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 Wastewater Treatment Facility located at

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

to receiving water named

Atlantic Ocean
(Hydrologic Basin Code 01060003)

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

This permit shall become effective upon signature.

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

This permit supersedes the permit issued on April 23, 2003, and modified on November 5, 2003

This permit consists of 15 pages in Part I including effluent limitations and monitoring requirements; 7 pages of Marine Chronic Toxicity Test Procedure and Protocol; 25 pages of Part II including General Conditions and Definitions; and 72 pages of Sludge Compliance Guidance.

Signed this 1st day of JUNE, 2010

SIGNATURE ON FILE

_____
Stephen S. Perkins, Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency - EPA
New England
Boston, Massachusetts

PART I.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1.a. During the period beginning on the effective date of the permit for the period from May 1 to October 31 of each year the Permittee is authorized to discharge treated waste waters from outfall Serial Number 001 (Star Island Corporation Wastewater Treatment Facility) into the Atlantic Ocean. Such discharges shall be limited and monitored by the Permittee as specified below. Samples taken in compliance with the monitoring requirements specified below shall be taken at the end of all processes, including disinfection and dechlorination or at an alternative representative location, approved by the EPA and NHDES.

Effluent Characteristic	Discharge Limitations						Monitoring Requirement	
	Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type
Flow, MGD				Report		Report	Daily	Calculated[1]
BOD_5	3.8 lbs/day	5.6 lbs/day	6.3 lbs/day	30 mg/l	45 mg/l	50 mg/l	2/Week[2]	24-Hour Composite
TSS	5.6 lbs/day	8.1 lbs/day	8.1 lbs/day	45 mg/l	65 mg/l	65 mg/l	2/Week[2]	24-Hour Composite
pH[3]	6.0-8.0 (See PART I.E.1.a.)						1/Day	Grab
Total Coliform Bacteria[4,5] (Colonies per 100 ml)				70			5/Week	Grab
Total Coliform Percent[4,5]						See No. 5	1/Month	Calculation
Enterococci Bacteria[4,6] (Colonies per 100 ml)				Report		Report	1/Week	Grab
Total Residual[4,7] Chlorine[5] (mg/l)				0.75		1.0	2/Day	Grab

PART I.A.1. (Continued)

1.b. During the period beginning on the effective date of the permit for the period from May 1 to October 31 of each year the Permittee is authorized to discharge untreated brine and filter backwash water from outfall Serial Number 002 (Star Island Corporation Reverse Osmosis Desalination Facility) into the Atlantic Ocean. Such discharges shall be limited and monitored by the Permittee as specified below. Samples taken in compliance with the monitoring requirements specified below shall be taken at the end of all processes or at an alternative representative location, approved by the EPA and NHDES.

Effluent Characteristic	Discharge Limitations						Monitoring Requirement	
	Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type
Flow, MGD				**0.08**		**Report**	**Daily**	**Calculated[1]**
TSS	**20 lbs/day**			**30 mg/l**			**1/Month**	**Grab**
pH[3]	**6.5-8.3 (See PART I.E.1.a.)**						**1/Day**	**Grab**

(Note: See pages 4 through 5 for footnotes.)

FOOTNOTES TO PART I.A.1 ON PAGES 2 through 3

(1) The effluent flow shall be measured (calculated) and recorded on a daily basis.

(2) The influent concentrations of both BOD_5 and TSS shall be monitored twice per month (2/Month) using a 24-Hour Composite sample and the results reported as average monthly values.

(3) State Certification requirement.

(4) Samples for the monitoring of Total Coliform bacteria, enterococci bacteria and Total Residual Chlorine as described in Superscripts (5), (6) and (7) below shall be collected concurrently from the same volume of treated effluent.

(5) Total Coliform shall be tested using an approved method as specified in 40 C.F.R. Part 136, List of Approved Biological Methods for Wastewater and Sewage Sludge.

The Average Monthly value for Total Coliform shall be determined by calculating the geometric mean of the daily sample results. Not more than 10 percent of the samples collected over a monthly period shall exceed a Most Probable Number (MPN) of 230 per 100 ml for a 5-tube decimal dilution test. Furthermore, all Total Coliform data collected must be submitted with the monthly Discharge Monitoring Reports (DMRs).

The permittee is required to report two (2) statistics each month. One is the Total Coliform geometric mean value, reported as the average monthly value; and the other is the "percentage" of collected samples that exceeds an MPN of 230 per 100 milliliters for the 5-tube decimal dilution test, reported as the maximum daily value. The latter statistic will be used to judge compliance with that part of the limit that reads "Not more than 10 percent of the collected samples shall exceed an MPN of 230 per 100 milliliters for a 5-tube decimal dilution test" referenced above.

(6) The Average Monthly value for enterococci shall be determined by calculating the geometric mean of the daily sample results. Enterococci shall be tested using an approved method as specified in 40 C.F.R. Part 136, List of Approved Biological Methods for Wastewater and Sewage Sludge. All enterococci data collected must be submitted with the monthly Discharge Monitoring Reports (DMRs).

(7) Total Residual Chlorine shall be measured using any one of the following three methods listed:

a. Standard Methods [18th or subsequent Edition(s) as approved in 40 CFR Part 136], No. 4500-Cl G.

b. Standard Methods [18th or subsequent Edition(s) as approved in 40 CFR Part 136], No. 4500-Cl F.

c. Standard Methods [18th or subsequent Edition(s) as approved in 40 CFR Part 136], No. 4500-Cl D.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

2. The discharge shall not cause a violation of the water quality standards of the receiving water.

3. The discharge shall be adequately treated to insure that the surface water remains free from pollutants in concentrations or combinations that settle to form harmful deposits, float as foam, debris, scum or other visible pollutants. It shall be adequately treated to insure that the surface waters remain free from pollutants which produce odor, color, taste or turbidity in the receiving waters which is not naturally occurring and would render it unsuitable for its designated uses.

4. The permittee's treatment facility shall maintain a minimum of 85 percent removal for both BOD_5, and TSS. The percent removal shall be based on a comparison of average monthly influent versus effluent concentrations.

5. When the average monthly effluent flow equals or exceeds 80 per cent of the Wastewater Treatment Facility design flow (0.012 Million Gallons per Day (MGD)) for each of three (3) consecutive months, the permittee shall submit to the permitting authorities a projection of loadings up to the time when the design capacity of the treatment facility is reached, and a program for maintaining satisfactory treatment levels consistent with approved water quality management plans. Before the design flow is reached, or whenever treatment necessary to achieve permit limits cannot be assured, the permittee may be required to submit plans for facility improvements.

6. The permittee may not introduce into the treatment works any pollutant(s) which cause Pass Through or Interference with the operation or performance of the treatment works.

The terms "Pass Through" and "Interference" are defined in 40 CFR Section 403.3.

7. The permittee must provide adequate notice to both EPA-New England and the NHDES-WD of the following:

   a. Any substantial change in the volume or character of pollutant being introduced into the treatment works by a source introducing pollutants into the treatment works at the time of issuance of the permit.

   b. For purposes of this paragraph, adequate notice shall include information on:

      (1) the quantity and quality of effluent introduced into the treatment works; and

      (2) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the treatment works.

8. The permittee shall not discharge into the receiving water any pollutant or combination of pollutants in toxic amounts

B. UNAUTHORIZED DISCHARGES AND UNAUTHORIZED RELEASES TO THE TREATMENT WORKS

1. The permit only authorizes discharges in accordance with the terms and conditions of this permit and only from the outfalls listed in Part I A.1.a. and Part I.A.1.b. of this permit. Discharges of wastewater from any other point sources, including sanitary sewer overflows (SSOs) are not authorized by this permit and shall be reported in accordance with Part II, Section D.1.e. (1) of the General Requirements of this permit (Twenty-four hour reporting).

2. The following list of discharges to the treatment works' collection system, directly to the treatment works itself or the reverse osmosis system is strictly prohibited.

   For the treatment works:

   a. Any waters or waste containing, wax, grease, or oils, whether emulsified or not, except grey-water discharges from food-related operations (preparation/serving/clean-up) may contain minimal quantities of oil and grease. Drains servicing any food preparation and/or food clean-

up areas must have properly installed, operated and maintained grease traps;

b. Any floor, house-keeping and/or food-service cleaners except in concentrations and volumes that do not adversely affect the biological treatment works nor pass through its works;

c. Any waters or wastes containing 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:

a. No water additives are allowed in the operation of the reverse osmosis desalination system. Chlorination of the treated potable water is allowed.

C. SLUDGE CONDITIONS

1. The permittee shall comply with all existing federal & state laws and regulations that apply to sewage sludge use and disposal practices and with the CWA Section 405(d) technical standards.

2. The permittee shall comply with the more stringent of either the state (Env-Wq 800) or federal (40 C.F.R. Part 503) requirements.

3. The requirements and technical standards of 40 CFR Part 503 applies to facilities which perform one or more of the following 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. Placement *of* sludge in a municipal solid waste landfill (See 40 CFR Section 503.4).

   d. Sewage sludge incineration in a sludge only incinerator.

4. The 40 CFR Part 503 conditions do not apply to facilities which place sludge within a municipal solid waste landfill. These conditions do not apply to facilities which do not

dispose of sewage sludge during the life of the permit, but rather treat the sludge (lagoons-reed beds), or are otherwise excluded under 40 CFR Section 503.6.

5. The permittee shall use and comply with the attached Sludge Compliance Guidance document to determine appropriate conditions. Appropriate conditions contain the following elements.

   - o General requirements
   - o Pollutant limitations
   - o Operational Standards (pathogen reduction requirements and vector attraction reduction requirements)
   - o Management practices
   - o Record keeping
   - o Monitoring
   - o Reporting

   Depending upon the quality of material produced by a facility all conditions may not apply to the facility.

6. The permittee shall monitor the pollutant concentrations, pathogen reduction and vector attraction reduction for the permittee's chosen sewage sludge use or disposal practices at the following frequency. This frequency is based upon the amount of sewage sludge generated at the facility in dry metric tons per year.

less than 290	1/Year
290 to less than 1,500	1/Quarter
1,500 to less than 15,000	6/Year
15,000 plus	1/Month

7. The permittee shall sample the sewage sludge using the procedures detailed in 40 C.F.R. Section 503.8.

8. The permittee shall submit an annual report containing the information specified in the attached Sludge Compliance Guidance document. Reports are due annually by February 19th. Reports shall be submitted to both addresses (EPA-New England and NHDES-WD) contained in the reporting section of the permit.

