301 (h) MODIFIED PERMIT APPLICATION

"REVISED"

NORTHERN DISTRICT

SEWAGE TREATMENT PLANT

Recd. EPA 2/14/01
MZ

GUAM WATERWORKS AUTHORITY

Aturidat Kinalamten Hanom Guahan

Government of Guam

Post Office Box 3010, Hagåtña, Guam 96932

Phone: (671)479-7823/7820 Fax: (671)649-0158

FEB 05 2001

Norman L. Lovelace
Manager, Pacific Insular Area Programs
U.S. Environmental Protection Agency
Pacific Insular Areas Program
75 Hawthorne Street (CMD-5)
San Francisco, CA 94105

Re: Revised NPDES Permit Application for the Northern District Wastewater Treatment Plant

Dear Norman,

Enclosed is GWA's revised 301(h) Modified NPDES permit application for the Northern District Wastewater Treatment Plant. The information provided on the application is the latest regarding the operation, maintenance, and scheduled improvements for the plant. GWA is presently in the process of conducting a new Expanded Effluent Testing for the Northern District WWTP and will submit the results as soon as they become available. We are currently reviewing the guidelines provided by your Office concerning the Toxicity Testing requirements. GWA will most likely contract this requirement out to one of the qualified labs listed by your Office. We will inform your Office of our arrangement no later than the end of March this year.

According to GMP Associates Inc. (consultant for the design and construction of the outfall extensions), its subcontractor has completed the test borings at both the Agana and Northern District outfall extension sites. Included in the Technical Support section of the revised application (Tab 4) is a copy of the receiving water quality report for both proposed outfall sites. The requested biological monitoring information will be sent to your office as soon as it becomes available.

Included in this revised application are the construction schedules for both the Agana and Northern District WWTPs outfall extensions. GWA will keep you updated on the status of the design, and all subsequent matters regarding the outfall extensions.

Please advise me if additional information is needed to complete the application process. I can be reached at (671) 479-7823, fax (671) 479-7879 or e-mail at hjjohn@ite.net.

Sincerely,

Herbert J. Johnston
General Manager

REVISED

NPDES 301(h) MODIFIED
PERMIT APPLICATION

NORTHERN DISTRICT
SEWAGE TREATMENT PLANT

REVISED SECTION

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SIGNITORY & CERTIFICATION STATEMENT

FEB 05 2001

I certify that I am the General Manager of the Guam Waterworks Authority having responsibility for the overall operations of the Authority.

****

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

NPDES Application
Public Agency

Herbert J. Johnston
General Manager
Guam Waterworks Authority
(671) 479-7823

NPDES FORM 1 & FORM 2A

Please print or type in the unshaded areas only
(Fill–in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved. OMB No. 2040-0086.

FORM 1 GENERAL

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

GENERAL INFORMATION

Consolidated Permits Program
(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER

F GU0020141 D

LABEL ITEMS

I. EPA I.D. NUMBER
III. FACILITY NAME
V. FACILITY MAILING ADDRESS
VI. FACILITY LOCATION

PLEASE PLACE LABEL IN THIS SPACE

GENERAL INSTRUCTIONS

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill–in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill–in area(s) below. If the label is complete and correct, you need not complete Items I, III, V, and VI *(except VI-B which must be completed regardless)*. Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of bold–faced terms.

SPECIFIC QUESTIONS	MARK 'X' YES	NO	FORM ATTACHED	SPECIFIC QUESTIONS	MARK 'X' YES	NO	FORM ATTACHED
A. Is this facility a **publicly owned treatment works** which results in a discharge to **waters of the U.S.**? (FORM 2A)	X		X	B. Does or will this facility *(either existing or proposed)* include a **concentrated animal feeding operation** or **aquatic animal production facility** which results in a **discharge to waters of the U.S.**? (FORM 2B)		X	
C. Is this a facility which currently results in **discharges** to **waters of the U.S.** other than those described in A or B above? (FORM 2C)		X		D. Is this a proposed facility *(other than those described in A or B above)* which will result in a **discharge** to **waters of the U.S.**? (FORM 2D)		X	
E. Does or will this facility treat, store, or dispose of **hazardous wastes**? (FORM 3)		X		F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)		X	
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)		X		H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)		X	
I. Is this facility a proposed **stationary source** which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X		J. Is this facility a proposed **stationary source** which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X	

III. NAME OF FACILITY

1 SKIP NORTHERN DISTRICT WWTP

IV. FACILITY CONTACT

A. NAME & TITLE *(last, first, & title)*	B. PHONE *(area code & no.)*
2 EDWARD REYES, WASTEWATER MANAGER	671 479 7885

V. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX	B. CITY OR TOWN	C. STATE	D. ZIP CODE
3 P.O. BOX 3010	4 HAGATNA	GU	96932

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER	B. COUNTY NAME	C. CITY OR TOWN	D. STATE	E. ZIP CODE	F. COUNTY CODE *(if known)*
5 ROUTE 34		6 HARMON ANEX	GU	96912	

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

VII. SIC CODES *(4-digit, in order of priority)*

A. FIRST		B. SECOND	
4941	(specify) WATER SUPPLY	4952	(specify) SEWAGE

C. THIRD		D. FOURTH	
	(specify)		(specify)

VIII. OPERATOR INFORMATION

A. NAME: GUAM WATERWORKS AUTHORITY

B. Is the name listed in Item VIII-A also the owner? [X] YES [ ] NO

C. STATUS OF OPERATOR *(Enter the appropriate letter into the answer box; if "Other", specify.)*
F = FEDERAL
S = STATE
P = PRIVATE
M = PUBLIC *(other than federal or state)*
O = OTHER *(specify)*

M (specify)

D. PHONE *(area code & no.)*: A 671 479 7823

E. STREET OR P.O. BOX: P.O. BOX 3010

F. CITY OR TOWN: HAGATNA

G. STATE: GU

H. ZIP CODE: 96932

IX. INDIAN LAND
Is the facility located on Indian lands? [ ] YES [X] NO

X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES *(Discharges to Surface Water)*	N	D. PSD *(Air Emissions from Proposed Sources)*	P
B. UIC *(Underground Injection of Fluids)*	U	E. OTHER *(specify)*	(specify)
C. RCRA *(Hazardous Wastes)*	R	E. OTHER *(specify)*	GU0020141 (specify) OCEAN OUTFALL

XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property bounderies. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in the map area. See instructions for precise requirements.

XII. NATURE OF BUSINESS *(provide a brief description)*

Production and distribution of municipal potable water.

Collection and treatment of municipal wastewater.

XIII. CERTIFICATION *(see instructions)*

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE *(type or print)*	B. SIGNATURE	C. DATE SIGNED
Herbert J. Johnston, General Manager		02-05-01

COMMENTS FOR OFFICIAL USE ONLY

C

FACILITY NAME AND PERMIT NUMBER:

NORTHERN DISTRICT WWTP GU0020141

Form Approved 1/14/99
OMB Number 2040-0086

FORM **2A** NPDES

NPDES FORM 2A APPLICATION OVERVIEW

APPLICATION OVERVIEW

Form 2A has been developed in a modular format and consists of a "Basic Application Information" packet and a "Supplemental Application Information" packet. The Basic Application Information packet is divided into two parts. All applicants must complete Parts A and C. Applicants with a design flow greater than or equal to 0.1 mgd must also complete Part B. Some applicants must also complete the Supplemental Application Information packet. The following items explain which parts of Form 2A you must complete.

BASIC APPLICATION INFORMATION:

A. **Basic Application Information for all Applicants.** All applicants must complete questions A.1 through A.8. A treatment works that discharges effluent to surface waters of the United States must also answer questions A.9 through A.12.

B. **Additional Application Information for Applicants with a Design Flow ≥ 0.1 mgd.** All treatment works that have design flows greater than or equal to 0.1 million gallons per day must complete questions B.1 through B.6.

C. **Certification.** All applicants must complete Part C (Certification).

SUPPLEMENTAL APPLICATION INFORMATION:

D. **Expanded Effluent Testing Data.** A treatment works that discharges effluent to surface waters of the United States and meets one or more of the following criteria must complete Part D (Expanded Effluent Testing Data):

1. Has a design flow rate greater than or equal to 1 mgd,
2. Is required to have a pretreatment program (or has one in place), or
3. Is otherwise required by the permitting authority to provide the information.

E. **Toxicity Testing Data.** A treatment works that meets one or more of the following criteria must complete Part E (Toxicity Testing Data):

1. Has a design flow rate greater than or equal to 1 mgd,
2. Is required to have a pretreatment program (or has one in place), or
3. Is otherwise required by the permitting authority to submit results of toxicity testing.

F. **Industrial User Discharges and RCRA/CERCLA Wastes.** A treatment works that accepts process wastewater from any significant industrial users (SIUs) or receives RCRA or CERCLA wastes must complete Part F (Industrial User Discharges and RCRA/CERCLA Wastes). SIUs are defined as:

1. All industrial users subject to Categorical Pretreatment Standards under 40 Code of Federal Regulations (CFR) 403.6 and 40 CFR Chapter I, Subchapter N (see instructions); and
2. Any other industrial user that:
   a. Discharges an average of 25,000 gallons per day or more of process wastewater to the treatment works (with certain exclusions); or
   b. Contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the treatment plant; or
   c. Is designated as an SIU by the control authority.

G. **Combined Sewer Systems.** A treatment works that has a combined sewer system must complete Part G (Combined Sewer Systems).

ALL APPLICANTS MUST COMPLETE PART C (CERTIFICATION)

FACILITY NAME AND PERMIT NUMBER:

NORTHERN DISTRICT WWTP GU0020141

Form Approved 1/14/99
OMB Number 2040-0086

BASIC APPLICATION INFORMATION

PART A. BASIC APPLICATION INFORMATION FOR ALL APPLICANTS:

All treatment works must complete questions A.1 through A.8 of this Basic Application Information packet.

A.1. Facility Information.

Facility name: NORTHERN DISTRICT WASTEWATER TREATMENT PLANT

Mailing Address: P.O. BOX 3010
HAGATNA, GU 96932

Contact person: Herbert J. Johnston

Title: General Manager

Telephone number: (671) 479-7823

Facility Address (not P.O. Box): Route 34 Harmon Anex, Guam 96912

A.2. Applicant Information. If the applicant is different from the above, provide the following:

Applicant name: _____

Mailing Address: _____

Contact person: _____

Title: _____

Telephone number: _____

Is the applicant the owner or operator (or both) of the treatment works?

X owner X operator

Indicate whether correspondence regarding this permit should be directed to the facility or the applicant.

_____ facility X applicant

A.3. Existing Environmental Permits. Provide the permit number of any existing environmental permits that have been issued to the treatment works (include state-issued permits).

NPDES GU0020141 PSD _____

UIC _____ Other _____

RCRA _____ Other _____

A.4. Collection System Information. Provide information on municipalities and areas served by the facility. Provide the name and population of each entity and, if known, provide information on the type of collection system (combined vs. separate) and its ownership (municipal, private, etc.).

Name	Population Served	Type of Collection System	Ownership
Dededo & Yigo	49,850	Separate	Public
Tumon,Barrigada,Mangilao	18,334	Separate	Public
AndersenAFB,Fineguyan	8,488	Separate	Public & Military
Total population served	76,672		

FACILITY NAME AND PERMIT NUMBER:

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A.5. Indian Country.

a. Is the treatment works located in Indian Country?

____ Yes X No

b. Does the treatment works discharge to a receiving water that is either in Indian Countryor that is upstream from (and eventually flows through) Indian Country?

____ Yes X No

A.6. Flow. Indicate the design flow rate of the treatment plant (i.e., the wastewater flow rate that the plant was built to handle). Also provide the average daily flow rate and maximum daily flow rate for each of the last three years. Each year's data must be based on a 12-month time period with the 12th month of "this year" occurring no more than three months prior to this application submittal.

a. Design flow rate 12.0 mgd

	Two Years Ago	Last Year	This Year	
b. Annual average daily flow rate	6.4	5.9	6.3	mgd
c. Maximum daily flow rate	6.9	7.2	8.0	mgd

A.7. Collection System. Indicate the type(s) of collection system(s) used by the treatment plant. Check all that apply. Also estimate the percent contribution (by miles) of each.

X Separate sanitary sewer 100 %

N/A Combined storm and sanitary sewer ____ %

A.8. Discharges and Other Disposal Methods.

a. Does the treatment works discharge effluent to waters ofthe U.S.? X Yes ____ No

If yes, list how many of each of the following types of discharge points the treatment works uses:

i. Discharges of treated effluent 1

ii. Discharges of untreated or partially treated effluent N/A

iii. Combined sewer overflow points N/A

iv. Constructed emergency overflows (prior to the headworks) N/A

v. Other N/A ____

b. Does the treatment works discharge effluent to basins, ponds, or other surfaceimpoundments that do not have outlets for discharge to waters of the U.S.? ____ Yes X No

If yes, provide the following for each surface impoundment

Location: ____

Annual average daily volume discharged to surface impoundment(s) ____ mgd

Is discharge ____ continuous or ____ intermittent?

c. Does the treatment works land-apply treated wastewater? ____ Yes X No

If yes, provide the following for each land application site:

Location: ____

Number of acres: ____

Annual average daily volume applied to site: ____ Mgd

Is land application ____ continuous or ____ intermittent?

d. Does the treatment works discharge or transport treated or untreated wastewater to another treatment works? ____ Yes X No

If yes, describe the mean(s) by which the wastewater from the treatment works is discharged or transported to the other treatment works (e.g., tank truck, pipe).

_____

If transport is by a party other than the applicant, provide:

Transporter name: N/A

Mailing Address: _____

_____

Contact person: _____

Title: _____

Telephone number: _____

For each treatment works that receives this discharge provide the following:

Name: N/A

Mailing Address: _____

_____

Contact person: _____

Title: _____

Telephone number: _____

If known, provide the NPDES permit number of the treatment works that receives this discharge. _____

Provide the average daily flow rate from the treatment works into the receiving facility. _____ mgd

e. Does the treatment works discharge or dispose of its wastewater in a manner not included in A.8.a through A.8.d above (e.g., underground percolation, well injection)? _____ Yes X No

If yes, provide the following for each disposal method:

Description of method (including location and size of site(s) if applicable):

_____

Annual daily volume disposed of by this method: _____

Is disposal through this method _____ continuous or _____ intermittent?

FACILITY NAME AND PERMIT NUMBER:

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WASTEWATER DISCHARGES:

If you answered "yes" to question A.8.a, complete questions A.9 through A.12 **once for each outfall** (including bypass points) through which effluent is discharged. Do not include information on combined sewer overflows in this section. **If you answered "no" to question A.8.a**, go to Part B, "Additional Application Information for Applicants with a Design Flow Greater than or Equal to 0.1mgd."

A.9. Description of Outfall.

a. Outfall number 001

b. Location Tanguissan (City or town, if applicable) 96912 (Zip Code)

Dededo (County) Guam (State)

13DEG 33MIN 7.36SEC (Latitude) 144DEG 48MIN 24.03SEC (Longitude)

c. Distance from shore (if applicable) 2,160 ft.

d. Depth below surface (if applicable) 60 ft.

e. Average daily flow rate 6.2 mgd

f. Does this outfall have either an intermittent or a periodic discharge? ____ Yes X No (go to A.9.g.)

If yes, provide the following information:

Number of times per year discharge occurs: ____

Average duration of each discharge: ____

Average flow per discharge: ____ mgd

Months in which discharge occurs: ____

g. Is outfall equipped with a diffuser? X Yes ____ No

A.10. Description of Receiving Waters.

a. Name of receiving water Philippine Sea

b. Name of watershed (if known) N/A

United States Soil Conservation Service 14-digit watershed code (if known): ____

c. Name of State Management/River Basin (if known): N/A

United States Geological Survey 8-digit hydrologic cataloging unit code (if known): ____

d. Critical low flow of receiving stream (if applicable):
acute N/A cfs chronic N/A cfs

e. Total hardness of receiving stream at critical low flow (if applicable): N/A mg/l of $CaCO_3$

FACILITY NAME AND PERMIT NUMBER:

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A.11. Description of Treatment.

a. What levels of treatment are provided? Check all that apply.

X Primary _____ Secondary

_____ Advanced _____ Other. Describe: _____

b. Indicate the following removal rates (as applicable):

Design BOD_5 removal or Design $CBOD_5$ removal	40-60 (BOD)	%
Design SS removal	50-75	%
Design P removal	Not given	%
Design N removal	Not given	%
Other N/A		%

c. What type of disinfection is used for the effluent from this outfall? If disinfection varies by season, please describe.

Chlorine; but no longer in use.No disinfection performed at this plant.

If disinfection is by chlorination, is dechlorination used for this outfall? _____ Yes X No

d. Does the treatment plant have post aeration? _____ Yes X No

A.12. Effluent Testing Information. All Applicants that discharge to waters of the US must provide effluent testing data for the following parameters. Provide the indicated effluent testing required by the permitting authority for each outfall through which effluent is discharged. Do not include information on combined sewer overflows in this section. All information reported must be based on data collected through analysis conducted using 40 CFR Part 136 methods. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136. At a minimum, effluent testing data must be based on at least three samples and must be no more than four and one-half years apart.

Outfall number: 001

PARAMETER	MAXIMUM DAILY VALUE		AVERAGE DAILY VALUE		
	Value	Units	Value	Units	Number of Samples
pH (Minimum)	7.19	s.u.			
pH (Maximum)	7.31	s.u.			
Flow Rate	7.4	mgd	6.2	mgd	365
Temperature (Winter)	N/S		N/S		
Temperature (Summer)	N/S		N/S		

* For pH please report a minimum and a maximum daily value

POLLUTANT		MAXIMUM DAILY DISCHARGE		AVERAGE DAILY DISCHARGE			ANALYTICAL METHOD	ML / MDL
		Conc.	Units	Conc.	Units	Number of Samples		
CONVENTIONAL AND NONCONVENTIONAL COMPOUNDS.								
BIOCHEMICAL OXYGEN DEMAND (Report one)	BOD-5	163	mg/L	140	mg/L	36	Standard	
	CBOD-5	N/S		N/S				
FECAL COLIFORM		N/S		N/S				
TOTAL SUSPENDED SOLIDS (TSS)		154	mg/L	120	mg/L	36	Standard	

END OF PART A.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE

FACILITY NAME AND PERMIT NUMBER:

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BASIC APPLICATION INFORMATION

PART B. ADDITIONAL APPLICATION INFORMATION FOR APPLICANTS WITH A DESIGN FLOW GREATER THAN OR EQUAL TO 0.1 MGD (100,000 gallons per day).

All applicants with a design flow rate ≥ 0.1 mgd must answer questions B.1 through B.6. All others go to Part C (Certification).

B.1. Inflow and Infiltration. Estimate the average number of gallons per day that flow into the treatment works from inflow and/or infiltration.

N/A gpd

Briefly explain any steps underway or planned to minimize inflow and infiltration.

_____

_____

B.2. Topographic Map. Attach to this application a topographic map of the area extending at least one mile beyond facility property boundaries. This map must show the outline of the facility and the following information. (You may submit more than one map if one map does not show the entire area.)

a. The area surrounding the treatment plant, including all unit processes.

b. The major pipes or other structures through which wastewater enters the treatment works and the pipes or other structures through which treated wastewater is discharged from the treatment plant. Include outfalls from bypass piping, if applicable.

c. Each well where wastewater from the treatment plant is injected underground.

d. Wells, springs, other surface water bodies, and drinking water wells that are: 1) within 1/4 mile of the property boundaries of the treatment works, and 2) listed in public record or otherwise known to the applicant.

e. Any areas where the sewage sludge produced by the treatment works is stored, treated, or disposed.

f. If the treatment works receives waste that is classified as hazardous under the Resource Conservation and Recovery Act (RCRA) by truck, rail, or special pipe, show on the map where that hazardous waste enters the treatment works and where it is treated, stored, and/or disposed.

B.3. Process Flow Diagram or Schematic. Provide a diagram showing the processes of the treatment plant, including all bypass piping and all backup power sources or redundancy in the system. Also provide a water balance showing all treatment units, including disinfection (e.g, chlorination and dechlorination). The water balance must show daily average flow rates at influent and discharge points and approximate daily flow rates between treatment units. Include a brief narrative description of the diagram.

B.4. Operation/Maintenance Performed by Contractor(s).

Are any operational or maintenance aspects (related to wastewater treatment and effluent quality) of the treatment works the responsibility of a contractor? ____Yes X No

If yes, list the name, address, telephone number, and status of each contractor and describe the contractor's responsibilities (attach additional pages if necessary).

Name: _____

Mailing Address: _____

_____

Telephone Number: _____

Responsibilities of Contractor: _____

B.5. Scheduled Improvements and Schedules of Implementation. Provide information on any uncompleted implementation schedule or uncompleted plans for improvements that will affect the wastewater treatment, effluent quality, or design capacity of the treatment works. If the treatment works has several different implementation schedules or is planning several improvements, submit separate responses to question B.5 for each. (If none, go to question B.6.)

a. List the outfall number (assigned in question A.9) for each outfall that is covered by this implementation schedule.

001

b. Indicate whether the planned improvements or implementation schedule are required by local, State, or Federal agencies.

____Yes X No

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c If the answer to B.5.b is "Yes," briefly describe, including new maximum daily inflow rate (if applicable).
N/A

d. Provide dates imposed by any compliance schedule or any actual dates ofcompletion for the implementation steps listed below, as applicable. For improvements planned independently of local, State, or Federal agencies, indicate planned or actual completion dates, as applicable. Indicate dates as accurately as possible.

Implementation Stage	Schedule MM / DD / YYYY	Actual Completion MM / DD / YYYY
– Begin construction	10 / 31 / 2001	/ /
– End construction	10 / 31 / 2002	/ /
– Begin discharge	12 / 31 / 2002	/ /
– Attain operational level	01 / 31 / 2003	/ /

e. Have appropriate permits/clearances concerning other Federal/State requirements been obtained? X Yes ___ No

Describe briefly: Permits for test drilling approved(May 12,2000)
Permit application for construction to be submitted.

B.6. EFFLUENT TESTING DATA (GREATER THAN O.1 MGD ONLY).

Applicants that discharge to waters of the US must provide effluent testing data for the following parameters. Provide the indicated effluent testing required by the permitting authority for each outfall through which effluent is discharged. Do not include information on combined sewer overflows in this section. All information reported must be based on data collected through analysis conducted using 40 CFR Part 136 methods. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods foranalytes not addressed by 40 CFR Part 136. At a minimum, effluent testing data must be based on at least three pollutant scans and must be no more than four and one-half years old.

Outfall Number: 001

POLLUTANT	MAXIMUM DAILY DISCHARGE		AVERAGE DAILY DISCHARGE			ANALYTICAL METHOD	ML / MDL
	Conc.	Units	Conc.	Units	Number of Samples		
CONVENTIONAL AND NONCONVENTIONAL COMPOUNDS.							
AMMONIA (as N)	N/A						
CHLORINE (TOTAL RESIDUAL, TRC)	N/A						
DISSOLVED OXYGEN	N/A						
TOTAL KJELDAHL NITROGEN (TKN)	N/A						
NITRATE PLUS NITRITE NITROGEN	N/A						
OIL and GREASE	N/A						
PHOSPHORUS (Total)	N/A						
TOTAL DISSOLVED SOLIDS (TDS)	N/A						
OTHER	N/A						

END OF PART B.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE

* Priority Pollutant Scan in progress; results will be forwarded upon receip

Estimated date: December 2000

FACILITY NAME AND PERMIT NUMBER:

NORTHERN DISTRICT WWTP GU0020141

Form Approved 1/14/99
OMB Number 2040-0086

BASIC APPLICATION INFORMATION

PART C. CERTIFICATION

All applicants must complete the Certification Section. Refer to instructions to determine who is an officer for the purposes of this certification. All applicants must complete all applicable sections of Form 2A, as explained in the Application Overview. Indicate below which parts of Form 2A you have completed and are submitting. By signing this certification statement, applicants confirm that they have reviewed Form 2A and have completed all sections that apply to the facility for which this application is submitted.

Indicate which parts of Form 2A you have completed and are submitting:

X Basic Application Information packet

Supplemental Application Information packet:

X Part D (Expanded Effluent Testing Data)

* Part E (Toxicity Testing: Biomonitoring Data)

____ Part F (Industrial User Discharges and RCRA/CERCLA Wastes)

____ Part G (Combined Sewer Systems)

ALL APPLICANTS MUST COMPLETE THE FOLLOWING CERTIFICATION.

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

Name and official title: Herbert J. Johnston, General Manager

Signature:

Telephone number: (671) 479-7823

Date signed: 02-05-01

Upon request of the permitting authority, you must submit any other information necessary to assess wastewater treatment practices at the treatment works or identify appropriate permitting requirements.

SEND COMPLETED FORMS TO:

* Part E requirement will be sent as soon as possible.

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SUPPLEMENTAL APPLICATION INFORMATION

PART D. EXPANDED EFFLUENT TESTING DATA

Refer to the directions on the cover page to determine whether this section applies to the treatment works.

Effluent Testing: 1.0 mgd and Pretreatment Treatment Works. If the treatment works has a design flow greater than or equal to 1.0mgd or it has (or is required to have) a pretreatment program, or is otherwise required by the permitting authority to provide the data, then provide effluent testing data for the following pollutants. Provide the indicated effluent testing information and any other information required by the permitting authority for each outfall through which effluent is discharged. Do not include information on combined sewer overflows in this section. All information reported must be based on data collected through analyses conducted using 40 CFR Part 136 methods. In addition, these data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods foranalytes not addressed by 40 CFR Part 136. Indicate in the blank rows provided below any data you may have on pollutants not specifically listed in this form. At a minimum,effluent testing data must be based on at least three pollutant scans and must be no more than four and one-half years old.

Outfall number: 001 * Results submitted are from a single Pollutant Scan. (Complete once for eachoutfall discharging effluent to waters of the United States.)

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/ MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	Number of Samples		
METALS (TOTAL RECOVERABLE), CYANIDE, PHENOLS, AND HARDNESS.											
ANTIMONY											
ARSENIC											
BERYLLIUM											
CADMIUM											
CHROMIUM											
COPPER											
LEAD											
MERCURY											
NICKEL											
SELENIUM											
SILVER											
THALLIUM											
ZINC											
CYANIDE											
TOTAL PHENOLIC COMPOUNDS											
HARDNESS (AS $CaCO_3$)											
Use this space (or a separate sheet) to provide information on other metals requested by the permit writer.											

Please refer to Tab 6

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Outfall number: _____ (Complete once for eachoutfall discharging effluent to waters of the United States.)

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/ MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	Number of Samples		
VOLATILE ORGANIC COMPOUNDS.											
ACROLEIN											
ACRYLONITRILE											
BENZENE											
BROMOFORM											
CARBON TETRACHLORIDE											
CLOROBENZENE											
CHLORODIBROMO-METHANE											
CHLOROETHANE											
2-CHLORO-ETHYLVINYL ETHER											
CHLOROFORM											
DICHLOROBROMO-METHANE											
1,1-DICHLOROETHANE											
1,2-DICHLOROETHANE											
TRANS-1,2-DICHLORO-ETHYLENE											
1,1-DICHLOROETHYLENE											
1,2-DICHLOROPROPANE											
1,3-DICHLORO-PROPYLENE											
ETHYLBENZENE											
METHYL BROMIDE											
METHYL CHLORIDE											
METHYLENE CHLORIDE											
1,2,2-TETRACHLORO-ETHANE											
TETRACHLORO-ETHYLENE											
TOLUENE											

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Outfall number: _____ (Complete once for eachoutfall discharging effluent to waters of the United States.)

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/ MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	Number of Samples		
1,1,1-TRICHLOROETHANE											
1,1,2-TRICHLOROETHANE											
TRICHLORETHYLENE											
VINYL CHLORIDE											
Use this space (or a separate sheet) to provide information on other volatile organic compounds requested by the permit writer.											
ACID-EXTRACTABLE COMPOUNDS											
P-CHLORO-M-CRESOL											
2-CHLOROPHENOL											
2,4-DICHLOROPHENOL											
2,4-DIMETHYLPHENOL											
4,6-DINITRO-O-CRESOL											
2,4-DINITROPHENOL											
2-NITROPHENOL											
4-NITROPHENOL											
PENTACHLOROPHENOL											
PHENOL											
2,4,6-TRICHLOROPHENOL											
Use this space (or a separate sheet) to provide information on other acid-extractable compounds requested by the permit writer.											
BASE-NEUTRAL COMPOUNDS.											
ACENAPHTHENE											
ACENAPHTHYLENE											
ANTHRACENE											
BENZIDINE											
BENZO(A)ANTHRACENE											

BENZO(A)PYRENE											

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Outfall number: _____ (Complete once for eachoutfall discharging effluent to waters of the United States.)

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/ MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	Number of Samples		
3,4 BENZO-FLUORANTHENE											
BENZO(GHI)PERYLENE											
BENZO(K)FLUORANTHENE											
BIS (2-CHLOROETHOXY) METHANE											
BIS (2-CHLOROETHYL)-ETHER											
BIS (2-CHLOROISO-PROPYL) ETHER											
BIS (2-ETHYLHEXYL) PHTHALATE											
4-BROMOPHENYL PHENYL ETHER											
BUTYL BENZYL PHTHALATE											
2-CHLORONAPHTHALENE											
4-CHLORPHENYL PHENYL ETHER											
CHRYSENE											
DI-N-BUTYL PHTHALATE											
DI-N-OCTYL PHTHALATE											
DIBENZO(A,H) ANTHRACENE											
1,2-DICHLOROBENZENE											
1,3-DICHLOROBENZENE											
1,4-DICHLOROBENZENE											
3,3-DICHLOROBENZIDINE											
DIETHYL PHTHALATE											
DIMETHYL PHTHALATE											
2,4-DINITROTOLUENE											
2,6-DINITROTOLUENE											

1,2-DIPHENYLHYDRAZINE											

FACILITY NAME AND PERMIT NUMBER:

NORTHERN DISTRICT WWTP GU0020141

Form Approved 1/14/99
OMB Number 2040-0086

Outfall number: _____ (Complete once for eachoutfall discharging effluent to waters of the United States.)

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/ MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	Number of Samples		
FLUORANTHENE											
FLUORENE											
HEXACHLOROBENZENE											
HEXACHLOROBUTADIENE											
HEXACHLOROCYCLO-PENTADIENE											
HEXACHLOROETHANE											
INDENO(1,2,3-CD)PYRENE											
ISOPHORONE											
NAPHTHALENE											
NITROBENZENE											
N-NITROSODI-N-PROPYLAMINE											
N-NITROSODI- METHYLAMINE											
N-NITROSODI-PHENYLAMINE											
PHENANTHRENE											
PYRENE											
1,2,4-TRICHLOROBENZENE											
Use this space (or a separate sheet) to provide information on other base-neutral compounds requested by the permit writer.											
Use this space (or a separate sheet) to provide information on other pollutants (e.g., pesticides) requested by the permit writer.											

END OF PART D.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE

FACILITY NAME AND PERMIT NUMBER:

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SUPPLEMENTAL APPLICATION INFORMATION

PART E. TOXICITY TESTING DATA

POTWs meeting one or more of the following criteria must provide the results of whole effluent toxicity tests for acute or chronic toxicity for each of the facility's discharge points: 1) POTWs with a design flow rate greater than or equal to 1.0mgd; 2) POTWs with a pretreatment program (or those that are required to have one under 40 CFR Part 403); or 3) POTWs required by the permitting authority to submit data for these parameters.

- At a minimum, these results must include quarterly testing for a 12-month period within the past 1 year using multiple species (minimum of two species), or the results from four tests performed at least annually in the four and one-half years prior to the application, provided the results show no appreciable toxicity, and testing for acute and/or chronic toxicity, depending on the range of receiving water dilution. Do not include information on combined sewer overflows in this section. All information reported must be based on data collected through analysis conducted using 40 CFR Part 136 methods. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136.
- In addition, submit the results of any other whole effluent toxicity tests from the past four and one-half years. If a whole effluent toxicity test conducted during the past four and one-half years revealed toxicity, provide any information on the cause of the toxicity or any results of a toxicity reduction evaluation, if one was conducted.
- If you have already submitted any of the information requested in Part E, you need not submit it again. Rather, provide the information requested in question E.4 for previously submitted information. If EPA methods were not used, report the reasons for using alternate methods. If test summaries are available that contain all of the information requested below, they may be submitted in place of Part E.

If no biomonitoring data is required, do not complete Part E. Refer to the Application Overview for directions on which other sections of the form to complete.

E.1. Required Tests.

Indicate the number of whole effluent toxicity tests conductedin the past four and one-half years.

____chronic ____acute

E.2. Individual Test Data. Complete the following chart for each whole effluent toxicity test conducted in the last four and one-half years. Allow one column per test (where each species constitutes a test). Copy this page if more than three tests are being reported.

	Test number:_____	Test number:_____	Test number:_____
a. Test information.			
Test species & test method number			
Age at initiation of test			
Outfall number			
Dates sample collected			
Date test started			
Duration			
b. Give toxicity test methods followed.			
Manual title			
Edition number and year of publication			
Page number(s)			
c. Give the sample collection method(s) used. For multiple grab samples, indicate the number of grab samples used.			
24-Hour composite			
Grab			
d. Indicate where the sample was taken in relation todisinfection. (Check all that apply for each)			
Before disinfection			
After disinfection			
After dechlorination			

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	Test number:_____	Test number:_____	Test number:_____
e. Describe the point in the treatment process at which the sample was collected.			
Sample was collected:			
f. For each test, include whether the test was intended to assess chronic toxicity, acute toxicity, or both.			
Chronic toxicity			
Acute toxicity			
g. Provide the type of test performed.			
Static			
Static-renewal			
Flow-through			
h. Source of dilution water. If laboratory water, specify type; if receiving water, specify source.			
Laboratory water			
Receiving water			
i. Type of dilution water. If salt water, specify "natural" or type of artificial sea salts or brine used.			
Fresh water			
Salt water			
j. Give the percentage effluent used for all concentrations in the test series.			
k. Parameters measured during the test. (State whether parameter meets test method specifications)			
pH			
Salinity			
Temperature			
Ammonia			
Dissolved oxygen			
l. Test Results.			
Acute:			
Percent survival in 100% effluent	%	%	%
LC_{50}			
95% C.I.	%	%	%
Control percent survival	%	%	%
Other (describe)			

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Chronic:			
NOEC	%	%	%
IC_{25}	%	%	%
Control percent survival	%	%	%
Other (describe)			
m. Quality Control/Quality Assurance.			
Is reference toxicant data available?			
Was reference toxicant test within acceptable bounds?			
What date was reference toxicant test run (MM/DD/YYYY)?			
Other (describe)			

E.3. Toxicity Reduction Evaluation. Is the treatment works involved in a Toxicity Reduction Evaluation?

____Yes ____No If yes, describe: _____

_____

_____

E.4. Summary of Submitted Biomonitoring Test Information. If you have submitted biomonitoring test information, or information regarding the cause of toxicity, within the past four and one-half years, provide the dates the information was submitted to the permitting authority and a summary of the results.

Date submitted: _____ (MM/DD/YYYY)

Summary of results: (see instructions)

_____

_____

END OF PART E.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE.

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SUPPLEMENTAL APPLICATION INFORMATION

PART F. INDUSTRIAL USER DISCHARGES AND RCRA/CERCLA WASTES

All treatment works receiving discharges from significant industrial users or which receive RCRA, CERCLA, or other remedial wastes must complete Part F.

GENERAL INFORMATION:

F.1. Pretreatment Program. Does the treatment works have, or is it subject to, an approved pretreatment program?

____Yes ____No

F.2. Number of Significant Industrial Users (SIUs) and Categorical Industrial Users (CIUs). Provide the number of each of the following types of industrial users that discharge to the treatment works.

a. Number of non-categorical SIUs. _____

b. Number of CIUs. _____

SIGNIFICANT INDUSTRIAL USER INFORMATION:

Supply the following information for each SIU. If more than one SIU discharges to the treatment works, copy questions F.3 through F.8 and provide the information requested for each SIU.

F.3. Significant Industrial User Information. Provide the name and address of each SIU discharging to the treatment works. Submit additional pages as necessary.

Name: _____

Mailing Address: _____

_____

F.4. Industrial Processes. Describe all of the industrial processes that affect or contribute to theSIU's discharge.

_____

F.5. Principal Product(s) and Raw Material(s). Describe all of the principal processes and raw materials that affect or contribute to theSIU's discharge.

Principal product(s): _____

Raw material(s): _____

F.6. Flow Rate.

a. Process wastewater flow rate. Indicate the average daily volume of process wastewater discharged into the collection system in gallons per day (gpd) and whether the discharge is continuous or intermittent.

_____ gpd (_____continuous or _____intermittent)

b. Non-process wastewater flow rate. Indicate the average daily volume of non-process wastewater flow discharged into the collection system in gallons per day (gpd) and whether the discharge is continuous or intermittent.

_____ gpd (_____continuous or _____intermittent)

F.7. Pretreatment Standards. Indicate whether the SIU is subject to the following:

a. Local limits ____Yes ____No

b. Categorical pretreatment standards ____Yes ____No

If subject to categorical pretreatment standards, which category and subcategory?

_____

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F.8. Problems at the Treatment Works Attributed to Waste Discharged by the SIU. Has the SIU caused or contributed to any problems (e.g., upsets, interference) at the treatment works in the past three years?

____Yes ____No If yes, describe each episode.

_____

_____

RCRA HAZARDOUS WASTE RECEIVED BY TRUCK, RAIL, OR DEDICATED PIPELINE:

F.9. RCRA Waste. Does the treatment works receive or has it in the past three years received RCRA hazardous waste by truck, rail, or dedicated pipe?
____Yes ___No (go to F.12.)

F.10. Waste Transport. Method by which RCRA waste is received (check all that apply):

_____Truck _____Rail _____Dedicated Pipe

F.11. Waste Description. Give EPA hazardous waste number and amount (volume or mass, specify units).

EPA Hazardous Waste Number	Amount	Units

CERCLA (SUPERFUND) WASTEWATER, RCRA REMEDIATION/CORRECTIVE ACTION WASTEWATER, AND OTHER REMEDIAL ACTIVITY WASTEWATER:

F.12. Remediation Waste. Does the treatment works currently (or has it been notified that it will) receive waste from remedial activities?

____Yes (complete F.13 through F.15.) ____No

Provide a list of sites and the requested information (F.13 - F.15.) for each current and future site.

F.13. Waste Origin. Describe the site and type of facility at which the CERCLA/RCRA/or other remedial waste originates (or is expected to originate in the next five years).

_____

_____

_____

F.14. Pollutants. List the hazardous constituents that are received (or are expected to be received). Include data on volume and concentration, if known. (Attach additional sheets if necessary).

_____

_____

F.15. Waste Treatment.

a. Is this waste treated (or will it be treated) prior to entering the treatment works?

____Yes ____No

If yes, describe the treatment (provide information about the removal efficiency):

_____

_____

b. Is the discharge (or will the discharge be) continuous or intermittent?

____Continuous ____Intermittent If intermittent, describe discharge schedule

END OF PART F.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE

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SUPPLEMENTAL APPLICATION INFORMATION

PART G. COMBINED SEWER SYSTEMS

If the treatment works has a combined sewer system, complete Part G.

G.1. System Map. Provide a map indicating the following: (may be included with Basic Application Information)

a. All CSO discharge points.

b. Sensitive use areas potentially affected by CSOs (e.g., beaches, drinking water supplies, shellfish beds, sensitive aquatic ecosystems, and outstanding natural resource waters).

c. Waters that support threatened and endangered species potentially affected by CSOs.

G.2. System Diagram. Provide a diagram, either in the map provided in G.1. or on a separate drawing, of the combined sewer collection system that includes the following information:

a. Locations of major sewer trunk lines, both combined and separate sanitary.

b. Locations of points where separate sanitary sewers feed into the combined sewer system.

c. Locations of in-line and off-line storage structures.

d. Locations of flow-regulating devices.

e. Locations of pump stations.

CSO OUTFALLS:

Complete questions G.3 through G.6 once for each CSO discharge point.

G.3. Description of Outfall.

a. Outfall number _____

b. Location _____
(City or town, if applicable) (Zip Code)

_____
(County) (State)

_____
(Latitude) (Longitude)

c. Distance from shore (if applicable) _____ft.

d. Depth below surface (if applicable) _____ft.

e. Which of the following were monitored during the last year for this CSO?

____Rainfall ____CSO pollutant concentrations ____CSO frequency

____CSO flow volume ____Receiving water quality

f. How many storm events were monitored during the last year? _____

G.4. CSO Events.

a. Give the number of CSO events in the last year.

_____ events (___ actual or ___ approx.)

b. Give the average duration per CSO event.

_____ hours (____ actual or ____ approx.)

c. Give the average volume per CSO event.

_____ million gallons (_____ actual or _____ approx.)

d. Give the minimum rainfall that caused a CSO event in the last year.

_____ inches of rainfall

G.5. Description of Receiving Waters.

a. Name of receiving water: _____

b. Name of watershed/river/stream system: _____

United States Soil Conservation Service 14-digit watershed code (if known): _____

c. Name of State Management/River Basin: _____

United States Geological Survey 8-digit hydrologic cataloging unit code (if known): _____

G.6. CSO Operations.

Describe any known water quality impacts on the receiving water caused by this CSO (e.g., permanent or intermittent beach closings, permanent or intermittent shell fish bed closings, fish kills, fish advisories, other recreational loss, or violation of any applicable State water quality standard).

_____

_____

END OF PART G.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE.

Additional information, if provided, will appear on the following pages.

Description of Treatment/Outfall System

(Drawing)

DRAWING

Summary Attachment

OUTFALL CONSTRUCTION SCHEDULE

(Progress Report & Timeline Schedule)

ASSOCIATES, INC.

Engineers / Architects

PROGRESS REPORT FOR INVOICE NO. 5
JULY 2000
AGANA & NORTHERN DISTRICT STP OUTFALL EXTENSION
(Task XVI, Tumon Bay Beautification & Infrastructure Project)

Introduction

Recent activities have focused on preparation for the baseline monitoring, securing Federal and Guam permits to allow drilling on and beyond the reef, and start-up of the drilling process itself.

Baseline Monitoring

Sampling protocol has been developed for sediments which is consistent with that required by USEPA Region IX in other locations. An order for a Van Veen grab sampler has been placed with Kahlseo International Corp. and delivery is expected in three months. This equipment was selected because its proven utility for outfall surveys in California and Hawaii.

Geotechnical Investigations

Applications were filed with the Army Corp of Engineers (September 31, 1999) and Department of Land Management (September 14, 1999) to conduct offshore drilling. Concurrently, requests were made to the Bureau of Planning for a Guam Coastal Zone Management Consistency Statement (GCZMC) and Guam Environmental Protection Agency for a 401 Water Quality Determination. These permits and determinations were processed in following chronological order:

1. GCZMC consisting statement by Bureau of Planning received on November 8, 1999.
2. 401 Water Quality Determination from USEPA on November 24, 1999.
3. Waiver of Seashore Protection Permit by Department of Land Management December 22, 1999.
4. Department of Army Permit by ACOE May 12, 2000.
5. Approval of Water Quality Monitoring Plan by GEPA.

GITC Bldg. [illegible] South Marine Drive • Suite 302 • Tamuning, Guam 96911 • Telephone [illegible] • Fax (671) 647-[illegible]

ASSOCIATES, INC.

Engineers / Architects

The lag between the DLM waiver and DA permit resulted from the need to determine the species and percent abundance of coral at each offshore site.

Drilling has begun at the Tanguisson site with one shore side and two reef test bores completed. A third reef bore was suspended by surge conditions generated by Typhoon Kirogi. A fifth bore will be made offshore. The drilling at Tanguisson and five corresponding test bores at the Agana site are expected to be completed by mid-August contingent upon sea shore conditions.

GITC Bldg • 590 South Marine Drive • Suite 302 • Tamuning, Guam 96911 • Telephone: (671) 647-4467 • Fax: (671) 647-4471

NORTHERN DISTRICT OUTFALL CONSTRUCTION

Item	Duration (days)	Start	Finish
GWA Review	15	9/15/01	9/30/01
Contractors' Bids	45	10/01/01	11/15/01
Contract Award	60	11/16/01	1/15/02
Submittal Review	90	1/15/02	4/15/02
Mobilize Offsite	30	4/16/02	5/15/02
Mobilize Onsite	30	5/16/02	6/15/02
Drill & Ream Pilot Hole	15	6/16/02	6/30/02
Install & Hydrotest Pipeline	30	7/1/02	7/31/02
Construct Junction Box	31	8/1/02	8/31/02
Install Diffuser	90	8/1/02	10/30/02
Demobilize	30	10/31/02	11/30/02

HAGÅTÑA OUTFALL CONSTRUCTION

Item	Duration (days)	Start	Finish
GWA Review	30	4/1/02	4/30/02
Contractors' Bids	45	5/1/02	6/15/02
Contract Award	60	6/16/02	8/17/02
Submittal Review	90	8/18/02	11/16/02
Mobilize Offsite	30	11/17/02	12/17/02
Mobilize Onsite	30	12/17/02	1/18/03
Drill & Ream Pilot Hole	15	1/19/03	2/1/03
Install & Hydrotest Pipeline	30	2/2/03	3/8/03
Install Outfall Terminal Section	30	3/9/03	4/9/03
Demobilize Site	30	4/10/03	5/9/03

DESIGN OF HAGÅTÑA & NORTHERN DISTRICT OUTFALLS

Item	Critical Path	Duration (days)	Start	End
	Geotechnical Analysis & Report	45	10/1/00	11/14/00
	Bottom Profiling & Report	60	10/15/00	11/29/00
	HDD Feasibility Report	45	11/30/00	1/12/01
30%	Basis of Design	30	1/13/01	2/14/01
	(2 week Government review)			
60%	PSCE	60	3/1/01	3/19/01
	(2 week Government review)		4/2/01	5/28/01
90%	PSCE	60	6/11/01	8/10/01
	(2 week Government review)			
FINAL	PSCE	17	8/27/01	9/14/01
	Non-Critical Path			
	Sediment Sampling	15	10/15/00	10/31/00
	Water Quality Analysis	21	9/20/00	10/15/00
	Sediment Physical & Chemical Analysis	21	11/6/00	11/24/00
	Sediment Infauna Analysis	120	11/1/00	2/28/01
	Water & Sediment Quality Report	15	3/1/01	3/15/01
	Draft Environmental Impact Assessment	*in progress*		5/28/01
	Final Environmental Impact Assessment	*in progress*		8/10/01

Wastewater O&M Progress Report
4th Quarter, FY 2000

1998 LABORATORY REPORT

PRIORITY POLLUTANT SCAN

MONTGOMERY WATSON LABORATORIES

555 East Walnut Street
Pasadena, California 91101
818 568 6400; Fax: 818 568 6324;
1 800 566 LABS (1 800 566 5227)

Laboratory Report

for

Guam Water Authority
Government of Guam

P.O.Box 3010

Agana, GUAM , USA 96910

Attention: Carmen Sian-Denton
Fax: (671) 637-2592

RECEIVED
4/23/98

MONTGOMERY WATSON LABS.
SUBMITTED ON

APR 02 1998

HDS Hillary Strayer
Hillary

Wastewater
Report#: 41239
DRINKING

Report Summary of positive results, PR41239

		Result	MDL	UNITS
Analyzed	980311001 COMP12 AGANA STP			
03/16/98	4-Methylphenol	50	10.000	UGL
03/16/98	Benzoic Acid	100	******	UGL
03/16/98	Benzyl Alcohol	13	10.000	UGL
03/16/98	Data Entry	03/17/98		--
03/16/98	Di(2-Ethylhexyl)phthalate	23(B)	8.000	UGL
03/13/98	Copper, Total, ICAP	0.037	.010	MGL
03/13/98	Silver, Total, ICAP	0.01	.010	MGL
03/13/98	Zinc, Total, ICAP	0.087	.020	MGL
03/24/98	Data Entry	03/26/98		--
03/17/98	Acetone	120	10.000	UGL
03/17/98	Chloroform (Trichloromethane)	1.8	.500	UGL
03/17/98	Tetrachloroethylene (PCE)	2.0	.500	UGL
03/17/98	Toluene	1.2	.500	UGL
03/17/98	p-Dichlorobenzene (1,4-DCB)	1.2	.500	UGL
Analyzed	980311002 COMP12 NDSS			
03/16/98	4-Methylphenol	46	25.000	UGL
03/16/98	Data Entry	03/17/98		--
03/13/98	Copper, Total, ICAP	0.053	.010	MGL
03/13/98	Zinc, Total, ICAP	0.21	.020	MGL
03/24/98	Data Entry	03/26/98		--
03/13/98	Acetone	86	10.000	UGL
03/13/98	Toluene	1.9	.500	UGL
03/13/98	p-Dichlorobenzene (1,4-DCB)	1.1	.500	UGL
03/16/98	Lead, Total, GF	2.9	.002	MGL
Analyzed	980311003 TB-5/21/97-R.V. & J.B.-HOLD			
Analyzed	980311004 TB-9/26/97-R.V. & J.B.-HOLD			

??

