Commonwealth of the Northern Mariana Islands
OFFICE OF THE GOVERNOR
Bureau of Environmental and Coastal Quality
DEQ: P.O. Box 501304, DCRM: P.O. Box 10007, Saipan, MP 96950-1304
DEQ Tel.: (670) 664-8500/01; Fax: (670) 664-8540
DCRM Tel.: (670) 664-8300; Fax: (670) 664-8315
www.deq.gov.mp and www.crm.gov.mp

Frank M. Rabauliman
Administrator

Ray S. Masga
Acting Director, DEQ

February 17, 2017

Commonwealth Utilities Corporation
Gary Camacho, Acting Executive Director
PO Box 501220
Saipan, MP 96950

RE: Water Quality Certifications and Mixing Zone Approvals
– Sadog Tasi Wastewater Treatment Plant
– Agingan Wastewater Treatment Plant

Dear Mr. Camacho:

We have completed review of the application documents submitted in support of CUC's request for water quality certification and approval of a mixing zone for the discharge of secondary treated wastewater from the Sadog Tasi Wastewater Treatment Plant and the Agingan Wastewater Treatment Plant, and have granted conditional approval in accordance with all applicable requirements of the CNMI Water Quality Standards.

Please review the attached water quality certifications and mixing zone approval documents and take careful note of all provisions. Of special importance is the fact that this approval may be incorporated into the new NPDES permits that the U.S. Environmental Protection Agency is currently drafting.

If you have any comments or questions regarding this mixing zone approval, please contact our office a telephone number 664-8500.

Sincerely,

Frank M. Rabauliman, Administrator

Att: Water Quality Certification WQC-2017-001
Mixing Zone Approval ZOM-2017-001
Water Quality Certification WQC-2017-002
Mixing Zone Approval ZOM-2017-002

Cc: Peter Kozelka, USEPA region IX
Carl Goldstein, USEPA region IX
Rodney Camacho, BECQ Water Quality

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CNMI MIXING ZONE APPROVAL ZOM-2017-002

Re: Water Quality Certification No. WQC-2017-002
Agingan Wastewater Treatment Plant

THIS MIXING ZONE APPROVAL is issued in conformance with the requirements of the CNMI Water Quality Standards (WQS), NMIAC Chapter 65-130 for the discharge of secondary treated wastewater from the Agingan Wastewater Treatment Plant, pursuant to an application filed on June 24, 2014.

Part 500 of the CNMI WQS states that DEQ may allow a limited zone of mixing in the immediate area of a point source of pollution, provided the mixing zone is not granted in lieu of reasonable control measures, and if the requirements of Part 500 are met. In granting a mixing zone, BECQ must specify alternative criteria that must be met within the zone of mixing.

BECQ has determined that the application materials support a finding that the mixing zone is not being granted in lieu of reasonable control measures, and that, in conjunction with the conditions set forth herein, reasonable assurance has been provided that water quality criteria will not be exceeded beyond the zone of initial dilution, which is established herein as the mixing zone. In the remainder of this document, BECQ will show how this approval meets the requirements of Part 500, and will specify alternative criteria that must be met within the zone of mixing.

1. Applicant(s):

   Commonwealth Utilities Corporation
   Gary Camacho, Acting Executive Director
   PO Box 501220
   Saipan, MP 96950

2. Application Materials Evaluated:
   a. Application letter for 401 WQC and Mixing Zone approval, dated June 24, 2014, along with attached application documentation, including Agingan Outfall Assessment from the Wastewater Master Plan.
   b. Draft U.S. Environmental Protection Agency (USEPA) National Pollutant Discharge Elimination System (NPDES) Permit, dated March 2016.
   c. USEPA Fact Sheet dated March 2016.

3. Mixing Zone Characteristics:

   a. Critical initial dilution ratio:

   Based on the approved application documents, including the results of water quality modeling performed by CUC's contractor (the initial model run in 2001) and the dilution model review

conducted by CUC's Master Plan consultant (2013) using a plat design flow of 3.0 MGD and a current speed of 0.10 m/s, **a critical initial dilution of 288:1** for all parameters listed in paragraph 5 below is hereby approved in the location and within the dimensions described below:

b. Location and description of discharge point:

The diffuser structure is comprised of a 24 inch HDPE pipe fitted with a single 24 inch tide flex valve, protruding from the seafloor at an angle of 30o from the horizontal. The end of the diffuser structure is located within the body of water known as Tinian Channel, in the Philippine Sea, approximately 650 feet from the shore and at a depth of 94 feet below mean sea level, at the following coordinates (WGS-84 coordinate system):

15° 7' 7.88" north latitude
145° 41' 18.29" east longitude

c. Dimensions / orientation of mixing zone

The mixing zone extends **200 feet in all directions from the diffuser port**. The WQS allow for a sub area within the immediate vicinity of the discharge point termed a zone of initial dilution (ZID). In this case the ZID and the mixing zone have the same dimensions (the ZID extends to the boundary of the mixing zone).

