

AUTHORIZATION TO DISCHARGE UNDER THE  
RHODE ISLAND POLLUTANT DISCHARGE ELIMINATION SYSTEM

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

**Naval Undersea Warfare Center Division Newport**

1176 Howell Street  
Code 1023 B-679/2  
Newport, Rhode Island 02841

is authorized to discharge from a facility located at

**Naval Undersea Warfare Center Division Newport**

1176 Howell Street  
Newport, Rhode Island 02841

to receiving waters named

Narragansett Bay – East Passage (Waterbody ID # RI0007029E-01A)  
Narragansett Bay – East Passage (Waterbody ID # RI0007029E-01B)  
Narragansett Bay – East Passage (Waterbody ID # RI0007029E-01M)

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

This permit shall become effective on the date of signature.

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

This permit consists of four (4) pages in Part I including effluent limitations, monitoring requirements, etc., twelve (12) pages in the Statement of Basis, and ten (10) pages in Part II including General Conditions.

Signed this *11<sup>th</sup>* day of *September*, 2019.



---

Angelo S. Liberti, P.E., Administrator of Surface Water Protection  
Office of Water Resources  
Rhode Island Department of Environmental Management  
Providence, Rhode Island

1. This permit only authorizes the discharge of seawater that is circulated through the battery of an acoustic device during operational testing activities in the following receiving waters:
  - a. The Narragansett Bay's East Passage and has a waterbody identification # of RI0007029E-01A. The specific waterbody description is the East Passage waters south of a line extending from the southernmost tip of Gull Point, Prudence Island, to the southernmost tip of Popasquash Point, Bristol, to the northern tip of Hog Island, to McKee's Wharf on Bristol Neck; west of a line across the mouth of Mt Hope Bay; south of a line from the southern point on Prudence Island to the northernmost point on Jamestown; north of a line from the southernmost point of Beavertail on Jamestown to the southernmost tip of Brenton Point, Newport; exclusive of the East Passage waters, Coasters Harbor and Coddington Cove waters (RI0007029E-01D, RI0007029E-01N, RI0007029E-01C, RI0007029E-01B, RI0007029E-01E, RI0007029E-01F, RI0007029E-01G, RI0007029E-01H, RI0007029E-01I, RI0007029E-01J, RI0007029E-01K, RI0007029E-01L, RI0007029E-01M, RI0007029E-01O, RI0007030E-01A, RI0007030E-01B, RI0007030E-01C, and RI0007030E-01D),
  - b. The waterbody segment that receives the discharge at this location is generally described as the Narragansett Bay's East Passage and has a waterbody identification # of RI0007029E-01B. The specific waterbody description is the East Passage waters east of a line from range marker painted on the shoreline approximately 500 feet west of the monument flagpole located in Fort Adams State Park to the Rose Island light, east of a line from the Rose Island light to Navy buoy W or "D" located at the southeast side of Gould Island, east of a line from Navy buoy W or "D" off Gould Island to buoy GR C at Fiske Rock, south of a line from buoy GR C at Fiske Rock to the eastern (landward) end of the former dock site located approximately 800 feet north of Greene Lane, Middletown, and west of the Newport Harbor/Coddington Cove SB and SB1 waters described in waterbody ID's RI0007030E-01A, RI0007030E-01B, RI0007030E-01C, and RI0007030E-01D, and
  - c. The waterbody segment that receives the discharge at this location is generally described as the Narragansett Bay's East Passage and has a waterbody identification # of RI0007029E-01M. The specific waterbody description is the East Passage waters in the vicinity of Taylor Point and East Ferry, Jamestown, south of a line from the northern most tip of Taylor Point to buoy R14 located off Coasters Harbor in Newport; west of a line from buoy N2 located at the south end of Gould Island through buoy C13, to the House on the rocks located in "The Dumplings"; east of a line from the northernmost tip of Taylor Point to Bull Point which is 1000 feet seaward of the shoreline exclusive of the SB and SA{b} waters described in waterbody ID's: RI0007029E-01K, RI0007029E-01J, RI0007029E-01I, RI0007029E-01H, RI0007029E-01G, and RI0007029E-01F.
2. The permittee is only authorized to discharge from seawater reduction batteries, with a maximum of 8 battery tests per day, consistent with the permittee's application dated May 8, 2019.
3. The permittee is not authorized to discharge any chemical additive(s)/cleaner in the operation of the seawater reduction electrochemical batteries.
4. The pH of the effluent shall not cause the receiving water to be less than 6.5 nor greater than 8.5 standard units at anytime, unless these values are exceeded due to natural causes.
5. The discharge shall not cause visible discoloration of the receiving waters.
6. The effluent shall contain neither a visible oil sheen, foam, nor floating solids at any time.

