NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
PERMIT FACT SHEET
June 2021

Permittee Name: Guam Waterworks Authority

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NPDES Permit No.: GU0020371

I. STATUS OF PERMIT

Guam Waterworks Authority (the "permittee" or "GWA") applied for the renewal of its National Pollutant Discharge Elimination System ("NPDES") permit to authorize the discharge of treated effluent (i.e. clean-in place and backwash wastewater) from the Ugum Surface Water Treatment Plant (the "facility" or "SWTF") to the Ugum River located in Guam. A complete application was submitted on February 8, 2021. EPA Region 9 developed this permit and fact sheet pursuant to Section 402 of the Clean Water Act (CWA), which requires point source dischargers to control the amount of pollutants that are discharged to waters of the United States through obtaining a NPDES permit.

The permittee is currently discharging under NPDES permit GU0020371 issued on July 8, 2016. Pursuant to 40 CFR § 122.6, the terms of the existing permit are administratively extended until the issuance of a new permit.

This permittee is classified as a minor discharger. EPA rated the facility with 60 points, and 80 points are needed for the facility to be a major discharger.

II. SIGNIFICANT CHANGES TO PREVIOUS PERMIT

Permit Condition	Previous Permit (2016 – 2021)	Re-issued permit (2021 – 2026)	Reason for change
Metals monitoring	NA	Monitoring for copper, arsenic, cadmium, chromium III, chromium VI, lead, mercury, nickel, selenium, silver, and zinc in 1st, 3rd, 5th year.	Source water often contains metals, which can become concentrated in residuals associated with the treatment process. Monitoring is needed to confirm metal concentrations that may be present in the discharge.

Permit Condition	Previous Permit (2016 – 2021)	Re-issued permit (2016 – 2021)	Reason for change
Chronic toxicity monitoring	NA	Monitoring in the 1st, 3rd, 5th year of the permit for *Ceriodaphnia dubia*, *Pimphales promelas*, and *selenastrum capricornutum*	
Receiving water hardness monitoring	NA	Once per quarter at monitoring location UR-1 or UR-2 in the receiving water.	Some water quality standards for metals are hardness dependent (as hardness increases, the toxicity of certain metals decreases).
Ammonia monitoring	Annual monitoring	Removed monitoring requirement	The permittee has monitored for ammonia for the last two permit terms and the concentrations are consistently low. Therefore, EPA is removing the monitoring requirement.
BOD_5	Annual monitoring	Removed monitoring requirement	Based on the characteristics of filter backwash water, DO-demanding substances are not expected to be present in the discharge. The permittee has monitored BOD for the last two permit terms and levels are low (i.e. 2.29 mg/L for the).

III. GENERAL DESCRIPTION OF FACILITY

The Ugum SWTF is the only drinking water treatment plant owned and operated by GWA. The facility is the major source of water supply for the Southern Public Water System, which serves the southern part of the island. Ugum SWTF is designed to produce up to 4 mgd of potable water per day (in the rainy season), and discharges on average 0.02 mgd back to the river over approximately 3 and half hours. (GWA 2014).

During 2007 to 2011, GWA upgraded the facility from a conventional filtration to a microfiltration system, as part of the GWA Stipulated Order for Preliminary Relief. The facility has operated solely on microfiltration since March 28, 2011. In the facility's previous design, the plant did not discharge wastewater.

The facility includes an intake structure in the river, a pumping station next to the riverbank at the intake structure, transmission lines, and a treatment plant. Raw water is pumped from Ugum River to a wetwell via pre-screens. The screens are back-flushed periodically to remove solids accumulated on the screen and discharged into the Ugum River.

After screening, the raw water flows into flocculation tanks and then fed into contact tanks. Supernatant from the contact tanks is sent to membrane filters (Memcor CS System) for fine solids removal. Permeate is disinfected with chlorine prior to entering the distribution systems.[1]

The membrane filters (Memcor System) require regular cleaning (i.e. membrane backwash cycle). The dirty backwash water is transferred to a recycle tank and clarifier to stabilize pH and neutralize the chlorine prior to discharging. The design capacity of the tank is 25,000 gallons (0.025 mgd). The facility may discharge multiple times a day if the filters are cleaned more than once per day, which occurs only after a high intensity rainfall event after a prolonged dry period.

Solids are collected from the contact tanks and backwash water clarifiers. Solids are then sent to the sludge tank and are pumped into the sludge handling system. When the sludge handling system in not in operation, dewatered solids are hauled to Inarajan Wastewater Treatment Plant in Inarajan, Guam. See Attachment B, process flow diagram for Ugum SWTP.

IV. DESCRIPTION OF RECEIVING WATER

The Guam Environmental Protection Agency ("GEPA") adopted water quality standards ("WQS") for different surface waterbodies, depending on the level of protection required. The WQS, revised in 2015, provides water quality criteria by surface waterbody classification. The Ugum River is located within the area classified as Category S-2, medium quality surface water(s). Category S-2 waters are used for recreational purposes, including whole body contact recreation, for use as potable water supply after adequate treatment is provided, and propagation and preservation of aquatic wildlife and aesthetic enjoyment.

The facility discharges to the Ugum River at latitude 13° 19'74" N and 144° 44' 57" E through outfall 001, before the convergence with the Talofofo River, which flows into Talofofo Bay. The Ugum water is approximately 7.33 square miles of hills with steep slopes. Per the permit application, the critical low flow of the River is 2.00 cfs and has a total hardness of 58 mg/L of CaCO3. The Ugum River also is impaired due to turbidity, and in 2007, EPA approved a total maximum daily load ("TMDL") for sediment.[2] The TMDL describes the turbidity of the Ugum River, which averages 12 NTU for the year, 21 NTU during the wet season, with a maximum of 240 NTU from 2002 to 2004. The Ugum River turbidity is about twice as high during the wet season than during the dry season. See section VI.B.1, Applicable Standards, Designated Uses, and Impairments of Receiving Water.

V. DESCRIPTION OF DISCHARGE

The discharge consists of clean-in-place washwater or maintenance washwater used to clean the filters. A maintenance wash occurs every 3 days and clean-in-place occurs every 2 weeks during normal operations. The frequency of the maintenance wash is designed to be a short version of the clean-in-place cycle. The water cleaning the filters contains sodium hypochlorite, citric acid, and sulfuric acid. The neutralization tanks use sodium hydroxide and sodium bisulfate

[1] Chlorine is used in both the membrane system for clean-in-place/maintenance wash and the disinfection system before water enters the distribution system. During the dry season, pre-chlorination at the headworks also can occur.
[2] The Ugum River was delisted from Guam's 303(d) list of impaired waters because EPA approved a sediment TMDL in 2007.

to balance the pH and sodium meta-bisulphate to neutralize chlorine prior to discharge. The neutralized chlorine and acid wastes generated by the chemical cleaning process is discharged into the Ugum River downstream of the intake structure. Characteristics of backwash residuals include precipitated solids, total organic carbon, total suspended solids, pH, and chlorine, when used. See section III. General description of this facility, above, for further information.

Discharge is "batch" analyzed. If the washwater does not meet effluent limits and can't be discharged, the washwater is pumped out by pumper trucks and transported by tanker truck to Inarajan Wastewater Treatment Plant in Inarajan, Guam.