D. MONITORING AND REPORTING

Monitoring results shall be summarized for each calendar month and reported on separate Discharge Monitoring Report Form(s) (DMRs)

postmarked no later than the 15th day of the month following the completed reporting period.

Signed and Dated original DMRs and all other reports or notifications required herein or in Part II shall be submitted to the Director at the following address:

U.S. Environmental Protection Agency
Water Technical Unit (SEW)
P.O. Box 8127
Boston, Massachusetts 02114-8127

Duplicate signed copies (original signature) of all written reports or notifications required herein or in Part II shall be submitted to the State at:

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

All verbal reports or notifications required in Parts I and II of this permit shall be made to both EPA and NHDES-WD

E. STATE PERMIT CONDITIONS

1. The permittee shall comply with the following conditions which are included as State Certification requirements.

   a. The pH range limits in Part I.A.1.a and I.A.1.b 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 of the range of 6.0 to 9.0 S.U., which is the federal effluent limitation guideline regulation for pH for secondary treatment and is found in 40 CFR §133.102(c).

   b. 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 or

interfere with the uses assigned to said water by the New Hampshire Legislature (RSA 485-A:12).

c. If chlorine is used for disinfection, a recorder which shall continuously record the chlorine residual prior to dechlorination shall also be provided. Given that Star Island Corporation discharges in daily batches, the intent of the requirement to continuously record the chlorine residual can be met either with a continuous chlorine residual monitor, or by reporting one representative grab sample from each batch prior to dechlorination. All results shall be submitted with the monthly Discharge Monitoring Reports. All results of the chlorine residual analyses shall be maintained by the permittee for a period of no less than five (5) years.

d. The facility 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:

i. Any lapse or interruption of normal operation of the wastewater treatment facility's treatment/disinfection system, or other event that results in discharge of sewage from the treatment facility or sewer infrastructure (pump stations, sewer lines, manholes) that has not undergone full treatment/disinfection as specified in the NPDES permit.

ii. Average Daily flows in excess of the wastewater treatment facility's average daily design flow of 0.015 MGD.

iii. Daily post-disinfection effluent sample result of either 43 fecal coliform/100ml or greater, or 230 total coliform/100ml 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.

iv. Notification shall be made using the program's cell phone as well as the program's pager. 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.

e. In addition to submitting DMRs, monitoring results shall also be summarized for each calendar month and reported on separate Monthly Operating Report Form(s) (MORs) postmarked no later than the 15th day of the month following the completed reporting period.

Signed and dated MORs shall be submitted to:

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

2. This NPDES Discharge Permit is issued by the EPA-New England under Federal and State law. Upon final issuance by the EPA-New England, the NHDES-WD may adopt this permit, including all terms and conditions, as a State permit pursuant to RSA 485-A:13.

Each Agency shall have the independent right to enforce the terms and conditions of this Permit. 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, unless and until each Agency has concurred in writing with such modification, suspension or revocation.

F. SPECIAL CONDITIONS

Whole Effluent Toxicity (WET)

The permittee shall conduct a one-time "pass/fail" Whole Effluent Toxicity (WET) test for the chronic and modified acute toxicity using the saltwater indicator species Inland Silverside minnow (***Menidia beryllina)***, and Sea Urchin (***Arbacia punctulata***) (See Attachment A). Toxicity test samples shall be collected using 24-Hour Composite samples and the test completed during the July-August, 2010 peak discharge period reporting the results with the August Discharge Monitoring Report postmarked by September 15, 2010.

In order to pass the one-time WET test, a “LC50” result of 50% or greater must be obtained. "LC50" is defined as the concentration of wastewater that causes mortality to 50 percent of the test organisms. The "≥50 percent" limit (See Attachment A of Part 1) means that a mixture of effluent and dilution water composed of at least 50 percent effluent shall cause no greater than a 50 percent mortality rate in the test organisms.

This permit shall be modified, or alternatively, revoked and reissued to incorporate additional toxicity testing requirements, including chemical specific limits, if the results of the WET tests indicate the discharge exceeds any State water quality criterion. Results from these toxicity tests are considered "New Information" and the permit may be modified as provided in 40 C.F.R. Section 122.62(a)(2).

pH Limit Adjustment

The permittee may submit a written request to the EPA-New England requesting a change in the permitted pH limit range to be not less restrictive than 6.0 to 9.0 Standard Units found in the applicable National Effluent Limitation Guideline (Secondary Treatment Regulations in 40 CFR Part 133) for this facility. The permittee's written request must include the State's approval letter containing an original signature (no copies). The State's letter shall state that the permittee has demonstrated to the State's satisfaction that as long as discharges to the receiving water from a specific outfall are within a specific numeric pH range the naturally occurring receiving water pH will be unaltered. That letter must specify for each outfall the associated numeric pH limit range. Until written notice is received by certified mail from the EPA-New England indicating the pH limit range has been changed, the permittee is required to meet the permitted pH limit range in the respective permit.

Discharge of Unused Portion of Uncontaminated Storage Waters

Each October, 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 Star Island's treatment works discharges into the Atlantic Ocean. This batch discharge is exempt from all requirements in Part I.A.1. (pages 2 through 3), but is not exempt from other provisions in this permit.

In addition, with each October's Discharge Monitoring Report (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 saltwater 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) discharged, including date(s) and elapsed time (hours and minutes) needed to complete this discharge.

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 completed or 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 identified in 40 C.F.R. §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.

The permittee shall amend and update the BMP Plan within 14 days for any changes at the facility affecting the BMP Plan. Such changes may include, but are not limited to changes in the design, construction, operation, or maintenance of the facility, which have the potential for the discharge of pollutants to the waters of the United States.

The BMP Plan shall include, at a minimum, the following items:

1. 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.

2. Preventative maintenance procedures to ensure that equipment failures are avoided.

3. A description of where the solid material removed from the influent strainers is to be placed, stored, or disposed of as

well as the techniques used to prevent the removed solids from reentering the surface waters from any onsite storage. If the material is to be removed from the site, describe who receives the material and its method of disposal and/or reuse.

4. 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.

5. Documentation of operational and preventive 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 Plan activities shall be kept at the facility for at least three years and provided to EPA or NHDES upon request.

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 shore at spring low tide	110 feet
• Approximate discharge port height (off bottom)	4 inches
• Port inside diameter	3 to 6 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 shore at spring low tide	110 feet

• Discharge port height (off bottom)	5 feet
• Port inside diameter	2-7/16 inches
• Port angle from horizontal	60 degree up from horizontal
• Angle from shoreline	Approximately Perpendicular to Shoreline

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
EPA NEW ENGLAND
OFFICE OF ECOSYSTEM PROTECTION
5 POST OFFICE SQUARE – SUITE 100
BOSTON, MASSACHUSETTS 02109-3012

FACT SHEET

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES

CONTENTS: Thirty-eight (38) pages including Attachments A through D.

NPDES PERMIT NO.: NH0101028

NAME AND MAILING ADDRESS OF APPLICANT:

Star Island Corporation
Morton-Benedict House
30 Middle Street
Portsmouth, New Hampshire 03801

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Facility Location

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

RECEIVING WATER: Atlantic Ocean (Hydrologic Basin Code 01060003)

CLASSIFICATION: Class B

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

The above named applicant, Star Island Corporation (Star Island), has applied to the U.S. Environmental Protection Agency, New England Office (EPA New England) for reissuance of its NPDES permit to discharge treated effluent into the designated receiving water. The facility collects and treats domestic (sanitary) wastewater from the Star Island Conference Center and discharges that treated effluent into the Atlantic Ocean. There are no industrial dischargers to the Star Island wastewater treatment facility.

The treatment works is designed as a 0.015 million gallon per day (MGD) secondary wastewater treatment facility that, in order of

flow, is composed of a sequencing batch reactor followed by disinfection with sodium hypochlorite, and dechlorination with sodium metabisulfte. Discharge occurs each year from June through September when Star Island's conference center is open; however, the current permit is written to authorize discharge for an extra month at the beginning and end of the normal operating period to accommodate the treatment work's start-up and shut-down phases. During the off season (October through May), when on-island staffing is minimal and the main treatment works is off-line, the facility uses its on-site septic tank leach-field arrangement for wastewater disposal. In the discussion above, the start-up and shut-down phases for the treatment works overlaps with the off-season

Star Island's existing ("current") permit was issued on April 23, 2003, and a modification was issued on November 5, 2003. The permit expired on June 30, 2008. The permit has been administratively extended because the applicant filed a complete application for permit reissuance pursuant to 40 Code of Federal Regulations (C.F.R.) Section (§) 122.6.

There are no effluent limitations guidelines for privately owned treatment works treating domestic sewage. In the current permit, EPA concluded, using Best Professional Judgment (BPJ), that Star Island's privately owned treatment works must achieve the technology-based effluent limitations applicable to publicly owned treatment works (POTW) [See 40 C.F.R. § 133.102(a), § 133.102(b)(3) and § 133.105(b)(1) and (2)] because it is identical to a POTW in both equipment and operation. The Agency has continued to apply these effluent limitations, where appropriate, in the draft permit.

The current permit was developed based on a design flow of 0.015 MGD [15,000 gallon per day (gpd)] for this treatment works. This design flow has been carried forward unchanged into the draft permit. That permit authorizes discharge from Outfall 001 (Treatment Works) from May through October each year and that discharge period will be continued into the draft permit.

Additionally, the EPA and NHDES-WD have included permit coverage for the Star Island Corporation Reverse Osmosis Desalination Facility effluent discharge. The desalination facility effluent discharges to the Atlantic Ocean through Outfall 002. Outfall 002’s discharge was covered under the Potable Water Treatment Facility General Permit, but the reissued New Hampshire general permit for potable water treatment facilities excluded reverse osmosis drinking water treatment plants from coverage. The decision to exclude reverse osmosis systems was made by the NHDES. The NHDES reasoned, since reverse osmosis technology is clearly different from the technologies employed at a typical potable

water treatment facility, including coverage for a reserve osmosis facilities in the general permit was not appropriate. Although Star Island's reverse osmosis water treatment still is covered by the general permit, coverage was continued because EPA considered "… due to the relatively benign nature of the RO reject water and for procedural efficiencies…" The discharge from the Star Island drinking water treatment plant is authorized in the draft permit, and coverage under the general permit will be terminated upon issuance of the final permit.