7. All existing manufacturing, commercial, mining, and silvicultural dischargers must notify the Director as soon as they know or have reason to believe:
  - a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
    - (1) One hundred micrograms per liter (100 ug/l);
    - (2) Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitro-phenol; and one milligram per liter (1 mg/l) for antimony;
    - (3) Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 C.F.R. s122.21(g)(7); or
    - (4) Any other notification level established by the Director in accordance with 40 C.F.R. s122.44(f) and Rhode Island Regulations.
  - b. That any activity has occurred or will occur which would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
    - (1) Five hundred micrograms per liter (500 ug/l);
    - (2) One milligram per liter (1 mg/l) for antimony;
    - (3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 C.F.R. s122.21(g)(7); or
    - (4) Any other notification level established by the Director in accordance with 40 C.F.R. s122.44(f) and Rhode Island Regulations.
  - c. That they have begun or expect to begin to use or manufacture as an intermediate or final product or by-product any toxic pollutant which was not reported in the permit application.
8. This permit serves as the State's Water Quality Certificate for the discharges described herein.

**B. MONITORING AND REPORTING**

1. Monitoring

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

2. Reporting

By January 15<sup>th</sup> of each year the permittee shall submit a Seawater Reduction Battery Test Summary Report that contains the following information for the previous calendar year:

- a. The date(s) that any tests were conducted in surface waters
- b. The specific location(s) of each test
- c. The number of batteries that were part of each test

A signed copy of these reports shall be submitted to:

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

RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
235 PROMENADE STREET  
PROVIDENCE, RHODE ISLAND 02908-5767

STATEMENT OF BASIS

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

RIPDES PERMIT NO. **RI0023981**

NAME AND ADDRESS OF APPLICANT:

**Naval Undersea Warfare Center Division Newport**  
1176 Howell Street  
Code 1023 B-679/2  
Newport, Rhode Island 02841

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

**Naval Undersea Warfare Center Division Newport**  
1176 Howell Street  
Newport, Rhode Island 02841

RECEIVING WATER:

**Narragansett Bay – East Passage (Waterbody ID # RI0007029E-01A)**  
**Narragansett Bay – East Passage (Waterbody ID # RI0007029E-01B)**  
**Narragansett Bay – East Passage (Waterbody ID # RI0007029E-01M)**

CLASSIFICATION: **SA**

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

The above-named applicant has applied to the Rhode Island Department of Environmental Management (DEM) for issuance of a RIPDES Permit to discharge into the above listed and designated receiving waters. The Naval Undersea Warfare Center Division Newport's mission is to operate the United States Navy's full-spectrum research and development center which conducts research, development, testing and evaluation, engineering and fleet support for submarines, autonomous underwater systems, and offensive and defensive weapons systems associated with undersea warfare, homeland security, and national defense. The discharge consists of seawater that is circulated through seawater reduction batteries by a passive "bubble pump". As hydrogen gas is formed as a byproduct of the reduction of seawater, used to generate electrical current, a small flow of seawater is pushed out through vent ports in the batteries. The seawater will contain concentrations of magnesium hydroxide as a byproduct of the battery operation. The discharge is to three locations in the East Passage of Narragansett Bay. The facility is also covered under a separate RIPDES permit, number RI0023931 for the same type of testing in different locations in Narragansett Bay. However, the proposed discharge is to waterbodies classified as SA in the Rhode Island Water Quality Regulations (250-RICR-150-05 §1.25(K)(11)).

II. **Limitations and Conditions**

Effluent limitations and monitoring requirements may be found in the draft permit.

### III. Description of Discharge

The applicant's proposed discharges are from scientific experiments that investigate the functioning of an acoustic device in a true ocean environment. The device utilizes a battery which operates when immersed in seawater. Each battery utilizes 2,712g of silver chloride (AgCl) as a cathode; 970.0g of magnesium (Mg), 62.6g of aluminum (Al), and 10.4g of tin (Sn) alloy as an anode; and seawater as an electrolyte. When the battery is immersed in seawater, approximately 61g total of hydrogen (H<sub>2</sub>) gas is released even when no discharge current is being drawn; and silver chloride is reduced to silver metal and hydrochloric acid (HCl) residues. The silver and hydrochloric acid are retained in the battery while the hydrogen is completely released to the sea. Hydrogen gas is formed as a by-product of the battery operation and vents through the outlet port. The hydrogen venting pushes a small fraction of seawater with it. Magnesium salts are also released from the battery in the form of magnesium hydroxide. An estimated 60% of the magnesium salts are ejected from the battery by convection and/or gravity with the remainder being retained inside the sealed battery housing. Elemental Magnesium is insoluble in cold water, but will react with water to produce Magnesium Hydroxide and Hydrogen gas.

During the proposed testing, the experiment will be monitored by a real time data acquisition system. At a minimum, the system will monitor acoustic output levels and operation duration. Additionally, the experiment will be under constant human surveillance. Each battery operational test will be less than 1 hour in duration, with a maximum number of batteries tested per day at eight, and an average number of batteries tested per day at four. The calculated flow rates and pollutant loading estimates are based on an operating assumption of 100% battery efficiency. Actual efficiencies are less than 100% and average around 75%. As a result the projected flow and pollutant discharge estimates presented are estimated to be 1.25 times greater than the battery's expected flow rates. The facility applied for a RIPDES permit on May 8, 2019.