Table 1 shows data related to discharge from Outfall 001 based on permittee's NPDES renewal application as well as data reported on discharge monitoring reports (i.e. from February 2016 to February 2021). Per the permit application, the facility discharges approximately 4 times per year. During the last permit term, the facility discharged 3 of the 5 years – 4 times in 2018, twice in 2019, and 12 times in 2020.[3] More information is available on Enforcement and Compliance History Online (ECHO) at https://echo.epa.gov/detailed-facility-report?fid=110041921356. Pollutants believed to be absent or never detected in the effluent are not included in the table below.

Table 1. Effluent Data for Outfall 001 from February 2016 to April 2021.

Parameter	Units(1)	Current Permit Effluent Limitations		Effluent Data		
		Average Monthly	Maximum Daily	Highest Average Monthly	Highest Maximum Daily	Number of Samples
Flow Rate	MGD	Monitoring Only	Monitoring Only	0.01	0.02	18
5-day BOD_5	mg/L	--	Monitoring Only	--	2.29	3
Ammonia (as N)	mg/L	--	Monitoring Only	--	0.532	3
pH	Standard Units	6.5 – 9.0 (min-max)		6.5 – 8.7		23
Turbidity	NTU	--	12.5(2)	--	11.7(2)	23
Total suspended solids	mg/L lbs/day	30.00 6.26	45.00 9.39	31 3.82	40 5.37	23 23
Total dissolved solids	mg/L lbs/day	1,000 208.63	1,000 208.63	403.8 42.6	596 66.6	23 23
Chlorine, total residual (TRC)	µg/L	0.05	0.05	<0.05	<0.05	14
Total aluminum	mg/L lbs/day	--	1.00 0.21	--	0.996 0.746	19

(1) Mass based limits calculated using 0.025 MGD flow. In times of extreme wet weather/emergency, mass based effluent limits shall not exceed 18.78 lbs/day for TSS and 417.25 lbs/day for TDS based of a 0.05 MGD flow.
(2) Turbidity effluent limits were expressed as an instantaneous maximum.
(3) When monitoring for total ammonia (as nitrogen), pH monitoring must be concurrent.

[3] The facility discharged twice on 2/28/2018, 5/31/2018, 11/30/2019, 1/31/2020, 2/29/2020, 4/30/2020, 6/30/2020, 7/31/2020, and 10/31/2020.

VI. DETERMINATION OF NUMERICAL EFFLUENT LIMITATIONS

EPA developed effluent limitations and monitoring requirements in the permit based on an evaluation of the technology used to treat the pollutant (i.e., "technology-based effluent limits") and the water quality standards applicable to the receiving water (i.e., "water quality-based effluent limits"). EPA has established the most stringent of applicable technology-based or water quality-based standards in the draft permit, as described below.

A. Applicable Technology-Based Effluent Limitations

There are no applicable national or Guam criteria for drinking water treatment plants residual management. There are, however, NPDES general permits for the water treatment industry in other states that contain technology-based effluent limits (TBELs) based on best professional judgement. The most common pollutants regulated in drinking water treatment permits include aluminum, iron, manganese, pH, settleable solids, total residual chlorine, and total suspended solids (EPA 2011).[4]

The previous permit compared such TBELs for drinking water treatment plants in 10 states (Mississippi, South Carolina, South Dakota, Washington, Alabama, Arkansas, Massachusetts and New Hampshire, Ohio, and Oklahoma). The tables below provide updated information from these permits. Note that total residual chlorine limits shown below are WQBELs and shown here only for comparison purposes.

Table 2. Maximum Daily Limits from State General Permit Examples[5]

State	Settleable Solids (mL/L)	TRC (mg/L)	Aluminum (mg/L)	TDS (mg/L)	TSS (mg/L)
Alabama (2018)	--	0.019	--	--	45
Arkansas (2016)	--	0.011 instant max	2	--	30

[4] In the *Drinking Water Treatment Plant Residuals Management Report* (2011), EPA found that individual permits most commonly included effluent limits for aluminum, iron, manganese, pH, settleable solids, total residual chlorine (TRC), and total suspended solids (TSS) in general permits and aluminum, copper, dissolved oxygen, iron, lead, pH, temperature, TRC, TSS, and turbidity in individual permits. Other pollutants that may be included in WTP permits based on source water characteristics or treatment chemicals used include ammonia, arsenic, biochemical oxygen demand (BOD), cadmium, manganese, oil and grease, settleable solids, total phosphorus, and zinc.

[5] See the following links for state general permits authorizing discharges from water treatment plants:
AL: http://www.adem.alabama.gov/programs/water/permits/ALG640000WaterTreat.pdf
AR: https://www.adeq.state.ar.us/water/permits/npdes/nonstormwater/pdfs/arg640000/current_permit.pdf
MA/NH: https://www.epa.gov/npdes-permits/potable-water-treatment-facility-general-permit-pwtf-gp-massachusetts-new-hampshire;
OH: https://www.epa.ohio.gov/dsw/permits/GP_WaterTreatmentPlants;
OK: https://www.deq.ok.gov/wp-content/uploads/water-division/2012-OKG38-Permit-1.pdf;
SD: https://denr.sd.gov/des/sw/IPermits/WTPPermit.pdf;
WA: https://ecology.wa.gov/DOE/files/ab/ab5bbdaa-0ae9-44a0-9fa7-44405c846b77.pdf
EPA R8: https://www.epa.gov/sites/production/files/2019-08/documents/npdes-dwgp-fact-sheet-2019.pdf
CA: https://www.waterboards.ca.gov/rwqcb2/water_issues/programs/npdes/FilterBackwash/R2_2016_0009.pdf
ID: https://www.epa.gov/sites/production/files/2017-12/documents/r10-npdes-idaho-drinking-water-facilities-gp-idg380000-final-permit-2016.pdf

State	Settleable Solids (mL/L)	TRC (mg/L)	Aluminum (mg/L)	TDS (mg/L)	TSS (mg/L)
Massachusetts and New Hampshire, EPA R1 (2017)	--	0.019	--	--	50
Ohio (2017)	--	0.019	--	--	45
Oklahoma (2020)	--		2	--	30
South Dakota (2016)	--	0.019 instant max	--	1,000	30 or 90 instant max based on RW water
Washington (2014)	0.2	0.15	--	--	--
EPA R8 (2019)	--	0.019		--	--
California (2016)	0.2	0 instant max	--	--	45 average weekly
Idaho (2016)	--	0.02	--	--	45

Table 3. Average Monthly Limits from State General Permit Examples[5]

State	Settleable Solids (mg/L)	TRC (mg/L)	Aluminum (mg/L)	TDS (mg/L)	TSS (mg/L)
Alabama	--	0.011 instant max		--	30
Arkansas	--	0.011 instant max	1.0 dissolved	--	20
Massachusetts and New Hampshire	--	0.011	--	--	30
Ohio	--	0.019	--	--	30
Oklahoma	--	--	1.0 dissolved	--	20
Washington	0.1	0.07	--	--	--
EPA R8 GP		0.011	87		30
California	0.1				
Idaho		0.1			30

Based on BPJ, EPA is retaining the TBELs developed for total suspended solids (TSS), and total dissolved solids (TDS) contained in the 2010 permit. Mass limits were calculated based on flow scenarios. The design capacity of the tank is 0.025 mgd. Under normal operations, the facility discharges on average 0.02 mgd and only needs to empty the tank once. However, the facility may discharge multiple times a day depending on receiving water conditions. After a prolonged dry period, an intense rain can increase the turbidity of the receiving water. The facility usually shuts down under such conditions. However, the filters may need to be cleaned twice prior to resuming operations.

