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IN THE DISTRICT COURT OF GUAM

UNITED STATES OF AMERICA,)
)
 Plaintiff,)
)
 v.)
)
 GUAM WATERWORKS AUTHORITY)
 and the GOVERNMENT OF GUAM,)
)
 Defendants.)
 _____)

Civil Case No. 02-00035

ORDER FOR PRELIMINARY
RELIEF RE: DEADLINES FOR
OUTSTANDING PROJECTS
UNDER THE AMENDED
STIPULATED ORDER

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1 Plaintiff United States of America, on behalf of the United States Environmental
2 Protection Agency (“EPA”), filed a Complaint in this action on December 20, 2002, against
3 Defendant Guam Waterworks Authority (“GWA”) and the Government of Guam under the
4 Clean Water Act, 33 U.S.C. §§ 1251-1387 (the “CWA”), and the Safe Drinking Water Act, 42
5 U.S.C. §§ 300f - 300j-26 (the “SDWA”). Pl.’s Compl., ECF No. 1. GWA is a public
6 corporation and an agency within the Government of Guam that has the authority to produce,
7 treat, transmit, store, distribute, and sell water on Guam, and also has the authority to collect,
8 treat, and dispose of wastewater on Guam. GWA owns and operates a Publicly Owned
9 Treatment Works (“POTW”), as defined in 33 U.S.C. § 1292(2)(A), that includes five
10 wastewater treatment plants (“WWTP”) on Guam that are subject to the conditions and
11 limitations contained in National Pollutant Discharge Elimination System (“NPDES”) permits
12 issued by EPA pursuant to the CWA, and a wastewater collection and conveyance system
13 (“Wastewater Collection System”) to transport sewage to the WWTPs. GWA also owns and
14 operates three Public Water Systems that supply drinking water for the majority of the
15 population of Guam: the Northern, Central, and Southern Systems.
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20 In the Complaint, the United States sought injunctive relief and the appointment of a
21 receiver pursuant to section 504 of the CWA, 33 U.S.C. § 1364, and section 1431(a) of the
22 SDWA, 42 U.S.C. § 300i(a), to address the imminent and substantial endangerment to the health
23 and welfare of persons presented by: (1) the numerous and repeated discharges of untreated and
24 inadequately treated wastewater from GWA’s POTW, resulting in elevated levels of fecal
25 coliform bacteria in both surface waters and drinking water wells on Guam; and (2) serious
26 deficiencies in GWA’s Public Water Systems, causing contaminated water to be served to the
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1 public. The United States also sought both civil penalties and injunctive relief under CWA
2 section 309(b) and (d), 33 U.S.C. § 1319(b) and (d), for violations of the CWA and the terms and
3 conditions of applicable NPDES permits, and under SDWA 1414(b), 42 U.S.C. § 300g-3(b), for
4 violations of the SDWA and the National Primary Drinking Water Regulations. The
5 Government of Guam is identified in the Complaint as a defendant as required by CWA section
6 309(e), 33 U.S.C. § 1319(e).
7

8
9 In June 2003, the Parties agreed that entry of a Stipulated Order for Preliminary Relief
10 would be the most appropriate way to require the immediate implementation of short-term
11 projects and initial planning measures by GWA and the Government of Guam (jointly
12 “Defendants”) to begin to address issues of compliance at GWA’s POTW and three Public Water
13 Systems (the “Facilities”). Stip. Order, ECF. No. 17. The Parties agreed to two modifications to
14 the June 2003 Stipulated Order; the court entered an Order amending the Stipulated Order for
15 Preliminary Relief on October 25, 2006 (as amended, the “Stipulated Order”). Stip. Order, ECF.
16 Nos. 40, 41.
17

18
19 In June 2003, the Parties contemplated entering into a further stipulation to address
20 additional compliance issues after Defendants’ completion of the initial planning measures set
21 out in the Stipulated Order. Although the initial planning measures are now completed, GWA
22 has not completed several of the projects required by the Stipulated Order.
23

24
25 In an Order dated November 18, 2010, this court directed the Parties to work together to
26 draft a proposed plan to require GWA to complete the projects outstanding from the Stipulated
27 Order. Order, ECF No. 136. The court ordered the Parties to file a proposed plan by December
28 15, 2010. *Id.* at 2. If the Parties were unable to reach an agreement on a proposed plan, the

1 Parties were directed to file separate briefs setting forth the projects, a scope of work for each
2 project, and a schedule to complete each project. *Id.* Pursuant to the court's Order, the Parties
3 attempted to negotiate a proposed plan to submit to the court. After these attempts were
4 unsuccessful, the United States and GWA submitted separate briefs to the court on December 15,
5 2010. Pl.'s Br. ECF No.139; Def.'s Br, ECF No. 140.
6

7 In an Order dated March 9, 2011, the court directed the Parties to meet with Magistrate
8 Judge Manibusan on March 16, 2011, and to work collaboratively to set workable deadlines with
9 respect to outstanding projects under the Stipulated Order. Order, ECF. No. 145. The court
10 ordered the Parties to file an amended Stipulated Order by March 31, 2011. *Id.* If the parties
11 were unable to reach an agreement, the Magistrate Judge would file a report and
12 recommendation to the court on a timetable for the court to adopt. *Id.*
13
14

15 Pursuant to the court's Order, the Parties continued their efforts to negotiate an
16 agreement on the outstanding projects under the Stipulated Order. On March 31, 2011, the
17 Parties advised the court that they had reached an impasse in their settlement attempts. Rpt. and
18 Recom. ECF No. 154 at 1. After a hearing on April 28, 2011, the Magistrate Judge issued a
19 Report and Recommendation regarding the deadlines for the outstanding projects on July 7,
20 2011. *Id.*, As provided in the Magistrate Judge's Report and Recommendation, failure to file
21 written objections within 14 days from service shall bar an aggrieved party from attacking the
22 Report and Recommendation. *Id.* at 7.
23
24

25 NOW THEREFORE, after consideration of the Magistrate Judge's Report and
26 Recommendation, and each Party's response thereto, the court hereby adopts the Report and
27 Recommendation and ORDERS the following PRELIMINARY RELIEF:
28

I. DEFINITIONS

1
2 1. Terms used in this Order that are defined in the CWA, SDWA, or in regulations
3 promulgated pursuant to the CWA or SDWA, shall have the meanings assigned to them in those
4 statutes or regulations, unless otherwise provided in this Order. Whenever the terms set forth
5 below are used in this Order, the following definitions shall apply:
6

7 (a) “Biosolids” shall mean non-hazardous sewage sludge, as defined in 40 C.F.R.
8 § 503.9. Sewage sludge that is hazardous, as defined in 40 C.F.R. § 261.3, must be disposed of
9 in accordance with the Solid Waste Disposal Act, as amended, 42 U.S.C. §§ 6901 - 6992k (also
10 known as the Resource Conservation and Recovery Act or RCRA).
11

12 (b) “Bypass,” as defined by 40 C.F.R. § 122.41(m), shall mean the intentional
13 diversion of waste streams from any portion of a wastewater treatment facility.
14

15 (c) “Complaint” shall mean the Complaint filed by the United States in this action.

16 (d) “Day” shall mean a calendar day unless expressly stated to be a business day. In
17 computing any period of time under this Order, where the last day would fall on a Saturday,
18 Sunday, federal holiday, or a holiday on Guam, the period shall run until the close of business of
19 the next business day.
20

21 (e) “Defendants” shall mean GWA and the Government of Guam.

22 (f) “EPA” shall mean the United States Environmental Protection Agency and any of
23 its successor departments or agencies.
24

25 (g) “Effective Date” shall mean the date upon which this Order is entered by the
26 court as recorded on the court’s docket.

27 (h) “Excessive Infiltration/Inflow” or “Excessive I/I” shall mean the quantities of
28

1 infiltration/inflow (“I/I”) that can be eliminated from the sanitary sewer system in a cost-
2 effective manner, as determined by a cost-effectiveness analysis that compares the costs of
3 correcting the I/I with the total costs of transporting and treating the I/I.
4

5 (i) “Facilities” shall mean GWA’s Publicly Owned Treatment Works and three
6 Public Water Systems.

7 (j) “GWA” shall mean Guam Waterworks Authority.

8 (k) “Independent Contractor” shall mean a licensed contractor who has not been
9 employed by GWA in the three-year period prior to March 1, 2011.
10

11 (l) “Independent Professional Engineer” shall mean a licensed professional engineer
12 who has not been employed by GWA in the three-year period prior to March 1, 2011.

13 (m) “Infiltration,” as defined by 40 C.F.R. § 35.2005(b)(20), shall mean water, other
14 than wastewater, that enters the sanitary sewer system (including sewer service connections and
15 foundation drains) from the ground through such means as defective pipes, pipe joints,
16 connections, or manholes.
17

18 (n) “Inflow,” as defined by 40 C.F.R. § 35.2005(b)(21), shall mean water other than
19 wastewater that enters the sanitary sewer system (including sewer service connections) from
20 sources such as, but not limited to, roof leaders, cellar drains, yard drains, drains from springs
21 and swampy areas, manhole covers, clean-out caps on laterals, cross connections between storm
22 drains and sanitary sewers, catch basins, cooling towers, storm waters, surface runoff, street
23 wash waters, or drainage.
24

25 (o) “Paragraph” shall mean a portion of this Order identified by an Arabic numeral.

26 (p) “Parties” shall mean the United States, GWA, and the Government of Guam.
27
28

1 (q) "Section" shall mean a portion of this Order identified by a Roman numeral.