More Data Available?

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Group Comments

(625) B indicates that the analyte is also detected in the method blank.
(624) Samples 980311001 and 980311002 were analyzed twice and the same surrogate failed in both samples both times. Result for TCDD analysis submitted by Quanterra Environmenta l Services.

(980311001)

@BNA
X2,Sample diluted due to matrix interference.

AS-GF
AS-GF analyzed by method 200.8.

PB-GF
PB-GF analyzed method 200.8.

TL-GF
TL-GF analyzed by method 200.8.

(980311002)

@BNA
X5,Sample diluted due to matrix interference.

AS-GF
AS-GF analyzed by method 200.8.

PB-GF
PB-GF analyzed by method 200.8.

TL-GF
TL-GF analyzed by method 200.8.

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Carmen Sian-Denton
Government of Guam
P.O.Box 3010
Agana, GUAM , USA 96910

Samples Received
11-mar-1998 10:44:10

Prepared	Analyzed	QC Batch#	Method	Analyte	Result	Units	MDL	Dilut
COMP12 AGANA STP (980311001) Sampled on 03/10/98								
03/13/98	03/16/98	74594	(S3113B/E200.9)	Arsenic, Total, GF	ND	mg/l	0.005	1
	03/11/98		(ML/EPA 100.1)	Asbestos by TEM	<1.9	MFL	1.9	1
03/19/98	03/20/98	74822	(E335.2/E335.3)	Cyanide by manual distillation	ND	mg/l	0.005	1
03/13/98	03/13/98	74456	(EPA/ML 245.1)	Mercury	ND	ug/l	0.20	1
03/13/98	03/16/98	74596	(S3113B/200.9)	Lead, Total, GF	ND	mg/l	0.002	1
03/13/98	03/18/98	74598	(S3113B/E200.9)	Selenium, Total, GF	ND	mg/l	0.005	1
03/23/98	03/25/98	75332	(SUBCONTRACTED)	2,3,7,8-TCDD	ND	ng/l	7.3	1
03/13/98	03/16/98	74597	(ML/EPA 279.2)	Thallium, Total, GF	ND	mg/l	0.005	1
			BNA Extractable					
03/12/98	03/16/98	74668	(ML/EPA 625)	1,2,4-Trichlorobenzene	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	o-Dichlorobenzene (1,2-DCB)	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	1,2-Diphenylhydrazine	ND	ug/l	20	2
03/12/98	03/16/98	74668	(ML/EPA 625)	m-Dichlorobenzene (1,3-DCB)	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	p-Dichlorobenzene (1,4-DCB)	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	2,4,5-Trichlorophenol	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	2,4,6-Trichlorophenol	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	2,4-Dichlorophenol	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	2,4-Dimethylphenol	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	2,4-Dinitrophenol	ND	ug/l	100	2
03/12/98	03/16/98	74668	(ML/EPA 625)	2,4-Dinitrotoluene	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	2,6-Dinitrotoluene	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	2-Chloronaphthalene	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	2-Chlorophenol	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	2-Methylnaphthalene	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	2-Methylphenol	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	2-Nitroaniline	ND	ug/l	20	2
03/12/98	03/16/98	74668	(ML/EPA 625)	2-Nitrophenol	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	3,3'-Dichlorobenzidine	ND	ug/l	100	2
03/12/98	03/16/98	74668	(ML/EPA 625)	3-Nitroaniline	ND	ug/l	40	2
03/12/98	03/16/98	74668	(ML/EPA 625)	4,6-Dinitro-o-cresol	ND	ug/l	100	2

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(continued)

Prepared	Analyzed	QC Batch#	Method	Analyte	Result	Units	MDL	Diluti
03/12/98	03/16/98	74668	(ML/EPA 625)	4-Bromophenylphenylether	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	4-Chloroaniline	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	4-Chlorophenylphenylether	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	4-Methylphenol	50	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	4-Nitroaniline	ND	ug/l	40	2
03/12/98	03/16/98	74668	(ML/EPA 625)	4-Nitrophenol	ND	ug/l	20	2
03/12/98	03/16/98	74668	(ML/EPA 625)	Acenaphthene	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	Acenaphthylene	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	Aniline	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	Anthracene	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	Benzo(a)anthracene	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	Benzo(a)pyrene	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	Benzo(b)fluoranthene	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	Benzo(g,h,i)perylene	ND	ug/l	20	2
3/12/98	03/16/98	74668	(ML/EPA 625)	Benzo(k)fluoranthene	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	bis(2-Chloroethyl)ether	ND	ug/l	20	2
03/12/98	03/16/98	74668	(ML/EPA 625)	bis(2-Chloroethoxy)methane	ND	ug/l	20	2
03/12/98	03/16/98	74668	(ML/EPA 625)	bis(2-Chloroisopropyl)ether	ND	ug/l	20	2
03/12/98	03/16/98	74668	(ML/EPA 625)	Di(2-Ethylhexyl)phthalate	23(B)	ug/l	8.0	2
03/12/98	03/16/98	74668	(ML/EPA 625)	Butylbenzylphthalate	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	Benzidine	ND	ug/l	100	2
03/12/98	03/16/98	74668	(ML/EPA 625)	Benzoic Acid	100	ug/l	100	2
03/12/98	03/16/98	74668	(ML/EPA 625)	Benzyl Alcohol	13	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	Chrysene	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	Dibenzo(a,h)anthracene	ND	ug/l	20	2
03/12/98	03/16/98	74668	(ML/EPA 625)	Dibenzofuran	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	Diethylphthalate	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	Dimethylphthalate	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	Di-n-butylphthalate	ND	ug/l	20	2
03/12/98	03/16/98	74668	(ML/EPA 625)	Di-n-octylphthalate	ND	ug/l	20	2
03/12/98	03/16/98	74668	(ML/EPA 625)	Fluoranthene	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	Fluorene	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	Hexachlorobenzene	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	Hexachlorobutadiene	ND	ug/l	20	2
03/12/98	03/16/98	74668	(ML/EPA 625)	Hexachlorocyclopentadiene	ND	ug/l	20	2
03/12/98	03/16/98	74668	(ML/EPA 625)	Hexachloroethane	ND	ug/l	10	2

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(continued)

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03/12/98	03/16/98	74668	(ML/EPA 625)	Indeno(1,2,3-c,d)pyrene	ND	ug/l	20	2
03/12/98	03/16/98	74668	(ML/EPA 625)	Isophorone	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	Naphthalene	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	Nitrobenzene	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	N-Nitrosodimethylamine	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	N-Nitrosodi-N-propylamine	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	N-Nitrosodiphenylamine	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	p-Chloro-m-cresol	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	Pentachlorophenol	ND	ug/l	20	2
03/12/98	03/16/98	74668	(ML/EPA 625)	Phenanthrene	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	Phenol	ND	ug/l	10	2
03/12/98	03/16/98	74668	(ML/EPA 625)	Pyrene	ND	ug/l	10	2
			(Surrogate)	2,4,6-Tribromophenol	89	% Rec		
			(Surrogate)	2-Fluorobiphenyl	86	% Rec		
			(Surrogate)	2-Fluorophenol	77	% Rec		
			(Surrogate)	Nitrobenzene-d5	89	% Rec		
			(Surrogate)	Phenol-d5	148	% Rec		
			(Surrogate)	Terphenyl-d14	34	% Rec		
			Pesticides/PCBs					
03/14/98	03/24/98	74999	(ML/EPA 608)	PCB 1016 Aroclor	ND	ug/l	5.0	10
03/14/98	03/24/98	74999	(ML/EPA 608)	PCB 1221 Aroclor	ND	ug/l	5.0	10
03/14/98	03/24/98	74999	(ML/EPA 608)	PCB 1232 Aroclor	ND	ug/l	5.0	10
03/14/98	03/24/98	74999	(ML/EPA 608)	PCB 1242 Aroclor	ND	ug/l	5.0	10
03/14/98	03/24/98	74999	(ML/EPA 608)	PCB 1248 Aroclor	ND	ug/l	5.0	10
03/14/98	03/24/98	74999	(ML/EPA 608)	PCB 1254 Aroclor	ND	ug/l	5.0	10
03/14/98	03/24/98	74999	(ML/EPA 608)	PCB 1260 Aroclor	ND	ug/l	5.0	10
03/14/98	03/24/98	74999	(ML/EPA 608)	Alpha-BHC	ND	ug/l	0.20	10
03/14/98	03/24/98	74999	(ML/EPA 608)	Aldrin	ND	ug/l	0.20	10
03/14/98	03/24/98	74999	(ML/EPA 608)	Beta-BHC	ND	ug/l	0.20	10
03/14/98	03/24/98	74999	(ML/EPA 608)	Chlordane	ND	ug/l	2.0	10
03/14/98	03/24/98	74999	(ML/EPA 608)	Delta-BHC	ND	ug/l	0.20	10
03/14/98	03/24/98	74999	(ML/EPA 608)	p,p' DDD	ND	ug/l	0.20	10
03/14/98	03/24/98	74999	(ML/EPA 608)	p,p' DDE	ND	ug/l	0.20	10
03/14/98	03/24/98	74999	(ML/EPA 608)	p,p' DDT	ND	ug/l	0.20	10
03/14/98	03/24/98	74999	(ML/EPA 608)	Dieldrin	ND	ug/l	0.20	10

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03/14/98	03/24/98	74999	(ML/EPA 608)	Endrin Aldehyde	ND	ug/l	0.20	10
03/14/98	03/24/98	74999	(ML/EPA 608)	Endrin	ND	ug/l	0.10	10
03/14/98	03/24/98	74999	(ML/EPA 608)	Endosulfan I (alpha)	ND	ug/l	0.20	10
03/14/98	03/24/98	74999	(ML/EPA 608)	Endosulfan II (beta)	ND	ug/l	0.20	10
03/14/98	03/24/98	74999	(ML/EPA 608)	Endosulfan sulfate	ND	ug/l	0.20	10
03/14/98	03/24/98	74999	(ML/EPA 608)	Gamma-BHC	ND	ug/l	0.20	10
03/14/98	03/24/98	74999	(ML/EPA 608)	Heptachlor	ND	ug/l	0.10	10
03/14/98	03/24/98	74999	(ML/EPA 608)	Heptachlor Epoxide	ND	ug/l	0.10	10
03/14/98	03/24/98	74999	(ML/EPA 608)	Methoxychlor	ND	ug/l	2.0	10
03/14/98	03/24/98	74999	(ML/EPA 608)	Toxaphene	ND	ug/l	5.0	10
			(Surrogate)	Dibutyl Chlorendate	40	% Rec		
			Priority Pollutant Metals - IC					
03/12/98	03/13/98	74588	(EPA/ML 200.7)	Silver, Total, ICAP	0.01	mg/l	0.010	1
3/12/98	03/13/98	74588	(EPA/ML 200.7)	Beryllium, Total, ICAP	ND	mg/l	0.0010	1
03/12/98	03/13/98	74588	(EPA/ML 200.7)	Cadmium, Total, ICAP	ND	mg/l	0.005	1
03/12/98	03/13/98	74588	(EPA/ML 200.7)	Chromium, Total, ICAP	ND	mg/l	0.010	1
03/12/98	03/13/98	74588	(EPA/ML 200.7)	Copper, Total, ICAP	0.037	mg/l	0.010	1
03/12/98	03/13/98	74588	(EPA/ML 200.7)	Nickel, Total, ICAP	ND	mg/l	0.010	1
03/12/98	03/13/98	74588	(EPA/ML 200.7)	Antimony, Total, ICAP	ND	mg/l	0.050	1
03/12/98	03/13/98	74588	(EPA/ML 200.7)	Zinc, Total, ICAP	0.087	mg/l	0.020	1
			Volatile Organics HSL					
	03/17/98	74720	(ML/EPA 624)	1,1,2-Trichloroethane (1,1,2-T	ND	ug/l	0.50	1
	03/17/98	74720	(ML/EPA 624)	1,1-Dichloroethylene (1,1DCE)	ND	ug/l	0.50	1
	03/17/98	74720	(ML/EPA 624)	1,1-Dichloroethane	ND	ug/l	0.50	1
	03/17/98	74720	(ML/EPA 624)	o-Dichlorobenzene (1,2-DCB)	ND	ug/l	0.50	1
	03/17/98	74720	(ML/EPA 624)	1,2-Dichloroethane	ND	ug/l	0.50	1
	03/17/98	74720	(ML/EPA 624)	1,2-Dichloropropane	ND	ug/l	0.50	1
	03/17/98	74720	(ML/EPA 624)	m-Dichlorobenzene (1,3-DCB)	ND	ug/l	0.50	1
	03/17/98	74720	(ML/EPA 624)	p-Dichlorobenzene (1,4-DCB)	1.2	ug/l	0.50	1
	03/17/98	74720	(ML/EPA 624)	2-Butanone (MEK)	ND	ug/l	10	1
	03/17/98	74720	(ML/EPA 624)	2-Hexanone	ND	ug/l	10	1
	03/17/98	74720	(ML/EPA 624)	4-Methyl-2-Pentanone (MIBK)	ND	ug/l	10	1
	03/17/98	74720	(ML/EPA 624)	Acetone	120	ug/l	10	1
	03/17/98	74720	(ML/EPA 624)	Acrolein	ND	ug/l	200	1

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Prepared	Analyzed	QC Batch#	Method	Analyte	Result	Units	MDL	Dilut
	03/17/98	74720	(ML/EPA 624)	Acrylonitrile	ND	ug/l	50	1
	03/17/98	74720	(ML/EPA 624)	Benzene	ND	ug/l	0.50	1
	03/17/98	74720	(ML/EPA 624)	cis-1,2-Dichloroethene	ND	ug/l	0.50	1
	03/17/98	74720	(ML/EPA 624)	Chlorobenzene	ND	ug/l	0.50	1
	03/17/98	74720	(ML/EPA 624)	cis-1,3-Dichloropropene	ND	ug/l	0.50	1
	03/17/98	74720	(ML/EPA 624)	Bromoform	ND	ug/l	0.50	1
	03/17/98	74720	(ML/EPA 624)	Chloroform (Trichloromethane)	1.8	ug/l	0.50	1
	03/17/98	74720	(ML/EPA 624)	Chloroethane	ND	ug/l	0.50	1
	03/17/98	74720	(ML/EPA 624)	Carbon disulfide	ND	ug/l	0.50	1
	03/17/98	74720	(ML/EPA 624)	Carbon Tetrachloride	ND	ug/l	0.50	1
	03/17/98	74720	(ML/EPA 624)	Dibromochloromethane	ND	ug/l	0.50	1
	03/17/98	74720	(ML/EPA 624)	Dichlorobromomethane	ND	ug/l	0.50	1
	03/17/98	74720	(ML/EPA 624)	Ethyl benzene	ND	ug/l	0.50	1
	03/17/98	74720	(ML/EPA 524.2)	Dichlorodifluoromethane	ND	ug/l	0.50	1
	03/17/98	74720	(ML/EPA 624)	Methyl Bromide	ND	ug/l	1.0	1
	03/17/98	74720	(ML/EPA 624)	Methyl Chloride	ND	ug/l	1.0	1
	03/17/98	74720	(ML/EPA 624)	Methylene Chloride	ND	ug/l	3.0	1
	03/17/98	74720	(ML/EPA 624)	m,p-Xylenes	ND	ug/l	0.50	1
	03/17/98	74720	(ML/EPA 624)	o-Xylene	ND	ug/l	0.50	1
	03/17/98	74720	(ML/EPA 624)	1,1,2,2-Tetrachloroethane	ND	ug/l	0.50	1
	03/17/98	74720	(ML/EPA 624)	Tetrachloroethylene (PCE)	2.0	ug/l	0.50	1
	03/17/98	74720	(ML/EPA 624)	Styrene	ND	ug/l	0.50	1
	03/17/98	74720	(ML/EPA 624)	trans-1,2-Dichloroethene	ND	ug/l	0.50	1
	03/17/98	74720	(ML/EPA 624)	1,1,1-Trichloroethane	ND	ug/l	0.50	1
	03/17/98	74720	(ML/EPA 624)	Trichloroethylene (TCE)	ND	ug/l	0.50	1
	03/17/98	74720	(ML/EPA 624)	Trichlorofluoromethane	ND	ug/l	0.50	1
	03/17/98	74720	(ML/EPA 624)	trans-1,3-Dichloropropene	ND	ug/l	0.50	1
	03/17/98	74720	(ML/EPA 624)	Tetrahydrofuran	ND	ug/l	10	1
	03/17/98	74720	(ML/EPA 624)	Toluene	1.2	ug/l	0.50	1
	03/17/98	74720	(ML/EPA 624)	Vinyl Chloride (VC)	ND	ug/l	0.50	1
	03/17/98	74720	(ML/EPA 624)	Vinyl Acetate	ND	ug/l	10	1
			(Surrogate)	1,2-Dichloroethane-d4	117	% Rec		
			(Surrogate)	4-Bromofluorobenzene	93	% Rec		
			(Surrogate)	Toluene-d8	99	% Rec		

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Prepared	Analyzed	QC Batch#	Method	Analyte	Result	Units	MDL	Dilutic
COMP12 NDSS (980311002) Sampled on 03/09/98								
03/13/98	03/16/98	74594	(S3113B/E200.9)	Arsenic, Total, GF	ND	mg/l	0.005	1
	03/11/98		(ML/EPA 100.1)	Asbestos by TEM	<3.3	MFL	3.3	1
03/19/98	03/20/98	74822	(E335.2/E335.3)	Cyanide by manual distillation	ND	mg/l	0.005	1
03/13/98	03/13/98	74456	(EPA/ML 245.1)	Mercury	ND	ug/l	0.20	1
03/13/98	03/16/98	74596	(S3113B/200.9)	Lead, Total, GF	2.9	mg/l	0.002	1
03/13/98	03/16/98	74598	(S3113B/E200.9)	Selenium, Total, GF	ND	mg/l	0.005	1
03/23/98	03/25/98	75332	(SUBCONTRACTED)	2,3,7,8-TCDD	ND	ng/l	7.9	1
03/13/98	03/16/98	74597	(ML/EPA 279.2)	Thallium, Total, GF	ND	mg/l	0.005	1
BNA Extractable								
03/12/98	03/16/98	74668	(ML/EPA 625)	1,2,4-Trichlorobenzene	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	o-Dichlorobenzene (1,2-DCB)	ND	ug/l	25	5
./12/98	03/16/98	74668	(ML/EPA 625)	1,2-Diphenylhydrazine	ND	ug/l	50	5
03/12/98	03/16/98	74668	(ML/EPA 625)	m-Dichlorobenzene (1,3-DCB)	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	p-Dichlorobenzene (1,4-DCB)	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	2,4,5-Trichlorophenol	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	2,4,6-Trichlorophenol	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	2,4-Dichlorophenol	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	2,4-Dimethylphenol	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	2,4-Dinitrophenol	ND	ug/l	250	5
03/12/98	03/16/98	74668	(ML/EPA 625)	2,4-Dinitrotoluene	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	2,6-Dinitrotoluene	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	2-Chloronaphthalene	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	2-Chlorophenol	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	2-Methylnaphthalene	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	2-Methylphenol	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	2-Nitroaniline	ND	ug/l	50	5
03/12/98	03/16/98	74668	(ML/EPA 625)	2-Nitrophenol	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	3,3'-Dichlorobenzidine	ND	ug/l	250	5
03/12/98	03/16/98	74668	(ML/EPA 625)	3-Nitroaniline	ND	ug/l	100	5
03/12/98	03/16/98	74668	(ML/EPA 625)	4,6-Dinitro-o-cresol	ND	ug/l	250	5
03/12/98	03/16/98	74668	(ML/EPA 625)	4-Bromophenylphenylether	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	4-Chloroaniline	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	4-Chlorophenylphenylether	ND	ug/l	25	5

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03/12/98	03/16/98	74668	(ML/EPA 625)	4-Methylphenol	46	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	4-Nitroaniline	ND	ug/l	100	5
03/12/98	03/16/98	74668	(ML/EPA 625)	4-Nitrophenol	ND	ug/l	50	5
03/12/98	03/16/98	74668	(ML/EPA 625)	Acenaphthene	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	Acenaphthylene	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	Aniline	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	Anthracene	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	Benzo(a)anthracene	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	Benzo(a)pyrene	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	Benzo(b)fluoranthene	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	Benzo(g,h,i)perylene	ND	ug/l	50	5
03/12/98	03/16/98	74668	(ML/EPA 625)	Benzo(k)fluoranthene	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	bis(2-Chloroethyl)ether	ND	ug/l	50	5
03/12/98	03/16/98	74668	(ML/EPA 625)	bis(2-Chloroethoxy)methane	ND	ug/l	50	5
03/12/98	03/16/98	74668	(ML/EPA 625)	bis(2-Chloroisopropyl)ether	ND	ug/l	50	5
03/12/98	03/16/98	74668	(ML/EPA 625)	Di(2-Ethylhexyl)phthalate	ND	ug/l	20	5
03/12/98	03/16/98	74668	(ML/EPA 625)	Butylbenzylphthalate	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	Benzidine	ND	ug/l	250	5
03/12/98	03/16/98	74668	(ML/EPA 625)	Benzoic Acid	ND	ug/l	250	5
03/12/98	03/16/98	74668	(ML/EPA 625)	Benzyl Alcohol	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	Chrysene	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	Dibenzo(a,h)anthracene	ND	ug/l	50	5
03/12/98	03/16/98	74668	(ML/EPA 625)	Dibenzofuran	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	Diethylphthalate	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	Dimethylphthalate	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	Di-n-butylphthalate	ND	ug/l	50	5
03/12/98	03/16/98	74668	(ML/EPA 625)	Di-n-octylphthalate	ND	ug/l	50	5
03/12/98	03/16/98	74668	(ML/EPA 625)	Fluoranthene	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	Fluorene	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	Hexachlorobenzene	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	Hexachlorobutadiene	ND	ug/l	50	5
03/12/98	03/16/98	74668	(ML/EPA 625)	Hexachlorocyclopentadiene	ND	ug/l	50	5
03/12/98	03/16/98	74668	(ML/EPA 625)	Hexachloroethane	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	Indeno(1,2,3-c,d)pyrene	ND	ug/l	50	5
03/12/98	03/16/98	74668	(ML/EPA 625)	Isophorone	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	Naphthalene	ND	ug/l	25	5

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Prepared	Analyzed	QC Batch#	Method	Analyte	Result	Units	MDL	Diluti
03/12/98	03/16/98	74668	(ML/EPA 625)	Nitrobenzene	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	N-Nitrosodimethylamine	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	N-Nitrosodi-N-propylamine	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	N-Nitrosodiphenylamine	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	p-Chloro-m-cresol	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	Pentachlorophenol	ND	ug/l	50	5
03/12/98	03/16/98	74668	(ML/EPA 625)	Phenanthrene	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	Phenol	ND	ug/l	25	5
03/12/98	03/16/98	74668	(ML/EPA 625)	Pyrene	ND	ug/l	25	5
			(Surrogate)	2,4,6-Tribromophenol	82	% Rec		
			(Surrogate)	2-Fluorobiphenyl	76	% Rec		
			(Surrogate)	2-Fluorophenol	74	% Rec		
			(Surrogate)	Nitrobenzene-d5	79	% Rec		
			(Surrogate)	Phenol-d5	151	% Rec		
			(Surrogate)	Terphenyl-d14	37	% Rec		
			Pesticides/PCBs					
03/14/98	03/24/98	74999	(ML/EPA 608)	PCB 1016 Aroclor	ND	ug/l	5.0	10
03/14/98	03/24/98	74999	(ML/EPA 608)	PCB 1221 Aroclor	ND	ug/l	5.0	10
03/14/98	03/24/98	74999	(ML/EPA 608)	PCB 1232 Aroclor	ND	ug/l	5.0	10
03/14/98	03/24/98	74999	(ML/EPA 608)	PCB 1242 Aroclor	ND	ug/l	5.0	10
03/14/98	03/24/98	74999	(ML/EPA 608)	PCB 1248 Aroclor	ND	ug/l	5.0	10
03/14/98	03/24/98	74999	(ML/EPA 608)	PCB 1254 Aroclor	ND	ug/l	5.0	10
03/14/98	03/24/98	74999	(ML/EPA 608)	PCB 1260 Aroclor	ND	ug/l	5.0	10
03/14/98	03/24/98	74999	(ML/EPA 608)	Alpha-BHC	ND	ug/l	0.20	10
03/14/98	03/24/98	74999	(ML/EPA 608)	Aldrin	ND	ug/l	0.20	10
03/14/98	03/24/98	74999	(ML/EPA 608)	Beta-BHC	ND	ug/l	0.20	10
03/14/98	03/24/98	74999	(ML/EPA 608)	Chlordane	ND	ug/l	2.0	10
03/14/98	03/24/98	74999	(ML/EPA 608)	Delta-BHC	ND	ug/l	0.20	10
03/14/98	03/24/98	74999	(ML/EPA 608)	p,p' DDD	ND	ug/l	0.20	10
03/14/98	03/24/98	74999	(ML/EPA 608)	p,p' DDE	ND	ug/l	0.20	10
03/14/98	03/24/98	74999	(ML/EPA 608)	p,p' DDT	ND	ug/l	0.20	10
03/14/98	03/24/98	74999	(ML/EPA 608)	Dieldrin	ND	ug/l	0.20	10
03/14/98	03/24/98	74999	(ML/EPA 608)	Endrin Aldehyde	ND	ug/l	0.20	10
03/14/98	03/24/98	74999	(ML/EPA 608)	Endrin	ND	ug/l	0.10	10
03/14/98	03/24/98	74999	(ML/EPA 608)	Endosulfan I (alpha)	ND	ug/l	0.20	10

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03/14/98	03/24/98	74999	(ML/EPA 608)	Endosulfan II (beta)	ND	ug/l	0.20	10
03/14/98	03/24/98	74999	(ML/EPA 608)	Endosulfan sulfate	ND	ug/l	0.20	10
03/14/98	03/24/98	74999	(ML/EPA 608)	Gamma-BHC	ND	ug/l	0.20	10
03/14/98	03/24/98	74999	(ML/EPA 608)	Heptachlor	ND	ug/l	0.10	10
03/14/98	03/24/98	74999	(ML/EPA 608)	Heptachlor Epoxide	ND	ug/l	0.10	10
03/14/98	03/24/98	74999	(ML/EPA 608)	Methoxychlor	ND	ug/l	2.0	10
03/14/98	03/24/98	74999	(ML/EPA 608)	Toxaphene	ND	ug/l	5.0	10
			(Surrogate)	Dibutyl Chlorendate	32	% Rec		
			Priority Pollutant Metals - IC					
03/12/98	03/13/98	74588	(EPA/ML 200.7)	Silver, Total, ICAP	ND	mg/l	0.010	1
03/12/98	03/13/98	74588	(EPA/ML 200.7)	Beryllium, Total, ICAP	ND	mg/l	0.0010	1
03/12/98	03/13/98	74588	(EPA/ML 200.7)	Cadmium, Total, ICAP	ND	mg/l	0.005	1
03/12/98	03/13/98	74588	(EPA/ML 200.7)	Chromium, Total, ICAP	ND	mg/l	0.010	1
1/12/98	03/13/98	74588	(EPA/ML 200.7)	Copper, Total, ICAP	0.053	mg/l	0.010	1
03/12/98	03/13/98	74588	(EPA/ML 200.7)	Nickel, Total, ICAP	ND	mg/l	0.010	1
03/12/98	03/13/98	74588	(EPA/ML 200.7)	Antimony, Total, ICAP	ND	mg/l	0.050	1
03/12/98	03/13/98	74588	(EPA/ML 200.7)	Zinc, Total, ICAP	0.21	mg/l	0.020	1
			Volatile Organics HSL					
	03/13/98	74719	(ML/EPA 624)	1,1,2-Trichloroethane (1,1,2-T	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	1,1-Dichloroethylene (1,1DCE)	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	1,1-Dichloroethane	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	o-Dichlorobenzene (1,2-DCB)	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	1,2-Dichloroethane	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	1,2-Dichloropropane	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	m-Dichlorobenzene (1,3-DCB)	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	p-Dichlorobenzene (1,4-DCB)	1.1	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	2-Butanone (MEK)	ND	ug/l	10	1
	03/13/98	74719	(ML/EPA 624)	2-Hexanone	ND	ug/l	10	1
	03/13/98	74719	(ML/EPA 624)	4-Methyl-2-Pentanone (MIBK)	ND	ug/l	10	1
	03/13/98	74719	(ML/EPA 624)	Acetone	86	ug/l	10	1
	03/13/98	74719	(ML/EPA 624)	Acrolein	ND	ug/l	200	1
	03/13/98	74719	(ML/EPA 624)	Acrylonitrile	ND	ug/l	50	1
	03/13/98	74719	(ML/EPA 624)	Benzene	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	cis-1,2-Dichloroethene	ND	ug/l	0.50	1

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	03/13/98	74719	(ML/EPA 624)	Chlorobenzene	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	cis-1,3-Dichloropropene	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Bromoform	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Chloroform (Trichloromethane)	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Chloroethane	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Carbon disulfide	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Carbon Tetrachloride	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Dibromochloromethane	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Dichlorobromomethane	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Ethyl benzene	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 524.2)	Dichlorodifluoromethane	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Methyl Bromide	ND	ug/l	1.0	1
	03/13/98	74719	(ML/EPA 624)	Methyl Chloride	ND	ug/l	1.0	1
	03/13/98	74719	(ML/EPA 624)	Methylene Chloride	ND	ug/l	3.0	1
	03/13/98	74719	(ML/EPA 624)	m,p-Xylenes	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	o-Xylene	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	1,1,2,2-Tetrachloroethane	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Tetrachloroethylene (PCE)	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Styrene	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	trans-1,2-Dichloroethene	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	1,1,1-Trichloroethane	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Trichloroethylene (TCE)	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Trichlorofluoromethane	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	trans-1,3-Dichloropropene	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Tetrahydrofuran	ND	ug/l	10	1
	03/13/98	74719	(ML/EPA 624)	Toluene	1.9	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Vinyl Chloride (VC)	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Vinyl Acetate	ND	ug/l	10	1
			(Surrogate)	1,2-Dichloroethane-d4	125	% Rec		
			(Surrogate)	4-Bromofluorobenzene	83	% Rec		
			(Surrogate)	Toluene-d8	103	% Rec		

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TB-5/21/97-R.V. & J.B.-HOLD (980311003) Sampled on 03/10/98

Volatile Organics HSL

Prepared	Analyzed	QC Batch#	Method	Analyte	Result	Units	MDL	Diluti
	03/13/98	74719	(ML/EPA 624)	1,1,2-Trichloroethane (1,1,2-T	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	1,1-Dichloroethylene (1,1DCE)	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	1,1-Dichloroethane	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	o-Dichlorobenzene (1,2-DCB)	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	1,2-Dichloroethane	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	1,2-Dichloropropane	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	m-Dichlorobenzene (1,3-DCB)	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	p-Dichlorobenzene (1,4-DCB)	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	2-Butanone (MEK)	ND	ug/l	10	1
	03/13/98	74719	(ML/EPA 624)	2-Hexanone	ND	ug/l	10	1
	03/13/98	74719	(ML/EPA 624)	4-Methyl-2-Pentanone (MIBK)	ND	ug/l	10	1
	03/13/98	74719	(ML/EPA 624)	Acetone	ND	ug/l	10	1
	03/13/98	74719	(ML/EPA 624)	Acrolein	ND	ug/l	200	1
	03/13/98	74719	(ML/EPA 624)	Acrylonitrile	ND	ug/l	50	1
	03/13/98	74719	(ML/EPA 624)	Benzene	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	cis-1,2-Dichloroethene	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Chlorobenzene	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	cis-1,3-Dichloropropene	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Bromoform	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Chloroform (Trichloromethane)	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Chloroethane	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Carbon disulfide	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Carbon Tetrachloride	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Dibromochloromethane	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Dichlorobromomethane	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Ethyl benzene	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 524.2)	Dichlorodifluoromethane	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Methyl Bromide	ND	ug/l	1.0	1
	03/13/98	74719	(ML/EPA 624)	Methyl Chloride	ND	ug/l	1.0	1
	03/13/98	74719	(ML/EPA 624)	Methylene Chloride	ND	ug/l	3.0	1
	03/13/98	74719	(ML/EPA 624)	m,p-Xylenes	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	o-Xylene	ND	ug/l	0.50	1

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Guam Water Authority
(continued)

Prepared	Analyzed	QC Batch#	Method	Analyte	Result	Units	MDL	Dilution
	03/13/98	74719	(ML/EPA 624)	1,1,2,2-Tetrachloroethane	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Tetrachloroethylene (PCE)	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Styrene	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	trans-1,2-Dichloroethene	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	1,1,1-Trichloroethane	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Trichloroethylene (TCE)	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Trichlorofluoromethane	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	trans-1,3-Dichloropropene	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Tetrahydrofuran	ND	ug/l	10	1
	03/13/98	74719	(ML/EPA 624)	Toluene	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Vinyl Chloride (VC)	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Vinyl Acetate	ND	ug/l	10	1
			(Surrogate)	1,2-Dichloroethane-d4	101	% Rec		
			(Surrogate)	4-Bromofluorobenzene	102	% Rec		
			(Surrogate)	Toluene-d8	100	% Rec		

TB-9/26/97-R.V. & J.B.-HOLD (980311004) Sampled on 03/09/98

Volatile Organics HSL

	03/13/98	74719	(ML/EPA 624)	1,1,2-Trichloroethane (1,1,2-T	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	1,1-Dichloroethylene (1,1DCE)	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	1,1-Dichloroethane	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	o-Dichlorobenzene (1,2-DCB)	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	1,2-Dichloroethane	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	1,2-Dichloropropane	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	m-Dichlorobenzene (1,3-DCB)	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	p-Dichlorobenzene (1,4-DCB)	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	2-Butanone (MEK)	ND	ug/l	10	1
	03/13/98	74719	(ML/EPA 624)	2-Hexanone	ND	ug/l	10	1
	03/13/98	74719	(ML/EPA 624)	4-Methyl-2-Pentanone (MIBK)	ND	ug/l	10	1
	03/13/98	74719	(ML/EPA 624)	Acetone	ND	ug/l	10	1
	03/13/98	74719	(ML/EPA 624)	Acrolein	ND	ug/l	200	1
	03/13/98	74719	(ML/EPA 624)	Acrylonitrile	ND	ug/l	50	1
	03/13/98	74719	(ML/EPA 624)	Benzene	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	cis-1,2-Dichloroethene	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Chlorobenzene	ND	ug/l	0.50	1

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(continued)

Prepared	Analyzed	QC Batch#	Method	Analyte	Result	Units	MDL	Diluti
	03/13/98	74719	(ML/EPA 624)	cis-1,3-Dichloropropene	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Bromoform	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Chloroform (Trichloromethane)	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Chloroethane	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Carbon disulfide	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Carbon Tetrachloride	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Dibromochloromethane	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Dichlorobromomethane	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Ethyl benzene	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 524.2)	Dichlorodifluoromethane	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Methyl Bromide	ND	ug/l	1.0	1
	03/13/98	74719	(ML/EPA 624)	Methyl Chloride	ND	ug/l	1.0	1
	03/13/98	74719	(ML/EPA 624)	Methylene Chloride	ND	ug/l	3.0	1
	03/13/98	74719	(ML/EPA 624)	m,p-Xylenes	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	o-Xylene	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	1,1,2,2-Tetrachloroethane	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Tetrachloroethylene (PCE)	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Styrene	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	trans-1,2-Dichloroethene	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	1,1,1-Trichloroethane	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Trichloroethylene (TCE)	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Trichlorofluoromethane	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	trans-1,3-Dichloropropene	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Tetrahydrofuran	ND	ug/l	10	1
	03/13/98	74719	(ML/EPA 624)	Toluene	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Vinyl Chloride (VC)	ND	ug/l	0.50	1
	03/13/98	74719	(ML/EPA 624)	Vinyl Acetate	ND	ug/l	10	1
			(Surrogate)	1,2-Dichloroethane-d4	105	% Rec		
			(Surrogate)	4-Bromofluorobenzene	96	% Rec		
			(Surrogate)	Toluene-d8	97	% Rec		

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QC Batch #74456 Mercury

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
LCS1	Mercury	1.56	1.35	86.5	(85.00 - 115.00)	
LCS2	Mercury	1.56	1.41	90.4	(85.00 - 115.00)	4.3
MBLK	Mercury	ND				
MS	Mercury	1.56	1.41	90.4	(80.00 - 120.00)	
MSD	Mercury	1.56	1.38	88.5	(80.00 - 120.00)	2.2

QC Batch #74588 Priority Pollutant Metals - IC

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
LCS1	Antimony, Total, ICAP	0.500	0.451	90.2	(85.00 - 115.00)	
LCS2	Antimony, Total, ICAP	0.500	0.452	90.4	(85.00 - 115.00)	0.22
MBLK	Antimony, Total, ICAP	ND				
MS	Antimony, Total, ICAP	0.50	0.449	89.8	(70.00 - 120.00)	
MSD	Antimony, Total, ICAP	1.00	0.97	97.0	(70.00 - 120.00)	
LCS1	Beryllium, Total, ICAP	0.05	0.0477	95.4	(78.00 - 105.00)	
LCS2	Beryllium, Total, ICAP	0.05	0.0470	94.0	(78.00 - 105.00)	1.5
MBLK	Beryllium, Total, ICAP	ND				
MS	Beryllium, Total, ICAP	0.050	0.0463	92.6	(80.00 - 120.00)	
MSD	Beryllium, Total, ICAP	0.100	0.094	94.0	(80.00 - 120.00)	
LCS1	Cadmium, Total, ICAP	0.200	0.192	96.0	(85.00 - 108.00)	
LCS2	Cadmium, Total, ICAP	0.200	0.186	93.0	(85.00 - 108.00)	3.2
MBLK	Cadmium, Total, ICAP	ND				
MS	Cadmium, Total, ICAP	0.20	0.177	88.5	(80.00 - 120.00)	
MSD	Cadmium, Total, ICAP	0.40	0.358	89.5	(80.00 - 120.00)	
LCS1	Chromium, Total, ICAP	1.00	0.97	97.0	(90.00 - 106.00)	
LCS2	Chromium, Total, ICAP	1.00	0.97	97.0	(90.00 - 106.00)	0.00
MBLK	Chromium, Total, ICAP	ND				
MS	Chromium, Total, ICAP	1.00	0.95	95.0	(80.00 - 120.00)	
MSD	Chromium, Total, ICAP	2.00	1.90	95.0	(80.00 - 120.00)	
LCS1	Copper, Total, ICAP	1.00	1.00	100.0	(93.00 - 111.00)	
LCS2	Copper, Total, ICAP	1.00	0.99	99.0	(93.00 - 111.00)	1.0
MBLK	Copper, Total, ICAP	ND				
MS	Copper, Total, ICAP	1.00	0.95	95.0	(80.00 - 120.00)	
MSD	Copper, Total, ICAP	2.00	1.89	94.5	(80.00 - 120.00)	
LCS1	Nickel, Total, ICAP	0.5	0.496	99.2	(90.00 - 108.00)	

Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining.
Criteria for MS and DUP are not applicable for ICR monitoring.

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LCS2	Nickel, Total, ICAP	0.5	0.486	97.2	(90.00 - 108.00)	2.0
MBLK	Nickel, Total, ICAP	ND				
MS	Nickel, Total, ICAP	0.50	0.463	92.6	(80.00 - 120.00)	
MSD	Nickel, Total, ICAP	1.00	0.94	94.0	(80.00 - 120.00)	
LCS1	Silver, Total, ICAP	0.50	0.553	110.6	(82.00 - 112.00)	
LCS2	Silver, Total, ICAP	0.50	0.549	109.8	(82.00 - 112.00)	0.73
MBLK	Silver, Total, ICAP	ND				
MS	Silver, Total, ICAP	0.50	0.459	91.8	(70.00 - 120.00)	
MSD	Silver, Total, ICAP	1.00	0.97	97.0	(70.00 - 120.00)	
LCS1	Zinc, Total, ICAP	1.00	1.00	100.0	(88.00 - 115.00)	
LCS2	Zinc, Total, ICAP	1.00	0.99	99.0	(88.00 - 115.00)	1.0
MBLK	Zinc, Total, ICAP	ND				
MS	Zinc, Total, ICAP	1.00	0.95	95.0	(80.00 - 120.00)	
MSD	Zinc, Total, ICAP	2.00	1.88	94.0	(80.00 - 120.00)	

QC Batch #74594 Arsenic, Total, GF

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
LCS1	Arsenic, Total, GF	0.020	0.0176	88.0	(85.00 - 115.00)	
LCS2	Arsenic, Total, GF	0.020	0.0199	99.5	(85.00 - 115.00)	12
MBLK	Arsenic, Total, GF	ND				
MS	Arsenic, Total, GF	0.020	0.0189	94.5	(85.00 - 115.00)	
MSD	Arsenic, Total, GF	0.020	0.0167	83.5	(85.00 - 115.00)	12

QC Batch #74596 Lead, Total, GF

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
LCS1	Lead, Total, GF	0.020	0.0191	95.5	(85.00 - 115.00)	
LCS2	Lead, Total, GF	0.020	0.0188	94.0	(85.00 - 115.00)	1.6
MBLK	Lead, Total, GF	ND				
MS	Lead, Total, GF	0.020	0.0202	101.0	(85.00 - 115.00)	
MSD	Lead, Total, GF	0.020	0.0195	97.5	(85.00 - 115.00)	3.5

Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining.
Criteria for MS and DUP are not applicable for ICR monitoring.

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QC Batch #74597 Thallium, Total, GF

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
LCS1	Thallium, Total, GF	0.020	0.0189	94.5	(85.00 - 115.00)	
LCS2	Thallium, Total, GF	0.020	0.0179	89.5	(85.00 - 115.00)	5.4
MBLK	Thallium, Total, GF	ND				
MS	Thallium, Total, GF	0.020	0.0230	115.0	(75.00 - 125.00)	
MSD	Thallium, Total, GF	0.020	0.0225	112.5	(75.00 - 125.00)	2.2

QC Batch #74598 Selenium, Total, GF

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
LCS1	Selenium, Total, GF	0.020	0.0182	91.0	(85.00 - 115.00)	
LCS2	Selenium, Total, GF	0.020	0.0184	92.0	(85.00 - 115.00)	1.1
MBLK	Selenium, Total, GF	ND				
MS	Selenium, Total, GF	0.020	0.0080	40.0	(85.00 - 115.00)	
MSD	Selenium, Total, GF	0.020	0.0077	38.5	(85.00 - 115.00)	3.8

QC Batch #74668 BNA Extractable

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
LCS1	1,2,4-Trichlorobenzene	50	38.3	76.6	(44.00 - 117.00)	
MBLK	1,2,4-Trichlorobenzene	ND				
MS	1,2,4-Trichlorobenzene	50	36.6	73.2	(44.00 - 117.00)	
MBLK	1,2-Diphenylhydrazine	ND				
MBLK	2,4,5-Trichlorophenol	ND				
MBLK	2,4,6-Trichlorophenol	ND				
MBLK	2,4-Dichlorophenol	ND				
MBLK	2,4-Dimethylphenol	ND				
MBLK	2,4-Dinitrophenol	ND				
LCS1	2,4-Dinitrotoluene	50	33.8	67.6	(39.00 - 121.00)	
MBLK	2,4-Dinitrotoluene	ND				
MS	2,4-Dinitrotoluene	50	28.8	57.6	(39.00 - 121.00)	

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MBLK	2,6-Dinitrotoluene	ND			
MBLK	2-Chloronaphthalene	ND			
LCS1	2-Chlorophenol	100	63.7	63.7	(37.00 - 95.00)
MBLK	2-Chlorophenol	ND			
MS	2-Chlorophenol	100	66.5	66.5	(27.00 - 123.00)
MBLK	2-Methylnaphthalene	ND			
MBLK	2-Methylphenol	ND			
MBLK	2-Nitroaniline	ND			
MBLK	2-Nitrophenol	ND			
MBLK	3,3'-Dichlorobenzidine	ND			
MBLK	3-Nitroaniline	ND			
MBLK	4,6-Dinitro-o-cresol	ND			
MBLK	4-Bromophenylphenylether	ND			
MBLK	4-Chloroaniline	ND			
MBLK	4-Chlorophenylphenylether	ND			
MBLK	4-Methylphenol	ND			
MBLK	4-Nitroaniline	ND			
LCS1	4-Nitrophenol	100	55.8	55.8	(1.00 - 160.00)
MBLK	4-Nitrophenol	ND			
MS	4-Nitrophenol	100	41.2	41.2	(10.00 - 80.00)
LCS1	Acenaphthene	50	28.5	57.0	(47.00 - 102.00)
MBLK	Acenaphthene	ND			
MS	Acenaphthene	50	27.8	55.6	(47.00 - 102.00)
MBLK	Acenaphthylene	ND			
MBLK	Aniline	ND			
MBLK	Anthracene	ND			
MBLK	Benzidine	ND			
MBLK	Benzo(a)anthracene	ND			
MBLK	Benzo(a)pyrene	ND			
MBLK	Benzo(b)fluoranthene	ND			
MBLK	Benzo(g,h,i)perylene	ND			
MBLK	Benzo(k)fluoranthene	ND			
MBLK	Benzoic Acid	ND			
MBLK	Benzyl Alcohol	ND			
MBLK	Butylbenzylphthalate	ND			
MBLK	Chrysene	ND			
MBLK	Di(2-Ethylhexyl)phthalate	ND	9.8		

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MBLK	Di-n-butylphthalate	ND			
MS	Di-n-butylphthalate	100	44.2	44.2	(11.00 - 117.00)
MBLK	Di-n-octylphthalate	ND			
MBLK	Dibenzo(a,h)anthracene	ND			
MBLK	Dibenzofuran	ND			
MBLK	Diethylphthalate	ND			
MBLK	Dimethylphthalate	ND			
MBLK	Fluoranthene	ND			
MBLK	Fluorene	ND			
MBLK	Hexachlorobenzene	ND			
MBLK	Hexachlorobutadiene	ND			
MBLK	Hexachlorocyclopentadiene	ND			
MBLK	Hexachloroethane	ND			
MBLK	Indeno(1,2,3-c,d)pyrene	ND			
MBLK	Isophorone	ND			
LCS1	N-Nitrosodi-N-propylamine	50	30.2	60.4	(21.00 - 110.00)
MBLK	N-Nitrosodi-N-propylamine	ND			
MS	N-Nitrosodi-N-propylamine	50	31.7	63.4	(21.00 - 110.00)
MBLK	N-Nitrosodimethylamine	ND			
MBLK	N-Nitrosodiphenylamine	ND			
MBLK	Naphthalene	ND			
MBLK	Nitrobenzene	ND			
LCS1	Pentachlorophenol	100	85.7	85.7	(22.00 - 137.00)
MBLK	Pentachlorophenol	ND			
MS	Pentachlorophenol	100	69.1	69.1	(9.00 - 103.00)
MBLK	Phenanthrene	ND			
LCS1	Phenol	100	56.2	56.2	(43.00 - 79.00)
MBLK	Phenol	ND			
MS	Phenol	100	65.4	65.4	(12.00 - 89.00)
LCS1	Pyrene	50	36.4	72.8	(52.00 - 115.00)
MBLK	Pyrene	ND			
MS	Pyrene	50	23.5	47.0	(25.00 - 99.00)
MBLK	bis(2-Chloroethoxy)methane	ND			
MBLK	bis(2-Chloroethyl)ether	ND			
MBLK	bis(2-Chloroisopropyl)ether	ND			
MBLK	m-Dichlorobenzene (1,3-DCB)	ND			
MBLK	o-Dichlorobenzene (1,2-DCB)	ND			

Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining.
Criteria for MS and DUP are not applicable for ICR monitoring.