Below shows example of calculations for TSS and TDS.

TSS: mass-based limits calculated from concentration-based limits
0.025 mgd flow; normal operation
30-day average – (30 mg/L)(0.025)(8.345) = 6.259 lbs/day
Daily max – (45 mg/L)(0.025)(8.345) = 9.388 lbs/day

0.05 mdg; emergency operation
Daily max – (45 mg/L)(0.050)(8.345) = 18.776 lbs/day

TDS: mass-based limits calculated from concentration-based limits
0.025 mgd flow; normal operation
30-day average – (1,000 mg/L)(0.025)(8.345) = 208.625 lbs/day
Daily max – (1,000 mg/L)(0.025)(8.345) = 208.625 lbs/day

0.05 mdg; emergency operation
Daily max – (1,000 mg/L)(0.050)(8.345) = 417.250 lbs/day

B. Water Quality-Based Effluent Limitations

Water quality-based effluent limitations are required in NPDES permits when the permitting authority determines that a discharge causes, has the reasonable potential to cause, or contributes to an excursion above any water quality standard (40 CFR § 122.44(d)(1)).

When determining whether an effluent discharge causes, has the reasonable potential to cause, or contributes to an excursion above narrative or numeric criteria, the permitting authority shall use procedures which account for existing controls on point and non-point sources of pollution, the variability of the pollutant or pollutant parameter in the effluent, the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity) and where appropriate, the dilution of the effluent in the receiving water (40 CFR § 122.44(d)(1)(ii)).

EPA evaluated the reasonable potential to discharge toxic pollutants according to guidance provided in the *Technical Support Document for Water Quality-Based Toxics Control* (TSD) (Office of Water, U.S. EPA, March 1991) and the *U.S. EPA NPDES Permit Writers' Manual* (Office of Water, U.S. EPA, September 2010). These factors include:

1. Applicable standards, designated uses and impairments of receiving water
2. Dilution in the receiving water
3. Type of industry
4. History of compliance problems and toxic impacts
5. Existing data on toxic pollutants - Reasonable Potential Analysis

1. Applicable Standards, Designated Uses and Impairments of Receiving Water

Guam WQS establish water quality criteria for the following beneficial uses in Ugum River, a category S-2 water: recreation, including whole body contact recreation, for use as potable water supply after adequate treatment is provided, and propagation and preservation of aquatic wildlife and aesthetic enjoyment.

Applicable water quality standards establish water quality criteria for the protection of aquatic wildlife from acute and chronic exposure to certain metals that are hardness dependent, with a "cap" of 400 mg/l and a standard default value of 100 mg/L.

The Ugum River has a sediment TMDL. The TMDL was completed prior to the facility's discharge and therefore, does not include a waste load allocation for the facility.[6] EPA is retaining the turbidity and total suspended solids effluent limits as well as the receiving water monitoring requirements for these pollutants.

2. Dilution in the Receiving Water

Discharges from Outfall 001 are to the Ugum River, and the permittee has not requested a mixing zone. Dilution is not allowed and therefore, not considered by EPA in the development of water quality-based effluent limits applicable to the discharge. All effluent limits apply at the outfall.

3. Type of Industry

Typical pollutants of concern for drinking water treatment plant discharges include chlorine and the byproducts of chlorine, which at elevated levels are toxic to aquatic life. Other pollutants are concern include metals used in the treatment process to clean filters, such as iron and aluminum. See section VI.A. Applicable Technology-Based Effluent Limitations above**.** The permit retains effluent limits for chlorine and aluminum. The permit includes a daily maximum effluent limit for aluminum as opposed to an average monthly effluent limit because the discharge is intermittent.

4. History of Compliance Problems and Toxic Impacts

In recent years, GWA has faced an increasingly difficult task of keeping the plant operating at full capacity when the river is running with high turbidity rates. This highly turbid water has increased operational costs and operation and maintenance practices that can be hard on the treatment system, leading to premature failure of some components of the treatment plant system. Per the permittee's data from February 2016 to April 2021, no pollutants exceeded the permits effluent limits.

5. Existing Data on Toxic Pollutants

For pollutants with effluent data available, EPA has conducted a reasonable potential analysis based on statistical procedures outlined in EPA's *Technical Support Document for Water Quality-based Toxics Control* herein after referred to as EPA's TSD (EPA 1991). These statistical procedures result in the calculation of the projected maximum effluent concentration based on monitoring data to account for effluent variability and a limited data set. The projected maximum effluent concentrations were estimated assuming a coefficient of variation of 0.6 and

[6] The sediment TMDL allocated 19 tons/day (for cut/rill erosion, roads, stream bank erosion) as a daily load allocation for the Ugum River.

the 99 percent confidence interval of the 99th percentile based on an assumed lognormal distribution of daily effluent values (sections 3.3.2 and 5.5.2 of EPA's TSD).

EPA calculated the projected maximum effluent concentration for each pollutant using the following equation:

Projected maximum concentration = C_e × *reasonable potential multiplier factor.*

Where, "C_e" is the reported maximum effluent value and the multiplier factor is obtained from Table 3-1 of the TSD.

Summary of Reasonable Potential Statistical Analysis:

Parameter(1)	Maximum Observed Concentration	*n*	RP Multiplier(2)	Projected Maximum Effluent Concentration	Most Stringent Water Quality Criterion	Statistical Reasonable Potential?
Ammonia(3)	0.532	>20	1.4	0.75	2.2 mg/L(3)	No
Total Residual Chlorine	0	> 20	1.4	0	0.011 mg/L	No
Aluminum	33.0 mg/L	> 20	1.4	46.2	1.0 mg/L	Yes

(1) For purposes of RP analysis, parameters measured as Non-Detect are considered to be zeroes. Only pollutants detected are included in this analysis.

(2) RP multiplier is based on 95 % probability using (n) and the coefficient of variation (CV). Because of data variability, EPA used a CV of 0.6 for all parameters.

(3) GEPA standards for ammonia are pH based using the following formula, for acute criteria, CMC = $0.411/(1+10^{(7.204-pH)}) + 58.4/(1+10^{(pH-7.204)})$. EPA calculated ammonia criteria using the lowest and maximum pH values of the effluent (i.e. 6.5 and 8.7) to be 48.83 mg/L and 2.20 mg/L, respectively. EPA chose the most conservative value, 2.2 mg/L.

C. Rationale for Numeric Effluent Limits and Monitoring

EPA evaluated the typical pollutants expected to be present in the effluent and selected the most stringent of applicable technology-based standards or water quality-based effluent limitations. Where effluent concentrations of toxic parameters are unknown or are not reasonably expected to be discharged in concentration that have the reasonable potential to cause or contribute to water quality violations, EPA may establish monitoring requirements in the permit. Where monitoring is required, data will be re-evaluated, and the permit may be re-opened to incorporate effluent limitations as necessary.

- ***Flow (monitoring):*** No limits are established for flow, but flow rates must be monitored and reported. Weekly monitoring is retained in the permit. The permittee indicated that the design flow rate for the facility is 0.02 and the maximum flow rate is 0.02 mgd on the permit application. For purposes of this reissuance, EPA is using the design capacity of the tanks, 0.025 mgd for the daily maximum mass loadings and 0.50 mgd for emergency situations where the facility needs to discharge more in a given month since the discharge is batched discharged and can occur more than once per day.

