

## APPENDIX D

UNITED STATES  
ENVIRONMENTAL PROTECTION AGENCY  
REGION 2  
290 Broadway  
New York, New York 10007-1866

**FACT SHEET  
FOR  
DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION  
SYSTEM (NPDES) PERMIT TO DISCHARGE  
INTO THE WATERS OF THE UNITED STATES**

**NPDES Permit No. PR0021555**

Name and Address of Applicant:

Puerto Rico Aqueduct and Sewer Authority  
P.O. Box 7066  
Barrio Obrero Station  
San Juan, Puerto Rico 00916

Name and Address of Facility where discharge occurs:

Puerto Nuevo Regional Wastewater Treatment Plant  
Road #2 km 2, John F. Kennedy Avenue  
San Juan, Puerto Rico 00926

Receiving Water: Atlantic Ocean

Receiving Water Classification: Class SC

Permit Writer: Yasmin Laguer, Caribbean Environmental Protection Division

**I. LOCATION OF DISCHARGE**

The above-named applicant has applied to the U.S. Environmental Protection Agency (EPA) for a NPDES permit, to discharge into the designated receiving water. The approximate U.S.G.S. coordinates for Discharge 001 are:

Latitude **18°29'13"** North  
Longitude **66°08'21"** West

## II. DESCRIPTION OF FACILITY

The Puerto Nuevo Regional Wastewater Treatment Plant (RWWTP) started operations in 1957. The facility is owned and operated by the Puerto Rico Aqueduct and Sewer Authority (PRASA). It is located at Road #2 km 2, John F. Kennedy Avenue in San Juan, Puerto Rico. The Puerto Nuevo RWWTP serves the municipalities of San Juan, Trujillo Alto, and portions of Bayamón, Guaynabo and Carolina.

The Puerto Nuevo RWWTP is designed to treat an average hydraulic loading of 72 million gallons per day (MGD) and a peak hydraulic loading of 144 MGD. Currently, the average daily and maximum flows are approximately 57 MGD and 64 MGD, respectively. The facility's layout includes a pumping station, mechanical bar screen, grit removal mechanism, primary clarifiers, sludge handling facilities and disinfection area. The treated effluent from the Puerto Nuevo RWWTP combines with treated effluent from the Bayamón RWWTP and the Bacardi Corporation's wastewater treatment plant (WWTP). The combined effluent is then discharged approximately 7,365 ft (2,246 m) from the shoreline into the Atlantic Ocean, at a location approximately 3,600 ft (1,097 m) north of Isla de Cabras, at a depth of 141 ft (43 m). The discharge is through a high-rate, Y-shaped diffuser consisting of two (2) legs that are each 1,010 ft (308 m) in length and a constant 84-inch diameter. The west leg of the diffuser has 100 bell-mouthed ports and the east leg of the diffuser has 102 bell-mouthed ports, each at 15 degrees from the horizontal. There are a total of 202 ports. On the west diffuser leg, there are 80 inshore ports that have a diameter of 6 in (15.2 cm), 19 offshore ports that have a diameter of 7 in (17.8 cm), and 1 10-inch (25.4 cm) port. On the east diffuser leg, there are 81 inshore ports that have a diameter of 6 in (15.2 cm), 20 offshore ports that have a diameter of 7 in (17.8 cm), and 1 10-inch port. The ports discharge on alternating sides of the diffuser and are evenly spaced at 10 ft (3.05 m) intervals. The diffuser is currently operated with all 202 ports open. PRASA is proposing to continue discharging through all 202 ports.

An explanation of the physical components of the Puerto Nuevo RWWTP follows:

### *Influent Pumping Station and Headworks*

Wastewater collected and transported to the Puerto Nuevo RWWTP enters a common headworks structure prior to entering three screening channels. The screening facility has two hydraulically actuated mechanical bar screens, which remove large debris such as rags, paper, rocks and material from the wastewater stream. Removal of this material is necessary to protect mechanical equipment such as pumps and augers from excessive wear and tear.

