provide net economic or social benefit in the area in which the water body is located, and that the benefits of the activity outweigh the environmental impact caused by the reduction in water quality. *See* Env-Wq 1708.10(b).

This permit is being reissued with effluent limitations sufficiently stringent to satisfy the State’s antidegradation requirements, including the protection of the existing uses of the receiving water. An increased discharge is authorized by this permit; therefore, the NHDES conducted an antidegradation review for this permit reissuance (See Appendix A). NHDES has determined

that the flow increase of 2500 gpd for Outfall 001 and the extension of the discharge season for Outfalls 001 and 002 will result in only insignificant changes in water quality.

### **2.2.3 Assessment and Listing of Waters and Total Maximum Daily Loads.**

The objective of the CWA is to restore and maintain the chemical, physical and biological integrity of the Nation's waters. To meet this goal, the CWA requires states to develop information on the quality of their water resources and report this information to EPA, the U.S. Congress, and the public. To this end, EPA released guidance on November 19, 2001, for the preparation of an integrated "List of Waters" that could combine reporting elements of both § 305(b) and § 303(d) of the CWA. The integrated list format allows states to provide the status of all their assessed waters in one list. States choosing this option must list each water body or segment in one of the following five categories: 1) unimpaired and not threatened for all designated uses; 2) unimpaired waters for some uses and not assessed for others; 3) insufficient information to make assessments for any uses; 4) impaired or threatened for one or more uses but not requiring the calculation of a Total Maximum Daily Load (TMDL); and 5) impaired or threatened for one or more uses and requiring a TMDL.

A TMDL is a planning tool and potential starting point for restoration activities with the ultimate goal of attaining water quality standards. A TMDL essentially provides a pollution budget designed to restore the health of an impaired water body. A TMDL typically identifies the source(s) of the pollutant from point sources and non-point sources, determines the maximum load of the pollutant that the water body can tolerate while still attaining WQSs for the designated uses, and allocates that load among to the various sources, including point source discharges, subject to NPDES permits. *See* 40 CFR § 130.7.

For impaired waters where a TMDL has been developed for a particular pollutant and the TMDL includes a waste load allocation (WLA) for a NPDES permitted discharge, the effluent limitation in the permit must be "consistent with the assumptions and requirements of any available WLA". 40 CFR § 122.44(d)(1)(vii)(B).

### **2.2.4 Reasonable Potential**

Pursuant to CWA § 301(b)(1)(C) and 40 CFR § 122.44(d)(1), NPDES permits must contain any requirements in addition to TBELs that are necessary to achieve water quality standards established under § 303 of the CWA. *See also* 33 U.S.C. § 1311(b)(1)(C). In addition, limitations "must control any pollutant or pollutant parameter (conventional, non-conventional, or toxic) which the permitting authority determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any water quality standard, including State narrative criteria for water quality." 40 CFR § 122.44(d)(1)(i). To determine if the discharge causes, or has the reasonable potential to cause, or contribute to an excursion above any WQS, EPA considers: 1) existing controls on point and non-point sources of pollution; 2) the variability of the pollutant or pollutant parameter in the effluent; 3) the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity); and 4) where appropriate, the dilution of the effluent by the receiving water. *See* 40 CFR § 122.44(d)(1)(ii).

If the permitting authority determines that the discharge of a pollutant will cause, has the reasonable potential to cause, or contribute to an excursion above WQSs, the permit must contain WQBELs for that pollutant. *See* 40 CFR § 122.44(d)(1)(i).

### **2.2.5 State Certification**

EPA may not issue a permit unless the State Water Pollution Control Agency with jurisdiction over the receiving water(s) either certifies that the effluent limitations contained in the permit are stringent enough to assure that the discharge will not cause the receiving water to violate the State WQSs, the State waives (or is deemed to have waived), its right to certify. *See* 33 U.S.C. § 1341(a)(1). Regulations governing state certification are set forth in 40 CFR §§ 124.53 and 124.55. EPA has requested permit certification by the State pursuant to 40 CFR § 124.53 and expects that the Draft Permit will be certified.

If the State believes that conditions more stringent than those contained in the Draft Permit are necessary to meet the requirements of either CWA §§ 208(e), 301, 302, 303, 306 and 307 or the applicable requirements of State law, the State should include such conditions in its certification and, in each case, cite the CWA or State law provisions upon which that condition is based. Failure to provide such a citation waives the right to certify as to that condition. EPA includes properly supported State certification conditions in the NPDES permit. The only exception to this is that the permit conditions/requirements regulating sewage sludge management and implementing CWA § 405(d) are not subject to the State certification requirements. Reviews and appeals of limitations and conditions attributable to State certification shall be made through the applicable procedures of the State and may not be made through EPA's permit appeal procedures of 40 CFR Part 124.

In addition, the State should provide a statement of the extent to which any condition of the Draft Permit can be made less stringent without violating the requirements of State law. Since the State's certification is provided prior to final permit issuance, any failure by the State to provide this statement waives the State's right to certify or object to any less stringent condition.

It should be noted that under CWA § 401, EPA's duty to defer to considerations of state law is intended to prevent EPA from relaxing any requirements, limitations, or conditions imposed by state law. Therefore, "[a] State may not condition or deny a certification on the grounds that State law allows a less stringent permit condition." 40 CFR § 124.55(c). In such an instance, the regulation provides that, "The Regional Administrator shall disregard any such certification conditions or denials as waivers of certification." *Id.* EPA regulations pertaining to permit limitations based upon WQS and State requirements are contained in 40 CFR §§ 122.4 (d) and 122.44(d).

## **2.3 Effluent Flow Requirements**

Sewage treatment plant discharge is encompassed within the definition of "pollutant" and is subject to regulation under the CWA. The CWA defines "pollutant" to mean, *inter alia*, "municipal...waste" and "sewage...discharged into water." 33 U.S.C. § 1362(6).

Generally, EPA uses effluent flow both to determine whether an NPDES permit needs certain effluent limitations and to calculate the limitations themselves. EPA practice is to use effluent flow as a reasonable and important worst-case condition in EPA's reasonable potential and WQBEL calculations to ensure compliance with WQSs under § 301(b)(1)(C). Should the effluent flow exceed the flow assumed in these calculations, the in-stream dilution would be reduced, and the calculated effluent limitations may not be sufficiently protective (i.e. might not meet WQSs). Further, pollutants that do not have the reasonable potential to exceed WQSs at the lower discharge flow may have reasonable potential at a higher flow due to the decreased dilution. In order to ensure that the assumptions underlying EPA's reasonable potential analyses and permit effluent limitation derivations remain sound for the duration of the permit, EPA may ensure the validity of its "worst-case" wastewater effluent flow assumptions through imposition of permit conditions for effluent flow.<sup>1</sup> In this regard, the effluent flow limitation is a component of WQBELs because the WQBELs are premised on a maximum level flow. The effluent flow limit is also necessary to ensure that other pollutants remain at levels that do not have a reasonable potential to exceed WQSs.

The limitation on wastewater effluent flow is within EPA's authority to condition a permit to carry out the objectives of the Act. *See* CWA §§ 402(a)(2) and 301(b)(1)(C); 40 CFR §§ 122.4(a) and (d), 122.43 and 122.44(d). A condition on the discharge designed to ensure the WQBEL and reasonable potential calculations account for "worst case" conditions is encompassed by the references to "condition" and "limitations" in CWA §§ 402 and 301 and implementing regulations, as they are designed to assure compliance with applicable water quality regulations, including antidegradation. Regulating the quantity of pollutants in the discharge through a restriction on the quantity of wastewater effluent is consistent with the overall structure and purposes of the CWA.

In addition, as provided in Part II.B.1 of this permit and 40 CFR § 122.41(e), the Permittee is required to properly operate and maintain all facilities and systems of treatment and control. Operating the facilities wastewater treatment systems as designed includes operating within the facility's design wastewater effluent flow.

EPA has also included the effluent flow limit in the permit to minimize or prevent infiltration and inflow (I/I) that may result in unauthorized discharges and compromise proper operation and maintenance of the facility. Improper operation and maintenance may result in non-compliance with permit effluent limitations. Infiltration is groundwater that enters the collection system through physical defects such as cracked pipes or deteriorated joints. Inflow is extraneous flow added to the collection system that enters the collection system through point sources such as roof leaders, yard and area drains, sump pumps, manhole covers, tide gates, and cross connections with storm water systems. Significant I/I in a collection system may displace

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<sup>1</sup> EPA's regulations regarding "reasonable potential" require EPA to consider "where appropriate, the dilution of the effluent in the receiving water," *id* 40 CFR §122.44(d)(1)(ii). *Both* the effluent flow and receiving water flow may be considered when assessing reasonable potential. *In re Upper Blackstone Water Pollution Abatement Dist.*, 14 E.A.D. 577, 599 (EAB 2010). EPA guidance directs that this "reasonable potential: analysis be based on "worst-case" conditions. *See In re Washington Aquaduct Water Supply Sys.* 11 E.A.D. 565, 584 (EAB 2004)

sanitary flow, reducing the capacity available for treatment and operating efficiency of the treatment works and to properly operate and maintain the treatment works.

Furthermore, the extraneous flow due to significant I/I greatly increases the potential for sanitary sewer overflows (SSOs) in separate systems. Consequently, the effluent flow limit is a permit condition that relates to the permittee's duty to mitigate (*i.e.*, minimize or prevent any discharge in violation of the permit that has a reasonable likelihood of adversely affecting human health or the environment) and to properly operate and maintain the treatment works. *See* 40 CFR §§ 122.41(d), (e).

## 2.4 Monitoring and Reporting Requirements

### 2.4.1 Monitoring Requirements

Sections 308(a) and 402(a)(2) of the CWA and the implementing regulations at 40 CFR Parts 122, 124, 125, and 136 authorize EPA to include monitoring and reporting requirements in NPDES permits.

The monitoring requirements included in this permit have been established to yield data representative of the Facility's discharges in accordance with CWA §§ 308(a) and 402(a)(2), and consistent with 40 CFR §§ 122.41(j), 122.43(a), 122.44(i) and 122.48. The Draft Permit specifies routine sampling and analysis requirements to provide ongoing, representative information on the levels of regulated constituents in the discharges. The monitoring program is needed to enable EPA and the State to assess the characteristics of the Facility's effluent, whether Facility discharges are complying with permit limits, and whether different permit conditions may be necessary in the future to ensure compliance with technology-based and water quality-based standards under the CWA. EPA and/or the State may use the results of the chemical analyses conducted pursuant to this permit, as well as national water quality criteria developed pursuant to CWA § 304(a)(1), State water quality criteria, and any other appropriate information or data, to develop numerical effluent limitations for any pollutants, including, but not limited to, those pollutants listed in Appendix D of 40 CFR Part 122.

NPDES permits require that the approved analytical procedures found in 40 CFR Part 136 be used for sampling and analysis unless other procedures are explicitly specified. Permits also include requirements necessary to comply with the *National Pollutant Discharge Elimination System (NPDES): Use of Sufficiently Sensitive Test Methods for Permit Applications and Reporting Rule*.<sup>2</sup> This Rule requires that where EPA-approved methods exist, NPDES applicants must use sufficiently sensitive EPA-approved analytical methods when quantifying the presence of pollutants in a discharge. Further, the permitting authority must prescribe that only sufficiently sensitive EPA-approved methods be used for analyses of pollutants or pollutant parameters under the permit. The NPDES regulations at 40 CFR § 122.21(e)(3) (completeness), 40 CFR § 122.44(i)(1)(iv) (monitoring requirements) and/or as cross referenced at 40 CFR § 136.1(c) (applicability) indicate that an EPA-approved method is sufficiently sensitive where:

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<sup>2</sup> Fed. Reg. 49,001 (Aug 19, 2014).

- The method minimum level<sup>3</sup> (ML) is at or below the level of the effluent limitation established in the permit for the measured pollutant or pollutant parameter; or
- In the case of permit applications, the ML is above the applicable water quality criterion, but the amount of the pollutant or pollutant parameter in a facility's discharge is high enough that the method detects and quantifies the level of the pollutant or parameter in the discharge; or
- The method has the lowest ML of the analytical methods approved under 40 CFR Part 126 or required under 40 CFR chapter I, subchapter N or O for the measured pollutant or pollutant parameter.

#### 2.4.2 Reporting Requirements

The Draft Permit requires the Permittee to report monitoring results obtained during each calendar month to EPA and the State electronically using NetDMR. The Permittee must submit a Discharge Monitoring Report (DMR) for each calendar month no later than the 15<sup>th</sup> day of the month following the completed reporting period.

NetDMR is a national web-based tool enabling regulated CWA permittees to submit DMRs electronically via a secure internet application to EPA through the Environmental Information Exchange Network. NetDMR has eliminated the need for participants to mail in paper forms to EPA under 40 CFR §§ 122.41 and 403.12. NetDMR is accessible through EPA's Central Data Exchange at <https://cdx.epa.gov/>. Further information about NetDMR can be found on EPA's NetDMR support portal webpage.<sup>4</sup>

With the use of NetDMR, the Permittee is no longer required to submit hard copies of DMRs and reports to EPA and the State unless otherwise specified in the Draft Permit. In most cases, reports required under the permit shall be submitted to EPA as an electronic attachment through NetDMR. Certain exceptions are provided in the permit, such as for providing written notifications required under the Part II Standard Conditions.

#### 2.5 Standard Conditions

The standard conditions, included as Part II of the Draft Permit, are based on applicable regulations found in the Code of Federal Regulations. *See generally* 40 CFR Part 122.

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<sup>3</sup> The term "minimum level" refers to either the sample concentration equivalent to the lowest calibration point in a method or a multiple of the method detection limit (MDL). Minimum levels may be obtained in several ways: They may be published in a method; they may be sample concentrations equivalent to the lowest acceptable calibration point used by a laboratory; or they may be calculated by multiplying the MDL in a method, or the MDL determined by a lab, by a factor. EPA is considering the following terms related to analytical method sensitivity to be synonymous: "quantitation limit," "reporting limit," "level of quantitation," and "minimum level." *See* Fed. Reg. 49,001 (Aug. 19, 2014).

<sup>4</sup> <https://netdmr.zendesk.com/hc/en-us/articles/209616266-EPA-Region-1-NetDMR-Information>

## 2.6 Anti-backsliding

The CWA's anti-backsliding requirements prohibit a permit from being renewed, reissued, or modified to include with less stringent limitations or conditions than those contained in a previous permit except in compliance with one of the specified exceptions to those requirements. See CWA §§ 402(o) and 303(d)(4) and 40 CFR § 122.44(l). Anti-backsliding provisions apply to effluent limits based on technology, water quality and/or state certification requirements.

All proposed limitations in the Draft Permit are at least as stringent as limitations included in the 2010 Permit unless specific conditions exist to justify relaxation in accordance with CWA § 402(o) or § 303(d)(4). Discussion of any less stringent limitations and corresponding exceptions to anti-backsliding provisions is provided in the sections that follow.

## 3.0 Description of Facility and Discharge

### 3.1 Location and Type of Facility

Star Island is part of the Isles of Shoals and located approximately 7 miles off the New Hampshire coast, just south of the Maine border. The island is privately-owned by the non-profit Star Island Corporation (SIC) and home to a conference center which is accessible by boat. The wastewater needs of the center are served by the Star Island WWTF and discharges from outfall 001. A portion of the center's potable water needs are provided by an on-site reverse osmosis (RO) desalination facility. RO reject brine from the desalination facility discharges from Outfall 002. The location of the WWTF and outfalls 001 and 002 to the Atlantic Ocean are shown in Figure 1. The longitude and latitude of outfall 001 is 70° 36' 45" W, 42° 58' 40". Outfall 002 is immediately adjacent to outfall 001 but at a 60-degree angle from horizontal and is about 5 feet above the ocean bottom.

Discharge from both outfalls is seasonal, currently May through October. The Permittee removes the submerged portions of outfalls 001 and 002 at the end of each season and then reinstalls them in the spring. A special condition is included in the 2010 Permit, and the Draft Permit, which requires the outfall pipes to be installed according to the original outfall design (See Draft Permit Section I.F.4).

The Star Island WWTF is a secondary wastewater treatment facility that is engaged in the collection and treatment of domestic wastewater from a private conference center. Currently, the Facility serves approximately 375 visitors and staff on a seasonal basis. The Facility has a design flow of 0.015 MGD, the annual average daily flow reported in the 2014 application was 0.01 MGD and the median for the last 5 years has been 0.0075 MGD. The discharge is seasonal, May 1 through October 31. The collection system is a separate system. There is no stormwater collection system on the island. Wastewater is comprised of domestic sewage.

The second discharge, Outfall 002, is reject brine and backwash from the RO desalination facility which provides a portion of the potable water to the island. The design flow for the

potable water is 0.08 MGD. The median for the last 5 years has been 0.01 MGD. This discharge is also seasonal, May 1 through October 31.

The Permittee requested a flow increase to 0.0175 MGD for Outfall 001 in the 2014 reapplication and 2020 updated reapplication. SIC also requested an extension of the seasonal discharge period for both Outfalls 001 and 002 from May 1 through October 31 to April 1 through November 30. Both requests have been approved by NHDES and an antidegradation analysis was completed (Appendix A).

The Permittee does not have any industries contributing industrial wastewater to the WWTF, and thus is not required to have a pretreatment program.

A quantitative description of the discharge in terms of effluent parameters, based on monitoring data submitted by the permittee from May 2015 through October 2019 is provided in Appendix B of this Fact Sheet. The Star Island Conference Center did not open for the 2020 season due to the COVID-19 pandemic so there is no discharge data for 2020.

### **3.1.1 Treatment Process Description**

The Star Island WWTF was upgraded in 2018-2019 to convert the sequencing batch reactor (SBR) facility to an Amphidrome biologically active filtration facility. The upgraded facility, which was started up on May 30, 2019, consists of an equalization tank, three Amphidrome reactors, three clear well tanks, a chlorine contact tank, dechlorination tanks, and an effluent pump station. A flow diagram of the upgraded Treatment Facility is shown in Figure 2.