MONTGOMERY WATSON LABORATORIES

555 East Walnut Street
Pasadena, California 91101
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Guam Water Authority
(continued)

LCS1	p-Chloro-m-cresol	100	69.7	69.7	(35.00 - 90.00)
MBLK	p-Chloro-m-cresol	ND			
MS	p-Chloro-m-cresol	100	62.5	62.5	(23.00 - 97.00)
LCS1	p-Dichlorobenzene (1,4-DCB)	50	33.2	66.4	(25.00 - 99.00)
MBLK	p-Dichlorobenzene (1,4-DCB)	ND			
MS	p-Dichlorobenzene (1,4-DCB)	50	34.5	69.0	(25.00 - 99.00)

QC Batch #74719 Volatile Organics HSL

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
MBLK	1,1,1-Trichloroethane	ND				
MBLK	1,1,2,2-Tetrachloroethane	ND				
MBLK	1,1,2-Trichloroethane (1,1,2-T	ND				
MBLK	1,1-Dichloroethane	ND				
LCS1	1,1-Dichloroethylene (1,1DCE)	4	2.89	72.2	(57.00 - 154.00)	
MBLK	1,1-Dichloroethylene (1,1DCE)	ND				
MS	1,1-Dichloroethylene (1,1DCE)	4	3.85	96.2	(57.00 - 154.00)	
MSD	1,1-Dichloroethylene (1,1DCE)	4	3.73	93.2	(57.00 - 154.00)	3.2
MBLK	1,2-Dichloroethane	ND				
MBLK	1,2-Dichloropropane	ND				
MBLK	2-Butanone (MEK)	ND				
MBLK	2-Chloroethylvinylether	ND				
MBLK	2-Hexanone	ND				
MBLK	4-Methyl-2-Pentanone (MIBK)	ND				
MBLK	Acetone	ND				
MBLK	Acrolein	ND				
MBLK	Acrylonitrile	ND				
LCS1	Benzene	4	3.29	82.2	(75.00 - 124.00)	
MBLK	Benzene	ND				
MS	Benzene	4	4.21	105.2	(75.00 - 124.00)	
MSD	Benzene	4	4.45	111.2	(75.00 - 124.00)	5.5
MBLK	Bromoform	ND				
MBLK	Carbon Tetrachloride	ND				
MBLK	Carbon disulfide	ND				
LCS1	Chlorobenzene	4	3.96	99.0	(74.00 - 121.00)	
MBLK	Chlorobenzene	ND				

Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining.
Criteria for MS and DUP are not applicable for ICR monitoring.

MONTGOMERY WATSON LABORATORIES

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Laboratory
QC Report
#41239

Guam Water Authority
(continued)

MS	Chlorobenzene	4	4.24	106.0	(74.00 - 121.00)	
MSD	Chlorobenzene	4	4.49	112.2	(74.00 - 121.00)	5.7
MBLK	Chloroethane	ND				
MBLK	Chloroform (Trichloromethane)	ND				
MBLK	Dibromochloromethane	ND				
MBLK	Dichlorobromomethane	ND				
MBLK	Dichlorodifluoromethane	ND				
MBLK	Ethyl benzene	ND				
MBLK	Methyl Bromide	ND				
MBLK	Methyl Chloride	ND				
MBLK	Methylene Chloride	ND				
MBLK	Styrene	ND				
MBLK	Tetrachloroethylene (PCE)	ND				
MBLK	Tetrahydrofuran	ND				
LCS1	Toluene	4	3.68	92.0	(76.00 - 120.00)	
MBLK	Toluene	ND				
MS	Toluene	4	4.21	105.2	(76.00 - 120.00)	
MSD	Toluene	4	4.37	109.2	(76.00 - 120.00)	3.7
LCS1	Trichloroethylene (TCE)	4	3.50	87.5	(78.00 - 121.00)	
MBLK	Trichloroethylene (TCE)	ND				
MS	Trichloroethylene (TCE)	4	4.43	110.8	(78.00 - 121.00)	
MSD	Trichloroethylene (TCE)	4	4.45	111.2	(78.00 - 121.00)	0.45
MBLK	Trichlorofluoromethane	ND				
MBLK	Vinyl Acetate	ND				
MBLK	Vinyl Chloride (VC)	ND				
MBLK	cis-1,2-Dichloroethene	ND				
MBLK	cis-1,3-Dichloropropene	ND				
MBLK	m,p-Xylenes	ND				
MBLK	m-Dichlorobenzene (1,3-DCB)	ND				
MBLK	o-Dichlorobenzene (1,2-DCB)	ND				
MBLK	o-Xylene	ND				
MBLK	p-Dichlorobenzene (1,4-DCB)	ND				
MBLK	trans-1,2-Dichloroethene	ND				
MBLK	trans-1,3-Dichloropropene	ND				

Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining.
Criteria for MS and DUP are not applicable for ICR monitoring.

MONTGOMERY WATSON LABORATORIES
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Guam Water Authority
(continued)

QC Batch #74720 Volatile Organics HSL

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
MBLK	1,1,1-Trichloroethane	ND				
MBLK	1,1,2,2-Tetrachloroethane	ND				
MBLK	1,1,2-Trichloroethane (1,1,2-T	ND				
MBLK	1,1-Dichloroethane	ND				
LCS1	1,1-Dichloroethylene (1,1DCE)	4	3.74	93.5	(57.00 - 154.00)	
MBLK	1,1-Dichloroethylene (1,1DCE)	ND				
MS	1,1-Dichloroethylene (1,1DCE)	4	3.85	96.2	(57.00 - 154.00)	
MSD	1,1-Dichloroethylene (1,1DCE)	4	3.73	93.2	(57.00 - 154.00)	3.2
MBLK	1,2-Dichloroethane	ND				
MBLK	1,2-Dichloropropane	ND				
MBLK	2-Butanone (MEK)	ND				
MBLK	2-Chloroethylvinylether	ND				
MBLK	2-Hexanone	ND				
MBLK	4-Methyl-2-Pentanone (MIBK)	ND				
MBLK	Acetone	ND				
MBLK	Acrolein	ND				
MBLK	Acrylonitrile	ND				
LCS1	Benzene	4	4.14	103.5	(75.00 - 124.00)	
MBLK	Benzene	ND				
MS	Benzene	4	4.21	105.2	(75.00 - 124.00)	
MSD	Benzene	4	4.45	111.2	(75.00 - 124.00)	5.5
MBLK	Bromoform	ND				
MBLK	Carbon Tetrachloride	ND				
MBLK	Carbon disulfide	ND				
LCS1	Chlorobenzene	4	4.10	102.5	(74.00 - 121.00)	
MBLK	Chlorobenzene	ND				
MS	Chlorobenzene	4	4.24	106.0	(74.00 - 121.00)	
MSD	Chlorobenzene	4	4.49	112.2	(74.00 - 121.00)	5.7
MBLK	Chloroethane	ND				
MBLK	Chloroform (Trichloromethane)	ND				
MBLK	Dibromochloromethane	ND				
MBLK	Dichlorobromomethane	ND				

Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining.
Criteria for MS and DUP are not applicable for ICR monitoring.

MONTGOMERY WATSON LABORATORIES

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Laboratory
QC Report
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Guam Water Authority
(continued)

MBLK	Dichlorodifluoromethane	ND				
MBLK	Ethyl benzene	ND				
MBLK	Methyl Bromide	ND				
MBLK	Methyl Chloride	ND				
MBLK	Methylene Chloride	ND				
MBLK	Styrene	ND				
MBLK	Tetrachloroethylene (PCE)	ND				
MBLK	Tetrahydrofuran	ND				
LCS1	Toluene	4	4.14	103.5	(76.00 - 120.00)	
MBLK	Toluene	ND				
MS	Toluene	4	4.21	105.2	(76.00 - 120.00)	
MSD	Toluene	4	4.37	109.2	(76.00 - 120.00)	3.7
LCS1	Trichloroethylene (TCE)	4	4.08	102.0	(78.00 - 121.00)	
MBLK	Trichloroethylene (TCE)	ND				
MS	Trichloroethylene (TCE)	4	4.43	110.8	(78.00 - 121.00)	
MSD	Trichloroethylene (TCE)	4	4.45	111.2	(78.00 - 121.00)	0.45
MBLK	Trichlorofluoromethane	ND				
MBLK	Vinyl Acetate	ND				
MBLK	Vinyl Chloride (VC)	ND				
MBLK	cis-1,2-Dichloroethene	ND				
MBLK	cis-1,3-Dichloropropene	ND				
MBLK	m,p-Xylenes	ND				
MBLK	m-Dichlorobenzene (1,3-DCB)	ND				
MBLK	o-Dichlorobenzene (1,2-DCB)	ND				
MBLK	o-Xylene	ND				
MBLK	p-Dichlorobenzene (1,4-DCB)	ND				
MBLK	trans-1,2-Dichloroethene	ND				
MBLK	trans-1,3-Dichloropropene	ND				

QC Batch #74822 Cyanide by manual distillation

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
LCS1	Cyanide by manual distillation	0.05	0.050	100.0	(80.00 - 120.00)	
LCS2	Cyanide by manual distillation	0.05	0.050	100.0	(80.00 - 120.00)	0.00
MBLK	Cyanide by manual distillation	ND				

Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining.
Criteria for MS and DUP are not applicable for ICR monitoring.

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Laboratory
QC Report
#41239

Guam Water Authority
(continued)

QC Batch #74999 Pesticides/PCBs

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
LCS1	Aldrin	0.10	0.100	100.0	(56.00 - 116.00)	
LCS2	Aldrin	0.10	0.095	95.0	(56.00 - 116.00)	5.1
MBLK	Aldrin	ND				
MS	Aldrin	0.10	0.111	111.0	(56.00 - 116.00)	
MBLK	Alpha-BHC	ND				
MBLK	Beta-BHC	ND				
MBLK	Chlordane	ND				
MBLK	Delta-BHC	ND				
LCS1	Dieldrin	0.10	0.105	105.0	(57.00 - 117.00)	
LCS2	Dieldrin	0.10	0.101	101.0	(57.00 - 117.00)	3.9
MBLK	Dieldrin	ND				
MS	Dieldrin	0.10	0.126	126.0	(57.00 - 117.00)	
MBLK	Endosulfan I (alpha)	ND				
MBLK	Endosulfan II (beta)	ND				
MBLK	Endosulfan sulfate	ND				
LCS1	Endrin	0.10	0.096	96.0	(58.00 - 118.00)	
LCS2	Endrin	0.10	0.100	100.0	(58.00 - 118.00)	4.1
MBLK	Endrin	ND				
MS	Endrin	0.10	0.130	130.0	(58.00 - 118.00)	
MBLK	Endrin Aldehyde	ND				
LCS1	Gamma-BHC	0.10	0.106	106.0	(59.00 - 119.00)	
LCS2	Gamma-BHC	0.10	0.101	101.0	(59.00 - 119.00)	4.8
MBLK	Gamma-BHC	ND				
MS	Gamma-BHC	0.10	0.118	118.0	(59.00 - 119.00)	
LCS1	Heptachlor	0.10	0.101	101.0	(63.00 - 133.00)	
LCS2	Heptachlor	0.10	0.096	96.0	(63.00 - 133.00)	5.1
MBLK	Heptachlor	ND				
MS	Heptachlor	0.10	0.113	113.0	(63.00 - 133.00)	
MBLK	Heptachlor Epoxide	ND				
MBLK	Methoxychlor	ND				
MBLK	PCB 1016 Aroclor	ND				
MBLK	PCB 1221 Aroclor	ND				

Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining.
Criteria for MS and DUP are not applicable for ICR monitoring.

MONTGOMERY WATSON LABORATORIES

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Guam Water Authority
(continued)

MBLK	PCB 1232 Aroclor	ND				
MBLK	PCB 1242 Aroclor	ND				
MBLK	PCB 1248 Aroclor	ND				
MBLK	PCB 1254 Aroclor	ND				
MBLK	PCB 1260 Aroclor	ND				
MBLK	Toxaphene	ND				
MBLK	p,p' DDD	ND				
MBLK	p,p' DDE	ND				
LCS1	p,p' DDT	0.10	0.105	105.0	(62.00 - 162.00)	
LCS2	p,p' DDT	0.10	0.101	101.0	(62.00 - 162.00)	3.9
MBLK	p,p' DDT	ND				
MS	p,p' DDT	0.10	0.125	125.0	(21.00 - 150.00)	

QC Batch #75332 2,3,7,8-TCDD

QC	Analyte	Spiked	Recovered	Yield (%)	Limits (%)	RPD (%)
LCS1	2,3,7,8-TCDD	10	9.12	91.2	(60.00 - 140.00)	
MBLK	2,3,7,8-TCDD	ND				

Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining.
Criteria for MS and DUP are not applicable for ICR monitoring.

FY2000 DISCHARGE MONITORING REPORTS

PERMITTEE /ADDRESS (Include facility Name.. ..ation if Different)

NATIONAL POLLUTION DISCHARGE ELIMINATION S\. ..M (NPDES)
DISCHARGE MONITORING REPORT (DMR)

Form Approved.
OMB No. 2040-0004
Approval expires 9-30-85

NAME: Guam Waterworks Authority
ADDRESS: P.O. Box 3010
AGANA, GUAM 96932

FACILITY: Northern District Sewage Treatment Plant
LOCATION: Dededo, Guam

(2-16)	(17-19)
GU0020141	001
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	99	10	1	TO	99	10	31
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card only) (46-53) AVERAGE	QUANTITY OR LOADING (54-61) MAXIMUM	UNITS	(4 Card Only) (38-45) MINIMUM	QUANTITY OR CONCENTRATION (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	NO. EX. (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
FLOW	SAMPLE MEASUREMENT	5.3	7.3	mgd				mgd	22	31/31	HOURLY
	PERMIT REQUIREMENT		6.0								CONTINUOUS
INFLUENT BOD	SAMPLE MEASUREMENT	6529	11319	lbs/day	90	141	203	mg/l		3/31	COMPOSITE
	PERMIT REQUIREMENT										COMPOSITE
EFFLUENT BOD	SAMPLE MEASUREMENT	4934	8493	lbs/day	33	97	152	mg/l	2	3/31	COMPOSITE
	PERMIT REQUIREMENT	4258	8512			85	170			1/7	COMPOSITE
INFLUENT SUSPENDED SOLIDS	SAMPLE MEASUREMENT	7260	10090	lbs/day	70	138	181	mg/l		3/31	COMPOSITE
	PERMIT REQUIREMENT										COMPOSITE
EFFLUENT SUSPENDED SOLIDS	SAMPLE MEASUREMENT	2407	3353	lbs/day	50	67	92	mg/l	1	3/31	COMPOSITE
	PERMIT REQUIREMENT	2504	5008			50	100			1/7	COMPOSITE
EFFLUENT SETTLEABLE SOLIDS	SAMPLE MEASUREMENT				0.2	0.2	0.3	ml/l	0	3/31	DISCRETE
	PERMIT REQUIREMENT					1.0	2.0			1/7	DISCRETE
EFFLUENT OIL & GREASE	SAMPLE MEASUREMENT	1341	1341	lbs/day	24	24	24	mg/l		1/31	DISCRETE
	PERMIT REQUIREMENT									1/30	DISCRETE
EFFLUENT pH	SAMPLE MEASUREMENT				7.1	7.1	7.2		0	3/31	DISCRETE
	PERMIT REQUIREMENT				7.0		9.0			1/7	DISCRETE

NAME/TITLE PRINCIPLE EXECUTIVE OFFICER		TELEPHONE		DATE		
HERBERT J. JOHNSTON Jr. GENERAL MANAGER, GWA ACTING	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION I BELIEVE THE SUBMITTED INFORMATION IS TRUE ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT SEE. 18 USC $1001 AND 33 USC $1319 (Penalties under these statutes may include fines up to $10,000 and or a maximum imprisonment of between 6 months and 5 years)	671	479-7844	J/A		
TYPED OR PRINTED	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)
Maximum daily flow was exceeded on 22 days this month
Susupended solids monthly average concentration was exceeded by 17 mg/l
BOD monthly average concentration was exceeded by 12 mg/l and average loading by 678 lbs/day.

1/21/00

Explanation of violations attached at end of DMR's

NORTHE' STRICT TREATMENT PLANT WASTEWATER RESULTS
FOR THE MONTH OF OCTOBER 1999

INFLUENT

DATE	pH	SUSP. SOLIDS mg/l	BOD mg/l	SETTL. SOLID ml/l	SUSP. SOLIDS lbs/day	BOD lbs/day	FLOW mgd
1							6.30
2							6.70
3							6.70
4							6.80
5	7.18	181	203	5.0	10090	11319	6.70
6							6.60
7							6.70
8							6.50
9							6.80
10							7.30
11							1.00
12	7.39	164	90	8.0	7796	1051	1.40
13							1.30
14							1.30
15							1.00
16							1.40
17							1.40
18							1.30
19	NO ANALYSIS AS SAMPLES WARM						6.70
20							7.00
21							6.80
22							6.80
23							5.60
24							6.40
25							6.60
26	7.43	70	129	5.0	3895	7217	6.70
27							6.60
28							6.80
29							6.60
30							6.50
31							6.70
AVG	7.33	138	141	6.0	7260	6529	5.26
MIN	7.18	70	90	5.0	3895	1051	1.00
MAX	7.43	181	203	8.0	10090	11319	7.30

EFFLUENT

DATE	pH	SUSP. SOLIDS mg/l	BOD mg/l	SETTL. SOLID ml/l	SUSP. SOLIDS lbs/day	BOD lbs/day	SUSP. SOLIDS %removal	BOD %removal	OIL & GREASE mg/l	OIL & GREASE lbs/day
1										
2										
3										
4										
5	7.15	60	152	0.3	3353	8493	67%	25%	24	1341
6										
7										
8										
9										
10										
11										
12	7.06	92	33	0.2	1074	385	44%	63%		
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26	7.13	50	106	0.2	2794	5923	28%	18%		
27										
28										
29										
30										
31										
AVG	7.11	67	97	0.2	2407	4934	46%	35%	24	1341
MIN	7.06	50	33	0.2	1074	385	28%	18%	24	1341
MAX	7.15	92	152	0.3	3353	8493	67%	63%	24	1341

PERMIT REQUIRMENTS	MAX	monthly avg	7	50	85	1	2504	4256
	6	daily max	9	100	170	2	5008	8512

VIOLATIONS
suspended solids monthly average concentration
BOD monthly average concentration and loading.
flow

*Please note that samples were collected but not analyzed for October 20, 1999 as samples were warm when laboratory received them..

** The Southern Link Pump Station was down from the 11th through the 18th.

PERMITTEE NAME/ADDRESS (Include facility Name/Location if Different)

NAME: Guam Waterworks Authority
ADDRESS: P.O. Box 3010
AGANA, GUAM 96932

FACILITY: Northern District Sewage Treatment Plant
LOCATION: Dededo, Guam

NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

Form Approved.
OMB No. 2040-0004
Approval expires 9-30-86

(2-16) PERMIT NUMBER	(17-19) DISCHARGE NUMBER
GU0020141	001

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	99	11	1	TO	99	11	30
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card only) (46-53) AVERAGE	QUANTITY OR LOADING (54-61) MAXIMUM	UNITS	(4 Card Only) (38-45) MINIMUM	QUANTITY OR CONCENTRATION (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	NO. EX. (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
FLOW	SAMPLE MEASUREMENT	2.1	7.1	mgd				mgd	5	30/30	HOURLY
	PERMIT REQUIREMENT		6.0								CONTINUOUS
INFLUENT BOD	SAMPLE MEASUREMENT	4377	9549	lbs/day	124	149	164	mg/l		5/30	COMPOSITE
	PERMIT REQUIREMENT										COMPOSITE
EFFLUENT BOD	SAMPLE MEASUREMENT	1965	6305	lbs/day	20	53	108	mg/l	0	5/30	COMPOSITE
	PERMIT REQUIREMENT	4256	8512			85	170			1/7	COMPOSITE
INFLUENT SUSPENDED SOLIDS	SAMPLE MEASUREMENT	5045	11798	lbs/day	122	160	208	mg/l		5/30	COMPOSITE
	PERMIT REQUIREMENT										COMPOSITE
EFFLUENT SUSPENDED SOLIDS	SAMPLE MEASUREMENT	2280	7373	lbs/day	12	49	130	mg/l	2	5/30	COMPOSITE
	PERMIT REQUIREMENT	2504	5008			50	100			1/7	COMPOSITE
EFFLUENT SETTLEABLE SOLIDS	SAMPLE MEASUREMENT				0	0.5	1.8	ml/l	0	5/30	DISCRETE
	PERMIT REQUIREMENT					1.0	2.0			1/7	DISCRETE
EFFLUENT OIL & GREASE	SAMPLE MEASUREMENT	35	35	lbs/day	5.3	5.3	5.3	mg/l			DISCRETE
	PERMIT REQUIREMENT									1/30	DISCRETE
EFFLUENT pH	SAMPLE MEASUREMENT				6.9	7.3	7.8		1	5/30	DISCRETE
	PERMIT REQUIREMENT				7.0		9.0			1/7	DISCRETE

NAME/TITLE PRINCIPLE EXECUTIVE OFFICER		TELEPHONE		DATE		
HERBERT J. JOHNSTON Jr. GENERAL MANAGER, GWA ACTING	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION I BELIEVE THE SUBMITTED INFORMATION IS TRUE ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT SEE. 18 USC $1001 AND 33 USC $1319 (Penalties under these statutes may include fines up to $10,000 and or a maximum imprisonment of between 6 months and 5 years)	671	479-7844	JAN 2		
TYPED OR PRINTED	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)
overflow at force main Southern Link from November 3rd to 27th. Flow greater than 6.0 mgd on all other dates
pH was 6.87 on the 2nd
Suspended solids daily maximum concentration was exceeded by 30 mg/l and loading by 2365 lbs/day on the 2nd.

1/21/00

Explanation of violations attached at end of DMR's

NORTHER STRICT TREATMENT PLANT WASTEWATER RESULTS
FOR THE MONTH OF NOVEMBER 1999

INFLUENT

DATE	pH	SUSP. SOLIDS mg/l	BOD mg/l	SETTL. SOLID ml/l	SUSP. SOLIDS lbs/day	BOD lbs/day	FLOW mgd
1							6.80
2	7.02	208	155	9.5	11798	8785	6.80
3							0.80
4							0.90
5							1.00
6							1.00
7							1.00
8							0.90
9	7.49	156	162	9.0	1041	1081	0.80
10							0.90
11							1.20
12							1.30
13							1.30
14							1.10
15							1.20
16	7.35	122	142	9.0	1323	1540	1.30
17							1.20
18							1.30
19							0.80
20							1.10
21							0.90
22							0.00
23	7.30	144	124	7.0	1081	931	0.90
24							1.00
25							0.90
26							1.00
27							4.90
28							6.40
29							7.10
30	7.46	171	164	6.0	9981	9549	7.00
AVG	7.32	160	149	8.1	5045	4377	2.09
MIN	7.02	122	124	6.0	1041	931	0.00
MAX	7.49	208	164	9.5	11798	9549	7.10

EFFLUENT

DATE	pH	SUSP. SOLIDS mg/l	BOD mg/l	SETTL. SOLID ml/l	SUSP. SOLIDS lbs/day	BOD lbs/day	SUSP. SOLIDS %removal	BOD %removal	OIL & GREASE mg/l	OIL & GREASE lbs/day
1										
2	6.87	130	47	1.8	7373	2665	38%	70%		
3										
4										
5										
6										
7										
8										
9	7.2	28	43	0.0	187	287	82%	73%	5.3	35
10										
11										
12										
13										
14										
15										
16	7.43	12	20	0.1	130	217	90%	86%		
17										
18										
19										
20										
21										
22										
23	7.83	12	47	0.3	90	353	92%	62%		
24										
25										
26										
27										
28										
29										
30	7.31	62	108	0.4	3620	6305	64%	34%		
AVG	7.33	49	53	0.5	2280	1965	73%	65%	5.3	35
MIN	6.87	12	20	0.0	90	217	38%	34%	5.3	35
MAX	7.83	130	108	1.8	7373	6305	92%	86%	5.3	35

PERMIT REQUIRMENTS								
MAX	monthly avg	7	50	85	1	2504	4256
6	daily max	9	100	170	2	5008	8512

VIOLATIONS
suspended solids
pH

* 9 th Pump Station sample grab only due to force main break. Used for BOD and Suspended solids.
* 16 th Pump Station sample grab only due to force main break. Used for BOD and Suspended solids.
* 23 th Pump Station sample not taken due to force main break.

PERMITTEE NAME/ADDRESS (Include facility Name/Location if Different)

NAME: Guam Waterworks Authority
ADDRESS: P.O. Box 3010
AGANA, GUAM 96932

FACILITY: Northern District Sewage Treatment Plant
LOCATION: Dededo, Guam

NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

Form Approved.
OMB No. 2040-0004
Approval expires 9-30-86

(2-16) PERMIT NUMBER	(17-19) DISCHARGE NUMBER
GU0020141	001

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	99	12	1	TO	99	12	31
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card only) (46-53) AVERAGE	QUANTITY OR LOADING (54-61) MAXIMUM	UNITS	(4 Card Only) (38-45) MINIMUM	QUANTITY OR CONCENTRATION (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	NO. EX. (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
FLOW	SAMPLE MEASUREMENT	4.3	7.2	mgd				mgd	17	31/31	HOURLY
	PERMIT REQUIREMENT		6.0								CONTINUOUS
INFLUENT BOD	SAMPLE MEASUREMENT	4351	9161	lbs/day	157	163	175	mg/l		3/31	COMPOSITE
	PERMIT REQUIREMENT										COMPOSITE
EFFLUENT BOD	SAMPLE MEASUREMENT	3206	8290	lbs/day	55	85	142	mg/l	0	3/31	COMPOSITE
	PERMIT REQUIREMENT	4256	8512			85	170			1/7	COMPOSITE
INFLUENT SUSPENDED SOLIDS	SAMPLE MEASUREMENT	7574	18023	lbs/day	126	187	309	mg/l		4/31	COMPOSITE
	PERMIT REQUIREMENT										COMPOSITE
EFFLUENT SUSPENDED SOLIDS	SAMPLE MEASUREMENT	3428	6889	lbs/day	34	74	118	mg/l	2	4/31	COMPOSITE
	PERMIT REQUIREMENT	2504	5008			50	100			1/7	COMPOSITE
EFFLUENT SETTLEABLE SOLIDS	SAMPLE MEASUREMENT				0	0.2	0.4	ml/l	0	4/31	DISCRETE
	PERMIT REQUIREMENT					1.0	2.0			1/7	DISCRETE
EFFLUENT OIL & GREASE	SAMPLE MEASUREMENT	130	130	lbs/day	13	13	13	mg/l		1/31	DISCRETE
	PERMIT REQUIREMENT									1/30	DISCRETE
EFFLUENT pH	SAMPLE MEASUREMENT				7.0	7.2	7.5		0	4/31	DISCRETE
	PERMIT REQUIREMENT				7.0		9.0			1/7	DISCRETE

NAME/TITLE PRINCIPLE EXECUTIVE OFFICER		TELEPHONE		DATE		
HERBERT J. JOHNSTON Jr. GENERAL MANAGER, GWA ACTING	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION I BELIEVE THE SUBMITTED INFORMATION IS TRUE ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT SEE. 18 USC $1001 AND 33 USC $1319 (Penalties under these statutes may include fines up to $10,000 and or a maximum imprisonment of between 6 months and 5 years)	671	479-7844	JAN	8	[illegible]
TYPED OR PRINTED	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

Flow was greater than 6.0 mgd 16 days this month

Suspended solids monthly average concentration was exceeded by 24 mg/l. Daily maximum concentration was exceeded by 18 mg/l on the 21st and maximum loading by 1881 lbs/day on the 21st and 947 lbs/day on the 28th.

1/21/90

Explanation of violations attached at end of DMR's

NORTHERN DI' CT TREATMENT PLANT WASTEWATER RESULTS
FOR THE MON. F DECEMBER 1999

INFLUENT

DATE	pH	SUSP. SOLIDS mg/l	BOD mg/l	SETTL. SOLID ml/l	SUSP. SOLIDS lbs/day	BOD lbs/day	FLOW mgd
1							6.80
2							7.00
3							6.70
4							1.00
5							1.20
6	7.41	160	175	9.5	2002	2189	1.50
7							1.40
8							1.30
9							1.30
10							1.60
11							1.50
12							1.30
13							1.20
14	7.53	126	157	5.0	1366	1702	1.30
15							1.40
16							1.80
17							1.20
18							1.20
19							6.90
20							6.90
21	7.44	153	157	9.0	8907	9161	7.00
22							7.00
23							7.10
24							7.20
25							7.00
26							7.10
27							6.90
28	7.25	309		8.0	18023		7.00
29							7.00
30							7.20
31							7.10
AVG	7.41	187	163	7.9	7574	4351	4.26
MIN	7.25	126	157	5.0	1366	1702	1.00
MAX	7.53	309	175	9.5	18023	9161	7.20

EFFLUENT

DATE	pH	SUSP. SOLIDS mg/l	BOD mg/l	SETTL. SOLID ml/l	SUSP. SOLIDS lbs/day	BOD lbs/day	SUSP. SOLIDS %removal	BOD %removal	OIL & GREASE mg/l	OIL & GREASE lbs/day
1										
2										
3										
4										
5										
6	7.26	40	55	0.0	500	688	75%	69%		
7										
8										
9										
10										
11										
12										
13									13	130
14	7.47	34	59	0.0	369	640	73%	62%		
15										
16										
17										
18										
19										
20										
21	7.05	118	142	0.2	6889	8290	23%	10%		
22										
23										
24										
25										
26										
27										
28	7.02	102		0.4	5955		67%			
29										
30										
31										
AVG	7.20	74	85	0.2	3428	3206	59%	47%	13	130
MIN	7.02	34	55	0.0	369	640	23%	10%	13	130
MAX	7.47	118	142	0.4	6889	8290	75%	69%	13	130

PERMIT REQUIRMENTS								
	MAX	monthly avg	7	50	85	1	2504	4256
	6	daily max	9	100	170	2	5008	8512

VIOLATIONS

suspended solids

* 6 th No Pump Station sample
* 14 th No Pump Station sample
* 28 th samples not kept cold, no BOD analyzed

PERMITTEE NAME/ADDRESS (Include facility Name/Location if Different)

NAME: Guam Waterworks Authority
ADDRESS: P.O. Box 3010
AGANA, GUAM 96932

FACILITY: Northern District Sewage Treatment Plant
LOCATION: Dededo, Guam

NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

Form Approved.
OMB No. 2040-0004
Approval expires 9-30-85

(2-16)	(17-19)
GU0020141	001
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	2000	1	1	TO	2000	1	31
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card only) (46-53) AVERAGE	QUANTITY OR LOADING (54-61) MAXIMUM	UNITS	(4 Card Only) (38-45) MINIMUM	QUANTITY OR CONCENTRATION (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	NO. EX. (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
FLOW	SAMPLE MEASUREMENT	6.6	7.6	mgd				mgd	31	31/31	HOURLY
	PERMIT REQUIREMENT		6.0								CONTINUOUS
INFLUENT BOD	SAMPLE MEASUREMENT	10790	11970	lbs/day	169	187	221	mg/l		4/31	COMPOSITE
	PERMIT REQUIREMENT										COMPOSITE
EFFLUENT BOD	SAMPLE MEASUREMENT	10473	13914	lbs/day	110	184	249	mg/l	7	4/31	COMPOSITE
	PERMIT REQUIREMENT	4256	8512			85	170			1/7	COMPOSITE
INFLUENT SUSPENDED SOLIDS	SAMPLE MEASUREMENT	11689	14705	lbs/day	151	205	271	mg/l		4/31	COMPOSITE
	PERMIT REQUIREMENT										COMPOSITE
EFFLUENT SUSPENDED SOLIDS	SAMPLE MEASUREMENT	12624	18775	lbs/day	114	224	336	mg/l	10	4/31	COMPOSITE
	PERMIT REQUIREMENT	2504	5008			50	100			1/7	COMPOSITE
EFFLUENT SETTLEABLE SOLIDS	SAMPLE MEASUREMENT				0.3	2.2	6.0	ml/l	2	4/31	DISCRETE
	PERMIT REQUIREMENT					1.0	2.0			1/7	DISCRETE
EFFLUENT OIL & GREASE	SAMPLE MEASUREMENT	907	907	lbs/day	16	16	16	mg/l		1/31	DISCRETE
	PERMIT REQUIREMENT									1/30	DISCRETE
EFFLUENT pH	SAMPLE MEASUREMENT				7.0	7.2	7.4		0	4/31	DISCRETE
	PERMIT REQUIREMENT				7.0		9.0			1/7	DISCRETE

NAME/TITLE PRINCIPLE EXECUTIVE OFFICER		TELEPHONE		DATE		
HERBERT J. JOHNSTON Jr. GENERAL MANAGER, GWA ACTING	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION I BELIEVE THE SUBMITTED INFORMATION IS TRUE ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT SEE. 18 USC $1001 AND 33 USC $1319 (Penalties under these statutes may include fines up to $10,000 and or a maximum imprisonment of between 6 months and 5 years)	671	479-7844	MAY	0 5	2000
TYPED OR PRINTED	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

The daily flow was above the allowable maximum of 6 mgd on all dates this month.

BOD monthly average concentration was exceeded by 99 mg/l, and the monthly average loading by 6217 lbs/day. The daily maximum concentration was exceeded on 2 of the 4 sample dates, and daily maximum loading on 3 of the 4 samlpe dates.

Suspended solids monthly average concentration was exceeded by 174 mg/l, and the monthly average loading by 10120 lbs/day. The daily maximum concentration and loading was exceeded for all 4 sample dates,

Settleable solids monthly average was exceeded by 1.2 ml/L, and the maximum daily allowable was exceeded on 1 of 4 sample dates.

Explanation of violations attached at end of DMR's

5/5/00

NORTHERN DISTRICT TREATMENT PLANT WASTEWATER RESULTS
FOR THE MONTH OF JANUARY 2000

INFLUENT

DATE	pH	SUSP. SOLIDS mg/l	BOD mg/l	SETTL. SOLID ml/l	SUSP. SOLIDS lbs/day	BOD lbs/day	FLOW mgd
1							6.50
2							6.50
3							6.60
4							6.50
5	7.54	151	185	7.5	9548	11721	7.60
6							6.30
7							6.80
8							6.60
9							6.60
10							6.20
11							6.30
12	7.36	271	221	8.4	14705	11970	6.50
13							6.50
14							6.40
15							6.60
16							6.80
17							6.70
18							6.60
19	7.31	201	175	9.0	11216	9758	6.70
20							6.50
21							6.60
22							6.90
23							6.70
24							6.50
25							6.80
26	7.73	196	169	4.0	11286	9712	6.90
27							6.70
28							6.30
29							6.80
30							6.90
31							6.80
AVG	7.49	205	187	7.2	11689	10790	6.63
MIN	7.31	151	169	4.0	9548	9712	6.20
MAX	7.73	271	221	9.0	14705	11970	7.60

EFFLUENT

DATE	pH	SUSP. SOLIDS mg/l	BOD mg/l	SETTL. SOLID ml/l	SUSP. SOLIDS lbs/day	BOD lbs/day	SUSP. SOLIDS %removal	BOD %remova	OIL & GREASE mg/l	OIL & GREASE lbs/day
1										
2										
3										
4										
5	7.14	114	110	0.3	7226	6972	24%	41%		
6										
7									16	907
8										
9										
10										
11										
12	7.01	316	207	0.7	17130	11221	-16%	6%		
13										
14										
15										
16										
17										
18										
19	7.31	336	249	6.0	18775	13914	-67%	-43%		
20										
21										
22										
23										
24										
25										
26	7.37	128	170	1.9	7366	9783	35%	-1%		
27										
28										
29										
30										
31										
AVG	7.21	224	184	2.2	12624	10473	-6%	1%	16	907
MIN	7.01	114	110	0.3	7226	6972	-67%	-43%	16	907
MAX	7.37	336	249	6.0	18775	13914	35%	41%	16	907

PERMIT REQUIRMENTS	MAX	monthly avg	7	50	85	1	2504	4256
	6	daily max	9	100	170	2	5008	8512

VIOLATIONS

BOD FLOW

SUSPENDED SOLIDS

SETTLEABLE SOLIDS

PERM EE NAME/ADDRESS (Include facility Name/Location if Different)

NAME: Guam Waterworks Authority
ADDRESS: P.O. Box 3010
AGANA, GUAM 96932

FACILITY: Northern District Sewage Treatment Plant
LOCATION: Dededo, Guam

NATIONAL POLLUTION DISCHARGE ELIMINATI... SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

Form Approved.
OMB No. 2040-0004
Approval expires 9-30-85

(2-16) GU0020141 PERMIT NUMBER

(17-19) 001 DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	2000	2	1	TO	2000	2	29
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card only) (46-53) AVERAGE	QUANTITY OR LOADING (54-61) MAXIMUM	UNITS	(4 Card Only) (38-45) MINIMUM	QUANTITY OR CONCENTRATION (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	NO. EX. (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
FLOW	SAMPLE MEASUREMENT	7.1	9.4	mgd				mgd	29	29/29	HOURLY
	PERMIT REQUIREMENT		6.0								CONTINUOUS
INFLUENT BOD	SAMPLE MEASUREMENT	7812	8194	lbs/day	112	129	144	mg/l		3/29	COMPOSITE
	PERMIT REQUIREMENT										COMPOSITE
EFFLUENT BOD	SAMPLE MEASUREMENT	9001	9868	lbs/day	128	149	174	mg/l	5	3/29	COMPOSITE
	PERMIT REQUIREMENT	4256	8512			85	170			1/7	COMPOSITE
INFLUENT SUSPENDED SOLIDS	SAMPLE MEASUREMENT	7093	9127	lbs/day	93	118	161	mg/l		3/29	COMPOSITE
	PERMIT REQUIREMENT										COMPOSITE
EFFLUENT SUSPENDED SOLIDS	SAMPLE MEASUREMENT	8397	12043	lbs/day	76	138	190	mg/l	6	3/29	COMPOSITE
	PERMIT REQUIREMENT	2504	5008			80	100			1/7	COMPOSITE
EFFLUENT SETTLEABLE SOLIDS	SAMPLE MEASUREMENT				1.1	2.0	3.0	ml/l	2	3/29	DISCRETE
	PERMIT REQUIREMENT					1.0	2.0			1/7	DISCRETE
EFFLUENT OIL & GREASE	SAMPLE MEASUREMENT	1531	1531	lbs/day	27	27	27	mg/l		1/29	DISCRETE
	PERMIT REQUIREMENT									1/30	DISCRETE
EFFLUENT pH	SAMPLE MEASUREMENT				7.2	7.2	7.3		0	4/29	DISCRETE
	PERMIT REQUIREMENT				7.0		9.0			1/7	DISCRETE

NAME/TITLE PRINCIPLE EXECUTIVE OFFICER

HERBERT J. JOHNSTON Jr.

GENERAL MANAGER, GWA
ACTING

TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION I BELIEVE THE SUBMITTED INFORMATION IS TRUE ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT SEE. 18 USC $1001 AND 33 USC $1319 (Penalties under these statutes may include fines up to $10,000 and or a maximum imprisonment of between 6 months and 5 years)

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE		DATE		
AREA CODE	NUMBER	YEAR	MO	DAY
671	479-7844	MAY 0 5	2000	

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

The daily flow was above the allowable maximum of 6 mgd on all dates this month.

BOD monthly average concentration was exceeded by 64 mg/l, and the monthly average loading by 4745 lbs/day. The daily maximum concentration was exceeded on 1 of the 3 sample dates, and daily maximum loading on 2 of the 3 sample dates.

Suspended solids monthly average concentration was exceeded by 88 mg/l, and the monthly average loading by 5893 lbs/day. The daily maximum concentration was exceeded all 2 of 3 sample dates, and daily maximum loading on 2 of the 3 sample dates.

Settleable solids monthly average was exceeded by 1.0 ml/L, and the maximum daily allowable was exceeded on 1 of 3 sample dates.

Explanation of violations attached at end of DMR's

5/5/00

NORTHERN DISTRICT TREATMENT PLANT WASTEWATER RESULTS
FOR THE MONTH OF FEBRUARY 2000

INFLUENT

DATE	pH	SUSP. SOLIDS mg/l	BOD mg/l	SETTLE. SOLID ml/l	SUSP. SOLIDS lbs/day	BOD lbs/day	FLOW mgd
1							6.80
2	7.54	161	144	23.0	9127	8176	6.80
3							7.00
4							6.70
5							6.60
6							6.80
7							6.70
8							7.30
9	NO SAMPLES DELIVERED TO LAB						6.30
10							7.50
11							7.70
12							9.40
13							8.40
14							8.40
15							7.90
16	7.47	100	112	6.0	6343	7067	7.60
17							7.30
18							6.80
19							6.80
20							7.20
21							7.50
22							8.00
23	7.50	93	131	5.0	5810	8194	7.50
24							7.40
25							7.70
26							7.80
27							7.50
28							7.40
29							0.00
AVG	7.50	118	129	11.3	7093	7812	7.13
MIN	7.47	93	112	5.0	5810	7067	0.00
MAX	7.54	161	144	23.0	9127	8194	9.40

EFFLUENT

DATE	pH	SUSP. SOLIDS mg/l	BOD mg/l	SETTLE. SOLID ml/l	SUSP. SOLIDS lbs/day	BOD lbs/day	SUSP. SOLIDS %removal	BOD %remova	OIL & GREASE mg/l	OIL & GREASE lbs/day
1										
2	7.23	148	174	1.1	8393	9868	8%	-21%	27	1531
3										
4										
5										
6										
7										
8										
9	NO SAMPLES DELIVERED TO LAB									
10										
11										
12										
13										
14										
15										
16	7.27	190	144	3.0	12043	9127	-90%	-29%		
17										
18										
19										
20										
21										
22										
23	7.23	76	128	2.0	4754	8006	18%	2%		
24										
25										
26										
27										
28										
29										
AVG	7.24	138	149	2.0	8397	9001	-21%	-16%	27	1531
MIN	7.23	76	128	1.1	4754	8006	-90%	-29%	27	1531
MAX	7.27	190	174	3.0	12043	9868	18%	2%	27	1531

PERMIT REQUIREMENTS								
	MAX	monthly avg	7	50	85	1	2504	4256
	6	daily max	9	100	170	2	5008	8512

VIOLATIONS
BOD
SUSPENDED SOLIDS
SETTLEABLE SOLIDS

:TTEE NAME/ADDRESS (Include
fac...y Name/Location if Different)

NAME: Guam Waterworks Authority
ADDRESS: P.O. Box 3010
AGANA, GUAM 96932

FACILITY: Northern District Sewage Treatment Plant
LOCATION: Dededo, Guam

NATIONAL POLLUTION DISCHARGE ELIMINAT. :STEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

Form Approved.
OMB No. 2040-0004
Approval expires 9-30-85

(2-16)	(17-19)
GU0020141	001
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	2000	3	1	TO	2000	3	31
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card only) (46-53) AVERAGE	QUANTITY OR LOADING (54-61) MAXIMUM	UNITS	(4 Card Only) (38-45) MINIMUM	QUANTITY OR CONCENTRATION (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	NO. EX. (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
FLOW	SAMPLE MEASUREMENT	7.3	9.0	mgd				mgd	31	31/31	HOURLY
	PERMIT REQUIREMENT		6.0								CONTINUOUS
INFLUENT BOD	SAMPLE MEASUREMENT	8170	9158	lbs/day	123	135	144	mg/l		4/31	COMPOSITE
	PERMIT REQUIREMENT										COMPOSITE
EFFLUENT BOD	SAMPLE MEASUREMENT	8356	10146	lbs/day	109	137	154	mg/l	7	4/31	COMPOSITE
	PERMIT REQUIREMENT	4256	8512			85	170			1/7	COMPOSITE
INFLUENT SUSPENDED SOLIDS	SAMPLE MEASUREMENT	6392	7910	lbs/day	91	106	128	mg/l		4/31	COMPOSITE
	PERMIT REQUIREMENT										COMPOSITE
EFFLUENT SUSPENDED SOLIDS	SAMPLE MEASUREMENT	7934	9875	lbs/day	82	129	160	mg/l	10	4/31	COMPOSITE
	PERMIT REQUIREMENT	2504	5008			50	100			1/7	COMPOSITE
EFFLUENT SETTLEABLE SOLIDS	SAMPLE MEASUREMENT				0.2	1.5	4.0	ml/l	2	4/31	DISCRETE
	PERMIT REQUIREMENT					1.0	2.0			1/7	DISCRETE
EFFLUENT OIL & GREASE	SAMPLE MEASUREMENT	1351	1351	lbs/day	18	18	18	mg/l		1/31	DISCRETE
	PERMIT REQUIREMENT									1/30	DISCRETE
EFFLUENT pH	SAMPLE MEASUREMENT				7.3	7.4	7.5		0	4/31	DISCRETE
	PERMIT REQUIREMENT				7.0		9.0			1/7	DISCRETE

NAME/TITLE PRINCIPLE EXECUTIVE OFFICER		TELEPHONE		DATE		
HERBERT J. JOHNSTON Jr. GENERAL MANAGER, GWA ACTING	671	479-7844	MAY 05 2000			
TYPED OR PRINTED	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION I BELIEVE THE SUBMITTED INFORMATION IS TRUE ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT SEE. 18 USC $1001 AND 33 USC $1319 (Penalties under these statutes may include fines up to $10,000 and or a maximum imprisonment of between 6 months and 5 years)

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

The daily flow was above the allowable maximum of 6 mgd on all dates this month.