Following screening, the wastewater is pumped by the influent pumping system to the grit removal process. Influent pumping is accomplished by up to five pumps (two variable speed type, and three constant speed type rated at 37,000 gpm each) of the vertical centrifugal type. The pumps operate at constant speed either automatically based on influent wet well water level or in the manual mode with operator controlled speed adjustment. The pumped influent flow is

discharged through two headers that convey the wastewater to the grit system channels through the East and West pipe galleries.

The grit removal system is designed to remove material that is not removed by screening and is suspended in the fluid medium as a result of the wastewater velocity. This material is composed of grit and sand-type-particles that are classified as discrete particles. The Puerto Nuevo RWWTP has six horizontal velocity controlled grit units where grit is deposited, collected, pumped and removed for disposal. Each grit unit is 60 ft long with a trapezoidal section that is 6 ft 7 in wide at the top, 22 in wide at the bottom, and approximately 8 ft deep. Settled grit is collected and transported by screw conveyors. Six recessed impeller vortex type grit pumps remove the grit collected from the units to the grit classifiers. Grit removed from the classifiers is discharged to a container for offsite disposal. Effluent from the grit units is collected in a common channel and is discharged to the primary sedimentation tanks after flow measurement in a Parshall flume.

#### *Advanced Primary Treatment*

The Puerto Nuevo RWWTP is designed to provide the primary treatment of wastewater prior to discharge to the Atlantic Ocean. Basic primary treatment involves the physical separation of solid matter in the wastewater by gravitational forces. Raw wastewater is composed of discrete and organic solid particles. Primary sedimentation basins are designed to remove a large fraction of the discrete or settleable solid particles. The organic fraction of solid particles, suspended solids, are minute in size and are not readily removed in the liquid-solid separation phase of the primary sedimentation basins. To enhance sedimentation, the draft permit will require the continued use of a chemical additive to increase the settling of suspended solids.

Following grit removal, the wastewater is conveyed through a Parshall flume to the influent channel of the primary sedimentation basins. The process of sedimentation is carried out in a total of fourteen (14) identical sedimentation tanks split into two groups. Group I consists of four older settling tanks, while Group II consists of the remaining ten tanks. Each tank consists of two longitudinal bays approximately 200 ft long, 16 ft wide and with an average side water depth of 8 ft. Each tank is equipped with two longitudinal chain and flight sludge collector mechanisms (one per channel) and one cross connector mechanism. A level actuated slotted scum removal pipe is provided at the effluent end of each channel.

Settled sludge is moved by the chain and flight collectors to the influent end of each basin. At the head of each tank, a cross collector moves the sludge to a center hopper shared by each pair of tanks. Sludge is removed and pumped by the primary sludge transfer pumps to the gravity thickeners distribution box.

The primary effluent is discharged via an arrangement of v-notch weirs at the downstream end of the basins. The effluent channel from the settling tanks feeds an effluent chamber where chlorine is diffused for post-chlorination. The chamber discharges into a 102-inch diameter reinforced

concrete pipe that conveys the primary effluent to the effluent pumping station for subsequent discharge to the outfall.

#### *Primary Sludge Handling*

Primary sludge is removed from the sedimentation tanks and pumped by the primary sludge transfer pumps to the sludge distribution box upstream of the gravity thickeners. Two pumps serve the Group I sedimentation tanks and four pumps serve the Group II tanks. The sludge distribution box also receives sludge from the sludge holding tanks. The sludge thickeners are concrete structures equipped with rotating sludge thickener mechanisms designed to thicken sludge to approximately 5 to 10 percent solids. Thickened primary sludge is pumped to a tanker truck for offsite disposal.

### III. DESCRIPTION OF DISCHARGE AND DRAFT PERMIT CONDITIONS

A description of the type and quantity of pollutants which are discharged or proposed to be discharged is included in Attachment I. The effluent limitations, monitoring requirements, schedules of compliance and other conditions of the draft permit are also described in Attachment I.