Maps showing the location of the treatment facility, Outfall 001, Outfall 002, and the receiving water are included in Attachment A.

II. Description of Discharge.

A quantitative description of significant effluent parameters based on reapplication and discharge monitoring data during the 2004 through 2008 operating seasons (May through October) are shown in Attachment B. The current permit contains limits for Five-Day Biochemical Oxygen Demand (BOD_5), Total Suspended Solids (TSS), Percent Removal of BOD_5 and TSS, pH, Total Residual Chlorine (TRC), and Total Coliform bacteria; plus a reporting (monitoring-only) requirement for Enterococci bacteria and Effluent Flow. The draft permit contains limits for the same parameters as the current permit.

As described previously, the reverse osmosis facility is not covered in the current NPDES individual permit but is covered in the draft permit. The effluent discharge from this facility will be limited for pH and TSS.

III. Limitations and Conditions.

Effluent limitations, monitoring requirements, and any implementation schedule (if required) are found in PART I of the draft NPDES permit. The basis for each limit and condition is discussed in Section IV of this Fact Sheet

IV. Permit Basis and Explanation of Effluent Limitations Derivation.

A. General Statutory and Regulatory Background

Congress enacted the Clean Water Act ("CWA" or "Act"), "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 specified permitting sections of the Act, one of

which is Section 402. See CWA §§ 301(a), 402(a). Section 402 establishes one of the CWA's principal permitting programs, the National Pollutant Discharge Elimination System or NPDES. Under this section of the Act, EPA may "issue a permit for the discharge of any pollutant, or combination of pollutants" in accordance with certain conditions. See CWA § 402(a). NPDES permits generally contain discharge limitations and establish related monitoring and reporting requirements. See CWA § 402(a)(1)-(2).

Section 301 of the CWA provides for two types of effluent limitations to be included in NPDES permits: "technology-based" limitations and "water quality-based" limitations. See CWA §§ 301, 303, 304(b); 40 CFR Parts 122, 125 and 131. 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 described previously, there are no effluent limits guidelines for privately owned treatment works treating domestic sewage, but EPA has made a BPJ determination to apply the technology based limits for POTWs for this facility because of the similarity between the wastewater being treated and the technology used to treat the wastewater. As a class, 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_5, TSS and pH. See 40 C.F.R. Part 133.

Water quality-based effluent limits, on the other hand, are designed to ensure that state water quality standards are met regardless of the decision made with respect to technology and economics in establishing technology-based limitations. In particular, Section 301(b)(1)(C) requires achievement of, "any more stringent limitation, including those necessary to meet water quality standards...established pursuant to any State law or regulation..." See 40 C.F.R. §§ 122.4(d), 122.44(d)(1) (providing that a permit must contain effluent limits as necessary to protect state water quality standards, "*including State narrative criteria for water quality*") (emphasis added) and 122.44(d)(5) (providing in part that a permit incorporate any more stringent limits required by Section 301(b)(1)(C) of the CWA).

The CWA requires that states develop water quality standards for all water bodies within the state. See CWA § 303. These standards have three parts: (1) one or more "designated uses" for each water body or water body segment in the state; (2) water quality "criteria," consisting of numerical concentration levels and/or narrative statements specifying the amounts of various pollutants that may be present in each water body without

impairing the designated uses of that water body; and (3) an antidegradation provision, focused on protecting high quality waters and protecting and maintaining water quality necessary to protect existing uses. See CWA § 303(c)(2)(A); 40 C.F.R. § 131.12. The limits and conditions of the permit reflect the goal of the CWA and EPA to achieve and then to maintain water quality standards.

The applicable New Hampshire water quality standards can be found in the NH Surface Water Quality Regulations, Chapter Env-Wq 1700 et seq. See generally, Title 50, Water Management and Protection, Chapter 485A, Water Pollution and Waste Disposal Section 485-A. Hereinafter, New Hampshire's Surface Water Quality Regulations are referred to as the NH Standards.

Receiving stream requirements are established according to numeric and narrative standards adopted under state law for each stream classification. When using chemical-specific numeric criteria from the state's water quality standards to develop permit limits, both the acute and chronic aquatic life criteria are used and expressed in terms of maximum allowable in stream pollutant concentrations. Acute aquatic life criteria are generally implemented through maximum daily limits and chronic aquatic life criteria are generally implemented through average monthly limits. Where a State has not established a numeric water quality criterion for a specific chemical pollutant that is present in the effluent in a concentration that causes or has a reasonable potential to cause a violation of narrative water quality standards, the permitting authority must establish effluent limits in one of three ways: 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”; on a “case-by-case basis” using CWA Section 304(a) recommended water quality criteria, supplemented as necessary by other relevant information; or, in certain circumstances, based on an “indicator parameter.” See 40 CFR § 122.44(d)(1)(vi)(A-C).

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). Compliance schedules and deadlines not in accordance with the statutory provisions of the CWA cannot be authorized by an NPDES permit. The regulations governing EPA's NPDES permit program are generally found in 40 CFR Parts 122, 124, 125 and 136.

B. Development of Water Quality-based Limits

The permit must limit any pollutant or pollutant parameter (conventional, non-conventional, toxic and whole effluent toxicity) that is or may be discharged at a level that causes or has "reasonable potential" to cause or contribute to an excursion above any water quality standard, including narrative water quality criteria. See 40 CFR §122.44(d)(1). An excursion occurs if the projected or actual in-stream concentration exceeds the applicable criterion.

Reasonable Potential

In determining reasonable potential, EPA considers: (1) existing controls on point and nonpoint sources of pollution; (2) pollutant concentration and variability in the effluent and receiving water as determined from permit application, monthly DMRs and State and Federal water quality reports; (3) sensitivity of the species to toxicity testing; (4) statistical approach outlined in *Technical Support Document for Water Quality-based Toxics Controls,* March 1991, EPA/505/2-90-001 in Section 3; and, where appropriate, (5) dilution of the effluent in the receiving water. In accordance with New Hampshire regulations (RSA 485-A:8,VI, Env-Wq 1705.02), available dilution for rivers and streams is based on a known or estimated value of the lowest average flow which occurs for seven (7) consecutive days with a recurrence interval of once in ten (10) years (7Q10) for aquatic life and human health criteria for non-carcinogens, or the long-term harmonic mean flow for human health (carcinogens only) in the receiving water at the point just upstream of the outfall. Available dilution for tidal waters is based on conditions that result in dilution that is exceeded 99 percent of the time. Furthermore, 10 percent (%) of the receiving water's assimilative capacity is held in reserve for future needs in accordance with New Hampshire's Surface Water Quality Regulations Env-Wq 1705.01.

Anti-Backsliding

Section 402(o) of the CWA generally provides that the effluent limitations of a renewed, reissued, or modified permit must be at least as stringent as the comparable effluent limitations in the previous permit. EPA has also promulgated anti-backsliding regulations, which are found at 40 CFR § 122.44(l). Unless applicable anti-backsliding requirements are met, the limits and conditions in the reissued permit must be at least as stringent as those in the previous permit.

State Certification

Section 401(a)(1) of the CWA requires all NPDES permit applicants

to obtain a certification from the appropriate state agency stating that the permit will comply with all applicable federal effluent limitations and state water quality standards. See CWA § 401(a)(1). The regulatory provisions pertaining to state certification provide that EPA may not issue a permit until a certification is granted or waived by the state in which the discharge originates. See 40 C.F.R. § 124.53(a). The regulations further provide that, "when certification is required....no final permit shall be issued...unless the final permit incorporates the requirements specified in the certification under § 124.53(e)." See 40 CFR. § 124.55(a)(2). Section 124.53(e) in turn provides that the State certification shall include "any conditions more stringent than those in the draft permit which the State finds necessary" to assure compliance with, among other things, state water quality standards, See 40 CFR. § 124.53(e)(2), and shall also include, "[a] statement of the extent to which each condition of the draft permit can be made less stringent without violating the requirements of State law, including water quality standards," See 40 C.F.R.§ 124.53(e)(3).

However, when EPA reasonably believes that a state water quality standard requires a more stringent permit limitation than that reflected in a state certification, it has an independent duty under CWA § 301(b)(1)(C) to include more stringent permit limitations. See 40 C.F.R. §§ 122.44(d)(1) and (5). 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." See 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 limits based upon water quality standards and state requirements are contained in 40 CFR § 122.4(d) and 40 CFR § 122.44(d).

C. Repeated Violations

As can be seen in the following table, multiple violations of the effluent parameters limited in Star Island WTF's effluent have occurred. In a December 12, 2008 letter to the Star Island Corporation the Operations Section of NHDES's Wastewater Engineering Bureau expressed concern that the number of violations have, "... become a serious concern of the regulating agency."

Year	Month	Violation				
		BOD_5	TSS	pH	TRC	TC

2005	June			1		
	July		16			2
	August	1	21		1	
	September				2	
2006	June			4	3	1
	July	15	13	3		1
	August	8	2	2	1	2
	September	12	14	3	3	2
2007	June					
	July	4		1		
	August	12		1	1	
	September	9	8		1	
2008	June			1		
	July	3	6		1	1
	August				1	
	September					

It is recognized the Star Island WTF experiences some unique operational situations that other municipal wastewater treatment facilities do not. The Star Island WTF does not operate year round; the WTF is in use only from June to September. After startup of the WTF some weeks are required to induce and then stabilize the biological treatment of the wastewater. However, a few months after achieving that stabilization the WTF ceases operation for the season with the entire startup process beginning anew the following spring. Another challenge is the influent to the WTF is more saline than a typical municipal wastewater treatment plant since Star Island uses salt water for flushing toilets. The high saline concentrations make it more difficult to maintain consistent biological treatment.

Star Island, though contending with these operation challenges, still must meet the WTF effluent limitations in order to continue to discharge treated effluent to the surface waters of the United States. EPA and NHDES consider the effluent limitations contained in the draft permit sufficient to yield data which are representative of the facility’s discharge in accordance with 40 C.F.R. § 122.48, and to determine if Star Island is making progress or not in operating the WTF more effectively. At this juncture EPA and NHDES-WD consider the effluent parameters sampled and the sampling frequency of those parameters remain appropriate to accurately monitor the operation of the Star Island WTF.