2 (r) "SSO" or "Sanitary Sewer Overflow" shall mean an overflow, spill, diversion, or
3 release of wastewater from or caused by the GWA's Wastewater Collection System, except that
4 the term "SSO" does not include wastewater backups into buildings caused solely by a blockage
5 or other malfunction in a building lateral that is privately owned.
6

7 (s) "Stipulated Order" shall mean the Stipulated Order for Preliminary Relief
8 entered by the court on June 5, 2003, as amended by stipulation and approved and filed by the
9 court on October 25, 2006.
10

11 (t) "Unauthorized Bypass" shall mean a Bypass that violates any condition in, or is
12 not authorized by, GWA's NPDES permits.
13

14 (u) "United States" shall mean the United States of America, acting on behalf of
15 EPA.
16

17 (v) "Wastewater Collection System" shall mean all parts of the wastewater collection
18 system owned or operated by GWA that are intended to convey domestic, commercial or
19 industrial wastewater to GWA's wastewater treatment plants, including, without limitation,
20 sewers, pipes, pump stations, lift stations, manholes or maintenance holes, force mains, and
21 appurtenances associated with each of the above.
22

23 **II. COMPLIANCE REQUIREMENTS**

24 **A. WASTEWATER PROJECTS**

25 2. Northern District Wastewater Treatment Plant ("WWTP") Interim Primary Treatment
26 Upgrades. By September 30, 2012, GWA shall complete construction of interim primary
27 treatment improvements at the Northern District WWTP and achieve consistent compliance with
28

1 the interim effluent limits set forth in Table 1 in subparagraph 3.a. Within 30 Days after
 2 completing construction of the interim primary improvements, GWA shall provide notification
 3 to EPA and the United States pursuant to Paragraph 35 of this Order.
 4

5 3. Interim Effluent Limits for the Northern District WWTP.

6 a. By no later than September 30, 2012, GWA shall comply with the following
 7 requirements and interim effluent limits in Table 1 for flow rate, Biochemical Oxygen Demand
 8 (5 day) (“BOD5”), and Total Suspended Solids (“TSS”) for wastewater discharges from the
 9 Northern District WWTP.
 10

Northern District WWTP - Table 1					
Interim Discharge Limitations				Monitoring Requirements	
Parameter	Average Monthly	Maximum Daily	Units	Minimum Frequency	Sample Type
Flow	6	6; report ^{1/}	mgd	continuous	
Biochemical Oxygen Demand (5 day)	85 4,256	170 8,512	mg/L lbs/da y	daily	composite

25 ^{1/} Until GWA completes the interim primary treatment upgrades at the Northern District WWTP
 26 pursuant to Paragraph 2, the flow limit shall remain at 6 million gallons per day (“mgd”) as a
 27 daily maximum as required by GWA’s NPDES permit. The daily maximum flow limit of 6 mgd
 28 shall no longer apply after GWA completes construction of the interim primary treatment
 improvements but GWA shall continue to report each month the daily maximum flow.

Total Suspended Solids	50	100	mg/L	daily	composite
	2,504	5,008	lbs/day		

(1) After three months of continuous compliance with the average monthly limits in Table 1 in subparagraph 3.a., GWA may request from EPA the limits in Table 2 below. GWA shall submit in its request to EPA, for review and approval in accordance with Paragraph 30 of this Order, (i) a report signed by an Independent Professional Engineer certifying that the Northern District WWTP has the capacity to treat an average monthly flow of 7.5 mgd in compliance with the following BOD5 and TSS limits, and (ii) documentation that shows at least three months of continuous compliance with the average monthly limits in Table 1 in subparagraph 3.a.

Northern District WWTP - Table 2					
Interim Discharge Limitations				Monitoring Requirements	
Parameter	Average Monthly	Maximum Daily	Units	Minimum Frequency	Sample Type
Flow	7.5	report	mgd	continuous	
Biochemical Oxygen Demand (5 day)	85	170	mg/L	daily	composite
	5,320	10,640	lbs/day		

Total Suspended Solids	50	100	mg/L	daily	composite
	3,129	6,258	lbs/day		

(2). After three months of continuous compliance with the approved average monthly limits set forth in Table 2 in subparagraph 3.a.(1) and with average monthly flows of at least 6.5 mgd, GWA may request from EPA the limits in Table 3 below. GWA shall submit in its request to EPA, for review and approval in accordance with Paragraph 30 of this Order, (i) a report signed by an Independent Professional Engineer certifying that the Northern District WWTP has the capacity to treat an average monthly flow of 9 mgd in compliance with the following BOD5 and TSS limits, and (ii) documentation that shows at least three months of continuous compliance with the average monthly limits in Table 2 in subparagraph 3.a.(1).

Northern District WWTP - Table 3					
Interim Discharge Limitations				Monitoring Requirements	
Parameter	Average Monthly	Maximum Daily	Units	Minimum Frequency	Sample Type
Flow	9	report	mgd	continuous	
Biochemical Oxygen Demand (5 day)	85	170	mg/L	daily	composite
	6,384	12,768	lbs/day		

Total Suspended Solids	50	100	mg/L	daily	composite
	3,755	7,510	lbs/day		

b. GWA shall comply with the requirements and interim effluent limits for flow rate, TSS, and BOD5 for the Northern District WWTP as set forth in subparagraph 3.a. or, as applicable, subparagraph 3.a.(1) or 3.a.(2), notwithstanding any final effluent limitations for flow rate, TSS and BOD5 set forth in GWA’s applicable NPDES permit for the Northern District WWTP; provided, however, that this Order shall not affect the force or effect of any other effluent limitations, or monitoring and reporting requirements, or any other terms and conditions of its applicable NPDES permit.

c. Within 90 Days after the Effective Date, GWA shall commence effluent monitoring for wastewater discharges from the Northern District WWTP. For one year, GWA shall monitor the effluent each calendar-year quarter (four samples total) for the parameters listed in Appendix A, including conventional and nonconventional compounds, metals, cyanide, phenols, organic compounds, and whole effluent toxicity. GWA shall report the results to EPA in the Quarterly Reports submitted pursuant to Paragraph 31.a.

4. Northern District WWTP Interim Sludge and Biosolids Management.

a. By December 31, 2011, GWA shall submit to EPA, for review and approval in accordance with Paragraph 30 of this Order, a proposed Sludge Management Plan for solids produced at the Northern District WWTP. The Plan shall include a schedule for full implementation of the Plan for: (i) dewatering WWTP solids by no later than September 30,

1 2012, and (ii) adequate stabilization and dewatering of the WWTP solids by no later than
2 September 30, 2014. The Plan shall include at a minimum: (1) estimates of the average and
3 maximum daily solids produced at the WWTP under current conditions and conditions projected
4 to exist when interim primary treatment improvements are completed; (2) whether the solids
5 produced will be stabilized at the Northern District WWTP or transported off-site for
6 stabilization; (3) the maximum capacity that GWA has to transport solids for treatment off-site;
7 (4) if solids will be treated off-site, address and evaluate the following issues: (i) how such
8 solids will be stored prior to transport; (ii) where treatment will be done; (iii) how much
9 treatment capacity is available; (iv) whether GWA's implementation of the proposed Plan will
10 have an adverse impact on the performance of GWA's other WWTP; and (v) how GWA will
11 dispose of solids; and (5) if solids will be treated on-site, address the following issues: (i) how
12 much treatment capacity is available; (ii) what new facilities or upgrades to existing facilities
13 will be required; (iii) when and how these new facilities or upgrades will be completed; and (iv)
14 how GWA will dispose of solids. GWA shall implement the Sludge Management Plan as
15 approved.

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20 b. In each Quarterly Report submitted to EPA pursuant to Paragraph 31, GWA shall
21 report sludge management activities, including, but not limited to, the amount of solids produced
22 and/or applied to drying beds, solids transported off-site, and solids treated on-site.

23 c. By September 30, 2012, GWA shall repair or replace the solids handling facilities
24 at the Northern District WWTP in accordance with the approved plan and ensure that solids
25 generated by the WWTP are adequately dewatered to comply with the sludge and biosolids
26 requirements in 40 C.F.R. Part 503.
27
28

1 d. By September 30, 2014, GWA shall fully implement the approved Sludge
2 Management Plan and ensure that solids generated by the WWTP are adequately stabilized and
3 dewatered to comply with the sludge and biosolids requirements in 40 C.F.R. Part 503.
4

5 5. Agana WWTP Primary Treatment Upgrades. By June 30, 2013, GWA shall complete
6 primary treatment improvements at the Agana WWTP, achieve consistent compliance with the
7 WWTP's NPDES permit, and comply with the sludge and biosolids requirements in 40 C.F.R.
8 Part 503. To achieve consistent compliance, GWA shall complete the following improvements
9 and any additional WWTP repairs, rehabilitation or improvements, such as the use of chemically
10 enhanced treatment.
11

12 a. By September 30, 2011, GWA shall submit to EPA, for review and comment, a
13 proposed scope of work and schedule, describing all improvements required to achieve
14 consistent compliance. The scope of work and schedule shall include, but not be limited to,
15 improvements to septage handling, grit and fats/oil/grease ("FOG") removal, and solids
16 handling, as set forth below in subparagraphs 5.b., 5.c. and 5.d.
17

18 b. By no later than June 30, 2013, GWA shall construct and have in service a
19 septage handling facility located at the Agana WWTP or another location to be determined by
20 GWA. GWA shall meet the following interim compliance milestones:
21

22 (1) by December 31, 2011, GWA shall execute a design contract and issue a
23 notice to proceed with design; and
24

25 (2) by June 30, 2012, GWA shall execute a construction contract and issue a
26 notice to proceed with construction.
27

28 c. By no later than June 30, 2013, GWA shall construct and have in service grit and

1 FOG removal systems at either the Agana WWTP or the Agana sewage pump station. GWA
2 shall meet the following interim compliance milestones:

3 (1) by December 31, 2011, GWA shall execute a design contract and issue a
4 notice to proceed with design; and

5 (2) by June 30, 2012, GWA shall execute a construction contract and issue a
6 notice to proceed with construction.

7
8 d. By June 30, 2013, GWA shall repair the solids handling facilities at the Agana
9 WWTP, ensure that solids generated by the WWTP are adequately stabilized and dewatered at
10 the Agana WWTP, and comply with the sludge and biosolids requirements in 40 C.F.R. Part 503.