- ***pH*:** Drinking water treatment plants adjust the pH to optimize source water treatment. Based on effluent monitoring data, pH values ranged from 6.5 to 8.7 S.U. However, EPA is retaining the WQBEL pH effluent limit based on antibacksliding requirements.

- ***Turbidity:*** EPA is retaining the turbidity limits in the permit based on BPJ, consistent with anti-backsliding provisions. The limit also implements the numeric target set forth in the Ugum Watershed TMDL. Receiving water monitoring for turbidity is also retained.

- ***Total Suspended Solids:*** EPA is retaining the TSS effluent limits of 30 mg/L for average monthly and 45 mg/L for max daily. EPA is retaining these TBELs to meet the requirements of BCT/BAT.[7] EPA determined that drinking water treatment facilities, like this one, have similar pollutants in their discharge and employ similar wastewater treatment processes to small POTWs. Therefore, the secondary treatment standards are a starting point for establishing TSS limits. The secondary treatment standards, at 40 C.F.R. § 133.105(b), establish both 30- day average effluent limitation for TSS (30 mg/L) and a 7-day average effluent limitation for TSS (45 mg/L). A daily maximum was used instead of a 7-day average because the discharge is batched discharge, occurring for approximately 3 hours. Retaining the TSS limit will also ensure the WQS requirement that concentrations of TSS in the receiving water "should not exceed 20 mg/L, except when due to natural conditions" for S-2 waters as well as the sediment TMDL. Receiving water monitoring for TSS is also retained.

- ***Total Dissolved Solids:*** EPA is retaining the effluent limits for TDS of 1,000 mg/L and 208.63 lbs/day, EPA is retaining these TBELs to meet the requirements of BCT/BAT.[7] Retaining TDS will be used to ensure that the effluent will not cause the ambient water to exceed 500 mg/L or 122% of the ambient conditions for S-2 waters.

- ***Total Residual Chlorine:*** EPA is retaining the TRC effluent limits of 0.5 ug/L as a daily max and average monthly limit. EPA is retaining these TBELs to meet the requirements of BCT/BAT.[7] EPA determined that drinking water treatment facilities, like this one, have similar pollutants in their discharge and employ similar wastewater treatment processes to small POTWs.

- ***Total Aluminum:*** Aluminum chlorohydrate is used as a coagulant, as part of the treatment process (i.e. filter backwash from cleaning). EPA is retaining the WQBEL effluent limits for aluminum because there is reasonable potential for the discharge to exceed the WQS. Per GEPA's WQS, the fresh water maximum numerical limit for Aluminum is 1.0 mg/L. Mass-based effluent limits were calculated using a flow of 0.025

[7] BCT represents the control from existing industrial point sources of conventional pollutants, including biochemical oxygen demand, total suspended solids, fecal coliform, pH, and oil and grease. BCT standards are established after considering a two-part reasonableness test. The first test compares the relationship between the costs of attaining a reduction in effluent discharge and the resulting benefits. The second test examines the cost and level of reduction of pollutants from the discharge from publicly owned treatment works to the cost and level of reduction of such pollutants from a class or category of industrial sources. Effluent limitations must be reasonable under both tests. BAT represents the best existing performance of treatment technologies that are economically achievable within an industrial point source category. BAT standards apply to toxic and non-conventional pollutants.

mgd. The permit includes a daily maximum effluent limit for aluminum as opposed to an average monthly effluent limit because the discharge is intermittent.

- ***Metals (monitoring):*** EPA is establishing metal monitoring in year 1, 3, and 5 of the permit. Water treatment plants remove metals from the source water to meet maximum contaminant levels (MCLs) in the finished drinking water. The removed metals and metal constituents of treatment chemicals become part of the residual waste streams. EPA is establishing monitoring requirements for copper, arsenic, cadmium, chromium III, chromium VI, lead, mercury, nickel, selenium, silver, and zinc, as these metals can be present in source water and become concentrated during the treatment process or can be present in coagulants.[8] These parameters must be measured and reported as total recoverable.

- ***Hardness (monitoring):*** EPA is establishing a hardness monitoring requirement because hardness is required for the calculation of metals toxicity. This information will be used to determine the need for metal effluent limits during the next reissuance.

- ***Chronic toxicity (monitoring):*** EPA is establishing chronic toxicity monitoring in year 1, 3, and 5 of the permit. GEPA has narrative criteria in their water quality standards that prohibit toxic discharges in toxic amounts. While potable water treatment facilities are generally considered low risk for toxicity, EPA needs to gather sufficient data to ensure that discharges do not demonstrate reasonable potential to cause or contribute pollutants in concentrations that are toxic to aquatic life. Chronic toxicity is conducted to determine whether certain effluents, which may contain potentially toxic pollutants, are discharged in a combination which produces a toxic effect in the receiving water. The principal advantages of biological techniques, like WET testing, are: (1) the effects of complex discharges of many known and unknown constituents can be measured only by biological analyses; (2) bioavailability of pollutants after discharge is best measured by toxicity testing including any synergistic effects of pollutants; and (3) pollutants for which there are inadequate chemical analytical methods or criteria can be addressed.

  EPA notes that priority pollutants are not expected to be present in the discharge. Therefore, a priority pollutant scan is not required. Instead the draft permit contains monitoring requirements for metals and toxicity.

D. Anti-Backsliding

Section 402(o) and 303(d)(4) of the CWA and 40 CFR § 122.44(l)(1) prohibits the renewal or reissuance of an NPDES permit that contains effluent limits and permit conditions less stringent than those established in the previous permit, except as provided in the statute and regulation. The permit does not establish any effluent limits less stringent than those in the previous permit and does not allow backsliding.

[8] Chromium, copper, nickel, and zinc can be present in an aluminum-based coagulant as a treatment chemical impurity.

E. Antidegradation Policy

EPA's antidegradation policy under CWA § 303(d)(4) and 40 CFR § 131.12 and Section 5101.B of Guam EPA's water quality standards require that existing water uses and the level of water quality necessary to protect the existing uses be maintained.

As described in this document, the permit contains effluent limits and monitoring requirements to ensure that all applicable water quality standards are met. The permit does not include a mixing zone; therefore these limits will apply at the end of pipe without consideration of dilution in the receiving water. Due to the low levels of toxic pollutants present in the effluent, high level of treatment being obtained, and water quality-based effluent limitations, the discharge is not expected to adversely affect receiving water bodies or result in any degradation of water quality.

VII. NARRATIVE WATER QUALITY-BASED EFFLUENT LIMITS

Section 5103 of Guam EPA's water quality standards contains narrative water quality standards applicable to the receiving water. Therefore, the permit incorporates applicable narrative water quality standards.

VIII. MONITORING AND REPORTING REQUIREMENTS

The permit requires the permittee to conduct monitoring for all pollutants or parameters where effluent limits have been established, at the minimum frequency specified. Additionally, where effluent concentrations of toxic parameters are unknown or where data are insufficient to determine reasonable potential, monitoring may be required for pollutants or parameters where effluent limits have not been established. The permittee is required to monitor for flow, metals, and chronic toxicity.