### IV. COMMONWEALTH CERTIFICATION REQUIREMENTS

Commonwealth Certification requirements based upon a Water Quality Certificate (WQC) issued by the Puerto Rico Environmental Quality Board (EQB) are described in Part I of the draft permit. Review and appeals of limitations and conditions attributable to Commonwealth Certification shall be made through the applicable procedures of the Commonwealth of Puerto Rico and may not be made through EPA procedures.

### V. SECTION 301(h) MODIFIED PERMIT FOR THE PUERTO NUEVO RWWTP

Under section 301(h) of the Clean Water Act, 33 U.S.C. 1311(b)(1)(B), publicly-owned wastewater treatment plants that discharge into deep ocean waters can apply for a modification of secondary treatment requirements and be approved for a modified NPDES permit by the EPA provided that the applicant demonstrates that it meets all nine of the statutory and regulatory criteria. In 2007, the EPA issued a final approval of PRASA's renewal application for a modified permit for the Puerto Nuevo RWWTP, and subsequently issued a permit that became effective on July 1, 2008, and will expire on June 30, 2013. The EPA intends to revoke this permit and reissue a new permit based on a new section 301(h) analysis to reflect a change in wastewater flow from the Puerto Nuevo RWWTP as a result of proposed facility modifications that would enable the diversion of up to 10 MGD of untreated sewage from the Bayamón RWWTP to the Puerto Nuevo RWWTP via the reconstruction and expansion of the La Rabúa pump station.

On October 1, 2010, PRASA requested a renewal of its section 301(h) modification of secondary treatment requirements for the Puerto Nuevo RWWTP. EPA has issued a tentative approval of

PRASA's request for a section 301(h) modification from secondary treatment requirements in the draft permit for the Puerto Nuevo RWWTP. A detailed discussion of EPA's findings, conclusions and recommendations on compliance of the Puerto Nuevo RWWTP discharge, alone and in combination with discharges from the Bayamón RWWTP and Bacardi Corporation WWTP, with the criteria set forth in section 301(h) of the Act and its implementing regulations at 40 CFR Part 125, Subpart G, and Puerto Rico Water Quality Standards Regulations, as amended (Regulation Number 7837), is presented in the EPA's 2011 Decision Document for the Bayamón and Puerto Nuevo RWWTPs. EPA is proposing a draft 301(h) modified permit under section 402 of the Act which modifies the requirements of subsection 301(b)(1)(B) with respect to the discharge of any pollutant from a publicly owned treatment works into marine waters.

## VI. ENVIRONMENTAL JUSTICE

Environmental Justice (EJ) is the right to a safe, healthy, productive and sustainable environment for all, where "environment" is considered in its totality to include the ecological, physical, social, political, aesthetic and economic environments. The EPA has performed an EJ analysis for the Bayamon RWWTP in accordance with the President's Executive Order 12898 entitled "Federal Actions to Address Environmental Justice in Minority Population and Low-Income Populations" and its regional Interim Policy for Environmental Justice. The EPA has prepared an EJ analysis for the Puerto Nuevo RWWTP service area that includes the Community of Concern (COC), Municipality of San Juan. Since the Bayamón RWWTP and Bacardi WWTP potentially impact a different COC, the EPA has prepared a separate EJ analysis that includes both facilities. The EJ analyses are part of the Administrative Record and are available for review upon request.

In the EJ analysis, EPA determined that the Municipality of San Juan is an EJ community although demographic and income information indicate that the average poverty level in San Juan does not exceed the threshold average for Puerto Rico, as established in the EPA Region 2's Interim Policy for Environmental Justice. Based on the EPA environmental databases, the EPA determined that the potential exists for a disproportionate and/or adverse environmental burden in the Municipality of San Juan since there were a higher number of facilities in San Juan that were listed for toxic releases than the average number of facilities island-wide. In the NPDES permitting program, the public participation process provides opportunities to address EJ concerns by providing appropriate avenues for public participation, seeking out and facilitating involvement of those potentially affected, and including public notices in more than one language where appropriate. The EPA is committed to taking all necessary actions to minimize potential adverse impacts to the Municipality of San Juan from Puerto Nuevo RWWTP. The EPA has prepared a public notice for comment on the draft permit in both English and Spanish, and will address any EJ concerns that arise during the public comment period.