Sludge is pumped to two waste activated sludge (WAS) tanks. The WAS tanks are decanted, and thickened sludge was pumped to three sludge holding tanks. From the holding tanks, sludge is periodically pumped to drying beds, the dried sludge is then composted and used on site.

The Star Island RO Desalination Facility produces a portion of the potable water for the conference center. A pressurized seawater system draws water to flush toilets, fire suppression, and the reverse osmosis system. After passing through two inline strainers that remove larger solids, the system pressure is increased and seawater flows through a media filter and then two cartridge filters. The media filter is back flushed once a day for approximately five minutes. The back flush represents about 150 gallons that are discharged through Outfall 002. The filtered seawater is then pressurized to 650-700 psi by a turbine pump and then split into two parallel streams, each entering a reverse osmosis membrane. Reject brine from the membranes (concentrated seawater that does not pass through the membranes) is also discharged through Outfall 002. A flow diagram of the Reverse Osmosis Desalination Facility is shown in Figure 3.

### **3.1.2 Collection System Description**

The Star Island WWTF is served by a small separate sewer system that services only the buildings on Star Island. A separate sanitary sewer conveys domestic sewage, but not stormwater. There is no stormwater collection system on the island.

## 4.0 Description of Receiving Water and Dilution

### 4.1 Receiving Water

The Star Island WWTF and the RO Desalination Facility discharges through outfalls 001 and 002, respectively, into the Atlantic Ocean, Segment NHOCN000000000-09. The segment is 1.0948 square miles and is classified as a Class B water by the State of New Hampshire.

*According to New Hampshire’s WQS (RSA 485-A:8), “Class B waters shall be of the second highest quality and shall have no objectionable physical characteristics, shall contain a dissolved oxygen content of at least 75 percent of saturation, and shall contain not more than either a geometric mean based on at least 3 samples obtained over a 60-day period of 126 Escherichia coli per 100 milliliters, or greater than 406 Escherichia coli per 100 milliliters in any one sample; and for designated beach areas shall contain not more than a geometric mean based on at least 3 samples obtained over a 60-day period of 47 Escherichia coli per 100 milliliters, or 88 Escherichia coli per 100 milliliters in any one sample; unless naturally occurring. There shall be no disposal of sewage or waste into said waters except those which have received adequate treatment to prevent the lowering of the biological, physical, chemical or bacteriological characteristics below those given above, nor shall such disposal of sewage or waste be inimical to aquatic life or to the maintenance of aquatic life in said receiving waters. The pH range for said waters shall be 6.5 to 8.0 except when due to natural causes. Any stream temperature increase associated with the discharge of treated sewage, waste or cooling water, water diversions, or releases shall not be such as to appreciably interfere with the uses assigned to this class. The waters of this classification shall be considered as being acceptable for fishing, swimming and other recreational purposes and, after adequate treatment, for use as water supplies. Where is demonstrated to the satisfaction of the department that the class B criteria cannot reasonably be met in certain surface waters at all times as a result of combined sewer overflow events, temporary partial use areas shall be established by rules adopted under RSA 485-A:6, XI-c, which meet, as a minimum, the standards specified in paragraph III.*

*Tidal waters utilized for swimming purposes shall contain not more than either a geometric mean based on at least 3 samples obtained over a 60-day period of 35 enterococci per 100 ml, or 104 enterococci per 100 milliliters in any one sample, unless naturally occurring. Those tidal waters used for growing or taking of shellfish for human consumption shall, in addition to the foregoing requirements, be in accordance with the criteria recommended under the National Shellfish Program Manual of Operation, United States Department of Food and Drug Administration.*

The Atlantic Ocean, Segment NHOCN000000000-09, is listed in the State of New Hampshire 2018 303(d) List as Category 5 “Waters Requiring a TMDL”.<sup>5</sup> The pollutants requiring TMDLs are polychlorinated biphenyls, and dioxin (including 2,3,7,8-TCDD). To date, no TMDLs have been developed for this segment for any of the listed impairments, and the priority is categorized as low. The status of each designated use is presented in Table 1.

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<sup>5</sup> State of New Hampshire, 2018 Section 305(b) and 303(d) Consolidated Assessment and Listing Methodology, January 2020.

**Table 1: Summary of Designated Uses and Listing Status**

<b>Designated Use</b>	<b>Status</b>
Aquatic Life	Insufficient Information/No Data
Fish Consumption	Impaired/Marginal (Polychlorinated biphenyls, Mercury)
Potential Drinking Water Supply	Supports Parameter, well above criteria
Primary Contact Recreation	Insufficient Information/No Data
Secondary Contact Recreation	Insufficient Information/No Data
Shellfish Consumption	Impaired/Marginal (Dioxin, including 2,3,7,8-TCDD; Polychlorinated biphenyls, Mercury)
Wildlife	Insufficient Information/No Data

During 2018-2019, the Star Island Corporation upgraded the WWTF, which also increased the design flow from 0.015 MGD to 0.0175 MGD. In the 2014 Permit application, the Permittee has requested the flow increase and an extension of the discharge season from May 1 through October 31 to April 1 through November 30. EPA regulation at 40 CFR § 131.12 requires states to develop and adopt an antidegradation policy and identify methods for implementing such policy. New Hampshire's antidegradation regulations are set forth in the WQS at Chapter Env-Wq 1708. NHDES has found that the increased flow will result in an insignificant change in water quality (*See* Chapter 1708.01(c)).

EPA has proposed effluent limits in the Draft Permit that ensure that the increased discharge results in no more than an insignificant degradation of water quality in the Atlantic Ocean. All loads have been held at the levels in the 2010 Permit or less.

#### **4.2 Available Dilution**

To ensure that discharges do not cause or contribute to violations of WQS under all expected conditions, WQBELs are derived assuming critical conditions for the receiving water<sup>6</sup>. For tidal waters, the flow condition shall be equivalent to the conditions that result in a dilution that is exceeded 99% of the time (*See* Env-Wq 1705.02(b)).

The Star Island outfalls (001 and 002) are located approximately 150 feet off the island at a depth of 30 feet below the surface.

The 2010 Permit was based on a dilution of 100, which was determined by a CORMIX modeling analysis completed in 1996. NHDES updated the CORMIX modeling in 2020, which included the requested flow increase and a reduction in the diameter of the outfall port from 6 inches to 3 inches<sup>7</sup>. The revised available dilution is 95.2. The CORMIX prediction and session reports can be found in Appendix C.

<sup>6</sup> EPA Permit Writer's Manual, Section 6.2.4

<sup>7</sup> Email. Hayley Franz, NHDES to Michele Barden, EPA, August 5, 2020, RE: Star Island NPDES Reissuance – Dilution Model

## 5.0 Proposed Effluent Limitations and Conditions

The proposed effluent limitations and conditions derived under the CWA and State WQSs are described below. These proposed effluent limitations and conditions, the basis of which are discussed throughout this Fact Sheet, may be found in Part I of the Draft Permit.

### 5.1 Effluent Limitations and Monitoring Requirements

In addition to the State and Federal regulations described in Section 2, data submitted by the permittee in its permit application, in monthly discharge monitoring reports (DMRs) from May 2015 to October 2019 (the “review period”) and the 2010 WET Test Report were used to identify the pollutants of concern and to evaluate the discharge during the effluent limitations development process (*See Appendix B*). The reasonable potential analysis is included in Appendix D and results are discussed in the sections below.

#### 5.1.1 Effluent Flow

##### Outfall 001

The 2010 Permit requires the permittee to report flow (no limit). The Permit specifies that the method of measurement is “by calculation”, and that flow shall be recorded daily. The DMR data during the review period ranges from 0.004 MGD to 0.03 MGD with a median of 0.0075 MGD.

The Draft Permit includes an average monthly effluent flow limit of 0.0175 MGD for Outfall 001. The Draft Permit requires that flow be measured continuously and that the average monthly, as well as, the maximum daily flow for each month be reported. The average monthly flow is the effluent flow limit. The Draft Permit also requires that flow be measured continuously and recorded using a flow meter and totalizer.

##### Outfall 002

The average monthly effluent flow limit for Outfall 002 in the 2010 Permit is 0.08 MGD. The Permit requires the flow to be measured “by calculation” and recorded daily. The DMR data during the review period ranges from 0.01 MGD to 0.02 MGD with a median of 0.01 MGD.

The Draft Permit maintains the average monthly effluent flow limit of 0.08 MGD for Outfall 002. The Draft Permit also requires that flow be measured continuously and recorded using a flow meter and totalizer; and that both the daily maximum and average monthly value be reported each month

EPA proposes a 1-year compliance schedule for the facility to install flow meters and totalizers for each outfall. In the interim, the Permittee is required to measure flows daily by calculation as required by the 2010 Permit.

## **5.1.2 Biochemical Oxygen Demand (BOD<sub>5</sub>)**

### **5.1.2.1 BOD<sub>5</sub> Concentration Limits**

#### **Outfall 001**

The BOD<sub>5</sub> limits in the 2010 Permit were established based on best professional judgment (BPJ) that privately owned treatment works treating domestic sewage must achieve the technology-based effluent limitations applicable to publicly owned treatment works (POTWs). POTWs are subject to the secondary treatment standards in 40 CFR § 133.102 which require an average monthly limit is 30 mg/L and an average weekly limit is 45 mg/L. A daily maximum limit of 50 mg/L was also in the 2010 Permit.

The DMR data during the review period shows there were two exceedances of the average monthly limit, five exceedances of the average weekly limit, and four exceedances of the maximum daily limit.

The Draft Permit proposes the same BOD<sub>5</sub> concentration limits as in the 2010 Permit as there have been no changes to the secondary treatment standards. The monitoring frequency remains twice per week.

#### **Outfall 002**

The 2010 Permit did not include BOD<sub>5</sub> limits. They are not proposed for the Draft Permit.

### **5.1.2.2 BOD<sub>5</sub> Mass Limits**

#### **Outfall 001**

The mass-based BOD<sub>5</sub> limits in the 2010 Permit of 3.8 lb/day (average monthly) and 5.6 lb/day (average weekly) were based on BPJ that privately owned treatment works treating domestic sewage must achieve the technology-based effluent limitations applicable to publicly owned treatment works and therefore, on EPA's secondary treatment standards and the design flow of the Facility. A limit of 6.3 lb/day (daily maximum), based on the concentration-based limit of 50 mg/L and the design flow of the Facility, is also in the 2010 Permit.

The DMR data from the review period shows that there has been one exceedance of the average monthly mass-based limit and two exceedances of the maximum daily mass-based limit.

The Draft Permit proposes the same mass-based BOD<sub>5</sub> limits as in the 2010 Permit as there has been no change to the secondary treatment standards. Although the design flow of the facility has increased the Draft Permit proposes continuing the BOD<sub>5</sub> load limits from the 2010 Permit consistent with the NHDES antidegradation review (see Appendix A).

## **5.1.3 Total Suspended Solids (TSS)**

Solids could include inorganic (e.g. silt, sand, clay, and insoluble hydrated metal oxides) and organic matter (e.g. flocculated colloids and compounds that contribute to color). Solids can clog fish gills, resulting in an increase in susceptibility to infection and asphyxiation. Suspended

solids can increase turbidity in receiving waters and reduce light penetration through the water column or settle to form bottom deposits in the receiving water. Suspended solids also provide a medium for the transport of other adsorbed pollutants, such as metals, which may accumulate in settled deposits that can have a long-term impact on the water column through cycles of re-suspension.

### **5.1.3.1 TSS Concentration Limits**

#### **Outfall 001**

The TSS limits for Outfall 001 (Daily maximum and average monthly limit of 65 mg/l) in the 2010 Permit were established based on the results of a pilot study that found the WWTF could only meet the less stringent “equivalent to secondary treatment” specified in 40 CFR § 133.105(b). The 2020 Permit application indicates that the facility is a secondary treatment facility and can achieve 85% removal for BOD<sub>5</sub> and TSS. Therefore, EPA has made the determination that the upgraded WWTF is able to achieve the secondary treatment requirements. The secondary treatment standards in 40 CFR § 133.102 require an average monthly limit of 30 mg/L and an average weekly limit of 45 mg/L and these are proposed as effluent limits in the Draft Permit. A daily maximum limit of 50 mg/L is also proposed. The monitoring frequency remains twice per week.

The DMR data during the review period shows there were no exceedances of the average monthly limit, one exceedance of the average weekly limit, and two exceedances of the maximum daily limit.

#### **Outfall 002**

The TSS limit for Outfall 002 in the 2010 Permit was established based on BPJ determination to set the average monthly TSS limit of 30 mg/L. The effluent limit was based on the New Hampshire NPDES General Permit for discharges from potable water treatment facilities. The 2010 Fact Sheet states that periodic monitoring of TSS levels will be the means to determine if Star Island operates its RO facility in an effective manner.

The DMR data during the review period shows there were no exceedances of the average monthly limit, concentrations range between 0 and 26 mg/L and the median is 3.5 mg/L.

The Draft Permit includes an average monthly TSS limit of 30 mg/L and a maximum daily limit of 50 mg/L based on the Final 2017 NPDES General Permit for Discharges from Potable Water Treatment Facilities in Massachusetts (MAG640000) and New Hampshire (NHG640000)<sup>8</sup> which is the basis for the BPJ determination. The monitoring frequency remains once per week.

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<sup>8</sup> <https://www.epa.gov/npdes-permits/potable-water-treatment-facility-general-permit-pwtf-gp-massachusetts-new-hampshire#2017>

### 5.1.3.2 TSS Mass Limits

#### Outfall 001

The mass-based TSS limits in the 2010 Permit were based on the “equivalent to secondary treatment” and the design flow of 0.015 MGD.

The DMR data during the review period shows that there have been no violations of the TSS mass-based limits.

The Draft Permit proposes more stringent mass-based TSS limits based on secondary treatment standards and using the increased design flow of the facility of 0.0175. *See* CWA §§402(o) and 303(d)(4) and 40 CFR § 122.44(l). The proposed mass-based limits are still less than the limits in the previous permit as they are now based on the secondary treatment standards rather than the equivalent to secondary treatment standards used in the previous permit.

$$4.4 \text{ lb/day} = 30 \text{ mg/L} * 0.0175 \text{ MGD} * 8.345$$

$$6.6 \text{ lb/day} = 45 \text{ mg/L} * 0.0175 \text{ MGD} * 8.345$$

$$7.3 \text{ lb/day} = 50 \text{ mg/L} * 0.0175 \text{ MGD} * 8.345$$

#### Outfall 002

The mass-based TSS limit in the 2010 Permit is based on the BPJ concentration limit of 30 mg/L and the design flow of 0.08 MGD

The DMR data during the review period shows that there have been no violations of the TSS mass-based limit.

The Draft Permit proposes maintaining the same mass-based TSS limit.

$$20.0 \text{ lb/day} = 30 \text{ mg/L} * 0.08 \text{ MGD} * 8.345$$

### 5.1.4 Eighty-Five Percent (85%) BOD<sub>5</sub> and TSS Removal Requirement

#### Outfall 001

Based on the BPJ determination that the Star Island WWTF is equivalent to a POTW and in accordance with the provisions of 40 CFR § 133.102(a)(3), and (b)(3), the 2010 Permit requires that the 30-day average percent removal for BOD<sub>5</sub> and TSS be not less than 85%. The DMR data during the review period shows that BOD<sub>5</sub> and TSS removal percentages averaged 98% and 97%, respectively. There was one violation of the 85% removal requirement for BOD<sub>5</sub> during that period.

The requirement to achieve 85% BOD<sub>5</sub> and TSS removal has been carried forward into the Draft Permit.

### 5.1.5 pH

The hydrogen ion concentration in an aqueous solution is represented by the pH using a logarithmic scale of 0 to 14 standard units (S.U.). Solutions with pH 7.0 S.U. are neutral, while those with a pH less than 7.0 S.U. are acidic and those with a pH greater than 7.0 S.U. are basic. Discharges with pH values markedly different from the receiving water pH can have a detrimental effect on the environment. Sudden pH changes can kill aquatic life. pH can also have an indirect effect on the toxicity of other pollutants in the water.

#### Outfall 001

The New Hampshire's WQS at RSA 485-A:8 II require "The pH for said (Class B) waters shall be 6.5 to 8.0 except when due to natural causes." The pH limit in the 2010 Permit is 6.0-8.0 S.U. The lower range limit was justified in the 2010 fact sheet as a response to the higher ambient pH of the receiving waters (approximately 8.0 S.U.), and the high dilution factor (100). NHDES policy requires permittees to conduct a pH range demonstration study at every reissuance to modify the pH range. The WQS for pH in Class B waters of 6.5-8.0 S.U. applies until the permittee completes the demonstration study and that study is approved by NHDES. The monitoring frequency is once per day.

The DMR data during the review period show that there have been no violations of the pH limitations.

#### Outfall 002

The New Hampshire's WQS at RSA 485-A:8 II require "The pH for said (Class B) waters shall be 6.5 to 8.0 except when due to natural causes." The pH limit in the 2010 Permit is 6.5-8.3 S.U. The higher range limit was justified in the 2010 Fact Sheet as a response to the higher ambient pH of the receiving waters (approximately 8.0 S.U.). NHDES policy requires permittees to conduct a pH range demonstration study at every reissuance to modify the pH range. The WQS for pH in Class B waters of 6.5-8.0 S.U. applies until the permittee completes the demonstration study and that study is approved by NHDES. The monitoring frequency is once per day.

The DMR data during the review period show that there have been no violations of the pH limitations.