BOD monthly average concentration was exceeded by 99 mg/l, and the monthly average loading by 6217 lbs/day. The daily maximum concentration was exceeded on 2 of the 4 sample dates, and daily maximum loading on 3 of the 4 samlpe dates.

Suspended solids monthly average concentration was exceeded by 174 mg/l, and the monthly average loading by 10120 lbs/day. The daily maximum concentration and loading was exceeded for all 4 sample dates,

Settleable solids monthly average was exceeded by 1.2 ml/L, and the maximum daily allowable was exceeded on 1 of 4 sample dates.

Explanation of violations attached at end of DMR's

5/5/00

NORTHERN DISTRICT TREATMENT PLANT WASTEWATER RESULTS
FOR THE MONTH OF JANUARY 2000

INFLUENT

DATE	pH	SUSP. SOLIDS mg/l	BOD mg/l	SETTL. SOLID ml/l	SUSP. SOLIDS lbs/day	BOD lbs/day	FLOW mgd
1	7.42			6.0			9.00
2							8.00
3							8.30
4							6.60
5							8.90
6							8.90
7							8.30
8	7.46	98	139	10.0	6484	9158	7.90
9							8.30
10							7.60
11							6.70
12							6.60
13							7.40
14							8.20
15	7.56	128	144	5.0	7910	8871	7.40
16							7.40
17							6.80
18							6.60
19							6.60
20							6.90
21							6.80
22	7.7	91	123	5.0	4784	6479	6.30
23							6.90
24							7.00
25							6.80
26							6.80
27							6.80
28							6.60
29							6.30
30							6.80
31							6.70
AVG	7.54	106	135	6.5	6392	8170	7.30
MIN	7.42	91	123	5.0	4784	6479	6.30
MAX	7.7	128	144	10.0	7910	9158	9.00

EFFLUENT

DATE	pH	SUSP. SOLIDS mg/l	BOD mg/l	SETTL. SOLID ml/l	SUSP. SOLIDS lbs/day	BOD lbs/day	SUSP. SOLIDS %removal	BOD %remova	OIL & GREASE mg/l	OIL & GREASE lbs/day
1									18	1351
2										
3										
4										
5										
6										
7										
8	7.3	146	154	4.0	9619	10146	-48%	-11%		
9										
10										
11										
12										
13										
14										
15	7.39	160	149	0.2	9875	9196	-25%	-4%		
16										
17										
18										
19										
20										
21										
22	7.53	82	109	0.3	4308	5727	10%	12%		
23										
24										
25										
26										
27										
28										
29										
30										
31										
AVG	7.41	129	137	1.5	7934	8356	-21%	-1%	18	1351
MIN	7.30	82	109	0.2	4308	5727	-48%	-11%	18	1351
MAX	7.53	160	154	4.0	9875	10146	10%	12%	18	1351

PERMIT REQUIRMENTS								
	MAX	monthly avg	7	50	85	1	2504	4256
	6	daily max	9	100	170	2	5008	8512

VIOLATIONS

BOD FLOW

SUSPENDED SOLIDS

SETTLEABLE SOLIDS

PERM. NAME/ADDRESS (Include facility Name/Location if Different)

NAME: Guam Waterworks Authority
ADDRESS: P.O. Box 3010
AGANA, GUAM 96932

FACILITY: Northern District Sewage Treatment Plant
LOCATION: Dededo, Guam

NATIONAL POLLUTION DISCHARGE ELIMINATION SYS... (NPDES)
DISCHARGE MONITORING REPORT (DMR)

Form Approved.
OMB No. 2040-0004
Approval expires 9-30-85

(2-16)	(17-19)
GU0020141	001
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	2000	4	1	TO	2000	4	30
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card only) (46-53) AVERAGE	QUANTITY OR LOADING (54-61) MAXIMUM	UNITS	(4 Card Only) (38-45) MINIMUM	QUANTITY OR CONCENTRATION (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	NO. EX. (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
FLOW	SAMPLE MEASUREMENT	5.9	6.9	mgd				mgd	15	30/30	HOURLY
	PERMIT REQUIREMENT		6.0								CONTINUOUS
INFLUENT BOD	SAMPLE MEASUREMENT	9083	9830	lbs/day	145	168	187	mg/l		4/30	COMPOSITE
	PERMIT REQUIREMENT										COMPOSITE
EFFLUENT BOD	SAMPLE MEASUREMENT	7089	7884	lbs/day	118	131	137	mg/l	2	4/30	COMPOSITE
	PERMIT REQUIREMENT	4259	8512			85	170			1/7	COMPOSITE
INFLUENT SUSPENDED SOLIDS	SAMPLE MEASUREMENT	9369	11196	lbs/day	109	172	204	mg/l		4/30	COMPOSITE
	PERMIT REQUIREMENT										COMPOSITE
EFFLUENT SUSPENDED SOLIDS	SAMPLE MEASUREMENT	5259	5640	lbs/day	88	96	100	mg/l	4	4/30	COMPOSITE
	PERMIT REQUIREMENT	2504	5008			50	100			1/7	COMPOSITE
EFFLUENT SETTLEABLE SOLIDS	SAMPLE MEASUREMENT				0.2	0.3	0.3	ml/l	0	4/30	DISCRETE
	PERMIT REQUIREMENT					1.0	2.0			1/7	DISCRETE
EFFLUENT OIL & GREASE	SAMPLE MEASUREMENT	1285	1285	lbs/day	23.7	23.7	23.7	mg/l		1/30	DISCRETE
	PERMIT REQUIREMENT									1/30	DISCRETE
EFFLUENT pH	SAMPLE MEASUREMENT				6.6	7.3	7.8		0	4/30	DISCRETE
	PERMIT REQUIREMENT				7.0		9.0			1/7	DISCRETE

NAME/TITLE PRINCIPLE EXECUTIVE OFFICER			TELEPHONE		DATE		
HERBERT J. JOHNSTON Jr. GENERAL MANAGER, GWA ACTING	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION I BELIEVE THE SUBMITTED INFORMATION IS TRUE ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT SEE. 18 USC $1001 AND 33 USC $1319 (Penalties under these statutes may include fines up to $10,000 and or a maximum imprisonment of between 6 months and 5 years)	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	671	479-7844	YEAR	MO	DAY
TYPED OR PRINTED			AREA CODE	NUMBER			

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

The daily flow was above the allowable maximum of 6 mgd on 15 out of 30 days this month

BOD monthly average concentration was exceeded by 46 mg/l, and the monthly average loading by 2833 lbs/day.

Suspended solids monthly average concentration was exceeded by 46 mg/l, and the monthly average loading by 2755 lbs/day.

5/24/00

Explanation of violations attached at end of DMR's

NORTHERN DISTRICT TREATMENT PLANT WASTEWATER RESULTS
FOR THE MONTH OF APRIL 2000

INFLUENT

DATE	pH	SUSP. SOLIDS mg/l	BOD mg/l	SETTL. SOLID ml/l	SUSP. SOLIDS lbs/day	BOD lbs/day	FLOW mgd
1							5.80
2							5.80
3							5.70
4							5.90
5	7.90	197	N/A	5.5	11196	N/A	6.90
6							6.00
7							5.20
8							5.70
9							6.10
10							4.60
11							5.80
12	6.80	178	145	5.0	9481	7753	6.40
13							6.40
14							5.40
15							5.00
16							5.80
17							5.00
18							4.80
19	7.72	109	171	5.0	6265	9830	6.90
20							6.50
21							5.70
22							5.60
23							5.10
24							5.60
25							6.50
26	7.88	204	187	5.0	10535	9866	5.20
27							6.70
28							4.00
29							5.40
30							5.70
31							
AVG	7.58	172	168	5.1	9369	9083	5.95
MIN	6.80	109	145	5.0	6265	7753	4.00
MAX	7.90	204	187	5.5	11196	9830	6.90

EFFLUENT

DATE	pH	SUSP. SOLIDS mg/l	BOD mg/l	SETTL. SOLID ml/l	SUSP. SOLIDS lbs/day	BOD lbs/day	SUSP. SOLIDS %removal	BOD %removal	OIL & GREASE mg/l	OIL & GREASE lbs/day
1										
2										
3										
4										
5	7.45	88	N/A	0.3	4991		55%			
6										
7										
8										
9										
10										
11										
12	6.46	100	118	0.3	5339	6298	44%	19%		
13										
14										
15										
16										
17										
18										
19	7.32	98	137	0.2	5640	7884	10%	20%		
20										
21										
22										
23										
24										
25									23.7	1285
26	7.77	98	137	0.2	5097	7084	52%	27%		
27										
28										
29										
30										
31										
AVG	7.25	98	131	0.3	5259	7089	40%	22%	23.7	1285
MIN	6.46	88	118	0.2	4991	6298	10%	19%	23.7	1285
MAX	7.77	100	137	0.3	5640	7884	55%	27%	23.7	1285

PERMIT REQUIRMENTS								
	MAX	monthly avg	7	50	85	1	2504	4256
	6	daily max	9	100	170	2	5008	8512

VIOLATIONS
BOD FLOW
SUSPENDED SOLIDS

PERMITTEE NAME/ADDRESS (Include facility Name/Location if Different)

NAME: Guam Waterworks Authority
ADDRESS: P.O. Box 3010
AGANA, GUAM 96932

FACILITY: Northern District Sewage Treatment Plant
LOCATION: Dededo, Guam

NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

Form Approved.
OMB No. 2040-0004
Approval expires 9-30-85

(2-16) PERMIT NUMBER	(17-19) DISCHARGE NUMBER
GU0020141	001

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	2000	5	1	TO	2000	5	31
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card only) (46-53) AVERAGE	QUANTITY OR LOADING (54-61) MAXIMUM	UNITS	(4 Card Only) (38-45) MINIMUM	QUANTITY OR CONCENTRATION (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	NO. EX. (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
FLOW	SAMPLE MEASUREMENT	5.2	6.8	mgd				mgd	20	30/30	HOURLY
	PERMIT REQUIREMENT		6.0								CONTINUOUS
INFLUENT BOD	SAMPLE MEASUREMENT	8033	13266	lbs/day	137	175	241	mg/l		4/30	COMPOSITE
	PERMIT REQUIREMENT										COMPOSITE
EFFLUENT BOD	SAMPLE MEASUREMENT	6416	8477	lbs/day	141	152	166	mg/l	2	4/30	COMPOSITE
	PERMIT REQUIREMENT	4254	8517			86	175			1/7	COMPOSITE
INFLUENT SUSPENDED SOLIDS	SAMPLE MEASUREMENT	7744	10582	lbs/day	88	193	288	mg/l		4/30	COMPOSITE
	PERMIT REQUIREMENT										COMPOSITE
EFFLUENT SUSPENDED SOLIDS	SAMPLE MEASUREMENT	3431	5551	lbs/day	58	75	104	mg/l	4	4/30	COMPOSITE
	PERMIT REQUIREMENT	2504	5006			90	180			1/7	COMPOSITE
EFFLUENT SETTLEABLE SOLIDS	SAMPLE MEASUREMENT				1.7	4.6	8.0	ml/l	4	4/30	DISCRETE
	PERMIT REQUIREMENT					1.0	2.0			1/7	DISCRETE
EFFLUENT OIL & GREASE	SAMPLE MEASUREMENT	1319	1319	lbs/day	23.6	23.6	23.6	mg/l		1/30	DISCRETE
	PERMIT REQUIREMENT									1/30	DISCRETE
EFFLUENT pH	SAMPLE MEASUREMENT				6.8	7.3	7.6		0	4/31	DISCRETE
	PERMIT REQUIREMENT				7.0		9.0			1/7	DISCRETE

NAME/TITLE PRINCIPLE EXECUTIVE OFFICER		TELEPHONE		DATE		
HERBERT J. JOHNSTON Jr. GENERAL MANAGER, GWA ACTING	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION I BELIEVE THE SUBMITTED INFORMATION IS TRUE ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT SEE. 18 USC §1001 AND 33 USC §1319 (Penalties under these statutes may include fines up to $10,000 and or a maximum imprisonment of between 6 months and 5 years)	671	479-7844			
TYPED OR PRINTED		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

The daily flow was above the allowable maximum twenty times this month. Overflows were reported on the 13, 16, 19-22 at the southern link pump station.
BOD monthly average concentration was exceeded .
Suspended solids monthly average concentration was exceeded due to a high concentration on the 31st.
Settleable solids monthly average was exceeded .

6/21/00

6/12/00

NORTHERN DISTRICT TREATMENT PLANT WASTEWATER RESULTS
FOR THE MONTH OF MAY 2000

INFLUENT

DATE	pH	SUSP. SOLIDS mg/l	BOD mg/l	SETTLE. SOLID ml/l	SUSP. SOLIDS lbs/day	BOD lbs/day	FLOW mgd
1							1.30
2							1.30
3	N/S	N/S	N/S	N/S	N/S	N/S	1.30
4							1.20
5							1.20
6							1.20
7							1.20
8							1.30
9							1.20
10	7.55	176	167	6.5	10582	9053	6.00
11							6.00
12							1.20
13							1.20
14							1.20
15							1.20
16							1.20
17	6.75	288	137	7.5	3122	1485	1.30
18							1.20
19							1.20
20							1.10
21							1.10
22							1.10
23							1.30
24	7.49	220	241	2.0	7786	13266	6.80
25							4.80
26							4.70
27							6.00
28							6.80
29							6.50
30							6.70
31	7.48	88	156	4.0	4864	8327	6.40
AVG	7.32	193	175	5.0	6589	8033	5.21
MIN	6.75	88	137	2.0	3122	1485	1.10
MAX	7.55	288	241	7.5	10582	13266	6.80

EFFLUENT

DATE	pH	SUSP. SOLIDS mg/l	BOD mg/l	SETTLE. SOLID ml/l	SUSP. SOLIDS lbs/day	BOD lbs/day	SUSP. SOLIDS %removal	BOD %removal	OIL & GREASE mg/l	OIL & GREASE lbs/day
1										
2										
3	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S		
4										
5										
6										
7										
8										
9										
10	7.58	62	146	0.0	3381	7860	65%	13%		
11										
12										
13										
14										
15									23.6	1318.72
16										
17	6.76	58	166	0.0	629	1800	80%	-21%		
18										
19										
20										
21										
22										
23										
24	7.52	76	154	1.7	4183	8477	65%	38%		
25										
26										
27										
28										
29										
30										
31	7.25	104	141	2.5	6561	7526	-18%	10%		
AVG	7.28	75	152	1.6	3431	6415	48%	9%	23.6	1319
MIN	6.76	58	141	1.7	629	1800	-18%	-21%	23.6	1319
MAX	7.58	104	166	2.5	6561	8477	80%	38%	23.6	1319

PERMIT REQUIREMENTS							
MAX	monthly avg	7	50	85	1	2504	4256
8	daily max	9	100	170	2	5008	8512

VIOLATIONS
FLOW
SUSPENDED SOLIDS
BOD

6/12/00

PERMITTEE NAME/ADDRESS (Include facility Name/Location if Different)

NAME: Guam Waterworks Authority
ADDRESS: P.O. Box 3010
AGANA, GUAM 96932

FACILITY: Northern District Sewage Treatment Plant
LOCATION: Dededo, Guam

NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

Form Approved.
OMB No. 2040-0004
Approval expires 9-30-85

(2-16)	(17-19)
GU0020141	001
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	2000	6	1	TO	2000	6	30
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card only) (46-53) AVERAGE	QUANTITY OR LOADING (54-61) MAXIMUM	UNITS	(4 Card Only) (38-45) MINIMUM	QUANTITY OR CONCENTRATION (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	NO. EX. (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
FLOW	SAMPLE MEASUREMENT	5.5	8.6	mgd				mgd	19	30/30	HOURLY
	PERMIT REQUIREMENT		6.0								CONTINUOUS
INFLUENT BOD	SAMPLE MEASUREMENT	9614	11261	lbs/day	125	176	208	mg/l		4/30	COMPOSITE
	PERMIT REQUIREMENT										COMPOSITE
EFFLUENT BOD	SAMPLE MEASUREMENT	5688	8392	lbs/day	117	129	140	mg/l	1	4/30	COMPOSITE
	PERMIT REQUIREMENT	4256	8512			85	170			1/7	COMPOSITE
INFLUENT SUSPENDED SOLIDS	SAMPLE MEASUREMENT	6904	7699	lbs/day	107	126	160	mg/l		4/30	COMPOSITE
	PERMIT REQUIREMENT										COMPOSITE
EFFLUENT SUSPENDED SOLIDS	SAMPLE MEASUREMENT	5378	8607	lbs/day	30	102	132	mg/l	4	4/30	COMPOSITE
	PERMIT REQUIREMENT	2504	5008			50	100			1/7	COMPOSITE
EFFLUENT SETTLEABLE SOLIDS	SAMPLE MEASUREMENT				0.3	1.7	3.0	ml/l	2	4/30	DISCRETE
	PERMIT REQUIREMENT					1.0	2.0			1/7	DISCRETE
EFFLUENT OIL & GREASE	SAMPLE MEASUREMENT	0	0	lbs/day	17.3	17.3	17.3	mg/l		1/30	DISCRETE
	PERMIT REQUIREMENT									1/30	DISCRETE
EFFLUENT pH	SAMPLE MEASUREMENT				7.2	7.3	7.3		0	4/31	DISCRETE
	PERMIT REQUIREMENT				7.0		9.0			1/7	DISCRETE

NAME/TITLE PRINCIPLE EXECUTIVE OFFICER		TELEPHONE		DATE		
HERBERT J. JOHNSTON Jr. GENERAL MANAGER, GWA ACTING	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION I BELIEVE THE SUBMITTED INFORMATION IS TRUE ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT SEE. 18 USC $1001 AND 33 USC $1319 (Penalties under these statutes may include fines up to $10,000 and or a maximum imprisonment of between 6 months and 5 years)	671	479-7844	AUG 0 4 2000		
TYPED OR PRINTED	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

The daily flow was above the allowable maximum nineteen times this month.
BOD monthly average concentration was exceeded by 44 mg/l, and the monthly average loading by 1432 lbs/day. The daily maximum loading was exceeded for 2 of the 3 samples.
Suspended solids monthly average concentration was exceeded by 52 mg/l, and the monthly average loading by 2874 lbs/day. The daily maximum concentration and loading was exceeded for 2 of the 3 sample
Settleable solids monthly average was exceeded by 0.7 ml/L, and the maximum daily allowable was exceeded for 1 of 4 samples.

7/25/00

7/24/00

TO: . 'TEWATER, NDSS FROM: LAB, JO BOYD

NORTHERN DISTRICT TREATMENT PLANT WASTEWATER RESULTS
FOR THE MONTH OF JUNE 00

INFLUENT

DATE	pH	SUSP. SOLIDS mg/l	BOD mg/l	SETTLE. SOLID ml/l	SUSP. SOLIDS lbs/day	BOD lbs/day	FLOW mgd
1							
2							
3							
4							
5							
6							
7							
8	7.45			6.0	N/S	N/S	1.40
9							
10							
11							
12							
13							
14	7.46	160	195	8.5	7052	8627	5.30
15							
16							
17							
18							
19							
20							
21	7.30	107	125	2.0	7699	8955	8.60
22							
23							
24							
25							
26							
27							
28	7.41	110	208	6.0	5961	11261	6.50
29							
30							
31							
AVG	7.41	126	176	5.6	6904	9614	5.45
MIN	7.30	107	125	2.0	5961	8627	1.40
MAX	7.46	160	208	8.5	7699	11261	8.60

EFFLUENT

DATE	pH	SUSP. SOLIDS mg/l	BOD mg/l	SETTLE. SOLID ml/l	SUSP. SOLIDS lbs/day	BOD lbs/day	SUSP. SOLIDS %removal	BOD %removal	OIL & GREASE mg/l	OIL & GREASE lbs/day
1										
2										
3										
4										
5										
6										
7										
8	7.28	30	140	0.3	350	1635				
9										
10										
11										
12										
13										
14	7.19	132	126	3.0	5835	5569	17%	35%		
15										
16										
17										
18										
19										
20										
21	7.26	120	117	2.0	8607	8392	-12%	6%		
22										
23										
24										
25									17.3	0
26										
27										
28	7.31	124	132	1.3	6722	7156	-13%	36%		
29										
30										
31										
AVG	7.26	102	129	1.7	5378	5886	-2%	26%	17.3	0
MIN	7.19	30	117	0.3	350	1635	-13%	6%	17.3	0
MAX	7.31	132	140	3.0	8607	8392	17%	36%	17.3	0

PERMIT REQUIREMENTS								
	MAX	monthly avg	7	50	85	1	2504	4256
	6	daily max	9	100	170	2	5008	8512

VIOLATIONS
SUSPENDED SOLIDS MONTHLY AVERAGE
BOD MONTHLY AVERAGE

7/24/00

PERMITTEE NAME/ADDRESS (Include facility Name/Location If Different)

NAME: Guam Waterworks Authority
ADDRESS: P.O. Box 3010
AGANA, GUAM 96932

FACILITY: Northern District Sewage Treatment Plant
LOCATION: Dededo, Guam

NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

Form Approved.
OMB No. 2040-0004
Approval expires 9-30-85

(2-16)	(17-19)
GU0020141	001
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	2000	7	1	TO	2000	7	31
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read Instructions before completing this form.

PARAMETER (32-37)		(3 Card only) (46-53) AVERAGE	QUANTITY OR LOADING (54-61) MAXIMUM	UNITS	(4 Card Only) (38-45) MINIMUM	QUANTITY OR CONCENTRATION (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	NO. EX. (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
FLOW	SAMPLE MEASUREMENT	2.2	7.9	mgd				mgd	5	31/31	HOURLY
	PERMIT REQUIREMENT		6.0								CONTINUOUS
INFLUENT BOD	SAMPLE MEASUREMENT	912	1646	lbs/day	127	135	141	mg/l		4/31	COMPOSITE
	PERMIT REQUIREMENT										COMPOSITE
EFFLUENT BOD	SAMPLE MEASUREMENT	621	841	lbs/day	34	64	84	mg/l	0	4/31	COMPOSITE
	PERMIT REQUIREMENT	4256	8512			85	170			1/7	COMPOSITE
INFLUENT SUSPENDED SOLIDS	SAMPLE MEASUREMENT	1301	1728	lbs/day	76	126	154	mg/l		4/31	COMPOSITE
	PERMIT REQUIREMENT										COMPOSITE
EFFLUENT SUSPENDED SOLIDS	SAMPLE MEASUREMENT	239	374	lbs/day	10	23	32	mg/l	0	4/31	COMPOSITE
	PERMIT REQUIREMENT	2504	5008			50	100			1/7	COMPOSITE
EFFLUENT SETTLEABLE SOLIDS	SAMPLE MEASUREMENT				0.1	0.2	0.2	ml/l	0	4/31	DISCRETE
	PERMIT REQUIREMENT					1.0	2.0			1/7	DISCRETE
EFFLUENT OIL & GREASE	SAMPLE MEASUREMENT	124	124	lbs/day	9.9	9.9	9.9	mg/l		1/31	DISCRETE
	PERMIT REQUIREMENT									1/30	DISCRETE
EFFLUENT pH	SAMPLE MEASUREMENT				7.3	7.5	7.9		0	4/31	DISCRETE
	PERMIT REQUIREMENT				7.0		9.0			1/7	DISCRETE

NAME/TITLE PRINCIPLE EXECUTIVE OFFICER

HERBERT J. JOHNSTON Jr.

GENERAL MANAGER, GWA
ACTING

TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION I BELIEVE THE SUBMITTED INFORMATION IS TRUE ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT SEE. 18 USC $1001 AND 33 USC $1319 (Penalties under these statutes may include fines up to $10,000 and or a maximum imprisonment of between 6 months and 5 years)

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE		DATE		
671	479-7844	NOV 13 2000		
AREA CODE	NUMBER	YEAR	MO	DAY

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)
The daily flow was above the allowable maximum on 5 days this month.
pump station down on several days this month.

(S) 9/12/00

Explanation of violations attached at end of DMR's
9/12/00

NORTHERN DISTRICT TREATMENT PLANT WASTEWATER RESULTS
FOR THE MONTH OF JULY 00

INFLUENT

DATE	pH	SUSP. SOLIDS mg/l	BOD mg/l	SETTLE. SOLID ml/l	SUSP. SOLIDS lbs/day	BOD lbs/day	FLOW mgd
1							[illegible]
2							[illegible]
3							[illegible]
4							[illegible]
5	7.40	154	138	6.0	1541	30	1.50
6							1.20
7							1.20
8							0.90
9							1.50
10							1.40
11							1.50
12	N/S	N/S	N/S	N/S	N/S	N/S	1.30
13							1.10
14							1.40
15							1.60
16							1.30
17							1.40
18							1.40
19	7.53	76	127	7.5	634	1059	1.30
20							1.00
21							1.40
22							1.40
23							1.50
24							1.40
25							1.50
26	7.39	148	141	7.0	1728	1646	1.00
27							1.40
28							1.30
29							1.40
30							1.40
31							[illegible]
AVG	7.44	126	135	6.8	1301	912	2.23
MIN	7.39	76	127	6.0	634	30	0.90
MAX	7.53	154	141	7.5	1728	1646	7.90

EFFLUENT

DATE	pH	SUSP. SOLIDS mg/l	BOD mg/l	SETTLE. SOLID ml/l	SUSP. SOLIDS lbs/day	BOD lbs/day	SUSP. SOLIDS %removal	BOD %removal	OIL & GREASE mg/l	OIL & GREASE lbs/day
1										
2										
3										
4										
5	7.25	26	84	0.1	260	841	83%	39%		
6										
7										
8										
9										
10										
11										
12	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S		
13										
14										
15										
16										
17										
18										
19	7.47	10	75	0.2	83	626	87%	41%		
20										
21										
22										
23										
24										
25									9.9	124
26	7.85	32	34	0.2	374	397	78%	76%		
27										
28										
29										
30										
31										
AVG	7.52	23	64	0.2	239	621	83%	52%	9.9	124
MIN	7.25	10	34	0.1	83	397	78%	39%	9.9	124
MAX	7.85	32	84	0.2	374	841	87%	76%	9.9	124

PERMIT REQUIREMENTS

MAX	monthly avg	7	50	85	1	2504	4256
6	daily max	9	100	170	2	5008	8512

VIOLATIONS
SUSPENDED SOLIDS MONTHLY AVERAGE
BOD MONTHLY AVERAGE

9/12/00

PERMITTEE NAME/ADDRESS (Include facility Name/Location if Different)

NAME: Guam Waterworks Authority
ADDRESS: P.O. Box 3010
AGANA, GUAM 96932

FACILITY: Northern District Sewage Treatment Plant
LOCATION: Dededo, Guam

NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

Form Approved.
OMB No. 2040-0004
Approval expires 9-30-85

(2-16)	(17-19)
GU0020141	001
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD						
	YEAR	MO	DAY		YEAR	MO	DAY
FROM	2000	8	1	TO	2000	8	31
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card only) (46-53) AVERAGE	QUANTITY OR LOADING (54-61) MAXIMUM	UNITS	(4 Card Only) (38-45) MINIMUM	QUANTITY OR CONCENTRATION (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	NO. EX. (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
FLOW	SAMPLE MEASUREMENT	6.6	6.8	mgd				mgd	30	31/31	HOURLY
	PERMIT REQUIREMENT		6.0								CONTINUOUS
INFLUENT BOD	SAMPLE MEASUREMENT	4107	8609	lbs/day	134	164	202	mg/l		3/31	COMPOSITE
	PERMIT REQUIREMENT										COMPOSITE
EFFLUENT BOD	SAMPLE MEASUREMENT	7224	9584	lbs/day	113	136	169	mg/l	3	3/31	COMPOSITE
	PERMIT REQUIREMENT	4256	8512			85	170			1/7	COMPOSITE
INFLUENT SUSPENDED SOLIDS	SAMPLE MEASUREMENT	4360	11718	lbs/day	128	174	228	mg/l		4/31	COMPOSITE
	PERMIT REQUIREMENT										COMPOSITE
EFFLUENT SUSPENDED SOLIDS	SAMPLE MEASUREMENT	5538	7461	lbs/day	80	105	142	mg/l	8	4/31	COMPOSITE
	PERMIT REQUIREMENT	2504	5008			50	100			1/7	COMPOSITE
EFFLUENT SETTLEABLE SOLIDS	SAMPLE MEASUREMENT				0.2	0.3	0.4	ml/l	0	4/31	DISCRETE
	PERMIT REQUIREMENT					1.0	2.0			1/7	DISCRETE
EFFLUENT OIL & GREASE	SAMPLE MEASUREMENT	672	672	lbs/day	12.2	12.2	12.2	mg/l		1/30	DISCRETE
	PERMIT REQUIREMENT									1/30	DISCRETE
EFFLUENT pH	SAMPLE MEASUREMENT				7.2	7.2	7.3		0	4/31	DISCRETE
	PERMIT REQUIREMENT				7.0		9.0			1/7	DISCRETE

NAME/TITLE PRINCIPLE EXECUTIVE OFFICER

HERBERT J. JOHNSTON Jr.

GENERAL MANAGER, GWA
ACTING

TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION I BELIEVE THE SUBMITTED INFORMATION IS TRUE ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT SEE. 18 USC $1001 AND 33 USC $1319 (Penalties under these statutes may include fines up to $10,000 and or a maximum imprisonment of between 6 months and 5 years).

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE		DATE		
AREA CODE	NUMBER	YEAR	MO	DAY
671	479-7844	NOV	13	2000

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

VIOLATIONS

MONTHLY FLOW EXCEEDED 30 OUT OF 31 DAYS
SUSPENDED SOLIDS MONTHLY AVERAGEAND DAILY MAX EXCEEDED
BOD MONTHLY AVERAGE

11/3/00

Explanation of violations attached at end of DMR's

TO: WASTEWATER, NDSS FROM: LAB, JO BOYD

NORTHERN DISTRICT TREATMENT PLANT WASTEWATER RESULTS
FOR THE MONTH OF AUGUST 2000

INFLUENT

DATE	pH	SUSP. SOLIDS mg/l	BOD mg/l	SETTLE. SOLID ml/l	SUSP. SOLIDS lbs/day	BOD lbs/day	FLOW mgd
1							6.40
2	7.48	228	155	5.5	11718	8609	5.80
3							6.60
4							6.80
5							6.80
6							6.70
7							6.80
8							6.70
9	7.59	192	134	4.0	1938	1261	6.30
10							6.60
11							6.30
12							6.60
13							6.60
14							6.80
15							6.70
16	7.46	128	202	6.5	2125	2452	6.80
17							6.60
18							6.70
19							6.50
20							6.40
21							6.60
22							6.60
23	7.47	148		10.0	1658		6.30
24							6.70
25							6.60
26							6.10
27							6.70
28							6.80
29							6.70
30							6.70
31							6.70
AVG	7.50	174	164	6.5	4360	4107	6.57
MIN	7.46	128	134	4.0	1658	1261	5.80
MAX	7.59	228	202	10.0	11718	8609	6.80

EFFLUENT

DATE	pH	SUSP. SOLIDS mg/l	BOD mg/l	SETTLE. SOLID ml/l	SUSP. SOLIDS lbs/day	BOD lbs/day	SUSP. SOLIDS %removal	BOD %removal	OIL & GREASE mg/l	OIL & GREASE lbs/day
1										
2	7.19	80	113	0.2	3870	5466	65%	27%		
3										
4										
5										
6										
7										
8										
9	7.34	98	126	0.4	5149	6620	49%	6%		
10										
11										
12										
13										
14										
15										
16	7.2	100	169	0.2	5671	9584	22%	16%		
17										
18										
19										
20										
21										
22										
23	7.24	142		0.2	7461		4%			
24										
25									12.2	672
26										
27										
28										
29										
30										
31										
AVG	7.24	105	138	0.3	5538	7224	35%	16%	12.2	672
MIN	7.19	80	113	0.2	3870	5466	4%	6%	12.2	672
MAX	7.34	142	169	0.4	7461	9584	65%	27%	12.2	672

PERMIT REQUIREMENTS								
MAX	monthly avg	7	50	85	1	2504	4256
6	daily max	9	100	170	2	5008	8512

VIOLATIONS

MONTHLY FLOW EXCEEDED 30 OUT OF 31 DAYS
SUSPENDED SOLIDS MONTHLY AVERAGEAND DAILY MAX EXCEEDED
BOD MONTHLY AVERAGE

PERMITTEE NAME/ADDRESS (Include facility Name/Location if Different)

NAME: Guam Waterworks Authority
ADDRESS: P.O. Box 3010
AGANA, GUAM 96932

FACILITY: Northern District Sewage Treatment Plant
LOCATION: Dededo, Guam

NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

Form Approved.
OMB No. 2040-0004
Approval expires 9-30-85

(2-16)	(17-19)
GU0020141	001
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	2000	9	1	TO	2000	9	30
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card only) (46-53) AVERAGE	QUANTITY OR LOADING (54-61) MAXIMUM	UNITS	(4 Card Only) (38-45) MINIMUM	QUANTITY OR CONCENTRATION (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	NO. EX. (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
FLOW	SAMPLE MEASUREMENT	5.6	7.3	mgd				mgd	24	30/30	HOURLY
	PERMIT REQUIREMENT		8.0								CONTINUOUS
INFLUENT BOD	SAMPLE MEASUREMENT	7230	9880	lbs/day	146	165	184	mg/l		4/30	COMPOSITE
	PERMIT REQUIREMENT										COMPOSITE
EFFLUENT BOD	SAMPLE MEASUREMENT	6251	8829	lbs/day	121	135	158	mg/l	3	4/30	COMPOSITE
	PERMIT REQUIREMENT	4266	8512			85	170			1/7	COMPOSITE
INFLUENT SUSPENDED SOLIDS	SAMPLE MEASUREMENT	7136	9926	lbs/day	137	152	170	mg/l		4/30	COMPOSITE
	PERMIT REQUIREMENT										COMPOSITE
EFFLUENT SUSPENDED SOLIDS	SAMPLE MEASUREMENT	4364	7671	lbs/day	66	91	126	mg/l	5	4/30	COMPOSITE
	PERMIT REQUIREMENT	2504	5008			50	100			1/7	COMPOSITE
EFFLUENT SETTLEABLE SOLIDS	SAMPLE MEASUREMENT				0.1	0.2	0.3	ml/l	0	4/30	DISCRETE
	PERMIT REQUIREMENT					1.0	2.0			1/7	DISCRETE
EFFLUENT OIL & GREASE	SAMPLE MEASUREMENT	615	615	lbs/day	11.0	11.0	11.0	mg/l		1/30	DISCRETE
	PERMIT REQUIREMENT									1/30	DISCRETE
EFFLUENT pH	SAMPLE MEASUREMENT				7.3	7.5	7.7		0	4/31	DISCRETE
	PERMIT REQUIREMENT				7.0		9.0			1/7	DISCRETE

NAME/TITLE PRINCIPLE EXECUTIVE OFFICER		TELEPHONE		DATE		
HERBERT J. JOHNSTON Jr. GENERAL MANAGER, GWA ACTING	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION I BELIEVE THE SUBMITTED INFORMATION IS TRUE ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT SEE. 18 USC $1001 AND 33 USC $1319 (Penalties under these statutes may include fines up to $10,000 and or a maximum imprisonment of between 6 months and 5 years)	671	479-7844	NOV	13	2000
TYPED OR PRINTED	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

VIOLATIONS

SUSPENDED SOLIDS MONTHLY AVERAGE AND DAILY MAX FOR BOTH MG/L AND LBS. /DAY 11/8/00

BOD MONTHLY AVERAGE AND DAILY MAX

Explanation of violations attached at end of DMR's

TO: WASTEWATER, NDSS FROM: LAB, F. LIZAMA

NORTHERN DISTRICT TREATMENT PLANT WASTEWATER RESULTS
FOR THE MONTH OF SEPTEMBER 2000

INFLUENT

DATE	pH	SUSP. SOLIDS mg/l	BOD mg/l	SETTLE. SOLID ml/l	SUSP. SOLIDS lbs/day	BOD lbs/day	FLOW mgd
1							6.70
2							6.70
3							6.30
4							6.40
5							6.40
6	7.44	139	169.5	0.5	9926	9880	7.30
7							7.00
8							6.90
9							6.70
10							6.30
11							7.00
12							6.50
13	7.47	137	146	9.0	7655	8130	6.70
14							6.50
15							6.70
16							6.50
17							0.90
18							1.20
19							1.40
20	7.83	170.00	184	6.50	1843	1995	1.30
21							1.50
22							1.20
23							7.00
24							6.90
25							6.80
26							6.60
27	7.86	162	163	0.1	9121	8916	6.70
28							6.40
29							6.80
30							6.80
31							
AVG	7.65	152	165	4.0	7136	7230	5.60
MIN	7.44	137	146	0.1	1843	1995	0.90
MAX	7.86	170	184	9.0	9926	9880	7.30

EFFLUENT

DATE	pH	SUSP. SOLIDS mg/l	BOD mg/l	SETTLE. SOLID ml/l	SUSP. SOLIDS lbs/day	BOD lbs/day	SUSP. SOLIDS %removal	BOD %removal	OIL & GREASE mg/l	OIL & GREASE lbs/day
1										
2										
3										
4										
5										
6	7.28	126	132	0.3	7671	8036	9%	22%		
7										
8										
9										
10										
11										
12										
13	7.36	94	121	0.1	5253	6761	31%	17%	11	615
14										
15										
16										
17										
18										
19										
20	7.66	78	127	0.1	846	1377	54%	31%		
21										
22										
23										
24										
25										
26										
27	7.7	66	158	0.1	3688	8829	59%	3%		
28										
29										
30										
31										
AVG	7.50	91	135	0.2	4364	6251	39%	18%	11	615
MIN	7.28	66	121	0.1	846	1377	9%	3%	11	615
MAX	7.70	126	158	0.3	7671	8829	59%	31%	11	615

INDUSTRIAL USERS SERVEY FORM

(Includes 1999 results)

GWA COMMERCIAL WASTEWATER DISCHARGE SURVEY RESULTS

(October 15, 1999)

I. Points of Interest Regarding the Survey

- The survey questionnaires were mailed out to all GWA commercial wastewater account holders during the first week of April 1999.
- The survey questionnaires were to be completed and mailed back to GWA NLT May 15, 1999; self-addressed, stamped envelopes were provided.
- During the interim, several calls regarding the survey were made to GWA.

II. Statistical numbers

- Out of the approximately fifteen hundred (1500) surveys mailed out, three hundred sixty-six (366) were returned to GWA.
- When responding to the question "Do you discharge any non-domestic wastewater into the sewer system?" (survey question #5) – question that allowed respondents to forego the remaining survey questions and simply sign the acknowledgement on the last page – three hundred forty-six (346) replied "No" and twenty (20) replied "Yes."

III. Breakdown of the Principal Service or Product of Business that responded to the survey

Hotel water park
Hemodialysis center
Laundromat
Manufacturer of soft drinks, ice, bottle water
Dental clinic
Wholesale/Retail of Fresh Seafood
Restaurant/Food court (water softener)
Daycare center (water softener)
Newspaper publisher
Commercial building (water softener)
Diagnostic Laboratory
Optical Laboratory
Medical Clinic
Pharmacy

- Shady approach toward Survey
- Out to have contacts individual SIPs | Inv rate - users records
- Field visits
- Do not know individual upstream users for individual POTW

END OF REVISED SECTION

COMMERCIAL WASTEWATER DISCHARGE SURVEY

Completion of this questionnaire is required for all GWA commercial account wastewater dischargers. Please mail in the completed f no later than May 15, 1999. A self-addressed, stamped envelope is included.

PLEASE TYPE OR PRINT LEGIBLY. (NOTE: GWA will follow-up incomplete and illegible questionnaires by phone or official lett Should you have any questions or need assistance in completing this questionnaire, please call GWA's Planning Division at 479-783: 479-7605 between the hours of 8:00 a.m. and 5:00 p.m., Monday through Friday. Thank you for your cooperation and timely respons

1. NAME OF BUSINESS (as it appears on GWA account): _____

MAILING ADDRESS: _____

2. BUSINESS LOCATION (if different from mailing address):

_____

3. YOUR PRINCIPAL SERVICE OR PRODUCT OF BUSINESS: _____

4. NAME OF INDIVIDUAL (WITHIN YOUR BUSINESS) WHO WE SHOULD CONTACT CONCERNING YOU WASTEWATER DISCHARGE INTO THE PUBLIC SEWER:

NAME: _____

TITLE: _____

TELEPHONE NUMBER: _____

5. DO YOU DISCHARGE ANY NON-DOMESTIC WASTEWATER (FROM OTHER THAN WASHROOM, TOILET, O SHOWER) INTO THE SEWER SYSTEM?

[ ] YES [ ] NO (GO TO QUESTION #16)

o. DESCRIBE THE OPERATION(S) AT YOUR BUSINESS THAT RESULT(S) IN THE DISCHARGE TO THE SEWER OF NON-DOMESTIC WASTES. INCLUDE A DESCRIPTION OF RAW MATERIALS, CATALYSTS, OR INTERMEDIARIES, IF APPLICA BLE. DESCRIBE ANY MANUFACTURING OPERATION AT THIS LOCATION. (ATTACH ADDITIONAL SHEETS AS NECESSARY):

_____

_____

_____

_____

7. DESCRIBE ANY WATER CONDITIONING PROCESSES USED AT THIS FACILITY (SUCH AS WATER SOFTENING REVERSE OSMOSIS, FILTRATION):

_____

_____

_____

_____

8. INDICATE (BY CHECKMARK) OPERATION SHIFTS NORMALLY WORKED EACH DAY:

SHIFT	START TIME	Sun	Mon	Tue	Wed	Thu	Fri	Sat
1ST								
2ND								
3RD								

9. IS YOUR PRODUCTION SEASONAL? [ ] YES [ ] NO

10. CHECK THE TYPE WHICH BEST DESCRIBES YOUR WASTEWATER DISCHARGE FLOW:

[ ] CONTINUOUS

AVERAGE DAILY FLOW: _____ GALLONS PER DAY

[ ] INTERMITTENT

AVERAGE QUANTITY PER DISCHARGE: _____ GALLONS

AVERAGE NUMBER OF DISCHARGES PER DAY: _____

[ ] BATCH

AVERAGE QUANTITY PER DISCHARGE: _____ GALLONS

AVERAGE NUMBER OF DISCHARGES PER DAY: _____

11. INDICATE THE APPROXIMATE TIMES THAT DISCHARGES OCCUR:

Sun	Mon	Tue	Wed	Thu	Fri	Sat

12. DESCRIBE THE CHARACTERISTICS AND CONSTITUENTS OF YOUR WASTEWATER DISCHARGE(S). LIST THE CONCENTRATION (IN PERCENT OR MG/L) IF KNOWN:

13. DESCRIBE ANY TREATMENT FACILITIES AT YOUR BUSINESS THAT TREATS WASTEWATER PRIOR TO DISCHARGE TO THE SEWER:

14. ADDITIONAL INFORMATION ON YOUR OPERATION:

15. INDICATE IF ANY OF THE FOLLOWING CONSTITUENTS OR SUBSTANCES IS (OR CAN BE) PRESENT I YOUR WATEWATER DISCHARGE AS A RESULT OF YOUR OPERATIONS BY PLACING IN FRONT OF EACH LISTED CHEMICAL COMPOUND:

1 = YOU SUSPECT THE COMPOUND IS ABSENT
2 = YOU KNOW THE COMPOUND IS ABSENT
3 = YOU SUSPECT THE COMPOUND IS PRESENT
4 = YOU KNOW THE COMPOUND IS PRESENT

[ ] Acenapthene
[ ] Acenapthylene (PAH)
[ ] Acrolein
[ ] Acrylonitrile
[ ] Aldrin
[ ] Antimony
[ ] Anthracene
[ ] Arsenic
[ ] Asbestos (Halomethanes)
[ ] 1,2 Benzanthracene (PAH)
[ ] Benzene
[ ] Benzidine
[ ] Benzo (A) Pyrene (3,4-Benzo-Pyrene) (PAH)
[ ]. 3,4 Benzofluoranthene (PAH)
[ ] Benzo (K) Fluoranthene (PAH)
[ ] 1,12 Benzoperylene (PAH)
[ ] Beryllium
[ ] Bromoform (Tribromomethane)
[ ] Bromomethane (Methyl Bromide)
] 4-Bromophenyl Phenyl Ether
] Cadmium
[ ] Carbon Tetrachloride (Tetrachloromethane)
[ ] Chlordane
[ ] Chlorobenzene (Monochloro-Benzene)
[ ] Chlorodibromomethane (Halomethane)
[ ] 1,2 Dichlorobenzene
[ ] 1,3 Dichlorobenzene
[ ] 1,4 Dichlorobenzene
[ ] 3,3 Dichlorobenzidine
[ ] Dichloroethane 1,1
[ ] Dichloroethane 1,2
[ ] 1,1 Dichloroethylene
[ ] 1,2-Trans-Dichloroethylene
[ ] Dichlorobromomethane
[ ] Dichloromethane (Halomethanes)
[ ] 2,4-Dichlorophenol
[ ] Dichloropropane 1,2
[ ] Dichloropropene 1,3
[ ] Dieldrin
[ ] Dimethylphenol 2,4
Diethylphthalate
Dimethylphthalate
[ ] Dinitrotoluene 2,4
[ ] Dinitrotoluene 2,6
[ ] 2,4 Dinitrophenol

[ ] Dioxine (2,3,7,8-TCDD)
[ ] Diphenylhydrazine 1,2
[ ] Alpha Endosulfan
[ ] Beta Endosulfan
[ ] Endosulfan Sulfate
[ ] Endrin
[ ] Endrin Aldehyde
[ ] Ethylbenzene
[ ] Chlorethane (Monochloroethane)
[ ] Chlorothyl Ether (Bis-2)
[ ] 1 Chloroethoxy Methane (Bis-2)
[ ] 2 Chloroethyl Vinyl Ether
[ ] 4-Chloro-3-Methylphenol
[ ] Chloromethane (Methyl Chloride)
[ ] Chloroform Trichloromethane
[-] 2 Chlorophenol
[ ] Chloroisopropyl Ether (Bis-2)
[ ] 2 Chloronaphthalene
[ ] 4-Chlorophenyl Ether
[ ] Chromium (HEX)
[ ] Chromium (TRI)
[ ] Oil / Grease (animal or vegetable origin)
[ ] Oil / Grease (mineral origin)
[ ] Petroleum or petroleum products
[ ] Chrysene (PAH)
[ ] Copper
[ ] pH decrease
[ ] pH increase
[ ] 4,4 DDT
[ ] 4,4 DDE
[ ] 4,4 DDD
[ ] Dibenzo (a,h) Anthracene (PAH)
[ ] 2 Nitrophenol
[ ] 4 Nitrophenol
[ ] 4, 6-Dinitro-2-Methylphenol
[ ] Nitrosodimenthylamine N
[ ] Nitrosodimenthylamine-N
[ ] Nitrosodi-N-Propylamine-N
[ ] PCB 1242
[ ] PCB 1254
[ ] PCB 1221
[ ] PCB 1232
Temperature decrease
- _____ F
Temperature increase
+ _____ F
[ ] PCB 1248
[ ] PCB 1260
[ ] PCB 1016

[ ] Fluorene (PAH)
[ ] Fluoranthene
[ ] Heptachlor
[ ] Heptachlor Epoxide
[ ] Hexachloroethane
[ ] Hexachlorobenzene
[ ] Hexachlorobutadiene
[ ] Hexachlorocyclohexane (lind
[ ] Hexachlorocyclohexane (Alph
[ ] Hexachlorocyclohexane (Beta
[ ] Hexachlorocyclohexane (Delt
[ ] Hexachlorocyclopentadiene
[ ] Indeno (1,2,3-cd) Pyrene (PAH)
[ ] Isophorone
[ ] Lead
[ ] Mercury
[ ] Naphthalene
[ ] Nickel
[ ] Nitrobenzene
[ ] Di-N-Butyl Phthalate
[ ] Di-N-Octyl-Phthalate
[ ] Pyrene (PAH)
[ ] Selenium
[ ] Silver
[ ] Tetracholoethane 1,1,2,2
[ ] Tetrachloroethylene
[ ] Thallium
[ ] Toluene
[ ] Toxaphene
[ ] 1,2,4 Trichlorobenzene
[ ] Trichloroethane 1,1,1
[ ] Trichloroethane 1,1,2
[ ] Trichloroethylene
[ ] Phenol
[ ] Pentachlorophenol
[ ] Phenanthrene (PAH)
[ ] Bis (2 Ethyl Hexyl)
[ ] Phthalate
[ ] Butyl Benzyl Phthalate
[ ] Trichlorophenol 2,4,6
[ ] Vinyl Chloride (Chloroethylene)
[ ] Zinc

OTHER COMPOUNDS NOT LISTED:
[ ] _____
[ ] _____
[ ] _____
[ ] _____
[ ] _____

16. STATEMENT OF RESPONSIBILITY:

THIS IS TO CERTIFY THAT THE UNDERSIGNED RESPONSIBLE OFFICIAL REPRESENTING

_____, IS FAMILIAR AND KNOWLEDGEABLE WITH QUESTIONS CONTAINED

(Company)

HEREIN, AND THAT THIS QUESTIONNAIRE HAS BEEN COMPLETED IN ITS ENTIRETY AND IS CERTIFIED TO E

TRUE AND CORRECT TO THE BEST OF KNOWLEDGE AND ABILITY

NAME: _____

(Please print)

SIGNATURE: _____

DATE: _____

TITLE: _____

(Original Application)

301 (h) MODIFIED
PERMIT APPLICATION

NORTHERN DISTRICT
SEWAGE TREATMENT PLANT

GUAM WATERWORKS AUTHORITY
Government of Guam
Post Office Box 3010, Agana, Guam 96932
Phone: (671)479-7823 Fax: (671)479-7879

MAR 27 1998

Lily Ning Lee
Guam Program Manager
U.S. Environmental Protection Agency
Pacific Insular Areas Program
75 Hawthorne Street (CMD-5)
San Francisco, Ca. 94105

Re: 301 (h) Modified Permit Application for Northern District STP

Dear Lily:

Enclosed is the Guam Waterworks Authority's 301(h) Modified Permit Application for the Northern District Sewage Treatment Plant.