## VII. PROCEDURES FOR REACHING A FINAL DECISION ON THE PERMIT

Procedures for reaching a final decision on the permit are set forth in 40 CFR Part 124 and described in the public notice of the preparation of the draft permit. Included in the public notice are requirements for the submission of comments by a specified date, procedures for requesting a

hearing and the nature of the hearing, and other procedures for participation in the final agency decision.

#### VIII. EPA CONTACT

Additional information concerning the draft permit and the section 301(h) Decision Document may be obtained between the hours of 8:00 A.M. and 4:30 P.M Eastern Standard Time, Monday through Friday from:

Ms. Yasmin Laguer  
Caribbean Environmental Protection Division  
EPA Region 2  
Centro Europa Building, Suite 417  
1492 Ponce de Leon Avenue, Stop 22  
San Juan, Puerto Rico 00909  
(787) 977-5848

## ATTACHMENT I

### DESCRIPTION OF DISCHARGE AND DRAFT PERMIT CONDITIONS

#### Outfall No. 001

The treatment plant effluent is discharged through Outfall No. 001 into the **Atlantic Ocean (Classification SC)**. Since effluent from the Puerto Nuevo RWWTP combines with effluent from the Bayamón RWWTP and Bacardi Corporation WWTP, compliance with effluent limitations and monitoring requirements shall be determine at an effluent sampling point at the Puerto Nuevo RWWTP for Discharge 001, pursuant to EQB's Final WQC. EQB has defined the sampling point for Discharge 001 to be located immediately after the primary flow measuring device of the effluent treatment system

The following are the proposed effluent limitations and permit conditions:

1. The proposed effluent limitations for biological oxygen demand (BOD<sub>5</sub>) and total suspended solids (TSS) are based on the federal definition of primary or equivalent treatment (40 CFR 125.60), EPA's section 301(h) Decision Document, the EQB's Final WQC issued on June 3, 2010, and an evaluation of existing effluent quality performed by EPA.
2. Average Monthly BOD<sub>5</sub> Concentration - **117 mg/l**
3. Average Monthly Suspended Solids Concentration - **75 mg/l**  
Percent Removal - **60 %**
4. Average Monthly Discharge: **72 MGD**  
Maximum Daily Discharge: **144 MGD**
5. The draft permit includes a Mixing Zone (MZ) which has been defined and authorized by EQB pursuant to Rule 1305 of the Puerto Rico Water Quality Standards Regulations (PRWQSR). The MZ is delineated by the following points:

#### **Geographic Coordinates\*** **New WQC**

Point 1	Lat. 18° 29.181' Long. 66° 08.518'
Point 2	Lat. 18° 29.202' Long. 66° 08.503'



**Geographic Coordinates\***  
**New WQC**

Point 3	Lat. 18° 29.100 Long. 66° 08.340'
Point 4	Lat. 18° 29.097' Long. 66° 08.150'
Point 5	Lat. 18° 29.072' Long. 66° 08.150'
Point 6	Lat. 18° 29.075' Long. 66° 08.348'

