UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

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Fact Sheet

Guam Waterworks Authority
Agat-Santa Rita Wastewater Treatment Plant
NPDES Permit No. GU0020222

I. INTRODUCTION/FACILITY DESCRIPTION

The Guam Waterworks Authority (permittee) owns and operates the Agat-Santa Rita Wastewater Treatment Plant (WTP) which serves the Agat and Santa Rita areas (approximately 17,000 people) on the island of Guam. The Agat-Santa Rita WTP consists of an extended aeration secondary treatment system sized for an average daily flow of 0.75 million gallons per day (mgd). The WTP currently receives an average daily flow of approximately 1.1 mgd. Effluent from the WTP is pumped through the Tipalao Outfall to Category M-2 (good) receiving waters named Tipalao Bay of the Philippine Sea, through Discharge Serial No. 001: 13° 24' 48" N latitude, 144° 38' 30" E longitude. The outfall also discharges effluent from the U.S. Navy's Apra Harbor Wastewater Treatment Plant, NPDES Permit No. GU0110019. (Category M-2 waters must be of sufficient quality to allow for the propagation and survival of marine organisms, particularly shellfish and other similarly harvested aquatic organisms, corals and other reef related resources, and whole body contact recreation. Other important and intended uses include mariculture activities, aesthetic enjoyment and related activities.) The Agat-Santa Rita WTP became operational in 1972 and will be renovated and expanded to treat expected flows to secondary treatment levels because the permittee is not able to comply with federal secondary treatment effluent standards (see p. 4 of this Fact Sheet).

In accordance with Section 402 of the Clean Water Act (CWA), the U. S. Environmental Protection Agency, Region 9 (USEPA Region 9) is issuing a NPDES permit to the permittee for the discharge of treated domestic wastewater from Agat-Santa Rita WTP into Tipalao Bay. The WTP outfall discharges within territorial waters of Guam. Because the Guam Environmental Protection Agency (GEPA) has not been delegated primary regulatory responsibility for administering the NPDES program, the USEPA Region 9 is issuing a NPDES permit which incorporates both federal CWA and Guam water quality requirements. On April 28, 2000, the permittee submitted an application for renewal of its existing NPDES permit. This Fact Sheet sets forth the principal facts and significant legal, methodological, and policy questions considered in the development of the permit. The permit is based on the Administrative Record.

II. DISCHARGE LIMITATIONS

When developing discharge limitations, the permitting authority must consider both limitations

based on technology available to treat the pollutants (i.e., technology based limitations) and limitations that are protective of the designated uses of the receiving waterbody (i.e., water quality based limitations). Discharge limitations in the permit are based on USEPA regulations contained in Title 40 of the *Code of Federal Regulations* (CFR) and *Revised Guam Water Quality Standards* (WQS), amended and adopted in 2001.

Technology Based Discharge Limitations

The permit includes the following technology based discharge limitations for biochemical oxygen demand and total suspended solids:

Discharge Limitations				
Discharge Parameter	Average Monthly	Average Weekly	Maximum Daily	Units
Biochemical Oxygen Demand (5-day)	30 375	45 563	n/a	mg/l lbs/day
	The arithmetic mean of the BOD_5 values, by concentration, for effluent samples collected over a period of 30 consecutive days shall not exceed 15% of the arithmetic mean, by concentration, for influent samples collected at approximately the same times during the same period.			
Total Suspended Solids	30 375	45 563	n/a	mg/l lbs/day
	The arithmetic mean of the TSS values, by concentration, for effluent samples collected over a period of 30 consecutive days shall not exceed 15% of the arithmetic mean, by concentration, for influent samples collected at approximately the same times during the same period.			
pH	Not less than 6.0 nor greater than 9.0 standard units			
Fecal Coliform	200	400	n/a	CFU/ 100 mL

The monthly average and weekly average discharge limitations for biochemical oxygen demand and total suspended solids (in mg/l and influent percent removal efficiency) are based on federal secondary treatment effluent standards contained in 40 CFR 133.102(c) and Section 5104 A of the *Revised Guam Water Quality Standards*. The discharge limitations for biochemical oxygen demand and total suspended solids (in lbs/day) are calculated using a design flow of 1.5 mgd and the following equation: lbs/day = 8.34 x Ce x Q. "Ce" is the discharge limitation in mg/l and "Q" is the flow rate in mgd.

Water Quality Based Discharge Limitations

If, after technology based discharge limitations are applied, the permitting authority determines that the discharge may exceed applicable water quality criteria, then water quality based discharge limitations must be imposed. When deciding whether or not water quality based discharge limitations are needed to protect water quality, in accordance with 40 CFR 122.44(d),

the permitting authority must determine whether the discharge causes, has the reasonable potential to cause, or contribute to an excursion of applicable numeric or narrative water quality criteria. As part of this evaluation, projected receiving water values – based on reported maximum discharge values – are compared to applicable water quality criteria to determine the "reasonable potential" for criteria exceedances and the need for discharge limitations. This discharge is in the process of being granted a mixing zone by the GEPA. The mixing zone will result in a worst-case dilution (expressed as parts receiving water per part wastewater) of 82:1. Note that GEPA may approve a mixing zone that would result in a dilution greater than 82:1. If a different dilution is approved, the following methodology would be used to calculate limits, as applicable. Projected effluent limitations are calculated using the following steady state equation: Ce = Co + Dm (Co-Cs). "Ce" is the effluent concentration limit (in mg/l or µg/l), "Co" is the concentration that must be met at the completion of initial dilution (in mg/l or µg/l), "Cs" is the background seawater concentration (in mg/l or µg/l), and "Dm" is the minimum probable initial dilution.