4. Period of Mixing Zone Approval:

This mixing zone approval is valid only for the specified term of the associated NPDES Permit, and shall not exceed five (5) years. The applicant must submit any request for a new mixing zone approval at least 180 days prior to the expiration of this approval to avoid delay in the issuance of a new approval.

5. Mixing Zone Parameters and Alternative Criteria
   a. Numeric water quality criteria are waived within the mixing zone for the following constituents:
      - Microbiological indicators: Enterococci, E. Coli
      - Nitrate-Nitrogen
      - Total Nitrogen
      - Orthophosphate
      - Total Phosphorus
      - Ammonia (un-ionized)
      - Dissolved Oxygen
      - Salinity
      - Temperature
      - Turbidity
      - Toxic Pollutants

   b. Alternative Criteria: *

Within the mixing zone, the discharge shall be free from:

i Materials that will settle to form objectionable sludge or bottom deposits.
ii Floating debris, oil, grease, scum, or other floating materials.
iii Substances in amounts sufficient to produce taste or odor in the water or detectable off flavor in the flesh of fish, or in amounts sufficient to produce objectionable odor, turbidity, or other conditions in the receiving waters.
iv High temperatures; biocides; pathogenic organisms; toxic, corrosive, or other deleterious substances at levels or in combinations sufficient to be toxic or harmful to human health or aquatic life, or in amounts sufficient to interfere with any beneficial use of the water.
v Substances or conditions or combinations thereof in concentrations which produce undesirable aquatic life.
vi Toxic pollutants in concentrations that are lethal to, or that produce detrimental physiological responses in human, plant, or animal life. Detrimental responses include, but are not limited to, decreased growth rate and decreased reproductive success of resident or indicator species and/or significant alterations in population or community ecology or receiving water biota.

*NOTE: the alternative water quality criteria specified within this document are NOT effluent limitations. Effluent limitations are specified in the associated NPDES Permit and Water Quality Certification.

6. Statement of Compliance with Mixing Zone Rules

Part 500 of the CNMI Water Quality Standards states that the water quality criteria in the standards shall apply within a mixing zone unless specific alternative criteria have been approved by the Bureau of Environmental and Coastal Quality. Mixing Zones are not to be granted in lieu of reasonable control measures to reduce point source pollutant discharges but will be granted to complement the applicable controls. A limited mixing zone in the immediate area of a point source of pollution may be allowed if the conditions set out in this part are met.

This section details BECQ's findings, with respect to how this mixing zone approval meets the requirements of Part 500 of the standards. Sub-parts of the standards are reproduced below in italics, followed by BECQ's findings.

NMIAC § 65-130-505 Establishment of Mixing Zone

No mixing zone shall be established unless the continuation of the function or operation involved in the discharge by the granting of the mixing zone is in the public interest, and the discharge occurring or proposed to occur does not substantially endanger public health and safety.

The Agingan wastewater treatment plant (WWTP) serves an extensive area of western Saipan: from the Chalan Lau Lau to the north; and to the airport and Koblerville in the south. The population served by the WWTP is approximately 16,755 people (CUC WW Master Plan 2013), or approximately one-third of the total population of Saipan (48,220 - based on the 2010 Census, U.S. Census Bureau). Within the collection system serving the Agingan WWTP are several important components of the Saipan's tourism infrastructure (the airport and several large hotels), most of Saipan's commercial shopping centers, numerous schools, and several

large villages. Projected flow measurements from CUC's Wastewater Master Plan indicate that average daily sewage loading for 2015 was approximately 1.12 million gallons per day (MGD) with a peak of 2.24 MGD. Plant design capacity is 3.0 MGD. Without the continued operation of the Agingan WWTP and outfall, each of the residences, hotels, institutions, and businesses within this service area would be required to provide for their own wastewater treatment on-site. In many cases this would not be possible, as establishments in the most developed areas were built with sewer connections to begin with, and have little to no available land for on-site treatment. Several of the villages served by the Agingan WWTP are also located in low-lying areas near wetlands, where septic systems would not be feasible due to soil types and high water table.