This package contains a certification of veracity, a signed, completed NPDES application and a completed application questionnaire.

Included in the revised application package are the A/E and construction schedules for the Northern District outfall extension. The A/E work - inclusive of the baseline study - has begun, and funding has been secured to construct the Northern District outfall extension at the earliest. GWA is committed to extending the outfall to a point sufficient to demonstrate that no decrease in receiving water quality will occur and that water currents will not carry material back into the inner reef areas or to shore.

Copies of the attached will be forwarded to the local EPA office, Bureau of Planning and Department of Agriculture. These particular agencies oversee programs which may be impacted by GWA's discharge at Tanguisson Point. As such, in sections of the Application Questionnaire where input regarding their programs are requested, reference will be made to these letters of determination and forthcoming comments from these respective agencies.

The results of the Priority Pollutant Scan and the Industrial User Survey will be forwarded to your office as soon as GWA receives them and has completed its review of the resulting data.

Please advise me if additional information is needed to complete the application process.

Sincerely,

Richard A. Quintanilla
General Manager

cc: Director, Bureau of Planning
Administrator, Guam EPA
Director, Department of Agriculture

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INTRODUCTION

GUAM WATERWORKS AUTHORITY

Government of Guam

Post Office Box 3010, Agana, Guam 96932

Phone: (671)479-7823 Fax: (671)479-7879

Statement of Veracity

I certify that under penalty of law that I have personally examined and am familiar with the information submitted in the attached document(s) and, based on my inquiry of those individuals immediately responsible for obtaining the information. I am convinced that the information is true, accurate and correct. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Richard A. Quintanilla
General Manager

NPDES Application

NPDES APPLICATION

Form Approved.
OMB No. 2040-0086
Approval expires 7-31-8

FOR AGENCY USE

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER

STANDARD FORM A – MUNICIPAL

SECTION I. APPLICANT AND FACILITY DESCRIPTION

Unless otherwise specified on this form all items are to be completed. If an item is not applicable indicate 'NA.'

ADDITIONAL INSTRUCTIONS FOR SELECTED ITEMS APPEAR IN SEPARATE INSTRUCTION BOOKLET AS INDICATED. REFER TO BOOKLET BEFORE FILLING OUT THESE ITEMS.

Please Print or Type

1. Legal Name of Applicant (see instructions)	101	Public Utility Agency of Guam
2. Mailing Address of Applicant (see instructions) Number & Street	102a	Post Office Box 3010
City	102b	Agana
State	102c	Guam
Zip Code	102d	96910
3. Applicant's Authorized Agent (see instructions) Name and Title	103a	Joseph F. Mesa Chief Officer
Number & Street	103b	Post Office Box 3010
City	103c	Agana
State	103d	Guam
Zip Code	103e	96910
Telephone	103f	671 (Area Code) 646-8891-5 (Number)
4. Previous Application If a previous application for a permit under the National Pollutant Discharge Elimination System has been made, give the date of application.	104	YR MO DAY

I certify that I am familiar with the information contained in this application and that to the best of my knowledge and belief such information is true, complete, and accurate.

JOSEPH F. MESA, Chief Officer, PUAG
Printed Name of Person Signing

102e Title

Signature of Applicant or Authorized Agent

102f 28 DEC 1990
YR MO DAY
Date Application Signed

18 U.S.C. Section 1001 provides that:

Whoever, in any matter within the jurisdiction of any department or agency of the United States knowingly and wilfully falsifies, conceals or covers up by any trick, scheme, or device a material fact, or makes any false, fictitious or fraudulent statement or representation, or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statement or entry, shall be fined not more than $10,000 or imprisoned not more than five years, or both.

FOR AGENCY USE

Received ___ ___ ___
YR MO DAY

OFFICE: ___ EPA Region Number
___ State

FORM APPROVED
OMB No. 158-R016

FOR AGENCY USE

		Number of Discharge Points		Total Volume Discharged, Million Gallons Per Day
To: Surface Water	107a1	1	107a2	
Surface Impoundment with no Effluent	107b1	N.A.	107b2	N.A.
Underground Percolation	107c1	N.A.	107c2	N.A.
Well (injection)	107d1	N.A.	107d2	N.A.
Other	107e1	N.A.	107e2	N.A.
Total Item 7	107f1	1	107f2	
If 'other' is specified, describe	107g1	N.A.		

If any of the discharges from this facility are intermittent, such as from overflow or bypass points, or are seasonal or periodic from lagoons, holding ponds, etc., complete Item 8.

8. Intermittent Discharges

a. Facility bypass points Indicate the number of bypass points for the facility that are discharge points. (see instructions) — 108a: N.A.

b. Facility Overflow Points Indicate the number of overflow points to a surface water for the facility (see instructions). — 108b: N.A.

c. Seasonal or Periodic Discharge Points Indicate the number of points where seasonal discharges occur from holding ponds, lagoons, etc. — 108c: N.A.

9. Collection System Type Indicate the type and length (in miles) of the collection system used by this facility. (see instructions) — 109a

- Separate Storm — ☐ SST
- Separate Sanitary — ☒ SAN
- Combined Sanitary and Storm — ☐ CSS
- Both Separate Sanitary and Combined Sewer Systems — ☐ BSC
- Both Separate Storm and Combined Sewer Systems — 109b ☐ SSC
- Length — 38 miles

10. Municipalities or Areas Served (see instructions)

	Name		Actual Population Served
110a	Dededo (Civilian)	110b	36,250
110a	Yigo (Civilian)	110b	13,600
110a	Anderson Air Force Base (Air Force)	110b	2,470
110a	Finegayan Hosuing (Navy) Federal Avaiation Admin. (FAA)	110b	2,950
110a	Tumon	110b	9,000
	Barrigada Mangilao	110b	9,334
Total Population Served	TOTAL	110c	73,604

FOR AGENCY U

11. Average Daily Industrial Flow
Enter estimated average daily waste flow from all industrial sources. | 111 | N.A. mgd

Note: All major industries (as defined in Section IV) discharging to the municipal system must be listed in Section IV.

12. Permits, Licenses and Applications
List all existing, pending or denied permits, licenses and applications related to discharges from this facility. (see instructions)

	Issuing Agency	For Agency Use	Type of Permit or License	ID Number	Date Filed YR/MO/DA	Date Issued YR/MO/DA	Date Denied YR/MO/DA	Expiration Date YR/MO/DA
112	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
1.	G.E.P.A.		Operating Permit	GEPA-M08	90/12	86/06/30	N.A.	91/06/30
2.								
3.								

13. Maps and Drawings
Attach all required maps and drawings to the back of this application. (see instructions)

14. Additional Information

114 Item Number	Information

Form Approved
OMB No. 2040-0086
Approval expires 7-31-88

FOR AGENCY USE

STANDARD FORM A—MUNICIPAL

SECTION II. BASIC DISCHARGE DESCRIPTION

Complete this section for each present or proposed discharge indicated in Section I, Items 7 and 8, that is to surface waters. This includes discharges to other municipal sewerage systems in which the waste water does not go through a treatment works prior to being discharged to surface waters. Discharges to wells must be described where there are also discharges to surface waters from this facility. Separate descriptions of each discharge are required even if several discharges originate in the same facility. All values for an existing discharge should be representative of the twelve previous months of operation. If this is a proposed discharge, values should reflect best engineering estimates.

ADDITIONAL INSTRUCTIONS FOR SELECTED ITEMS APPEAR IN SEPARATE INSTRUCTION BOOKLET AS INDICATED. REFER TO BOOKLET BEFORE FILLING OUT THESE ITEMS.

1. Discharge Serial No. and Name a. Discharge Serial No. (see instructions)	201a	001
b. Discharge Name Give name of discharge, if any (see instructions)	201b	Northern District Wastewater Treatment Plant Outfall
c. Previous Discharge Serial No If a previous NPDES permit application was made for this discharge (Item 4, Section I) provide previous discharge serial number.	201c	GU-0020141
2. Discharge Operating Dates a. Discharge to Begin Date If the discharge has never occurred but is planned for some future date, give the date the discharge will begin.	202a	91 (YR) 06 (MO)
b. Discharge to End Date If the discharge is scheduled to be discontinued within the next 5 years, give the date (within best estimate) the discharge will end. Give reason for discontinuing this discharge in Item 17.	202b	N. (YR) A. (MO)
3. Discharge Location Name the political boundaries within which the point of discharge is located:		
State	203a	Guam
County	203b	N.A.
(if applicable) City or Town	203c	Dededo
4. Discharge Point Description (see instructions) Discharge is into (check one)		
Stream (includes ditches, arroyos, and other watercourses)	204a	☐ STR
Estuary		☐ EST
Lake		☐ LKE
Ocean		☒ OCE
Well (Injection)		☐ WEL
Other		☐ OTH
If 'other' is checked, specify type	204b	
5. Discharge Point — Lat/Long. State the precise location of the point of discharge to the nearest second. (see instructions)		
Latitude	205a	13 DEG. 33 MIN. 7.36 SEC
Longitude	205b	144 DEG. 48 MIN. 24.03 SEC

Agency Use

203d		
203e		
203f		

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FOR AGENCY USE

DISCHARGE SERIAL NUMBER

001

c. Overflow Duration Give the average overflow duration in hours.

Wet weather — 209d1 — N.A. hours

Dry weather — 209d2 — N.A. Hours

d. Overflow Volume Give the average volume per overflow incident in thousand gallons.

Wet weather — 209d1 — N.A. thousand gallons per incident

Dry weather — 209d2 — N.A. thousand gallons per incident

Proceed to Item 11

10. Seasonal/Periodic Discharges

a. Seasonal/Periodic Discharge Frequency If discharge is intermittent from a holding pond, lagoon, etc., give the actual or approximate number of times this discharge occurs per year. — 210a — N.A. times per year

b. Seasonal/Periodic Discharge Volume Give the average volume per discharge occurrence in thousand gallons. — 210b — _____ thousand gallons per discharge occurrence

c. Seasonal/Periodic Discharge Duration Give the average duration of each discharge occurrence in days. — 210c — _____ days

d. Seasonal/Periodic Discharge Occurrence—Months Check the months during the year when the discharge normally occurs. — 210d

☐ JAN ☐ FEB ☐ MAR
☐ APR ☐ MAY ☐ JUN
☐ JUL ☐ AUG ☐ SEP
☐ OCT ☐ NOV ☐ DEC

11. Discharge Treatment

a. Discharge Treatment Description Describe waste abatement practices used on this discharge with a brief narrative. (See instructions) — 211a

Treatment will consist of communition and rag removal followed by preservation using diffused air and aeration tanks followed by degritting in an aerated grid chamber, followed by primary sedimentation using clarifier and chlorination. Sludge is treated by anaerobic digestion and dewatering by centrifugation.

DISCHARGE SERIAL NUMBER

001

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14. Description of Influent and Effluent (see instructions)

Parameter and Code 214	Influent	Effluent					
	Annual Average Value (1)	Annual Average Value (2)	Lowest Monthly Average Value (3)	Highest Monthly Average Value (4)	Frequency of Analysis (5)	Number of Analyses (6)	Sample Type (7)
Flow Million gallons per day 50050	2.25	2.25	2.15	3.0	7 days a week	365	composite
pH Units 00400			7.00	7.25	205/365		grab
Temperature (winter) °F 74028	N.A.						
Temperature (summer) °F 74027	N.A.						
Fecal Streptococci Bacteria Number/100 ml 74054 (Provide if available)				N.A.			
Fecal Coliform Bacteria Number/100 ml 74055 (Provide if available)				N.A.			
Total Coliform Bacteria Number/100 ml 74056 (Provide if available)				N.A.			
BOD 5-day mg/l 00310	95.2	79.6	22.3	122	41/365		composite
Chemical Oxygen Demand (COD) mg/l 00340 (Provide if available)	N.A.			N.A.			
OR							
Total Organic Carbon (TOC) mg/l 00680 (Provide if available) (Either analysis is acceptable)	N.A.			N.A.			
Chlorine–Total Residual mg/l 50060	N.A.			N.A.			

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Approval expires 7-31-88

DISCHARGE SERIAL NUMBER
001

FOR AGENCY USE

15. Additional Wastewater Characteristics
Check the box next to each parameter if it is present in the effluent. (see instructions)

Parameter (215)	Present	Parameter (215)	Present	Parameter (215)	Present
Bromide 71870		Cobalt 01037		Thallium 01059	
Chloride 00940		Chromium 01034		Titanium 01152	
Cyanide 00720		Copper 01042		Tin 01102	
Fluoride 00951		Iron 01045		Zinc 01092	
Sulfide 00745		Lead 01051		Algicides* 74051	
Aluminum 01105		Manganese 01055		Chlorinated organic compounds* 74052	
Antimony 01097		Mercury 71900		Oil and grease 00550	X
Arsenic 01002		Molybdenum 01062		Pesticides* 74053	
Beryllium 01012		Nickel 01067		Phenols 32730	
Barium 01007		Selenium 01147		Surfactants 38260	
Boron 01022		Silver 01077		Radioactivity* 74050	
Cadmium 01027					

*Provide specific compound and/or element in Item 17, if known.

Pesticides (Insecticides, fungicides, and rodenticides) must be reported in terms of the acceptable common names specified in *Acceptable Common Names and Chemical Names for the Ingredient Statement on Pesticide Labels*, 2nd Edition, Environmental Protection Agency, Washington, D.C. 20250, June 1972, as required by Subsection 162.7(b) of the Regulations for the Enforcement of the Federal Insecticide, Fungicide, and Rodenticide Act.

FORM APPROVED
OMB No. 158-R0100

FOR AGENCY USE

STANDARD FORM A—MUNICIPAL

SECTION III. SCHEDULED IMPROVEMENTS AND SCHEDULES OF IMPLEMENTATION

This section requires information on any uncompleted implementation schedule which has been imposed for construction of waste treatment facilities. Requirement schedules may have been established by local, State, or Federal agencies or by court action. IF YOU ARE SUBJECT TO SEVERAL DIFFERENT IMPLEMENTATION SCHEDULES, EITHER BECAUSE OF DIFFERENT LEVELS OF AUTHORITY IMPOSING DIFFERENT SCHEDULES (ITEM 1b) AND/OR STAGED CONSTRUCTION OF SEPARATE OPERATIONAL UNITS (ITEM 1c), SUBMIT A SEPARATE SECTION III FOR EACH ONE.

FOR AGENCY USE
Sched. No. _____

1. Improvements Required

a. Discharge Serial Numbers Affected List the discharge serial numbers, assigned in Section II, that are covered by this implementation schedule — 300

b. Authority Imposing Requirement Check the appropriate item indicating the authority for the implementation schedule If the identical implementation schedule has been ordered by more than one authority, check the appropriate items. (see instructions) — 301a GEPA USEPA _____ _____

Locally developed plan	301b	☐ LOC
Areawide Plan		☐ ARE
Basin Plan		☐ BAS
State approved implementation schedule		☐ SQS
Federal approved water quality standards implementation plan		☐ WQS
Federal enforcement procedure or action		☐ ENF
State court order		☐ CRT
Federal court order		☐ FED

c. Improvement Description Specify the 3-character code for the General Action Description in Table II that best describes the improvements required by the implementation schedule. If more than one schedule applies to the facility because of a staged construction schedule, state the stage of construction being described here with the appropriate general action code. submit a separate Section III for each stage of construction planned. Also, list all the 3-character (Specific Action) codes which describe in more detail the pollution abatement practices that the implementation schedule requires.

3-character general action description	301c	INT
3-character specific action descriptions	301d	SEC / / / /

2. Implementation Schedule and 3. Actual Completion Dates

Provide dates imposed by schedule and any actual dates of completion for implementation steps listed below. Indicate dates as accurately as possible. (see instructions)

Implementation Steps		2. Schedule (Yr /Mo /Day)		3. Actual Completion (Yr /Mo /Day)
a. Preliminary plan complete	302a	/ /	302b	/ /
b. Final plan complete	302b	/ /	302b	/ /
c. Financing complete & contract awarded	302c	/ /	302c	/ /
d. Site acquired	302d	/ /	302d	/ /
e. Begin construction	302e	/ /	302e	/ /
f. End construction	302f	/ /	302f	/ /
g. Begin Discharge	302g	/ /	302g	/ /
h. Operational level attained	302h	/ /	302h	/ /

FORM APPROVED
OMB No. 158-R010

FOR AGENCY USE

STANDARD FORM A–MUNICIPAL

SECTION IV. INDUSTRIAL WASTE CONTRIBUTION TO MUNICIPAL SYSTEM

Submit a description of each major industrial facility discharging to the municipal system, using a separate Section IV for each facility description. Indicate the 4 digit Standard Industrial Classification (SIC) Code for the industry, the major product or raw material, the flow (in thousand gallons per day), and the characteristics of the wastewater discharged from the industrial facility into the municipal system. Consult Table III for standard measures of products or raw materials. (see instructions)

1. Major Contributing Facility (see instructions)

Name	401a	N.A.
Number & Street	401b	
City	401c	
County	401d	
State	401e	
Zip Code	401f	
2. Primary Standard Industrial Classification Code (see instructions)	402	

3. Principal Product or Raw Material (see instructions)

				Quantity		Units (See Table III)
Product	403a		403c		403e	
Raw Material	403b		403d		403f	

4. Flow Indicate the volume of water discharged into the municipal system in thousand gallons per day and whether this discharge is intermittent or continuous.	404a	_____ thousand gallons per day
	404b	☐ Intermittent (int) ☐ Continuous (con)
5. Pretreatment Provided Indicate if pretreatment is provided prior to entering the municipal system	405	☐ Yes ☐ No

6. Characteristics of Wastewater (see instructions)

406a	Parameter Name							
	Parameter Number							
406b	Value							

EPA Form 7550-22 (7-73)
GPO 865-706

This section contains 1 page.

APPLICATION QUESTIONNAIRE

GENERAL INFORMATION

AND

BASIC DATA REQUIREMENTS

Treatment System Description

A. Treatment System Description

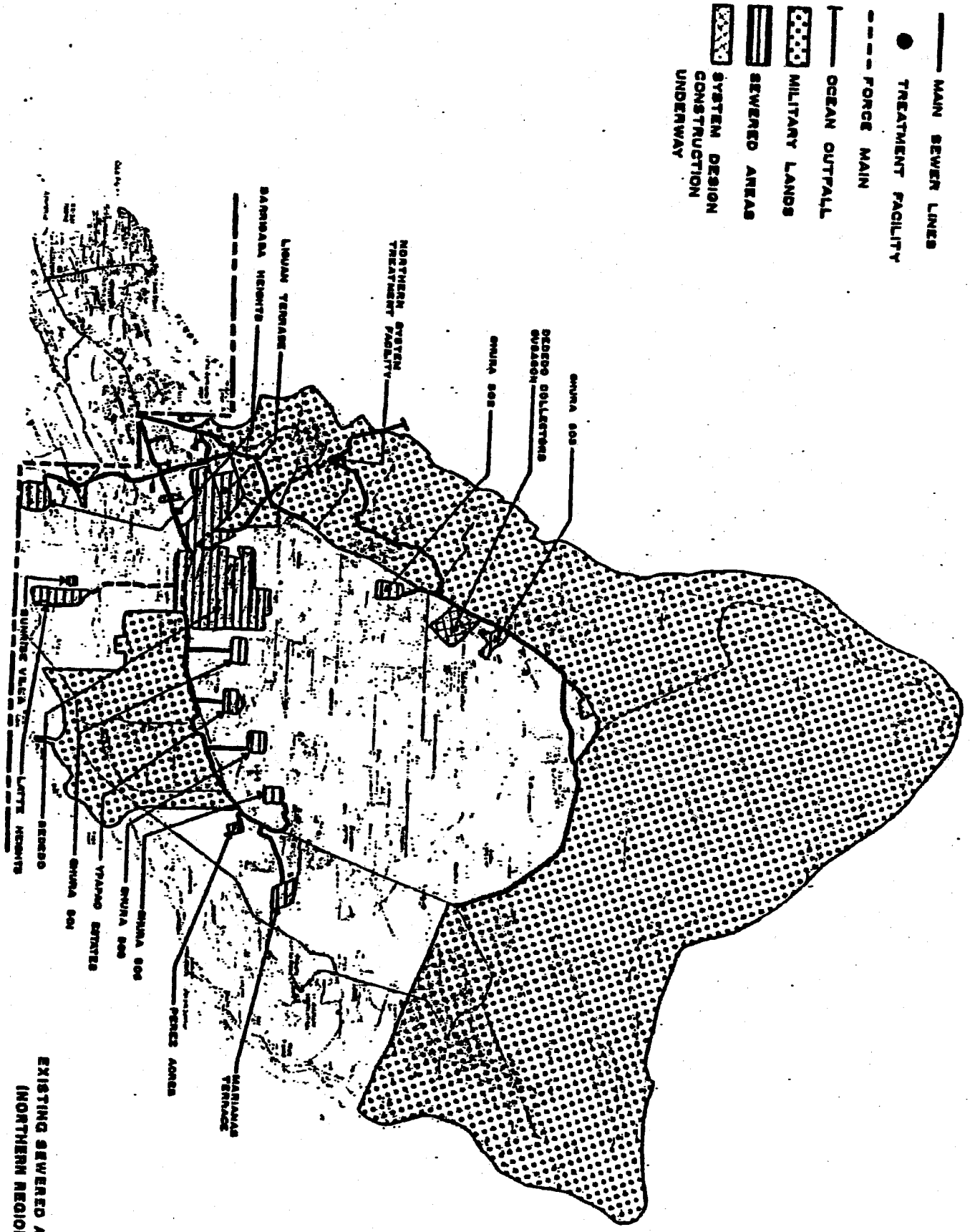
1. Description of the Treatment/Outfall System

The Northern District Sewerage System (NDSS) is the only community wastewater facility serving the civilian population in northern Guam. As shown on Figure 1 the system serves the developed area of Dededo, the subdivision of Latte Heights, Perez Acres, Ypaopao, and Marianas Terrace, Yigo Collector System, and the various GHURA Subdivisions scattered throughout the Yigo and Dededo municipalities. In addition, under an agreement with the U.S. Air Force and U.S. Navy, the system also collects domestic waste generated at Andersen Air Force Base, the Naval Communication Systems area (NCS) and other military housing areas on military lands in northern Guam.

The northern treatment facility was completed in 1979. It provides primary treatment And removes most of the settleable solids contained in the wastewater. It is designed to handle an average flow of 12 million gallons per day (mgd) with peak flows of up to 27 mgd. The treatment process include screening of raw sewage, prearetion for odor control, grit removal, comminution of large solids, primary sedimentation and chlorination. Presently, the treated effluent is discharged through a 7,272 foot ocean outfall to a point approximately 500 feet beyond the reef line west of Tanguison Point and at a depth of 60 feet. The sludge that is collected from the primary clarifiers is stabilized in a two-staged anaerobic digester. The primary stage is heated and mixed while the second stage quiscent digestion allowing sludge to settle out. The sludge is then collected and dewatered by centrifuges.

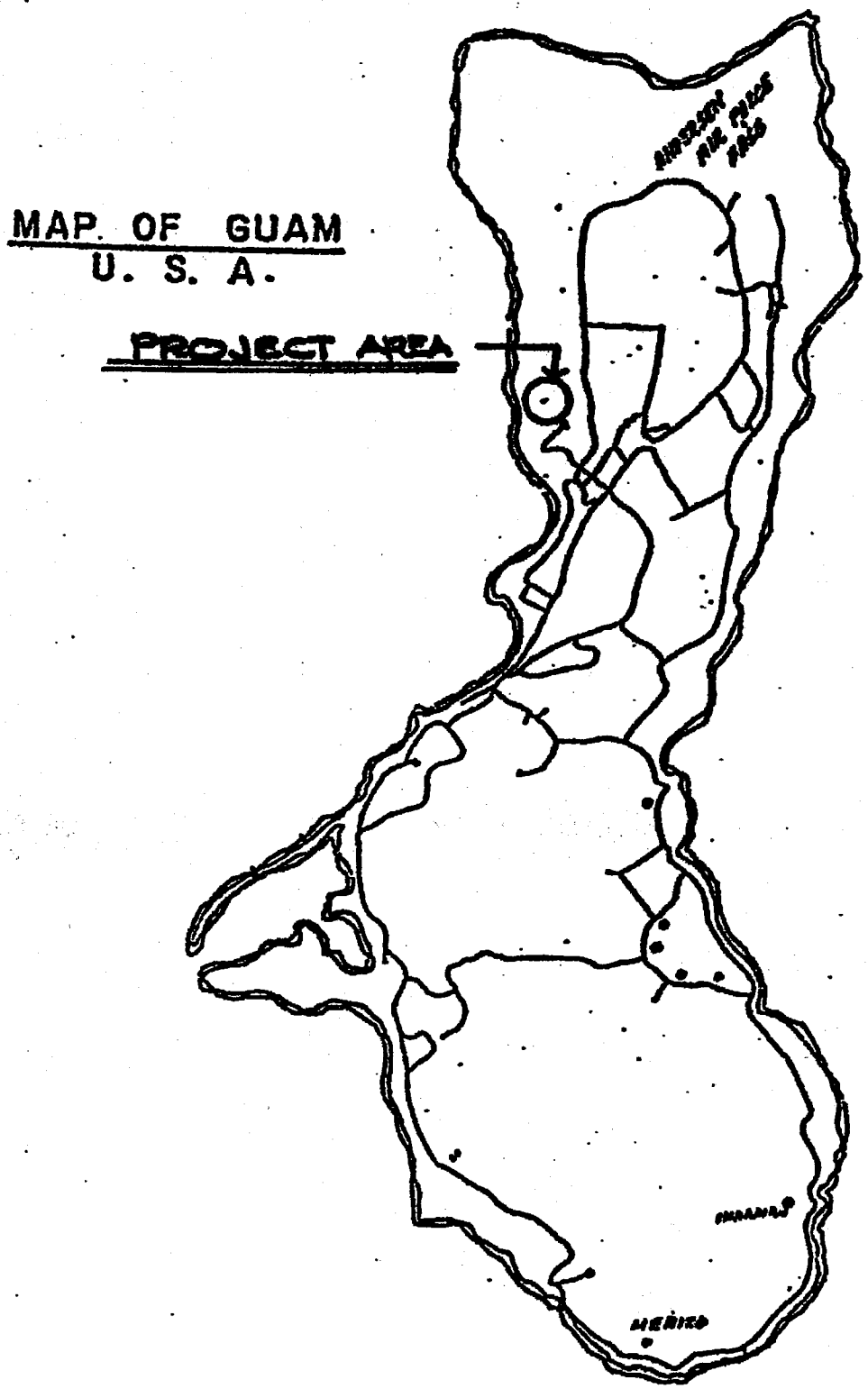
The average flow between January 1997 and December 1997, at the NDSS treatment facility was 6.3 mgd. This is considerably less than the 12 mgd design flow.

Figure 1



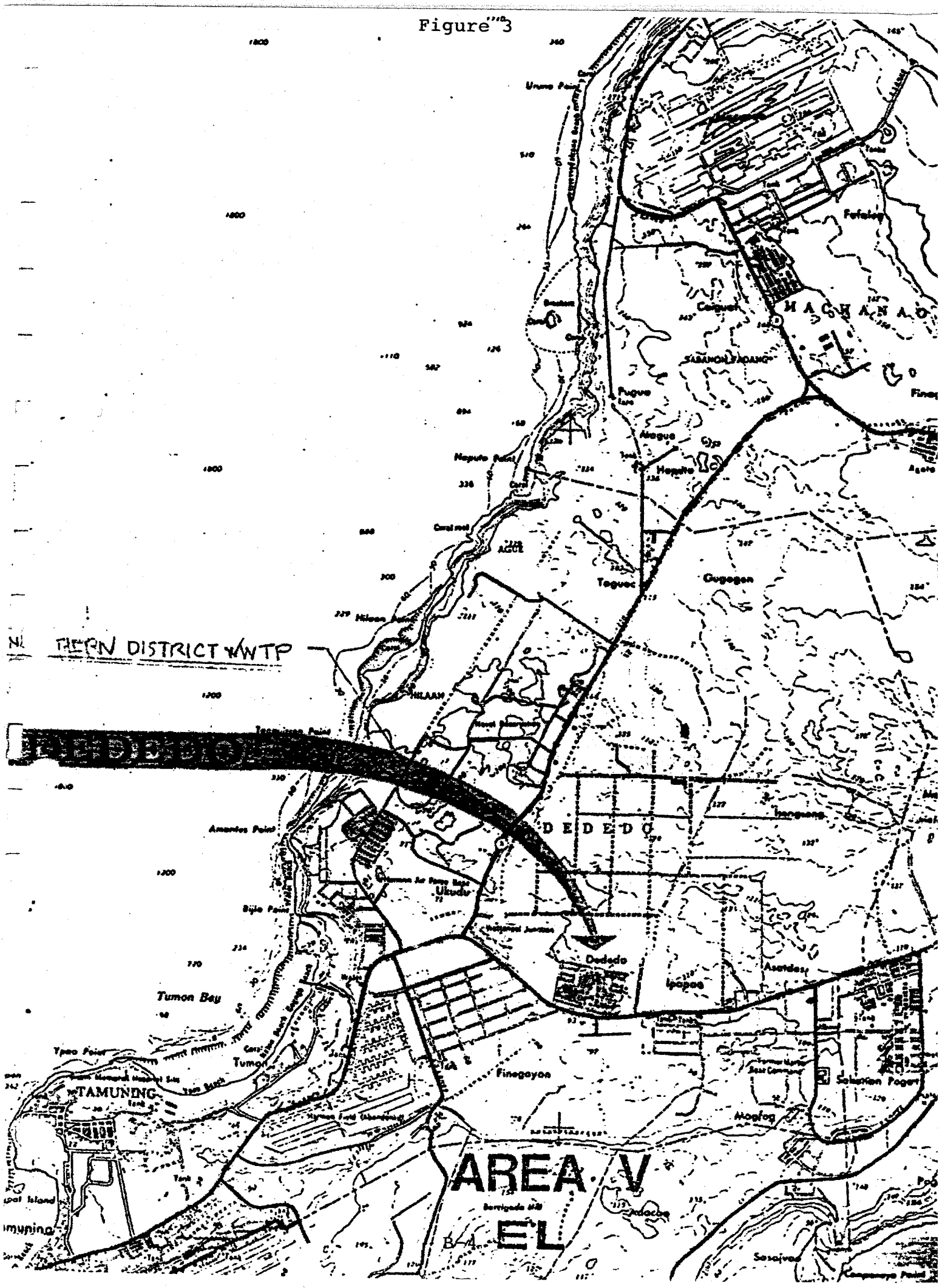
EXISTING SEWERED AREAS
(NORTHERN REGION)

Figure 2



NORTHERN DISTRICT WWTP
APPLICATION BY: PUBLIC UTILITY AGENCY OF GUAM

Figure 3



Uruno Point
Fafalog
Caiguat
MACHANAO
SABANON FADANG
Pugua
Alagua
Haputa
Naputo Point
AGUE
Taguac
Gugogan
Hilaan Point
HILAAN
DEDEDO
Amantes Point
Ukudu
Bijia Point
Dededo
Ipapao
Asatdas
Tumon Bay
Ypao Point
Tumon
TAMUNING
Finegayan
Mogfog
Sasajvao
AREA V
EL

Additional flows are expected from three sources in the future:

- Future connection of homes adjacent to existing sewers
- Construction of new sewer collection systems to serve densely populated areas
- Rerouting of sewer systems presently connected into the Agana Sewer System

It is anticipated that the NDSS treatment facility will have more than sufficient capacity to handle flows from its service area in the foreseeable future. Based upon population projections and U.S. Navy and U.S. Air Force wastewater flow projections, the maximum average flow that can be expected in the year 2000 is around 10 mgd. This would occur only if military flows reach the projected 5.6 mgd level and the entire civilian population is sewered, including the completion of San Vitores Reversion project.

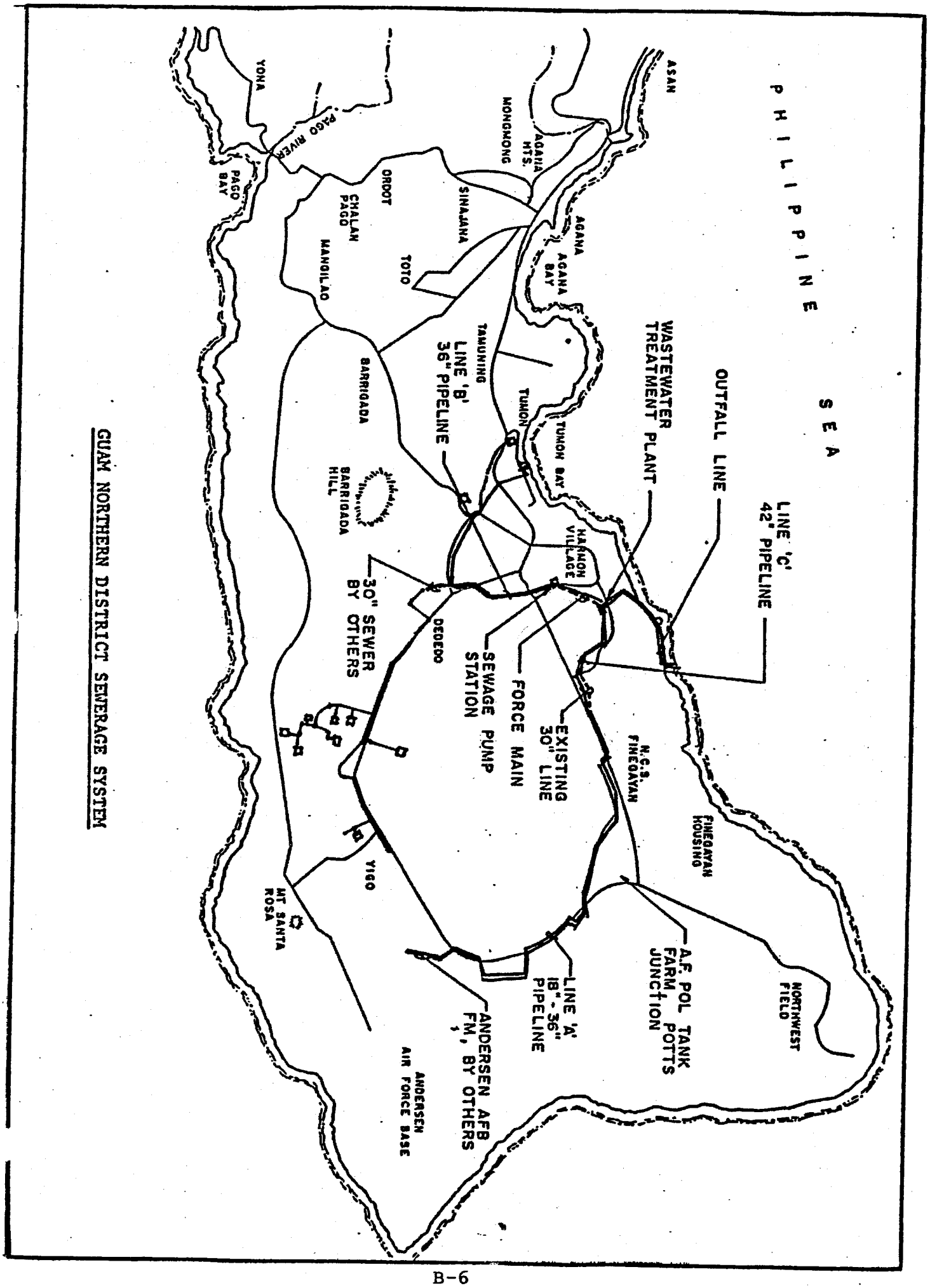
2. Facilities

The collection system consists of a network of gravity sewers. As Figure 2 shows, sewage is collected from the northern district, including Andersen Air Force Base and the Southern Link. Some of the collected sewage flows directly to the WWTP and the remainder flows to the SPS, where it is pumped through a force main to the WWTP.

The SPS includes the following major processes: Flow measurement, comminution, storage and pumping.

Figure 5 is a schematic flow diagram of the SPS. Sewage flowing into the SPS is first measured with a Parshall flume and then flows to a comminutor. The comminutor is provided to cut up large solids in the sewage that flows to the SPS to minimize the chances of clogging the pumps and to prepare the sewage for treatment

Figure 4



GUAM NORTHERN DISTRICT SEWERAGE SYSTEM

at the WWTP. The wet well of the SPS provides storage of the sewage so that, during periods of low sewage flows, the pumps can operate only intermittently. Three pumping units are provided to pump the sewage from the wet well to the WWTP. The design data of the SPS are given in Table 1. The Parshall flume, the comminutor, and the wet well are designed for the ultimate peak flow of 11.5 mgd.

At the WWTP, which is designed to provide advanced primary treatment of all incoming sewage flows before discharge into the ocean through an outfall, the following processes are included: Comminution, preaeration, grit removal, primary clarification, chlorination, anaerobic digestion, and centrifugation.

More specifically, the unit and facilities provided include the following:

1. A comminutor unit to cut up large solids in the incoming sewage from the gravity sewer (the sewage from the SPS that has been comminuted bypasses this unit).

2. Two preaeration tanks to aerate the incoming sewage and to flocculate the sewage solids.

3. A mechanical screw conveyor unit to dewater the grit removed from the grit chamber.

4. Two circular primary settling tanks to gravity settle sewage solids.

5. A chlorine contact tank and chlorine feed facilities to disinfect effluent prior to disposal.

6. Air blowers to provide air to the preaeration tanks and grit chambers.

Figure 5

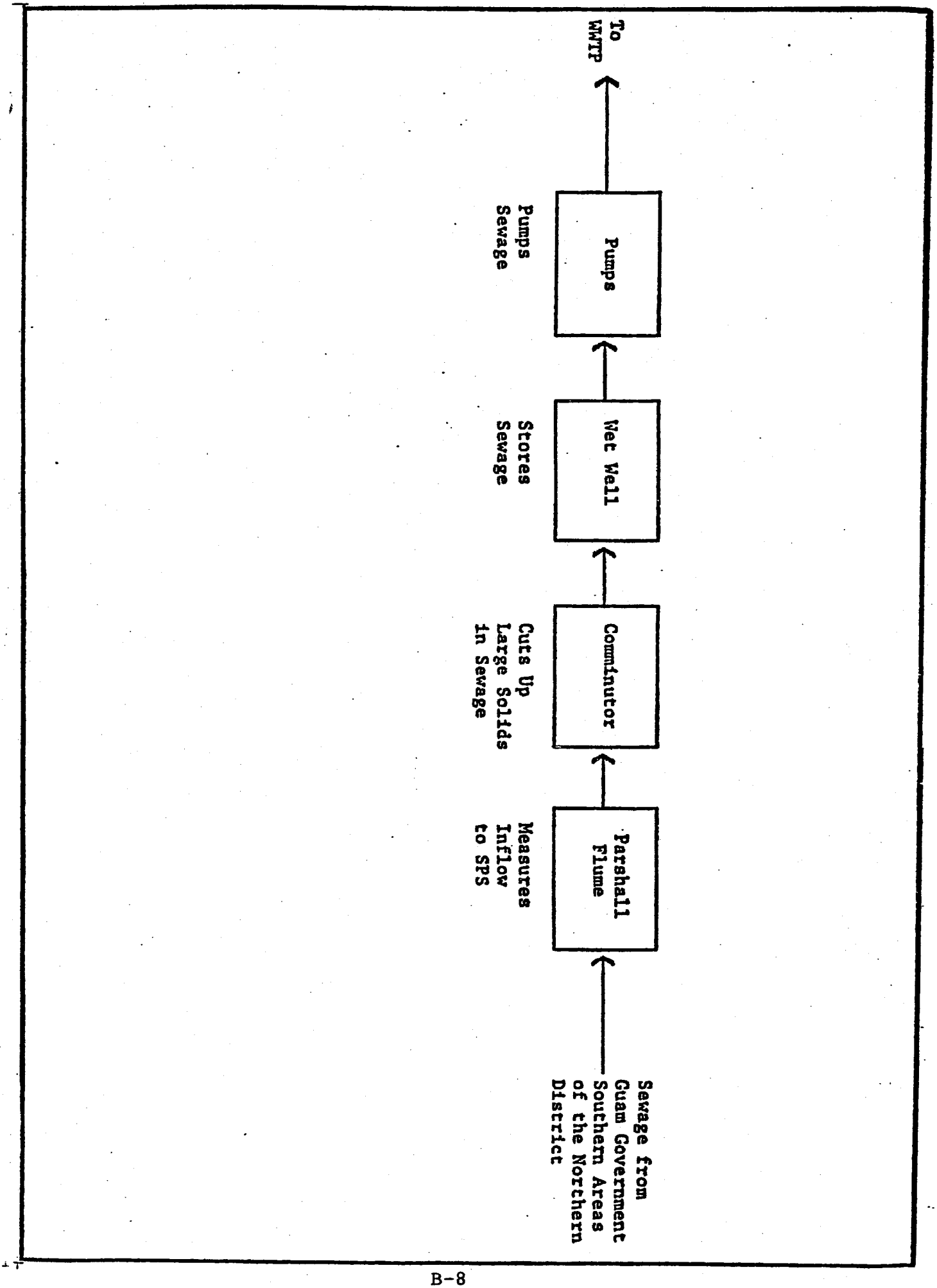

Sewage from Guam Government Southern Areas of the Northern District
Parshall Flume
Measures Inflow to SPS
Comminutor
Cuts Up Large Solids in Sewage
Wet Well
Stores Sewage
Pumps
Pumps Sewage
To WWTP

TABLE 1

DESIGN DATA FOR SEWAGE PUMP STATION

Design Peak Flow (gpm)	22,500
Number of Raw Sewage Pumps (each)	4
Pump Capacities (gpm each)	7,500 gpm
Total Discharge Head	108
Normal Power Source	Guam Power Authority
Standby Power Source	Diesel Generator

7. Sludge recirculation pumps to return sludge from the primary settling tanks to the preaeration tanks.

8. Waste sludge pumps to convey waste sludge from the primary settling tanks to the sludge heater and/or digestion tanks.

9. One primary and one secondary digestion tank.

10. A sludge heating unit to heat waste sludge.

11. Two centrifuge units with related chemical feed facilities to mechanically dewater digested sludge.

12. Laboratory facilities.

Basically, all incoming sewage is first passed through comminution, preaeration, and grit removal units. It then flows through the primary settling tanks to the chlorine contact tank before final discharge to the ocean through the outfall sewer.

The raw waste sludge that settles in the primary settling tanks is collated and pumped to the primary digester, which is designed to be gas mixed, heated to constant temperature, and operated nearly full. Most of the breakdown of organic matter occurs in this digester. Sludge should be transferred from the primary digester to the secondary digester at the same volumetric rate as the raw sludge loading so that the primary digester volume is maintained at its maximum. Further breakdown occurs in the secondary digester, although not as much as in the primary stage. Here the sludge is also allowed to settle and thicken to aid the dewatering process. Supernatant from the secondary digester is returned to the preaeration tanks.

Digested sludge is mechanically dewatered by centrifuges. The centrifuges are compact and completely enclosed, thereby minimizing odor and nuisance problems during solids processing.

3. Treatment Efficiencies

Efficiencies for sewage treatment plants are usually measured by the suspended solids (SS) and biological oxygen demand (BOD) removals. According to the design for this plant, which has advanced primary treatment, SS removal in the range of 50 to 75 percent and BOD removal of 40 to 60 percent may be expected.

The treatment plant is intended to meet the requirements of the permit to discharge sewage into the ocean. GWA's current discharge permit (No. GU0020141) requires that the effluent meet certain requirements which are given in Figure 6. Please note that the plant's Effluent Limitation requirements need to be adjusted to represent the plant's design capacity of 12 MGD.

4. Flow Pattern and Design Criteria

The flow pattern through the STP and the design criteria for the unit processes are shown and summarized on Figure 7 and in Table 2.