\* NAD 83 State Plane Coordinates

6. The MZ has been defined by EQB for the following parameters in the draft permit:  
**Cadmium, Color, Copper, Free Cyanide, Dissolved Oxygen, Lead, Mercury, Nickel, Nitrogen (NO<sub>2</sub>, NO<sub>3</sub>, NH<sub>3</sub>), pH, Silver, Sulfide, Surfactants, Temperature, Thallium, Turbidity, and Zinc.**
7. The water quality-based effluent limitations from the previous permit for **Arsenic and Total Coliform** are not included in the Final WQC issued by the EQB. EPA has determined that it is appropriate to remove the effluent limitations for these parameters without violating the anti-backsliding provisions of the Act, in accordance with section 402(o), because one of the exceptions to the provisions has been satisfied. Section 402(o)(2)(B)(i) of the Act provides that if information is available which was not available at the time of permit issuance and would have justified the application of a less stringent effluent limitation at the time of permit issuance, a permit may be renewed to contain a less stringent effluent limitation. Information submitted indicates that the discharge from Outfall No. 001 is not reasonably expected to contribute to a water quality exceedance for these parameters. Therefore, a water quality-based effluent limitation is not necessary for these parameters. Antidegradation requirements are not violated by removing the limits for these parameters. The permittee will be maintaining the same level of treatment and discharging the pollutants at the same level as under the previous permit. Therefore, the discharge would not contribute to further degradation of the receiving water and existing uses would be maintained.
8. The water quality-based effluent limitations from the previous permit for **BOD<sub>5</sub>, Copper, Cyanide, Lead, Mercury, Nickel, Nitrogen, Silver, Sulfide, Surfactants, Thallium, Turbidity, and Zinc** have been replaced with more stringent water quality-based limitations in the Final WQC issued by the EQB. Pursuant to section 401(d) of the Act

and 40 CFR 122.44(d) and 124.55, all State certified limitations and requirements contained in a section 401 certification shall be incorporated into a permit issued by EPA. The water quality-based effluent limitations referenced in this paragraph have been included in the draft permit for the Puerto Nuevo RWWTP based on EQB's Final WQC.

9. The effluent limitation for **Oil & Grease, Residual Chlorine, Solids and other Matter, Suspended, Colloidal or Settleable Solids, and Taste and Odor-producing Substances** are based on EQB's Final WQC.
10. The following Special Conditions were included as written in the Final WQC issued by the EQB dated June 3, 2010, with the additions and clarifications; as described below:

Special Condition 6: Sulfide (Undissociated H<sub>2</sub>S)

The Final WQC issued by EQB includes an effluent limitation and monitoring requirement for sulfide (undissociated H<sub>2</sub>S). The Final WQC does not specify an analytical method for sulfide (as undissociated H<sub>2</sub>S) in Special Condition No. 6 of the WQC, only that an approved EPA analytical method must be utilized that achieves the lowest possible detection level. EPA has included footnote "@" for sulfide in Table A.1 of the draft permit which specifies the methodology that must be used for calculating undissociated H<sub>2</sub>S from the dissolved Sulfide concentration and clarification to Special Condition No. 6 for reporting sulfide (undissociated H<sub>2</sub>S) concentrations when sample results are below detection limits.

Special Condition 20: Whole Effluent Toxicity

EPA has included an effluent limitation for Whole Effluent Toxicity (WET) for the combined discharge from the Bacardi facility, Bayamón RWWTP and Puerto Nuevo RWWTP. WET monitoring requirements have also been included for effluent only from the Puerto Nuevo RWWTP. Similar monitoring requirements have been incorporated into the NPDES permits for the Bayamón RWWTP and Bacardi facility. Attachment II of this Fact Sheet provides a summary of WET requirements established in the draft permit.

11. On April 19, 1994, EPA issued the "Combined Sewer Overflow (CSO) Control Policy" (59 FR 18688). This policy establishes a consistent approach in the NPDES program for controlling discharges from CSOs nationwide. In December 2000, the Act was amended to add language to section 402(q) requiring that each permit, order, or decree issued pursuant to the Act, after December 21, 2000, for a discharge from a municipal combined storm and sanitary sewer shall conform to the Combined Sewer Overflow Control Policy signed by the Administrator on April 11, 1994. In accordance with Section 402(q), EPA has included CSO conditions in the draft permit for the Puerto Nuevo RWWTP (see **Attachment 2: Combined Sewer Overflow (CSO) Permit Condition**). The CSO permit conditions require PRASA to comply with Technology and Water Quality-based

requirements and develop a Long-Term Control Plan to help control and eventually eliminate CSOs in the Puerto Nuevo RWWTP service area.