Tipalao Bay has water quality exceedences for copper and aluminum, and potential water quality exceedences for nickel and lead. Therefore, the water quality based effluent limitations for these compounds are limited to the most stringent water quality criterion, i.e., no dilution credit can be applied to these criteria since the background concentration exceeds WQS. Additionally, water quality based discharge limitations are included for enterococci, whole effluent toxicity, and total chlorine residual. GEPA has determined that a mixing zone will not be allowed for enterococci.

Given metals concentrations already present in Tipalao Bay, GEPA will require a formal and comprehensive investigation of sources of pollution to the Bay if the permittee is in significant non-compliance with permit effluent metals limitations.

In accordance with 40 CFR 122.44(d), the permit includes the following water quality based discharge limitations:

Discharge Limitations				
Effluent Characteristic	Average Monthly	Average Weekly	Maximum Daily	Units
Enterococci	35	n/a	57	CFU/100 ml
Whole Effluent Toxicity	n/a	n/a	n/a	TUc
Total Chlorine Residual	7.5	n/a	12.3	µg/l
Copper	2.9	n/a	4.8	µg/l
Nickel	8.2	n/a	13	µg/l
Zinc	58	n/a	95	µg/l
Aluminum	120	n/a	200	µg/l

Note that Guam has revised their WQS and the new marine chlorine limit is 0.0075 mg/L. The permit has been revised and the mass and concentration limits for chlorine have been adjusted.

The permit also requires effluent monitoring be conducted for certain parameters. 4,4-DDE and 4,4-DDD monitoring is necessary to confirm the presence of these compounds. A 1990 GWA study found concentrations of these compounds that exceed applicable WQS. Chlordane and Dieldrin monitoring requirements have been added based on the results of priority pollutant scan conducted by GWA in 2000.

Because the Agat-Santa Rita Wastewater Treatment Plant discharge does not fully comply with secondary treatment effluent standards or water quality based discharge limitations for bacterial parameters required in the permit, the USEPA Region 9 will issue an Administrative Order which includes: (1) a schedule of activities to ensure that the discharge will come into compliance with all applicable secondary treatment effluent standards and WQS during this permit term; and (2) interim discharge limitations based on current wastewater treatment plant performance. Reasonable control measures necessary to ensure compliance with WQS for enterococci will likely include additional treatment to reduce bacterial indicator organisms in the discharge. Should the permittee elect to utilize a disinfection technology which relies on chlorine to reduce bacterial indicator organisms in the discharge, the permit includes discharge limitations for total chlorine residual.

III. RECEIVING WATER MONITORING PROGRAMS

The permit contains receiving water monitoring requirements that are established based on best professional judgement and unaccounted for elevated background concentrations of copper, nickel, zinc, and aluminum. Note that the Navy and GWA have identical receiving water monitoring requirements and may combine efforts for compliance. The monitoring program includes a shoreline, offshore, and sediment component. The permittee shall make monthly visual, nutrient, and enterococci measurements at two locations along the shore near the outfall and at one control point. At two offshore station locations within Tipalao Bay (and at one control point outside Tipalao Bay), the permittee shall take visual observations and sample for enterococci, metals, orthophosphate, nitrate, ammonia, turbidity, suspended solids, dissolved oxygen, pH, and temperature. The permittees will also do at least one scan of sediments in the offshore locations.

GEPA is requiring that the permittee develop a fact sheet describing the purpose, location and extent of the mixing zone for dissemination to the community and the recreational diver and fishing community in particular.

IV. SLUDGE/BIOSOLIDS LIMITATIONS AND MONITORING REQUIREMENTS

On February 19, 1993, the USEPA issued a final rule for the use and disposal of sewage sludge (40 CFR 503). This rule requires that producers of sewage sludge meet certain reporting, handling, and disposal requirements. Guam has not been delegated the authority to implement this program, therefore, the USEPA Region 9 is the implementing agency. The permit contains

biosolids/sludge management requirements consistent with 40 CFR 257, 258, and 503.

V. ANTIDEGRADATION

The USEPA Region 9 has considered antidegradation pursuant to 40 CFR 131.12 and WQS, and finds that the discharge is consistent with these policies.

VI. OCEAN DISCHARGE CRITERIA

Pursuant to 40 CFR 125, Subpart M, Ocean Discharge Criteria, based on available information, including information provided by permittee, the USEPA Region 9 has determined that the discharge will not cause unreasonable degradation of the marine environment.

VII. PROTECTION OF ENDANGERED SPECIES

The USEPA Region 9 is currently engaged in consultation under section 7 of the Endangered Species Act (ESA) with the National Marine Fisheries Service and the U. S. Fish and Wildlife Service regarding this permit action. USEPA Region 9 may decide that changes to the final permit are warranted based on the results of the consultation when it is completed. Therefore, a reopener provision to this effect has been included in the permit.