5. Sewer Materials and Construction

All of the sewer in the collection system including the forcemain are reinforced plastic mortar (RPM) pipe. The RPM that was installed in the NDSS was manufactured by the Amoco Reinforced Plastics Company and is known by the brand name Techite pipe. It is made from siliceous sand, glass fibers and polyester resin and has a smooth resin finish on the interior. The ocean outfall was constructed of PVC lined reinforced concrete pipe from WWTP to station 11+60.45, Techite pipe

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS based upon an end of permit term flow of 0.26 m3/sec (6 mgd)

1. During the period beginning with the effective date of this permit and lasting through June 30, 1998, the permittee is authorized to discharge from outfall serial number 001.

   a. Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
	kg/day (lbs/day)		Other Units (Specify)			
	Monthly Average	Daily Max	Monthly Average	Daily Max	Measurement Frequency	Sample Type
Flow - m3/day (MGD)	-	-	-	(6 mgd)	Continuous	--
Biochemical Oxygen Demand (5-Day) *	1,930 (4,256)	3,860 (8,512)	85 mg/L	170 mg/L	Once/week	Composite
Suspended Solids *	1,136 (2,504)	2,272 (5,008)	50 mg/L	100 mg/L	Once/week	Composite
Settleable Solids	-	-	1 ml/L	2 ml/L	Once/week	Discrete
Oil and Grease **	-	-	-	-	Once/month	Discrete
Oil ***	Not less than 7.0 standard units nor greater than 9.0 standard units				Once/week	Discrete

* Both the influent and effluent shall be monitored.

** Oil and grease shall be monitored in the effluent on a monthly basis over a six month period since many toxic organic pollutants partition into this fraction. If the level of oil and grease is found to be unacceptable, this permit shall be modified to include an effluent limitation and monitoring requirements for this parameter.

*** The discharger shall not cause the pH of the receiving water to deviate more than 0.5 pH units of that which would occur naturally.

Next Effluent Limits

Figure 6

Figure 7

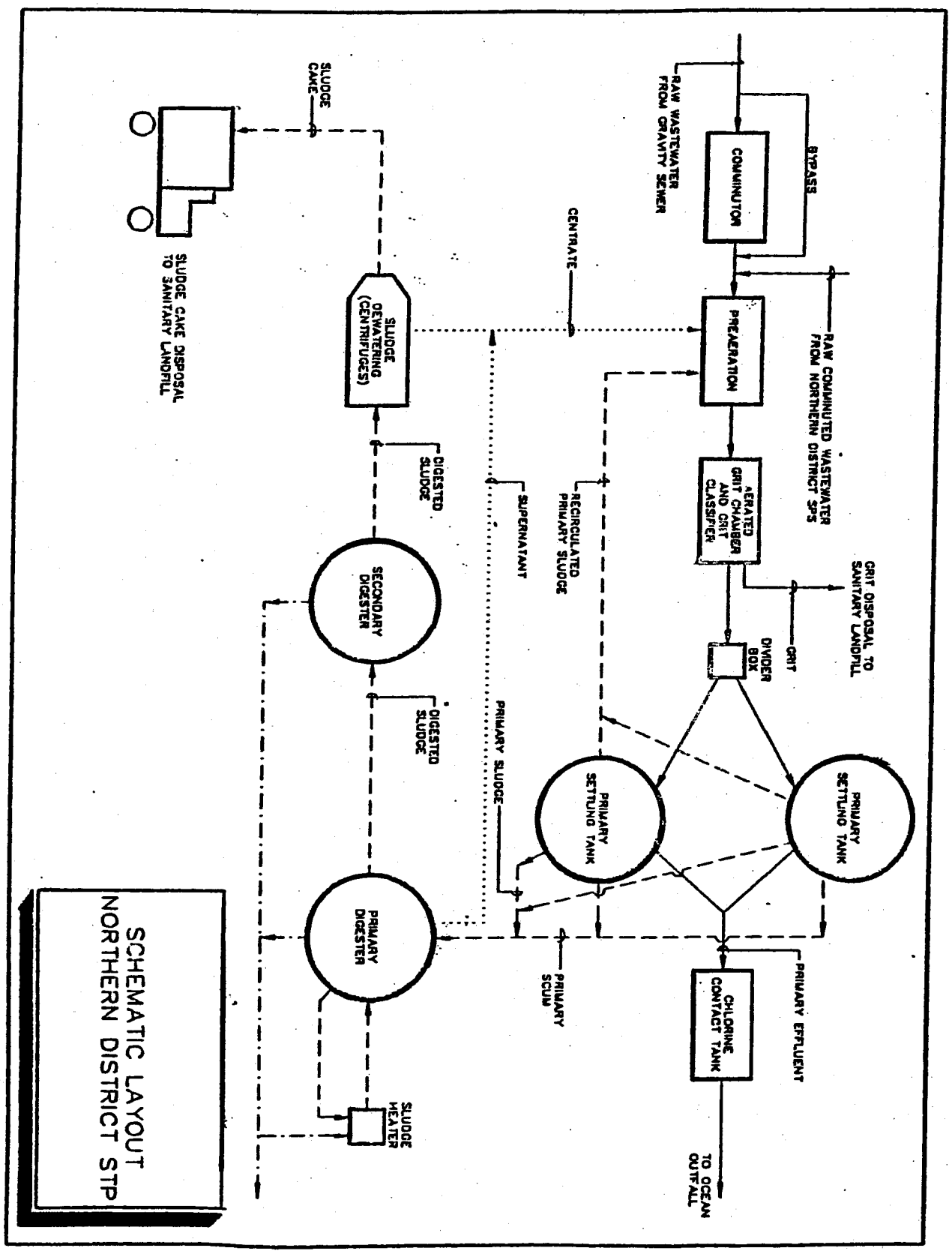

RAW WASTEWATER FROM GRAVITY SEWER
COMMINUTOR
BYPASS
RAW COMMINUTED WASTEWATER FROM NORTHERN DISTRICT SPS
PREAERATION
AERATED GRIT CHAMBER AND GRIT CLASSIFIER
GRIT DISPOSAL TO SANITARY LANDFILL
GRIT
DIVIDER BOX
PRIMARY SETTLING TANK
PRIMARY SETTLING TANK
PRIMARY EFFLUENT
CHLORINE CONTACT TANK
TO OCEAN OUTFALL
PRIMARY SCUM
PRIMARY SLUDGE
RECIRCULATED PRIMARY SLUDGE
SUPERNATANT
CENTRATE
PRIMARY DIGESTER
SLUDGE HEATER
DIGESTED SLUDGE
SECONDARY DIGESTER
DIGESTED SLUDGE
SLUDGE DEWATERING (CENTRIFUGES)
SLUDGE CAKE
SLUDGE CAKE DISPOSAL TO SANITARY LANDFILL
SCHEMATIC LAYOUT
NORTHERN DISTRICT STP

TABLE 2

WASTEWATER TREATMENT PLANT DESIGN DATA

Design Flow	
Average	12.0 mgd
Peak	27.0 mgd
Sewage Characteristics	
5-Day BOD	300 mg/l
Suspended Solids	275 mg/l
Preaeration Tanks (two)	
Volume, each	9,250 cf
Air Requirement	240 cfm
Ozone	68 grams/hr
Aerated Grit Chambers (two)	
Volume, each	16,650 cf
Air requirement	440 cfm
Primary Settling Tanks (two)	
Volume, each	696,000 gal
Surface Loading @ Qave	455 gpsfd
Weir Overflow Rate @ Qave	14,700 gpfd
Detention Time @ Qave	2.79 hrs
Chlorination	
Dosage at mg/l	
Average demand	1,800 lbs.day
Peak demand	4,050 lbs/day
Chlorine Contact Tank (one)	
Volume	296,000 gal
Detention Time @ Qpk	16.0 min
Sludge Digestion Tanks (two)	
Volume, each	115,450 CF
Centrifuges (two)	
Capacity, each	2,100 lbs/hr @ 10% incoming sludge

$SOR = \frac{Q_{AVG}}{SA_{tank}}$

from Station 11+60.45 to the end of the shallow reef area to the end of the outfall. All of the outfall sewer from the shoreline to the end is encased in concrete to protect it from the heavy seas that may occur during typhoons.

6. Outfall System

The NDSTP discharges effluent at Tanguisson Point in the Philippine Sea. This discharge point is at latitude 13 degrees 33 minutes 7.36 seconds, longitude 144 degrees 48 minutes 24.03 seconds. The outfall pipe is 2,160 feet from shore with discharge depth at 60 feet below the water surface. The current total volume discharged is between 6 and 7 mgd. However, at the end of the proposed permit period, the total volume is expected to be 10 mgd.

The present outfall system consists of 5,500 linear feet of 30-inch diameter pipe. Twenty-three (23) diffusers are part of the outfall system. Specific information about the diffusers is provided in Table 3. Appendices K, L, and N provides drawings of the treatment plant pipelines, outfall sewer and diffusers. Figures 8, 9, and 10 also show profiles of the outfall and diffusers.

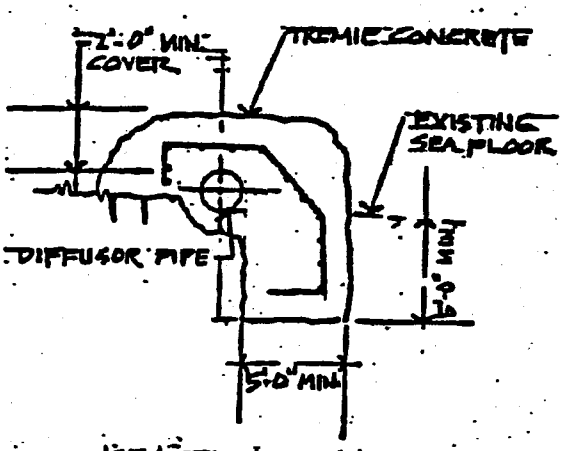
GWA has recently contracted with a local A/E firm to conduct a baseline study of the area immediately around and beyond the existing ocean outfall as a precursor to either extending the existing outfall or constructing an all-new outfall that is longer and deeper. This phase of the work has started and the resulting optimal design will be an outfall that extends to a point were no decrease in receiving water quality will occur and that water currents will not carry material back into the inner reef areas or to shore. (See Appendices H, I and J)

TABLE 3

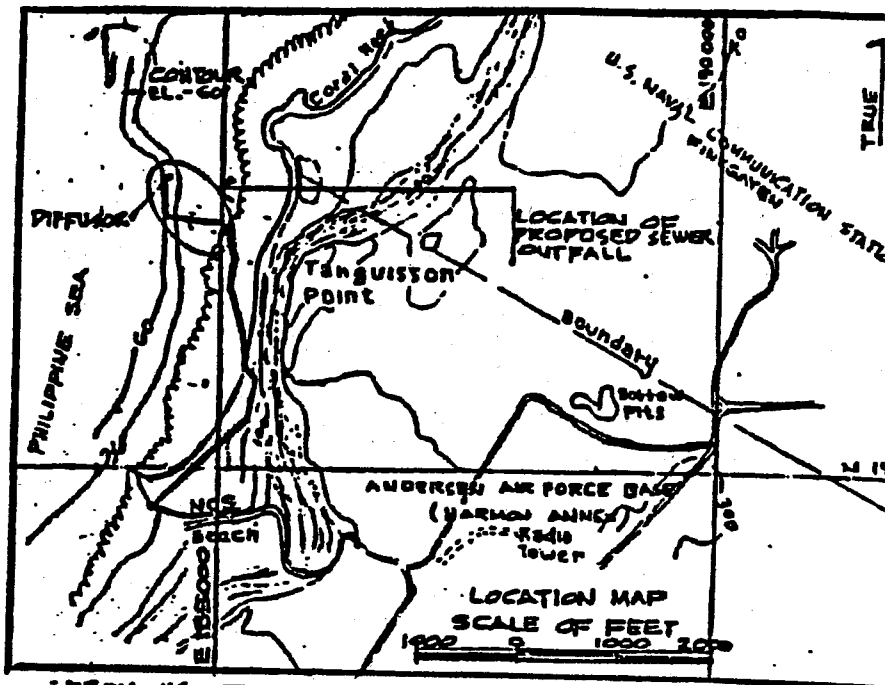
OUTFALL DATA

Outfall Diameter (meters)	-	1.219 + 0.762
Length	-	2,216.46
Diffuser Diameter	-	0.762, 0.609, 0.508, 0.406, 0.305
Length	-	128.659
4s of Port of Orientations from Horizontal (degrees)	-	90 degrees
Port Diameters	-	0.1016
Orifice Contraction co-efficient	-	
Vertical Distance from mean lower low water surface to (meters) Centerline of the port	-	18.293
Number of ports	-	23

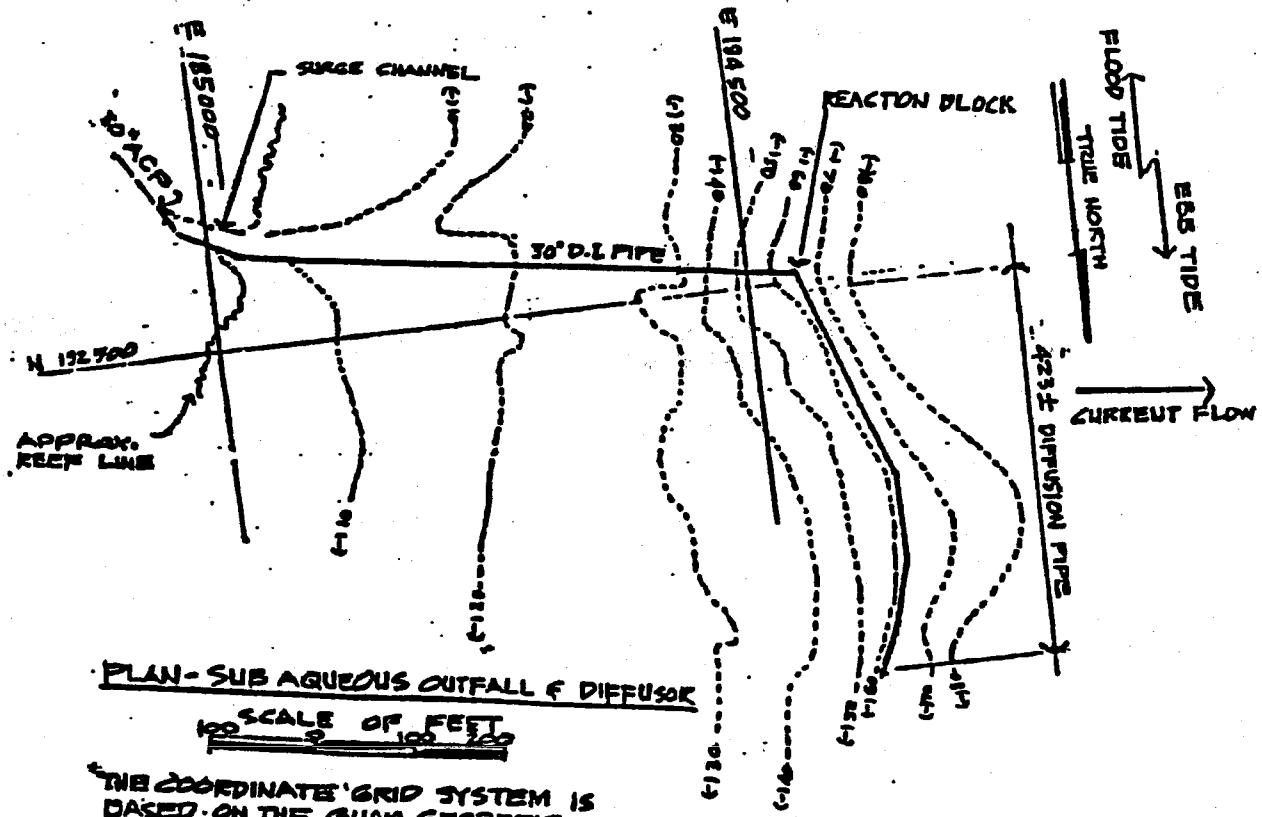
Figure 8



REACTION BLOCK DETAIL
SCALE OF FEET



*FROM U.S. DEPARTMENT OF THE INTERIOR GEOLOGICAL SURVEY MAP DATED 1968, PORTIONS OF RITIDIAN PT. & DEDEDO QUADRANGLE

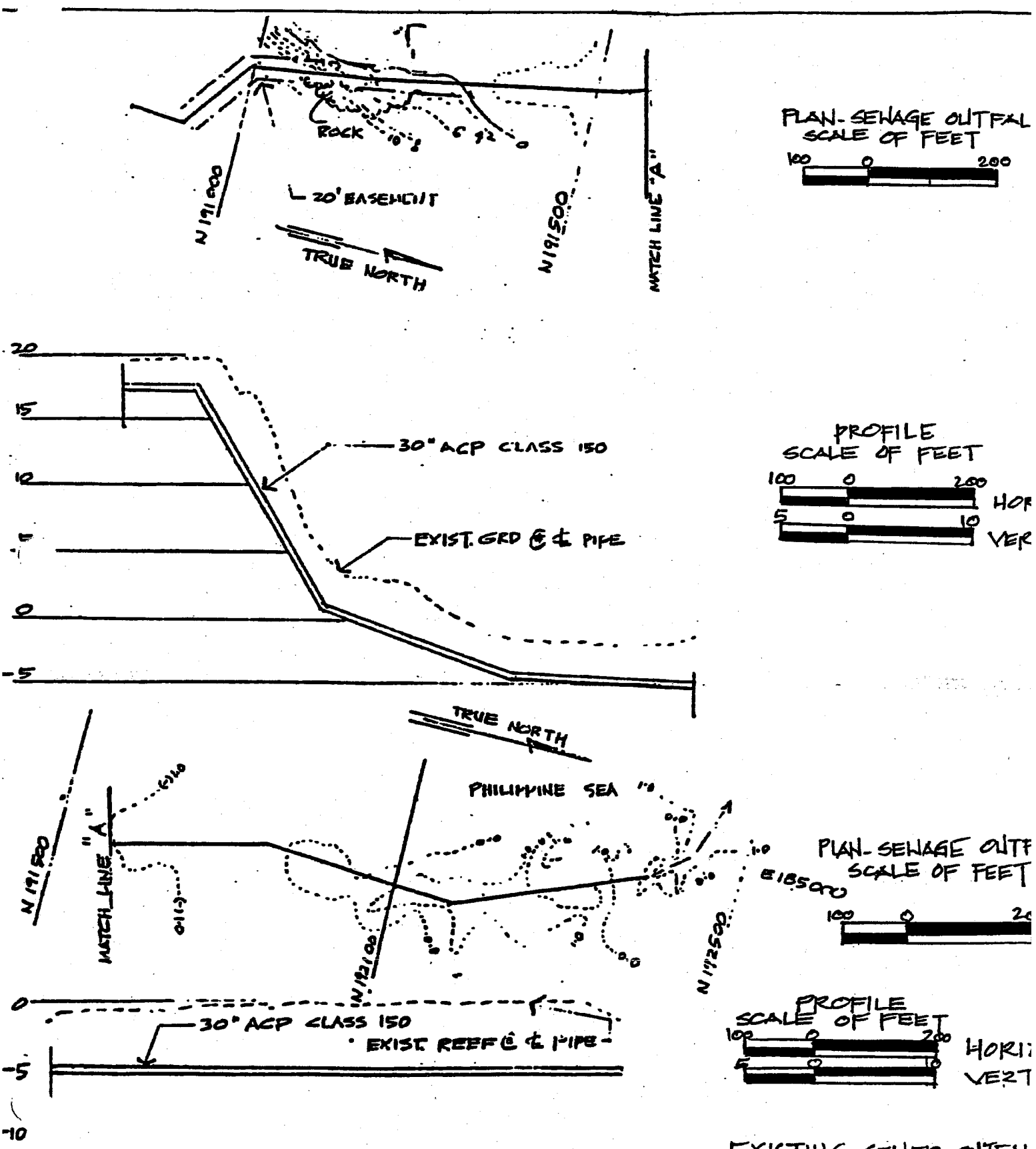


PLAN - SUB AQUEOUS OUTFALL & DIFFUSOR
SCALE OF FEET
100 0 100 200

*THE COORDINATE GRID SYSTEM IS BASED ON THE GUAM GEODETIC TRIANGULATION NETWORK 1963

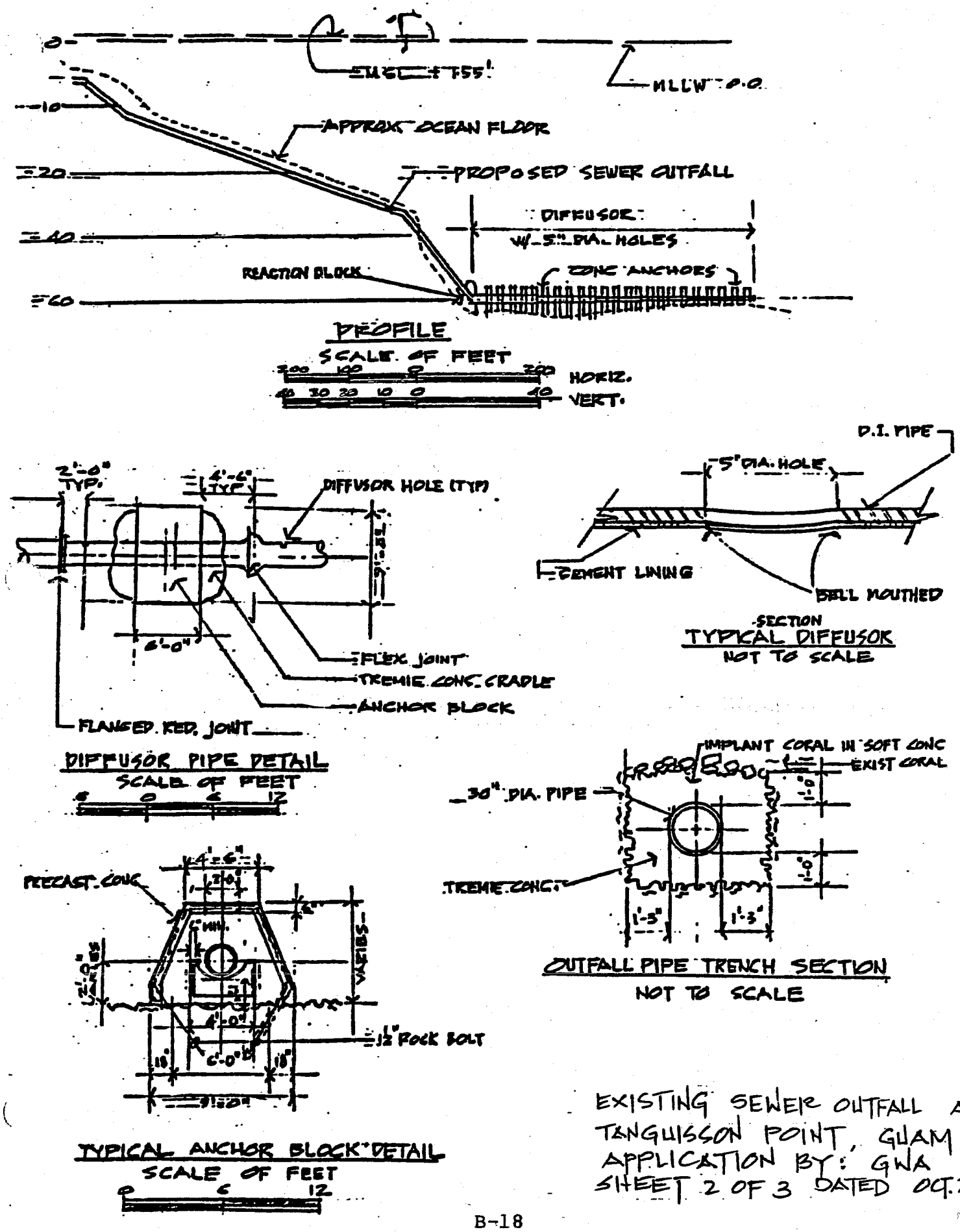
EXISTING SEWER OUTFALL
AT TANGUISSON POINT
GUAM, MARIANA ISLANDS
APPLICATION BY: GWA
SHEET 1 OF 3 DATED 10-28-

Figure 10



EXISTING SEWER OUTFAL
AT TANGUISSON POINT
GUAM MARIANA ISLANDS
APPLICATION BY: GWA
SHEET 3 OF 3 DATE: 10-28-9

Figure 9



EXISTING SEWER OUTFALL AT TANGUISSON POINT, GUAM
APPLICATION BY: GWA
SHEET 2 OF 3 DATED OCT. 28

7. Changes in Service Area

The area served by NDSS is primarily an urban zone which continues to be a region of major expansion.

In addition to the civilian population, there are major Federal Government installations in the area, including Andersen Air Force Base (AAFB) and the Marbo Annex, Naval Communication Station and FAA facilities at Finegayan. All of the Federal facilities have personnel housing.

The villages of Dededo and Yigo were previously cited as the areas served by the northern wastewater facility. The service area now includes Tumon Bay, the site of most of the hotels on Guam, and sections of Barrigada and Mangilao. Supporting the commercial, governmental and residential communities is a number of elementary and high schools\, churches, fire stations, and community centers.

Population estimates for the aforementioned areas are listed below:

Area	Population
Dededo	36,250
Yigo	13,600
AAFB	2,470
Finegayan/FAA	6,018
Tumon	9,000
Barrigada/Mangilao	9,334

Figures for the villages of Dededo, Yigo, Tumon and Barrigada/Mangilao were taken from the GWA Rural Island wide Wastewater Facilities Plan and are the projected population estimates for the year 2014. The military area population equivalents

were calculated based upon an average contribution of 100 gallons per capita per day; military utility consumption figures (1998) available to GWA were used in this computation. See Appendix O.

The change in the expense of this service area is significantly attributed to a project called the Sewage Reversion Project.
Integrated components of this project include:

- the Mamajanao Pumping Stations
- Fujita/Tumon Pumping Stations
- Harmon Industrial Park Pumping Stations
- Liguan Terrace/Barrigada Heights Pumping Station

Appendix M contains site plans from which the aforementioned stations may be located. As the project title infers, sewage flows will be "reversed". On October 1992, the actual activation period for the project, flows from Tumon, Barrigada Heights and Dededo Village were diverted northward for disposal at the Northern District Treatment Plant. Such discharges are currently treated at the Agana facility. Within the next 3-5 years, flows from the Mamajanao Pump Station will be reversed to the Liguan Terrace/Barrigada Heights Pump Station for disposal and treatment at the Northern facility. Table 4 presents a flow summary for the Sewage Reversion project.

8. Effluent Limitations and Characteristics

GWA is requesting that the effluent limitations presented in Figure 4 be reexamined and calculated to represent the plant's 12 MGD design. Discharge Monitoring Reports (DMRs) for the period January 1997 to December 1997 are attached as Appendix B. These routine compliance reports summarize the quality and/or quantity of GWA's NDSTP discharge and compares them with the current permit effluent limitations.

WHAT? Math doesn't add up or make sense in most cases here—

TABLE 4

FLOW SUMMARY

SEWAGE FLOW REVERSION PROJECT

Flow Summary: Flow does not balance

Mamajanao WWPS Maximum Capacity 4 pumps; 2,130 gpm each	6,400 gpm
Fujita/Tumon WWPS Maximum Capacity 4 pumps; 2,000 gpm each	8,000 gpm
Harmon Industrial Park WWPS Maximum Capacity 2 pumps; 500 gpm each	500 gpm
Maximum Gravity Flow to Liguan Terrace WWPS	4,060 gpm
Maximum Capacity of Gravity Line to North /Harmon WWPS (Minimum capacity is immediately downstream of the discharge manhole and also near the North Harmon WWPS)	10,400 gpm
Current maximum capacity of North Harmon WWPS 4 pumps; 7,800 gpm each	22,500 gpm
Average flow capacity of Northern District WWTP	18,750 gpm (27 mgd)
Maximum flow capacity of Northern District WWTP	13,890 gpm (20 mgd)

9. Toxic pollutants and Pesticides in Effluent

Samples for the required Toxicity and Priority Pollutant Scan were collected on the 9th of March for the Northern Wastewater Treatment Plant. The samples were sent off island to the Montgomery & Watson Labs in Pasadena California. GWA has received E-Mail confirmation that the analysis of the samples are presently in progress. The sampling was performed to provide GWA with information to address effluent toxicity concern in 301 (h) permit applications. The results along with GWA's responses to the relevant sections of the application questionnaire will be sent to your office at the earliest.

10. Effluent Volume

For the term of the modified permit being requested, the projected effluent flow is 10 mgd. The current effluent flow is 7.00 mgd, the activation of the sewer reversion project and the additional connections of more homes and commercial developments will increase flow to the NDSTP to the projected 10 mgd. Daily and Monthly Flow Reports for the period January 1997 to December 1997 are attached as Appendix F.

Flow to this plant is expected to reach 10 mgd by the year 2000 based on the Rural Island wide Wastewater Facilities Plan, (Barrett, Harris & Associates, Inc., October 1982) and the Tumon Bay Infrastructure Study, (Duenas & Swavely, Inc., July 1990)

Receiving Water Description

II. B. ***Receiving Water Description***

II.B.1. Are you applying for a modification based on a discharge into the ocean or to saline estuary?

GWA is applying for a modification based on a discharge to the ocean. The receiving waters are coastal waters off Tanguisson Point, on the western coast of Guam.

II.B.2. Is your current discharge or modified discharge to stressed waters as defined by 40 CFR 125.58(z)?

The receiving waters at Tanguisson Point are not stressed. GEPA's Revised Water Quality Standards 1992, classifies the waters in this area as good marine water (M-2). Water in this category must be sufficient to allow for the propagation and survival of marine organisms, particularly shellfish, corals and other reef related resources. Other important and intended uses include mariculture activities, aesthetic enjoyment and compatible recreation inclusive of whole body contact and related activities.

II.B.3. Provide a description and data on the seasonal circulation patterns in the vicinity of your current or modified discharge(s).

For the island of Guam as with most islands in the Central Pacific, the prevalent northeast tradewinds of the area play a major role in generating the enormous North Equatorial Drift Current that sweeps by Guam from east to west (Jones and Randall 1973a). This current is responsible for much of the energy that transports water along the coasts. The North Equatorial Current splits on the northeast corner of the island and streams around the South of Guam at Cocos Island and around the North at Ritidian Point. These two currents then move along the west coast and are joined off Apra Harbor and move out into the Philippine Sea. During the rainy season on Guam, the tradewinds often break down and the strength of the North Equatorial Current may be reduced. The typical tradewinds current pattern for Guam's coastal waters is depicted in Figure 1.

Jones and Randall, 1973a, concluded from measurements recorded by fixed current meters (5m, 10m-14m, 23m, 30m) that the general current direction is on a northeast and southwest axis with average speeds of 0.4 knots (0.21 m/sec). The mean frequency diagrams of current direction for these meters are shown in figures 12-16. The current direction and velocity is thought to correlate with Guam's semidiurnal tides, and that in general currents ran north to north east on an ebb tide and on flood tides ran southerly. Data from 1 m, 5 m and 10 m drift crosses also approximated a northerly drift on ebb tides and a southerly one on flood tides. Drift cross observations indicated a current speed from 0.1 to 0.6 knots, with a mean of 0.2 knots (0.1 m/sec). The drift cross tracks from the 1 m, 5 m, and 10 m are shown in figures 17, 18 and 19 respectively, and show that the currents would tend to transport the effluent offshore.

Huddell *et al.* 1971, reported that current speed measured at a depth of 50 ft in the vicinity of the discharge were most frequently between 0.05 and 0.25 knots, but up to 0.75 knots. Most of the currents flowed NE and SW, with NE been most predominant. Surface currents measured using dye traces during February, August and September 1971, indicated currents flowing up to 0.4 knots, usually parallel the shoreline. The current flow off shore from NCS Beach and Tanguisson Pt. was

almost equally divided between NE and SW. Studies were conducted in the winter from 4 Feb. to 3 Mar. 1971, and in the summer from 19 Aug to 15 Sep, 1971. They concluded that current does not appear to be affected tidally or seasonally. However, Jones and Randall, 1973a, suggest that some of the drogue and meter data collected by Huddell *et al.* does indicate an influence from tidal phase, but note that neither study have satisfactorily answered the question of tidal influence on currents.

Huddell *et al.* reports that NE tradewinds are dominant in all seasons, but are especially pronounced in the winter (Jan- May). During the summer (July - Oct) the effect of the trade winds are diminished and winds from every direction are not uncommon (Figure 11). For the most part the discharge should not be transported across the reef by surface currents that are wind driven. However, on occasion high fecal coliform numbers have been found at the shoreline at monitoring station A, situated perpendicular to the outfall. There is no other known source of fecal pollution in the area, and high fecal coliform numbers may be a result of the discharge been transported over the reef. Jones and Randall 1973b, noted that at times with heavy wave assault, currents are inshore and create a strong flushing action on the reef flats. Stating that this flushing would tend to minimize any concentration of sewage that does find its way to the reef flat.

GEPA conducted an environmental assessment of the Northern District WWTP receiving waters (Borja and Wood 1986). They note that dominant currents along the western shoreline of Guam move to the south at speeds averaging 0.5 to 0.8 knots. Therefore prevailing currents would tend to carry the wastewater plume offshore.

Hudell et al concluded from information gathered from meters stationed at Cabras Island, Hilaan Point and Orote Point, that an offshore southwesterly flow persists along the western coast of Guam. Nearshore flow is controlled by a complicated series of eddies generated from the offshore flow. The location and shape of the eddies is controlled by several factors; wind speed and direction, tidal phase, configuration of the coastline, topography of the bottom, wave height and direction, and the speed and direction of the offshore flow. The extention of the Agana and Tanguission outfalls farther from shore my reduce the influence of these nearshore eddies on the effluent plume. A series of hydrodynamic studies will be conducted to establish the fate of the effluent plume.

Borja, M. and H. Wood. 1986. Environmental Impact of Sewage Effluent at the Marine Outfall of the Northern District Sewage Treatment Plant, Guam. Guam Environmental Protection Agency, Technical Report.

Jones, R. S. and R. H. Randall. 1973a. A Study of Biological Impact caused by Natural and Man-Induced Changes on a Tropical Reef. University of Guam, Marine Laboratory Technical Report No.7.

Jones, R. S. and R. H. Randall. 1973b. A Preliminary Marine Survey for the Northern District Sewage System. University of Guam, Marine Laboratory, Environmental Survey Report No.8.

Huddell, H. D., J. G. Willett and G. Marchand. 1974. Nearshore currents and Coral Reef Ecology of the West coast Of Guam, Mariana Islands. Naval Oceanographic Office, Washington, D.C.

II.B.4. Oceanographic conditions in the vicinity of the current and proposed modified discharge(s). Provide the following:

- ***Lowest percentile current speed***

  0.05 knots

- ***Predominant current speed and direction during four seasons***

  Predominant current speed 0.2 to 0.4 knots. Currents direction are equally divided between NE and SW through the north.

- ***Periods of maximum stratification (months)***

  In the ocean waters around Guam there is a year round permanent thermocline, extending from 120m to more than 400m, in which water temperatures drop from 27° to 8° C (Amesbury, S. S. and M. Babin 1990). Water temperature measured at depths of 0m and 50m did not vary from each other, or vary through out the year by more than 1°C (Figure 24). The thermocline is well below the discharge depths, therefore stratification doesn't effect the effluent plume.

Amesbury, S. S. and M. Babin. 1990. Ocean Temperature Structure and the Seasonality of Pelagic Fish Species Near Guam, Mariana Islands. Micronesica 23(2):131-138).

- ***Density profiles during periods of maximum stratification***

  No stratification, see explanation above.

II.B.5. Do the receiving waters for your discharge contain significant amounts of effluent previously discharged from treatment works for which you are applying for a section 301(h) modified permit?

The receiving waters for the discharge do contain significant amounts of effluent previously discharged from the treatment works. Water quality standards and water quality criteria are met at and beyond the ZID boundary. However, a reading of greater than >400 fecal coliform/ 100 mL were recorded at site D one out of 19 times that waters have been sampled since 1989. The effluent currently discharged is rapidly diluted, and ambient water conditions generally occur outside the ZID for those parameters presently monitored. Water quality data will be collected as part of the baseline study in the area of any proposed sites for the extension of the Tanguisson outfall to determine if the waters are impacted by the current discharge.

II.B.6. Ambient water quality conditions during the period(s) of maximum stratification: at the zone of initial dilution (ZID) boundary, at other areas of potential impact and at control stations.
a. Provide profiles with depth on the following for the current discharge location and for the modified discharge location, if different from the current discharge:

- ***BOD_5 (mg/L)*** (not measured)
- ***Dissolved oxygen***
- ***Suspended solids (mg/L)*** (not measured)
- ***pH***
- ***Temperature (°C)***

- ***Salinity***
- ***Turbidity***
- ***Other significant variables***

As explained above there is no period of stratification. The results presented are from semi-quarterly sampling periods, March 1989 to July 1997, Table 5. The minimum, average and maximum values for each parameter are given on the third page of Table 5. Sampling stations are depicted in Figure 22, and locations are described below. The stations, water quality and bacteriological parameters measured were determined, and required, by the USEPA and Guam EPA. Samples were taken at 3 depths, surface (0m) mid (8m), and Bottom (16m). Sample were collected and analyzed by UOG Marine Lab, from March 1989 until December 1989, after which they were collected and analyzed by GWA staff.

RECEIVING WATER SAMPLING STATIONS

Onshore

ND A: 13° 32' 55" N x 144° 48' 15" E
shoreline station 0.4 km NE of C.

ND B: 13° 33' 30" N x 144° 48' 8" E
shoreline station at NCS beach

Offshore

ND C: 13° 33' 4" N x 144° 48' 10" E
situated above diffusers in 60 feet (18.29m) of water
Samples taken at surface, mid (10m), and bottom (20m)

ND D: 13° 33' 42" N x 144° 48' 10" E
100m south of the elbow in the diffuser pipe. In 60 ft of water
Samples taken at surface, mid (8m), and bottom (16m)

ND E: 13° 33' 20" N x 144° 48' 10" E
1000m north of C, in 600 ft of water.
Samples taken at surface, mid (8m), and bottom (16m)

From the Jan 1997 these stations were located in waters at the same depth as station C, and samples were taken at surface, mid (5m), and bottom (15m).

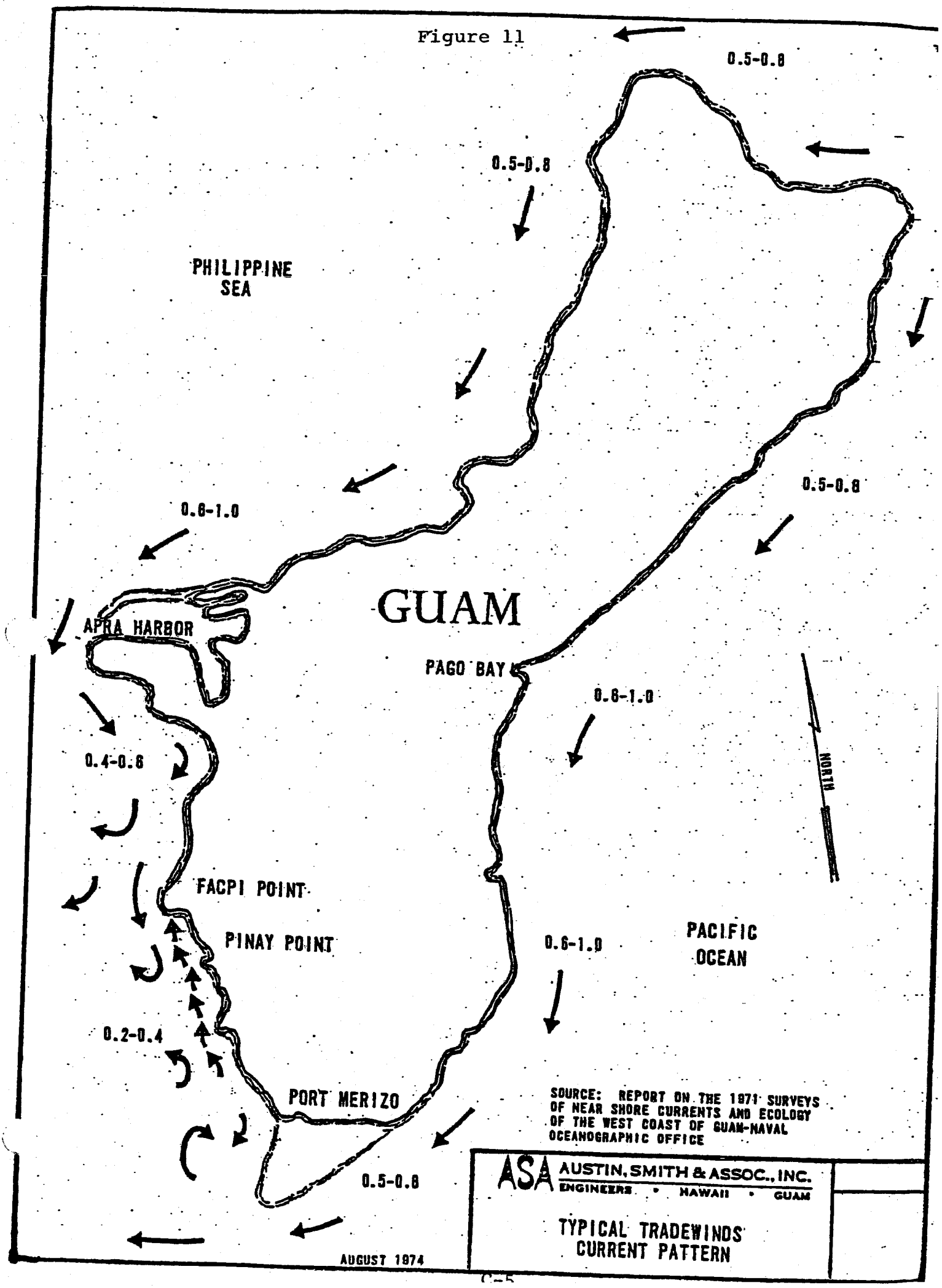
c. Are there other periods when receiving water quality conditions may be more critical than period(s) of maximum stratification?

No.

II.B.7 provide data on steady state sediment dissolved oxygen demand and oxygen demand due to resuspension of sediments in the vicinity of the discharge. (mg/L/day).

There has been no studies done to date on sediment dissolved oxygen demand.