12. The draft permit requires the permittee to comply with the requirements of the **Urban Area Pretreatment Program** as established in 40 CFR 125.65 and 40 CFR Part 403. The implementation of an **Urban Area Pretreatment Program** is one of the main requirements of the section 301(h) program and the Urban Area Pretreatment Program is established to control the entrance of toxic pollutants into the Puerto Nuevo RWWTP.
13. The draft permit requires the permittee to comply with the **Sanitary Sewage Sludge** requirements as established in 40 CFR Part 503. As required by the 1987 amendments to the Act, EPA developed this regulation to protect public health and the environment from any reasonably anticipated adverse effects of certain pollutants that might be present in sewage sludge biosolids.
14. As required in 40 CFR 125.62, the draft permit includes the requirement for the permittee to continue to implement a receiving water monitoring program referred to as the **Section 301(h) Waiver Demonstration Studies**. This monitoring program is designed to provide data to demonstrate compliance with applicable Puerto Rico Water Quality Standards and section 301(h) criteria, to evaluate the impact of the facility's discharge on the marine biota, and to measure the potential toxic substances in the discharge. Under 40 CFR 125.62, the goals of this program are to: document short and long term effects of the discharge in the receiving waters, sediments, biota and on beneficial uses of the receiving waters; determine compliance with permit terms and conditions and the applicable Puerto Rico water quality standards and EPA marine criteria; and to assess the effectiveness of the applicant's toxic control program.
15. As required in 40 CFR 125.66, the draft permit requires the permittee to implement a **Non-Industrial Source Control Program** so that the permittee, to the extent practicable, can eliminate the entrance of toxic pollutants from non-industrial sources into such treatment works.
16. Based on professional judgment, EPA has established a permit condition that requires that permittee continue the use of chemical addition to enhance solids sedimentation and that any chemical addition shall be flow proportional.

## ATTACHMENT II

### Whole Effluent Toxicity Requirements

Rule 1303.1(I) of PRWQS provides all waters of Puerto Rico shall not contain any substance at such concentration which, either alone or as result of synergistic effects with other substances is toxic or produces undesirable physiological responses in human, fish or other fauna or flora. This is generally referred to as a narrative water quality criterion "no toxics in toxic amounts". PRWQS do not provide a numeric criterion for toxicity. Since controls on individual pollutants may not always adequately protect water quality, toxicity testing is used to assess and control whole effluent toxicity (WET) which is necessary to reduce or eliminate the toxic impact of the effluent and meet narrative water quality criteria (54 FR 23868, June 2, 1989). NPDES regulations define WET as the whole or aggregate toxic effect of an effluent measured directly by a toxicity test.

Pursuant to the current modified permits, PRASA is required to conduct acute and chronic WET testing on the combined effluent and chronic only WET testing on individual effluent samples from the Bayamón RWWTP, Puerto Nuevo RWWTP, and the Bacardi WWTP. Since 2007, PRASA has conducted four acute WET monitoring events for the combined effluent using the mysid shrimp (*Mysidopsis bahia*) and sheepshead minnow (*Cyprinodon variegatus*) and 11 chronic WET monitoring events using these WET test species and the sea urchin (*Arbacia punctulata*). Five of the most recent 11 chronic WET monitoring events also included testing on individual effluent using the sea urchin. Since effluent toxicity is inversely related to the effect concentration (the lower the effect concentration, the higher the toxicity in the effluent), WET test data are typically expressed as toxic units (TUs) to better illustrate the magnitude of potential toxicity. Rule 1301.1 of PRWQS defines acute TU (TU<sub>a</sub>) and chronic TU (TU<sub>c</sub>) values as the Lethal Concentration (LC<sub>50</sub>) of the tested effluent at which 50 percent of the test organisms die, where  $TU_a = 100 \div LC_{50}$ ; and the No Observed Effect Concentration (NOEC), where  $TU_c = 100 \div NOEC$ , respectively.<sup>1</sup> To assess WET test data, EPA recommends a criterion maximum concentration (CMC) of 0.3 TU<sub>a</sub> and criterion continuous concentration (CCC) of 1.0 TU<sub>c</sub> be used to ensure aquatic life protection against toxicity in the receiving water. For the purpose of the section 301(h) evaluation, EPA determined the maximum allowable level of effluent toxicity or wasteload allocation (WLA) at the edge of the mixing zone that would still ensure attainment of water quality criteria for toxicity. With consideration of dilution and CMC and CCC values, EPA calculated acute and chronic WLAs of 30.6 TU<sub>a</sub> and 102 TU<sub>c</sub>, respectively, and then compared the WLAs to effluent WET test data.