In view of these facts, BECQ finds that the continued operation of the Agingan Wastewater Treatment Plant is in the public interest, and as set forth in more detail below, does not represent a substantial danger to public health and safety.

NMIAC § 65-130-510 Prevention, Control, and Abatement

If the mixing zone is established on the grounds that there is no reasonable means known or available for the adequate prevention, control, or abatement of the discharge involved, it may be allowed until the necessary means for prevention, control or abatement become practicable, and subject to the taking of any substitute or alternative measures that the Director may prescribe. No renewal of a mixing zone shall be allowed without a thorough review of known and available means of preventing, controlling, or abating the discharge involved.

BECQ finds that the numeric criteria waived within this mixing zone are for basic water quality parameters which cannot be met end-of-pipe with treatment technology currently considered to be "reasonable means of control." The USEPA established "secondary treatment standards" (codified in 40 CFR 133) for municipal, publicly-owned wastewater treatment works ("POTWs"). Secondary treatment standards are technology-based effluent standards considered by EPA to be equivalent to "best conventional technology" (BCT) standards required for industrial wastewater sources. Secondary treatment standards are developed based on expected performance of properly-operated biological treatment systems, which were selected by USEPA as the equivalent to "BCT" for municipal wastewaters, with consideration given to capital costs, maintenance burden, and other practical considerations. The Agingan WWTP uses a biological secondary treatment process, and the proposed USEPA permit requires that it meet the federal secondary treatment standards. BECQ therefore considers the treatment system employed at the Agingan WWTP's to be equivalent to "reasonable means of control" as required in the Standards for mixing zones.

Though the secondary treatment standards represent the level of treatment that should be expected using the best conventional treatment technology available, such effluent would be unable to meet CNMI water quality criteria "end-of-pipe" under any circumstances, because the CNMI criteria are designed to represent a quality that supports all designated and existing uses of marine waters within that particular portion of the Tinian Channel (Class A marine waters at the point of discharge). At the present time, there are no known methods of wastewater treatment that could meet CNMI water quality criteria end-of-pipe, and still be considered

"reasonable means of control" in terms of cost or maintenance burden. Even technology that might be considered "best available technology" (BAT) under the industrial wastewater permitting program, such as reverse-osmosis, would still not meet all water quality criteria (e.g., salinity), and would still have a concentrated waste stream requiring disposal. Zero discharge disposal options have also been determined to not be practical for this situation; such as evaporation, which is precluded by high annual rainfall; and land disposal or irrigation, which are precluded by limited land resources and the high additional treatment costs that would be associated with more sensitive re-use options, such as golf course irrigation. Thus, an allowance for dilution is necessary in order to be able to permit any such municipal discharge, and the mechanism provided for doing so under the Clean Water Act and the CNMI Water Quality Standards is through the granting of a zone of mixing.

NMIAC § 65-130-515 Time Limit for Mixing Zone

The Director may issue an approval for the establishment of a mixing zone for a period not to exceed five years.

Section 4 of this approval sets the term of this approval to coincide with the term of the associated NPDES permit, and to not exceed five (5) years.

NMIAC § 65-130-520 Mixing Zone Characteristics

An allowable mixing zone shall be defined by all or some of the following characteristics: receiving water; discharge location; volume of discharge; specific linear distance; area or volume; mixing velocities and other pertinent hydrologic, biological, chemical, and physical characteristics.

This mixing zone is defined by the existing outfall discharge and extends 200 feet in all directions and is further described in Section 3 of this approval. BECQ believes that the description in Section 3 is adequate to define the physical characteristics of the mixing zone.

NMIAC § 65-130-525 Criteria for Mixing Zone

The following criteria shall be met in determining the location, size, shape, out-fall design and in-zone quality of mixing zones.

(a) Mixing zones shall be used solely for mixing of the discharge in Commonwealth or state waters. Mixing within the zone must be achieved as quickly as possible through the use of a diffuser or other apparatus that insures the discharge is mixed within the allocated dilution water in the smallest practicable area.