Figure 11

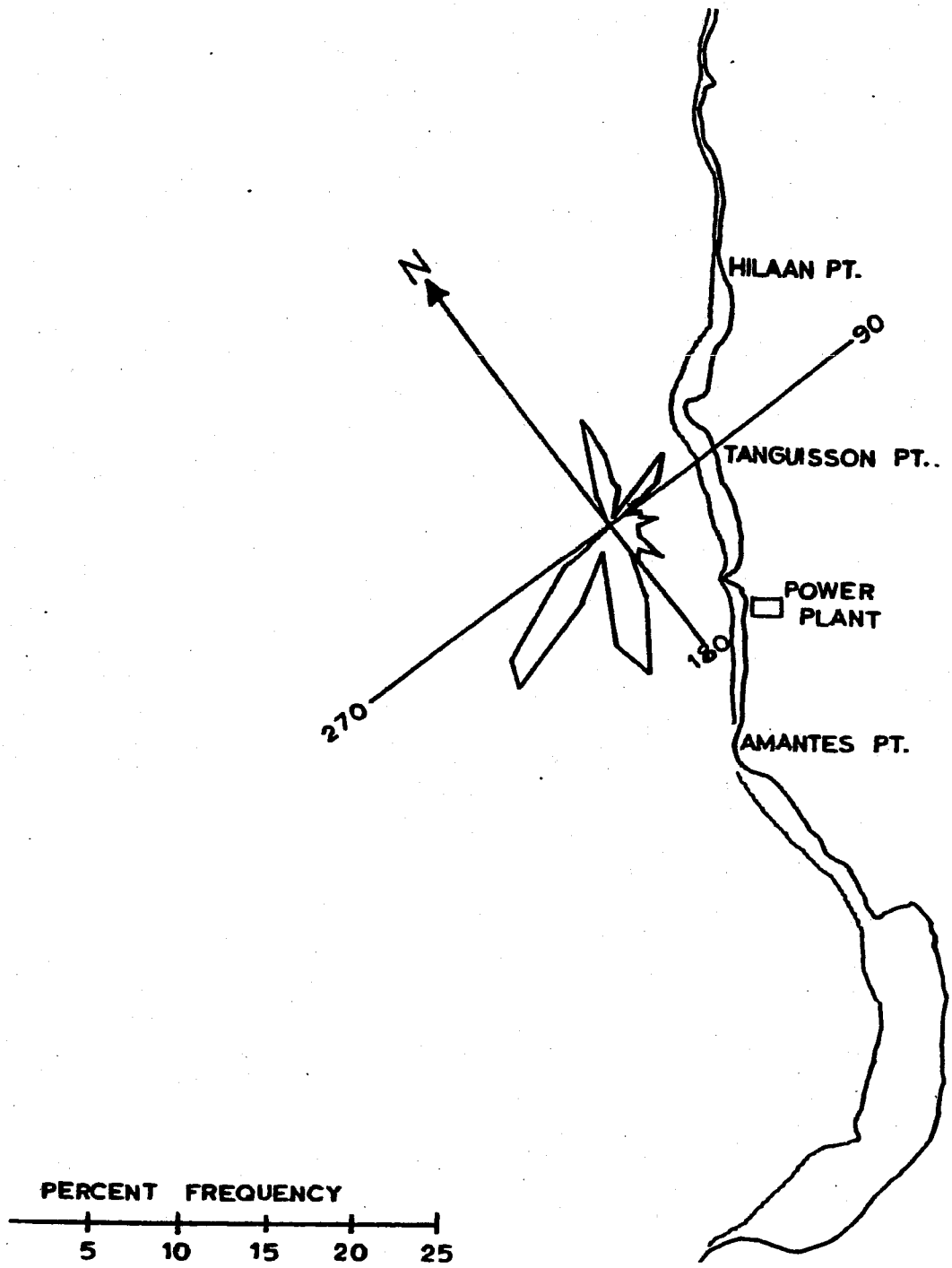


SOURCE: REPORT ON THE 1971 SURVEYS OF NEAR SHORE CURRENTS AND ECOLOGY OF THE WEST COAST OF GUAM-NAVAL OCEANOGRAPHIC OFFICE

ASA AUSTIN, SMITH & ASSOC., INC.
ENGINEERS • HAWAII • GUAM

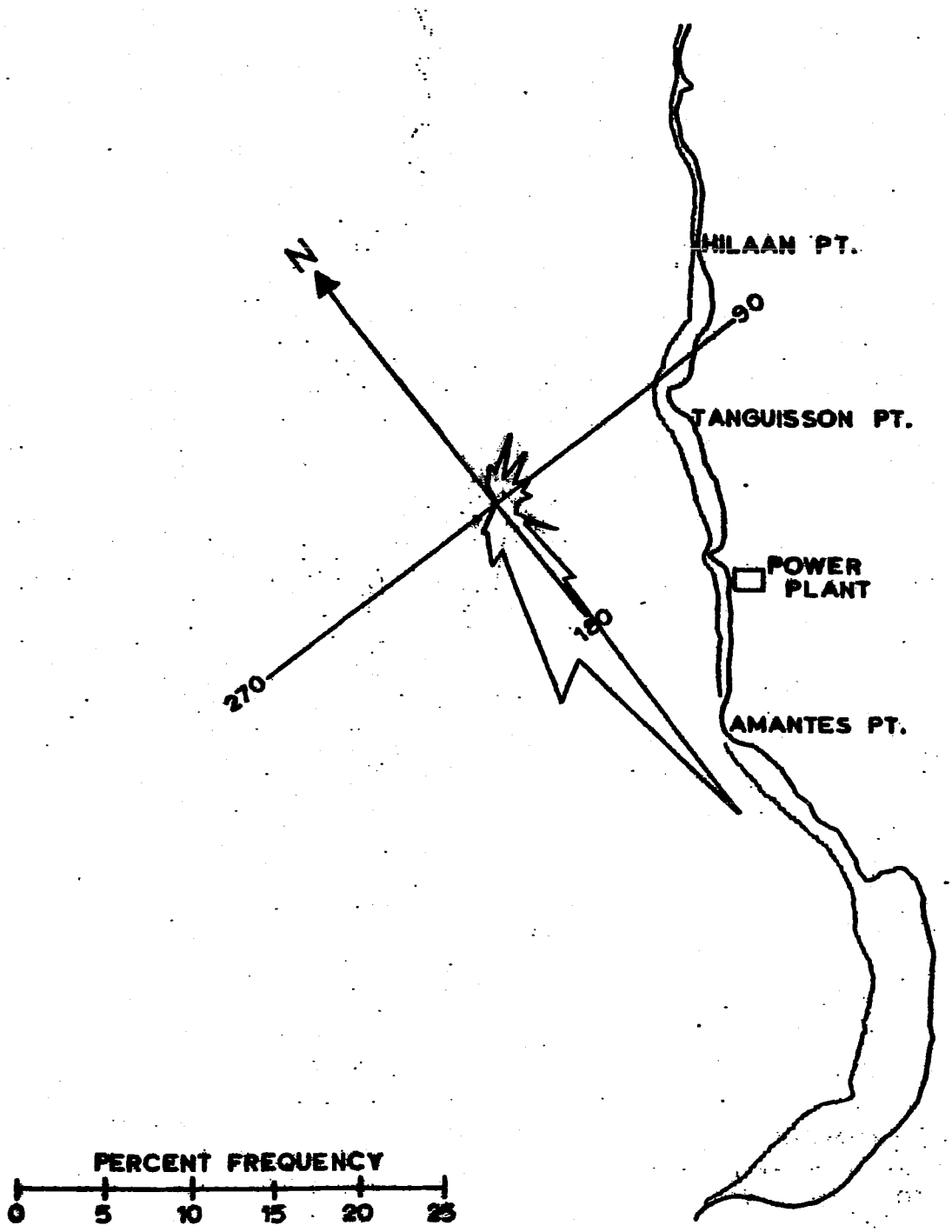
TYPICAL TRADEWINDS CURRENT PATTERN

Figure 12



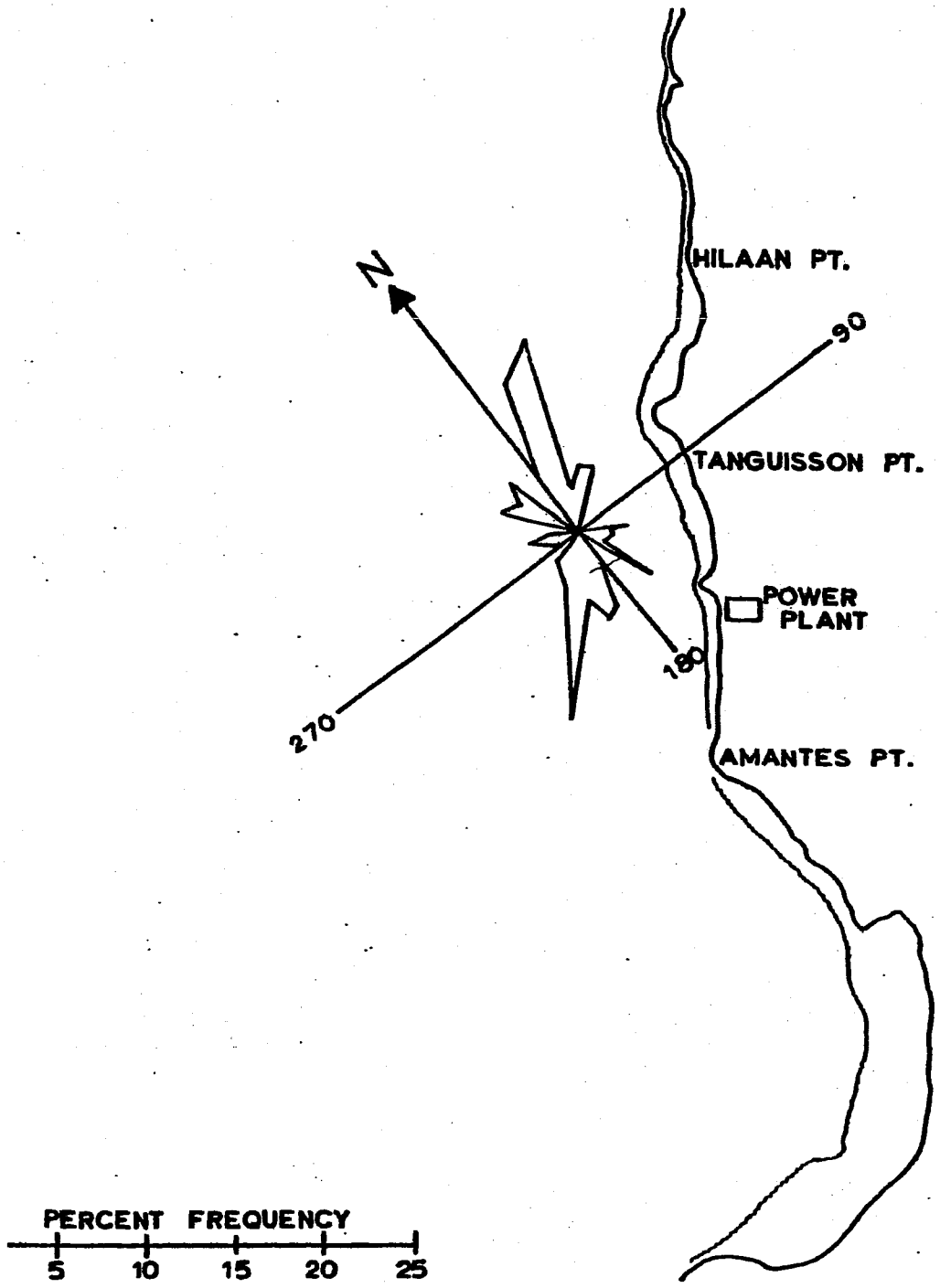
Mean frequency diagram for current direction at 5 m (TSK meter).

Figure 13



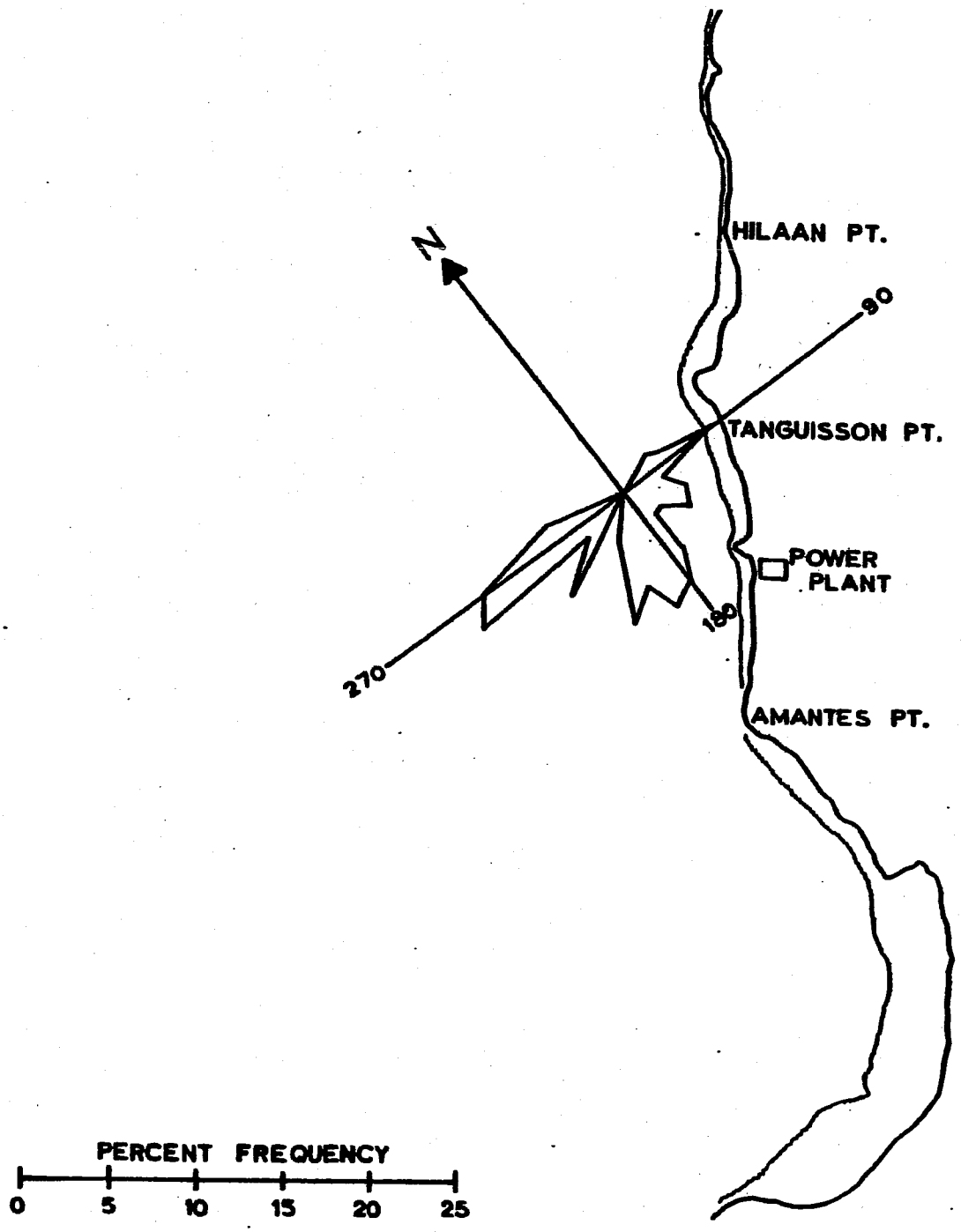
Mean frequency diagram for current direction at 10 to 14 m (Hydroproducts meter).

Figure 14



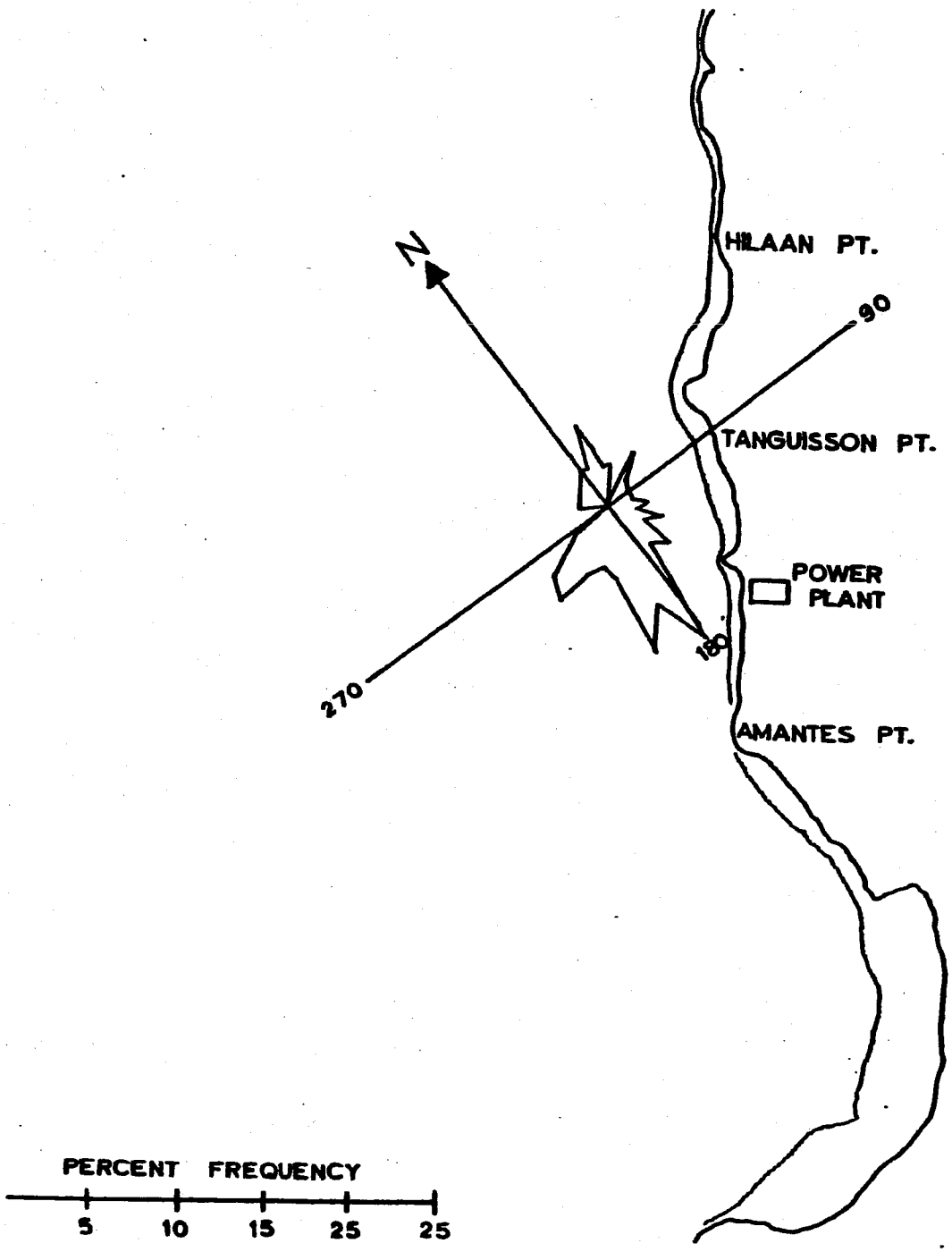
Mean frequency diagram for current direction at 23 m (TSK meter).

Figure 15



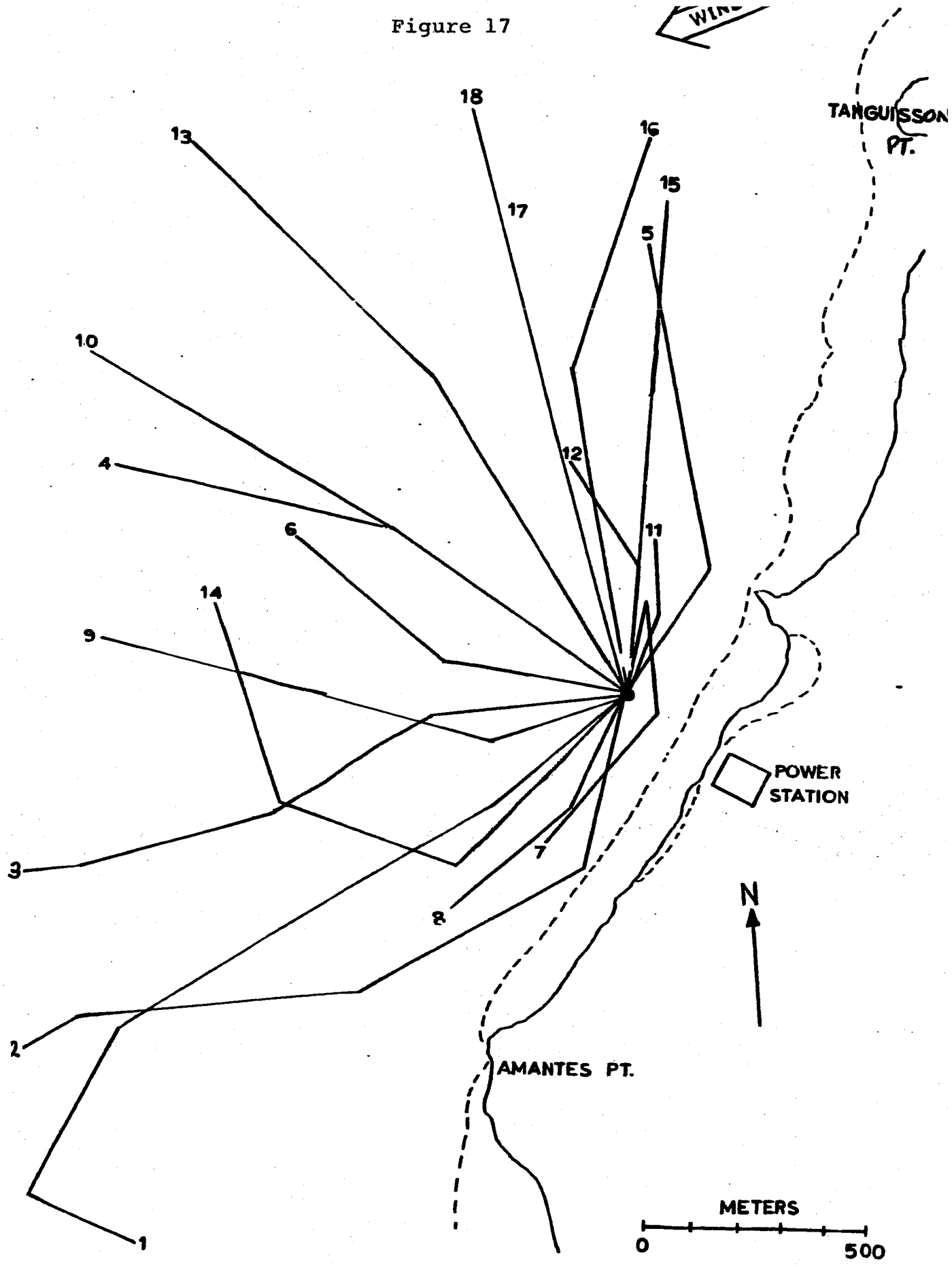
Mean frequency diagram for current direction at 30 m (Hydroproducts meter).

Figure 16



Mean frequency diagram for current direction, all stations combined. The data are biased by the inclusion of the truncated pattern produced by the Hydroproducts meter.

Figure 17



One meter drift cross casts.

Figure 18

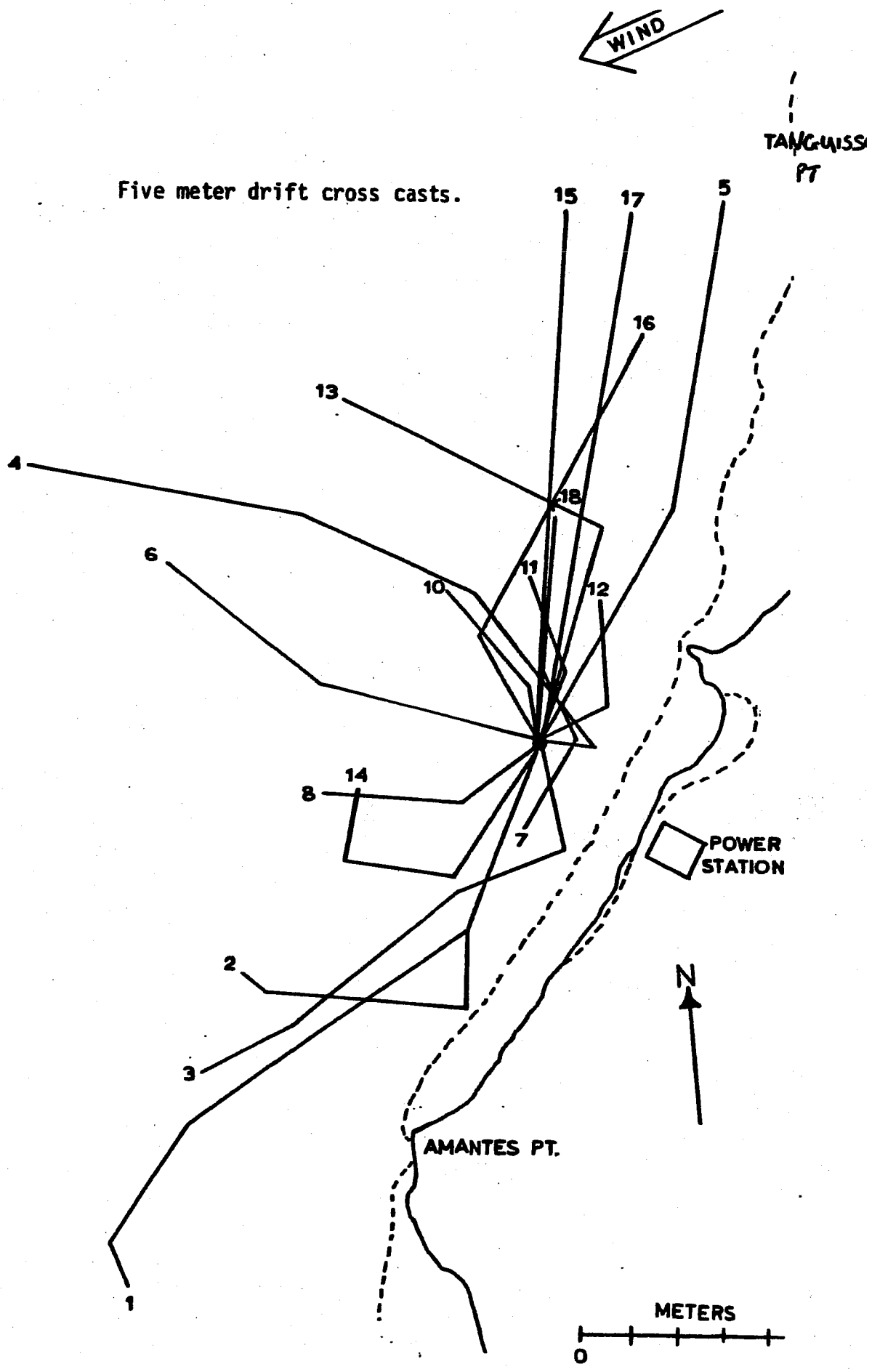
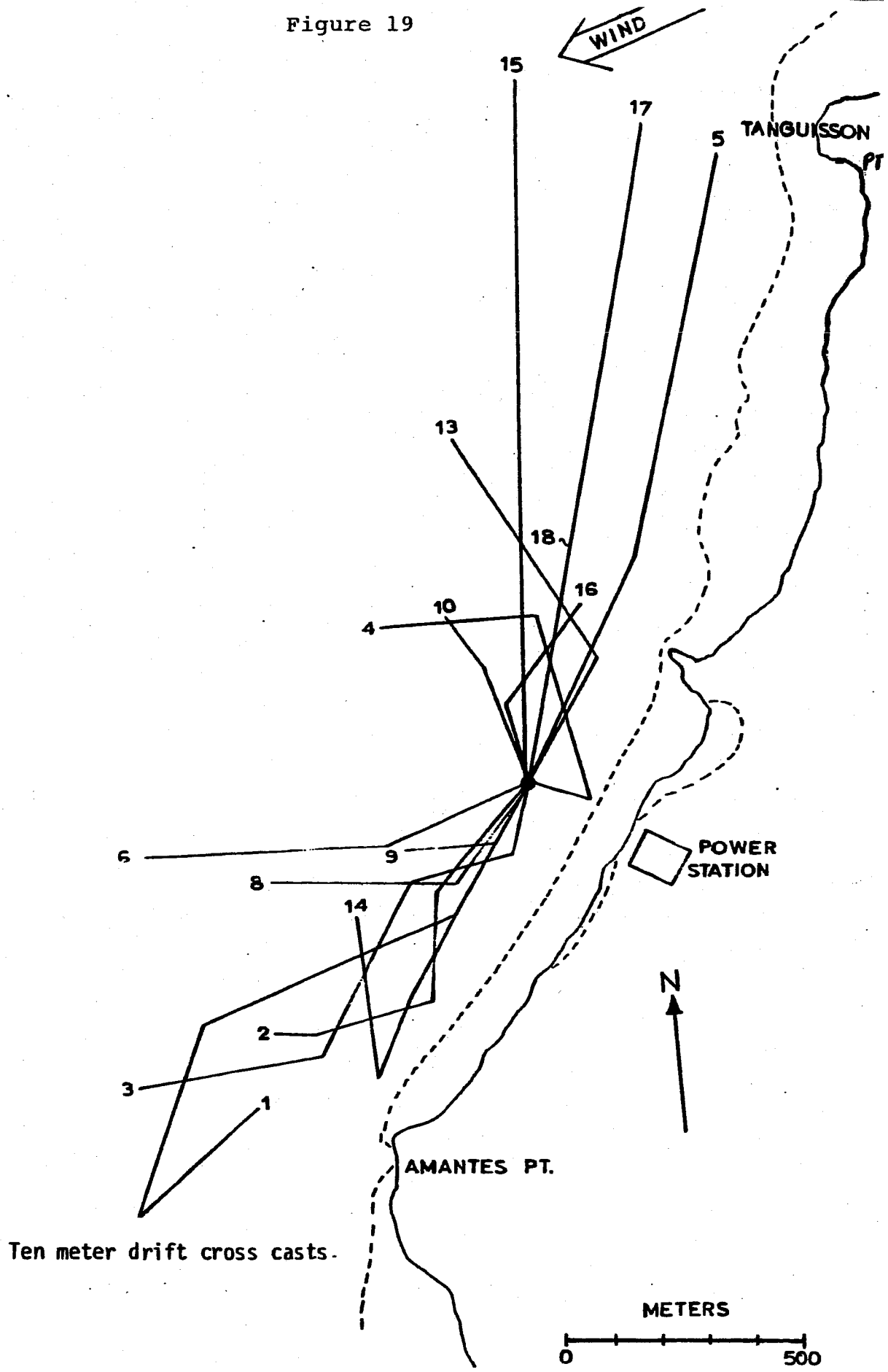
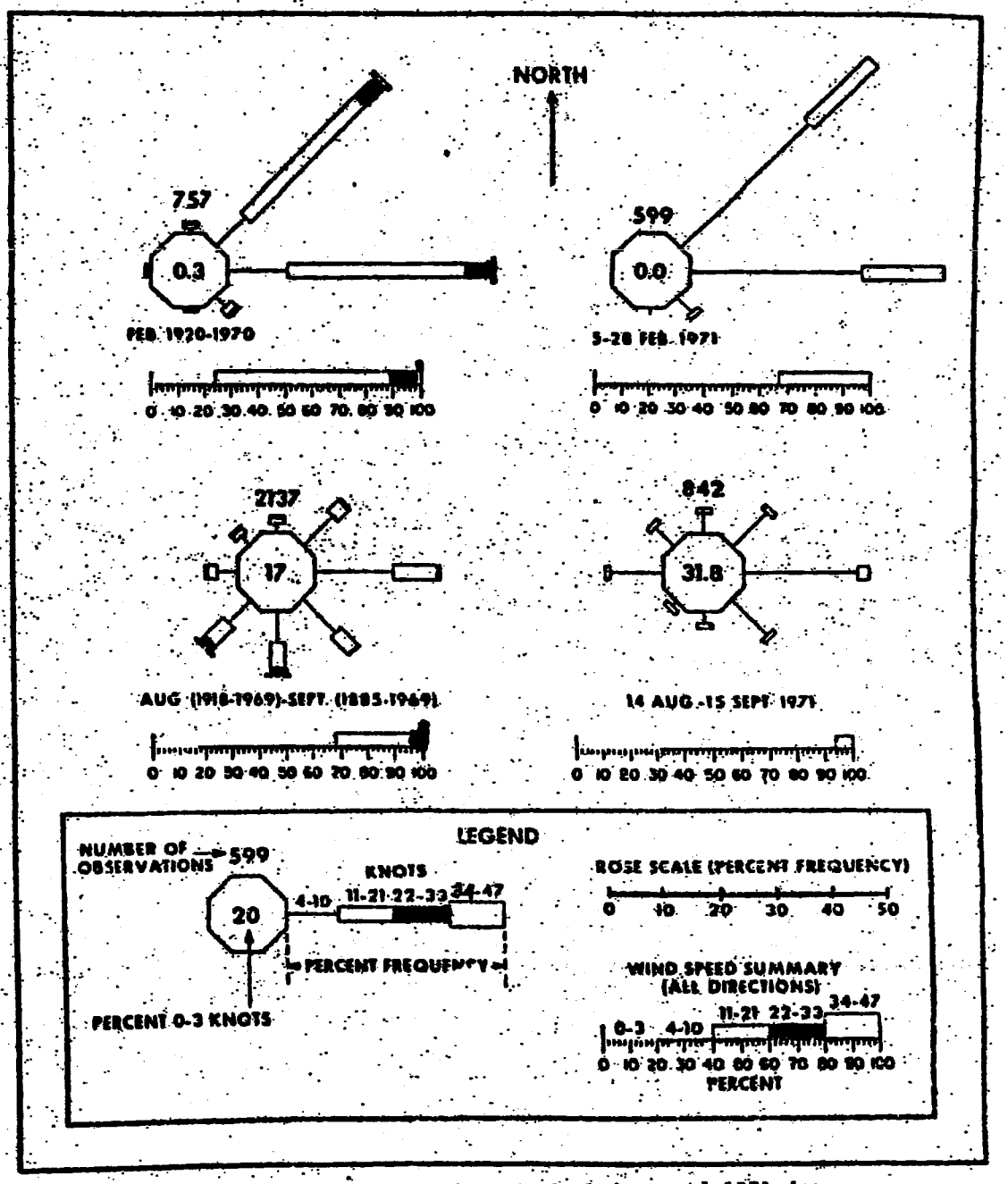

WIND
TANGUISS PT
Five meter drift cross casts.
15
17
5
16
13
4
18
6
11
10
12
14
8
7
POWER STATION
2
N
3
AMANTES PT.
1
METERS
0

Figure 19



Ten meter drift cross casts.

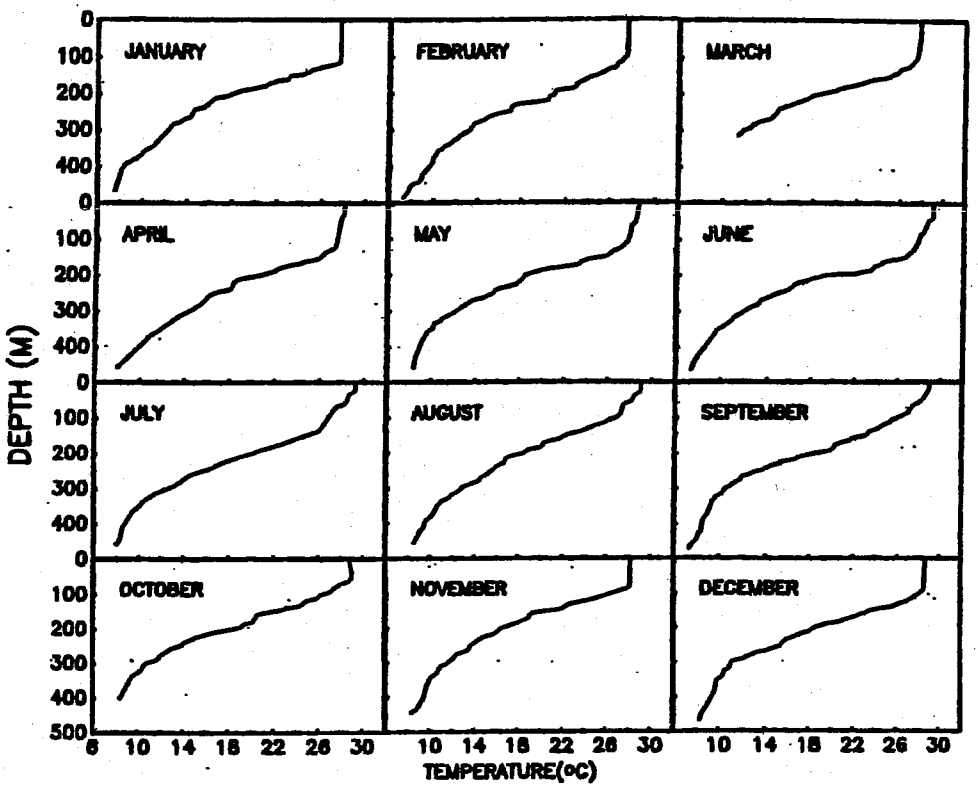
Figure 20



Wind roses of historical data and 1971 data.

Figure 21

Amesbury & Babin: Ocean Temperature and Pelagic Fish



Monthly temperature-depth relationships for the ocean waters near Guam. Individual plots are from years with temperature conditions most nearly approximating longterm average conditions for that month: Jan–1972, Feb–1974, Mar–1976, Apr (0–250 m)–1982, Apr (250–475 m) –1981, May–1975, Jun–1970, Jul–1979, Aug–1974, Sep–1974, Oct–1976, Nov–1979, Dec–1971.

Table 5

Water Quality Data for Northern District WWTP Receiving Waters 1989-1997.

PARAMETER	STATION	DEPTH	DATE SAMPLE COLLECTED									
			3/89	6/89	9/89	12/89	7/90	10/90	4/91	5/91	8/91	12/91
Fecal coliform	C	surface	6310		100	9120	10	0	10	60	0	400
FC/100mL *	D	surface	0		0	5	0	0	0	10	0	18
	E	surface	0		0	0	0	0	0	1	0	0
temperature	C	surface	27.5	28.0	29.1	30.4	30.2	29.0	26.5	27.3	29.4	26.5
oC		mid		27.2	29.0	30.4	30.4	29.0	26.5	27.5	29.5	26.5
		bottom		27.2	28.9	30.4	30.3	28.5	26.5	27.5	29.4	26.5
	D	surface	26.8	27.7	29.9	30.8	30.7	29.5	26.5	27.5	29.3	26.4
		mid		27.3	29.0	30.2	30.5	28.5	26.5	27.5	29.4	26.6
		bottom	26.8	27.2	28.9	30.2	30.6	28.0	26.5	27.4	29.3	26.6
	E	surface	26.8	27.7	29.0	29.5	30.5	29.5	26.4	27.1	29.4	26.3
		mid	27.0	27.4	29.0	29.5	30.4	28.0	26.5	27.0	29.4	26.3
		bottom	27.0	27.4	28.8	29.5	29.8	28.0	26.6	27.0	29.3	26.3
salinity	C	surface	32.8	35.1	35.8	35.1	34.0	33.0	35.0	34.0	33.0	35.0
ppt		mid		35.7	35.8	34.0	32.0	34.0	35.0	34.0	31.0	35.0
		bottom		16.7	2.2	35.3	32.0	33.0	35.0	34.0	31.0	34.0
	D	surface	32.9	35.8	35.1	34.9	32.0	34.0	35.0	35.0	35.0	35.0
		mid		36.0	36.0	34.6	30.0	34.0	34.0	35.0	35.0	35.0
		bottom	32.9	36.0	36.0	33.5	30.0	34.0	34.0	35.0	35.0	35.0
	E	surface	34.0	35.9	35.5	34.9	34.0	34.0	35.0	35.0	35.0	35.0
		mid	34.0	36.0	35.5	34.6	34.0	34.0	35.0	35.0	35.0	35.0
		bottom	34.0	35.7	35.7	33.9	34.0	34.0	35.0	35.0	35.0	35.0
pH	C	surface	8.40	8.48	8.18	8.21	7.95	8.10	8.22	9.47	9.21	7.99
		mid		8.28	8.17	8.20	8.34	8.29	8.37	9.28	9.18	8.04
		bottom		7.42	7.32	8.19	8.33	8.29	8.38	9.28	9.16	8.03
	D	surface	8.40	8.34	8.25	8.25	8.29	8.31	8.79	9.07	9.71	8.01
		mid		8.30	8.18	8.18	8.33	8.28	8.65	8.96	9.56	8.04
		bottom	8.39	8.30	8.16	8.18	8.34	8.31	8.66	8.87	9.49	8.04
	E	surface	8.38	8.30	8.17	8.17	8.48	8.29	8.39	9.10	9.45	8.02
		mid	8.39	8.30	8.16	8.18	8.40	8.30	8.29	9.27	9.53	8.03
		bottom	8.38	8.10	8.16	8.18	8.39	8.31	8.35	9.51	9.55	8.04
D. O.	C	surface		7.60	6.60	6.90	5.74	8.40	5.68	2.71	3.15	4.63
mg/L		mid		6.20	6.40	5.90	5.63	7.90	5.95	3.11	3.29	5.78
		bottom		6.20	6.40	5.90	5.34	7.80	5.32	3.73	3.76	6.28
	D	surface		6.30	6.70	6.30	5.40	9.00	5.32	2.46	3.17	4.85
		mid		6.20	6.20	5.80	5.79	8.70	4.72	3.45	3.47	5.75
		bottom		6.10	6.20	5.80	5.90	8.80	4.48	3.52	3.58	7.03
	E	surface		6.20	6.20	5.80	5.08	9.20	4.98	2.11	3.85	5.04
		mid		6.40	6.10	5.90	5.34	9.10	4.87	3.25	3.76	5.78
		bottom		6.40	6.10	5.90	5.51	9.30	5.51	3.50	3.77	5.98
Turbidity	C	surface	3.00	11.00	11.00	0.35	0.25	0.30	0.22	0.60	0.18	0.18
NTU		mid		11.00	11.00	0.35	0.30	0.35	0.25	0.85	0.15	0.10
except for		bottom		3.00	3.00	0.38	0.30	0.40	0.25	0.85	0.27	0.20
3/89, 6/89, 9/89	D	surface	11.00	11.00	11.00	0.55	0.10	0.15	0.20	0.15	0.15	0.10
when secci		mid	11.00	11.00	11.00	0.28	0.15	0.15	0.35	0.15	0.11	0.10
disc was used		bottom	11.00	11.00	11.00	0.25	0.15	0.15	0.35	0.15	0.14	0.35
	E	surface	11.00	11.00	11.00	0.25	0.18	0.15	0.01	0.10	0.21	0.10
		mid	11.00	11.00	11.00	0.20	0.25	0.15	0.01	0.10	0.26	0.15
		bottom	11.00	11.00	11.00	0.15	0.30	0.15	0.01	0.10	0.14	0.20
NOx	C	surface	0.032	0.018	0.044	0.0033						
		mid	ns	0.0029	0.0082	0.0025						
		bottom	ns	0.013	0	0.0009						
	D	surface	0.038	0.0058	0.089	0.0068						
		mid	ns	0.0035	0.011	0.0008						
		bottom	0.03	0.0024	0.037	0.0012						
	E	surface	0.0015	0.0021	0.04	0.0009						
		mid	0.0011	0.0015	0.013	0.0002						
		bottom	0.0023	0.0012	0.0056	0.0004						
FRP	C	surface	0.013	0.0003	0.012	0.025						
		mid	ns	0.03	0.0084	0.0085						
		bottom	ns	1.6	2.7	0.011						
	D	surface	0.008	0.0074	0.0091	0.0085						
		mid	ns	0.0003	0.01	0.0046						
		bottom	0.0076	0.0003	0.0028	0.0046						
	E	surface	0.0066	0.0003	0.0011	0.0052						
		mid	0.0097	0.0003	0.0011	0.0026						
		bottom	0.0035	0.0003	0.0011	0.0036						
Treatment Plant Average Flow (MGD)			2.01	2.13	2.16	2.23	2.23	2.05	2.36	3.32	2.57	2.96

* values of 400 for fecal coliform represent reports of >400FC/100mL

continued over page

Table 5

Water Quality Data :Northern Districts WWTP Receiving Waters 1989-1997

PARAMETER	STATION	DEPTH	DATE SAMPLE COLLECTED									
			5/92	8/92	1/93	4/93	9/93	10/93	6/94	1/97	5/97	7/97
Fecal coliform	C	surface	400	10	400	10	36	400	400	400	400	85
FC/100mL *	D	surface	0	0	0	0	20		0	400	32	0
	E	surface	0	0	0	0	0	5	0	0	0	0
temperature	C	surface	27.3	28.5	26.4	27.7	28.3	27.5	28.9	32.0	28.0	29.0
oC		mid	27.2	28.3	25.8	27.6	28.2	27.5	28.7	31.0	29.0	29.0
		bottom	27.2	28.3	26.0	27.6	28.1	27.8	28.6	31.0	29.0	29.0
	D	surface	27.2	28.5	25.9	27.7	28.4	28.6	28.8	31.0	30.0	29.0
		mid	27.3	28.6	25.9	27.6	28.2	28.2	28.7		30.0	29.0
		bottom	27.2	28.5	26.0	27.7	28.2	28.2	28.7		30.0	29.0
	E	surface	27.4	28.5	26.1	27.6	28.6	28.0	28.8	31.0	28.0	29.0
		mid	27.0	28.5	26.1	27.7	28.1	28.0	28.6		28.0	29.0
		bottom	27.2	28.4	26.1	27.7	28.1	27.9	28.6	32.0	28.0	29.0
salinity	C	surface	35.0	35.0	34.0	35.0	34.0	29.0	24.0	26.0	32.0	29.0
ppt		mid	35.0	32.0	34.0	35.0	34.0	29.1	24.0	25.0	30.0	27.5
		bottom	35.0	33.0	34.0	35.0	34.0	29.5	25.0	23.0	30.0	28.0
	D	surface	35.0	34.0	35.0	35.0	35.0	28.5	24.0	23.0	30.0	29.0
		mid	35.0	34.0	35.0	35.0	35.0	29.0	24.0		31.0	28.5
		bottom	35.0	33.0	35.0	35.0	35.0	29.1	25.5		30.0	28.5
	E	surface	35.0	33.0	35.0	35.0	35.0	28.5	24.0	28.0	30.0	29.0
		mid	35.0	33.0	35.0	35.0	35.0	29.1	24.0		30.0	28.5
		bottom	35.0	34.0	35.0	35.0	35.0	29.1	24.0	24.0	29.5	28.5
pH	C	surface	7.52	8.44	8.42	7.89	9.23	9.81	8.50	8.34	8.17	8.29
		mid	7.53	8.67	8.97	7.94	9.20	9.67	8.50	8.33	8.21	8.29
		bottom	7.55	8.66	9.12	7.97	9.25	9.50	8.51	8.34	8.22	8.30
	D	surface	7.65	8.69	9.17	8.00	9.11	8.80	8.49	8.34	8.26	8.30
		mid	7.62	8.68	9.14	7.99	9.08	8.92	8.50		8.25	8.29
		bottom	7.62	8.66	9.05	8.00	9.13	8.97	8.58		8.25	8.30
	E	surface	7.69	8.69	8.57	7.98	9.26	9.36	8.46	8.35	8.21	8.30
		mid	7.65	8.70	8.72	7.98	9.17	9.31	8.50		8.25	8.30
		bottom	7.65	8.72	8.83	7.97	9.16	9.32	8.51	8.36	8.25	8.30
D. O.	C	surface	2.80	2.68	4.55	4.56	4.99	1.12**	7.80	8.40	5.80	5.50
mg/L		mid	3.12	3.73	4.80	4.90	5.84	1.17**	7.30	5.80	5.60	5.80
		bottom	3.20	3.84	4.76	4.58	6.10	1.18**	7.20	5.25	5.50	5.00
	D	surface	3.64	3.68	4.34	4.50	4.37	1.06**	6.40	7.50	6.60	6.00
		mid	3.62	3.66	4.72	4.86	4.86	1.18**	6.40		6.00	4.80
		bottom	3.62	3.72	4.48	4.59	5.13	1.07**	6.40		6.00	5.10
	E	surface	3.71	3.75	4.68	4.55	5.19	1.14**	6.80	7.80	5.60	6.50
		mid	3.99	3.71	4.62	5.95	6.26	1.20**	7.40		5.70	5.20
		bottom	4.00	3.85	5.01	4.95	6.55	1.13**	7.30	7.60	5.50	6.40
Turbidity	C	surface	0.55	0.43	0.90	0.25	0.30	0.46	0.41	0.51	0.46	0.25
NTU		mid	0.60	0.34	0.20	0.26	0.30	0.54	0.73	0.48	0.97	0.46
except for		bottom	0.85	0.39	0.30	0.35	0.35	0.34	1.00	0.42	1.59	0.99
3/89, 6/89, 9/89	D	surface	0.15	0.31	0.10	0.20	0.20	0.27	0.40	0.27	0.51	0.19
when secci		mid	0.15	0.29	0.40	0.20	0.30	0.40	0.48		0.36	0.31
disc was used		bottom	0.25	0.30	0.30	0.25	0.30	0.49	0.30		0.64	0.29
	E	surface	0.10	0.65	0.20	0.25	0.25	0.39	0.33	0.24	0.34	0.24
		mid	0.10	0.27	0.20	0.25	0.20	0.29	0.50		0.35	0.30
		bottom	0.10	0.29	0.20	0.20	0.20	0.27	0.60	0.71	0.49	0.16
NOx	C	surface										
		mid										
		bottom										
	D	surface										
		mid										
		bottom										
	E	surface										
		mid										
		bottom										
FRP	C	surface										
		mid										
		bottom										
	D	surface										
		mid										
		bottom										
	E	surface										
		mid										
		bottom										
Treatment Plant Average Flow (MGD			3.82	4.06	4.15	5.36	5.04	5.19	4.61	6.5	6.4	6.1

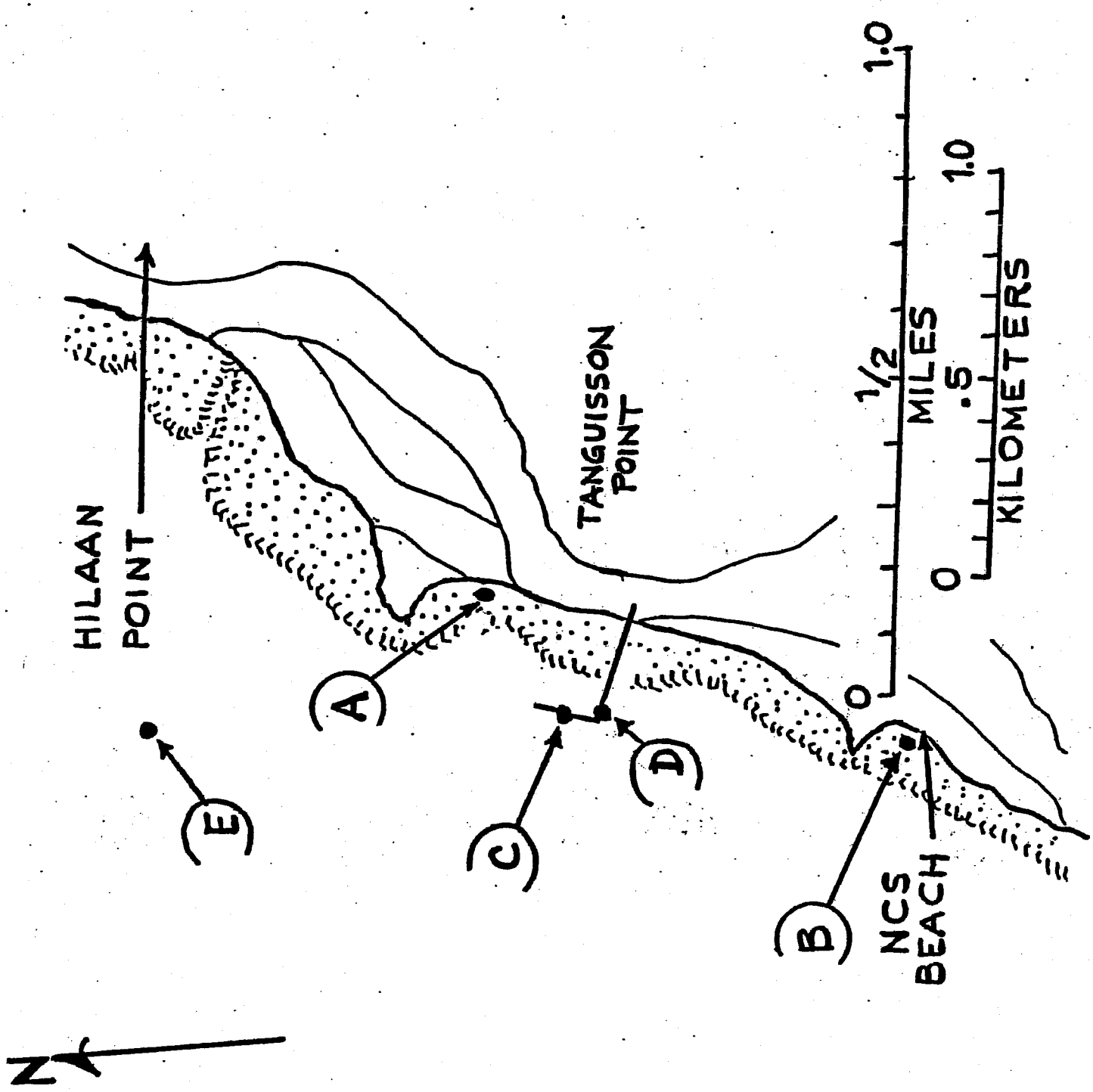
** values not included in calculations or graphs. These values are too low, the control site also has the same low readings. Probably due to incorrect use or calibration of the DO meter.