A comparison of acute and chronic WET test data and WLAs is presented in Appendix A of the EPA's 2011 Decision Document. For the combined effluent, no acute toxicity was observed although several chronic WET tests reported TU<sub>c</sub> values based on the NOEC that exceeded the chronic WLA.

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<sup>1</sup> The NOEC is the highest tested effluent concentration (in percent effluent) that does not cause an adverse effect on the test organism (i.e., the highest effluent concentration at which the values for the observed responses are not statistically different from the control).

Of the 30 chronic WET tests conducted on the combined effluent since 2007, 30 percent (or 10 tests) resulted in TUC values that exceeded the 102 TUC WLA. All of these tests were conducted on the sea urchin and 60 percent of them were conducted in May 2007. When compared to the permit limitation of 1.00 percent effluent or 100 TUC derived from the IC<sub>25</sub>, or the inhibition concentration at which a 25 percent effect occurs, no chronic toxicity is demonstrated. Based on the NOEC pursuant to PRWQS, since these tests were conducted on the combined effluent it is difficult to distinguish whether effluent from one facility or all was contributing to toxicity in these tests. In 2009, PRASA and the Bacardi Corporation began conducting chronic WET testing on individual samples of effluent from each facility in addition to the combined effluent. Between 2009 and 2011, five chronic WET tests using the sea urchin were conducted and results showed no toxicity observed in terms of the NOEC for the combined effluent but showed repeated toxicity in effluent samples from the Bacardi RWWTP. This may suggest that toxicity demonstrated in tests of combined effluent prior to 2009 may be attributed to effluent from the Bacardi WWTP. Nevertheless, nine WET monitoring events have been conducted since May 2007 and only one has demonstrated chronic toxicity on the combined effluent. Also no acute or chronic toxicity has been observed in effluent from the Bayamón RWWTP and only one effluent sample from the Puerto Nuevo RWWTP showed chronic toxicity.

Based on review of WET data, in accordance with 40 CFR 122.44(d)(v), EPA has determined that the combined discharge will cause, has the reasonable potential to cause, or contributes to an excursion above the narrative criterion for chronic toxicity and has proposed effluent limitation for the combined discharge. With consideration of dilution, EPA has proposed a maximum daily effluent limitation of 83.32 TUC (or 1.2 percent effluent) for chronic toxicity in the draft modified permits for the Bayamón RWWTP, Puerto Nuevo RWWTP, and Bacardi WWTP. EPA believes that the combined discharge will meet this effluent limitation upon permit issuance.

In addition to the limitation, EPA has included other toxicity testing requirements on the individual effluents from these three facilities, as these effluents combine prior to discharge. The toxicity observed in the effluent may be the result of toxicity in one or more of the discharges, or it may be the result of synergistic effects that occur when the effluents combine prior to discharge. The contemporaneous testing on each of the effluents from these facilities will provide an indication as to the source of any toxicity observed in the combined discharge.

EPA is also requiring that all three dischargers develop plans for a toxicity reduction evaluation (TRE) within the first six months of the permit term. The three dischargers may coordinate and develop one plan to meet the permit requirement in each permit. Violation of the limitation for chronic toxicity using the combined discharge would trigger accelerated monitoring of both the combined discharge and solely the Bacardi effluent for twelve weeks (PRASA would be required to test their individual effluents for the Bayamon and Puerto Nuevo facilities in addition to the combined discharge as well). During the accelerated testing period an additional violation of the limitation on the combined discharge would require these three permittees to activate their TRE workplans, and implement their strategy to identify and abate the source of toxicity.