11
12 e. By May 31, 2013, GWA shall submit to EPA an operations and maintenance
13 (“O&M”) plan for primary treatment operations at the Agana WWTP. The plan shall include
14 O&M procedures for all major systems of the WWTP from the headworks to the outfall and
15 sludge processing facilities.

16
17 f. Within 90 Days after the Effective Date, GWA shall commence effluent
18 monitoring for wastewater discharges from the Agana WWTP. For one year, GWA shall
19 monitor the effluent each calendar-year quarter (four samples total) for the parameters listed in
20 Appendix A, including conventional and nonconventional compounds, metals, cyanide, phenols,
21 organic compounds, and whole effluent toxicity. GWA shall report the results to EPA in the
22 Quarterly Reports submitted pursuant to Paragraph 31.a.

23
24 6. Agana WWTP Effluent Backsurge. By June 30, 2013, GWA shall prevent the backsurge
25 of effluent flow from the Agana WWTP’s outfall. By December 31, 2011, GWA shall submit to
26 EPA, for review and comment, a proposed plan and schedule to address the effluent backsurge
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1 issues. Until the effluent backsurge is addressed, GWA shall continuously monitor flows
2 discharged through the old outfall, as required by the WWTP's NPDES permit.

3
4 7. Infiltration/Inflow Analyses and Sewer System Evaluation Surveys. GWA shall conduct
5 Infiltration/Inflow ("I/I") Analyses for all portions of its sanitary sewer system tributary to the
6 Agana, Agat-Santa Rita, Baza Gardens, and Umatac-Merizo WWTPs. For the portions of those
7 basins of its sanitary sewer system determined to be subject to "Excessive I/I" as defined in this
8 Order, GWA shall also conduct Sewer System Evaluation Surveys ("SSES"). GWA shall
9 conduct a separate I/I Analysis and SSES for each sanitary sewer system tributary to each of the
10 four WWTPs. These I/I Analyses and SSES shall be conducted in accordance with sound
11 engineering judgment and with the guidance provided in the appropriate sections of the
12 *Handbook: Sewer System Infrastructure Analysis and Rehabilitation*, EPA/625/6-91/030, 1991;
13 *Existing Sewer Evaluation and Rehabilitation*, WEF MOP FD-6, 1994; and the National
14 Association of Sewer Service Companies ("NASSCO") "Manual of Practice."
15
16

17 8. I/I Analyses and SSES Work Plan. Within 180 Days after the Effective Date, GWA shall
18 develop and submit for EPA's review and approval in accordance with Paragraph 30 of this
19 Order, an I/I Analysis and SSES work plan that provides the anticipated activities,
20 implementation schedule and completion date, work products, and interrelationship with GWA's
21 Capital Improvement Program planning efforts for the analyses described below in
22 subparagraphs 8.a. through 8.d. After EPA's approval of the work plan, GWA shall perform the
23 following I/I Analyses and SSESs.
24
25

26 a. Flow and Rainfall Data. GWA shall collect concurrent wastewater flow and
27 rainfall data for purposes of conducting its I/I Analyses required in this Paragraph. GWA shall
28

1 collect wastewater flow data utilizing continuous-recording Doppler-type flow meters (or a
2 similar method approved by EPA) capable of (i) measuring flow depth and flow velocity
3 simultaneously, and (ii) calculating flow rate from these data. GWA shall collect rainfall data
4 utilizing continuous-recording rain gauges. At least one rain gauge shall be installed in the area
5 tributary to each wastewater flow meter. When feasible, GWA shall select small-to-moderate
6 wet weather events that do not cause Sanitary Sewage Overflows (“SSOs”), but do not result in
7 less than 0.1 inch per hour of rainfall intensity during the main part of the storm event.
8
9

10 b. I/I Analysis for Agat-Santa Rita, Baza Gardens, and Umatac-Merizo WWTPs
11 (collectively, the “Southern WWTPs”). Within 540 Days after the Effective Date, GWA shall
12 complete I/I Analyses of the Southern WWTPs. For these I/I Analyses, the subject sewer system
13 shall be subdivided into a single drainage basin for each WWTP. Flow metering with concurrent
14 rainfall measurement conforming to the requirements of subparagraph 8.a. shall be performed for
15 each individual drainage basin to establish current dry-weather and wet-weather wastewater flow
16 rates generated within that drainage area. Treatment plant influent flow meters may be used for
17 flow data collection provided that they are fully functional, including during power outages, and
18 yield wastewater flow rate data comparable in accuracy to portable flow meters conforming to
19 subparagraph 8.a. Flow metering and concurrent rainfall data collected within the past five years
20 may be utilized in lieu of collecting new flow and rainfall data provided that the flow metering
21 and concurrent rainfall data collection effort conform to all requirements of subparagraph 8.a.
22 Through analysis and comparison of dry-weather flow data, wet-weather flow data, and rainfall
23 data, GWA shall determine whether each individual drainage area is likely subject to Excessive
24 I/I.
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1 c. I/I Analysis for the Agana WWTP. Within 900 Days after the Effective Date,
2 GWA shall complete the I/I Analysis of the sanitary sewer systems tributary to the Agana
3 WWTP. For this I/I Analysis, the sanitary sewer system shall be subdivided into individual
4 drainage sub-basins. Flow metering with concurrent rainfall measurement conforming to the
5 requirements of subparagraph 8.a. shall be performed for each individual drainage area to
6 establish current dry-weather and wet-weather wastewater flow rates generated within that
7 drainage area. Flows from upstream tributary areas shall be deducted to determine the
8 infiltration and/or inflow likely to be entering the sanitary sewer system from sources lying
9 within each drainage area. Flow metering and concurrent rainfall data collected within the past
10 five years may be utilized in lieu of collecting new flow and rainfall data provided that the flow
11 metering and concurrent rainfall data collection effort conformed to all requirements of
12 subparagraph 8.a. Through analysis and comparison of dry-weather flow data, wet-weather flow
13 data, and rainfall data, GWA shall determine whether each individual drainage area is likely
14 subject to Excessive I/I.

15 d. SSES for the Southern WWTPs. Within 540 Days after the Effective Date, GWA
16 shall perform an SSES for the sanitary sewer systems tributary to the Southern WWTPs found to
17 likely have Excessive I/I under subparagraph 8.b. The SSES shall specifically identify: (i) the
18 areas within each individual drainage basin having Excessive I/I that are causing and/or
19 contributing to recurring wet weather SSOs, overloading of WWTPs, and/or Bypasses at the
20 WWTPs; (ii) sources of I/I within the individual drainage basin suspected to have Excessive I/I
21 rates, together with a quantification of the amount; (iii) recurring wet weather SSOs and/or
22 Bypasses at the WWTPs within each individual drainage basin; (iv) storm water cross-
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1 connections and unauthorized connections; and (v) degraded pipes, manholes, and structures of
2 the sanitary sewer system that permit Excessive I/I to enter the sanitary sewer system. The SSES
3 shall include: (i) additional flow monitoring to isolate sources of I/I; (ii) smoke testing;
4 (iii) visual inspections of pipes and manholes; (iv) night flow isolation; (v) closed circuit
5 television (“CCTV”) inspection to identify sewers in need of repair, rehabilitation, or
6 replacement; (vi) dyed water flooding of storm drainage pipes and ditches within 20 feet of or
7 crossing sanitary sewers or sanitary sewer laterals concurrently with CCTV; and (vii) building
8 inspections.
9

10
11 e. SSES for the Agana WWTP. Within 900 Days after the Effective Date, GWA
12 shall perform an SSES for each individual drainage basin tributary to the Agana WWTP found to
13 likely have Excessive I/I under subparagraph 8.c. GWA’s SSES shall conform to the
14 requirements of subparagraph 8.d. Within 960 Days after the Effective Date, GWA shall submit
15 to EPA for review and comment a plan to address the problems identified in the SSES conducted
16 pursuant to this subparagraph, including the repair, rehabilitation or replacement of all
17 Wastewater Collection System assets that permit Excessive I/I to enter the sanitary sewer
18 system.
19

20
21 9. Agat-Santa Rita WWTP Interim Measures. GWA shall complete the following interim
22 measures at the Agat-Santa Rita WWTP.

23 a. Within 60 Days after the Effective Date, GWA shall submit to EPA a list of each
24 time that GWA bypassed wastewater from the Agat-Santa Rita WWTP and discharged without
25 treatment in the last three calendar years (2008, 2009, and 2010), including the date and volume
26 of wastewater bypassed.
27
28

1 b. Within 180 Days after the Effective Date, GWA shall repair or replace the
2 Agat-Santa Rita WWTP's influent flow meter, calibrate the flow meter, report to EPA on the
3 actions taken to improve the flow meter, and ensure that the repaired or replaced flow meter
4 accurately measures flow as required by the NPDES permit for the Agat-Santa Rita WWTP.
5

6 c. Within 180 Days after the Effective Date, GWA shall submit to EPA, for review
7 and approval in accordance with Paragraph 30 of this Order, a report evaluating near-term
8 measures that address disinfection, solids handling, and prohibited Bypasses. The report shall be
9 prepared by an Independent Professional Engineer and shall: (i) describe the alternative
10 measures evaluated, the methodology and criteria used, and the findings of the evaluation; (ii)
11 recommend specific remedial measures and include a proposed schedule to implement the
12 remedial measures; and (iii) address the following elements:
13

14 (1) Disinfection. The report shall examine measures to disinfect and
15 dechlorinate wastewater flows at the WWTP prior to discharge.
16

17 (2) Solids Handling. The report shall examine the repair or replacement of
18 the solids handling facilities, process changes, or other alternatives at the WWTP to ensure that
19 solids are dewatered at the WWTP and to enable GWA to achieve compliance at the WWTP
20 with the sludge and biosolids requirements in 40 C.F.R. Part 503. The report shall propose an
21 expeditious schedule to implement any upgrades or process changes by no later than 180 Days
22 after EPA's approval.
23