### 5.1.6 Bacteria

The 2010 Permit includes a report only requirement for bacteria using *Enterococci* bacteria as the indicator bacteria to protect recreational uses. The decision for a report only requirement was based on an assumption that the surrounding waters were not used frequently for swimming. However, swimming does occur at Star Island; and it specifically occurs during the seasonal discharge period when the conference center is opened to guests. Therefore, EPA has included effluent limits for enterococci bacteria in the Draft Permit. The NH WQS at Env-Wq 1700, Appendix E require a monthly geometric mean of 35 enterococci /100 mL and a maximum daily limit of 104 enterococci/100 mL for tidal water utilized for swimming purposes. Given that the WWTF has been recently upgraded and includes chlorination and dechlorination capabilities, along with the expanded discharge season, EPA finds that it is appropriate to apply the

*Enterococci* standards in the NH WQS as effluent limits to the discharge from Outfall 001. The sampling frequency is daily.

The DMR data during the review period shows that enterococci bacteria concentrations in the effluent are not controlled until later in the discharge season.

The 2010 Permit also includes total coliform bacteria limits of a monthly geometric mean of 70 MPN/100 mL, a report requirement for the daily maximum, and a requirement that “not more than 10 percent of the collected samples shall exceed an MPN of 230 per 100 mL for the 5-tube decimal dilution test.” The DMR data during the review period shows three violations of the monthly geometric mean limit for total coliform.

EPA has proposed changing from total coliform to fecal coliform bacteria as the bacteria parameter for the Draft Permit at the request of NHDES.

The NH WQS and the regulations at 485-A:8, V require, “Those tidal waters used for growing or taking of shellfish for human consumption shall, in addition to the foregoing requirements, be in accordance with the criteria recommended under the National Shellfish Program Manual of Operation, United States Department of Food and Drug Administration.” NOTE: The Definition section of the 2019 NSSP states “Adverse Pollution Conditions means a state or situation caused by meteorological, hydrological or seasonal events or point sources that has historically resulted in elevated fecal coliform levels in a particular growing area.”

The NSSP (Chapter II. Growing Areas, .01 Fecal Coliform Standards) requires:

*E. Standard for the Approved Classification of Growing Areas when Evaluated for Adverse Pollution Conditions.*

- (1) Water Quality. The bacteriological quality of every station in the growing area shall meet the fecal coliform standard in E Section (2).*
- (2) Fecal Coliform Standard for Adverse Pollution Conditions. The fecal coliform geometric mean MPN of the water quality samples results for each station shall not exceed 14 MPN per 100 ml, and not more than ten (10) percent of the samples shall exceed an MPN of:*
  - (a) 43 MPN per 100 ml for a five-tube decimal dilution test;*
  - (b) 49 MPN per 100 ml for a three-tube decimal dilution test;*
  - (c) 28 MPN per 100 ml for a twelve-tube single dilution test; or*
  - (d) 31 CFU per 100 ml for a MF (mTEC) test.*

Based on concerns expressed by NHDES in recent 401 water quality certifications letters<sup>9</sup>, a new daily fecal coliform monitoring requirement has been added in anticipation of a NHDES 401 certification condition that allows the use of any EPA-approved analytical method that meets the

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<sup>9</sup> Letter. Thomas O’Donovan, NHDES to Ellen Weitzler, EPA, August 24, 2020, RE: Levitt E McGrath Wastewater Treatment Plant, Hampton, NH, Certification of NPDES Permit No. NH0100625.

timeliness requirements of the NHDES Shellfish Program. See Part I.H.10 of the Draft Permit. The frequency of fecal coliform monitoring using the 5-tube method in Part I.A.1 of the Draft Permit is 3 times per week.

### 5.1.7 Total Residual Chlorine

The Permittee uses sodium hypochlorite for disinfection. The 2010 Permit includes effluent limitations for total residual chlorine (TRC) of 0.75 mg/L (monthly average) and 1 mg/L (maximum daily).

The DMR data during the review period show that there have been three violations of the maximum daily TRC limitation.

The TRC permit limits are based on the instream chlorine criteria defined in *National Recommended Water Quality Criteria: 2002*, EPA 822R-02-047 (November 2002), as adopted by the New Hampshire Code of Administrative Rules, Env-Wq 1703.21 and Table 1703.1. These marine instream criteria for chlorine are 7.5 ug/L (chronic) and 13 ug/L (acute). Because the upstream chlorine is assumed to be zero in this case, the water quality-based chlorine limits are calculated as the criteria times the dilution factor times the 0.9 to reserve 10% assimilative capacity, as follows:

Chronic criteria \* dilution factor \* factor to reserve 10% assimilative capacity = Chronic limit  
 $7.5 \text{ ug/L} * 95.2 * 0.9 = 642.6 \text{ ug/L} = 0.64 \text{ mg/L}$  (average monthly)

Acute criteria \* dilution factor \* factor to reserve 10% assimilative capacity = Acute limit  
 $13 \text{ ug/L} * 95.2 * 0.9 = 1113.84 \text{ ug/L} = 1.11$  (maximum daily)

An average monthly limit of 0.64 mg/L is included in the Draft Permit. The limit is more stringent than the limit in the 2010 Permit due to the increase in flow and the subsequently revised dilution factor. A maximum daily limit of 1.0 mg/L is also included in the Draft Permit and is the same as the limit in the 2010 Permit. The maximum daily limit as calculated is higher, however, the limit has been set at 1.0 mg/L based on the fact that chlorine and chlorine compounds, such as “organo-chlorines,” produced by the chlorination of wastewater can be extremely toxic to aquatic life as well as antbacksliding considerations. Section 101(a)(3) of the CWA and state law RSA 485-A:8, VI, and the NH Code of Administrative Rules, Part Env-Wq 1703.21 prohibits the discharge of toxic pollutants in toxic amounts. Therefore, to reduce the potential for the formation of chlorinated compounds during the wastewater disinfection process, EPA, Region 1 has, historically, established a maximum daily total chlorine residual concentration of 1.0 mg/L, whenever the average monthly and/or the maximum daily limit(s), after factoring in available dilution, is more stringent than allowed under NH Standards. This approach is based on BPJ which is allowed under the authority granted in Section 402(a)(1) of the CWA and 40 CFR § 125.3. In this situation, a maximum daily limit of 1.0 mg/L for the maximum daily limit is more stringent than the 1.11 mg/L limit allowed under NH WQS and available dilution.

The sampling frequency remains twice per day.

### 5.1.8 Ammonia

Nitrogen in the form of ammonia can reduce the receiving stream's dissolved oxygen concentration through nitrification and can be toxic to aquatic life, particularly at elevated temperatures. The toxicity level of ammonia in marine waters depends on the temperature, pH, and salinity of the receiving water.<sup>10</sup> There are marine ammonia criteria in EPA's *National Recommended Water Quality Criteria*, 2002 (EPA 822-R-02-047) document, which are included in the NH WQS (See Env-Wq 1703.28 and 1703.31).

The 2010 Permit does not include ammonia limitations or reporting requirements. The Permittee has submitted the results of a single pass/fail Whole Effluent Toxicity (WET) test which was required by the 2010 Permit. Composite ambient and effluent samples were collected on July 20, 22, and 24, 2010. The samples were analyzed for various water quality parameters including ammonia in the effluent and receiving water. The receiving water maximum for total ammonia was non-detect and assumed to be zero (0). The effluent maximum was 0.33 mg/L. The data was collected during the warm weather period. There is no data available for the cold weather period.

EPA assumed an ambient pH of 8.0 S.U., ambient salinity of 30 ppt, and an ambient temperature of 20° C for the warm water period and 5° C for the cold water period.<sup>11</sup> Based on these assumptions, the applicable ammonia criteria were determined from the tables in the WQS, interpolating between values as necessary, and are presented in Appendix D.

To determine whether the discharge has the reasonable potential to cause or contribute to excursions above the in-stream water quality criteria for ammonia, EPA used the mass balance equation presented in Appendix D to project the ammonia concentration outside of the discharge area and if applicable, to determine the limit required in the permit.

Based on the analysis in Appendix D, there is no reasonable potential to cause an exceedance of the acute or chronic water quality criteria for either the warm weather or cold weather seasons. The Draft Permit requires effluent and ambient monitoring for ammonia to be conducted twice per year.

### 5.1.9 Metals

Dissolved fractions of certain metals in water can be toxic to aquatic life. Therefore, there is a need to limit toxic metal concentrations in the effluent where aquatic life may be impacted. For the development of the Draft Permit, analyses were completed to evaluate whether there is reasonable potential for effluent discharges to cause or contribute to exceedances of the water quality criteria for cadmium, copper, lead, nickel, and zinc given the chemical characteristics of the receiving water.

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<sup>10</sup> Environmental Protection Agency (EPA, "Ambient Water Quality Criteria for Ammonia (Saltwater) – 1989," pages 3-4.

<sup>11</sup> New Hampshire Department of Environmental Services (NHDES), "EMD Results – Station ID IOSSI2." Retrieved from [https://www4.des.state.nh.us/gis/emd\\_results/?id=IOSSI2](https://www4.des.state.nh.us/gis/emd_results/?id=IOSSI2) on August 4, 2020

### 5.1.9.1 Applicable Metals Criteria

State water quality criteria for cadmium, copper, lead, nickel, and zinc are established in terms of dissolved metals. However, many inorganic components of domestic wastewater, including metals, are in particulate form, and differences in the chemical composition between the effluent and the receiving water affect the partitioning of metals between the particulate and dissolved fractions as the effluent mixes with the receiving water, often resulting in a transition from the particulate to dissolved form (*The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion* (USEPA 1996 [EPA-823-B96-007])). Consequently, quantifying only the dissolved fraction of metals in the effluent prior to discharge may not accurately reflect the biologically-available portion of metals in the receiving water. Regulations at 40 CFR § 122.45(c) require, with limited exceptions, that effluent limits for metals in NPDES permits be expressed as total recoverable metals.

The criteria for cadmium, copper, lead, nickel, and zinc are presented in Appendix D based on EPA's National Recommended Water Quality Criteria: 2002, which are incorporated into the NH Env Wq-1703 by reference.

### 5.1.9.2 Reasonable Potential Analysis and Limit Derivation

To determine whether the effluent has the reasonable potential to cause or contribute to an exceedance above the in-stream water quality criteria for each metal, EPA uses the mass balance equation presented in Appendix D to project the concentration outside of the discharge areas and, if applicable, to determine the limit required in the permit.

The results of this analysis for each metal are presented in Appendix D. As shown in Appendix D, there is no reasonable potential and effluent limits are not required.

### 5.1.10 Whole Effluent Toxicity

CWA §§ 402(a)(2) and 308(a) provide EPA and States with the authority to require toxicity testing. Section 308 specifically describes biological monitoring methods as techniques that may be used to carry out objectives of the CWA. Whole effluent toxicity (WET) testing is conducted to ensure that the additivity, antagonism, synergism, and persistence of the pollutants in the discharge do not cause toxicity, even when the pollutants are present at low concentrations in the effluent. The inclusion of WET requirements in the Draft Permit will assure that the Facility does not discharge combinations of pollutants into the receiving water in amounts that would be toxic to aquatic life or human health.

In addition, under CWA § 301(b)(1)(C), discharges are subject to effluent limitations based on WQSS. Under CWA §§ 301, 303 and 402, EPA and the States may establish toxicity-based limitations to implement the narrative water quality criteria calling for "no toxics in toxic amounts". *See also* 40 CFR § 122.44(d)(1). New Hampshire statute and regulations state that "all surface waters shall be free from toxic substances or chemical constituents in concentrations or combination that injure or are inimical to plants, animals, humans, or aquatic life...." (N.H. RSA 485-A:8, VI and the N.H. Code of Administrative Rules, PART Env-Wq 1703.21(a)(1)).

National studies conducted by EPA have demonstrated that domestic sources, as well as industrial sources, contribute toxic constituents to POTWs. These constituents include metals, chlorinated solvents, aromatic hydrocarbons, and others. Some of these constituents may cause synergistic effects, even if they are present in low concentrations. Because of the source variability and contribution of toxic constituents in domestic and industrial sources, the reasonable potential may exist for this discharge to cause or contribute to an exceedance of the “no toxics in toxic amounts” narrative water quality standard.

In accordance with current EPA guidance, whole effluent chronic effects are regulated by limiting the highest measured continuous concentration of an effluent that causes no observed chronic effect on a representative standard test organism, known as the chronic No Observed Effect Concentration (C-NOEC). Whole effluent acute effects are regulated by limiting the concentration that is lethal to 50% of the test organisms, known as the LC<sub>50</sub>. This policy recommends that permits for discharges having a dilution factor between 20 and 100 require acute toxicity testing four times per year for two species. Additionally, for discharges with dilution factors between 20 and 100, the LC<sub>50</sub> limit should be greater than or equal to 100%.

The 2010 Permit required a one-time “pass-fail” WET test for the chronic and acute toxicity using the saltwater indicator species Inland Silverside minnow (*Menidia beryllina*), and Sea Urchin (*Arbacia punctulata*). Toxicity test samples were collected using 24-hour composite samples and the test was completed during July 2010 when peak discharges were anticipated. To pass the test, a LC<sub>50</sub> result of 50% or greater was required. The test was passed with a LC50 for *Menidia beryllina* >100%. The *Arbacia punctulata* was used in a Chronic Exposure Toxicity Evaluation and the C-NOEC = 100%.

The Star Island WWTF is a privately-owned treatment works and only receives domestic wastewater from the on-island facilities. Based on the limited potential for toxicity from the domestic wastewater only contribution and the dilution of 95.2, the Draft Permit proposes a single WET testing to be conducted during Year 1 of the Permit during July, when peak flows are anticipated from the WWTF. The Draft Permit includes an acute limit of LC<sub>50</sub> equal or greater than 100%. The permittee is required to test two species: Inland Silverside minnow (*Menidia beryllina*) and Mysid Shrimp (*Americamysis bahia*). Toxicity testing must be performed in accordance with the updated EPA Region 1 WET test procedures and protocols specified in Attachment A, Marine Acute Toxicity Test Procedure and Protocol (July 2012) of the Draft Permit.

#### **5.1.11 Per- and polyfluoroalkyl substances (PFAS)**

As explained at <https://www.epa.gov/pfas>, PFAS are a group of synthetic chemicals that have been in use since the 1940s. PFAS are found in a wide array of consumer and industrial products. PFAS manufacturing and processing facilities, facilities using PFAS in production of other products, airports, and military installations can be contributors of PFAS releases into the air, soil, and water. Due to their widespread use and persistence in the environment, most people in the United States have been exposed to PFAS. Exposure to some PFAS above certain levels may increase risk of adverse health effects.<sup>17</sup> EPA is collecting information to evaluate the

potential impacts that discharges of PFAS from wastewater treatment plants may have on downstream drinking water, recreational and aquatic life uses.

On September 30, 2019, NH DES adopted Maximum Contaminant Levels (MCLs) and Maximum Contaminant Level Goals (MCLGs) for drinking water at Env-DW 705.06 and Ambient Groundwater Quality Standards (AGQS) at Env-Or 603 for the following PFAS:

	<u>MCLs/AGQs</u>	<u>MCLGs</u>
Perfluorohexanesulfonic acid (PFHxS)	0.000018 mg/L	0
Perfluorononanoic acid (PFNA)	0.000011 mg/L	0
Perfluorooctanesulfonic acid (PFOS)	0.000015 mg/L	0
Perfluorooctanoic acid (PFOA)	0.000012 mg/L	0

The September 2019 PFAS regulations were challenged in state court and are currently enjoined pending resolution of the litigation. On July 23, 2020, the New Hampshire legislature enacted legislation establishing MCLs and AGQSs for these PFAS in State statute at the identical levels as the challenged regulations. The statutory MCLs and AGQSs became effective on July 23, 2020.

Since PFAS chemicals are persistent in the environment and may lead to adverse human health and environmental effects, the Draft Permit requires that the facility conduct quarterly influent, effluent and sludge sampling for PFAS, starting in the first full calendar quarter beginning six months after EPA has notified the Permittee that appropriate, multi-lab validated test methods are made available by EPA to the public.

The purpose of this monitoring and reporting requirement is to better understand potential discharges of PFAS from this facility and to inform future permitting decisions, including the potential development of water quality based effluent limits on a facility- specific basis. EPA is authorized to require this monitoring and reporting by CWA § 308(a), which states:

“SEC. 308. (a) Whenever required to carry out the objective of this Act, including but not limited to (1) developing or assisting in the development of any effluent limitation, or other limitation, prohibition, or effluent standard, pretreatment standard, or standard of performance under this Act; (2) determining whether any person is in violation of any such effluent limitation, or other limitation, prohibition or effluent standard, pretreatment standard, or standard of performance; (3) any requirement established under this section; or (4) carrying out sections 305, 311, 402, 404 (relating to State permit programs), 405, and 504 of this Act—

- (A) the Administrator shall require the owner or operator of any point source to (i) establish and maintain such records, (ii) make such reports, (iii) install, use, and maintain such monitoring equipment or methods (including where appropriate, biological monitoring methods), (iv) sample such effluents (in accordance with such methods, at such locations, at such intervals, and in such manner as the Administrator shall prescribe), and (v) provide such other information as he may reasonably require;”.

Since an EPA method for sampling and analyzing PFAS in wastewater and sludge is not currently available, the PFAS sampling requirement in the Draft Permit includes a compliance schedule which delays the effective date of this requirement until the first full calendar quarter beginning 6 months after EPA has notified the Permittee that a multi-lab validated method for wastewater and biosolids is made available to the public on EPA's CWA methods program websites. For wastewater see <https://www.epa.gov/cwa-methods/other-clean-water-act-test-methods-chemical> and <https://www.epa.gov/cwa-methods>. For biosolids, see <https://www.epa.gov/cwa-methods/other-clean-water-act-test-methods-biosolids>. EPA expects these methods will be available by the end of 2021. This approach is consistent with 40 CFR § 122.44(i)(1)(iv)(B) which states that in the case of pollutants or pollutant parameters for which there are no approved methods under 40 CFR Part 136 or methods are not otherwise required under 40 CFR chapter I, subchapter N or O, monitoring shall be conducted according to a test procedure specified in the permit for such pollutants or pollutant parameters.

Given that the Star Island discharge is seasonal, the sampling frequency is twice per season.