The test units are portable and will produce a discharge at three proposed locations. One of the proposed discharge locations is generally described as the Narragansett Bay's East Passage and has a waterbody identification # of RI0007029E-01B. The specific waterbody description is the East Passage waters east of a line from range marker painted on the shoreline approximately 500 feet west of the monument flagpole located in Fort Adams State Park to the Rose Island light, east of a line from the Rose Island light to Navy buoy W or "D" located at the southeast side of Gould Island, east of a line from Navy buoy W or "D" off Gould Island to buoy GR C at Fiske Rock, south of a line from buoy GR C at Fiske Rock to the eastern (landward) end of the former dock site located approximately 800 feet north of Greene Lane, Middletown, and west of the Newport Harbor/Coddington Cove SB and SB1 waters described in waterbody ID's RI0007030E-01A, RI0007030E-01B, RI0007030E-01C, and RI0007030E-01D. This segment is located in Newport and Middletown and is classified as a Class SA water body according to the RI Water Quality Regulations. Currently, this segment is not listed as impaired in the DEM's 2016 303(d) List of Impaired Waters.

The second proposed discharge location is generally described as the Narragansett Bay's East Passage and has a waterbody identification # of RI0007029E-01M. The specific waterbody description is the East Passage waters in the vicinity of Taylor Point and East Ferry, Jamestown, south of a line from the northern most tip of Taylor Point to buoy R14 located off Coasters Harbor in Newport; west of a line from buoy N2 located at the south end of Gould Island through buoy C13, to the House on the rocks located in "The Dumplings"; east of a line from the northernmost tip of Taylor Point to Bull Point which is 1000 feet seaward of the shoreline exclusive of the SB and SA{b} waters described in waterbody ID's: RI0007029E-01K, RI0007029E-01J, RI0007029E-01I, RI0007029E-01H, RI0007029E-01G, and RI0007029E-01F. This segment is located in Jamestown and is classified as a Class SA water body according to the RI Water Quality Regulations. Currently, this segment is not listed as impaired in the DEM's 2016 303(d) List of Impaired Waters.

The third proposed discharge location is generally described as the Narragansett Bay's East Passage and has a waterbody identification # of RI0007029E-01A. The specific waterbody description is the East Passage waters south of a line extending from the southernmost tip of Gull

Point, Prudence Island, to the southernmost tip of Popasquash Point, Bristol, to the northern tip of Hog Island, to McKee's Wharf on Bristol Neck; west of a line across the mouth of Mt Hope Bay; south of a line from the southern point on Prudence Island to the northernmost point on Jamestown; north of a line from the southernmost point of Beavertail on Jamestown to the southernmost tip of Brenton Point, Newport; exclusive of the East Passage waters, Coasters Harbor and Coddington Cove waters (RI0007029E-01D, RI0007029E-01N, RI0007029E-01C, RI0007029E-01B, RI0007029E-01E, RI0007029E-01F, RI0007029E-01G, RI0007029E-01H, RI0007029E-01I, RI0007029E-01J, RI0007029E-01K, RI0007029E-01L, RI0007029E-01M, RI0007029E-01O, RI0007030E-01A, RI0007030E-01B, RI0007030E-01C, and RI0007030E-01D) . This segment is located in Portsmouth, Middletown, Newport, and Jamestown and is classified as a Class SA water body according to the RI Water Quality Regulations. Currently, this segment is not listed as impaired in the DEM's 2016 303(d) List of Impaired Waters.

Class SA waters are designated for shellfish harvesting for direct human consumption, primary and secondary contact recreational activities, and fish and wildlife habitat. They shall be suitable for aquacultural uses, navigation, and industrial cooling. These waters shall have good aesthetic value. Currently, none of the above segments are listed as not supporting fish and wildlife habitat in the DEM's 2016 303(d) List of Impaired Waters.

The Rhode Island Water Quality Regulations at §1.11(E)(2)(I) provides for the allowance of a new discharge to Class SA waters provided that the applicant demonstrates that the discharge, 1) serves a compelling public purpose which provides benefits to the public as a whole as opposed to individual or private interests, 2) there is no reasonable alternative means of, or location for, serving the compelling public purpose cited; and 3) the discharge will not impair existing uses nor attainment of designated uses. The applicant for this permit operates the United States Navy's full-spectrum research and development center which conducts research, development, testing and evaluation, engineering and fleet support for submarines, autonomous underwater systems, and offensive and defensive weapons systems associated with undersea warfare, homeland security, and national defense. This provides a compelling public purpose. The applicant's proposed discharges are from scientific experiments that investigate the functioning of an acoustic device in a true ocean environment. The device utilizes a battery which operates when immersed in seawater. The proposed discharge locations were selected in order to test the devices in environmental conditions that could not be achieved at alternative locations (e.g., deeper depths). Therefore, the locations indicated in the permittee's application provide for no reasonable alternative means of or location for the compelling public purpose. Finally, as discussed below, the discharge will not impair existing uses nor attainment of designated uses. Based on these factors the proposed discharge is an allowable new discharge into a class SA water under the Rhode Island Water Quality Regulation.

#### Antibacksliding

Provided below is a brief introduction to Antibacksliding and Antidegradation; as well as a discussion on how the two policies were used in the development of this permit.