24 (3) Bypass reduction. The report shall examine alternatives to mitigate the
25 impact and reduce the volume of wastewater that is bypassed around the WWTP, including, but
26 not limited to, wastewater storage, targeted pipe replacement, source control (such as the
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28

1 elimination of inflow sources to the sanitary sewer system), and partial treatment of wet weather
2 flows. The report shall include a program to eliminate illicit discharges of roof, yard, and road
3 drainage to the sanitary sewer system in conjunction with the management of storm water runoff
4 to be diverted from the sanitary sewer system. The report shall recommend measures for GWA
5 to implement that would enable GWA to achieve and maintain a seventy-five percent (75%)
6 percent reduction in the frequency and volume of wastewater bypassed around the WWTP as
7 compared to the average number and volume of wastewater Bypass events in the last three
8 calendar years (2008, 2009, and 2010).
9
10

11 d. Within 180 Days after EPA's approval of the report submitted pursuant to
12 subparagraph 9.c., GWA shall implement the approved disinfection and chlorination measures in
13 subparagraph 9.c.(1) and shall comply with the bacteria and chlorine residual effluent limitations
14 of its NPDES permit.
15

16 e. Within 180 Days after EPA's approval of the report submitted pursuant to
17 subparagraph 9.c., GWA shall implement the approved solids handling measures in
18 subparagraph 9.c.(2) and shall comply with the sludge and biosolids requirements in 40 C.F.R.
19 Part 503.
20

21 f. Within 180 Days after EPA's approval of the report submitted pursuant to
22 subparagraph 9.c., GWA shall implement the approved measures in subparagraph 9.c.(3) to
23 mitigate the impact of wastewater that is bypassed from the WWTP and discharged without
24 treatment. In each Annual Report submitted pursuant to Paragraph 31.c., GWA shall measure
25 the percent reduction in Bypasses at the Agat-Santa Rita WWTP by comparing the total number
26 and volume of wastewater Bypass events in the last calendar year with the average number and
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1 volume of wastewater Bypass events in the prior three-year period.^{2/}

2 10. Agat-Santa Rita Wastewater Systems Evaluation. By December 31, 2013, GWA shall
3 complete an evaluation of the Agat-Santa Rita WWTP, collection system, and/or conveyance
4 system, submit a report to EPA documenting the findings of the evaluation, and submit to EPA,
5 for review and approval in accordance with Paragraph 30 of this Order, a plan with a schedule to
6 implement any proposed improvements to the Agat-Santa Rita WWTP, collection system, and/or
7 conveyance system. GWA shall evaluate upgrades to the Agat-Santa Rita WWTP, collection
8 system, and/or conveyance system that will achieve compliance with the WWTP's NPDES
9 permit and eliminate Bypasses at the WWTP. The evaluation shall take into account any
10 relevant results from I/I analyses and SSESs surveys conducted pursuant to Paragraph 8, and the
11 wastewater impacts, flow volumes, and pollutant loadings associated with the anticipated
12 population growth through year 2035. The evaluation shall examine options for inflow and
13 infiltration control, conveyance of peak flows, storage of peak flows, and treatment plant
14 capacity. The report shall describe the upgrades evaluated, methodology and criteria used, and
15 findings of the evaluation. GWA shall submit a plan that identifies improvements that GWA
16 will implement to achieve compliance with the WWTP's NPDES permit and eliminate Bypasses
17 at the WWTP and a schedule for completing the improvements.

18 11. Agat-Santa Rita Wastewater Systems Upgrade. By December 31, 2016, GWA shall
19 complete the improvements identified in the approved plan required by Paragraph 10, achieve
20 consistent compliance with the Agat-Santa Rita WWTP's NPDES permit, eliminate Bypasses at
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27 ^{2/} For example, in the Annual Report for calendar year 2011, the total number and volume of
28 wastewater Bypass events in 2011 will be compared to the average number and volume of
wastewater Bypass events in 2008, 2009, and 2010.

1 the WWTP, ensure that solids generated by the WWTP are adequately stabilized and dewatered
2 at the Agat-Santa Rita WWTP, and comply with the sludge and biosolids requirements in 40
3 C.F.R. Part 503. GWA shall also meet the following interim compliance milestones.
4

5 a. By June 30, 2014, GWA shall execute a design contract and issue a notice to
6 proceed with the design.

7 b. By June 30, 2015, GWA shall execute a construction contract and issue a notice
8 to proceed with construction.
9

10 12. Baza Gardens WWTP Interim Measures. GWA shall complete the following interim
11 measures at the Baza Gardens WWTP:

12 a. Within 180 Days after the Effective Date, GWA shall submit to EPA a report,
13 prepared by an Independent Professional Engineer, assessing the structural integrity of the Baza
14 Gardens WWTP, and identifying critical repairs required to prevent the failure of the treatment
15 units or ancillary structures needed to allow operator access to the Baza Gardens WWTP during
16 the next ten years.
17

18 b. Within 540 Days after the Effective Date, GWA shall complete the repair of any
19 structural deficiencies that would prevent continued operation of the Baza Gardens WWTP for
20 an additional ten years or until such time that the Baza Gardens WWTP has been rehabilitated or
21 replaced and placed in full operation.
22

23 c. Within 180 Days after the Effective Date, GWA shall submit to EPA, for review
24 and approval in accordance with Paragraph 30 of this Order, a report that examines the repair or
25 replacement of the solids handling facilities, process changes, or other alternatives at the WWTP
26 to ensure that solids generated by the WWTP are dewatered at the WWTP to enable GWA to
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1 comply with the sludge and biosolids requirements in 40 C.F.R. Part 503. The report shall
2 propose an expeditious schedule to implement any upgrades or process changes by no later than
3 365 Days after EPA's approval.
4

5 d. Within 365 Days after EPA's approval of the report in subparagraph 12.c., GWA
6 shall implement the approved solids handling measures and shall comply with the sludge and
7 biosolids requirements in 40 C.F.R. Part 503.

8
9 13. Baza Gardens Wastewater Systems Evaluation. By April 30, 2014, GWA shall complete
10 an evaluation of the Baza Gardens WWTP, collection system, and/or conveyance system, submit
11 a report to EPA documenting the findings of the evaluation, and submit to EPA, for review and
12 approval in accordance with Paragraph 30 of this Order, a plan with a schedule to implement any
13 proposed improvements to the Baza Gardens WWTP, collection system, and/or conveyance
14 system. GWA shall evaluate upgrades to the Baza Gardens WWTP, collection system, and/or
15 conveyance system that will achieve compliance with the WWTP's NPDES permit. The
16 evaluation shall take into account any relevant results from I/I analyses and SSESs conducted
17 pursuant to Paragraph 8; the wastewater impacts, flow volumes, and pollutant loadings
18 associated with the anticipated population growth through year 2035; and the effluent disposal
19 options available to GWA. The report shall describe the upgrades evaluated, methodology and
20 criteria used, and findings of the evaluation. GWA shall submit a plan that identifies
21 improvements to achieve compliance with the WWTP's NPDES permit, including I/I control,
22 conveyance of peak flows, storage of peak flows, and treatment plant capacity.
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26 14. Baza Gardens Wastewater Systems Upgrade. By April 30, 2018, GWA shall complete
27 the improvements identified in the approved plan required by Paragraph 13 and achieve
28

1 consistent compliance with the Baza Gardens WWTP's NPDES permit, ensure that solids
2 generated by the WWTP are adequately stabilized and dewatered at the Baza Gardens WWTP,
3 and comply with the sludge and biosolids requirements in 40 C.F.R. Part 503. GWA shall also
4 meet the following interim compliance milestones.
5

6 a. By October 31, 2015, GWA shall execute a design contract and issue a notice to
7 proceed with the design.

8 b. By October 31, 2016, GWA shall execute a construction contract and issue a
9 notice to proceed with construction.
10

11 15. Umatac-Merizo Wastewater Systems Evaluation. By December 31, 2013, GWA shall
12 complete an evaluation of the Umatac-Merizo WWTP, collection system, and/or conveyance
13 system, submit a report to EPA documenting the findings of the evaluation, and submit to EPA,
14 for review and approval in accordance with Paragraph 30 of this Order, a plan with a schedule to
15 implement any proposed improvements to the Umatac-Merizo WWTP, collection system, and/or
16 conveyance system. GWA shall evaluate upgrades to the Umatac-Merizo WWTP, collection
17 system, and/or conveyance system that will achieve compliance with the WWTP's NPDES
18 permit. The evaluation shall take into account any relevant results from infiltration/inflow
19 analyses and sanitary sewer evaluation surveys conducted pursuant to Paragraph 8; the
20 wastewater impacts, flow volumes, and pollutant loadings associated with the anticipated
21 population growth through year 2035; and the effluent disposal options available to GWA. The
22 report shall describe the upgrades evaluated, methodology and criteria used, and findings of the
23 evaluation. GWA shall submit a plan that identifies improvements to achieve compliance with
24 the WWTP's NPDES permit, including inflow/infiltration control, conveyance of peak flows,
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1 storage of peak flows, and treatment plant capacity.

2 16. Umatac-Merizo Wastewater Systems Upgrade. By December 31, 2018, GWA shall
3 complete the improvements identified in the approved plan required by Paragraph 15 and
4 achieve consistent compliance with the Umatac-Merizo WWTP's NPDES permit. GWA shall
5 also meet the following interim compliance milestones.
6

7 a. By June 30, 2016, GWA shall execute a design contract and issue a notice to
8 proceed with the design.
9

10 b. By June 30, 2017, GWA shall execute a construction contract and issue a notice
11 to proceed with construction.