The current configuration of the discharge pipe incorporates a single Tideflex Diffuser Valve angled 30 degrees above horizontal, discharging perpendicular to the current upon which the modelling shows that the critical initial dilution of 288:1 can be achieved under the worst case scenarios.

(b) A mixing zone may have a sub area within the immediate vicinity of the discharge point termed a zone of initial dilution (ZID).

For this Mixing Zone Approval, the ZID and the mixing zone have the same dimensions. The ZID extends to the boundary of the mixing zone. This configuration makes the mixing zone as small as possible.

(c) The concentration of toxic pollutants at or beyond the limit of the zone of initial dilution shall not exceed the acute aquatic life water quality criteria of § 65-130-450. The dimensions of the zone of initial dilution must be such that lethality to organisms passing through the zone of initial dilution is prevented.

For this Mixing Zone Approval, the zone of initial dilution and the mixing zone have the same dimensions. Numeric water quality criteria mentioned in paragraph 5 (a) including toxics pollutants are waived within the mixing zone, however the numeric water quality criteria become enforceable at the boundary of the mixing zone and beyond.

(d) At the boundary of the mixing zone the water shall comply with the water quality standards set forth for the water classification in these regulations.

Numeric water quality criteria mentioned in paragraph 5 (a) are waived within the mixing zone, however the numeric water quality criteria become enforceable at the boundary of the mixing zone and beyond.

(e) Where two or more mixing zones are in close proximity, they shall be so defined that a continuous zone of passage for aquatic life is available.

BECQ finds that this requirement is not applicable in this case. There are no other nearby zones of mixing.

(f) For the protection of aquatic life resources, including species listed as threatened or endangered under Section 4 of the Endangered Species Act, a mixing zone cannot be used for, or considered as, a substitute for waste treatment.

BECQ does not believe that the granting of the Mixing Zone Approval will have an adverse impact on aquatic life resources within the Tinian Channel or Philippine Sea as whole. The subject discharge has been continuous since at least 1985 without any evidence of such widespread, adverse effect.

(g) Chronic aquatic life and human health criteria apply at and beyond the boundary of the zone of mixing.

Numeric water quality criteria mentioned in paragraph 5 (a) are waived within the mixing zone, however the numeric water quality criteria become enforceable at the boundary of the mixing zone and beyond.

(h) Mixing zones shall not be allowed in Commonwealth or state waters with insufficient currents available for dispersion of pollutants.

The location of the discharge is subject to both surface currents and tides.

(i) Mixing zones shall be limited in extent as practicable, and dimensions shall be stablished through the application of a publicly available or proprietary plume dispersion model, as approved by BECQ.

The dimensions of this mixing zone are based on the calculated zone of initial dilution (200 feet in all directions from the discharge ports), and fall well within the maximum distance prescribed by the standards.

(j) All discharges to marine waters will comply with the Ocean Discharge Criteria promulgated under Section 403 (c) of the CWA.

The Clean Water Act (CWA) Part 403(c) criteria are codified as 40 CFR 125 Subpart M. BECQ has determined that 40 CFR 125.123 (a) applies in this case, which states that an NPDES Permit may be issued if, prior to permit issuance, it is determined that the discharge will not cause "unreasonable degradation of the marine environment" after application of any necessary conditions. 40 CFR 125.122(b) then states that discharges in compliance with State water quality standards "shall be presumed not to cause unreasonable degradation of the marine environment, for any specific pollutants or conditions specified in the variance or the standard."

As detailed elsewhere in this document, BECQ does not foresee that the granting of this mixing zone approval will result in the violation of any provisions of the CNMI water quality standards. Provided that the applicant follows all terms and conditions of their NPDES Permit and Section 401 Water Quality Certification with respect to controls for these parameters, as well as the requirements of the proposed USEPA Administrative Order, which will likely compel the applicant to install additional control measures (disinfection) and enhance enforcement of pre-treatment requirements, the discharge should be in compliance with all provisions of the CNMI standards, and thus should not cause "unreasonable degradation." BECQ therefore finds that this mixing zone approval to be in compliance with Part 403 (c) of the CWA.

7. Authorization

This Mixing Zone Approval shall remain in full force and effect for the period specified, subject to the conditions as set forth herein, and as authorized by the Administrator of the Bureau of Environmental and Coastal Quality.

Frank M. Rabauliman
Administrator, BECQ

2/21/17
Date