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

#### *Section 303(d)(4)*

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

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

#### Antidegradation

§1.27 of the Rhode Island Water Quality Regulations describes DEM's Policy for Implementing the Antidegradation Provisions of the Rhode Island Water Quality Regulations (the Policy). This Policy establishes four tiers of water quality protection:

**Tier 1.** In all surface waters, existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.

**Tier 2.** In waters where the existing water quality criteria exceeds the levels necessary to support the propagation of fish and wildlife and recreation in and on the water, that quality shall be maintained and protected except for insignificant changes in water quality as determined by the Director and in accordance with the Policy. In addition, the Director may allow significant degradation, which is determined to be necessary to achieve important economic or social benefits to the State in accordance with the Antidegradation Policy.

**Tier 2½.** Where high quality waters constitute Special Resource Protection Waters SRPWs<sup>1</sup>, there shall be no measurable degradation of the existing water quality necessary to protect the characteristics which cause the waterbody to be designated a SRPW. Notwithstanding that all public drinking water supplies are SRPWs, public drinking water suppliers may undertake temporary and short-term activities within the boundary perimeter of a public drinking water supply impoundment for essential maintenance or to address emergency conditions in order to prevent adverse effect on public health or safety. These activities must comply with the requirements set forth in Tier 1 and Tier 2.

**Tier 3.** Where high quality waters constitute an Outstanding Natural Resource ONRWs<sup>2</sup>, that water quality shall be maintained and protected. The State may allow some limited activities that result in temporary or short-term changes in the water quality of an ONRW. Such activities must not permanently degrade water quality or result in water quality lower than necessary to protect the existing uses in the ONRW.

In terms of the applicability of Tier 2 of the Policy, a water body is assessed as being high quality on a parameter-by-parameter basis. In accordance with §1.27(B) of the Policy, "Antidegradation applies to all new or increased projects or activities which may lower water quality or affect existing water uses, including but not limited to all 401 Water Quality Certification reviews and any new, reissued, or modified RIPDES permits." §1.27(D)(2) of the Policy indicates that it is not applicable to activities which result in insignificant (i.e., short-term minor) changes in water quality and that significant changes in water quality will only be allowed if it is necessary to accommodate important economic and social development in the area in which the receiving waters are located (important benefits demonstration). §1.27(E)(4) of the Policy states that: "Any new or increased discharge or activity could lower existing water quality and thus require the important benefits demonstration. RIDEM will: 1) evaluate applications on a case-by-case basis, using BPJ and all pertinent and available facts, including scientific and technical data and calculations as provided by the applicant; and 2) determine whether the incremental loss is significant enough to require the important benefits demonstration described below. [If not then as a general rule DEM will allocate no more than 20%.] Some of the considerations which will be made to determine if an impact is significant in each site specific decision

---

<sup>1</sup> SRPWs are surface waters identified by the Director as having significant recreational or ecological uses.

<sup>2</sup> ONRWs are a special subset of high-quality water bodies, identified by the State as having significant recreational or ecological water uses.



are: 1) percent change in water quality parameter value and their temporal distribution; 2) quality and value of the resource; 3) cumulative impact of discharges and activities on water quality to date; 4) measurability of the change; 5) visibility of the change; 6) impact on fish and wildlife habitat; and 7) impact on potential and existing uses. As a general guide, any discharge or activity which consumes greater than 20% of the remaining assimilative capacity will be considered a significant impact and will be required to demonstrate important economic or social benefits to justify the activity.”

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

In this permit, there are no chemical-specific limitations on discharges. Additionally, considerations of the Tier 2 applicability do not result in a significant impact to the receiving waters, given both the intermittent nature of the discharge, and the extremely low quantity of pollutants in the discharge. These quantities are discussed in Part IV of this Statement of Basis. Therefore, this permit is consistent with the Department’s anti-degradation policy.

In accordance with 40 CFR 122.4(d)(1)(iii), it is only necessary to establish permit limits for those pollutants in the discharge which have the reasonable potential to cause or contribute to the exceedance of instream criteria. In order to evaluate the need for permit limits, the most stringent calculated acute and chronic limits are compared to available data. Based on this comparison, there is no reasonable potential for the proposed discharge to cause or contribute to the exceedance of instream criteria.

An estimate of the pollutant discharge rates and a process line drawing are shown in Attachment A-1. Attachment A-2 includes a site location map.

#### **IV. Permit Basis and Explanation of Effluent Limitation Derivation**

##### General Requirements

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

When developing effluent limits for RIPDES Permits DEM is required to consider treatment technology and water quality requirements. Technology based treatment requirements represent the minimum level of control that must be imposed under Section 402 and 301(b) of the CWA (see 40 CFR 125 Subpart A) to meet Best Practicable Control Technology Currently Available (BPT), Best Conventional Control Technology (BCT) for conventional pollutants, and Best Available Technology Economically Achievable (BAT) for toxic pollutants. EPA has not promulgated National Effluent Limitation Guidelines for discharges from seawater reduction electrochemical batteries. In the absence of technology-based guidelines, DEM is authorized to use Best Professional Judgement (BPJ) to establish effluent limitations, in accordance with Section 402(a)(1) of the CWA.