D. Flow

The draft permit requires the facility to report average monthly and maximum daily flow. Federal regulations at 40 C.F.R. §122.45(b)(i) require that effluent limits for POTWs be calculated based on design flow of the facility. The facility is not a POTW, but treats sanitary wastewater and is similar to a POTW. EPA has made a BPJ determination that the facility's design flow will be used for calculation of effluent mass limits. The design flow rate of this treatment facility is 0.015 MGD. If the monthly average flow exceeds 80 per cent of the design flow; i.e., 0.012 MGD, for period of three consecutive months, the permittee must notify EPA and NHDES-WD, and implement a program for maintaining satisfactory treatment levels.

E. Conventional Pollutants

Five-Day Biological Oxygen Demand and Total Suspended Solids

Effluent limitations in the draft permit for Five-Day Biological Oxygen Demand (BOD_5), Total Suspended Solids (TSS) concentrations (average monthly, average weekly and maximum daily), mass loadings (average monthly, average weekly and maximum daily), and percent removal for BOD_5 and TSS, are all the same as the limits in the current permit, so are consistent with antibacksliding requirements found in 40 C.F.R. § 122.44(1). See Attachment C for the calculation the mass-based limits for BOD_5 and TSS.

In the current permit EPA concluded, based on a Best Professional Judgment (BPJ) determination, that even though Star Island's privately owned treatment works is not covered by any published technology-based guidelines, it is identical to a Publicly Owned Treatment Works (POTW) in both equipment and operation; therefore, technology requirements applicable to POTWs in 40 C.F.R. 133 apply.

The pilot study conducted prior to the design and construction of the existing WTF showed that BOD_5 effluent concentration and percent removal met the secondary treatment standards specified in 40 C.F.R. § 133.102(a), but TSS effluent concentration and percent removal only met the less stringent "equivalent to secondary treatment" specified in 40 C.F.R. § 133.105(b). The 1996 permit was based on secondary treatment for BOD_5, and equivalent to secondary for TSS.

During reissuance of the current permit in 2003, EPA completed an analysis of demonstrated plant performance and determined that the WTF was capable of meeting secondary treatment standards for TSS percent removal (85% removal), and therefore the TSS percent

removal limit was increased from 65% removal to 85% removal. In summary for the current permit, the TSS percent removal limit, the BOD_5 concentration limits and the BOD_5 percent removal limit in the current permit are based on secondary treatment. See 40 C.F.R. § 133.102(a) and (b). The TSS concentration limits are based on "equivalent to secondary treatment." See 40 C.F.R. § 133.105(b)(1) and (2). The EPA has determined that this determination will also apply for this permit development.

pH Limits

The New Hampshire standards require that the pH of Class B waters shall be 6.5 to 8.0 Standard Units(S.U.), unless due to natural causes [Env-Wq 1703.18(b)]. The pH range limits in the current permit are 6.0 to 8.0 S.U., and this limit range has been included in the draft permit.

Given the high ambient pH of the receiving water (approximately 8.0 S.U.), and the high degree of mixing of effluent in the receiving water (dilution factor of 100), EPA and NHDES have determined that the lower range limit of 6.0 S.U. is appropriate because it will not cause or contribute to pH violations in the receiving water. Accordingly, the pH range limits in the draft permit are 6.0 – 8.0 Standard Units.

As described above, the pH limits in the draft permit are 6.0 – 8.0 Standard Units, however, State Permit Conditions (PART I.E.1.a.) allows for a change in pH limit(s) under certain conditions. A change would be considered if the applicant can demonstrate to the satisfaction of NHDES that the receiving water pH standard will be protected when the discharge is outside the permitted range. To apply for such a change, the applicant or NHDES must request (in writing) that the permit limits be modified by EPA to incorporate the results of the demonstration.

Anticipating the situation where NHDES grants a formal approval changing the pH limit(s) to outside the 6.0 to 8.0 Standard Units (S.U.), EPA has added a provision to this draft permit. That provision will allow EPA to modify the pH limit(s) using a certified letter approach. This change will be allowed as long as it can be demonstrated that the revised pH limit range does not alter the naturally occurring receiving water pH. However, the pH limit range cannot be less restrictive than 6.0 - 9.0 S.U. Reference Part I.E.1. SPECIAL CONDITIONS in the draft permit.

If the State approves results from a pH demonstration study, this permit's pH limit range can be relaxed in accordance with 40 CFR §122.44(l)(2)(i)(B) because it will be based on new information not available at the time of this permit's issuance. This new

information includes results from the pH demonstration study that justifies the application of a less stringent effluent limitation. EPA anticipates that the limit determined from the demonstration study as approved by the NHDES will satisfy all effluent requirements for this discharge category and will comply with NH Standards amended on May 21, 2008.

Bacteria Limits

Total Coliform Bacteria. Total Coliform bacteria limits in the draft permit are the same as the limits in the current permit, so are consistent with antibacksliding requirements found in 40 C.F.R. § 122.44(1). Total Coliform limits are used for the protection of growing or taking of shellfish for human consumption, which is a designated for the waters in the vicinity of the facility's discharge. Two New Hampshire statutes (NH RSA 487:34 and 485-A:8 ,V.) specify water quality criteria for shellfish areas. NH RSA 485-A:8, V requires that tidal waters used for growing or taking of shellfish for human consumption shall be in accordance with the criteria recommended under the National Shellfish Program Manual of Operation, United States Department of Food and Drug Administration(FDA). Additionally, NH RSA 487:34 requires classification of shellfish waters in accordance with the FDA National Shellfish Sanitation Program (NSSP). The NSSP Guide includes standards for shellfish growing areas based on total coliform or fecal coliform. For total coliform, the geometric mean MPN shall not exceed 70 per 100 ml, and not more than 10% of the samples shall exceed an MPN of 230 MPN per 100 ml for a 5-tube, decimal dilution test.

The total coliform criteria have been incorporated as end of pipe effluent limitations (i.e no dilution) in accordance with the NH Standards (see NH Code of Administrative Rules, Part Env-Wq 1703.06, which requires that bacteria criteria be applied at the end of a wastewater treatment facility's discharge pipe). Compliance with the average monthly bacteria limit is determined by calculating the geometric mean. Compliance with the maximum daily limit is determined based on the percent of sampling results that exceed 230 coliform per 100 ml.

Enterococci Bacteria. New Hampshire's State statutes specifies criteria for Enterococci bacteria in "Tidal waters utilized for swimming purposes." See NH RSA 485-A:8,V. Although Star Island is surrounded by tidal waters, those waters in the vicinity of the outfall are not frequently used for swimming. In a Statement of Basis developed in September 2003 to modify the present permit, it was stated, "Contrary to previous opinion, DES is not applying the Enterococci bacteria limits for tidal waters utilized for swimming purposes in this situation (found in RSA Title 50 Chapter 485-A:8,V) because we now believe that these Enterococci bacteria

limits were intended for tidal waters with higher swimming use than is the case with Star Island." The present Star Island permit was modified on November 5, 2003. That modification changed the Enterococci bacteria limits to a "Report" only with a sampling frequency of once per week.

The draft permit maintains the "Report" only requirement for draft permit. Collecting bacteria data from the treatments plant's effluent will allow EPA and NHDES-WD to evaluate potential Enterococci impacts on the receiving water.

F. Nonconventional and Toxic Pollutants

Water quality based limits for specific toxic pollutants such as ammonia, metals, etc. are determined from numeric chemical specific criteria derived from extensive scientific studies. The EPA has summarized and published specific toxic pollutants and their associated toxicity criteria in Quality Criteria for Water, 1986, EPA 440/5-86-001 as amended, commonly known as the federal "Gold Book." Each criterion consists of two values; acute aquatic-life criteria to protect against short-term effects, such as death, and chronic aquatic-life criteria to protect against long-term effects, such as poor reproduction or impaired growth. New Hampshire adopted these Gold Book criteria, with certain exceptions and included them as part of the State's Water Quality Regulations adopted on December 3, 1999. EPA uses these pollutant specific criteria along with available dilution in the receiving water to determine a specific pollutant's draft permit limit. Available dilution is discussed in the next subheading.

Available Dilution

The current permit made use of the dilution calculations completed during development of the permit issued in November 18, 1996. The available dilution (also referred to as dilution factor) of the plant's discharge in the receiving water was calculated to be 100. The dilution factor was calculated using: (1) plant's design flow of 0.015 MGD; (2) Outfall 001's configuration of single port design; (3) ambient monitoring data of the receiving water (Atlantic Ocean) in the vicinity of the outfall; (4) Cornell Mixing Zone Expert System (CORMIX), version 3.1, a hydrodynamic model; and (5) NHDES Policy on Dilution Factors for Marine/Estuarine Discharges. (NOTE: The Star Island WTF treated effluent is discharged through a submerged single port outfall located just off the ocean bottom at a depth of approximately 21 feet (at spring low tide) and at a horizontal distance perpendicular to shore of at least 110 feet at spring low tide. Nominal ambient velocities of the ocean water were found running parallel to the shore.)

Since the issuance of the present permit, there has been no change in Star Island WTF's design flow or an alteration of Outfall 001's design or location. EPA and NHDES-WD have determined that it is appropriate to continue to use the dilution factor of 100 to calculate effluent limits for the draft permit.

The facility removes the submerged portions of the WTF and reverse osmosis facility outfall pipes each autumn and reinstalls them each spring. A special condition has been included in the draft permit, which requires the outfall pipes to be installed according to the original outfall design. The criteria specified in the special condition reflect the outfall design criteria that were used to complete the CORMIX mixing zone analyses for the outfall pipes, and are the basis for the dilution assumptions in the draft permit.