A. Effluent Monitoring and Reporting

The permittee shall conduct effluent monitoring to evaluate compliance with the draft permit conditions. The permittee shall perform all monitoring, sampling and analyses in accordance with the methods described in the most recent edition of 40 CFR § 136, unless otherwise specified in the draft permit. All monitoring data shall be reported on monthly DMRs and submitted quarterly as specified in the draft permit. All DMRs are to be submitted electronically to EPA using NetDMR.

Grab samples are required for all parameters because of the batch discharges. (40 CFR 136). Discrete samples are appropriate when a sample is needed to monitor a non-continuous discharge and allow collection of a variable sample volume. Continuous metered monitoring of flow rate is retained in the permit.

C. Whole Effluent Toxicity (WET) Requirements

Aquatic life is a public resource protected in surface waters covered by the CWA. As evidence that CWA requirements protecting aquatic life from chronic and acute toxicity are met

in surface waters receiving the NPDES discharge, samples are collected from the effluent and tested for toxicity in a laboratory using EPA's WET methods. These aquatic toxicity test results are used to determine if the NPDES effluent causes toxicity to aquatic organisms. Toxicity testing is important because for scores of individual chemicals and compounds, chemical-specific environmentally protective levels for toxicity to aquatic life have not been developed, or set as water quality standards. In due course, some such chemicals and compounds can eventually make their way into effluents and their receiving surface waters. When this happens, toxicity tests of effluents can demonstrate toxicity due to present, but unknown, toxicants (including possible synergistic and additive effects), signaling a water quality problem for aquatic life.

EPA's WET methods are systematically-designed instructions for laboratory experiments that expose sensitive life stages of a test species (e.g., fish, invertebrate, algae) to both an NPDES effluent sample and a negative control sample. During the toxicity test, each exposed test organism can show a difference in biological response; some will be undesirable differences. Examples of undesirable biological responses include, but are not limited to, eggs not fertilized, early life stages that grow too slowly or abnormally, or death. At the end of a toxicity test, the different biological responses of the organisms in the effluent group and the organisms in the control group are summarized using common descriptive statistics (e.g., means, standard deviations, coefficients of variation). The effluent and control groups are then compared using an applicable inferential statistical approach (i.e., hypothesis testing or point estimate model) chosen by the permitting authority and specified in the NPDES permit. The chosen statistical approach is compatible with both the experimental design of the WET method and the applicable toxicity water quality standard. Based on this statistical comparison, a toxicity test will demonstrate that the effluent is either toxic or not toxic, in relation to the permit's toxicity level for the effluent, which is set to protect the quality of surface waters receiving the NPDES discharge. EPA's WET methods are specified under 40 CFR § 136 and/or in applicable water quality standards.

EPA recommends inferential statistical approaches that a permitting authority chooses from to set a protective level for toxicity in an NPDES discharge. The statistical approach chosen for this permit is based on bioequivalence hypothesis testing and is called the Test of Significant Toxicity (TST) statistical approach. It is described in *National Pollutant Discharge Elimination System Test of Significant Toxicity Technical Document* (EPA 833-R-10-004, 2010; TST Technical Document) and Denton DL, Diamond J, and Zheng L. 2011. Test of significant toxicity: A statistical application for assessing whether an effluent or site water is truly toxic. *Environ Toxicol Chem* 30:1117-1126. This statistical approach supports important choices made within a toxicity laboratory which favor quality data and EPA's intended levels for statistical power when true toxicity is statistically determined to be unacceptably high (≥ 25 PE, Percent (%) Effect), or acceptably low (< 10 PE). Example choices are practices supporting healthy test organisms, increasing the minimum recommended replication component of the WET method's experimental design (if needed), technician training, etc. TST results do not often differ from other EPA-recommended statistical approaches using hypothesis testing (Diamond D, Denton D, Roberts J, Zheng L. 2013. Evaluation of the Test of Significant Toxicity for determining the toxicity of effluents and ambient water samples. *Environ Toxicol Chem* 32:1101-1108.). The TST maintains EPA's desired low false positive rate for WET methods—the probability of declaring toxicity when true toxicity is acceptably low ≤ 5%—when quality toxicity laboratories conduct toxicity tests (TST Technical Document; Fox JF, Denton DL, Diamond J, and Stuber R.

2019. Comparison of false-positive rates of 2 hypothesis-test approaches in relation to laboratory toxicity test performance. *Environ Toxicol Chem* 38:511-523.). Note: The false positive rate is a long-run property for the toxicity laboratory conducting a WET method. A low false positive rate is indicted by a low long-run toxicity laboratory control coefficent of variation for the test species/WET method, using a minimum of 30 to 50 toxicity tests.

In accordance with 40 CFR § 122.44(d)(1), reasonable potential for chronic toxicity has not been established. This is because no chronic toxicity test result is Fail (1) indicating unacceptable toxicity is not present in the effluent and/or no associated PE (Percent (%) Effect) value is ≥ 10 indicating toxicity at a level higher than acceptable is not present in the effluent. Thus, no chronic toxicity WQBELs are required for the permitted discharge (40 CFR § 122.44(d)(1)). However, monitoring and reporting for both the median monthly and maximum daily effluent results for the parameter of chronic toxicity are required, so that effluent toxicity can be assessed in relation to CWA requirements for the permitted discharge (see Part I, Table 2 in NPDES permit).

In accordance with 40 CFR § 122.44(d)(1)(ii), in setting the permit's levels for chronic toxicity and conditions for discharge, EPA is using a test species/chronic short-term WET method and a discharge Instream Waste Concentration (IWC) representing conservative assumptions for effluent dilution necessary to protect receiving water quality. The IWC is a discharge-specific term based on the permit's authorized mixing zone or initial dilution. Generally, the dilution model result "S" from Visual Plumes/Cormix is used. S is the volumetric dilution factor, i.e. 1 volume effluent is diluted with S − 1 volumes surface water) = [(Ve + Va) / Ve]. Following the mass balance equation, if the dilution ratio D = Qs / Qe, then [(Qe + Qs) / Qe] = 1 + D = S.

For this discharge, S = 1 (i.e., no authorized dilution). The discharge-specific IWC = 1 to 1 dilution (1:1, 1/1) = 100% effluent. The IWC made by the toxicity laboratory is mixed as 1 part solute (i.e., effluent) to 0 parts dilutant (1: (1 – 1)) for a total of 1 part.

The TST's null hypothesis for chronic toxicity (H_o) is: In-stream Waste Concentration (IWC) mean response (% effluent) ≤ 0.75 Control mean response. The TST's alternative hypothesis is (H_a): IWC mean response (% effluent) > 0.75 Control mean response. For this permit, results obtained from a single chronic toxicity test are analyzed using the TST statistical approach, where the required chronic toxicity IWC for Discharge Point Number 001 is 100% effluent.

For NPDES samples for toxicity testing, the sample hold time begins when the 24-hour composite sampling period is completed (or the last grab sample in a series of grab samples is taken) and ends at the first time of sample use (initiation of toxicity test). 40 CFR § 136.3(e) states that the WET method's 36-hour hold time cannot be exceeded unless a variance of up to 72-hours is authorized by EPA. In a June 29, 2015 inter-office memorandum, EPA Region 9 authorized a hold time variance of up to 72-hours applicable only to Pacific Island Territory permittees which ship the NPDES sample to the continental U.S. for toxicity testing, with conditions (see NPDES permit).