12 17. Sewer Cleaning. GWA shall conduct sanitary sewer system cleaning as follows: (i) clean
13 each gravity main sewer in GWA's Wastewater Collection System at least once every five years;
14 (ii) clean at least 55 "unique miles" of gravity main sewer in each calendar year^{3/} in addition to
15 any additional repeat cleaning (Hot Spot Cleaning) required pursuant to Paragraph 18 to address
16 recurring blockages or partial blockages caused by grit, FOG, and/or other materials; and (iii)
17 provide details in each Annual Report regarding the total number of gravity sewer lines cleaned
18 in the past year, the number of gravity sewer lines subject to repeated cleaning, and the number
19 of "unique miles" cleaned in the prior year. In calculating the number of "unique miles" per
20 year, GWA shall count each individual pipe segment cleaned in the year but shall not count an
21 individual pipe segment multiple times even if it was subject to repeated cleaning in that year.
22 The cleaning activities may be coordinated with the CCTV inspections required by Paragraph 19
23 below.
24
25
26
27

28 ^{3/} For calendar year 2011, GWA shall clean at least 30 miles of gravity main sewer.

1 18. Hot Spot Identification, Inspection, and Cleaning. By 180 Days after the Effective Date,
2 GWA shall submit to EPA, for review and approval in accordance with Paragraph 30 of this
3 Order, a proposed Hot Spot Cleaning Plan, which shall detail: (1) the process for identifying pipe
4 segments in the Hot Spot Cleaning Program, including (i) all pipes where SSOs caused by
5 blockages have occurred in the past five years, (ii) all pipes where recurring grit and/or Fat, Oil
6 and Grease (“FOG”) build-up is known to occur, and (iii) all pipes to be cleaned at one-month,
7 three-month, six-month, and one-year intervals; (2) the process by which pipes are added to or
8 removed from the Hot Spot Cleaning Program; and (3) the process for evaluating how each pipe
9 in the Hot Spot Cleaning Program should be addressed to prevent SSOs. Upon EPA’s approval,
10 GWA shall implement the program.
11

12
13 19. CCTV Inspection Program. Within two years after the Effective Date, GWA shall
14 complete a CCTV inspection and assessment of at least forty percent (40%) percent of its gravity
15 sanitary sewers mains. GWA shall complete a CCTV inspection and assessment of all of its
16 gravity sanitary sewers mains within five years after the Effective Date. GWA shall use the
17 results from the critical sewer assessment rating in GWA’s 2006 Water Resources Master Plan
18 and other planning documents to plan the first two years of CCTV inspections. In prioritizing
19 inspections, GWA shall classify as high priority all gravity mains within 1,000 feet of a potable
20 water supply well or within the groundwater protection zone. Beginning on January 30, 2012,
21 and annually thereafter, GWA shall report the total miles and the locations of the gravity sewers
22 inspected by CCTV during the previous year.
23
24

25
26 20. Sewer Hook-up Program. GWA shall maintain its sewer hook-up program and initiate
27 new efforts to connect residents to the GWA sewer system, including the following measures:
28

- 1 a. continue the existing sewer hook-up revolving fund program for residents
2 currently required to connect to the Wastewater Collection System;
3
4 b. provide funding to expand and ensure the viability of the existing program; and
5
6 c. at EPA's request, provide a report describing the number of new connections and
7 the balance of the program's revolving fund.

8 GWA reserves the right to identify alternative funding sources and methods for the program.

9 **B. PUBLIC WATER SYSTEM PLANNING AND IMPROVED OPERATIONS &**
10 **MAINTENANCE ("O&M")**

11 21. Upgrade Groundwater Chlorination System Project. Within 540 Days after the Effective
12 Date, GWA shall complete construction of the Upgrade of Groundwater Chlorination System
13 Project (U.S. EPA Grant XP-97931501-2).

14
15 22. Chlorine Residual Monitors and Alarms and/or Automatic Shutoff of Wells. Within 180
16 Days after the Effective Date, GWA shall submit a proposed plan to EPA, for review and
17 approval in accordance with Paragraph 30 of this Order, detailing how GWA will design,
18 acquire, install, maintain, and operate at all wells both: (i) continuous chlorine residual monitors
19 and (ii) alarms and/or automatic shutoff systems when there is a loss of chlorine residual. The
20 chlorination dosage levels and the chlorine residual analyzers and monitoring shall meet, at a
21 minimum, all requirements under the new Groundwater Rule ("GWR"), 40 C.F.R. §§ 141.400 -
22 141.405, including the treatment technique requirements, 40 C.F.R. § 141.403, and, in addition
23 to the reporting requirements in 40 C.F.R. § 141.31, the reporting and recordkeeping
24 requirements in 40 C.F.R. § 141.405. Upon EPA's approval of the plan, GWA shall install
25 continuous chlorine residual monitors and alarms and/or automatic shutoff systems at all existing
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1 wells in accordance with the following schedule:

2 a. within 540 Days after the Effective Date at high risk wells located near sewage
3 pumping stations, ponding basins, injection wells, or other known possible sources of fecal
4 contamination, or with a history of regular fecal contamination, including at a minimum the
5 following wells: A-5, A-6, A-23, A-25, A-29, A30, A-31, A-32, Y-3, Y-9; Y-15, F-13, D-7,
6 D-19, and MJ-1;

7
8 b. within two years after the Effective Date at moderate risk wells with any history
9 of fecal contamination, including at a minimum the following wells: D-4, D-27, F-11, A-2, A-3,
10 A-7, A-10, A-12, A-14, A-15, M-1, M-5, M-17A, EX-11, D-13, D-17, D-21, D-22, Y-2, F-2, and
11 F-10; and

12
13 c. within three years after the Effective Date at all other wells with no history of
14 fecal contamination.
15

16 GWA shall operate the analyzers and report to EPA and Guam EPA as required under the GWR,
17 40 C.F.R. §§ 141.31, 141.405.

18 23. Water Meters. GWA shall ensure comprehensive water metering in the Public Water
19 Systems by implementing the following:

20
21 a. Within 180 Days after the Effective Date, GWA shall submit to EPA a detailed
22 plan and schedule to ensure that each known connection to its water supply system has an
23 accurate and accessible water meter. Information on each meter shall be entered into GWA's
24 GIS and into an asset inventory system. Pursuant to the plan, GWA shall ensure that all known
25 connections to the water system are metered within two years after the Effective Date.
26

27 b. Within 180 Days after the Effective Date, GWA shall submit to EPA a detailed
28

1 plan and schedule to develop and implement a water meter repair and maintenance program.

2 **C. PUBLIC WATER SYSTEM CAPITAL IMPROVEMENT PROGRAM PROJECTS**

3
4 24. Construction and Inspection of Ugum Water Treatment Plant. Within one year after the
5 Effective Date, GWA shall complete construction of the Ugum Water Treatment Plant, including
6 conversion of the plant to a membrane filtration system, replacement of the control systems, and
7 installation of a Supervisory Control and Data Acquisition (“SCADA”) system, as well as other
8 improvements to achieve consistent compliance with SDWA requirements, performance
9 standards, and the plant’s NPDES permit. By at least 60 Days before the scheduled completion
10 of construction of the Ugum Water Treatment Plant, GWA shall submit to EPA, for review and
11 approval in accordance with Paragraph 30 of this Order, the name and qualifications of an
12 Independent Contractor with experience in water treatment plant design, construction and
13 operation who is qualified to inspect all processes, equipment, and facilities at the plant,
14 including pumping, all treatment process including, but not limited to, chemical addition,
15 membrane filtration, disinfection, and all liquid and solid waste stream treatment, recycle and
16 disposal processes, equipment, and facilities. After completion of construction and prior to
17 startup, GWA’s Independent Contractor shall perform an inspection of all components of the
18 plant. The Independent Contractor shall identify any deficiencies in the plant in a written report.
19 Within 60 Days after the inspection, GWA shall provide a copy of the written report to EPA and
20 Guam EPA and shall submit to EPA, for review and approval in accordance with Paragraph 30
21 of this Order, a plan and schedule to correct the deficiencies identified in the report. The
22 deficiencies shall be corrected no later than 90 Days after EPA’s approval of the plan and
23 schedule. After GWA corrects these deficiencies, the Independent Contractor shall certify the
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1 acceptability of the completed project.

2 25. Perform Operations Assessment and Provide Operator Training and Contractor
3 Assistance During Start-up. By at least 60 Days before the scheduled completion of the
4 construction of the Ugum Water Treatment Plant, GWA shall submit to EPA, for review and
5 approval in accordance with Paragraph 30 of this Order, a plan to perform an operations
6 assessment and provide operator training and start-up procedures for the plant. This plan shall
7 include the name and qualifications of an Independent Contractor, with experience in water
8 treatment plant design and operation, who is qualified to assess the operation of the plant and
9 assist GWA in start-up procedures. GWA may retain the same Independent Contractor used in
10 the plant inspection in Paragraph 24. The operations assessment and operator training program
11 shall commence prior to start-up and continue through the start-up period. GWA shall ensure
12 that contractor assistance is available throughout the start-up period and for a period of at least
13 one year following start-up or until plant operation can proceed without external assistance,
14 whichever is longer.