Total Residual Chlorine

The average monthly and maximum daily limitations for Total Residual Chlorine (TRC) of 0.75 and 1.0 mg/l, respectively, in the draft permit are based upon limitations in the existing permit and so are consistent with antibacksliding requirements found in 40 C.F.R. § 122.44(1). See Attachment C for the calculation of TRC limits

G. Whole Effluent Toxicity

EPA's *Technical Support Document for Water Quality-based Toxics Control, EPA/2-90-901 March 1991,* recommends using an "integrated strategy" containing both pollutant (chemical) specific approaches and whole effluent (biological) toxicity approaches to control toxic pollutants in effluent discharges from entering the nation's waterways. EPA-New England adopted this "integrated strategy" on July 1, 1991, for use in permit development and issuance. These approaches are designed to protect aquatic life and human health. Pollutant specific approaches such as those in the Gold Book and State regulations address individual chemicals, whereas, Whole Effluent Toxicity (WET) approaches evaluate interactions between pollutants, thus rendering an "overall" or "aggregate" toxicity assessment of the effluent. Furthermore, WET measures the additive and/or antagonistic effects of individual chemical pollutants which pollutant specific approaches do not, thus the need for both approaches. In addition, the presence of an unknown toxic pollutant can be discovered and addressed through this process.

New Hampshire law states 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 lifer...." See NH RSA 485-A:8, VI and Env-Wq 1703.21(a)(1)). The federal NPDES regulations at 40 C.F.R.

§122.44(d)(l)(v) require whole effluent toxicity limits in a permit when a discharge has a "reasonable potential" to cause or contribute to an excursion above the State's narrative criterion for toxicity.

The EPA and NHDES-WD had determined for the present permit that the Star Island WTF presented no reasonable potential for this discharge to exceed the no toxic provision in the State's regulations [Env-Wq 1730.21(a)(1)]. That conclusion was based on the facts that; (1) this is a low-volume and non-continuous (seasonal) discharge of treated sanitary wastewater from late May through early October; (2) unlike most treatment works, Star Island does not receive any industrial wastes given the facility's use as a conference center; (3) floor, house-keeping and food-service cleaners as well as photo processing/developing chemicals have been prohibited from discharge into the treatment works; (4) the WET test results from the previous permit demonstrated no acute toxicity (LC50 of >100%) and no reasonable potential to cause chronic toxicity (C-NEOC of 50% is not toxic at a dilution factor of 100); and (5) this facility has an available dilution of 100 to 1 with the receiving water.

EPA-New England and the NHDES-WD have continued their position in the draft permit that the Star Island WTF effluent discharge continues to present no reasonable potential to exceed the no toxic provision in the State's regulations. The EPA and the NHDES-WD have revised how the WET testing requirement is administered. In the present permit there is an annual WET test requirement. Star Island was to conduct a one-time “pass/fail” marine chronic (and modified acute) WET test. If Star Island passed that WET test, the annual WET test requirement was waived.

The draft permit has been constructed to require just a one-time pass/fail WET test. The pass/fail test requires a marine chronic (and modified acute) WET test using the saltwater indicator species Sea Urchin (Arbacia punctulata) and Inland Silverside (Menidia beryllina). Toxicity test samples shall be collected and tests completed during the July-August peak discharge period reporting the results with the August Discharge Monitoring Report.

If the results of the pass/fail WET test indicates that the discharge exceeds an LC50 of 50% (Note: effluent concentration which means 50% or greater of the test organisms must survive in an effluent sample composed of 50 percent (or greater) effluent, the remainder being dilution water, for the test to indicate no toxicity in the effluent.), or exhibits significant toxicity for survival and growth, then the permit shall be modified, or alternatively, revoked and reissued to incorporate additional toxicity testing requirements, including chemical specific limits.

H. Star Island Corporation Reverse Osmosis Desalination Facility

Star Island Conference center produces a portion of their potable water through reverse osmosis treatment of seawater. A pressurized seawater system is employed at the Star Island Conference Center to flush toilets and fire suppression. Seawater is also drawn from this system for the reverse osmosis facility.

Referring to Attachment D, after passing through two inline strainers that remove larger solids the systems pressure is increased and the 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 gal that is 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. Brine from the membranes (concentrated seawater that does not pass through the membranes) is also discharged through Outfall 002.

Potable water from the membranes flows to a diverter valve where a salinity sensor gages the water's salt concentration. Potable water with a salinity greater than 500 parts per million is rejected into the brine flow; potable water with salinity below that concentration is chlorinated and sent to clearwells for storage and distribution.

The Star Island Conference Center reverse osmosis system has a potable water production design flow rate of 0.08 MGD. The annual average production rates are 0.02 MGD; with maximum flow rates reaching 0.04 MGD. In July 2009 at the direction of the EPA, the Star Island Conference Center sampled the brine discharge of the reverse osmosis system to categorize its composition. The pH of the brine discharge was 8.1 S.U.; the TSS was 0.0 mg/l; and the NH_3 was measure at <0.05 mg/l.

The draft permit includes pH and TSS effluent limits applicable to Outfall 002. Star Island last summer demonstrated to the satisfaction of NHDES-WD that the receiving water pH standard will be protected when the discharge is outside of the range specified in the water quality criteria. In the case of Star Islands reverse osmosis system the pH of the influent seawater occasionally exceeds the State's maximum water quality limit of 8.0 S.U. Accordingly, the draft permit's pH range to reflect seawater pH that occasionally exceeds the State's standards, will 6.5 – 8.3 S.U.in the draft permit.

Although there was no TSS measured in Star Island's July 2009 sampling of the reverse osmosis brine discharge, EPA and NHDES-WD have established limitations and monitoring conditions on this

discharge. An average monthly limitations of 30 mg/l has been established in accordance with a BPJ determination in accordance with 40 C.F.R. § 125.3 to make the average monthly TSS limit 30 mg/l. The 30 mg/l is taken from the New Hampshire NPDES General Permit for discharges from potable water treatment facilities. Periodic monitoring of TSS levels will be the means to determine if Star Island operates its reverse osmosis facility in an effective manner. EPA and NHDES-WD have also made a requirement in the draft permit that Star Island may not use any chemical additions to the reverse osmosis process.

I. Sludge

Section 405(d) of the ACT requires that EPA develop technical standards regulating the use and disposal of sewage sludge. These regulations were signed on November 25, 1992, published in the Federal Register on February 19, 1993, and became effective on March 22, 1993. Domestic sludges which are land applied, disposed of in a surface disposal unit, or fired in a sewage sludge incinerator are subject to Part 503 technical and to State Env-Ws 800 standards. Part 503 regulations have a self-implementing provision; however, the ACT requires implementation through permits. Domestic sludges which are disposed of in municipal solid waste landfills are in compliance with Part 503 regulations provided the sludge meets the quality criteria of the landfill and the landfill meets the requirements of 40 CFR Part 258.

The draft permit has been conditioned to ensure that sewage sludge use and disposal practices meet the ACT Section 405(d) Technical Standards. In addition, EPA-New England has included with the draft permit a 72-page document entitled "EPA Region I NPDES Permit Sludge Compliance Guidance" for use by the permittee in determining their appropriate sludge conditions for their chosen method of sewage sludge use or disposal practices.

The permittee is also required to submit an annual report to EPA-New England and NHDES-WD, on February 19th each year, containing the information specified in the Sludge Compliance Guidance document for their chosen method of sewage sludge use or disposal practices.

Accumulated sludge in Star Island's sequencing batch reactor is removed periodically (once each operating season at a minimum) and processed on site (lime addition and dewatering) prior to shipment to a secure landfill for ultimate disposal. In the past, Star Island's sludge has been land filled at the Turnkey Landfill in Rochester, New Hampshire. According to Star Island's recent NPDES permit application, they generate annually about three dry metric tons of sludge.

J. Uncontaminated Stored Water Discharge

Each summer season (June through September), the permittee utilizes on-site storage of rainwater, drinking water and saltwater for various operational needs at its Conference Center, such as saltwater for flushing toilets. Due to the island's isolated location off the coast of New Hampshire, and the lack of an adequate ground-water supply, these types of water storage are a necessity. Furthermore, since the Conference Center is closed from late fall through early spring a one-time batch discharge of the remaining uncontaminated storage waters is needed each year in early fall to avoid using excessive quantities of antifreeze in winterizing efforts. These stored waters are considered "uncontaminated," since there has been no chemical additions made or any on-site treatment applied to this stored water. It is inappropriate and unnecessary, from an operational perspective, to pass them through the biological treatment system. Therefore, during each October, the draft permit will allow the permittee to bypass its secondary biological treatment system (physical, biological and chemical components) with a one-time batch discharge of the unused portion of storage waters through Outfall 001. Because these waters are considered uncontaminated and will pass through the outfall's diffuser, they will obtain significant initial dilution with the receiving water (Atlantic Ocean), thus obviating the need for any monitoring. A description of the various water types allowed bypassing of Star Island's treatment works are shown below in the following table.

Description of the Various Water Storage Facilities at the Conference Center

Water Type and Source	Storage Medium	Storage Volume (gallons)	Use(s)
Rain Water from Conference Center Roof/Water from City of Portsmouth	One open rubber-lined tank in basement of Conference Center	79,000	Showers and Wash Water for General Cleaning
potable Water from Reverse Osmosis System	Five closed plastic tanks at Conference Center	1500(3) 1750(2)	Drinking, Restaurant Use, Showers, and Wash Basins

Ocean Water from Around Island	Two open rubber-lined tanks in attic of Conference Center	2,500	Flushing Toilets

K. Ocean Discharge Criteria Evaluation

Outfall 001

EPA-New England, for the draft permit development, performed an Ocean Discharge Criteria Evaluation for Star Island's Wastewater Treatment Facility and made a determination of no unreasonable degradation to the marine environment for that permitted level of discharge. This determination was made following regulations described in 40 C.F.R. Part 125, Subpart M-Ocean Discharge Criteria and in 45 Federal Register, 65942. The determination's summary finding follows:

"The Star Island Conference Center wastewater treatment plant discharges a small volume of high quality effluent for only 4 or 5 months a year. Near-field dilution is very rapid with initial dilution being in excess of 100 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 facility has a seasonal (non-continuous) discharge of low volume, high quality, treated sanitary waste that occurs only from June through to late September. See Attachment B for tabulation of effluent data. In addition, unlike most treatment works, the Star Island WTF does not receive any industrial wastes for treatment. Therefore, EPA-New England believes the effluent discharge from this facility presents no degradation of the surrounding marine environment.