Species sensitivity screening for chronic toxicity is not an automatic requirement in this permit. However, the permit retains a species sensitivity screening condition as an option for the

permitting authority to exercise, particularly when the quality of the permitted discharge has changed, or is expected to change, during the permit term.

IX. SPECIAL CONDITIONS - RECEIVING WATER MONITORING

The Ugum River is an impaired water body with a TMDL for sediment. The permittee shall not contribute to the sediment loading in the river. Accordingly, monthly receiving water monitoring is required for turbidity and total suspended solids. The permittee shall take samples both upstream and downstream of the outfall during a discharge. The downstream sample shall be collected at least 200 feet downstream of the outfall to ensure proper effluent mixing with the receiving water. Hardness monitoring is also required.

Additional parameter monitoring is required in order to determine compliance with narrative Guam WQS. The narrative portion of the Guam WQS describes limits while allowing flexibility to account for ambient concentrations. Downstream samples shall be used as a compliance point, while upstream samples shall be used as reference for ambient concentrations. Hence, the downstream compliance sample must be higher than the upstream background sample in order to constitute a violation of a narrative standard or permit condition. EPA acknowledges statistical variations due to randomness in comparing downstream to upstream receiving water samples and will exercise enforcement discretion accordingly. The summary tables below shows the receiving water monitoring and a statistical analysis for the data during the last permit term.

Table 4. Receiving water monitoring data for TSS and turbidity in the Ugum River.

Date	TSS (mg/L)[1]		Turbidity (NTU)[2]	
	UR-1 (Upstream)	UR-2 (Downstream)	UR-1 (Upstream)	UR-2 (Downstream)
10/16/2015	17	16	--[3]	--[3]
1/19/2016	2.4	4.8	--[3]	--[3]
2/5/2016	3.6	5.2	--[3]	--[3]
3/16/2016	--[3]	--[3]	2.4	1.9
4/5/2016	1.2	1.2	--	--
5/12/2016	6.0	4.0	2.1	1.7
6/13/2016	5.2	3.2	1.8	2.0
8/5/2016	2.8	3.6	--[3]	--[3]
10/6/2016	18.4	19.2	--[3]	--[3]
11/23/2016	6.8	8.0	20.9	21.9
12/29/2016	2.6	3.2	12.9	10.6
2/3/2017	137	155	306	366
3/15/2017	4.0	3.6	3.27	3.90
4/5/2017	3.6	2.0	5.88	5.49
5/18/2017	1.6	0.8	3.97	4.78
6/14/2017	0.0	0.0	3.5	3.0
11/16/2017	1.4	1.2	5.20	5.47
2/14/2018	1.2	6.6	2.48	4.83
5/16/2018	0.4	1.2	5.49	5.78
11/26/2019	4.8	2.0	7.1	7.3
1/14/2020	6.0	6.8	3.74	3.40
2/10/2020	--[3]	2.0	3.59	4.77

Date	TSS (mg/L)		Turbidity (NTU)	
	UR-1 (Upstream)	UR-2 (Downstream)	UR-1 (Upstream)	UR-2 (Downstream)
4/28/2020	1.6	2.8	1.3	2.8
4/30/2020	1.6	0.8	1.2	2
6/2/2020	7.6	2.8	3.0	14.6
7/28/2020	5.7	6.7	18.4	18.1
10/14/2020	6.8	7.6	13.6	14.4

[1]A paired two sample mean t-test for TSS resulted in no statistical significance difference upstream and downstream of the outfall (i.e. two-tailed p value of 0.84 compared to a alpha value of 0.5). The data on 2/3/2017 was excluded from the statistical analysis as sample data is not representative of typical stream conditions (i.e. stream greater than 7 times more turbid) and could be due to variations due to randomness of sampling.
[2]A paired two sample mean t-test for turbidity resulted in no statistical significance difference upstream and downstream of the outfall (i.e. two-tailed p value of 0.98 compared to a alpha value of 0.5). The data on 2/3/2017 was excluded from the statistical analysis as sample data is not representative of typical stream conditions (i.e. stream greater than 7 times more turbid) and could be due to variations due to randomness of sampling.
[3] Not sampled or analytical error.

X. OTHER CONSIDERATIONS UNDER FEDERAL LAW

A. Consideration of Environmental Justice

EPA's Environmental Justice policy establishes fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. As part of the environmental permitting process, EPA considers cumulative environmental impacts to disproportionately impacted communities.

EPA conducted a screening level evaluation of vulnerabilities in the community posed to local residents near the vicinity of the permitted surface water treatment plant using EPA's EJSCREEN tool. The purpose of the screening is to identify areas disproportionately burdened by pollutant loadings and to consider demographic characteristics of the population living in the vicinity of the discharge when drafting permit conditions.

In Guam, EPA is aware of several environmental burdens facing communities including emissions from petroleum power generation, imminent Naval relocation and expansion, and bacteriological impairments for beaches across the territory. Guam has also experienced recent relocation of their primary landfill for industrial and municipal waste and received its first Municipal Separate Storm Sewer System ("MS4") permit in December 2018.

EPA is aware of the potential for cumulative burden of the permitted discharge on the impacted community and will issue this permit consistent with the CWA, which is protective of all beneficial uses of the receiving water, including human health. In addition to these permits, EPA provides support to GWA through compliance and State Revolving Funding assistance. Continued engagement across all water programs is critical to establish consistent expectations and resources to support water and wastewater infrastructure. In consideration of the above, EPA believes the permitted discharges should not contribute to undue incremental environmental burden and has made reasonable effort to ensure the community has, at a minimum, the same degree of protection as less burdened communities.

B. Impact to Threatened and Endangered Species

Section 7 of the Endangered Species Act of 1973 (16 U.S.C. § 1536) requires federal agencies to ensure that any action authorized, funded, or carried out by the federal agency does not jeopardize the continued existence of any listed or candidate species, or result in the destruction or adverse modification of critical habitat. To determine whether the discharge would affect any endangered or threatened species, EPA requested a species list from U.S. FWS and received a response on June 3, 2021 (reference number 01EPIF00-2021-SL-0304). A discussion of each of these species is below. The action area does not include any marine waters so it was unnecessary to request a species list from the National Marine Fisheries Service.

Table 5. Listed species for the action area designated under the U.S. Endangered Species Act

Type	Common Name	Scientific Name	Status and Critical Habitat[1]
Mammals	Mariana Fruit Bat	*Pteropus mariannus mariannus*	Threatened
Birds	Mariana Gray Swiftlet (yayaguak)	*Aerodramus vanikorensis bartschi*	Endangered
	Mariana Common Moorhen (pulattat)	*Gallinula chloropus guami*	Endangered
Invertebrates	Mariana eight-spot butterfly (ababang)	*Hypolimnas octocula marianensis*	Endangered
	Humped tree snail (alakeha)	*Partula gibba*	Endangered
	Guam tree snail (alakeh)	*Partula radiolata*	Endangered
	Fragile tree snail (alakeh)	*Samoana fragilis*	Endangered
Plants	Fadang	*Cycas micronesica*	Threatened
	No common name	*Phyllanthus saffordii*	Endangered
	No common name	*Tabernaemontana rotensis*	Threatened

[1] U.S. FWS confirmed that no designated critical habitat exists within or near the project site (i.e. action area).