Under Section 301 (b)(1)(C) of the CWA, discharges are subject to effluent limitations based on water quality standards. The Rhode Island Water Quality Regulations include a narrative statement that prohibits the discharge of any pollutant or combination of pollutants in quantities that would be toxic or injurious to aquatic life. In addition, the State has adopted numerical criteria for specific toxic pollutants.

##### Explanation of Effluent Limitation Derivation and Conditions

The RIPDES application for the proposed discharge listed magnesium salts in the form of

magnesium hydroxide (Mg(OH)<sub>2</sub>) as the only pollutant discharged with the seawater from the seawater reduction electrochemical batteries. As indicated above, EPA has not promulgated National Effluent Limitation Guidelines for discharges from seawater reduction electrochemical batteries. In addition, the Rhode Island Water Quality Regulations do not contain water quality criteria for magnesium. Therefore, the DEM evaluated the proposed discharge for the need to have BPJ-based effluent limits.

Using the reported maximum and average seawater flow rates and the maximum and average Mg(OH)<sub>2</sub> discharge rates, the DEM determined the discharge concentrations from the batteries as follows:

Maximum Mg(OH)<sub>2</sub> Load Discharged:

$$\frac{970.0\text{g Mg(OH)}_2}{\text{Battery}} \times \frac{8 \text{ batteries}}{\text{day}} \times 60\% \times \frac{\text{kg}}{1000\text{g}} = 4.7 \text{ kg Mg(OH)}_2 / \text{day}$$

Average Mg(OH)<sub>2</sub> Load Discharged:

$$\frac{970.0\text{g Mg(OH)}_2}{\text{Battery}} \times \frac{4 \text{ batteries}}{\text{day}} \times 60\% \times \frac{\text{kg}}{1000\text{g}} = 2.3 \text{ kg Mg(OH)}_2 / \text{day}$$

Projected Effluent Concentrations at Maximum Flow:

$$\frac{4.7 \text{ kg Mg(OH)}_2 / \text{day}}{3 \text{ gallons/day} * 3.785 \text{ L/gal}} = 0.4139 \text{ kg Mg(OH)}_2 / \text{L}$$

Projected Effluent Concentrations at Average Flow:

$$\frac{2.3 \text{ kg Mg(OH)}_2 / \text{day}}{1.5 \text{ gallons/day} * 3.785 \text{ L/gal}} = 0.4051 \text{ kg Mg(OH)}_2 / \text{L}$$

Using the following atomic weights; O = 15.9994 g/mol, H = 1.00797 g/mol, and Mg = 24.312 g/mol, the percent Mg in Mg(OH)<sub>2</sub> is calculated as follows:

Percent Mg in Mg(OH)<sub>2</sub>:

$$\frac{24.312 \text{ g/mol}}{24.312 \text{ g/mol} + 2 * (15.9994 \text{ g/mol} + 1.00797 \text{ g/mol})} * 100 = 41.68\%$$

Based on the above information, the projected increase on Mg concentration in the discharge from the electrochemical battery was calculated as follows:

Projected Mg Concentration Increases:

Maximum: 0.4139 kg Mg(OH)<sub>2</sub> /L \* 41.68 % Mg = 0.173 kg Mg/L

Average: 0.4051 kg Mg(OH)<sub>2</sub> /L \* 41.68 % Mg = 0.169 kg Mg/L

250-RICR-150-05 §1.10(B) of the Rhode Island Water Quality Regulations allows the Director to recognize, where appropriate a limited acute and/or chronic mixing zone(s) on a case by case basis. Based on the concentrations of Mg in typical seawater of 1,290 mg Mg/L, from Karl K Turekian: *Oceans*. 1968. Prentice-Hall, the increase in typical seawater concentrations would be within 5% of typical background concentrations through dilution in a spherical radius of 6.34 ft of seawater. This 5% increase in typical seawater concentrations can be assumed to be within the natural variability of Mg concentrations in typical seawater. See calculations presented below:

$$(X_f) \times (V_f) = (X_d \times V_d) + (X_b \times V_b)$$



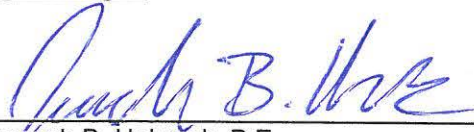
formal hearing to reconsider or contest the final decision. Requests for formal hearings must satisfy the requirements of §1.50 of the Regulations for the Rhode Island Pollutant Discharge Elimination System.