## 5.2 Sludge Conditions

Section 405(d) of the Clean Water Act requires that EPA develop technical standards regarding the use and disposal of sewage sludge. On February 19, 1993, EPA promulgated technical standards. These standards are required to be implemented through permits. The conditions in The purpose of this monitoring and reporting requirement is to better understand potential discharges of PFAS from this facility and to inform future permitting decisions, including the potential development of water quality based effluent limits on a facility-specific basis. EPA is authorized to require this monitoring and reporting by CWA § 308(a), which states:

“SEC. 308. (a) Whenever required to carry out the objective of this Act, including but not limited to (1) developing or assisting in the development of any effluent limitation, or other limitation, prohibition, or effluent standard, pretreatment standard, or standard of performance under this Act; (2) determining whether any person is in violation of any such effluent limitation, or other limitation, prohibition or effluent standard, pretreatment standard, or standard of performance; (3) any requirement established under this section; or (4) carrying out sections 305, 311, 402, 404 (relating to State permit programs), 405, and 504 of this Act—

- (A) the Administrator shall require the owner or operator of any point source to (i) establish and maintain such records, (ii) make such reports, (iii) install, use, and maintain such monitoring equipment or methods (including where appropriate, biological monitoring methods), (iv) sample such effluents (in accordance with such methods, at such locations, at such intervals, and in such manner as the Administrator shall prescribe), and (v) provide such other information as he may reasonably require;”.

Since an EPA method for sampling and analyzing PFAS in wastewater and sludge is not currently available, the PFAS sampling requirement in the Draft Permit includes a compliance schedule which delays the effective date of this requirement until 6 months after EPA's multi-lab validated method for wastewater and biosolids is made available to the public on EPA's CWA methods program websites. For wastewater see <https://www.epa.gov/cwa-methods/other-clean-water-act-test-methods-chemical> and <https://www.epa.gov/cwa-methods>. For biosolids, see <https://www.epa.gov/cwa-methods/other-clean-water-act-test-methods-biosolids>. EPA expects these methods will be available by the end of 2021. This approach is consistent with 40 CFR 122.44(i)(1)(iv)(B) which states that in the case of pollutants or pollutant parameters for which there are no approved methods under 40 CFR part 136 or methods are not otherwise required under 40 CFR chapter I, subchapter N or O, monitoring shall be conducted according to a test procedure specified in the permit for such pollutants or pollutant parameters.

Given that the Star Island discharge is seasonal, the sampling frequency is twice per season.

### **5.3 Operation and Maintenance of the Sewer System**

The standard permit conditions for 'Proper Operation and Maintenance', found at 40 CFR § 122.41(e), require the proper operation and maintenance of permitted wastewater systems and related facilities to achieve compliance with permit conditions. The requirements at 40 CFR § 122.41(d) impose a 'duty to mitigate,' which requires the permittee to "take all reasonable steps" to minimize or prevent any discharge in violation of the permit that has a reasonable likelihood of adversely affecting human health or the environment. EPA maintains that an I/I removal program is an integral component of ensuring permit compliance with the requirements of the permit under the provisions at 40 CFR § 122.41(d) and (e).

General requirements for proper operation and maintenance, and mitigation have been included in Part II of the permit. Specific permit conditions have also been included in Part I.C. and I.D. of the Draft Permit. These requirements include reporting of unauthorized discharges including SSOs, maintaining an adequate maintenance staff, performing preventative maintenance, and maintaining alternate power where necessary. These requirements are included to minimize the occurrence of permit violations that have a reasonable likelihood of adversely affecting human health or the environment.

As the Permittee is not a POTW and has a limited collection system that is less extensive than a typical POTW, EPA has not included in the Draft Permit all of the standard collection system operation and maintenance requirements that are currently included in POTW permits.

## **5.4 Special Conditions**

### **5.4.1 Discharge of Unused Portion of Uncontaminated Storage Waters**

Each November, the Permittee is allowed to bypass its secondary biological treatment system (physical, biological and chemical components) with a one-time batch discharge through Outfall 001 of the unused portion of the uncontaminated storage waters (captured rainwater, drinking water and saltwater pumped from the nearby Atlantic Ocean) as long as no substance has been added to those waters during their on-island storage.

See the Draft Permit Section I.F.2. for specific requirements.

### **5.4.2 Reverse Osmosis Desalination Facility Best Management Practices**

The Permittee shall develop, implement, and maintain a Best Management Practices (BMP) Plan for the reverse osmosis desalination facility designed to reduce or prevent the discharge of pollutants in the brine and filter backwash discharges to waters of the United States. The BMP Plan shall be a written document that is consistent with the terms of the permit and identifies and describes the BMPs employed by the facility in operating wastewater controls.

See the Draft Permit Section I.F.3. for specific requirements.

## **5.5 Standard Conditions**

The standard conditions of the permit are based on 40 CFR §122, Subparts A, C, and D and 40 CFR § 124, Subparts A, D, E, and F and are consistent with management requirements common to other permits.

## **6.0 Federal Permitting Requirements**

### **6.1 Ocean Discharge Act**

EPA has determined that the Star Island WWTF is seaward of the territorial sea baseline and, therefore is subject to the requirements of Section 403 of the CWA. Prior to draft permit development, as required by Section 403(c) of the CWA, EPA assessed the effect of Star Island's effluent on diversity, productivity, and stability of the ocean's ecosystem in the vicinity of the outfall. On the basis of the available information, EPA determined that the treatment plant discharge, as regulated by this permit, should not cause unreasonable degradation of the marine environment. This determination was made in accordance with 40 CFR 125, Subpart M (Ocean Discharge Criteria) and a summary of EPA's findings is included in Appendix E.

As required by 40 CFR 125.123(d)(4), the draft permit contains a clause stating that the permit will be modified or revoked at any time if new data indicates that there may be unreasonable degradation of the marine environment.

## 6.2 Endangered Species Act

Section 7(a) of the Endangered Species Act of 1973, as amended (ESA), grants authority and imposes requirements on Federal agencies regarding endangered or threatened species of fish, wildlife, or plants (listed species) and any habitat of such species that has been designated as critical under the ESA (a “critical habitat”).

Section 7(a)(2) of the ESA requires every federal agency, in consultation with and with the assistance of the Secretary of Interior, to ensure that any action it authorizes, funds or carries out, in the United States or upon the high seas, is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat. The United States Fish and Wildlife Service (USFWS) administers Section 7 consultations for freshwater species. The National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) administers Section 7 consultations for marine and anadromous species.

The Federal action being considered in this case is EPA’s proposed NPDES permit for the Star Island Wastewater Treatment Facility’s discharges of pollutants. The Draft Permit is intended to replace the 2010 Permit in governing the Facility. As the federal agency charged with authorizing the discharge from this Facility, EPA determines potential impacts to federally listed species and initiates consultation with the Services when required under § 7(a)(2) of the ESA.

Section 7(a) of the Endangered Species Act of 1973, as amended (ESA), grants authority and imposes requirements on Federal agencies regarding endangered or threatened species of fish, wildlife, or plants (listed species) and any habitat of such species that has been designated as critical under the ESA (a “critical habitat”).

The Federal action being considered in this case is EPA’s proposed NPDES permit for the Star Island WWTF, which discharges through Outfall 001 into the Gulf of Maine, Atlantic Ocean at latitude 70° 36’ 45” W and longitude 42° 58’ 40”. Outfall 002 is immediately adjacent to Outfall 001, but at a 60-degree angle from horizontal. The portion of the Gulf of Maine receiving the discharge is located approximately 7 miles off the coast of New Hampshire, identified as Segment NHOCN000000000-09. The segment is 1.0948 square miles and is classified as a Class B water by the State of New Hampshire. Outfalls 001 and 002 discharge approximately 150 feet from the shore of Star Island at a depth of 30 feet below the surface. Generally, the Gulf of Maine has a mean depth of 417 feet, but 25% of the Gulf is less than 210 feet deep.

As the federal agency charged with authorizing the discharge from this Facility, EPA determined potential impacts to federally listed species, and initiates consultation, when required under § 7(a)(2) of the ESA.

EPA has reviewed the federal endangered or threatened species of fish, wildlife, and plants in the expected action area of the outfall to determine if EPA’s proposed NPDES permit could potentially impact any such listed species.

For protected species under jurisdiction of the USFWS<sup>12</sup>, two listed shore bird species have been documented in the general area of the discharge around Star Island. The birds are the rufa red knot (*Calidris canutus rufa*), listed as threatened and the roseate tern (*Sterna dougallii*), listed as endangered.

The rufus red knot can be seen along the coast of New Hampshire in the spring and fall, as it migrates from summer breeding grounds on the tundra of the Canadian arctic to wintering sites in South America and the southern US. This bird is one of the longest-distance migrants in the animal kingdom. It feeds on invertebrates, especially small clams, mussels, and snails, but also crustaceans, marine worms, and horseshoe crab. Pressures on the species include coastal development and overharvest of the horseshoe crab.

The roseate tern can be found on small barrier islands in the northeast North America, often at ends or breaks along a beach and almost always nest in colonies with common terns. Roseate terns are found in coastal New Hampshire and Massachusetts from the end of April until late August to early September. The bird eats small fish, primarily the American sand lance. The population has been greatly reduced by human activity and development on barrier islands, predation, and competition from expanding numbers of large gulls.

The outfall point from the Facility is in an established, deep, offshore location and does not disturb the shoreline habitat of these two birds. In addition, the discharge does not come in contact with the intertidal fish, worms and crustaceans that these birds feed on. Based on this assessment, EPA has determined that these USFWS federally protected shorebird species, as well as their prey, are not present in the action area. Therefore, consultation with USFWS under Section 7 of the ESA is not required.

Regarding protected species under the jurisdiction of NOAA Fisheries<sup>13</sup>, a number of anadromous and marine species and life stages are present in coastal New Hampshire and Massachusetts waters. Various life stages of the following fish, sea turtles and whales have been documented in these coastal waters: Atlantic sturgeon (*Acipenser oxyrinchus*) adult and subadult life stages are expected throughout the year; shortnose sturgeon (*Acipenser brevirostrom*) adults are expected from April through November; protected sea turtles including adult and juvenile life stages of leatherback sea turtles (*Dermochelys coriacea*), loggerhead sea turtles (*Caretta caretta*), Kemp's ridley sea turtles (*Lepidochelys kempii*) and green sea turtles (*Chelonia mydas*) are expected from June through November; along with adult and juvenile life stages of North Atlantic right whales (*Eubalaena glacialis*) and fin whales (*Balaenoptera physalus*), expected year-round. In addition, this coastal area has been designated as part of the critical habitat for North Atlantic right whale feeding.

These protected species life stages, as well as the listed North Atlantic right whale critical habitat, are likely influenced by the discharge from this Facility. Because these species may be

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<sup>12</sup> See USFWS Information for Planning and Consultation Mapper for more information:  
<https://ecos.fws.gov/ipac/location/index>

<sup>13</sup> See NOAA: ESA Section 7 Mapper for more information:  
<https://noaa.maps.arcgis.com/apps/webappviewer/index.html?id=1bc332edc5204e03b250ac11f9914a27>

affected by the discharge authorized by the proposed permit, EPA has evaluated the potential impacts of the permit action on these anadromous and marine species. On the basis of the evaluation, EPA's preliminary determination is that this action may affect, but is not likely to adversely affect, the relevant life stages of the NOAA Fisheries listed species above that are expected to inhabit the coastal waters surrounding Star Island in the vicinity of the action area of the discharge. In addition, EPA has made the preliminary determination that the proposed action does not overlap with the designated North Atlantic right whale critical habitat.

Therefore, EPA has judged that a formal consultation pursuant to Section 7 of the ESA is not required. EPA is seeking concurrence from NOAA Fisheries regarding this determination through the information in the Draft Permit, this Fact Sheet, as well as a letter that will be sent to NOAA Fisheries Protected Resources Division under separate cover.

At the beginning of the public comment period, EPA notified NOAA Fisheries Protected Resources Division that the Draft Permit and Fact Sheet were available for review and provided a link to the EPA NPDES Permit website to allow direct access to the documents.

Initiation of consultation is required and shall be requested by the EPA or by NOAA Fisheries where discretionary Federal involvement or control over the action has been retained or is authorized by law and: (a) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered in the analysis; (b) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this analysis; or (c) If a new species is listed or critical habitat designated that may be affected by the identified action. No take is anticipated or exempted. If there is any incidental take of a listed species, initiation of consultation would be required.

### **6.3 Essential Fish Habitat**

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (*see* 16 U.S.C. § 1801 *et seq.*, 1998), EPA is required to consult with the NOAA Fisheries if EPA's action or proposed actions that it funds, permits, or undertakes, "may adversely impact any essential fish habitat." 16 U.S.C. § 1855(b).

The Amendments broadly define "essential fish habitat" (EFH) as: "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." 16 U.S.C. § 1802(10). "Adverse impact" means any impact that reduces the quality and/or quantity of EFH 50 CFR § 600.910(a). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species' fecundity), or site specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions. EFH is only designated for fish species for which federal Fisheries Management Plans exist. *See* 16 U.S.C. § 1855(b)(1)(A). EFH designations for New England were approved by the U.S. Department of Commerce on March 3, 1999.

The Federal action being considered in this case is EPA's proposed NPDES permit for the Star Island WWTF, which discharges through Outfall 001 into the Gulf of Maine, Atlantic Ocean at

latitude 42° 58' 40" N and longitude 70° 36' 45" W. Outfall 002 is immediately adjacent to Outfall 001, but at a 60-degree angle from horizontal. The portion of the Gulf of Maine receiving the discharge is located approximately 7 miles off the coast of New Hampshire, identified as Segment NHOCN000000000-09. The segment is 1.0948 square miles and is classified as a Class B water by the State of New Hampshire. Outfalls 001 and 002 discharge approximately 150 feet from the shore of Star Island at a depth of 30 feet below the surface. Generally, the Gulf of Maine has a mean depth of 417 feet, but 25% of the Gulf is less than 210 feet deep.

A review of the relevant essential fish habitat information provided by NOAA Fisheries<sup>14</sup> indicates that the outfall exists within designated EFH for 27 federally managed species and one Habitat Area of Particular Concern. The EFH species and life stages are listed in Table 2.

**Table 2: EFH Species and life stages in the vicinity of Star Island WWTF Outfalls**

Species/Management Unit	Lifestage(s) Found at Location
Atlantic Sea Scallop	ALL
Atlantic Wolffish	ALL
Haddock	Juvenile
Winter Flounder	Eggs, Juvenile, Larvae/Adult
Ocean Pout	Adult, Eggs, Juvenile
Atlantic Herring	Juvenile, Adult, Larvae
Atlantic Cod	Larvae, Adult, Juvenile, Eggs
Pollock	Juvenile, Eggs, Larvae
Red Hake	Adult, Eggs/Larvae/Juvenile
Silver Hake	Eggs/Larvae, Adult
Yellowtail Flounder	Adult, Juvenile
Monkfish	Adult, Eggs/Larvae, Juvenile
White Hake	Larvae, Adult, Eggs, Juvenile
Winter Skate	Juvenile
Witch Flounder	Adult
American Plaice	Adult, Juvenile
Acadian Redfish	Larvae
Thorny Skate	Juvenile
Bluefin Tuna	Adult, Juvenile
Common Thresher Shark	ALL
Porbeagle Shark	ALL
Northern Shortfin Squid	Adult
Longfin Inshore Squid	Adult
Atlantic Mackerel	Juvenile, Adult
Atlantic Butterfish	Adult

<sup>14</sup> See NOAA: Essential Fish Habitat (EFH) Mapper for more information:  
<https://www.habitat.noaa.gov/application/efhmapper/index.html>

Species/Management Unit	Lifestage(s) Found at Location
Spiny Dogfish	Sub-Adult Male and Female, Adult Male and Female
Ocean Quahog	Juvenile, Adult
HAPC Name	
Inshore 20m Juvenile Cod	

**6.3.1 EPA’s Finding of all Potential Impacts to EFH Species**

EPA has concluded that the operation of this facility, as governed by this permit action, is not likely to adversely affect the species of concern or the Habitat Area of Particular Concern for the following reasons:

- This Draft Permit action does not constitute a new source of pollutants. It is the reissuance of an existing NPDES permit. The Permittee has been granted a small flow increase at the outfall, but all water quality standards continue to be met;
- The effluent is discharged at approximately 150 feet off the island at a depth of 30 feet below the surface;
- The effluent has a dilution factor of 95.2;
- Total suspended solids, biochemical oxygen demand, total residual chlorine, total coliform bacteria, Enterococci and pH are regulated by the Draft Permit to meet water quality standards;
- The Draft Permit prohibits the discharge of pollutants or combination of pollutants in toxic amounts;
- The effluent limitations and conditions in the Draft Permit were developed to be protective of all aquatic life; and
- The Draft Permit prohibits violations of the state water quality standards.

EPA believes that the conditions and limitations contained within the Star Island Wastewater Treatment Facility Draft Permit adequately protect all aquatic life, including those species with designated EFH in the receiving water, as well as the Habitat Area of Particular Concern. Further mitigation is not warranted. Should adverse impacts to EFH be detected as a result of this permit action, or if new information is received that changes the basis for EPA’s conclusions, NOAA Fisheries will be contacted and an EFH consultation will be re-initiated. At the beginning of the public comment period, EPA notified NOAA Fisheries Habitat and Ecosystem Services Division that the Draft Permit and Fact Sheet were available for review and provided a link to the EPA NPDES Permit website to allow direct access to the documents.

In addition to this Fact Sheet and the Draft Permit, information to support EPA’s finding is

included in a letter under separate cover that will be sent to the NOAA Fisheries Habitat and Ecosystem Services Division during the public comment period.

#### **6.4 Coastal Zone Management (CZM) Consistency Review**

The regulation at 40 CFR § 122.49(d) states “The Coastal Zone Management Act, 16 U.S.C. 1451 et seq. section 307(c) of the Act and implementing regulations (15 CFR part 930) prohibit EPA from issuing a permit for an activity affecting land or water in the coastal zone until the applicant certifies that the proposed activity complies with the State Coastal Zone Management program, and the State or its designated agency concurs with the certification (or the Secretary of Commerce) overrides the State’s nonconcurrence.