Outfall 002

Star Island's reverse osmosis system is presently regulated by a Potable Water Treatment Facility General Permit. For this permit reissuance, EPA has again reviewed this ocean discharge to comply with regulations described in 40 C.F.R. Part 125, Subpart M-Ocean Discharge Criteria and in 45 Federal Register, 65942. Such a review is required when an ocean discharge is to be covered by an individual NPDES permit. EPA has determined that the reverse osmosis system's effluent discharge should be regulated through Star Island's individual NPDES permit. An individual permit

provides a more effective means for regulating the various components of the reverse system's effluent discharge. The draft permit also has requirements for the location and orientation of the reverse osmosis system's brine discharge (Outfall 002). The determination's summary finding follows:

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

The Star Island Conference Center reverse osmosis system has a potable water very low production rate that averages 0.02 MGD; with maximum flow rates reaching 0.04 MGD. Depending on the membrane efficiency of the reverse osmosis unit, on average, discharges 0.024 – 0.047 MGD of brine to the ocean from the unit. Again, depending on membrane efficiency the brine will have a salinity ranging from approximately 50 – 60 g/L. Analysis of the brine categorize its composition with a pH of 8.1 S.U.; a TSS concentration of 0.0 mg/l; and NH_3 concentration of <0.05 mg/l.

In the draft permit Outfall 002's effluent discharge has pH and TSS effluent limits. A 30 mg/l TSS has been imposed on the effluent discharge from Outfall 002. This limit will ensure Star Island operates its reverse osmosis facility in an effective manner. EPA and NHDES-WD have also included a draft permit requirement that Star Island may not use any chemical additions to the reverse osmosis process. Finally, EPA and NHDES-WD have specified the offshore location and orientation of Outfall 002. These requirements will provide for complete and rapid mixing with the ocean water of Outfall 002's brine discharge; preventing a "pooling" of effluent with elevated salinity in the immediate vicinity of Outfall 002.

The reverse osmosis system discharges a small volume of filter back wash and brine for only 4 or 5 months a year. The location and orientation of Outfall 002 provides very rapid dilution of the discharge's effluent. Since this discharge is to the Atlantic Ocean, dispersion is rapid and far field dilution is significant. Based on these factors, EPA and NHDES-WD believe that this discharge is not degrading the marine environment.

L. Essential Fish Habitat

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens

Fishery Conservation and Management Act (16 U.S.C. § 1801 et seq. (1998)), EPA is required to consult with the National Marine Fisheries Service (NMFS) if EPA's action or proposed actions that it funds, permits, or undertakes, "may adversely impact any essential fish habitat." See 16 U.S.C. § 1855(b). The Amendments broadly define "essential fish habit" (EFH) as: "waters and substrate necessary to fish for spawning breeding, feeding, or growth to maturity." See 16 U.S.C. § 1802(10). Adversely impact means any impact which reduces the quality and/or quantity of EFH. See 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), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions. Id.

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.

Description of Proposed Action

The wastewater treatment works for the Star Island Conference Center is designed as a 0.015 MGD secondary wastewater treatment facility that is composed of a sequencing batch reactor followed by disinfection with sodium hypochlorite and dechlorination with sodium metabisulfite. The current permit was developed based on that design flow and it has been carried forward unchanged into the draft permit. Discharge occurs each year from June through September when Star Island's Conference Center is open; however, the current permit is written to authorize discharge for an extra month on each end to accommodate the treatment work's start-up and shut-down phase. Accordingly, the current permit authorizes discharge from the treatment works to Outfall 001 from May through October each *ye*ar and that same discharge period will be continued into the draft permit.

Additionally, the Star Island Conference Center produces a portion of their potable water through reverse osmosis treatment of seawater. A pressurized seawater system is employed at the Star Island Conference Center to flush toilets and fire suppression. Seawater is also drawn from this system for the reverse osmosis facility. After passing a series of strainers/filters, the seawater is pressurized and enters a set of reverse osmosis membranes. Potable water produced from the membranes is chlorinated and sent to clearwells for storage and distribution. Brine from the membranes (concentrated seawater that does not pass through the membranes) is also discharged through Outfall 002.

The Star Island Conference Center reverse osmosis system has a potable water production design flow rate of 0.08 MGD. The annual average production rates are 0.02 MGD; with maximum flow rates reaching 0.04 MGD. In July 2009 at the direction of the EPA, the Star Island Conference Center sampled the brine discharge of the reverse osmosis system to categorize its composition. The pH of the brine discharge was 8.1 S.U.; the TSS was 0.0 mg/l; and the NH_3 was measure at <0.05 mg/l.

Star Island's reverse osmosis system is presently regulated by a Potable Water Treatment Facility General Permit. For this permit reissuance, the reverse osmosis system's effluent discharge will be regulated through Star Island's individual NPDES permit. An individual permit provides a more effective means for regulating the various components of the reverse system's effluent discharge. The draft permit also has requirements for the location and orientation of the reverse osmosis system's brine discharge (Outfall 002). The withdrawal of raw surface water for the purpose of potable water production is not regulated under the Clean Water Act.

In the draft permit Outfall 002's effluent discharge has pH and TSS effluent limits. A 30 mg/l has been imposed on the effluent discharge from Outfall 002. This limit will ensure Star Island operates its reverse osmosis facility in an effective manner. EPA and NHDES-WD have also included a draft permit requirement that Star Island may not use any chemical additions to the reverse osmosis process. Finally, EPA and NHDES-WD have specified the offshore location and orientation of Outfall 002. These requirements will provide for complete and rapid mixing with the ocean water of Outfall 002's brine discharge; preventing a "pooling" of effluent with elevated salinity in the immediate vicinity of Outfall 002.

EFH Species

The following lists of 17 managed species are believed present during one or more life stages within EFH Area 1 which encompasses the existing discharge site.

Common Name	Scientific Name
Atlantic Salmon	Salmo salar
American plaice	Hippoglossoides platessoides
Atlantic cod	Gadus morhua
Atlantic halibut	Hippoglossus hippoglossus
Atlantic sea herring	Clupea harengus
Atlantic mackerel	Scomber scombrus

Bluefin tuna	Thunnus thynnus
Atlantic sea scallop	Placopecten magellanicus
Haddock	Melanogrammus aeglefinus
Pollock	Pollachius virens
Red hake	Urophycis chuss
Whiting	Merluccius bilinearis
Windowpane flounder	Scophthalmus aquosus
Winter flounder	Pseudopleuronectes americanus
Yellowtail flounder	Pleuronectes ferruginea
Bluefish	Pomatomus saltatrix
White hake	Urophycis tenuis

Analysis of Effects and EPA-New England's Opinion of Probable Impacts

No "habitat areas of particular concern", as defined under §600.815(a)(9) of the Magnuson-Stevens Act, have been designated for this site. Although EFH has been designated for this general location, EPA-New England has concluded, as was concluded for the development of the present permit, that impacts to EFH from this discharge have been minimized for the following reasons:

- This is a reissuance of an existing permit with no increase in the authorized sanitary discharge of pollutants as compared to the existing permit;
- The permit will prohibit violations of State water quality standards in the receiving water;
- The facility has a seasonal (non-continuous) discharge of low volume, high quality, treated domestic wastewater (grey water and sanitary) from the Conference Center that occurs only from June through September. For example, on an average monthly basis, 0.0106 MGD of treated effluent with a five-day BOD_5 concentration of 30 mg/L is discharged. See Attachment B for tabulation of effluent data;
- There are no industrial dischargers on the island and Star Island's operating charter prohibits any form of that activity;
- The facility's outfall is configured so that nearfield dilution is very rapid and the initial dilution is greater than 100 to 1;
- The treated effluent is discharged through a single port outfall approximately 150 feet from shore in approximately 21 feet of water at low tide;
- The discharge is disinfected with chlorine followed by

dechlorination prior to discharge. This dechlorination results in an average monthly TRC residual of 0.019 mg/L. See Attachment B for tabulation of effluent data); and

- The draft will require Star Island to conduct a WET test during the summer season. If the results of the pass/fail WET test indicates that the discharge exceeds an LC50 of 50% (Note: effluent concentration which means 50% or greater of the test organisms must survive in an effluent sample composed of 50 percent (or greater) effluent, the remainder being dilution water, for the test to indicate no toxicity in the effluent.), or exhibits significant toxicity for survival and growth, then the permit shall be modified, or alternatively, revoked and reissued to incorporate additional toxicity testing requirements, including chemical specific limits.

EPA-New England considers that the draft permit is designed to protect the State's water quality standards. By protecting the States water quality all marine species, including EFH species and their forage, will then not be adversely affected. However, if adverse impacts to EFH are detected in the future as a result of this permit action, NMFS will be notified and an EFH consultation will be promptly initiated.

Mitigation

The EPA-New England considers the conditions in this draft permit to be adequately protective of EFH, and, therefore, does not consider further mitigation to be warranted.

M. Endangered Species Act

Section 7(a) of the Endangered Species Act (ESA) of 1973, as amended, grants authority to and imposes requirements upon federal agencies regarding endangered or threatened species of fish, wildlife, or plants (“listed species”) and habitat of such species that has been designated as critical (a “critical habitat”). The ESA requires every federal agency, in consultation with and with the assistance of the Secretary of Interior or Commerce, to insure 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) typically administer Section 7 consultations for fresh water species, and the National Marine Fisheries Services (NMFS) administers Section 7 consultations for marine species and anadromous fish.

Based on EPA’s review of federally-listed species information for

New England waters, several species of whales and sea turtles are known to be seasonally present in the general vicinity of the Star Island WTF discharge. Therefore, only species under the purview of NMFS may be present. Among the listed whale species possibly present, North Atlantic right whales (*Eubalaena glacialis*) and humpback whales (*Megaptera novaeangliae*) are more likely to be found close to shore. Fin (*Balaenoptera physalus*), sei (*Balaenoptera borealis*) and sperm (*Physter macrocephalus*) whales are typically found in deeper offshore waters. Given that the outfall from the Star Island WTF is only approximately 110 feet from shore in approximately 20-feet of water (mean lower low water), the likelihood of any whale species coming within close proximity to this outfall seems remote.

The marine turtle species known to be present in New Hampshire waters during warmer periods of the year include loggerhead *Caretta caretta*) and Kemp's ridley (*Lepidochelys kempi*). Green sea turtles(*Chelonia mydas*) are known to be present in Massachusetts waters. Green sea turtles, as well as leatherback sea turtles (*Dermochelys coriacea*), which tend to inhabit deeper, offshore waters, are less likely to be present in the vicinity of the Star Island WWTP discharge.