18 26. O&M Plan and Procedures for Ugum Water Treatment Plant. By at least 90 Days before
19 the scheduled start-up, GWA shall submit to EPA and Guam EPA, for review and comment, a
20 proposed O&M plan for the Ugum Water Treatment Plant. GWA may, where appropriate,
21 incorporate provisions from existing O&M manuals. This plan shall include, but not be limited
22 to, the following elements:

- 24 a. O&M procedures for all major components and systems of the plant, from the
25 intake to the finished water storage, including all equipment such as pumps, valves, pipes, filters,
26 compressors, electrical controls, chemical addition equipment, process monitoring equipment, all
27
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1 treatment processes and associated facilities and equipment, with a special emphasis on newly
2 installed membrane filters, waste stream treatment and disposal, and other new treatment
3 components. The O&M plan shall include procedures for all aspects of operation and process
4 control, including: chemical addition; monitoring of key parameters; operation and maintenance
5 of all associated equipment; use and handling of all chemicals, including chemical storage,
6 chemical addition, and associated equipment and appurtenances; management and processing of
7 all wastes, including wastewater, waste sludge, and any other wastes; and the finished water
8 storage facilities. The O&M procedures shall be of sufficient detail such that the water treatment
9 plant operators can fully operate and maintain all components of the plant under all operating
10 conditions;
11

12
13 b. The development of monthly operating reports to demonstrate regulatory
14 compliance under federal and State regulations and requirements;
15

16 c. Spare parts inventory procedures, including identification of parts to maintain on-
17 site and parts to maintain at off-site locations; and
18

19 d. Staffing levels and training plans to ensure that the plant is fully staffed with
20 qualified personnel, including the number of staff, position titles, required experience, water
21 treatment or other certification levels required for all operation and maintenance personnel, and
22 professional experience grades required for plant operating personnel.
23

24 27. Ugum Water Treatment Plant Operation and Maintenance. Within one year after the
25 Effective Date, GWA shall achieve compliance at the Ugum Water Treatment Plant with the
26 SDWA, the Guam SDWA, regulations promulgated pursuant to those statutes, and the plant's
27 NPDES permit. GWA shall implement the O&M plan and procedures for the Ugum Water
28

1 Treatment Plant developed in accordance with Paragraph 26. GWA shall maintain spare parts as
2 required in the procedures and make timely repairs when needed. GWA shall modify the O&M
3 manuals as necessary to ensure consistent compliance. GWA shall ensure that the plant is
4 sufficiently staffed for all shifts with operators who have appropriate certifications, experience,
5 and training.
6

7 28. Sinajana Water Transmission Line. GWA shall complete construction of the Sinajana
8 Water Transmission Line to ensure the reliable delivery of chlorinated water in the Northern
9 Public Water System.
10

11 a. Within 180 Days after the Effective Date, GWA shall complete construction of
12 the Sinajana Water Transmission Line, which has been designed to receive water from several
13 wells in the Northern Public Water System and to reliably deliver water to storage tanks for
14 chlorination.
15

16 b. Within 180 Days after the Effective Date, GWA shall provide to EPA, for review
17 and comment, an engineering and hydraulic evaluation/assessment report. The report shall:
18 (i) detail improvements needed for any additional facilities (such as booster pumps, additional
19 water lines, chlorination facilities, and storage tanks) to provide subsequent distribution of water
20 in a manner that ensures adequate disinfectant level, pressure, and flow are maintained in the
21 distribution system service area; (ii) include an assessment of the Agana Heights and Chaot
22 storage tanks, which are currently out of service and determined by GWA to require complete
23 replacement, and recommend the appropriate tank sizes and locations required to ensure
24 adequate disinfection, adequate pressure at all locations in the distribution system served by the
25 wells connected to the Sinajana Water Transmission Line, and sufficient storage capacity to meet
26
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28

1 all water storage needs; and (iii) include a plan and schedule to implement the improvements
2 identified in the report.

3
4 c. Within 540 Days after the completion of the engineering and hydraulic
5 evaluation/assessment report required by subparagraph 28.b., GWA shall complete construction
6 and start-up of the Sinajana Water Transmission Line and other improvements (including the
7 replacement and possible relocation of the Agana Heights and Chaot storage tanks) identified by
8 the report to ensure that adequate disinfectant level, pressure, and flow are maintained in the
9 distribution system service area.
10

11 d. Pursuant to the schedules set out in this subparagraph, GWA shall provide
12 monitoring plans to EPA, for review and approval in accordance with Paragraph 30 of this
13 Order, that ensure adequate flow, pressure, and disinfection is maintained in the distribution
14 system service area.
15

16 (1) At least 90 Days prior to the scheduled completion of construction
17 required in subparagraph 28.a. above, GWA shall submit a plan indicating how it will monitor
18 flows, pressure, tank water levels, and chlorine throughout the distribution system service area.
19 Upon approval, for one year following completion of construction and initial start-up, GWA
20 shall monitor flows, pressure, tank water levels, and chlorine throughout the service area in
21 accordance with the approved plan.
22

23 (2) At least 180 Days prior to the scheduled completion of construction
24 required in subparagraph 28.c. above, GWA shall submit a plan indicating how it will monitor
25 flows, pressure, tank water levels, and chlorine throughout the distribution system service area.
26 Upon approval, for one year following completion of construction and initial start-up, GWA
27
28

1 shall monitor flows, pressure, tank water levels, and chlorine throughout the service area in
2 accordance with the approved plan.

3
4 e. As part of its Quarterly and Annual Reports, GWA shall describe the status of the
5 engineering and hydraulic assessment/evaluation and the implementation of the necessary
6 improvements, and shall include monitoring data for the distribution system service area as
7 required by subparagraph 28.d.

8
9 29. Storage Tank/Reservoir Repair, Rehabilitation, Replacement, and Relocation Program.

10 GWA has completed the assessment of the following six of its storage tanks: Agana Heights,
11 Piti, Chaot, Astumbo #1, Yigo #1, and Mangilao #1. GWA shall follow the procedures set out in
12 this Paragraph to complete the assessment and necessary repair, rehabilitation, replacement, and
13 relocation of all of its 29 storage tanks.

14
15 a. Hydraulic Analysis.

16 (1) Within 90 Days after the Effective Date, GWA shall provide to EPA, for
17 review and approval in accordance with Paragraph 30 of this Order, a plan and schedule to
18 perform a hydraulic analysis that assesses the proper size and location of GWA's storage tanks.

19 The hydraulic analysis shall evaluate each service area to identify deficiencies that impact the
20 short- and long-term storage and pressure needs of that service area. GWA's plan shall ensure
21 that a hydraulic analysis of all service areas is completed no later than one year after EPA
22 approves the plan. Upon EPA's approval, GWA shall implement the approved plan and
23 schedule.
24

25
26 (2) Within 540 Days after the Effective Date, GWA shall submit to EPA, for
27 review and comment, a report describing the hydraulic analysis, methodology, findings, and
28

1 recommendations on the proper size and location of GWA's storage tanks. The
2 recommendations shall address deficiencies that impact GWA's short and long term storage
3 needs in each service area.
4

5 b. Assessment and Repair, Rehabilitation, Replacement, and/or Relocation.

6 (1) Within 90 Days after EPA's approval of the plan under subparagraph
7 29.a.(1), GWA shall provide to EPA, for review and comment, procedures to operate and
8 monitor water transmission and distribution in order to minimize service disruptions while GWA
9 assesses and repairs, rehabilitates, replaces, and/or relocates each tank.
10

11 (2). Within 540 Days after the Effective Date, GWA shall submit to EPA, for
12 review and approval in accordance with Paragraph 30 of this Order, a schedule to assess the
13 storage capacity, structure, and safety of each storage tank, and complete the necessary
14 improvements, which may include repair, rehabilitation, replacement, and/or relocation of each
15 storage tank. The improvements shall address structural deficiencies and safety issues as well as
16 the findings from the hydraulic analysis completed in subparagraph a., such as inadequate
17 storage and pressure.
18

19 (3) Within 540 Days after the Effective Date, GWA shall complete
20 construction of at least one new storage tank with a minimum capacity of two million gallons in
21 the Barrigada area to replace or increase the storage volume of the Barrigada storage tanks (*i.e.*,
22 Barrigada #1, Barrigada #2, and Barrigada #3).
23

24 (4) The following seven tanks were ranked by GWA to have a severe need:
25 Malolaj Elevated Tank, Yigo Elevated, Hyundai, Santa Rosa/Yigo, Santa Rita, Astumbo #2, and
26 Yona Pulantat tanks/reservoirs. Within five years after the Effective Date, after taking into
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28

1 account the conclusions of the hydraulic analysis performed under subparagraph 29.a., GWA
2 shall assess and complete construction (*i.e.*, repair, rehabilitate, replace or relocate) of at least
3 seven additional storage tanks/reservoirs.^{4/} These prioritized tanks shall include all of the seven
4 tanks ranked to have a severe need unless the hydraulic analysis demonstrates that one or more
5 of these “severe need” tanks is no longer needed in its service area or that other tanks should be
6 prioritized for repair, rehabilitation, replacement or relocation.
7

8 (5) Within five years after the Effective Date, after taking into account the
9 conclusions of the hydraulic analysis performed under subparagraph 29.a., GWA shall assess all
10 remaining storage tanks/reservoirs.
11

12 (6). After completion of the assessment conducted pursuant to subparagraph
13 29.b.(5), the Parties shall meet and confer to set an expedited schedule to repair, rehabilitate,
14 replace or relocate all remaining tanks according to the following schedule: (i) by no later than
15 seven years after the Effective Date, GWA shall complete construction (*i.e.*, repair, rehabilitate,
16 replace or relocate) of at least ten additional storage tanks/reservoirs; and (ii) by no later than
17 December 31, 2020, GWA shall complete construction (*i.e.*, repair, rehabilitate, replace or
18 relocate) of the remaining storage tanks/reservoirs.
19

20 c. As part of its Quarterly and Annual Reports, GWA shall describe the status of the
21 plan, assessment findings of each water storage tank/reservoir, and status and description of
22 repairs, replacements, and/or relocations required for each tank/reservoir.
23
24
25

26 _____
27 ^{4/} These seven tanks shall be in addition to the Barrigada tank constructed pursuant to
28 subparagraph 29.b.(3). of this Paragraph and the Chaot and Agana Heights tanks constructed
pursuant to Paragraph 28.

III. REPORTING REQUIREMENTS

1
2 30. Approval of Reports, Plans, and Other Deliverables. After review of any plan, report, or
3 other item that is required to be submitted for EPA's review and approval pursuant to this Order,
4 EPA shall in writing approve the submission, approve the submission upon specified conditions,
5 approve part of the submission and disapprove the remainder, or disapprove the submission.
6

7 a. If the submission is approved, Defendants shall take all actions required by the
8 plan, report, or other document, in accordance with the schedules and requirements of the plan,
9 report, or other document, as approved.
10

11 b. If the submission is conditionally approved or approved only in part, Defendants
12 shall, upon written direction from EPA, take all actions required by the approved plan, report, or
13 other item that EPA determines are technically severable from any disapproved portions, subject
14 to Defendants' right to dispute only the specified conditions or the disapproved portions.
15

16 c. If the submission is disapproved in whole or in part, Defendants shall, within 45
17 Days or such other time as the Parties agree to in writing, correct all deficiencies and resubmit
18 the plan, report, or other item, or disapproved portion thereof, for approval.
19

20 d. If the resubmission is approved in whole or in part, Defendants shall proceed in
21 accordance with subparagraphs 30.a. and 30.b. above.