The discharge is within the defined CZMA boundaries. The Permittee has submitted a federal consistency certification dated December 23, 2020 to the New Hampshire Coastal Program stating their intention to abide by the NH Coastal Program water quality and habitat policies. EPA expects that the NH Coastal Program will find the discharge consistent with its policies.

#### **7.0 Public Comments, Hearing Requests and Permit Appeals**

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:

Michele Barden  
EPA Region 1  
Email: [barden.michele@epa.gov](mailto:barden.michele@epa.gov)  
Telephone: (617) 918-1539

Prior to the close of the public comment period, any person, may submit a written request to EPA for a public hearing to consider the Draft Permit. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held if the criteria stated in 40 CFR § 124.12 are satisfied. In reaching a final decision on the Draft Permit, EPA will respond to all significant comments in a Response to Comments document attached to the Final Permit and make these responses available to the public at EPA's Boston office and on EPA’s website.

Following the close of the comment period, and after any public hearings, if such hearings are held, EPA will issue a Final Permit decision, forward a copy of the final decision to the applicant, and provide a copy or notice of availability of the final decision to each person who submitted written comments or requested notice. Within 30 days after EPA serves notice of the issuance of the Final Permit decision, an appeal of the federal NPDES permit may be commenced by filing a petition for review of the permit with the Clerk of EPA’s Environmental Appeals Board in accordance with the procedures at 40 CFR § 124.19.

#### **8.0 Administrative Record**

Following U.S. Centers for Disease Control and Prevention (CDC) and U.S. Office of Personnel Management (OPM) guidance and specific state guidelines impacting our regional offices,

EPA's workforce has been directed to telework to help prevent transmission of the coronavirus. While in this workforce telework status, there are practical limitations on the ability of Agency personnel to allow the public to review the administrative record in person at the EPA Boston office. However, any documents relating to this draft can be requested from the individual listed above.

The administrative record on which this Draft Permit is based may be accessed by contacting Michele Barden, EPA Region 1, via email at [barden.michele@epa.gov](mailto:barden.michele@epa.gov) or telephone at 617-918-1539.

March 16, 2021

Ken Moraff, Director  
Water Division  
U.S. Environmental Protection Agency

**Figure 1: Location map Star Island WWTF**

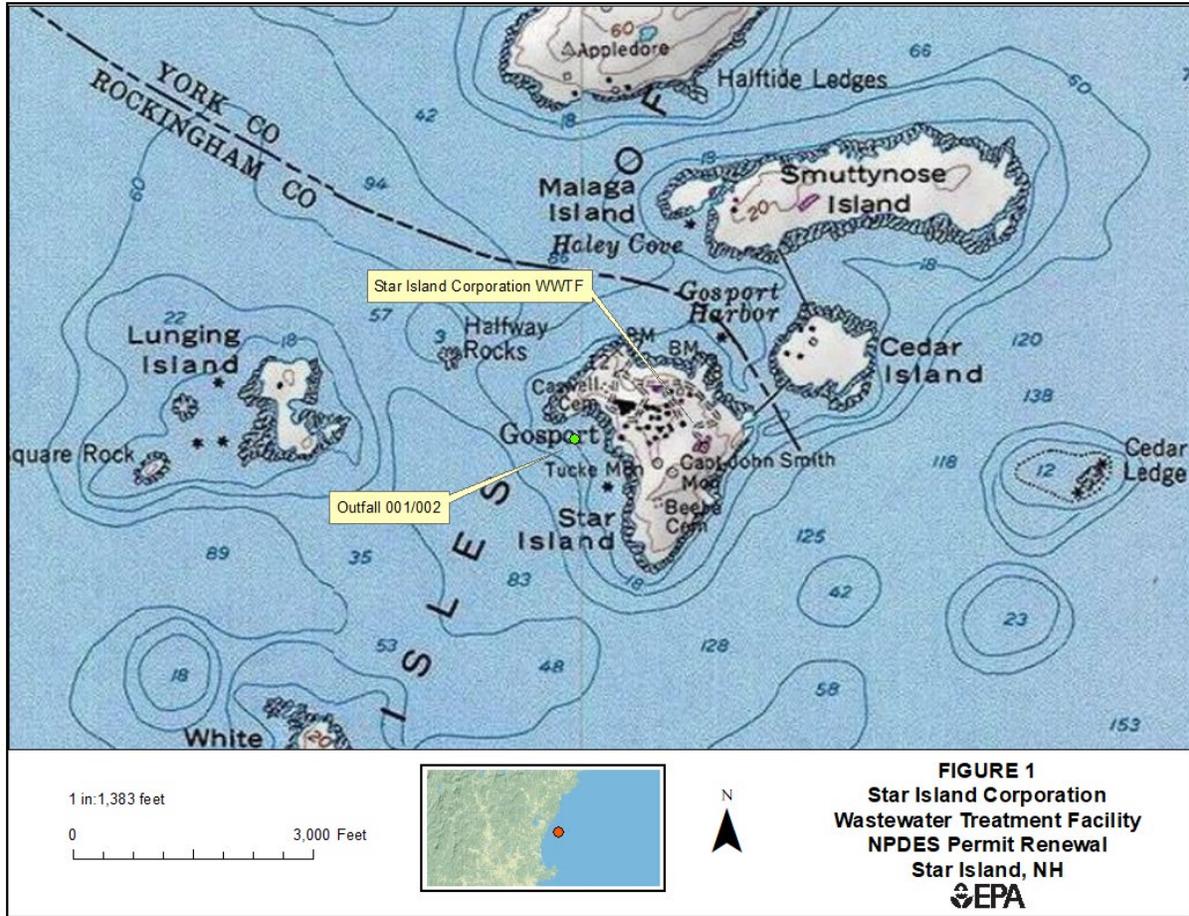
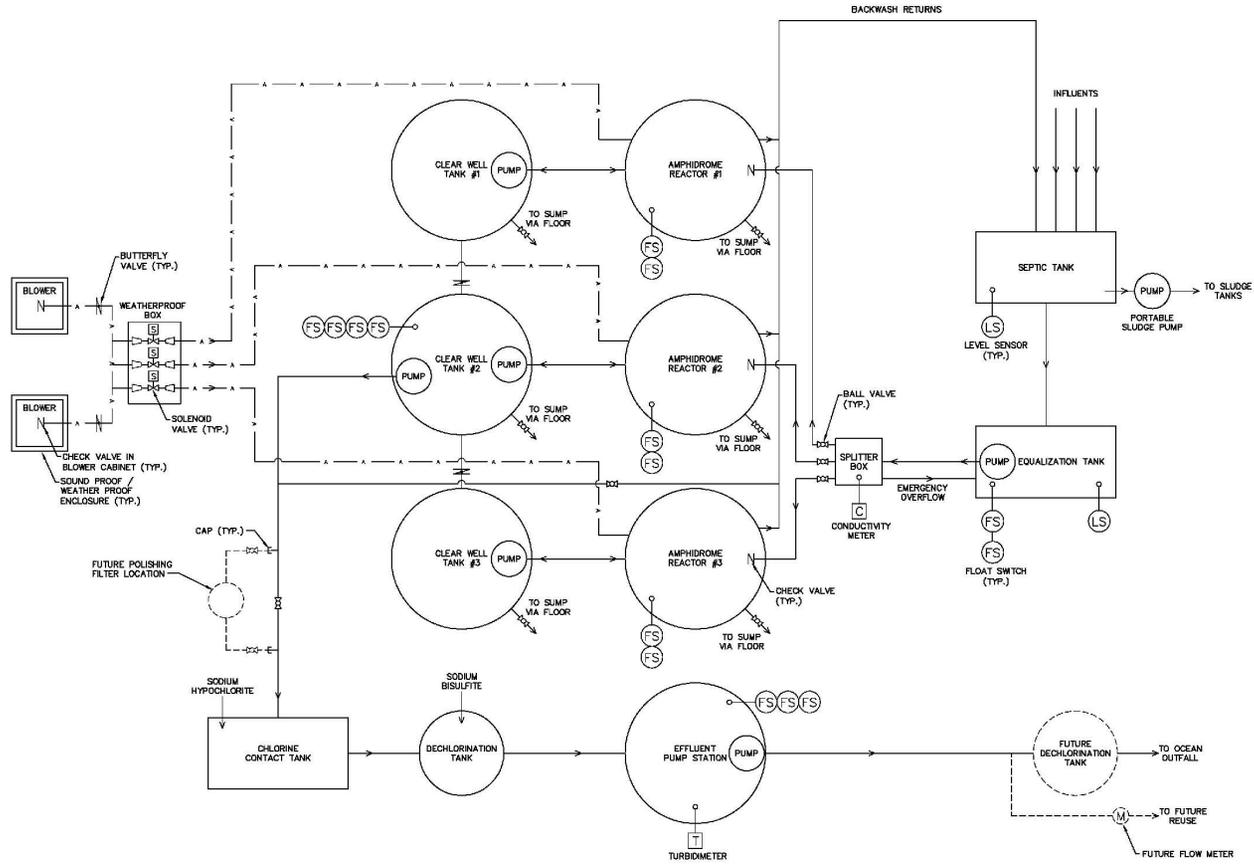
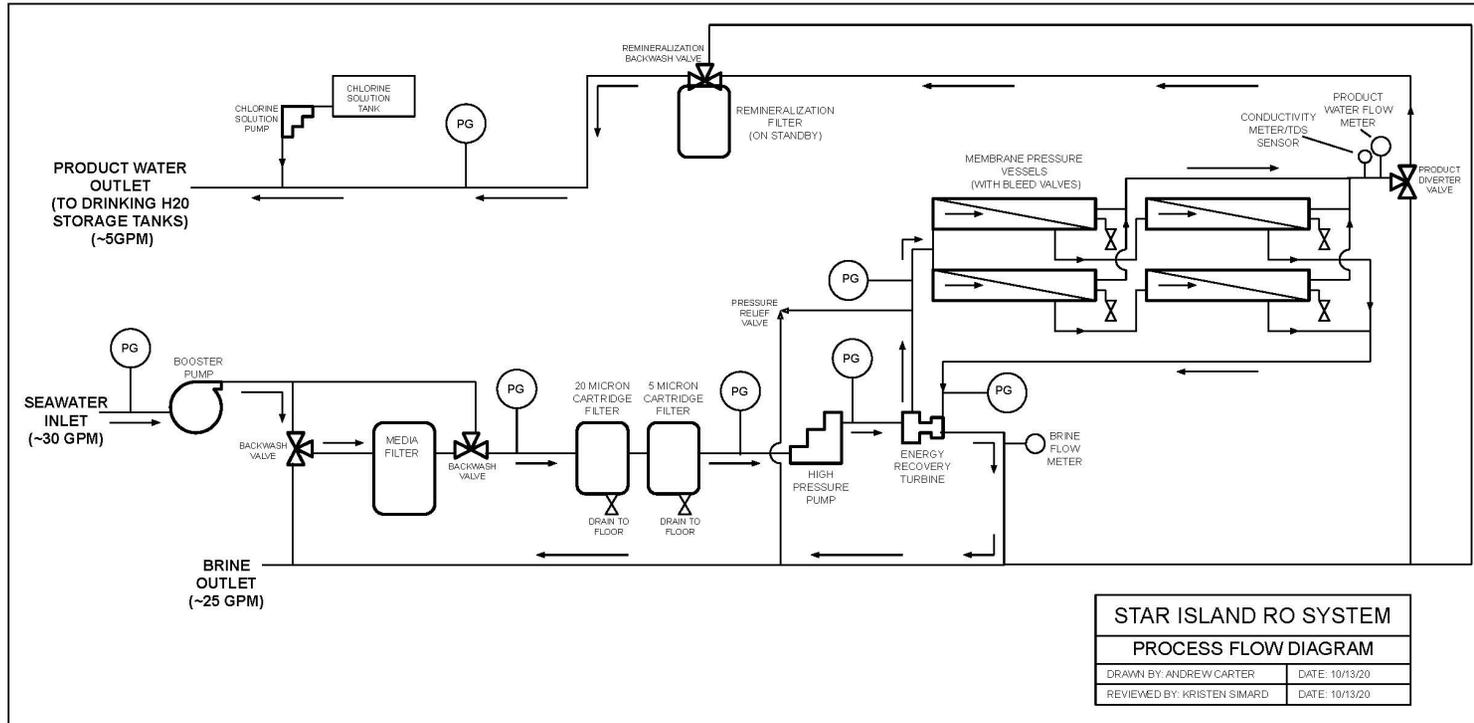


Figure 2: Flow diagram of the Star Island WWTF



**Figure 3: Flow diagram of the Star Island RO System**



## **Appendices**



The State of New Hampshire  
**Department of Environmental Services**



**Robert R. Scott, Commissioner**

June 19, 2020

Joe Watts  
Chief Executive Officer  
Star Island Corporation  
30 Middle Street  
Portsmouth, NH 03801

Re: Star Island Corporation WWTF Antidegradation Review  
NPDES Permit No. NH0101028

Dear Mr. Watts:

We received the reapplication for the Star Island Corporation Wastewater Treatment Facility (WWTF) National Pollutant Discharge Elimination System (NPDES) permit, dated January 27, 2020, in which the Star Island Corporation (SIC) requested a design flow increase for the facility from 15,000 gallons per day to 17,500 gallons per day. In addition, the SIC requested, for both the WWTF outfall and the reverse osmosis drinking water facility outfall, an increase in the permitted discharge window from six months per year to eight months per year, from April 1 through November 30. Per the requirements of the New Hampshire Code of Administrative Rules Env-Wq 1708, an antidegradation review of this request was performed by the New Hampshire Department of Environmental Services (NHDES).

As noted in the antidegradation requirements in Env-Wq 1708, NHDES shall not approve a proposed increase in flow from an existing point source that would cause a significant change in water quality, unless the department finds that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the surface water is located. A change in water quality as a result of an increased discharge from a point source is considered "insignificant" if the increase in discharge uses less than twenty percent of the remaining assimilative capacity in the receiving water for a water quality parameter.

Below is a summary of the antidegradation review for the requested design flow increase at the SIC WWTF. This letter is also being provided to EPA for their consideration in reissuing the NPDES permit for the facility.

NHDES used the WWTF effluent and Atlantic Ocean receiving water data available from the facility's 2010 Whole Effluent Toxicity (WET) test to determine whether the proposed increase would use twenty percent or more of the remaining assimilative capacity in the Atlantic Ocean at the edge of the WWTF's regulatory mixing zone for a set of water quality parameters. As a condition of its 2010 NPDES permit, the SIC WWTF was required to conduct a one-time "pass/fail" WET test. The samples were to be collected using 24-hour composite samples and the test completed during the July through August 2010 peak discharge period. The SIC collected 24-hour composite samples on July 20, 22, and 24 in 2010. The sample taken on July 20, 2010 was analyzed for various water quality parameters in the effluent and receiving water. The receiving water concentrations from this sample were used to define the current background load for each water quality parameter in the Atlantic Ocean at the edge of the WWTF's regulatory mixing zone. The antidegradation calculations described below use the WWTF effluent data from this sample to determine the load of each water quality parameter from the SIC WWTF to the Atlantic Ocean. Typically, NHDES would apply a multiplication factor from Table 3.1 – *Reasonable Potential Multiplying Factors* in EPA's *Technical Support Document for Water Quality Based Toxics Control* to the average effluent concentration in order to account for statistical variability in the effluent. However, because the SIC WWTF only receives wastewater from a single facility, as opposed to a municipal collection

system, the effluent from the facility is unlikely to show variability in multiple samples, and NHDES determined that the multiplication factor is not required for this evaluation.

The antidegradation calculations followed the water quality relationships shown in Figure 1. The current background load for the Atlantic Ocean, as determined by the sampled receiving water concentration and the facility’s dilution factor, in addition to a ten percent reserve of the total assimilative capacity in the receiving water, were subtracted from the total assimilative capacity in the receiving water to determine the remaining assimilative capacity for each water quality parameter.

**Table 1.** Results of the SIC WWTF Antidegradation Review

Parameter	Sampled Effluent Concentration (ug/L)	Max. Allowable Effluent Concentration (ug/L)	Projected Eff. Conc. Exceeds Max. Allowable?
Ammonia, mg/L	0.33	77	No
Cadmium	0	121	No
Chromium	0	157,325	No
Copper	16	58	No
Lead	0.95	114	No
Nickel	3.0	127	No
Zinc	104	935	No

As previously discussed, a change in water quality as a result of the proposed increased discharge from the SIC WWTF will be considered “insignificant” if the increase in discharge uses less than twenty percent of the remaining assimilative capacity in the receiving water for a water quality parameter. The “Maximum Allowable Effluent Concentration” column in Table 1 shows the concentration limit required for the SIC WWTF effluent in order for the discharge to use less than twenty percent of the remaining assimilative capacity for each parameter. As can be seen in the table, the sampled effluent concentration does not exceed the maximum allowable effluent concentration for any of the water quality parameters. As a result, the proposed increase in discharge can be considered to be “insignificant”.

The SIC WWTF existing NPDES permit contains average monthly, average weekly, and maximum daily load limits equal to 3.8 lb/day, 5.6 lb/day, and 6.3 lb/day, respectively, for both BOD and TSS. Per NHDES policy, these loading limits shall remain the same for the increased design flow. The average monthly, average weekly, and maximum daily concentration limits of 30 mg/L, 45 mg/L, and 50 mg/L, respectively, will also remain the same. Note that once the actual flow from the SIC WWTF exceeds 15,000 gallons per day, the concentrations of BOD and TSS in the effluent will need to be reduced in order to meet the load limits.

In addition, NHDES approves SIC’s request to increase the permitted discharge window from six months per year to eight months per year, from April 1 through November 30, for both their WWTF outfall and their reverse osmosis drinking water facility outfall.