VI. **DEM Contact**

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

Travis Babikoff  
RIPDES Program  
Office of Water Resources  
Department of Environmental Management  
235 Promenade Street  
Providence, Rhode Island 02908  
Telephone: (401) 222-4700 Ext.7274  
Email: [travis.babikoff@dem.ri.gov](mailto:travis.babikoff@dem.ri.gov)

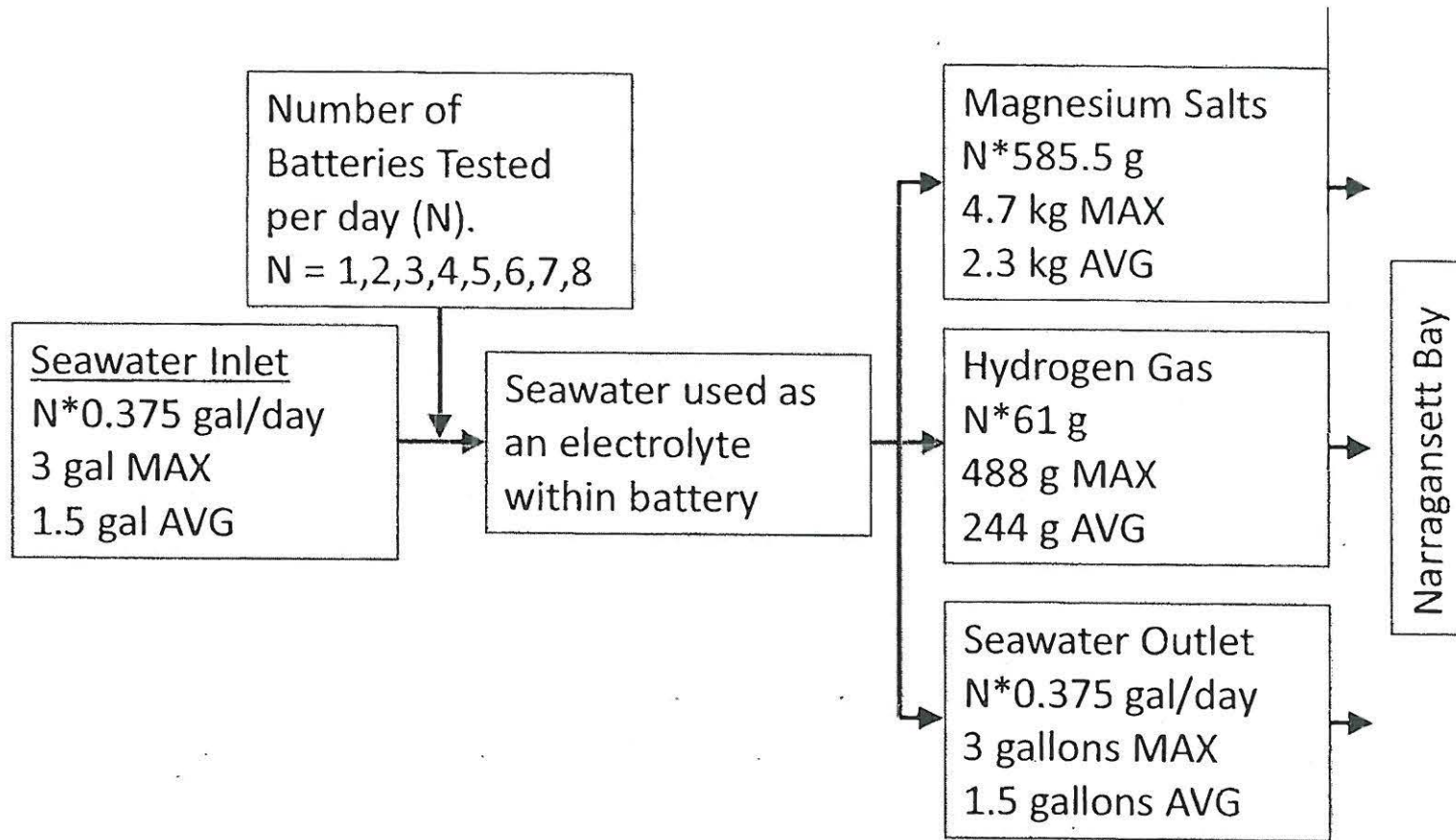
9/9/19  
Date

  
\_\_\_\_\_  
Joseph B. Haberek, P.E.  
Environmental Engineer IV  
RIPDES Permitting Section  
Office of Water Resources  
Department of Environmental Management