22 e. If a resubmitted plan, report, or other item, or portion thereof, is disapproved in
23 whole or in part, EPA may again require Defendants to correct any deficiencies, in accordance
24 with subparagraph 30.c., or may itself correct any deficiencies, subject to Defendants' right to
25 invoke dispute resolution and the right of EPA to seek imposition of penalties.
26

27 31. Required Reports. GWA shall submit the following reports:
28

1 a. Quarterly Report. Within 30 Days after the end of each calendar-year quarter
2 (*i.e.*, by January 30, April 30, July 30, and October 30) after the Effective Date of this Order,
3 until termination of the court’s Order, GWA shall submit a Quarterly Report for the preceding
4 calendar-year quarter that shall include the status of any construction or compliance measures;
5 completion of milestones; problems encountered or anticipated, together with implemented or
6 proposed solutions; status of permit applications; effluent monitoring data required by Paragraph
7 3, subparagraph 3.c., and Paragraph 5, subparagraph 5.f.; and the status of any programs for
8 which a Quarterly Report is due pursuant to this Order.
9

10
11 (1) The Quarterly Reports shall not be subject to EPA’s approval pursuant to
12 Paragraph 30 above.

13
14 (2) Each Quarterly Report shall also include a description of any non-
15 compliance with the requirements of this Order and an explanation of the violation’s likely cause
16 and of the remedial steps taken, or to be taken, to prevent or minimize such violation. If the
17 cause of a violation cannot be fully explained at the time the report is due, GWA shall so state in
18 the report. GWA shall investigate the cause of the violation and shall then submit an amendment
19 to the report, including a full explanation of the cause of the violation, within 30 Days after the
20 Day GWA becomes aware of the cause of the violation.
21

22 b. SSO and Bypass Report. Within 30 Days after the end of each calendar-year
23 quarter (*i.e.*, by January 30, April 30, July 30, and October 30) after the Effective Date, until
24 termination of the court’s Order, GWA shall submit to EPA and Guam EPA a summary of all
25 SSOs and Bypasses that occurred during the previous quarter.
26

27 (1) For each SSO, the reports shall provide: (a) a map showing the locations
28

1 of all SSOs occurring in the previous quarter in relation to the locations of drinking water wells
2 and sewage pump stations; (b) the start and end date and time of each SSO; (c) the location of
3 each SSO including address, village, and manhole numbers; (d) the structure(s) from which each
4 SSO emerged (*e.g.*, manhole, broken pipe, wet well, indoor plumbing, lateral cleanout, etc.); (e)
5 the pipe size, length, and material; (f) the estimated volume of each SSO including gross volume,
6 amount recovered, and amount not recovered; (g) the cause of each SSO; (h) whether each SSO
7 entered a particular water of the United States, and if so, the name of the water body and whether
8 it entered via storm drains or other man-made conveyances; (i) the results and analysis of any
9 post-SSO CCTV results; and (j) the actions GWA took to control the SSO and prevent future
10 SSOs at the same location.

13 (2) For each Bypass, the reports shall provide: (a) the name of the treatment
14 facility and the part(s) of the facility bypassed; (b) the start and end date and time of the Bypass;
15 (c) a detailed explanation of the cause(s), and all available photographs, videos, and maps that
16 would aid in explaining its cause(s); (d) if a storm event caused the Bypass, local rain gauge data
17 for that event; (e) the following flows: Bypass; facility influent; and facility effluent; and a
18 description of how they were determined, including any calculations; (f) the results of any
19 samples taken of the Bypass or receiving water, or an explanation of why sampling was not
20 conducted; (g) the dates that GWA provided verbal and written notifications of the Bypass to
21 EPA and Guam EPA; and (h) the actions GWA took to control the Bypass and prevent future
22 Bypasses.

26 (3) If an SSO or Bypass is reported by someone other than a member of
27 GWA's inspection crew and a GWA inspector determines, upon inspection, that an SSO or
28

1 Bypass is occurring, the initial timing of the SSO or Bypass, for purposes of determining the
2 volume of the discharge, shall commence at the date and time that GWA received the report of
3 the SSO or Bypass event.
4

5 c. Annual Report. After the Effective Date, GWA shall submit an Annual Report to
6 EPA regarding the status of each project required by Paragraphs 2 through 29 of Section II
7 (Compliance Requirements) of this Order. The Annual Report shall be due on January 30
8 (covering the previous January 1 to December 31).
9

10 (1) For projects that are completed, the Annual Report shall state whether the
11 project was completed by the applicable deadline.

12 (2) For projects that have not been completed, the Annual Report shall briefly
13 describe the status of the project, including whether the project remains on schedule for
14 completion by the applicable deadline or the anticipated completion date. If any projects
15 identified in Paragraphs 2 through 29 are not completed by the applicable deadline, subsequent
16 Annual Reports shall continue to set forth the status of these uncompleted projects until each
17 project is completed.
18

19 (3) The Annual Reports shall not be subject to EPA’s approval pursuant to
20 Paragraph 30 of this Order.
21

22 32. Whenever any violation of this Order or of any applicable NPDES permits or any other
23 event affecting GWA’s performance under this Order, or the performance of its Facilities, may
24 pose an immediate threat to the public health or welfare or the environment, GWA shall notify
25 EPA orally or by electronic or facsimile transmission as soon as possible, but no later than 24
26 hours after GWA first knew of the violation or event. This procedure is in addition to the
27
28

1 requirements set forth in the preceding Paragraph.

2 33. All reports shall be submitted to the persons designated in Section IV (Notices) of this
3 Order.

4
5 34. Each report submitted by Defendants under this Section shall be signed by an official of
6 the submitting party and include the following certification:

7 I certify under penalty of law that this document and all
8 attachments were prepared under my direction or supervision in
9 accordance with a system designed to assure that qualified
10 personnel properly gather and evaluate the information submitted.
11 Based on my inquiry of the person or persons who manage the
12 system, or those persons directly responsible for gathering the
13 information, the information submitted is, to the best of my
14 knowledge and belief, true, accurate, and complete. I am aware
15 that there are significant penalties for submitting false information,
16 including the possibility of fine and imprisonment for knowing
17 violations.

18 This certification requirement does not apply to emergency or similar notifications where
19 compliance would be impractical.

20 **IV. NOTICES**

21 35. Unless otherwise specified herein, whenever notifications, submissions, or
22 communications are required by the court's Order, they shall be made in writing, shall be sent
23 via express mail or similar service with return receipt requested, or, in the alternative, by both
24 fax and e-mail, and addressed as follows:

25 To the United States:

26 Chief, Environmental Enforcement Section
27 (Attn: Robert Mullaney)
28 U.S. Department of Justice
301 Howard Street, Suite 1050
San Francisco, CA 94105
Re: DOJ No. 90-5-1-1-07942

1 Fax: (415) 744-6476
2 E-mail: robert.mullaney@usdoj.gov

3 and

4 Gary Hess, ORC-2
5 U.S. Environmental Protection Agency
6 75 Hawthorne Street
7 San Francisco, CA 94105
8 Fax: (415) 947-3570
9 E-mail: hess.gary@epa.gov

10 To EPA:

11 Fatima Ty, EPA Clean Water Program Enforcement Section
12 U.S. Environmental Protection Agency
13 75 Hawthorne Street
14 San Francisco, CA 94105
15 Fax: 415-947-3545
16 E-mail: Ty.Fatima@epa.gov

17 To GWA:

18 Samuel J. Taylor
19 Guam Waterworks Authority
20 578 North Marine Corps Drive
21 Tamuning, Guam 96913
22 Fax: (671) 646-2335
23 E-mail: staylor@guamwaterworks.net

24 Martin Roush
25 GWA General Manager
26 Guam Waterworks Authority
27 578 North Marine Corps Drive
28 Tamuning, Guam 96913
29 Fax: (671) 646-2335
30 e-mail: gmcus@guamwaterworks.org

31 Paul Kemp
32 Compliance and Safety Officer
33 Guam Waterworks Authority
34 578 North Marine Corps Drive
35 Tamuning, Guam 96913
36 Fax: (671) 646-2335

1 e-mail: paulkemp@guamwaterworks.org

2 To Government of Guam:

3 Kathy A. Fokas
4 J. Patrick Mason
5 Office of the Attorney General
6 278 West O'Brien Drive
7 Hagatna, Guam 96910
8 Fax: (671) 472-2493
9 E-mail: kfokas@guamattorneygeneral.com
10 pmason@guamattorneygeneral.com

11 36. Any Party may, by written notice to the other Parties, change its designated notice
12 recipient or notice address, fax number or e-mail that are provided above.

13 37. Notices submitted by express mail pursuant to this Section shall be deemed submitted
14 upon mailing, unless otherwise provided in this Order or by mutual agreement of the Parties in
15 writing. If notices are sent electronically, they shall be deemed submitted upon transmission, but
16 a notice is not effective if the sending Party learns that it did not reach the Party to be notified.
17 Notwithstanding the sender's receipt of a successful delivery notification, a recipient that fails to
18 receive the submission may request delivery by other means. Such a request does not affect the
19 timeliness of the original submission.