Please feel free to contact me at (603) 271-6637 or Hayley Franz at (603) 271-0671 with any questions or if you wish to meet to discuss any issue related to the antidegradation review.

Sincerely,

A handwritten signature in black ink, appearing to read "Stergios Spanos". The signature is fluid and cursive, with the first name "Stergios" and last name "Spanos" clearly distinguishable.

Stergios Spanos, P.E., Permits & Compliance Supervisor  
Water Division, Wastewater Engineering Bureau

cc: Ellen Weitzler, Water Permits Branch Acting Chief, EPA  
Michael Cobb, Municipal Permits Section Acting Chief, EPA  
Michele Barden, Environmental Scientist, EPA  
Thomas O'Donovan, P.E., Director, NHDES WD  
Tracy Wood, P.E., Administrator, NHDES WD-WWEB  
Ted Diers, Administrator, NHDES WD-WMB  
Hayley Franz, P.E., Permits Engineer, NHDES WD-WWEB

**Figure 1.** Water Quality Relationships Used in Antidegradation Calculations

		<b>BEST POSSIBLE WATER QUALITY</b>		
Better ↑ <b>WATER QUALITY</b> ↓ Worse	<b>Parameter Value</b> <b>Outstanding Resource Waters (ORWs) TIER 3</b>	<b>TIER 2</b> <b>HIGH QUALITY</b> Water quality has more than 10% of the Total Assimilative Capacity Remaining	<b>EXISTING WATER QUALITY</b>	
			20% Remaining Assimilative Capacity	<b>Remaining Assimilative Capacity</b>
		<b>TIER 1</b> <b>MARGINAL QUALITY</b> Water quality has less than 10% of the Total Assimilative Capacity Remaining	<b>No additional pollutant loading</b> Reserve Assimilative Capacity must be no less than 10% of the Total Assimilative Capacity	
		<b>WATER QUALITY CRITERIA</b>		
		<b>IMPAIRED</b> Water quality is below the standard	<b>No additional pollutant loading</b> Pollutant loading reductions are needed to restore water quality	
			<b>Reserve Assimilative Capacity</b>	<b>Total Assimilative Capacity</b>

**Outfall - Monitoring Location - Limit Set: 001 - 1 - A**

Parameter	Flow	Flow	BOD5	BOD5	BOD5	BOD5	BOD5
	Monthly Ave	Daily Max	Monthly Ave	Monthly Ave	Weekly Ave	Daily Max	Daily Max
Units	MGD	MGD	lb/d	mg/L	mg/L	lb/d	mg/L
Effluent Limit	Report	Report	3.8	30	45	6.3	50
Minimum	0.004	0.0074	0	0	0	0	0
Maximum	0.03	0.0375	15.2	161	310	51	470
Median	0.0075	0.01075	0.4	7	9.5	0.85	12
No. of Violations	N/A	N/A	1	2	5	2	4
5/31/2015	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C
6/30/2015	0.0115	0.0199	0.8	9	10	1	10
7/31/2015	0.0101	0.0375	0.4	6	16	0.9	16
8/31/2015	0.0091	0.0115	0	0	0	0	0
9/30/2015	0.0059	0.009	0	0	0	0	0
10/31/2015	0.03	0.03	NODI: 8	NODI: 8	NODI: 8	NODI: 8	NODI: 8
5/31/2016	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C
6/30/2016	0.0088	0.0161	0.4	7	8	0.8	11
7/31/2016	0.0087	0.0143	1.1	19	50	3.6	65
8/31/2016	0.0086	0.0111	0.2	2	6	0.7	11
9/30/2016	0.0062	0.0285	0.4	8	17	1.6	24
10/31/2016	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C
5/31/2017	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C
6/30/2017	0.0072	0.0131	0.3	14	14	0.5	17
7/31/2017	0.0077	0.0121	0.9	23	55	2	59
8/31/2017	0.0076	0.0097	0.2	4	6	0.5	8
9/30/2017	0.004	0.0074	0.2	6	11	0.4	22
10/31/2017	0.0074	0.0238	0.1	3	3	0.1	5
5/31/2018	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C
6/30/2018	0.0066	0.0087	0.9	22	28	1.2	32
7/31/2018	0.0085	0.0101	0.4	7	20	1.4	22
8/31/2018	0.008	0.0104	0.6	8	9	1.1	13
9/30/2018	0.0047	0.0084	0.5	11	15	0.9	18
10/31/2018	0.018	0.026	0.9	10	9	0.9	10
5/31/2019	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C
6/30/2019	0.0093	0.0157	3.2	37	69	7.5	88
7/31/2019	0.0107	0.0179	15.2	161	310	51	470
8/31/2019	0.0084	0.0119	2.1	30	50	3.6	49
9/30/2019	0.004	0.0082	0.5	13	17	0.9	18
10/31/2019	0.0041	0.01	0.4	12	21	1.1	20

**Outfall - Monitoring Location - Limit Set: 001 - 1 - A**

Parameter	TSS	TSS	TSS	TSS	TSS	pH	pH
	Monthly Ave	Monthly Ave	Weekly Ave	Daily Max	Daily Max	Minimum	Maximum
Units	lb/d	mg/L	mg/L	lb/d	mg/L	SU	SU
Effluent Limit	5.6	45	65	8.1	65	6	8
Minimum	0.2	4	2	0.4	8	6	6.7
Maximum	2.4	41	80	3.9	80	6.9	8
Median	0.6	12.5	17	1.3	21.5	6.35	7.1
No. of Violations	0	0	1	0	2	0	0
5/31/2015	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C
6/30/2015	1.2	14	9	1.6	21	6.1	7.4
7/31/2015	0.8	13	25	1.6	28	6.3	7.5
8/31/2015	0.3	4	5	0.5	8	6.1	7.3
9/30/2015	0.4	9	19	1.5	20	6.2	7.1
10/31/2015	NODI: 8	NODI: 8	NODI: 8	NODI: 8	NODI: 8	6.7	6.7
5/31/2016	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C
6/30/2016	0.5	9	6	0.7	13	6.1	7
7/31/2016	1.1	18	30	2.9	38	6.5	7.1
8/31/2016	0.9	13	26	2.1	33	6.6	7.1
9/30/2016	0.6	20	36	1.2	58	6.6	7.2
10/31/2016	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C
5/31/2017	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C
6/30/2017	0.2	6	2	0.5	15	6	7.3
7/31/2017	0.6	23	80	1.8	80	6.5	7
8/31/2017	0.6	9	10	0.8	14	6.6	7
9/30/2017	0.4	13	21	0.6	25	6.6	7
10/31/2017	0.4	15	15	0.4	15	6.9	7.3
5/31/2018	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C
6/30/2018	1.7	41	46	2	49	6.1	7.1
7/31/2018	1.3	17	26	2.1	27	6	7.3
8/31/2018	0.7	11	23	2	27	6.5	7.2
9/30/2018	0.8	22	64	3.4	73	6.5	7
10/31/2018	1.4	16	10	1.4	16	6.7	6.9
5/31/2019	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C
6/30/2019	1.2	12	25	2.2	25	6.9	8
7/31/2019	2.4	27	36	3.9	37	6.4	7.8
8/31/2019	0.9	14	20	1.8	24	6.6	8
9/30/2019	0.3	8	11	0.6	22	6	7.3
10/31/2019	1.1	28	39	2.7	45	6.7	7.5

**Outfall - Monitoring Location - Limit Set: 001 - 1 - A**

Parameter	TRC	TRC	Coliform, total - % samples exceeding limit	Coliform, total general	Enterococci: group D, MF trans, M-E, EIA	Coliform, total general	Enterococci: group D, MF trans, M-E, EIA
	Monthly Ave	Daily Max	Monthly Geometric Mean	Monthly Geometric Mean	Monthly Geometric Mean	Daily Max	Daily Max
Units	mg/L	mg/L	%	MPN/100mL	MPN/100mL	MPN/100mL	MPN/100mL
Effluent Limit	0.75	1	10	70	Report	Report	Report
Minimum	0.01	0.02	0	3.6	10	7.8	10
Maximum	0.46	5.28	50	173.9	3705.3	5794	15531
Median	0.17	0.905	0	8.6	16.15	230	63.5
No. of Violations	0	3	7	3	N/A	N/A	N/A
5/31/2015	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C
6/30/2015	0.17	0.59	29	173.9	2310	920	2310
7/31/2015	0.21	0.95	0	8.5	45.6	1600	520
8/31/2015	0.21	0.99	0	4.6	14.2	350	41
9/30/2015	0.2	0.9	0	3.6	11.5	27	20
10/31/2015	0.24	0.24	0	13	NODI: 8	13	NODI: 8
5/31/2016	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C
6/30/2016	0.36	0.86	15	34.3	29.5	1600	86
7/31/2016	0.17	0.97	4	14	126.5	920	727
8/31/2016	0.17	0.99	0	6.3	13.3	220	31
9/30/2016	0.05	0.98	0	4.5	11.5	170	20
10/31/2016	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C
5/31/2017	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C
6/30/2017	0.31	0.91	12	15.8	99.2	540	985
7/31/2017	0.09	0.55	0	8.1	51.9	220	146
8/31/2017	0.19	0.93	18	17.7	30	1600	594
9/30/2017	0.13	0.82	5	7	14.1	240	20
10/31/2017	0.09	0.27	0	3.6	10	7.8	10
5/31/2018	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C
6/30/2018	0.46	2.73	30	129.7	3705.3	1600	15531
7/31/2018	0.12	0.92	0	20.7	10	1600	10
8/31/2018	0.11	0.76	0	28.4	31.3	1600	248
9/30/2018	0.13	0.94	0	8.7	18.1	79	108
10/31/2018	0.01	0.02	0	5.9	10	7.8	10
5/31/2019	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C
6/30/2019	0.2	3.03	30	59.2	57	5794	146
7/31/2019	0.41	5.28	50	79.9	948.3	1600	6488
8/31/2019	0.26	0.97	0	12.9	232.5	1600	1317
9/30/2019	0.46	0.99	0	15.7	27.2	540	137
10/31/2019	0.33	0.94	0	13.3	25.2	136.7	160

**Outfall - Monitoring Location - Limit Set: 001 - G - A**

<b>Parameter</b>	<b>BOD5</b>	<b>TSS</b>
	<b>Monthly Ave</b>	<b>Monthly Ave</b>
<b>Units</b>	<b>mg/L</b>	<b>mg/L</b>
<b>Effluent Limit</b>	<b>Report</b>	<b>Report</b>
<b>Minimum</b>	<b>227</b>	<b>216</b>
<b>Maximum</b>	<b>1150</b>	<b>1624</b>
<b>Median</b>	<b>457.5</b>	<b>450.5</b>
<b>No. of Violations</b>	<b>N/A</b>	<b>N/A</b>
5/31/2015	NODI: C	NODI: C
6/30/2015	370	394
7/31/2015	465	541
8/31/2015	650	501
9/30/2015	335	396
10/31/2015	NODI: 8	NODI: 8
5/31/2016	NODI: C	NODI: C
6/30/2016	350	407
7/31/2016	500	606
8/31/2016	420	1004
9/30/2016	515	1624
10/31/2016	NODI: C	NODI: C
5/31/2017	NODI: C	NODI: C
6/30/2017	1150	662
7/31/2017	1000	737
8/31/2017	660	510
9/30/2017	635	815
10/31/2017	365	437
5/31/2018	NODI: C	NODI: C
6/30/2018	525	580
7/31/2018	620	646
8/31/2018	620	561
9/30/2018	227	216
10/31/2018	450	464
5/31/2019	NODI: C	NODI: C
6/30/2019	505	431
7/31/2019	395	408
8/31/2019	625	560
9/30/2019	470	610
10/31/2019	675	280

**Outfall - Monitoring Location - Limit Set: 001 - K - A**

Parameter	BOD5	TSS
	MO MIN	MO MIN
Units	%	%
<b>Effluent Limit</b>	<b>85</b>	<b>85</b>
<b>Minimum</b>	<b>59</b>	<b>90</b>
<b>Maximum</b>	<b>100</b>	<b>99</b>
<b>Median</b>	<b>98</b>	<b>97</b>
<b>No. of Violations</b>	<b>1</b>	<b>0</b>
5/31/2015	NODI: C	NODI: C
6/30/2015	98	97
7/31/2015	99	98
8/31/2015	100	99
9/30/2015	100	98
10/31/2015	NODI: 8	NODI: 8
5/31/2016	NODI: C	NODI: C
6/30/2016	98	98
7/31/2016	96	97
8/31/2016	99	99
9/30/2016	98	99
10/31/2016	NODI: C	NODI: C
5/31/2017	NODI: C	NODI: C
6/30/2017	99	99
7/31/2017	98	97
8/31/2017	99	98
9/30/2017	99	98
10/31/2017	99	97
5/31/2018	NODI: C	NODI: C
6/30/2018	96	93
7/31/2018	99	97
8/31/2018	99	98
9/30/2018	95	90
10/31/2018	98	97
5/31/2019	NODI: C	NODI: C
6/30/2019	93	97
7/31/2019	<b>59</b>	93
8/31/2019	95	98
9/30/2019	98	99
10/31/2019	98	90

**Outfall - Monitoring Location - Limit Set: 001 - O - A**

Parameter	BOD5	TSS
	Weekly Ave	Weekly Ave
Units	lb/d	lb/d
<b>Effluent Limit</b>	<b>5.6</b>	<b>8.1</b>
<b>Minimum</b>	<b>0</b>	<b>0.1</b>
<b>Maximum</b>	<b>32.6</b>	<b>3.6</b>
<b>Median</b>	<b>0.55</b>	<b>0.85</b>
<b>No. of Violations</b>	<b>2</b>	<b>0</b>
5/31/2015	NODI: C	NODI: C
6/30/2015	1	0.9
7/31/2015	0.9	1.5
8/31/2015	0	0.4
9/30/2015	0	1.4
10/31/2015	NODI: 8	NODI: 8
5/31/2016	NODI: C	NODI: C
6/30/2016	0.4	0.4
7/31/2016	2.9	1.7
8/31/2016	0.5	1.6
9/30/2016	1.1	1
10/31/2016	NODI: C	NODI: C
5/31/2017	NODI: C	NODI: C
6/30/2017	0.3	0.1
7/31/2017	1.6	1.8
8/31/2017	0.4	0.7
9/30/2017	0.5	0.7
10/31/2017	0.1	0.4
5/31/2018	NODI: C	NODI: C
6/30/2018	1.1	1.8
7/31/2018	1.3	2
8/31/2018	0.7	1.7
9/30/2018	0.8	2.4
10/31/2018	0.6	0.8
5/31/2019	NODI: C	NODI: C
6/30/2019	<b>6</b>	2.2
7/31/2019	<b>32.6</b>	3.6
8/31/2019	3.5	1.4
9/30/2019	0.8	0.5
10/31/2019	0.8	2.3

**Outfall - Monitoring Location - Limit Set: 002 - 1 - A**

Parameter	Flow	Flow	TSS	TSS	pH	pH
	Monthly Ave	Daily Max	Monthly Ave	Monthly Ave	Minimum	Maximum
Units	MGD	MGD	lb/d	mg/L	SU	SU
<b>Effluent Limit</b>	<b>0.08</b>	<b>Report</b>	<b>20</b>	<b>30</b>	<b>6.5</b>	<b>8.3</b>
<b>Minimum</b>	<b>0.01</b>	<b>0.01</b>	<b>0</b>	<b>0</b>	<b>6.8</b>	<b>8</b>
<b>Maximum</b>	<b>0.02</b>	<b>0.04</b>	<b>3.2</b>	<b>26</b>	<b>8.1</b>	<b>8.2</b>
<b>Median</b>	<b>0.01</b>	<b>0.03</b>	<b>0.165</b>	<b>3.5</b>	<b>7.8</b>	<b>8.1</b>
<b>No. of Violations</b>	<b>0</b>	<b>N/A</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
5/31/2015	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C
6/30/2015	0.01	0.04	0	0	7.9	8.2
7/31/2015	0.02	0.03	0	0	6.8	8.1
8/31/2015	0.01	0.03	0	0	7.2	8.1
9/30/2015	0.02	0.02	0.01	1	7.8	8.1
10/31/2015	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C
5/31/2016	0.02	0.04	0	0	8	8.2
6/30/2016	0.02	0.04	0	0	7.8	8.2
7/31/2016	0.02	0.04	0	0	7.8	8.2
8/31/2016	0.02	0.04	0.7	4	7.8	8.1
9/30/2016	0.01	0.01	0.05	1	7.8	8.1
10/31/2016	0.01	0.01	1.14	15	7.6	8.1
5/31/2017	0.01	0.03	0.1	1	7.9	8
6/30/2017	0.01	0.04	0.7	15	7.8	8.1
7/31/2017	0.02	0.04	2.2	20	7.3	8.2
8/31/2017	0.01	0.02	0.9	9	7.8	8.2
9/30/2017	0.01	0.02	1.2	11	7.5	8.2
10/31/2017	0.01	0.02	1.3	14	8	8
5/31/2018	0.02	0.04	0.5	4	8.1	8.2
6/30/2018	0.01	0.03	2.9	26	7.9	8.2
7/31/2018	0.01	0.03	0	0	7.8	8.1
8/31/2018	0.01	0.02	0.2	3	7.8	8.1
9/30/2018	0.01	0.03	3.2	12	7.8	8.1
10/31/2018	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C	NODI: C
5/31/2019	0.01	0.02	0.13	1	8	8.1
6/30/2019	0.01	0.03	1.1	8	7.9	8.1
7/31/2019	0.01	0.03	1.8	18	7.7	8.2
8/31/2019	0.01	0.03	0.8	8	7.6	8.2
9/30/2019	0.01	0.01	0.7	10	7.7	8.1
10/31/2019	0.01	0.01	0.1	4	7.6	8







CORMIX predictions on dilutions and concentrations (with associated plume geometries) are reliable for the majority of cases and are accurate to within about  $\pm 50\%$  (standard deviation).  
As a further safeguard, CORMIX will not give predictions whenever it judges the design configuration as highly complex and uncertain for prediction.