**ATTACHMENT A-1**

**ESTIMATED POLLUTANT DISCHARGE RATES  
AND LINE DIAGRAM**

# Line Diagram



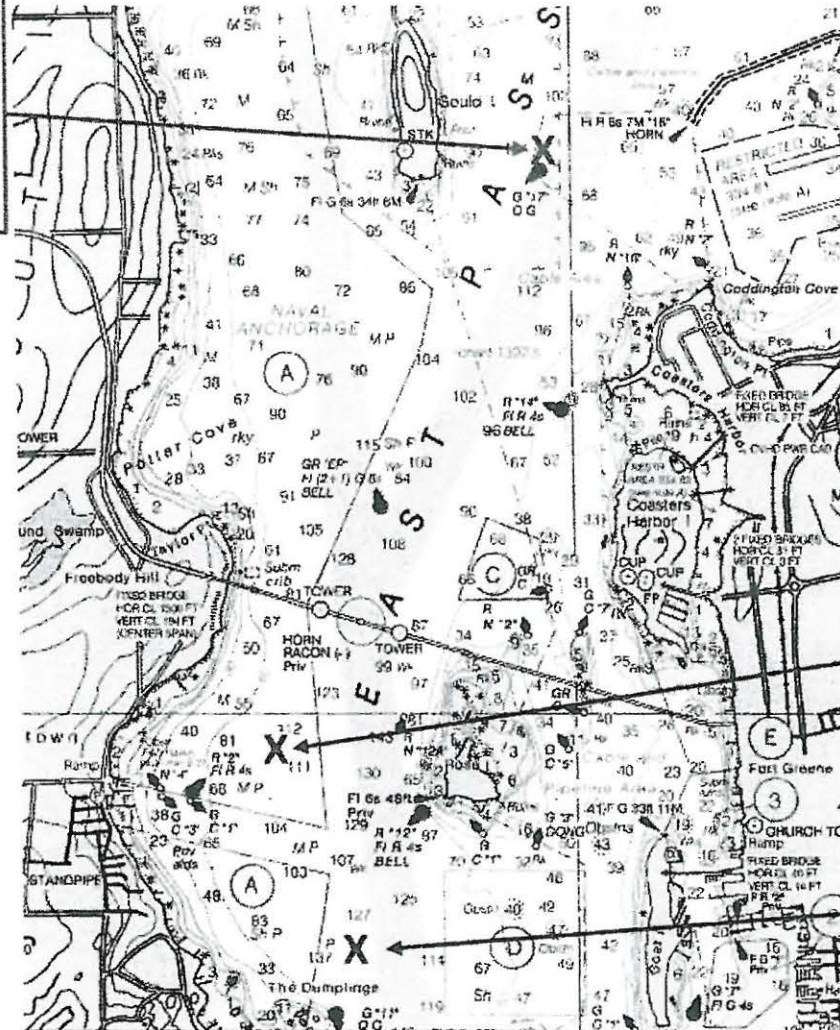
**ATTACHMENT A-2**  
**DISCHARGE LOCATION MAP**

Northwest of Buoy G

17:

$41^{\circ} 31' 51''$

$71^{\circ} 20' 17''$



South of Newport  
Bridge West Tower:

$41^{\circ} 29' 57''$

$71^{\circ} 21' 17''$

North of Buoy G 11:

$41^{\circ} 29' 13''$

$71^{\circ} 21' 5''$



PART II  
TABLE OF CONTENTS

GENERAL REQUIREMENTS

- (a) Duty to Comply
- (b) Duty to Reapply
- (c) Need to Halt or Reduce Not a Defense
- (d) Duty to Mitigate
- (e) Proper Operation and Maintenance
- (f) Permit Actions
- (g) Property Rights
- (h) Duty to Provide Information
- (i) Inspection and Entry
- (j) Monitoring and Records
- (k) Signatory Requirements
- (l) Reporting Requirements
- (m) Bypass
- (n) Upset
- (o) Change in Discharge
- (p) Removed Substances
- (q) Power Failures
- (r) Availability of Reports
- (s) State Laws
- (t) Other Laws
- (u) Severability
- (v) Reopener Clause
- (w) Confidentiality of Information
- (x) Best Management Practices
- (y) Right of Appeal

DEFINITIONS

## GENERAL REQUIREMENTS

(a) Duty to Comply

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

- (1) The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the CWA for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.
- (2) The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the CWA is subject to a civil penalty not to exceed \$10,000 per day of such violation. Any person who willfully or negligently violates permit conditions implementing Sections 301, 302, 306, 307 or 308 of the Act is subject to a fine of not less than \$2,500 nor more than \$25,000 per day of violation, or by imprisonment of not more than 1 year, or both.
- (3) Chapter 46-12 of the Rhode Island General Laws provides that any person who violates a permit condition is subject to a civil penalty of not more than \$5,000 per day of such violation. Any person who willfully or negligently violates a permit condition is subject to a criminal penalty of not more than \$10,000 per day of such violation and imprisonment for not more than 30 days, or both. Any person who knowingly makes any false statement in connection with the permit is subject to a criminal penalty of not more than \$5,000 for each instance of violation or by imprisonment for not more than 30 days, or both.

(b) Duty to Reapply

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

(c) Need to Halt or Reduce Not a Defense

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

(d) Duty to Mitigate

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

(e) Proper Operation and Maintenance

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

(f) Permit Actions

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

(g) Property Rights

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

(h) Duty to Provide Information

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

(i) Inspection and Entry

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

- (1) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
- (2) Have access to and copy, at reasonable times any records that must be kept under the conditions of this permit;
- (3) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices or operations regulated or required under this permit; and

- (4) Sample or monitor any substances or parameters at any location, at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the CWA or Rhode Island law.
- (j) Monitoring and Records
- (1) Samples and measurements taken for the purpose of monitoring shall be representative of the volume and nature of the discharge over the sampling and reporting period.
  - (2) The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings from continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 5 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.
  - (3) Records of monitoring information shall include:
    - (i) The date, exact place, and time of sampling or measurements;
    - (ii) The individual(s) who performed the sampling or measurements;
    - (iii) The date(s) analyses were performed;
    - (iv) The individual(s) who performed the analyses;
    - (v) The analytical techniques or methods used; and
    - (vi) The results of such analyses.
  - (4) Monitoring must be conducted according to test procedures approved under 40 CFR Part 136 and applicable Rhode Island regulations, unless other test procedures have been specified in this permit.
  - (5) The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall upon conviction, be punished by a fine of not more than \$10,000 per violation or by imprisonment for not more than 6 months per violation or by both. Chapter 46-12 of the Rhode Island General Laws also provides that such acts are subject to a fine of not more than \$5,000 per violation, or by imprisonment for not more than 30 days per violation, or by both.
  - (6) Monitoring results must be reported on a Discharge Monitoring Report (DMR).
  - (7) If the permittee monitors any pollutant more frequently than required by the permit, using test procedures approved under 40 CFR Part 136, applicable State regulations, or as specified in the permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR.