### Calculation of Waste Load Allocation (WLA)

The WLA is used to determine the level of effluent concentration that will comply with water quality standards in receiving waters. Using the information available for dilution, WLAs were calculated for

WET using the complete mix equation, which simplifies to

$$WLA = C_r \times \text{Dilution Ratio}$$

where  $C_r$  = the water quality criterion concentration. In Puerto Rico, a criterion continuous concentration of 1.0 TU<sub>c</sub>, and a criterion maximum concentration (CMC) of 0.3 TU<sub>a</sub> is used as the numeric interpretation of the water quality standard for toxicity.

Using a critical initial dilution (CID) ratio of 102:1, the chronic WLA would be

$$WLA_c = C_r \times 102 = 1.0 \times 102 = 102.0 \text{ TU}_c$$

$$WLA_a = 0.3 \times 102 = 30.6 \text{ TU}_a$$

$$WLA_{a,c} = WLA_a \times ACR = 30.6 \times 10 = 306 \text{ TU}_{a,c}$$

### Calculate Long-term Averages (LTAs).

To calculate the long term average (LTA):

$$LTA = WLA \times e^{[0.05\sigma^2 z\sigma]}$$

$$LTA_{a,c} = 306 \times 0.321 = 98.23 \text{ TU where:}$$

0.321 is the acute WLA multiplier for  $C_v = 0.6$  at the 99<sup>th</sup> percentile (from Table 5-1, pg. 102 of the TSD)

$$LTA_c = WLA_c \times e^{[0.5\sigma^2 - z\sigma]}$$

$$LTA_c = 102 \times 0.527 = 53.75 \text{ where:}$$

0.527 is the chronic WLA multiplier at the 99<sup>th</sup> percentile (from Table 5-1, pg. 102 of the TSD)

**Select the minimum LTA.**

The LTA based on the chronic WLA is more limiting and will be used to develop permit limits.

**Limit Calculation:**

Using the 95<sup>th</sup> percentile and monthly sampling, the effluent limit is calculated as:

$$LTA \times e^{[z \sigma_n^{0.5} \sigma_n^2]} \text{ where } e^{[z \sigma_n^{0.5} \sigma_n^2]} = \text{AML LTA multiplier}$$

$z = 1.645$  for the 95<sup>th</sup> percentile occurrence probability for the AML is recommended

$n$  = number of samples/month (the TSD recommends that a minimum  $n$  of 4 be used, even if monitoring is less frequent).

From Table 5-2, on pg. 102 of the TSD, for  $CV = 0.6$  and  $n=4$ ,

$$AML = 53.75 \times 1.55 = \mathbf{83.32 \text{ TUc}}$$

### **ATTACHMENT III**

#### **Ocean Discharge Criteria**

Section 403(c) of the Clean Water Act (the Act) and the Ocean Discharge Criteria regulations at 40 CFR Part 125, Subpart M (45 FR 65942, October 3, 1980) provide that no permit for a discharge to the territorial sea, the contiguous zone, or the ocean may be issued except in compliance with the Ocean Discharge Criteria in section 403(c) of the Act. Since the combined wastewater discharges to the territorial sea (i.e., the Atlantic Ocean), compliance with Ocean Discharge Criteria has been evaluated as part of the renewal process.

Discharges from the combined outfall for the Bayamón and Puerto Nuevo RWWTPs and the Bacardi WWTP have been evaluated for impacts to the marine environment as part of the EPA's review of PRASA's applications for a section 301(h) modification from secondary treatment requirements for the Bayamón and Puerto Nuevo RWWTPs. Under 40 CFR 125.122(b), discharges in compliance with section 301(h) shall be presumed not to cause unreasonable degradation of the marine environment. The EPA has determined that the discharges from the combined outfall meet the requirements of section 301(h) and, therefore, has concluded that discharges from the combined outfall, including those from the Puerto Nuevo RWWTP, will not cause unreasonable degradation to the marine environment.