A reasonable potential analysis is completed using a single set of critical conditions for flow and pollutant concentration that will ensure the protection of water quality standards. To determine the critical condition of the effluent, EPA projects an upper bound of the effluent concentration based on the observed monitoring data and a selected probability basis. EPA generally applies the quantitative approach found in Appendix E of EPA’s *Technical Support Document for Water Quality-based Toxics Control (TSD)*<sup>1</sup> to determine the upper bound of the effluent data. This methodology accounts for effluent variability based on the size of the dataset and the occurrence of non-detects (i.e., samples results in which a parameter is not detected above laboratory detection limits). For datasets of 10 or more samples, EPA uses the upper bound effluent concentration at the 95<sup>th</sup> percentile of the dataset. For datasets of less than 10 samples, EPA uses the maximum value of the dataset.

EPA uses the calculated upper bound of the effluent data, along with a concentration representative of the parameter in the receiving water, the critical effluent flow, and the critical upstream flow to project the downstream concentration after complete mixing using the following simple mass-balance equation:-

$$C_s Q_s + C_e Q_e = C_d Q_d$$

Where:

- C<sub>s</sub> = upstream concentration (median value of available ambient data)
- Q<sub>s</sub> = upstream flow (7Q10 flow upstream of the outfall)
- C<sub>e</sub> = effluent concentration (95<sup>th</sup> percentile or maximum of effluent concentration)
- Q<sub>e</sub> = effluent flow of the facility (design flow)
- C<sub>d</sub> = downstream concentration
- Q<sub>d</sub> = downstream flow (Q<sub>s</sub> + Q<sub>e</sub>)

Solving for the downstream concentration results in:

$$C_d = \frac{C_s Q_s + C_e Q_e}{Q_d}$$

When both the downstream concentration (C<sub>d</sub>) and the effluent concentration (C<sub>e</sub>) exceed the applicable criterion, there is reasonable potential for the discharge to cause, or contribute to an excursion above the water quality standard. *See* 40 C.F.R. § 122.44(d). When EPA determines that a discharge causes, has the reasonable potential to cause, or contribute to such an excursion, the permit must

**Appendix D – Reasonable Potential and Limits Calculations**

**NPDES Permit No. NH0101028**

contain WQBELs for the parameter. *See* 40 C.F.R. § 122.44(d)(1)(iii). Limits are calculated by using the criterion as the downstream concentration ( $C_d$ ) and rearranging the mass balance equation to solve for the effluent concentration ( $C_e$ ). The table below presents the reasonable potential calculations and, if applicable, the calculation of the limits required in the permit. Refer to the pollutant-specific section of the Fact Sheet for a detailed discussion of these calculations, any assumptions that were made and the resulting permit requirements.

Pollutant	DF	$C_s$ <sup>1</sup>	$C_e$ <sup>2</sup>		$C_d$		Criteria		Reasonable Potential		Limits	
	--	mg/L	Acute (mg/L)	Chronic (mg/L)	Acute (mg/L)	Chronic (mg/L)	Acute (mg/L)	Chronic (mg/L)	$C_d$ & $C_r$ > Acute Criteria	$C_d$ & $C_r$ > Chronic Criteria	Acute (mg/L)	Chronic (mg/L)
Ammonia (Warm)	95.2	0.0	0.3	0.3	0.0	0.0	7.3	1.1	N	N	N/A	N/A
Ammonia (Cold)		0.0	0.0	0.0	0.0	0.0	21.0	3.1	N	N	N/A	N/A
		$\mu\text{g/L}$	$\mu\text{g/L}$	$\mu\text{g/L}$	$\mu\text{g/L}$	$\mu\text{g/L}$	$\mu\text{g/L}$	$\mu\text{g/L}$			$\mu\text{g/L}$	$\mu\text{g/L}$
Cadmium		0.0	0.0	0.0	0.0	0.0	40.2	8.9	N	N	N/A	N/A
Copper		0.0	19.0	19.0	0.2	0.2	5.8	3.7	N	N	N/A	N/A
Lead		0.6	1.0	1.0	0.6	0.6	220.8	8.5	N	N	N/A	N/A
Nickel		0.0	3.0	3.0	0.0	0.0	74.7	8.3	N	N	N/A	N/A
Zinc		22.0	110.0	110.0	22.9	22.9	95.1	85.6	N	N	N/A	N/A

<sup>1</sup>Median concentration for the receiving water upstream of the zone of influence of the facility's discharge taken from the WET testing data during the review period (see Appendix A).

<sup>2</sup>Values represent the 95<sup>th</sup> percentile (for  $n \geq 10$ ) or maximum (for  $n < 10$ ) concentrations from the DMR data and/or WET testing data during the review period (see Appendix A). If the metal already has a limit (for either acute or chronic conditions), the value represents the existing limit.

**Clean Water Act Section 403(c) Ocean Discharge  
Criteria Evaluation**

**Star Island WWTF**

**March 2021**

## **I. Introduction**

EPA has determined that the Star Island Wastewater Treatment Facility (WWTF) and Reverse Osmosis (RO) Desalination Facility outfalls, 001 and 002, respectively, are seaward of the territorial sea baseline and, therefore, are subject to Section 403 of the Clean Water Act (CWA). The facilities are owned and operated by the Star Island Corporation (SIC).

The Ocean Discharge Criteria regulations found at 40 CFR Part 125 – Subpart M establish ocean discharge guidelines from which a permit writer must make a determination that a discharge will, or will not, cause “unreasonable degradation” of the marine environment.

A determination of whether “unreasonable degradation” will occur is based on consideration of the 10 guidelines found in 40 CFR § 125.122(a). “Determination of unreasonable degradation of the marine environment”. Unreasonable degradation is defined in the Ocean Discharge Criteria as any of the following:

1. Significant adverse changes in ecosystem diversity, productivity, and stability of the biological community within the area of discharge and surrounding biological communities;
2. Threat to human health through direct exposure to pollutants or through consumption of exposed aquatic organisms; or
3. Loss of aesthetic, recreational, scientific or economic values which is unreasonable in relation to the benefit derived from the discharge.

If a determination is made that no “unreasonable degradation” will result, a permit is issued including appropriate conditions to ensure that unreasonable degradation does not take place. These conditions may include a requirement for an ongoing monitoring program. If EPA determines that a discharge will cause unreasonable degradation despite the application of all possible permit conditions, it may not issue a permit authorizing the discharge of pollutants.

If, because of insufficient information, a determination cannot be made prior to the issuance of a permit that no unreasonable degradation will result, then additional conditions must be satisfied by the permittee.

## **II. Criteria Evaluation**

The determination of no “unreasonable degradation” is to be made based on a consideration of the 10 guidelines found in 40 CFR § 125.122. The 10 guidelines are discussed below:

### **1. Quantities, composition, and potential for bioaccumulation or persistence of the pollutants to be discharged.**

In the 2010 Permit, the Star Island WWTF was permitted to have an average monthly design flow of 15,000 gallons per day (GPD) that occurs annually from May 1 through October 31. A summary of effluent parameters taken from monthly discharge monitoring reports (DMRs) is shown in Table 1. The Permittee has requested an increase in average monthly flow to 17,500 gpd and an extension of the discharge season to April 1 through November 30. The Draft Permit authorizes the flow increase and the longer discharge season. The following is an assessment of the effluent:

- a. Type: The effluent from the WWTF which discharges through Outfall 001 is composed mainly of domestic sewage from the Star Island Retreat and Conference Center. There are no industrial sources and SIC is not required to administer a pretreatment program under 40 CFR § 122.44(j), 40 CFR § 403, and Section 307 of the Clean Water Act. However, the permit contains conditions that ensure that pollutants from industrial users will not pass through the facility and cause water quality standard violations or cause interference with the operation of the treatment facility.

Outfall 002 is reject brine from the (RO) desalination facility that provides a percentage of the potable water for the conference center. The RO system has a very low production rate that averages 0.02 MGD; with maximum flow rates reaching 0.04 MGD. Depending on membrane efficiency of the RO unit, the discharge averages 0.01-0.02 MGD of reject brine and has a salinity ranging from approximately 50-60 g/L. Analysis of the brine categorizes its composition with a pH of 8.1 S.U.; a TSS concentration of 0- mg/L; and a NH<sub>3</sub> concentration of <0.05 mg/L.

- b. Sources: The WWTF, Outfall 001, receives domestic wastewater from a maximum population of 375 people in residence at the Star Island Conference Center between May and October. The population is significantly lower at the start and end of the season. Outfall 002 is composed of reject brine from the RO desalination facility.
- c. Amounts: The WWTF has a revised average monthly design flow of 17,500 gpd. For the period May 1, 2015 through October 31, 2019, the median monthly flow from Outfall 001 was 7,500 gpd. For the same time frame, the highest daily flow was 100,000 gpd.

Outfall 2 has an average monthly design flow of 80,000 gpd. For the period May 1, 2015 through October 31, 2019, the monthly flow was 12,963 gpd. For the same time frame, the highest daily flow was 40,000 gpd.

- d. For the period from May 1, 2015, through October 31, 2019, the flows from the WWTF have been relatively consistent. The average yearly flows during this period have been 0.013, 0.008, 0.007, 0.009, and 0.007 MGD.

For the period from May 1, 2015, through October 31, 2019, the flows from the Outfall 2 have been relatively consistent. The average yearly flows during this period have been 0.015, 0.017, 0.017, 0.016, and 0.010 MGD.

- e. Physical, Chemical, and Toxicological Properties: The WWTF provides secondary treatment for the wastewater generated by the conference center. The Permit contains effluent limitations and/or monitoring requirements for effluent flow, biochemical oxygen demand, total suspended solids, pH, total residual chlorine, Enterococci bacteria, fecal coliform bacteria.

The Draft Permit also includes effluent limits for Outfall 002 for flow, TSS and pH.

Summary:

The Star Island WWTF treats wastewater to secondary standards. Secondary treatment effluent should not contain significant amounts of pollutants that bioaccumulate or that are toxic. The permit has and will continue to prohibit the discharge of pollutants in toxic amounts. In 2010, the Permittee was required to conduct a whole effluent toxicity (WET) test that showed no toxicity. The Draft Permit requires the facility to conduct ambient water quality monitoring during the fourth year of the permit which will provide EPA the data necessary to evaluate the responsible potential of the discharge in future permitting. It is expected that the WWTF will continue to operate in compliance in the future.

The Star Island RO system generates a limited volume of reject brine. Flows have been well below the limit and the effluent data is well within the effluent limits in the 2010 Permit.

**Table 1: Effluent Characteristics, May 1, 2015 Through October 31, 2019**

<b>Effluent Parameter</b>	<b>Monthly Average</b>	<b>Range of Monthly Averages</b>	<b>Maximum of Daily Maximums<sup>1</sup></b>
<b>Outfall 001</b>			
Flow (gpd)	13,000	10,000-20,000	40,000
pH (Standard Units) <sup>2</sup>	N/A	6.8-8.2	N/A
Total Coliform Bacteria (colonies/100 ml)	28.72	3.6-173.9	5794, 1600, 1600
Enterococci	340.53	10-3705.3	3705.3, 2310, 948.3
Total Residual Chlorine (mg/l)	0.212	0.01-0.46	0.46, 0.46, 0.41
BOD <sub>5</sub> (mg/L)	17.9	0-161	161, 37, 30
BOD <sub>5</sub> (lb/d)	1.29	0-15.2	15.2, 3.2, 2.1
BOD <sub>5</sub> (% removal)	96	---	---
TSS (mg/l)	6.85	0-26	26, 20, 18
TSS (lb/d)	0.73	0-3.2	3.2, 2.9, 2.2
TSS (% removal)	97	---	---
LC50 (% effluent) <i>Menidia beryllina</i>	---	---	>100%
CNOEC (% effluent) <i>Menidia beryllina</i>	---	---	50%
CNOEC (% effluent) <i>Arbacia punctulata</i>	---	---	100%
<b>Outfall 002</b>			

Flow (GPD)	12,963	10,000-20,000	40,000, 40,000, 40,000
TSS (mg/L)	6.85	0-26	26, 20, 18
TSS (lb/d)	0.73	0-3.2	3.2, 2.9, 2.2
pH <sup>2</sup>	---	6.8-8.2	8.2, 8.2, 8.2

1. More than one number represents the second and third highest values.
2. Numbers listed are the minimum and maximum daily readings

## 2. Potential transport of pollutants by biological, physical, or chemical process.

Star Island is located approximately 7 miles off the New Hampshire coast, just south of the Maine border. The island is owned by the non-profit SIC and home to a conference center which is accessible by boat. The wastewater needs of the center are served by the Star Island WWTF and are discharged from Outfall 001. A portion of the facility's potable water needs are provided by the on-site reverse osmosis (RO) desalination facility. RO reject brine from the desalination facility discharges from outfall 002. The location of the WWTF, desalination facility, and Outfalls 001 and 002 to the Atlantic Ocean are shown in Figure 1. The longitude and latitude of Outfall 1 is 70° 36' 45" W, 42° 58' 40". Outfall 002 is immediately adjacent to Outfall 001 but at a 60-degree angle from horizontal which is about 5 feet above the ocean bottom.

The pollutants discharged by this treatment facility are conventional (TSS, BOD) and do not bioaccumulate. Chemical analysis of the sludge indicated that unconventional pollutants (such as metals) that may bioaccumulate are generally not present or present in low concentrations. The biological transport of chemicals does not result from the discharge. Physical transport from this discharge is limited as the discharges are to the Atlantic Ocean where dispersion is rapid and farfield dilution is significant.

The 2010 Permit was based upon a dilution factor of 100 which was determined in 1996 modeling using the Cornell Mixing Zone Expert System (CORMIX). In 2020, NHDES re-modeled the diffuser using the most current version of CORMIX, CORMIX Version 11, the requested flow increase, and a reduction in the diameter of the outfall port from 6" to 3" and returned a dilution factor of 95.2. The Draft Permit has been developed using a dilution factor of 95.2 which has resulted in more stringent effluent limits for TSS and total residual chlorine.

### Summary:

The lack of nonconventional pollutants combined with the available dilution and subsequent dispersion makes the transport and fate of pollutants from this discharge of little concern.

## 3. Composition and vulnerability of potentially exposed biological communities, including: unique species or communities, endangered or threatened species, and species critical to the structure or function of the ecosystem.

A number of endangered or threatened species are known to inhabit New Hampshire coastal waters. These include Atlantic sturgeon, shortnose sturgeon, green sea turtle, Kemp's ridley sea turtle, leatherback sea turtle, loggerhead sea turtle, North Atlantic right whale, and fin whale. These species are generally pelagic, with the exception of the

sturgeon. The discharge is required to meet state water quality standards and the lack of nonconventional (i.e. toxic) pollutants in the discharge greatly reduces the potential risk to these species.

EPA has made the determination that the proposed action may affect, but is not likely to adversely affect, endangered or threatened species found in the action area along with the designated North Atlantic right whale and Atlantic sturgeon critical habitats that overlaps the action area. EPA must consult with NOAA Fisheries to document concurrence with this determination. See Section 6.2 of the Fact Sheet.

**4. Importance of the receiving water are to the surrounding biological community such as spawning sites, nursery/forage area, migratory pathways, and areas necessary for critical life stages/functions of an organism.**

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (*see* 16 U.S.C. § 1801 *et. Seq.*, 1998), EPA is required to consult with the National Marine Fisheries Service (NOAA Fisheries) if EPA's action or proposed actions that it funds, permits, or undertakes, "may adversely impact any essential fish habitat," 16 U.S.C. § 1855(b).

The Amendments broadly define "essential fish habitat" (EFH) as: "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." 16 U.S.C. § 1802(10). "Adverse impact" means any impact that reduces the quality and/or quantity of EFH, 50 C.F.R. § 600.910(a). Adverse effects may include direct (*e.g.* contamination or physical disruption), indirect (*e.g.* loss of prey, reduction in species' fecundity), or site specific or habitat-wide impacts, including individual, cumulative or synergistic consequences of actions.

EFH is only designated for fish species for which federal Fisheries Management Plan exist. *See* 16 U.S.C. § 1855(b)(1)(A). EFH designations for New England were approved by the U.S. Department of Commerce on March 3, 1999.

A review of the relevant essential fish habitat information provided by NOAA Fisheries indicates that the outfalls exist within designated EFH for 27 federally managed species and one Habitat Area of Particular Concern (HAPC). The EFH species and life stages are listed in Table 2. A full discussion of potential impacts to EFH species and the HAPC is found in Section 6.3 of the Fact Sheet.

It is expected that the receiving water will also be used by species within the biological community for which there are not EFH designations for spawning, foraging, migration, and other functions.

Due to the nature of the discharge and the dispersive capabilities of the area, the impacts from the discharge on the biota are anticipated to be limited to the area immediately around the discharge point.

**Table 2**  
**EFH Species and life stages in the vicinity of Star Island WWTF**  
**Outfall at Latitude 42° 58' 40" N, Longitude 70° 36' 45" W**

<b>Species/Management Unit</b>	<b>Lifestage(s) Found at Location</b>
Atlantic Sea Scallop	ALL
Atlantic Wolffish	ALL
Haddock	Juvenile
Winter Flounder	Eggs, Juvenile, Larvae/Adult
Ocean Pout	Adult, Eggs, Juvenile
Atlantic Herring	Juvenile, Adult, Eggs
Atlantic Cod	Larvae, Adult, Juvenile, Eggs
Pollock	Juvenile, Egg, Larvae
Red Hake	Adult, Eggs/Larvae/Juvenile
Silver Hake	Eggs/Larvae, Adult
Yellowtail Flounder	Adult, Juvenile
Monkfish	Adult, Eggs/Larvae, Juvenile
White Hake	Larvae, Adult, Eggs, Juvenile
Winter Skate	Juvenile
Witch Flounder	Adult
American Plaice	Adult, Juvenile
Acadian Redfish	Larvae
Thorny Skate	Juvenile
Bluefin Tuna	Adult, Juvenile
Common Thresher Shark	ALL
Porbeagle Shark	ALL
Northern Shortfin Squid	Adult
Longfin Inshore Squid	Adult
Atlantic Mackerel	Juvenile, Adult
Atlantic Butterfish	Adult
Spiny Dogfish	Sub-Adult Male, Sub-Adult Female, Adult Male, Adult Female
Atlantic Surfclam	Juvenile, Adult
<b>Habitat Area of Particular Concern Name</b>	
Inshore 20m Juvenile Cod	

**5. The existence of special aquatic sites, including marine sanctuaries/refuges, parks, monuments, national seashores, wilderness areas, and coral reefs.**

The Isles of Shoals are a group of small islands and tidal ledges situated approximately 10 miles off the east coast, straddling the border of New Hampshire and Maine. The U.S. Coast Guard and the U.S. Navy have ties to the Isles dating back to the early 1900s.