(k) Signatory Requirement

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

(l) Reporting Requirements

- (1) Planned changes. The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility.
- (2) Anticipated noncompliance. The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with the permit requirements.
- (3) Transfers. This permit is not transferable to any person except after written notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under State and Federal law.
- (4) Monitoring reports. Monitoring results shall be reported at the intervals specified elsewhere in this permit.
- (5) Twenty-four hour reporting. The permittee shall immediately report any noncompliance which may endanger health or the environment by calling DEM at (401) 222-4700 or (401) 222-3070 at night.

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

The following information must be reported immediately:

- (i) Any unanticipated bypass which causes a violation of any effluent limitation in the permit; or
- (ii) Any upset which causes a violation of any effluent limitation in the permit; or
- (iii) Any violation of a maximum daily discharge limitation for any of the pollutants specifically listed by the Director in the permit.

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

- (6) Other noncompliance. The permittee shall report all instances of noncompliance not reported under paragraphs (1), (2), and (5), of this section, at the time monitoring reports are submitted. The reports shall contain the information required in paragraph (1)(5) of the section.
- (7) Other information. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, they shall promptly submit such facts or information.

(m) Bypass

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

- (1) Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs (2) and (3) of this section.
- (2) Notice.
  - (i) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten (10) days before the date of the bypass.
  - (ii) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in 250-RICR-150-10-1.14(R) of the RIPDES Regulations.
- (3) Prohibition of bypass.
  - (i) Bypass is prohibited, and the Director may take enforcement action against a permittee for bypass, unless:
    - (A) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage, where "severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production;
    - (B) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
    - (C) The permittee submitted notices as required under paragraph (2) of this section.

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

(n) Upset

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

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

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

- (a) An upset occurred and that the permittee can identify the cause(s) of the upset;
- (b) The permitted facility was at the time being properly operated;
- (c) The permittee submitted notice of the upset as required in 250-RICR-150-10-1.14(R) of the RIPDES Regulations; and
- (d) The permittee complied with any remedial measures required under 250-RICR-150-10-1.14(E) of the RIPDES Regulations.

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

(o) Change in Discharge

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

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

(p) Removed Substances

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

(q) Power Failures

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

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

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

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

(r) Availability of Reports

Except for data determined to be confidential under paragraph (w) below, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the DEM, 291 Promenade Street, Providence, Rhode Island. As required by the CWA, effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the CWA and under Section 46-12-14 of the Rhode Island General Laws.

(s) State Laws

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

(t) Other Laws

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



(u) Severability

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

(v) Reopener Clause

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

(w) Confidentiality of Information

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

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

- (i) The name and address of any permit applicant or permittee;
- (ii) Permit applications, permits and any attachments thereto; and
- (iii) NPDES effluent data.

(x) Best Management Practices

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

(y) Right of Appeal

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

**DEFINITIONS**

1. For purposes of this permit, those definitions contained in the RIPDES Regulations and the Rhode Island Pretreatment Regulations shall apply.
2. The following abbreviations, when used, are defined below.

cu. M/day or M <sup>3</sup> /day	cubic meters per day
mg/l	milligrams per liter
ug/l	micrograms per liter
lbs/day	pounds per day
kg/day	kilograms per day
Temp. °C	temperature in degrees Centigrade
Temp. °F	temperature in degrees Fahrenheit
Turb.	turbidity measured by the Nephelometric Method (NTU)
TNFR or TSS	total nonfilterable residue or total suspended solids
DO	dissolved oxygen
BOD	five-day biochemical oxygen demand unless otherwise specified
TKN	total Kjeldahl nitrogen as nitrogen
Total N	total nitrogen
NH <sub>3</sub> -N	ammonia nitrogen as nitrogen
Total P	total phosphorus
COD	chemical oxygen demand
TOC	total organic carbon
Surfactant	surface-active agent
pH	a measure of the hydrogen ion concentration
PCB	polychlorinated biphenyl
CFS	cubic feet per second
MGD	million gallons per day
Oil & Grease	Freon extractable material
Total Coliform	total coliform bacteria
Fecal Coliform	total fecal coliform bacteria
ml/l	milliliter(s) per liter
NO <sub>3</sub> -N	nitrate nitrogen as nitrogen
NO <sub>2</sub> -N	nitrite nitrogen as nitrogen
NO <sub>3</sub> -NO <sub>2</sub>	combined nitrate and nitrite nitrogen as nitrogen
Cl <sub>2</sub>	total residual chlorine