It is EPA's opinion that the discharge from the Star Island WWTP, as governed by the reissuance of this NPDES permit, is not likely to adversely affect any whale or sea turtle species, or their critical habitat. As with the Essential Fish Habitat analysis cinducted in Section L, the following information supports this determination:

- This is a reissuance of an existing permit with no increase in the authorized sanitary discharge of pollutants as compared to the existing permit;
- The permit will prohibit violations of State water quality standards in the receiving water;
- The facility has a seasonal (non-continuous) discharge of low volume, high quality, treated domestic wastewater (grey water and sanitary) from the Conference Center that occurs only from June through September. For example, on an average monthly basis, 0.012 MGD of treated effluent with a five-day BOD_5 concentration of 30 mg/L is discharged. See Attachment B for tabulation of effluent data;
- There are no industrial dischargers on the island and Star Island's operating charter prohibits any form of that activity;
- The facility's outfall is configured so that nearfield dilution is very rapid and the initial dilution is greater than 100 to 1;
- The discharge is disinfected with chlorine followed by

dechlorination prior to discharge. This dechlorination results in an average monthly TRC residual of 0.019 mg/L. See Attachment B for tabulation of effluent data); and

- The draft will require Star Island to conduct a WET test during the summer season. If the results of the pass/fail WET test indicates that the discharge exceeds an LC50 of 50% (Note: effluent concentration which means 50% or greater of the test organisms must survive in an effluent sample composed of 50 percent (or greater) effluent, the remainder being dilution water, for the test to indicate no toxicity in the effluent.), or exhibits significant toxicity for survival and growth, then the permit shall be modified, or alternatively, revoked and reissued to incorporate additional toxicity testing requirements, including chemical specific limits.

EPA is seeking concurrence from NMFS and the USFWS on these opinions through informal ESA section 7 consultations.

N. Additional Requirements, Conditions and Effluent Monitoring

The effluent monitoring requirements have been established to yield data representative of the discharge under the authority of Section 308(a) of the CWA in accordance with 40 CFR §122.41(j), §122.44(i) and §122.48. Outfall 001 compliance monitoring frequencies for Flow, BOD_5, TSS, Total Residual Chlorine, pH and Total Coliform bacteria in the draft permit are consistent with the EPA/NHDES Effluent Monitoring Guidance mutually agreed upon and implemented in July 19, 1999. Outfall 002 compliance monitoring of pH and TSS is based on the expected low variability in these effluent parameters. A monitoring-only requirement for Enterococci bacteria of outfall 001 has been carried over to the draft permit from the existing permit. See the following tables for a comparison of sampling frequencies, sample types and effluent limitations in the current versus draft permits.

Comparison of Sampling Frequencies and Sample Types

Outfall 001

	Existing Permit		Draft Permit	
Parameter	Sampling Frequency	Sample Type	Sampling Frequency	Sample Type
Flow	Daily	Calculation	Daily	Calculation
BOD_5	2/Week	24-hr Composite	2/Week	24-hr Composite

TSS	2/Week	24-hr Composite	2/Week	24-hr Composite
pH	Daily	Grab	Daily	Grab
Total Coliform bacteria	5/Week	Grab	5/Week	Grab
Enterococci bacteria	1/Week	Grab	1/Week	Grab
Total Residual Chlorine	2/Day	Grab	2/Day	Grab
WET	One-Time Test*	24-hr Composite	One-Time Test	24-hr Composite

* The existing permit would have imposed limits if the one-time test indicated toxicity.

Outfall 002

	Existing Permit		Draft Permit	
Parameter	Sampling Frequency	Sample Type	Sampling Frequency	Sample Type
Flow	---	---	Daily	Calculation
TSS	---	---	1/Month	Composite
pH	---	---	1/Week	Grab

Comparison of Effluent Limitations

Outfall 001

	Existing Permit		Draft Permit	
Parameter	Average Monthly/Weekly	Maximum Daily	Average Monthly/Weekly	Maximum Daily
Flow	Report	Report	0.015 MGD	Report
BOD_5	30/45 mg/L 3.8/5.6 1bs/day	50 mg/L 6.3 lbs/day	30/45 mg/L 3.8/5.6 1bs/day	50 mg/L 6.3 lbs/day
TSS	45/65 mg/L 5.6/8.1 lbs/day	65 mg/L 8.1 lbs/day	45/65 mg/L 5.6/8.1 lbs/day	65 mg/L 8.1 lbs/day
pH	Range: 6.0 to 8.0 S.U.		Range: 6.0 to 8.0 S.U.	

Total Coliform bacteria	70/NA colonies/ 100 ml	Report Colonies/100 ml	70/NA colonies/ 100 ml	Report Colonies/100 ml & percent exceeding 230 Colonies/ 100 ml
Enterococci bacteria	Report Colonies/100 ml	Report Colonies/100 ml	Report Colonies/100 ml	Report Colonies/100 ml
Total Residual Chlorine	0.75 mg/L	1.0 mg/L	0.75 mg/L	1.0 mg/L
WET	Pass/Fail (LC50>=50%)		Pass/Fail (LC50>=50%)	

Outfall 002

	Existing Permit		Draft Permit	
Parameter	Average Monthly/Weekly	Maximum Daily	Average Monthly/Weekly	Maximum Daily
Flow	---	---	Report MGD	Report MGD
TSS	---	---	30 mg/L 20 lbs/day	
pH	---		Range: 6.5 to 8.3 S.U.	

The remaining conditions of the permit are based on the NPDES regulations 40 CFR, Parts 122 through 125, and consist primarily of management requirements common to all permits.

V. Antidegradation

This draft permit is being reissued with identical allowable wasteload, parameter coverage and limits as in the current permit; with no change in outfall location.

Additionally, the brine discharge from the reverse osmosis system which produces fresh water for the Star Island Conference Center has received individual coverage under the draft permit. Star Island’s reverse osmosis system is presently regulated by a Potable Water Treatment Facility General Permit. For this permit reissuance, the reverse osmosis system’s effluent discharge will be regulated through Star Island’s individual NPDES permit. Although the coverage by individual permit contains the same limitations as the general permit, an individual permit provides a more effective means for regulating the various components of the reverse system’s

effluent discharge. The new monthly reporting requirements for Outfall 002 will demonstrate if Star Island is operating its reverse osmosis facility in an effective manner. The draft permit also has requirements for the location and orientation of the reverse osmosis system's brine discharge (Outfall 002). These requirements will provide for complete and rapid mixing with the ocean water of Outfall 002's brine discharge

The State of New Hampshire has indicated that there is no lowering of water quality and no loss of existing water uses; therefore, no additional antidegradation review is warranted at this time.

VI. State Certification Requirements.

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 and/or conditions contained in the permit are stringent enough to assure, among other things, that the discharge will not cause the receiving water to violate NH Standards or waives its right to certify as set forth in 40 CFR § 124.53.

Upon public notice of the draft permit, EPA is formally requesting that the State's certifying authority make a written determination concerning certification. The State will be deemed to have waived its right to certify unless certification is received within 60 days of receipt of this request.

The NHDES is the certifying authority. EPA has discussed this draft permit with the Staff of the Wastewater Engineering Bureau and expects that the draft permit will be certified. Regulations governing state certification are set forth in 40 CFR §§ 124.53 and 124.55.

The State's certification should include the specific conditions necessary to assure compliance with applicable provisions of the Clean Water Act Sections 208(e), 301, 302, 303, 306 and 307 and with appropriate requirements of State law. In addition, the State should provide a statement of the extent to which each 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 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. These less stringent conditions may be established by EPA during the permit issuance process based on information received following the public noticing. If the State believes that any conditions more stringent than those contained in the draft permit are necessary to meet the requirements of either the CWA or State law, the State should include such conditions and, in each case, cite the CWA or State

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law reference upon which that condition is based. Failure to provide such a citation waives the right to certify as to that condition. The only exception to this is the sludge conditions/requirements implementing Section 405(d) of the CWA are not subject to the Section 401 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 the applicable procedures of 40 CFR Part 124.

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." See 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 limits based upon water quality standards and state requirements are contained in 40 CFR § 122.4 (d) and 40 CFR § 122.44(d).

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

All persons, including applicants, who wish to comment on any condition of the Draft Permit 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:

Mr. John Paul King, Environmental Scientist
U.S. Environmental Protection Agency
Region 1
5 Post Office Square – Suite 100
Boston, Massachusetts 02109-3012
Telephone: (617) 918-1295
FAX No.: (617) 918-01295

Any person, prior to such date, may submit a request in writing for a public hearing to consider the Draft Permit to EPA and the NHDES. Such requests shall state the nature of the issue proposed to be raised in the hearing. A public hearing may be held after at least thirty (30) days public notice whenever 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.

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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. Permits may be appealed to the Environmental Appeals Board in the manner described at 40 CFR § 124.19.

Information concerning the Draft Permit may be obtained from the contact person named above between the hours of 9:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays.

_____ Stephen S. Perkins, Director
Date Office of Ecosystem Protection
U.S. Environmental Protection Agency

Attachment A

ATTACHMENT B

EFFLUENT CHARACTERISTICS AT OUTFALL 001

TABLE I

The following selected effluent characteristics were derived from analysis of discharge-monitoring data collected for Outfall 001 during the 2003 through 2008 operating seasons (May through October).