Appledore Island, in Maine, is the largest of the Isles of Shoals, at 95 acres. It is listed on the National Register of Historic Places as culturally significant and worthy of preservation. The island is the operating station for the Shoals Marine Laboratory, run

cooperatively by Cornell University and the University of New Hampshire. The island is mostly owned by the Star Island Corporation.

Second in size at 46 acres is Star Island and it is the only island served by a commercial boat from the mainland. It is a religious conference center, owned by the Star Island Corporation. Located on Star Island is Gosport House, the 150-year-old chapel, and several buildings which dated back to the original village. Smuttynose Island, at 25 acres is the third-largest island. Smuttynose is not populated today. Malaga Island is an island just to the west of Smuttynose and is connected to it by a breakwater.

Other islands include White Island and Lunging Island on the New Hampshire side to the border and Duck and Cedar Islands in the state of Maine. White Island features one of the two lighthouses on the New Hampshire coast. Lunging Island is privately owned. Duck Island lies about 1.5 miles to the north and once was used as a bombing range for the US Navy. It has been sold by the Star Island Corporation to the Maine Coastal Heritage Trust and is kept as a wildlife sanctuary. It is home to a seal colony and has never supported a human population. Cedar Island is connected by breakwaters to both Smuttynose Island and Star Island and is privately owned.

Isles of Shoals, of which Star Island is a part, is host to a myriad of marine and terrestrial animals and plants. The intertidal and subtidal zones are rich in species of algae, fish and invertebrates, while the deeper waters surrounding the Isles provide habitat for schools of fish and pods of dolphins and whales. Most of the land area that constitutes Isles of Shoals is privately owned.

As was discussed in the previous section, there is no indication of adverse impacts to special aquatic sites due to the effluent discharge from the Star Island's Wastewater Treatment Facility and or the Reverse Osmosis Desalination Facility. Whole Effluent Toxicity (WET) testing was required in the previous permit and demonstrated no toxicity.

Additionally, the Draft Permit prohibits the discharge of water or wastes to the wastewater treatment works that contain wax, grease, or oils, whether emulsified or not, except grey-water discharges from food-related operations (which may contain minimal quantities of oil and grease), any floor, housekeeping and/or food service cleaners except in concentrations and volumes that do not adversely affect the biological treatment works, photographic processing and/or developing chemicals and/or solutions; and any material considered or defined as hazardous waste in RCRA subtitle C. For the reverse osmosis system, the Draft Permit prohibits the use of water additives.

Both these effluent discharges are to the Atlantic Ocean where dispersion is rapid and farfield dilution significant.

## **6. Potential direct or indirect impacts on human health.**

Bacteria limitations have been established that are consistent with the New Hampshire Water Quality Standards (WQS) which protect swimming and fishing (including shellfishing) uses.

Fecal Coliform bacteria limits in the Draft Permit are the essentially equivalent to the Total Coliform limits in the current permit. Over the last 5 seasons, the Star Island

WWTF reported three violations of the monthly average limits and seven violations of the percent maximum daily limit. The violations mostly occur early in the season. The Draft Permit extends the period of seasonal discharge and it should allow the Permittee to get the WWTF up and running prior to the maximum number of guests arriving on the Island. The facility has also been recently upgraded (See Fact Sheet Section 3.1.1.).

New Hampshire statutes specify criteria for *Enterococci* bacteria in tidal waters, those waters in the vicinity of the outfall are not frequently used for swimming. Since there is swimming on the island during the discharge period, the Draft Permit includes effluent limits for *Enterococci* bacteria.

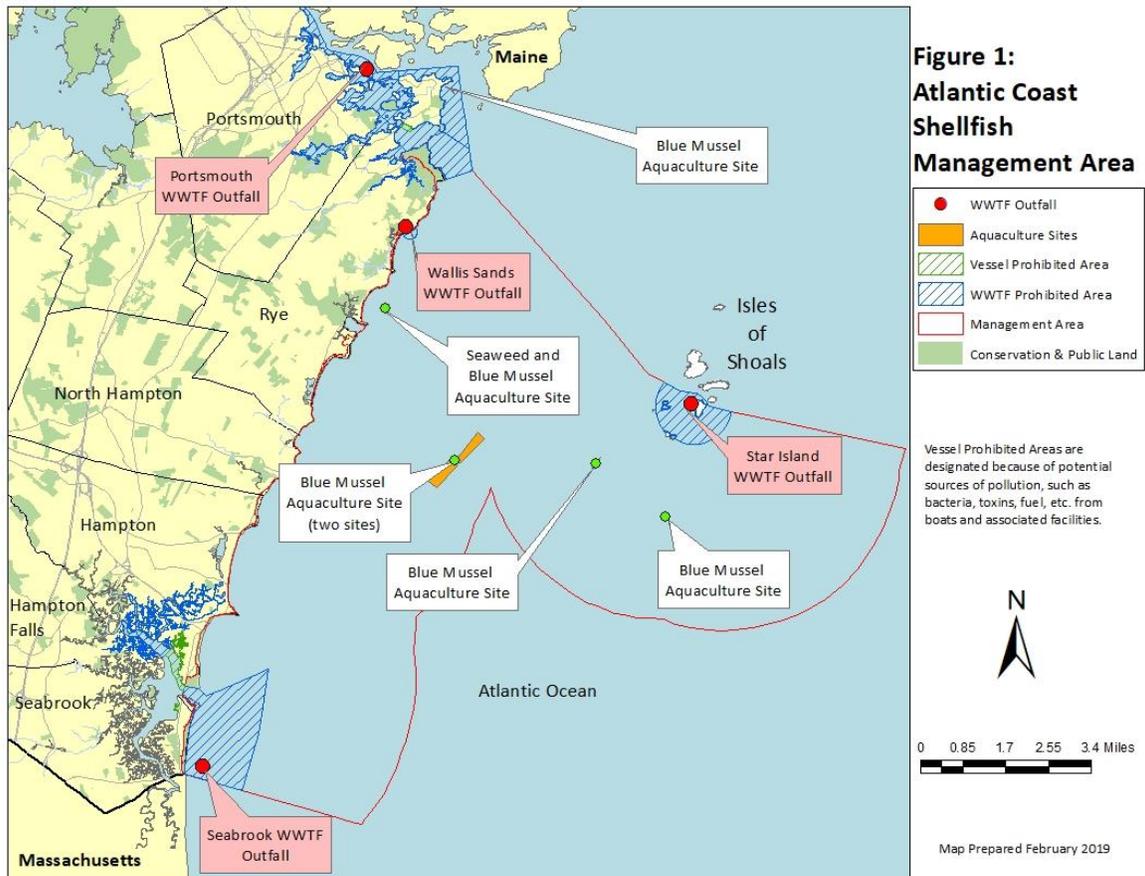
The Draft Permit includes Fecal Coliform bacteria limits instead of Total Coliform bacteria limits at the request of NHDES. The limits are consistent with NH WQS and the FDA requirements in the NSSP.

### **7. Existing or potential recreational and commercial fishing.**

Recreational fin fishing does occur within the area. There has been no evidence of an impact to this activity from this discharge. The stringent effluent limits, effluent monitoring frequency and rapid effluent dispersion will ensure that there are no adverse effects to recreational fishing.

The discharge is located approximately 7 miles offshore in Gulf of Maine (Atlantic Ocean). A closure zone was defined by the NHDES Shellfish Program based on conservative calculations. The FDA and NHDES found that the lack of shellfish resources and harvest potential in the area did not warrant the need for a dye study (Nash, 2020). The closure zone attributable to the Star Island is shown in Figure 1 below. It should be noted that the closure zone is not a reflection of the effluent quality coming from the outfall. Rather, the closure zone is a requirement under FDA for areas that contain a sanitary outfall.

Figure 1



**Figure 1: From 2016-2018 TRIENNIAL SHELLFISH MANAGEMENT AREA UPDATE FOR THE ATLANTIC COAST, GULF OF MAINE, NEW HAMPSHIRE (December 2019, authored by C. Nash and B. Dejadon of NHDES)**

Paralytic Shellfish Poisoning (PSP) or Red Tide can extend over large stretches of the Maine, New Hampshire, and Massachusetts coasts, not just the Star Island area. PSP is a serious illness caused by eating shellfish contaminated with harmful neurotoxins. These neurotoxins are produced by microscopic algae that can bloom in certain environmental conditions. NHDES conducts weekly sampling from April through October of blue mussel tissue at one nearshore site in the Hampton/Seabrook area and one offshore site at Isle of Shoals (Nash, 2020). Additional species and stations are added as needed. NHDES also collects weekly seawater samples and examines cell abundance of selected harmful algal bloom species at four locations, weekly from February through November. Additional stations and sampling runs are added as conditions dictate. “PSP is a recurrent and widespread problem in the Gulf of Maine (GOM)...”<sup>1</sup> PSP outbreaks generally originate in waters further north off the coast of Maine and spread south, so it is not expected that Star Island’s discharges causes or contributes to Red Tide outbreaks in the area.

<sup>1</sup> [https://coastalscience.noaa.gov/data\\_reports/bloom-dynamics-of-the-red-tide-dinoflagellate-alexandrium-fundyense-in-the-gulf-of-maine-a-synthesis-and-progress-towards-a-forecasting-capability/](https://coastalscience.noaa.gov/data_reports/bloom-dynamics-of-the-red-tide-dinoflagellate-alexandrium-fundyense-in-the-gulf-of-maine-a-synthesis-and-progress-towards-a-forecasting-capability/)

Areas around the discharge can be utilized for recreational fishing for species such as lobster, flounder, striped bass, and mackerel. Additionally, commercial fishing for lobster takes place in this area as does gill netting.

The discharge is not expected to have any negative impact to any recreationally or commercially sought fish or lobsters. This is due to the fact that the plant does not discharge any nonconventional pollutants that tend to bioaccumulate and considerable dilution is provided by the ocean water.

#### **8. Any requirements of an approved Coastal Zone Management Plan (CZMP).**

An NPDES permit may not be issued for a discharge to marine or estuarine waters without a review for consistency with the State of New Hampshire Coastal Zone Management Plan. This review has not yet been performed and typically occurs after the permit has been placed on public notice. EPA anticipates that discharges from the Star Island WWTF and the Reverse Osmosis Desalination Facility will be in compliance with the requirements of the New Hampshire Coastal Zone Management Plan consistency review.

#### **9. Other factors relating to the effects of the discharge as may be appropriate.**

Two other effects often associated with treatment plant discharges in New England are enhanced primary productivity and low ambient dissolved oxygen concentrations. Star Island has a very small discharge volume and receives considerable dilution when it mixes with the ocean. Consequently, the potential for nuisance algal blooms or episodes of high primary productivity are low.

The potential for episodes of extremely low dissolved oxygen in the area of Star Island discharge is low for several reasons. The quantity of organic matter discharged in the effluent is low, so the oxygen demand of the effluent will be low. Also, ambient water temperatures are low, which means the solubility of oxygen in this area would be high. These two factors combine to make the occurrence of low dissolved oxygen events unlikely.

#### **10. Marine water quality criteria.**

Based on the initial dilution and the anticipated low concentrations of nonconventional pollutants, this discharge is expected to meet all applicable water quality criteria.

The permit contains a condition that the discharge shall not cause a violation of the water quality standards of the receiving water and that the POTW does not discharge pollutants or combinations of pollutants in toxic amounts.

### **III. Determination of No Unreasonable Degradation to the Marine Environment**

The Star Island Retreat and Conference Center WWTF discharges a small volume of high-quality effluent for only eight months of the year. Near field dilution is very rapid with initial dilution being 95.2 to 1. The treatment facility possesses dechlorination

equipment, thus chlorine residual is not a concern. Further, since the discharge is to the Atlantic Ocean, far-field dilution dispersion is rapid and significant.

The Star Island Retreat and Conference Center RO system's brine discharge has pH and TSS effluent limits. These limits ensure Star Island operates its RO facility in an effective manner. Star Island may not use any chemical additions to the RO process. Additionally, the offshore location and orientation of the RO system's brine discharge will provide for complete and rapid mixing in the Atlantic Ocean. This will prevent a "pooling" effect with elevated salinity in the immediate vicinity of the discharge.

Based upon available information, EPA believes that this discharge will not cause unreasonable degradation of the marine environment.

### References

1. EPA. 2010. Fact Sheet to National Pollutant Discharge Elimination System Permit, NH0101028.
2. EPA. 2010. National Pollutant Discharge Elimination System Permit, NH0101028.
3. EPA. 2010. Clean Water Act Section 403(c) Ocean Discharge Criteria Evaluation for Star Island, Rye, New Hampshire.
4. Star Island Corporation. 2020. National Pollutant Discharge Elimination System Permit application.
5. Discharge Monitoring Reports. May 1, 2015 – October 31, 2019.
6. C. Nash. 2020. New Hampshire Department of Environmental Services. Personal communication.
7. C. Williams. 2020. New Hampshire Department of Environmental Services. Personal communication.
8. Woods Hole Oceanographic Institute. 2019. Northeast PSP, New England Harmful Algal Bloom/Red Tide Information. <https://www.whoi.edu/northeastpsp/>
9. New Hampshire Department of Environmental Services. FAQs – Red Tide. <https://www.wildlife.state.nh.us/marine/redtide.html#faqs>
10. National Marine Fisheries Service – North East Regional Office. List of Endangered or Threatened Species under the Jurisdiction of NOAA Fisheries Service Northeast Region.

NEW HAMPSHIRE DEPARTMENT OF  
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U.S. ENVIRONMENTAL PROTECTION  
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JOINT PUBLIC NOTICE OF A DRAFT NATIONAL POLLUTANT DISCHARGE  
ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE INTO WATERS OF THE  
UNITED STATES UNDER SECTION 402 OF THE CLEAN WATER ACT ("CWA" or THE  
"ACT"), AS AMENDED, AND STATE CERTIFICATION UNDER SECTION 401 OF THE  
ACT, AND ISSUANCE OF A STATE SURFACE WATER PERMIT UNDER NH RSA 485-  
A:13, I(a).

PUBLIC NOTICE PERIOD: March 17, 2021 – April 16, 2021

PERMIT NUMBER: **NH0101028**

PUBLIC NOTICE NUMBER: NH-003-21

NAME AND MAILING ADDRESS OF APPLICANT:

Star Island Corporation  
30 Middle Street  
Portsmouth, New Hampshire 03801

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Star Island Wastewater Treatment Facility  
Star Island (Isles of Shoals)  
Rye, New Hampshire 03870

RECEIVING WATER:

Atlantic Ocean (Class B)

PREPARATION OF THE DRAFT PERMIT AND CWA § 401 CERTIFICATION:

The U.S. Environmental Protection Agency (EPA) and the New Hampshire Department of Environmental Services, Water Division (NHDES-WD) have cooperated in the development of a draft permit for the Star Island Wastewater Treatment Plant, which discharges treated domestic wastewater. Sludge from this facility is dewatered and composted on-site for land application. The effluent limits and permit conditions imposed have been drafted to assure compliance with the CWA and State water quality standards in Chapter 485-A of the New Hampshire Statutes: Water Pollution and Waste Disposal, and the New Hampshire Surface Water Quality Standards, Env-Wq 1700 et seq. In addition, EPA has requested that the State certify the draft permit pursuant to Section 401 of the CWA and NHDES has determined that the draft permit, with any

additional state conditions included in the state certification, assures compliance with Sections 208(e), 301, 302, 303, 306 and 307 of the CWA and with State water quality requirements.

#### INFORMATION ABOUT THE DRAFT PERMIT:

The draft permit and explanatory fact sheet may be obtained at no cost at [http://www.epa.gov/region1/npdes/draft\\_permits\\_listing\\_nh.html](http://www.epa.gov/region1/npdes/draft_permits_listing_nh.html) or by contacting:

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U.S. Environmental Protection Agency – Region 1  
5 Post Office Square, Suite 100 (06-1)  
Boston, MA 02109-3912  
Telephone: (617) 918-1539  
[Barden.michele@epa.gov](mailto:Barden.michele@epa.gov)

The administrative record containing all documents relating to this draft permit including all data submitted by the applicant may be inspected at the EPA Boston office by appointment, Monday through Friday, except holidays and during facility closures due to COVID-19. All data submitted by the applicant are available as part of the administrative record.

#### PUBLIC COMMENT AND REQUEST FOR PUBLIC HEARING:

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 **April 16, 2021**, to the EPA contact and address or email address listed above. Any person, prior to such date, may submit a request in writing to EPA and NHDES for a public hearing to consider this draft permit and CWA § 401 certification. 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 days public notice if the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on the draft permit, the Regional Administrator will respond to all significant comments and make these responses available to the public at EPA's Boston office.

#### FINAL PERMIT DECISION:

Following the close of the comment period, and after a public hearing, if such hearing is held, the Regional Administrator 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.

THOMAS E. O'DONOVAN, DIRECTOR  
WATER DIVISION  
NEW HAMPSHIRE DEPARTMENT OF  
ENVIRONMENTAL SERVICES

KEN MORAFF, DIRECTOR  
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PROTECTION AGENCY – REGION I