20 **V. DISPUTE RESOLUTION**

21 38. Unless otherwise expressly provided for in this Order, the dispute resolution procedures
22 of this Section shall be the exclusive mechanism to resolve disputes arising under or with respect
23 to this Order. GWA's failure to seek resolution of a dispute under this Section shall preclude
24 GWA from raising any such issue as a defense to an action by the United States to enforce any
25 obligation of GWA arising under this Order.
26

27 39. Informal Dispute Resolution. Any dispute subject to Dispute Resolution under this Order
28

1 shall first be the subject of informal negotiations. The dispute shall be considered to have arisen
2 when GWA sends the United States a written Notice of Dispute. Such Notice of Dispute shall
3 state clearly the matter in dispute. The period of informal negotiations shall not exceed 20
4 Days from the date the dispute arises, unless that period is modified by written agreement. If the
5 Parties cannot resolve a dispute by informal negotiations, then the position advanced by the
6 United States shall be considered binding unless, within 30 Days after the conclusion of the
7 informal negotiation period, GWA invokes formal dispute resolution procedures as set forth
8 below.
9

10
11 40. Formal Dispute Resolution. GWA shall invoke formal dispute resolution procedures,
12 within the time period provided in the preceding Paragraph 39, by serving on the United States a
13 written Statement of Position regarding the matter in dispute. The Statement of Position shall
14 include, but need not be limited to, any factual data, analysis, or opinion supporting GWA's
15 position and any supporting documentation relied upon by GWA.
16

17 41. The United States shall serve its Statement of Position within 45 Days after receipt of
18 GWA's Statement of Position. The United States' Statement of Position shall include, but need
19 not be limited to, any factual data, analysis, or opinion supporting that position and any
20 supporting documentation relied upon by the United States. The United States' Statement of
21 Position shall be binding on GWA, unless GWA files a motion for judicial review of the dispute
22 in accordance with the following Paragraph 42.
23

24 42. GWA may seek judicial review of the dispute by filing with the Court and serving on the
25 United States, in accordance with Section IV (Notices) of this Order, a motion requesting
26 judicial resolution of the dispute. The motion must be filed within 10 working Days after receipt
27
28

1 of the United States' Statement of Position pursuant to the preceding Paragraph 41. The motion
2 shall contain a written statement of GWA's position on the matter in dispute, including any
3 supporting factual data, analysis, opinion, or documentation, and shall set forth the relief
4 requested and any schedule within which the dispute must be resolved for orderly
5 implementation of this Order.
6

7 43. The United States shall respond to GWA's motion within the time period allowed by the
8 Local Rules of this Court. GWA may file a reply memorandum, to the extent permitted by the
9 Local Rules.
10

11 44. Standard of Review

12 a. Disputes Concerning Matters Accorded Record Review. Except as otherwise
13 provided in this Order, in any dispute brought under Paragraph 40 pertaining to the adequacy or
14 appropriateness of plans, procedures to implement plans, schedules or any other items requiring
15 approval by EPA under this Order, the adequacy of the performance of work undertaken
16 pursuant to this Order, and all other disputes that are accorded review on the administrative
17 record under applicable principles of administrative law, GWA shall have the burden of
18 demonstrating, based on the administrative record, that the position of the United States is
19 arbitrary and capricious or otherwise not in accordance with law.
20

21 b. Other Disputes. Except as otherwise provided in this Order, in any other dispute
22 brought under Paragraph 40, GWA shall bear the burden of demonstrating that its position
23 complies with this Order and better furthers the objectives of the Order.
24
25

26 **VI. EFFECT OF ORDER**

27 45. This Order for Preliminary Relief is a partial remedy for the civil claims of the United
28

1 States for the violations alleged in the Complaint filed in this action, and does not resolve the
2 civil claims of the United States for civil penalties and other injunctive relief for the violations
3 alleged in the Complaint in this action.
4

5 46. Upon the Effective Date of this Order for Preliminary Relief , the Stipulated Order, as
6 amended on October 25, 2006, is terminated and of no further force or effect. However, this
7 Order for Preliminary Relief does not resolve any claims of the United States for stipulated
8 penalties for violations of the Stipulated Order prior to its termination.
9

10 47. This Order for Preliminary Relief shall not be construed to prevent or limit the rights of
11 the United States to obtain (i) penalties or injunctive relief under the CWA, the SDWA, or
12 implementing regulations, or under other federal laws, regulations, or permit conditions, or (ii)
13 all legal and equitable remedies to address any imminent and substantial endangerment to the
14 public health or welfare or the environment arising at, or posed by, GWA's Facilities, whether
15 related to the violations addressed in this Order or otherwise.
16

17 48. This Order for Preliminary Relief is not a permit, or a modification of any permit, under
18 any federal, State, or local laws or regulations. Defendants are responsible for achieving and
19 maintaining complete compliance with all applicable federal, State, and local laws, regulations,
20 and permits; and Defendants' compliance with this Order shall be no defense to any action
21 commenced pursuant to any such laws, regulations, or permits, except as set forth herein.
22

23 49. This Order for Preliminary Relief in no way limits or affects any right of entry and
24 inspection, or any right to obtain information, held by the United States pursuant to applicable
25 federal laws, regulations, or permits, nor does it limit or affect any duty or obligation of GWA to
26 maintain documents, records, or other information imposed by applicable federal or state laws,
27
28

1 regulations, or permits.

2 **VII. RETENTION OF JURISDICTION**

3
4 50. The court shall retain jurisdiction over this case until termination of this Order, for the
5 purpose of resolving disputes arising under this Order, or effectuating or enforcing compliance
6 with the terms of this Order.

7 **VIII. APPENDIX**

8
9 51. The following appendix is attached to and part of this Order: “Appendix A” is a list of
10 effluent monitoring requirements for the Northern District WWTP and the Agana WWTP
11 pursuant to Paragraph 3, subparagraph (3), and Paragraph 5, subparagraph (6).

12 **SO ORDERED.**



/s/ Frances M. Tydingco-Gatewood
Chief Judge
Dated: Nov 10, 2011

1 **APPENDIX A**

2 Effluent Monitoring Requirements for the Northern District WWTP and the Agana WWTP

3
4 Conventional and Nonconventional Compounds:

5 Ammonia (As N)
6 Chlorine (Total Residual, TRC)
7 Dissolved Oxygen
8 Total Kjeldahl
9 Nitrogen (TKN)
10 Nitrate plus Nitrite Nitrogen
11 Oil and Grease
12 Phosphorus (Total)
13 Total Dissolved
14 Solids (TDS) temperature
15 Cyanide
16 Total Phenolic Compounds
17 Hardness (As CaCO₃)

18 Metals (Total Recoverable):

19 Antimony
20 Arsenic
21 Beryllium
22 Cadmium
23 Chromium
24 Copper
25 Lead
26 Mercury
27 Nickel
28 Selenium
Silver
Thallium
Zinc

29 Volatile Organic Compounds:

30 Acrolein
31 Acrylonitrile
32 Benzene
33 Bromoform
34 Carbon Tetrachloride

1	Clorobenzene
2	Chlorodibromo-methane
	Chloroethane
3	2-chloro-ethylvinyl
	Ether
4	Chloroform
5	Dichlorobromo-methane
	1,1-dichloroethane
6	1,2-dichloroethane
7	Trans-1,2-dichloro-ethylene
	1,1-dichloroethylene
8	1,2-dichloropropane
	1,3-dichloro-propylene
9	Ethylbenzene
10	Methyl Bromide
	Methyl Chloride
11	Methylene Chloride
	1,1,2,2-tetrachloro-ethane
12	Tetrachloro-ethylene
13	Toluene
	1,1,1-trichloroethane
14	1,1,2-trichloroethane
15	Trichlorethylene
	Vinyl Chloride
16	
17	<u>Acid-extractable Compounds:</u>
18	P-chloro-m-cresol
	2-chlorophenol
19	2,4-dichlorophenol
	2,4-dimethylphenol
20	4,6-dinitro-o-cresol
21	2,4-dinitrophenol
	2-nitrophenol
22	4-nitrophenol
23	Pentachlorophenol
	Phenol
24	2,4,6-trichlorophenol
25	<u>Base-neutral Compounds:</u>
26	
	Acenaphthene
27	Acenaphthylene
28	Anthracene

1 Benzidine
2 Benzo(a)anthracene
3 Benzo(a)pyrene
4 3,4 Benzo-fluoranthene
5 Benzo(ghi)perylene
6 Benzo(k)fluoranthene
7 Bis (2-chloroethoxy)
8 Methane
9 Bis (2-chloroethyl)-ether
10 Bis (2-chloroiso-propyl)
11 Ether
12 Bis (2-ethylhexyl) Phthalate
13 4-bromophenyl Phenyl Ether
14 Butyl Benzyl Phthalate
15 2-chloronaphthalene
16 4-chlorphenyl Phenyl Ether
17 Chrysene
18 Di-n-butyl Phthalate
19 Di-n-octyl Phthalate
20 Dibenzo(a,h) Anthracene
21 1,2-dichlorobenzene
22 1,3-dichlorobenzene
23 1,4-dichlorobenzene
24 3,3-dichlorobenzidine
25 Diethyl Phthalate
26 Dimethyl Phthalate
27 2,4-dinitrotoluene
28 2,6-dinitrotoluene
1,2-diphenylhydrazine
19 Fluoranthene
20 Fluorene
21 Hexachlorobenzene
22 Hexachlorobutadiene
23 Hexachlorocyclopentadiene
24 Hexachloroethane
25 Indeno(1,2,3-cd)pyrene
26 Isophorone
27 Naphthalene
28 Nitrobenzene
N-nitrosodi-n-propylamine
N-nitrosodi- Methylamine
N-nitrosodi-phenylamine
Phenanthrene
Pyrene

1 1,2,4-trichlorobenzene

2 Whole Effluent Toxicity (Chronic):

3 Sperm Cell Toxicity Tests Using the Sea Urchin (*Arbacia punctulata*), (*Strongylocentrus*
4 *Purpuratus*) or (*Tripneustes Gratilla*); (Fertilization Test Method 1008.0)

5 Sheepshead Minnow (*Cyprinodon variegatus*) Larval Survival and Growth Toxicity Tests

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