Action and Action Area

The proposed action is reissuance of an NPDES permit authorizing discharges from the Ugum Surface Water Treatment Facility to Ugum River. The permittee is a minor discharger that discharges approximately 0.02 MGD, 2 miles upstream of Talofofo Bay. Ugum SWTF's discharge is a very small proportion (<0.5%) of the Ugum River's flow, and the river's flow is further diluted in the floodplain. Ugum SWTF's contribution to the floodplain is considered *de minimis*. No new construction, new pipelines, land, habitat, or hydrology alterations are associated with the permit reissuance.

The permit incorporates effluent limits and narrative conditions to ensure that the discharge meets GEPA WQS, without any mixing zones. The effluent limits in the permit will not result in acute or chronic exposures to contaminants that would affect federally listed threatened and endangered species or impair any designated critical habitat. All effluent limits will apply at end

of pipe. The major pollutants of concern for this discharge include TSS and turbidity, which the discharger monitors in the receiving water. See Table 4 for receiving water monitoring data in the Ugum River.

The data indicate little to no impact to the receiving water within the surrounding waters (i.e. no significant difference using a paired t-test upstream and downstream of the outfall for either TSS or turbidity). The data indicate that discharge has no discernible effect on Talofofo Bay, so Talofofo Bay is not part of the action area. The action area includes the permitted facility and the Ugum River from the discharge point two miles downstream into the Talofofo floodplain.

Bats: Mariana Fruit Bat

The Mariana Fruit Bat (*Pteropus mariannus mariannus*) is listed as threatened due to habitat lost/degradation, over hunting, predation by the brown treesnake, and natural disturbances. The Mariana fruit bat is a medium-sized bat measuring 195 to 250 mm from head to rump, with a wingspan of 860 to 1065 mm. The males are slightly larger than the females. The abdomen and wings are dark brown to black with individual gray hairs intermixed throughout the fur. The mantle and sides of the neck are bright gold on most animals but in some individuals, this region may be pale gold or pale brown. The color of the head varies from brown to dark brown.

On islands inhabited by humans, bat colonies usually occur in remote sites, especially near or along clifflines. The Mariana Fruit Bat is known to forage on military lands and at the Guam National Wildlife Refuge, which are miles away from this facility's discharge. Therefore, there is little likelihood that the Maraina Fruit Bat will be present in the action area. Since the proposed action is related to the discharge of filter backwash water to the Ugum River, there is no direct impacts to this listed species. Further, the discharge will not indirectly affect the food or habitat as the Mariana Fruit Bat eats fruits, flowers, and leaves, and the Ugum River is not habitat for the species. EPA has determined that the action will not affect Mariana Fruit Bats. There is no designated critical habitat for the Mariana Fruit Bat in the action area. (US FWS 2009; US FWS 2012).

Birds: Two Endemic Bird Species

The Mariana Gray Swiftlet is listed as endangered. The Mariana Gray Swiftlet is a small, narrow winged bird with dark sooty gray above and grayish brown below. The species is endemic to the Mariana Islands and populations currently exist on Guam, Aguiguan, and Saipan. The Mariana Gray Swiftlet populations are known to occur in 3 locations on Guam, in natural and manmade caves. Guano of swiftlets have been found near Talofofo Bay.

The swiftlet nests and roosts in limestone caves in nests composed of moss held tightly together and sealed to the cave wall by hardened saliva. The species navigates through caves using echolocation. Swiftlets leave the cave early morning and early evening to drink and forage on insects over a wide variety of terrain and vegetation. The Mariana Swiftlet feeds on insect prey and invertebrates, preferring forest locations and captures these insects during flight. The most likely historical and current threats to the survival of the Mariana gray swiftlet are the disturbance of caves by human activity, predation by brown tree snakes, the historical use and

application of pesticides by the U.S. military, avian disease, the destruction of forests and habitats by typhoons, and the alteration of native habitats.

The Mariana Gray Swiftlet will have extremely limited exposure to the discharge authorized by the permit because the volume of discharge is low and it will be diluted by the flow of the Ugum River. Occasional exposure could potentially occur if the Mariana Gray Swiftlet drank from the Ugum River, however the TSS and turbidity levels resulting from the discharge are indistinguishable from the TSS and turbidity levels without the discharge, so the action would not affect Mariana Gray Swiftlets that drink water from the Ugum River. Additionally, because they are indistinguishable from background levels, TSS and turbidity from the discharge would not change the availability of insects that spend any portion of their lifecycle in the Ugum River and would therefore not affect the availability of prey for the Mariana Gray Swiftlet. Therefore, EPA has determined that the action will not affect the Mariana Gray Swiftlet.

The Mariana Common Moorhen is a non-migratory, wary bird found primarily at natural and manmade wetlands. They feed on a variety of plant and animal matter (most commonly aquatic plants, insects, berries, and invertebrates) located in and around the wetlands. Specifically, the Mariana common moorhen feeds by swimming and sticking its head under the surface to grasp plants or insect prey. The most serious threat to the Mariana Common Moorhen is the disappearance of suitable wetland habitat and hunting. (US FWS 1991). Talofofo floodplain wetlands could potentially support the species. The Ugum River contributes to the stagnant water in the floodplain and is one of many surface waters contributing to the floodplain. This action will not result in loss or degradation of wetland habitat. The outfall is about 2 miles upstream of the Talofofo Bay and the pollutants of concern are TSS and turbidity. The TSS limits of 30 mg/L for average monthly and 45 mg/L for a maximum daily and turbidity limit of 12.50 NTU as an instant max for the effluent are already lower than the concentrations that may cause sublethal effects and the effluent will be further diluted by the receiving water. (Gammon 1970, as cited in Kerr 1995; EPA 2003). The receiving water data shows no significant difference in TSS and turbidity as a result of the discharge, so the discharge would not affect the availability or health of the aquatic plants, insects, and other invertebrates in the Ugum River which are prey for the Mariana Common Moorhen. Therefore, EPA has determined that the action will not affect the Mariana Common Moorhen.

Invertebrates: Mariana eight-spot butterfly and three tree snails

The Mariana eight-spot butterfly was listed as endangered in 2015. A butterfly of the Nymphalidae family, the Mariana eight-spot butterfly is known solely from the islands of Guam and Saipan. Believed to be extirpated from Saipan, Guam remains its only known home in the world. The butterflies are primarily orange and black. Males are smaller than females and are mostly black with an orange stripe running vertically across the wings, in which the hindwings have small black dots. Adult females tend to lay their eggs on the edge of host plant leaves, and in clusters of one or two. Forest herbs, *Elatostema* and *Procris,* are vital food sources for the caterpillars of this endangered species. *Elatostema* is only found on karst substrate, often on limestone boulders. Procris also occurs on karst substrates but also as epiphytes on trees. *Procris* appears to fair better in sunny areas with less water. The action area does not include suitable habitat for the Mariana eight-spot butterfly so EPA has determined that the actionwill not affect this species or its habitat or food (i.e. *Elatostema* or *Procris*).