MONITORING PERIOD END DATE	Flow (MGD)		BOD_5 (mg/L)		BOD_5 (lb/d)		BOD_5 % remove
	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Monthly Average
7/31/2003	0.0154	0.0117	10	7	0.9	0.6	99
8/31/2003	0.0127	0.0107	22	12	1.6	1.0	96
9/30/2003	0.0230	0.0086	15	10	1.1	0.7	98
6/30/2004	0.0175	0.0090	44	28	2.1	1.6	93
7/31/2004	0.0125	0.0086	39	18	2.7	1.2	95
8/31/2004	0.0136	0.0097	35	24	3.2	2.0	94
9/30/2004	0.0214	0.0073	19	13	2.0	0.9	96
6/30/2005	0.0102	0.0083	17	12	1.2	1.1	96
7/31/2005	0.0194	0.0121	47	22	5.7	2.4	93
8/31/2005	0.0182	0.0115	49	26	4.6	2.5	96
9/30/2005	0.0136	0.0079	20	11	1.6	0.7	99
6/30/2006	0.0151	0.0111	26	26	2.5	2.0	92
7/31/2006	0.0289	0.0219	129	74	**23.8**	**13.9**	89
8/31/2006	0.0186	0.0135	156	105	**17.3**	**9.2**	88
10/31/2006	0.0390	0.0115	98	62	**10.4**	**6.0**	90
7/31/2007	0.0174	0.0073	48	40	3.3	2.1	91
8/31/2007	0.0160	0.0107	80	49	**9.0**	**4.9**	**83**
9/30/2007	0.0408	0.0128	100	39	**10.7**	3.1	87
6/30/2008	0.0221	0.0099	27	15	0.8	0.8	96
7/31/2008	0.0156	0.0106	48	45	5.5	**5.3**	**78**
8/31/2008	0.0109	0.0087	17	11	1.5	0.8	97
9/30/2008	0.0275	0.0095	11	9	1.0	0.6	96
MONITORING PERIOD END DATE	Flow (MGD)		BOD_5 (mg/L)		BOD_5 (lb/d)		BOD_5 % remove
	Daily Max	Mon Ave	Daily Max	Mon Ave	Daily Max	Mon Ave	Mon Ave
2003 Limits	**Report**	**Report**	**50**	**30**	**6.3**	**3.8**	**85**
Minimum	0.0102	0.0073	10	7	0.8	0.6	78
Maximum	0.0408	0.0219	156	105	23.8	13.9	99
Average	0.0197	0.0106	48	30	5.1	2.9	93

Std. Dev.	0.009	0.003	40	25	6	3	5
# Measurements	22	21	22	22	22	22	22
# Exceeds Limits	N/A	N/A	5	7	5	5	2

ATTACHMENT B (cont.)

TABLE I

MONITORING PERIOD END DATE	pH (s.u.)		TSS (mg/l)		TSS (lb/d)		TSS; % remove
	Min	Max	Daily Max	Mon Ave	Daily Max	Mon Ave	Mon Ave
7/31/2003	6.0	7.6	26	14	3.3	1.4	98
8/31/2003	6.0	6.8	**72**	41	5.7	3.5	95
9/30/2003	6.0	6.6	**68**	44	4.2	2.9	95
6/30/2004	6.1	7.0	**72**	31	3.4	1.7	96
7/31/2004	6.0	6.4	**101**	**56**	**8.2**	4.0	93
8/31/2004	6.1	6.6	**187**	**106**	**24.5**	**8.9**	88
9/30/2004	**5.9**	6.7	**164**	**112**	**24.8**	**9.2**	87
6/30/2005	**5.9**	6.8	**76**	43	5.1	4.0	93
7/31/2005	6.2	6.5	**123**	**69**	**13.7**	**7.6**	89
8/31/2005	6.2	6.5	**288**	**123**	**26.9**	**12.0**	87
9/30/2005	6.0	6.5	37	18	2.7	1.1	98
6/30/2006	**5.7**	7.2	15	12	1.2	0.8	98
7/31/2006	**5.9**	6.7	**465**	**107**	**79.6**	**18.5**	**80**
8/31/2006	**5.6**	6.4	**71**	**47**	5.7	5.1	93
10/31/2006	**5.8**	7.6	**258**	**138**	**27.5**	**14.2**	88
7/31/2007	**5.6**	5.6	58	22	2.8	1.4	95
8/31/2007	**5.9**	6.5	45	33	5.4	4.6	95
9/30/2007	6.2	6.9	**103**	**58**	**9.9**	**6.0**	93
6/30/2008	6.6	7.1	48	30	2.8	1.8	95
7/31/2008	6.3	6.9	**158**	**82**	**19.2**	**7.9**	88
8/31/2008	6.2	6.9	51	32	3.6	2.4	95
9/30/2008	6	6.6	42	25	2.7	1.5	95
MONITORING PERIOD END DATE	pH (s.u.)		TSS (mg/l)		TSS (lb/d)		TSS; % remove
	Min	Max	Daily Max	Mon Ave	Daily Max	Mon Ave	Mon Ave
2003 Limits	**6**	**8**	**65**	**45**	**8.1**	**5.6**	**85**
Minimum	5.6	5.6	15	12	1.2	0.8	80
Maximum	6.6	7.6	465	138	79.6	18.5	98
Average	6.0	6.7	115	56	12.9	5.5	92
Std. Dev.	0.23	0.42	106	38	17	5	5
# Measurements	22	22	22	22	22	22	22
# Exceeds Limits	8	0	14	10	9	8	1

ATTACHMENT B (cont.)

TABLE I

MONITORING PERIOD END DATE	Chlorine, total residual (mg/L)		Coliform, total general (#/100mL)		Enterococci: group D, MF trans, M-E, EIA (#/100mL)	
	Daily Maximum	Monthly Average	Monthly Geo	Daily Maximum	Daily Maximum	Monthly Geo
7/31/2003	0.54	0.04	2	8	-	-
8/31/2003	0.80	0.05	3	23	-	-
9/30/2003	0.96	0.08	3	17	-	-
6/30/2004	0.05	0.03	34	900	1000	150
7/31/2004	0.75	0.08	6	500	2400	2169
8/31/2004	0.84	0.07	14	1600	2400	1941
9/30/2004	**1.80**	0.13	9	500	2400	2400
6/30/2005	0.68	0.13	5	900	340	340
7/31/2005	0.02	0.02	11	1600	4800	856
8/31/2005	**4.20**	0.15	20	1600	4800	2605
9/30/2005	**4.30**	0.32	3	80	3100	222
6/30/2006	**6.45**	**1.13**	40	1600	10	10
7/31/2006	0.72	0.07	45	1600	550	186
8/31/2006	**1.07**	0.05	**81**	1600	9600	346
10/31/2006	**11.75**	0.70	**419**	1600	469	1800
7/31/2007	0.92	0.12	6	130	110	16
8/31/2007	**1.90**	0.09	2	30	63	15
9/30/2007	**2.70**	0.35	2	7	10	10
6/30/2008	**1.60**	0.10	3	80	20	14
7/31/2008	**3.65**	0.13	-	-	24000	256
8/31/2008	**6.25**	0.38	-	-	74	14
9/30/2008	0.33	0.02	8	130	23	41

MONITORING PERIOD END DATE	Chlorine, total residual (mg/L)		Coliform, total general (#/100mL)		Enterococci: group D, MF trans, M-E, EIA (#/100mL)	
	Daily Maximum	Monthly Average	Monthly Geo	Daily Maximum	Daily Maximum	Monthly Geo
2003 Permit Limits	**1**	**0.75**	**70**	**Report**	**Report**	**Report**
Minimum	0.02	0.02	2	7	10	10

Maximum	11.75	1.13	419	1600	24000	2605
Average	2.38	0.19	36	725	2956	705
Std. Dev.	2.82	0.26	92	710	5660	942
# Measurements	22	22	20	20	19	19
# Exceeds Limits	11	1	2	N/A	N/A	N/A

ATTACHMENT B (cont.)

TABLE II

One-Time Whole Effluent Toxicity Testing[1]

Effluent Test	Minimums of Maximum Test Result
LC50[2] (Percent Effluent)	
Menidia beryllina	>100
C-NOEC[3] (Percent Effluent)	
Menidia beryllina	
Survival	50
Growth	50

1. Data were extracted from the actual WET toxicological evaluation reports instead of the DMR data.

2. This test involves preparing a series of effluent concentrations by diluting the effluent with control water. Groups of test animals, i.e. Menidia beryllina (Inland Silversides minnow) are exposed to each effluent concentration and a control for a specific period. The mortality data for each concentration can be used to calculate (by regression) the medium lethal concentration or LC-50. LC-50 is defined as the concentration which kills half the test organisms. Samples with a high LC-50 value are less likely to affect survival.

3. This test measures the sublethal effects by exposing test organisms to effluent samples during a sensitive period in their life cycle. Chronic Inland Silversides minnow (Menidia beryllina) tests measure survival and growth (weight) over seven days.

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ATTACHMENT C

MAXIMUM ALLOWABLE LOADS

Equation used to calculate mass limits for BOD_5 and TSS:

$$L = C \times Q_{PDF} \times 8.345$$

Where:

L	-	Maximum allowable load, in lb/day
C	-	Maximum allowable effluent concentration for reporting period, in mg/l. Reporting periods are average monthly, average weekly and maximum daily
Q_{PDF}	-	Treatment plant's design flow, in MGD.
8.345	-	Factor to convert effluent concentration, in mg/l, and plant's design flow, in MGD, to lbs/day.

WATER QUALITY CRITERIA (WQC) BASED LIMITS

Equation used to calculate average monthly and maximum daily Total Residual Chlorine limits.

Chlorine Limit = Dilution Factor x Water Quality Criteria

Where:

Total Residual Chlorine; NH Standards Table 1703.1.

Chronic WQC: 0.0075 mg/l. Average Monthly Limit
Acute WQC: 0.013 mg/l, Maximum Daily Limit

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ATTACHMENT C (cont.)

The average monthly and maximum daily limitations for Total Residual Chlorine (TRC) of 0.75 and 1.0 mg/l, respectively, in the draft permit are based upon limitations in the existing permit and so are consistent with antibacksliding requirements found in 40 C.F.R. § 122.44(1). When originally calculated, the average monthly TRC limit of 0.75 mg/l was set based on the chronic aquatic-life criterion for marine waters of 0.0075 mg/l in the NH Standards and the available dilution of the receiving water of 100. For the maximum daily TRC limit of 1.0 mg/l, it was set 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. Section 101(a)(3) of the ACT 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-New England has, historically, established a maximum TRC limitation of 1.0 mg/1 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 Best Professional Judgment (BPJ) which is allowed under the authority granted in Section 402(a)(1) of the ACT and 40 C.F.R. § 125.3. In this situation, a maximum limit of 1.0 mg/l for the maximum daily TRC limit is more stringent than the maximum daily TRC limit of 1.30 mg/l limit allowed under NH Standards and available dilution. In the NH Standards, the acute aquatic-life criterion in marine waters is 0.013 mg/l.

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ATTACHMENT D

Star Island Reverse Osmosis Desalination Flow Diagram