For the listed tree snails that could occur in the action area, all are tree-dwelling species and members of the Partulidae family of snails. All listed tree snail species are currently threatened by habitat loss and modification and by predation from several species. Predation by the nonnative rosy carnivore snail (*Euglandina rosea*), the nonnative Manokwar flatworm (*Platydemus manokwari*), and rats (*Rattus sp*.) is a serious threat to the survival of these listed tree snails. The humped tree snail may only be found only on the islands of Guam, Saipan, Sarigan, and Pagan andappears to show specificity to plant species, being found on only 5 of the surveyed 30 plant species during a study done in the early 1990s. (Hopper and Smith 1992). The Guam tree snail requires cool and shaded native forest habitat and is now known from 22 populations on Guam. The Guam tree snail does not appear to show plant species specificity being found on all 30 plant species surveyed. The fragile tree snail is found in forest ecosystems, most notably in the northern limestone plateau and was also found on only 5 of the surveyed plant species. (Hopper and Smith 1992). Generally, the fragile tree snail needs cool, shaded forest habitat with high humidity and reduced air movement that prevents excessive water loss.

The action area does not provide suitable habitat for these tree-dwelling snail species. Further, the major pollutants of concern will not affect the growing of suitable habitat for the listed species. EPA has determined that the action will not affect listed snail species in Table 5.

Plants: Three trees

The Fadang, *Phyllanthus saffordii*, and *Tabernaemontana rotensis*, are known from Guam. Fadang is under attack by the nonnative insect cycad aulacaspis scale, which is causing rapid mortality of the Fadang. As of January 2013, the Fadang mortality reached 92 percent on Guam. *Phyllanthus saffordii* is a woody shrub and is historically known from the southern part of Guam within the savanna ecosystem. *Phyllanthus saffordii* are at risk due to continued habitat loss and destruction from agriculture, urban development, nonnative animals and plants, fires, and typhoons, combined with habitat destruction and direct damage by recreational vehicles. *Tabernaemontana rotensis* is a small to medium sized tree and is widespread throughout the tropics/sub-tropics.

It was historically known from at least 250 individuals in Guam, with more than 21,000 individuals found throughout Andersen Airforce Base in 2007. *Tabernaemontana rotensis* populations of this species on Guam and Rota are at risk due to continued habitat loss and destruction from agriculture, urban development, nonnative animals and plants, fires, and typhoons; combined with ordnance and live-fire training. The greatest concern regarding this species is clearing and habitat loss due to the proposed airforce and Navy base expansions.

EPA notes that none of the listed tree species are associated with wetland or riparian environments that could be adjacent to the Ugum River and therefore would not occur in the action area. Further, the discharge's pollutants of concern,TSS and turbidity, would not affect the ability of the plant tree species to grow or be established. Therefore, EPA has determined that the action will not affect Fadang, *Phyllanthus saffordii*, or *Tabernaemontana rotensis*.

Summary: ESA No Effect Determination

As described above, EPA has determined that the action will not affect any threatened or endangered species. There is no designated critical habitat in the action area. EPA provided the Services with copies of this fact sheet and the draft permit during the public notice period. If, in the future, EPA obtains information or is provided information that indicates that there could be adverse impacts to federally listed species, EPA will contact the appropriate agency or agencies and initiate consultation, to ensure that such impacts are minimized or mitigated.

C. Impact to Coastal Zones

The Coastal Zone Management Act (CZMA) requires that Federal activities and licenses, including Federally permitted activities, must be consistent with an approved state Coastal Management Plan (CZMA §§ 307(c)(1) through (3)). Section 307(c) of the CZMA and implementing regulations at 40 CFR § 930 prohibit EPA from issuing a permit for an activity affecting land or water use in the coastal zone until the applicant certifies that the activity complies with the State (or Territory) Coastal Zone Management program, and the State (or Territory) or its designated agency concurs with the certification.

At this time, EPA has not received a consistency certification from the Guam Department of Commerce for the Ugum SWTP discharge. At the time the certification is received, EPA will review the certification and will make any necessary modification to the permit to ensure compliance with the Guam Coastal Management Plan.

D. Impact to Essential Fish Habitat

The 1996 amendments to the Magnuson-Stevens Fishery Management and Conservation Act (MSA) set forth a number of new mandates for the National Marine Fisheries Service, regional fishery management councils and other federal agencies to identify and protect important marine and anadromous fish species and habitat. The MSA requires Federal agencies to make a determination on Federal actions that may adversely impact Essential Fish Habitat (EFH).

The draft permit contains technology-based effluent limits and numerical and narrative water quality-based effluent limits as necessary for the protection of applicable aquatic life uses. The draft permit does not directly discharge to areas of essential fish habitat. Therefore, EPA has determined that the draft permit will not adversely affect essential fish habitat.

E. Impact to National Historic Properties

Section 106 of the National Historic Preservation Act (NHPA) requires federal agencies to consider the effect of their undertakings on historic properties that are either listed on, or eligible for listing on, the National Register of Historic Places. Pursuant to the NHPA and 36 CFR § 800.3(a)(1), EPA is making a determination that issuing this draft NPDES permit does not have the potential to affect any historic properties or cultural properties. As a result, Section 106 does not require EPA to undertake additional consulting on this permit issuance.

F. Water Quality Certification Requirements (40 CFR §§ 124.53 and 124.54)

For States, Territories, or Tribes with EPA approved water quality standards, on the date of public notice, EPA requested certification from GEPA that the draft permit will meet all applicable water quality standards. Certification under section 401 of the CWA shall be in writing and shall include the conditions necessary to assure compliance with referenced applicable provisions of sections 208(e), 301, 302, 303, 306, and 307 of the CWA and appropriate requirements of Territory law. EPA cannot issue the permit until the certifying State, Territory, or Tribe has granted certification under 40 CFR § 124.53 or waived its right to certify. If the State, Territory, or Tribe does not respond within 60 days of the date of public notice it will be deemed to have waived certification.

XI. STANDARD CONDITIONS

A. Reopener Provision

In accordance with 40 CFR §§ 122 and 124, this permit may be modified by EPA to include effluent limits, monitoring, or other conditions to implement new regulations, including EPA-approved water quality standards; or to address new information indicating the presence of effluent toxicity or the reasonable potential for the discharge to cause or contribute to exceedances of water quality standards.

B. Standard Provisions

The permit requires the permittee to comply with EPA Region IX Standard Federal NPDES Permit Conditions.

XII. ADMINISTRATIVE INFORMATION

A. Public Notice (40 CFR § 124.10)

The public notice is the vehicle for informing all interested parties and members of the general public of the contents of a draft NPDES permit or other significant action with respect to an NPDES permit or application.

B. Public Comment Period (40 CFR § 124.10)

Notice of the draft permit will be placed on EPA's website at https://www.epa.gov/npdes-permits/npdes-permits-epas-pacific-southwest-region-region-9, with a minimum of 30 days provided for interested parties to respond in writing to EPA. The draft permit and fact sheet will be posted on the EPA website for the duration of the public comment period. After the closing of the public comment period, EPA is required to respond to all significant comments at the time a final permit decision is reached or at the same time a final permit is actually issued.

C. Public Hearing (40 CFR § 124.12)

A public hearing may be requested in writing by any interested party. The request should state the nature of the issues proposed to be raised during the hearing. A public hearing will be held if EPA determines there is a significant amount of interest expressed during the 30-day public comment period or when it is necessary to clarify the issues involved in the permit decision.

XIII. CONTACT INFORMATION

Comments, submittals, and additional information relating to this proposal may be directed to:

EPA Region 9
Becky Mitschele
mitschele.becky@epa.gov
(415) 972 – 3492

XIV. REFERENCES

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