Table 5

Water Quality Data : Northern Districts WWTP Receiving Waters 1989-1997

PARAMETER	STATION	DEPTH	STATISTICAL DATA		
			MIN.	AVG.	MAX.
Fecal coliform	C	surface			
FC/100mL *	D	surface			
	E	surface			
temperature	C	surface	26.4	28.4	32.0
oC		mid	25.8	28.3	31.0
		bottom	26.0	28.3	31.0
	D	surface	25.9	28.5	31.0
		mid	25.9	28.3	30.5
		bottom	26.0	28.2	30.6
	E	surface	26.1	28.3	31.0
		mid	26.1	28.0	30.4
		bottom	26.1	28.1	32.0
salinity	C	surface	24.0	32.8	35.8
ppt		mid	24.0	32.3	35.8
		bottom	2.2	29.5	35.3
	D	surface	23.0	32.7	35.8
		mid	24.0	33.1	36.0
		bottom	25.5	33.0	36.0
	E	surface	24.0	33.0	35.9
		mid	24.0	33.3	36.0
		bottom	24.0	32.8	35.7
pH	C	surface	7.5	8.4	9.8
		mid	7.5	8.5	9.7
		bottom	7.3	8.4	9.5
	D	surface	7.7	8.5	9.7
		mid	7.6	8.5	9.6
		bottom	7.6	8.5	9.5
	E	surface	7.7	8.5	9.5
		mid	7.7	8.5	9.5
		bottom	7.7	8.5	9.6
D. O.	C	surface	2.7	5.5	8.4
mg/L		mid	3.1	5.4	7.9
		bottom	3.2	5.3	7.8
	D	surface	2.5	5.4	9.0
		mid	3.5	5.2	8.7
		bottom	3.5	5.3	8.8
	E	surface	2.1	5.4	9.2
		mid	3.3	5.5	9.1
		bottom	3.5	5.7	9.3
Turbidity	C	surface	0.2	1.6	11.0
NTU		mid	0.1	1.5	11.0
except for		bottom	0.2	0.8	3.0
3/89, 6/89, 9/89	D	surface	0.1	1.9	11.0
when secci		mid	0.1	2.0	11.0
disc was used		bottom	0.1	2.0	11.0
	E	surface	0.0	1.8	11.0
		mid	0.0	1.9	11.0
		bottom	0.0	1.9	11.0
NOx	C	surface			
		mid			
		bottom			
	D	surface			
		mid			
		bottom			
	E	surface			
		mid			
		bottom			
FRP	C	surface			
		mid			
		bottom			
	D	surface			
		mid			
		bottom			
	E	surface			
		mid			
		bottom			
Treatment Plant Average Flow (MGD)					

Figure 22



Northern District Water Quality Monitoring Stations.

Biological Conditions

II.C. ***Biological Conditions***

II.C.1 Provide a detailed description of representative biological communities in the vicinity of your current and modified discharge(s)

Jones and Randall, 1973 conducted a preliminary reef survey for the Northern District Sewage System. They noted that the submarine terrace in the area of the current outfall was fairly uniform. Former coral growth was extensively developed on the terrace prior to the 1968-1969 Acanthaster planci (Crown of Thorns Starfish) infestation that killed 90% to 99% of the living corals. They note that recolonization was starting to take place, but at a slow rate. The percent coverage by living coral was 2% to 10%

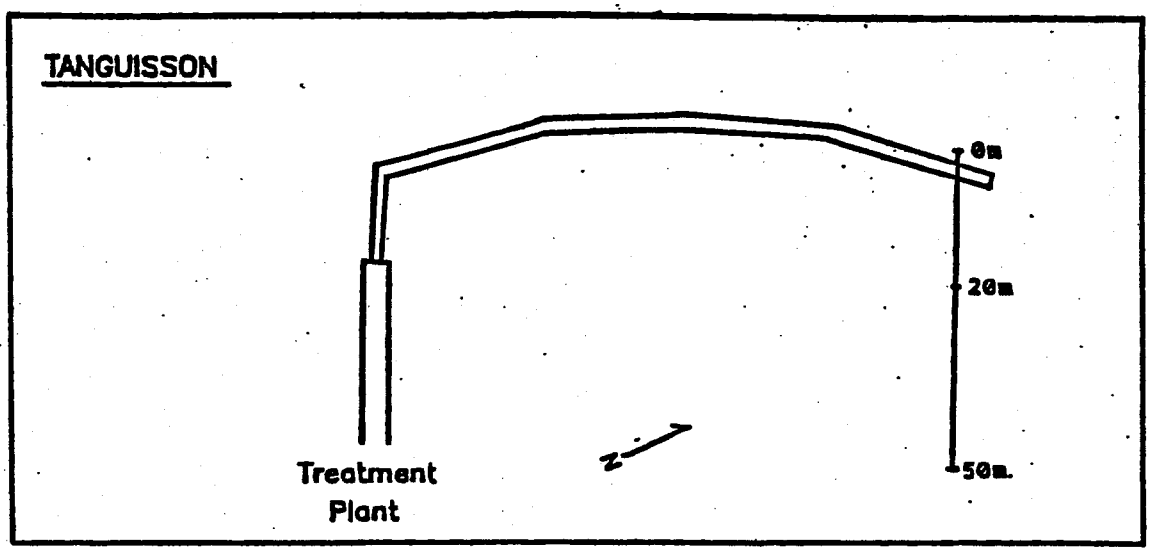
Biological monitoring of the Northern District WWTP's was contracted to the University of Guam Marine Laboratory. The surveys were conducted quarterly, from August 1989 until September 1994, with quarterly reports and yearly summaries submitted to GWA. Three 10 m transects were run parallel to shore, one immediately at the diffusers (0 m) and the other two at 20 m and 50 m distances towards shore from the diffusers (Figure 23). The transects were therefore at progressively shallower depths. However, the individual transect depths are unknown. Transect sites were permanently marked for long term monitoring. No control site surveys were conducted for comparison.

Qualitative observations were made to determine the composition of each site. An estimate of substrate cover was done by using a 10 m chain-link transect method, and the percent cover of various species and benthic groups were estimated. The species of fish present were recorded by a diver swimming the 50 meter line connecting each of the three transects. The reports did not state whether the fish observations were restricted to a distance either side of the 50 m line or whether it was a timed observation, and quantities of each species were not recorded. The GWA biologist conducted a Review and Analysis of Past Biological Monitoring Data for the Northern District WWTP, Guam. This report is located in ITEM N. The information below is taken from that report.

A summary of the surveys to estimate percent cover by individual species or benthic groups (*i.e.* Bare Substrate, Turf Algae, Macro Algae, Coralline Algae, Corals and other) along the 0m, 20m and 50m transects are given in Table 6, 7 and 8 respectively. The area surrounding the diffusers (0 - 50m) was predominantly covered by either Bare Substrate, Turf Algae, or Coral, most commonly Porites rus and Porites lutea. These three groups in general made up greater than 75% of the cover. Coralline Algae, Macro Algae or other live sessile organisms (sponges, ascidians, vermetid molluscs, etc) made up the remaining benthic cover. Regression analysis was performed on the data to establish if there had been any significant changes in the benthic community over the period of time that the surveys took place. Results of the analysis are summarized in Table 6. There were significant increases in Bare Substrate along the 0m, 20m and 50m transects. A significant decreases in the percent cover of Turf Algae along the 0m and 50m transects and an increase in Coral along the 0m transect. Coral cover had increased from that reported by Jones and Randall in 1973, which was 2% to 10%. The 0m transect had 1%-30% coral cover, and the 20m and 50m transects had approximately 10% to 60% coral cover. All other changes in percentage over cover were non significant.

A summary of the fish species observed over the study period is given in Table 9. Species diversity and number of species in each trophic level did not change significantly over the

Figure 23



Location of Biological Monitoring Transects, with sample loctions at 0, 20 and 50 meters.

period of biological monitoring, and are believed to be representative of other coral reef fish communities around Guam (personal communication; Dr Steve Amesbury, Prof. of Ichthyology, UOG Marine Laboratory).

Jones, R. S. and R. H. Randall. 1973. A Preliminary Marine Survey for the Northern District Sewage System. University of Guam, Marine Laboratory, Environmental Survey Report No.8.

II.C.2. a. Are distinctive habitats of limited distribution (such as kelp beds or coral reef) located in areas potentially affected by the modified discharge?

Yes, coral reefs encircle almost the entire island of Guam.

II.C.3. a. Are commercial or recreational fisheries located in areas potentially affected by the discharge?

Yes.

b. If yes, provide information on types, location and value of fisheries

Attached information (Table 11) is from surveys conducted by the Department of Aquatics and Wildlife Resources (DAWR) during 1997.

Table 6

Species list and percent cover along the 0 meter transect at Northern District Outfall

SPECIES OR GROUP	PERCENT COVER															
0m	8/25/89	11/14/89	4/2/90	6/13/90	9/24/90	12/11/90	8/27/91	12/26/91	3/19/92	8/6/92	12/4/92	3/30/93	8/17/93	1/10/94	5/27/94	8/28/94
Dictiota	0	0	0	0	0	0	0	0	0	0	0	0	0	0.13	0	0
Favid	0	0.14	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Acanthastrea	0	0	0	0	0.26	0	0	0	0	0	0	0	0	0	0	0
Coscinarea columna	0.26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pavona varians	0	0	0	0	0.26	0	0	0	0	0	0	0	0	0	0	0
Stylocoeonella sp	0	0	0	0.26	0	0	0	0	0	0	0	0	0	0	0	0
Leptoria	0	0	0	0	0	0.26	0	0	0	0	0	0	0	0	0	0
Halymenia	0	0	0.39	0	0	0	0	0	0	0	0	0	0	0	0	0
Scolymia sp.	0	0	0	0.39	0	0	0	0	0	0	0	0	0	0	0	0
zooanthid	0	0	0	0	0.39	0	0	0	0	0	0	0	0	0	0	0
Pocillopora	0	0	0	0.39	0	0	0	0	0	0	0	0	0	0	0	0
Chrysophyceae	0	0	0.52	0	0	0	0	0	0	0	0	0	0	0	0	0
Pleiastrea	0	0	0	0.65	0	0	0	0	0	0	0	0	0	0	0	0
Schizotrix sp.	0.39	0	0	0	0.26	0	0	0	0	0	0	0	0	0	0	0
Milliopora	0	0	0	0	0	0	0	0	0	0	0	0	0	0.78	0	0
Liagora	0	0	0.78	0	0	0	0	0	0	0	0	0	0	0	0	0
Asytreopora	0	0	0	0.39	0	0	0	0	0	0	0	0	0	0.13	0	0.39
Red tuff	0	0	0	1.04	0	0	0	0	0	0	0	0	0	0	0	0
Garcillaria	0	0	0	0	0	0	0.26	0	0.79	0	0	0	0	0	0	0
Neomeris sp.	0	0	0	0	0	0	0.13	0.53	0	0.52	0	0	0	0	0	0
Blue green micro algae	0	1.41	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fungia	0	0	0	0	0	0.78	0	0	0.26	0	0	0	0	0.26	0	0.39
Sinulara	0	0	0	0	1.95	0	0	0	0	0	0	0	0	0	0	0
Goniastrea sp.	0	0	0.26	0	0	0	0	0	0	0	0	0.39	0.52	0.26	0	0.78
Cyptastrea	0	0	0	0	1.04	0	0	0	0	0	0	1.56	0	0	0	0
Halimeda discoidea	1.32	0.56	0.91	0	0	0	0	0	0	0	0	0	0	0	0	0
Favities sp.	0	0	0	0	0	0	0.13	0	0	0	0	0	0	2.47	0.39	0
Montipora	0	0	0	0	0	0	0	0.53	0	0.26	0	0.26	0.26	0	0	1.95
Leptastrea	0	0	0	0	0	0	0	0	0	0.52	1.00	1.95	1.04	1.95	3.12	0.52
Favia sp.	0	0	0	0.26	0	0.26	0	0	0	0	1.00	1.30	2.08	0.91	2.21	2.99
Halimeda opuntia	0	0.84	0.91	2.6	0	0.52	0.53	2.10	1.84	0.65	0.08	0	1.17	0.52	0	0.52
Porites sp.	0	0	3.77	0.91	0.65	0	0	0	0	0	0	2.86	0.26		1.04	2.99
Porites lutea	3.16	2.67	0	0	8.18	0.39	0	0	0	0	0	0	0	0	0	0
Galaxaura sp.	0	0.14	1.04	0	0	0	0	0.13	9.21	3.38	0.15	2.27	0.52	0	0	0
Coralline Algae	5.53	1.97	0	0.91	0	0	6.19	0	0	0	0.46	0.91	2.08	0.91	0.26	5.45
Porites rus	1.32	1.27	0.26	1.04	37.79	1.95	7.76	0	0	0	0.15	0	0	9.61	1.04	22.21
Turf Algae	75.14	81.02	82.86	79.48	37.92	72.21	74.60	26.57	11.68	42.21	14.63	8.31	7.01	10.78	5.84	14.68
Bare	13.10	10.02	8.32	11.69	11.30	23.38	10.40	68.96	76.32	52.46	82.52	79.74	83.38	71.30	86.10	47.14

Species list and percent cover along the 20 meter transect at Northern District Outfall

SPECIES OR GROUP	PERCENT COVER															
20m	8/25/89	11/14/89	4/2/90	6/13/90	9/24/90	12/11/90	8/27/91	12/26/91	3/19/92	8/6/92	12/4/92	3/30/93	8/17/93	1/10/94	5/27/94	8/28/94
Polychaete	0	0	0	0	0	0.13	0	0	0	0	0	0	0	0	0	0
Asteopora	0	0	0	0	0	0.26	0	0	0	0	0	0	0	0	0	0
Padina	0	0	0	0	0	0	0	0.26	0	0	0	0	0	0	0	0
Alveopora sp.	0	0	0.39	0	0	0	0	0	0	0	0	0	0	0	0	0
Galaxea sp.	0	0	0	0.39	0	0	0	0	0	0	0	0	0	0	0	0
Spiro branchus gigantea	0	0	0	0	0	0	0.40	0	0	0	0	0	0	0	0	0
Favid	0	0	0.52	0	0	0	0	0	0	0	0	0	0	0	0	0
Amphiroa sp.	0	0	0.65	0	0	0	0	0	0	0	0	0	0	0	0	0
Stichopus chloronotus.	0	0	0	0	0	0	0	0	0	0	0	0	0	0.91	0	0
Garcillaria	0	0	0	0	0	0	0	0.39	0	0	0	0	0	0	0.52	0
Neomeris	0	0	0	0	0	0	0	0.66	0	0	0	0.26	0	0	0	0
Holothuria noblis	0	0	0	0	0	0	0	0	0	0	0	1.04	0	0	0	0
favities sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.04	0
Sinularia	0	0	0	0	0	0	0	0	0	1.04	0	0	0	0	0	0
Halimeda discoidea	1.18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocillopora	0	0	0	0	0	0	0	0	0	1.30	0	0	0	0	0	0
Leptastrea sp.	0	0.39	0	0.13	0	0	0	0	0	0	0	0	0	0.78	0	0
Sponge	1.45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hypnea sp.	0	0	0	0	0	0	1.71	0	0	0	0	0	0	0	0	0
Amphiroa Fragill	2.23	0	0	0	0	0		0	0	0	0	0	0	0	0	0
Soft coral	0	2.24	0	0	0	0	0	0	0	0	0.62	0	0	0	0	0
Ralfsia sp.	0	0	0	0	0	0	0	0	0	0	3.47	0	0	0	0	0
Goniastrea	0	0	0	0	0	0	0	1.05	0.79	2.86	0	0	0	0	0.39	0.26
Dictiota sp.	0	0	0	0	0	0	0	0	0	2.99	0	2.86	0	0	0	0
Caulerpa	0	0	0	0	0	0.39	0	0	0	0	5.78	0	0	0	0	0
Liagora sp.	0	0	0	0	0	0	0	0	6.45	0	0	0	0	0	0	0
Favia	0	0	0	0	0	0.91	0.40	0	0	2.34	0.85	0.78	0	0	1.69	0.26
Porites sp.	0	0	3.51	2.08	0	0.39	0	0	0	0	0	0	0	0	1.30	0.39
Montipora sp.	0	0	0	0	0	0	0	0	0.79	0	0	0	0	6.75	0.65	0
Galaxaura sp.	0.26	0	0.13	0.91	0	1.17	0.53	3.16	0	0	0	0	3.51	1.69	0.52	0.65
Halimeda opuntia	0	1.32	0.13	0.13	0	0.78	1.84	0	1.71	3.90	0.15	0	0	3.12	0.65	0.39
Porites lutea	2.50	1.58	0	0	0	0	1.32	1.32	4.61	6.32	0	0.52	0	0	0	0
Coralline Algae	7.24	10	1.82	0	0	0	0	0	0	9.49	2.23	2.21	9.09	5.32	2.99	6.04
Bare	7.50	4.87	5.2	0	0	35.72	0.263	16.43	64.61	28.04	14.47	4.29	68.05	52.47	62.08	23.83
Porites rus	39.48	29.08	26.88	28.57	50.78	29.66	60.79	2.89	16.84	26.63	21.02	48.05	17.79	13.25	24.29	60.39
Turf Algae	38.16	50.53	59.75	67.79	49.22	30.78	32.49	73.83	4.21	15.19	50.34	40.00	1.56	15.71	3.90	7.79

Species list and percent cover along the 50 meter transect at Northern District Outfall

SPECIES OR GROUP	PERCENT COVER															
50m	8/25/89	11/14/89	4/2/90	6/13/90	9/24/90	12/11/90	8/27/91	12/26/91	3/19/92	8/6/92	12/4/92	3/30/93	8/17/93	1/10/94	5/27/94	8/28/94
Vermetid	0.13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
macro algae	0	0	0	0	0	0.13	0	0	0	0	0	0	0	0	0	0
Valonia	0	0	0	0	0	0	0	0	0.13	0	0	0	0	0	0	0
Fungia sp.	0	0	0	0	0	0	0	0	0	0	0.15	0	0	0	0	0
Codium	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.26	0
Cyptastrea	0	0	0	0	0	0	0	0	0	0	0	0.26	0	0	0	0
Poritid	0	0	0.26	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocillopora	0	0	0	0	0	0	0	0	0	0	0	0	0	0.39	0	0
desmea	0	0	0	0	0	0.39	0	0	0	0	0	0	0	0	0	0
Alveopora sp.	0	0	0.39	0	0	0	0	0	0	0	0	0	0	0	0	0
Dictyota	0	0	0	0	0	0.39	0	0	0	0	0	0	0	0	0	0
Neomeris sp.	0	0	0	0	0	0	0	0	0.13	0.13	0	0	0	0	0	0.13
Goniastrea pectina	0	0	0.39	0	0	0	0	0	0	0	0	0	0	0	0	0
Echinostrephus	0	0	0	0	0	0	0	0	0	0	0	0	0	0.65	0	0
Schizotrix mexica	0	0	0.91	0	0	0	0	0	0	0	0	0	0	0	0	0
Goniastrea edwards	0	0	0.39	0	0.52	0	0	0	0	0	0	0	0	0	0	0
Stylophora	0	0	0	0	0	0	0	0	0.92	0	0	0	0	0	0	0
Sponge	0.26	0	0	0	0.78	0	0	0	0	0	0	0	0	0	0	0
Montipora	0	0	0	0	0	0.13	1.32	0	0	0	0	0	0	0	0	0
Garcillaria	0	0	0	0	0	0	1.45	0	0	0	0	0	0	0	0	0
Stichopus chloronotus.	0.26	0	0	0	0	0	0	0	0	1.17	0.15	0	0	0	0	0
Platygyra sp.	0	0	0	0	0	0	0	0	0	0.65	0	0	0.65	0	0.39	0
Jania sp.	0	0	0	0	0	0	0	0	1.71	0	0	0	0	0	0	0
Pavona	0	0	0	0	0	0	0	0	1.84	0	0	0	0	0	0	0
Favites	0	0	0	0	0	0.39	0.66	0	0	0.65	0	0	0	0.52	0.26	0
Amphiroa Fragill	2.37	0	0.26	0	0	0	0	0	0	0	0	0	0	0	0	0
Favid	2.64	0.13	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Astreopora	0	0	0	0	0	0	0	0	0	0.39	0	0	0.91	0.52	0	1.30
Halimeda sp	0.13	0	0.65	0.26	0	0.39	0.26	1.05	0	0.52	0	0	0	0.26	0	0
Favia	0	0	0	0	0	0.13	0.26	0.13	0	2.60	0	0	0	0	0	0.52
Soft coral	0	0	0	0	0	0	4.34	0	0	0	0	0	0	0	0	0
Lutea	0	0	5.32	0	0	0	0	0	0	0	0	0	0	0	0	0
Goniastrea sp.	0.92	0.66	0	0	0	0	0	0	0.92	3.77	0	0.65	0	0	0	0
Leptastrea	0	0	0.26	0	0	0	0	0	0	0	0.15	0.39	1.56	0.91	3.79	0
Galaxea sp.	0	0	0	3.64	0	0	0	0	0	0.26	0	8.57	4.42	0	0	0
Porites sp.	0	1.45	2.6	4.68	0	6.1	0	0	0	0	0	0	0	0	0	2.08
Porites lutea	5.53	1.32	0	0	0	0	0	0	0.79	0	0	3.51	4.94	5.19	1.95	0
Galaxaura sp.	0	0.26	1.04	0.26	0	0	0	0.26	3.95	0.71	0.62	0	0	8.05	3.77	4.68
Coralline Algae	4.08	0	1.82	0	0	0	8.95	0	1.71	5.98	0.23	0	1.82	0.52	0	1.04
Porites rus	28.29	25	20	30.52	2.99	40.78	17.37	21.25	21.32	13.37	8.86	16.62	5.84	12.86	15.45	31.04
Bare	8.95	8.81	20.39	15.2	23.38	4.16	5.26	6.55	6.32	16.37	80.98	68.70	74.42	68.83	72.32	43.38
Turf Algae	46.45	63.42	45.33	44.16	72.34	39.52	60.13	70.75	60.27	53.43	8.86	1.30	5.45	1.30	1.56	14.94

Table 8

Table 9

Northern District Outfall Fish Species.

shaded boxes represent that species been present

Fiscal Year	1990				1991				1992				1993				1994				Total
quarter	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	n/16
Acanthuridae (surgeonfishes) subfamily Acanthurinae (Surgeonfishes)																					
Acanthurus blochii						ns					ns				ns				ns		11
Acanthurus lineatus						ns					ns				ns				ns		1
Acanthurus nigricans						ns					ns				ns				ns		16
Acanthurus nigrofuscus						ns					ns				ns				ns		13
Acanthurus pyroferus						ns					ns				ns				ns		12
Acanthurus xanthopterus						ns					ns				ns				ns		3
Ctenochaetus binotatus						ns					ns				ns				ns		4
Ctenochaetus hawaiiensis						ns					ns				ns				ns		2
Ctenochaetus striatus						ns					ns				ns				ns		6
Zebrasoma flavescens						ns					ns				ns				ns		11
Zebrasoma scopas						ns					ns				ns				ns		3
Zebrasoma veliferum						ns					ns				ns				ns		1
Acanthuridae (Unicornfishes) subfamily Nasinae (Unicornfishes)																					
Naso annulatus						ns					ns				ns				ns		1
Naso lituratus						ns					ns				ns				ns		16
Naso hexacanthus						ns					ns				ns				ns		1
Naso tuberosus						ns					ns				ns				ns		6
Naso vlamingii						ns					ns				ns				ns		1
Aulostomidae (Trumpetfishes)																					
Aulostomus chinensis						ns					ns				ns				ns		1
Balistidae (Triggerfishes)																					
Balistapus undulatus						ns					ns				ns				ns		13
Balistidae sp.						ns					ns				ns				ns		1
Balistoides virdescens						ns					ns				ns				ns		4
Melichthys vidua						ns					ns				ns				ns		4
Melichythys niger						ns					ns				ns				ns		9
Odonus niger						ns					ns				ns				ns		6
Rhinecanthus rectangulus						ns					ns				ns				ns		1
Sufflamen bursa						ns					ns				ns				ns		10
Blenniidae (Blennies)																					
Meiacantus atrodorsalis						ns					ns				ns				ns		9
Caesionidae (Fusiliers)																					
Caesio carulaureus						ns					ns				ns				ns		2
Carangidae (Jacks; Trevallys)																					
Caranx melampygus						ns					ns				ns				ns		1
Gnathanodon speciosus						ns					ns				ns				ns		1
Chaetodontidae (butterflyfishes)																					
Chaetodon bennetti						ns					ns				ns				ns		10
Chaetodon citrinellus						ns					ns				ns				ns		16
Chaetodon ephippium						ns					ns				ns				ns		1
Chaetodon lunula						ns					ns				ns				ns		11
Chaetodon mertensii						ns					ns				ns				ns		11
Chaetodon ornatissimus						ns					ns				ns				ns		6
Chaetodon punctatofasciatus						ns					ns				ns				ns		1
Chaetodon reticulatus						ns					ns				ns				ns		8
Chaetodon trifasciatus						ns					ns				ns				ns		11
Chaetodon ulietensis						ns					ns				ns				ns		2
Chaetodon unimaculatus						ns					ns				ns				ns		2
Forcipiger flavissimus						ns					ns				ns				ns		2
Hemitauricthys polylepis						ns					ns				ns				ns		4
Heniochus acuminatus						ns					ns				ns				ns		1
Heniochus chrysostomus						ns					ns				ns				ns		5
Heniochus singularis						ns					ns				ns				ns		1
Cirrhitidae (Hawkfish)																					
Cirrhitichthys falco						ns					ns				ns				ns		5
Paracirrhites arcatus						ns					ns				ns				ns		2
Paracirrhitus forsteri						ns					ns				ns				ns		11
Gobiidae (Gobies)																					
Amblygobius sp.						ns					ns				ns				ns		1
Valenciennea strigatus						ns					ns				ns				ns		2
Haemulidae (Sweetlips and Grunts)																					
Scolopsis lineatus						ns					ns				ns				ns		1
Holocentridae subfamily Myripristinae (Solderfishes)																					
Myripristis spp.						ns					ns				ns				ns		1
Holocentridae subfamily Holocentrinae (Squirrelfishes)																					

Table 9

Northern District Outfall Fish Species.

shaded boxes represent that species been present

Fiscal Year	1990				1991				1992				1993				1994				Total
quarter	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	n/16
Sargocentron sp.						ns					ns				ns				ns		2
Labridae (Wrasses)																					
Anampses twisti						ns					ns				ns				ns		1
Bodianus axillaris						ns					ns				ns				ns		12
Bodianus mesothorax						ns					ns				ns				ns		1
Cheilinus bimaculatus						ns					ns				ns				ns		5
Cheilinus chlorourus						ns					ns				ns				ns		3
Cheilinus fasciatus						ns					ns				ns				ns		11
Cheilinus orientalis						ns					ns				ns				ns		2
Cheilinus oxycephalus						ns					ns				ns				ns		11
Cheilinius undulatus						ns					ns				ns				ns		7
Cheilinus unifasciatus						ns					ns				ns				ns		5
Cheilio inermis						ns					ns				ns				ns		1
Cirrhilabrus sp.						ns					ns				ns				ns		5
Coris aygula						ns					ns				ns				ns		2
Coris gaimard						ns					ns				ns				ns		14
Epinephelus sp.						ns					ns				ns				ns		1
Epibulus insidiator						ns					ns				ns				ns		2
Epiephelus merra						ns					ns				ns				ns		1
Gomphosus varius						ns					ns				ns				ns		11
Halichoeres biocellatus						ns					ns				ns				ns		1
Halichoeres hortulanus						ns					ns				ns				ns		14
Halichoeres margaritaceus						ns					ns				ns				ns		11
Halichoeres marginatus						ns					ns				ns				ns		2
Halichoeres trimaculatus						ns					ns				ns				ns		1
Hemigymnus melapterus						ns					ns				ns				ns		11
Hologymnosus annulatus						ns					ns				ns				ns		1
Labrichthys unilineatus						ns					ns				ns				ns		4
Labroides dimidiatus						ns					ns				ns				ns		12
Macropharyngogon meleagris						ns					ns				ns				ns		3
Navoculichthys taeniourus						ns					ns				ns				ns		3
Stethojulis bandanensis						ns					ns				ns				ns		1
Stethojulis strigiventor						ns					ns				ns				ns		11
Thalassoma hardwickii						ns					ns				ns				ns		11
Thalassoma lutescens						ns					ns				ns				ns		15
Thalassoma purpureum						ns					ns				ns				ns		1
Thalassoma quinquevittatum						ns					ns				ns				ns		1
Thallasoma lunare						ns					ns				ns				ns		2
Lethrinidae (Emperors)																					
Gnathodentex aureolineatus						ns					ns				ns				ns		2
Lethrinus harak						ns					ns				ns				ns		1
Lethrinus xanthochilus						ns					ns				ns				ns		4
Monotaxis grandoculus						ns					ns				ns				ns		4
Lutjanidae (Snappers)																					
Aphareus furca						ns					ns				ns				ns		3
Lutjanus bohar						ns					ns				ns				ns		1
Macolor niger						ns					ns				ns				ns		9
Malcolor macularis						ns					ns				ns				ns		1
Microdesmidae (Dartfishes)																					
Nemateleotris magnifica						ns					ns				ns				ns		3
Ptereleotris evides						ns					ns				ns				ns		12
Ptereleotris zebra						ns					ns				ns				ns		7
Mugilidae (Mullets)																					
Parupeneus barberinus						ns					ns				ns				ns		3
Parupeneus multifasciatus						ns					ns				ns				ns		12
Mullidae (Goatfishes)																					
Parapeneus bifasciatus						ns					ns				ns				ns		1
Muraenidae (Moray eels)																					
Gymnothorax meleagris						ns					ns				ns				ns		1
Ostraciidae (Trunkfish)																					
Ostracion meleagris						ns					ns				ns				ns		2
Pinguipedidae (Sandperches)																					
Parapercis clatherata						ns					ns				ns				ns		9
Parapercis millipunctata						ns					ns				ns				ns		1
Pomacanthidae (Angelfishes)																					
Centropyge flavissimus						ns					ns				ns				ns		13

Table 9

Northern District Outfall Fish Species.

shaded boxes represent that species been present

Fiscal Year	1990				1991				1992				1993				1994				Total
quarter	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	n/16
Centropyge shepardi						ns					ns				ns				ns		5
Pygoplites diacantus						ns					ns				ns				ns		3
Pomacentridae (Damselfishes) subfamily Amphiprioninae (Anemonefishes)																					
Amphiprion chrysopterus						ns					ns				ns				ns		10
Amphiprion periderion						ns					ns				ns				ns		6
Chromis acares						ns					ns				ns				ns		1
Pomacentridae (Damselfishes) subfamily Pomacentrinae																					
Abudefduf saxatalis						ns					ns				ns				ns		2
Chryiptera traceyi						ns					ns				ns				ns		4
Chrysiptera leucopoma						ns					ns				ns				ns		1
Plectroglyhididodon leucozona						ns					ns				ns				ns		1
Plectroglyphidodon dickii						ns					ns				ns				ns		9
Plectroglyphidodon johnstonianus						ns					ns				ns				ns		2
Plectroglyphidodon lacrymatus						ns					ns				ns				ns		13
Plectroglyphidodon sp.						ns					ns				ns				ns		1
Pomacentrus amboinensis						ns					ns				ns				ns		10
Pomacentrus grammorhynchus						ns					ns				ns				ns		11
Pomacentrus vaiuli						ns					ns				ns				ns		4
Pomachromis guamensis						ns					ns				ns				ns		5
Stegastes albifasciatus						ns					ns				ns				ns		3
Scaridae (Parrotfishes)																					
Calototomus carolinus						ns					ns				ns				ns		1
Scaras altipinnus						ns					ns				ns				ns		3
Scarus frenatus						ns					ns				ns				ns		9
Scarus frontalis						ns					ns				ns				ns		1
Scarus ghobban						ns					ns				ns				ns		2
Scarus gibbus						ns					ns				ns				ns		4
Scarus globiceps						ns					ns				ns				ns		2
Scarus schlegeli						ns					ns				ns				ns		11
Scarus sordidus						ns					ns				ns				ns		16
Scorpaenidae (Scorpionfishes)																					
Scorpaenopsis verrucosa						ns									ns				ns		1
Serrandiae (Grouper)																					
Cepahlopholis argus						ns					ns				ns				ns		10
Cephalopholis urodeta						ns					ns				ns				ns		7
Variola louti						ns					ns				ns				ns		2
Siganidae (Rabbitfish)																					
Siganus aregenteus						ns					ns				ns				ns		1
Siganus spinus						ns					ns				ns				ns		1
Sphyraenidae (Barracudas)																					
Sphyraena forsteri						ns					ns				ns				ns		7
Syngnathidae subfamily Syngnathinae (Pipefishes)																					
Corythoichthys intestinalis						ns					ns				ns				ns		1
Synodontidae (Lizardfishes)																					
Saurida gracilis						ns					ns				ns				ns		1
Synodus spp.						ns					ns				ns				ns		1
Tetraodontidae (puffers)																					
Arothron nigropunctatus						ns					ns				ns				ns		1
Canthigaster solandri						ns					ns				ns				ns		14
Zanclidae (Moorish Idol)																					
Zancluls cornutus						ns					ns				ns				ns		15
total number of species	44	38	41	48	44	ns	65	67	59	56	ns	55	51	43	ns	49	42	36		42	

Number of fish species that fall under each food group.

Herbivore	12	11	15	17	16	ns	18	20	16	16	ns	15	14	14	ns	15	13	11	ns	14
Carnivore	19	16	21	20	19	ns	30	29	27	26	ns	25	22	21	ns	23	21	17	ns	19
Invertivore	18	14	21	19	19	ns	28	27	25	24	ns	23	20	20	ns	21	20	16	ns	18
Planktivore	4	3	1	4	4	ns	5	6	5	4	ns	5	5	2	ns	4	2	2	ns	2
Omnivore	4	1	2	2	2	ns	4	3	3	2	ns	2	2	2	ns	2	2	2	ns	2
Corallivore	5	7	2	5	3	ns	8	9	8	8	ns	8	8	5	ns	5	4	4	ns	4

Table 10

Regression analysis results for Northern District. Significance of change in % cover of the six benthic categories over the 61 months that the area was surveyed.

Transect	Bare	Turf Algae	Macro Algae	Coral	Coralline	Other
0 m *ts*	+s 4.072	-s 5.805	- -0.699	+s 2.653	+ 0.047	- -0.995
20 m *ts*	+s 2.23	- -1.52	+ 1.02	- -0.72	+ 0.65	+ 0.4
50 m *ts*	+s 3.361	-s -3.842	+ 0.854	- -1.78	- -0.434	- -0.903

ts 0.05[15] =2.131
s = significant at 95%
+ = positive regression
- = negative regression

FACSIMILE TRANSMITTAL SHEET

DATE: 12 Dec 1997

NUMBER OF PAGES (INCLUDING THIS PAGE): 1

****

TO:

NAME: Joanne Boyd

ROUTING: PUAG

TELEPHONE: 472-1338 **(FAX)**

(COMMERCIAL)

SUBJECT: FY97 Inshore Catch Survey Results

****

FROM:

NAME: Todd Pitlik

ROUTING: Division of Aquatic & Wildlife Resources (DAWR)

TELEPHONE: (671) 734-6570 **(FAX)**

(671) 735-3986 **(COMMERCIAL)**

****

MESSAGE: Dear Joanne,

I am including the FY97 results I promised to you. If you have any questions, pls let me know. In addition, I may be able to expand specific areas to get the results you are looking for.

Sincerely,

Todd J. Pitlik

Todd J. Pitlik
Fisheries Biologist

Table 11

Combined estimated inshore participation, effort, and total harvest (kg) for all methods during the day and night in FY97.

METHOD	Persons	Gears	Trips	Per-Hrs	Gear-Hrs	Catch	Finfish	Inverts	CPUE**
Hook & Line	44,774	44,158	25,697	155,038	153,318	15,033	14,940	93	0.15 wd
Cast Net	10,055	8,826	7,734	23,063	20,246	7,518	7,500	18	0.78 wen
Gill Net	7,637	3,581	2,410	28,103	13,138	6,111	5,763	347	0.87 wed
Surround Net	0	0	0	0	0	0	0	0	0.0
Spear Snorkel	2,829	2,455	1,370	5,910	5,083	3,410	2,594	815	0.84 wn
Spear Scuba	36	36	32	37	37	39	36	3	1.32 wen
Drag Net	160	29	29	267	49	79	79	0	1.67 wn
Hooks & Gaffs	731	938	469	1,376	1,659	433	0	433	0.28 wd
Other*	2,323	2,323	1,407	3,996	3,996	4,864	647	4,217	2.12 wd
TOTAL	68,545	62,344	39,147	217,789	197,525	37,486	31,560	5,925	0.16

*Other methods typically includes: gleaning, hand nets, traps, and spears.
**CPUE (kg/gh) summary includes either the greatest weekday (wd) or weeknight (wn) or weekend day (wed), weekend night (wen) values listed in Tables 2 and 3. The greatest CPUE value for hook and line was region 3.

Table 2. Estimated inshore participation, effort, and total harvest (kg) for all methods during the day in FY97.

METHOD	Persons	Gears	Trips	Per-Hrs	Gear-Hrs	Catch	Finfish	Inverts	CPUE**
Hook & Line	30,180	30,148	18,361	110,557	110,652	12,098	12,008	90	0.15 wd
Cast Net	9,989	8,759	7,672	22,932	20,115	7,457	7,456	1	0.54 wd
Gill Net	5,628	2,660	1,626	19,567	9,253	4,686	4,447	239	0.87 wed
Surround Net	0	0	0	0	0	0	0	0	0.0
Spear Snorkel	1,348	1,063	785	2,959	2,304	1,473	829	644	0.69 wed
Spear Scuba	0	0	0	0	0	0	0	0	0.0
Drag Net	0	0	0	0	0	0	0	0	0.0
Hooks & Gaffs	731	938	469	1,376	1,659	433	0	433	0.28 wd
Other*	1,668	1,668	928	2,572	2,572	4,664	616	4,048	2.12 wd
TOTAL	49,545	45,235	29,841	159,962	146,555	30,812	25,357	5,454	0.21

*Other methods typically includes: gleaning, hand nets, traps, and spears.
**CPUE (kg/gh) summary includes either the greatest weekday (wd) or weekend day (wed) values. The greatest CPUE value for hook and line was region 3

Table 11

Estimated inshore participation, effort, and total harvest (kg) for all methods during the night in FY97.

METHOD	Persons	Gears	Trips	Per-Hrs	Gear-Hrs	Catch	Finfish	Inverts	CPUE**
Hook & Line	14,593	14,010	7,336	44,481	42,666	2,935	2,932	3	0.12 wn
Cast Net	66	66	61	131	131	61	44	17	0.78 wen
Gill Net	2,009	921	784	8,536	3,886	1,424	1,316	108	0.63 wn
Surround Net	0	0	0	0	0	0	0	0	0.0
Spear Snorkel	1,481	1,392	585	2,951	2,778	1,936	1,765	171	0.84 wn
Spear Scuba	36	36	32	37	37	39	36	3	1.32 wen
Drag Net	160	29	29	267	49	79	79	0	1.67 wn
Hooks & Gaffs	0	0	0	0	0	0	0	0	0.0
Other*	655	655	479	1,423	1,423	200	31	169	0.14 wd
TOTAL	19,000	17,109	9,306	57,826	50,970	6,674	6,203	471	0.13

*Other methods typically includes: gleaning, hand nets, traps, and spears.

**CPUE (kg/gh) summary includes either the greatest weeknight (wn) or weekend night (wen) values. The greatest value for hook and line was region 3.

Table 11

FY97 combined day and night catch composition for the top ten species and families of finfish harvested. Juvenile *Caranx ignobilis, C. melampygous, C. papuensis,* and *C. sexfasciatus* (i'e' ≤ 200mm), *Mulloides flavolineatus* (ti'ao ≤ 100mm), and *Siganus spinus* (mañåhak), are listed separately from the intermediate to adult size classes. Finfish harvest percentages were derived from the day and night catch (31,560 kg).

SPECIES	Harvest	
	kg	%
Naso unicornis	3,454.57	10.95
Siganus spinus	3,397.28	10.76
Acanthurus triostegus	1,973.18	6.25
Lethrinus harak	1,170.58	3.71
Caranx i'e'	1,047.54	3.32
Selar crumenophthalmus	994.94	3.15
Liza vaigiensis	963.62	3.05
Mulloides ti'ao	798.58	2.53
Mulloides flavolineatus	768.74	2.44
Caranx ignobilis	618.85	1.96
TOTAL ANNUAL COMBINED CATCH	15,187.88	48.12

FAMILY	Harvest	
	kg	%
Acanthuridae	6,835.24	21.66
Carangidae	4,662.48	14.77
Siganidae	3,650.93	11.57
Lethrinidae	2,193.78	6.95
Mullidae	1,943.47	6.16
Mugilidae	1,785.86	5.66
Lutjanidae	1,437.95	4.56
Gerreidae	1,049.82	3.33
Labridae	1,006.37	3.19
Scaridae	854.19	2.71
	25,420.09	80.55

Table 5. FY97 day catch composition for the top ten species and families of finfish harvested. Juvenile *Caranx ignobilis, C. melampygous, C. papuensis,* and *C. sexfasciatus* (i'e' ≤ 200mm), *Mulloides flavolineatus* (ti'ao ≤ 100mm), and *Siganus spinus* (mañåhak), are listed separately from the intermediate to adult size classes. Finfish harvest percentages were derived from the total day catch (25,357 kg).

SPECIES	Harvest	
	kg	%
Naso unicornis	3,154.85	12.44
Siganus spinus	2,976.54	11.74
Acanthurus triostegus	1,689.77	6.66
Lethrinus harak	944.00	3.72
Liza vaigiensis	880.03	3.47
Mulloides ti'ao	764.30	3.01
Caranx i'e'	742.14	2.93
Mulloides flavolineatus	652.82	2.57
Gerres oblongus	563.68	2.22
Caranx ignobilis	558.11	2.20
TOTAL ANNUAL DAY CATCH	12,926.24	50.98

FAMILY	Harvest	
	kg	%
Acanthuridae	6,110.36	24.10
Siganidae	3,187.36	12.57
Carangidae	3,005.71	11.85
Lethrinidae	1,728.74	6.82
Mullidae	1,726.38	6.81
Mugilidae	1,615.97	6.37
Lutjanidae	963.25	3.80
Gerreidae	876.82	3.46
Labridae	822.45	3.24
Scaridae	617.89	2.44
	20,654.93	81.46

Table 11

FY97 night catch composition for the top ten species and families of finfish harvested. Juvenile *Caranx ignobilis*, *C. melampygous*, *C. papuensis*, and *C. sexfasciatus* (i'e' ≤ 200mm), *Mulloides flavolineatus* (ti'ao ≤ 100mm), and *Siganus spinus* (mañåhak), are listed separately from the intermediate to adult size classes. Finfish harvest percentages were derived from the total night catch (6,203 kg).

SPECIES	Harvest	
	kg	%
Selar crumenophthalmus	840.55	13.55
Siganus spinus	420.74	6.78
Caranx i'e'	305.40	4.92
Naso unicornis	299.72	4.83
Acanthurus triostegus	283.41	4.57
Lutjanus argentimaculatus	243.27	3.92
Lethrinus harak	226.58	3.65
Caesio caerulaurea	203.32	3.28
Caranx sexfasciatus	200.25	3.23
Lutjanus fulvus	189.89	3.06
TOTAL ANNUAL NIGHT CATCH	3,213.13	51.80

FAMILY	Harvest	
	kg	%
Carangidae	1,656.77	26.71
Acanthuridae	724.88	11.69
Lutjanidae	474.70	7.65
Lethrinidae	465.04	7.50
Siganidae	463.57	7.47
Holocentridae	293.43	4.73
Scaridae	237.19	3.82
Mullidae	217.09	3.50
Caesionidae	207.33	3.34
Labridae	183.92	2.97
	4,923.92	79.38

Table 11

Comparison of the combined day and night catch composition for the top species and families of finfish harvested in FY93 and FY97. Juvenile *Caranx ignobilis, C. melampygous, C. papuensis,* and *C. sexfasciatus* (i'e' ≤ 200mm), *Mulloides flavolineatus* (ti'ao ≤ 100mm), and *Siganus spinus* (mañâhak), are listed separately from the intermediate to adult size classes.

SPECIES	Harvest (kg)		% Δ
	FY93	FY97	
Mulloides flavolineatus	4,438.47	768.74	↓83
Acanthurus triostegus	2,305.25	1,973.18	↓14
Lethrinus xanthochilus	2,154.46	436.07	↓80
Siganus spinus	2,143.29	3,397.28	37↑
Myripristis berndti	2,041.87	96.20	↓95
Naso unicornis	1,971.48	3,454.57	43↑
Crenimugil crenilabis	1,675.97	377.73	↓77
Kyphosus cinerascens	1,482.58	226.19	↓85
Lethrinus obsoletus	1,298.21	222.40	↓83
Mulloides ti'ao	1,196.56	798.58	↓14
TOTAL ANNUAL COMBINED CATCH	20,708.14	11,750.94	↓43

FAMILY	Harvest (kg)		% Δ
	FY93	FY97	
Acanthuridae	7,296.15	6,835.24	↓06
Mullidae	6,818.88	1,943.47	↓72
Lethrinidae	4,539.39	2,193.78	↓52
Mugilidae	3,609.74	1,785.86	↓51
Siganidae	3,239.59	3,650.93	37↑
Holocentridae	2,801.69	545.64	↓81
Carangidae	2,189.94	4,662.48	43↑
Scaridae	1,659.54	854.19	↓49
Kyphosidae	1,507.71	472.61	↓69
Lutjanidae	1,480.96	1,437.95	↓03
	35,143.59	24,382.15	↓47

% Δ reduction (↓)or % Δ increase (↑) of species and family totals (kg) from FY93-97.

Table 11

FY97 day and night catch composition for the top ten species of finfish harvested by hook and line method. Juvenile *Caranx ignobilis, C. melampygous, C. papuensis,* and *C. sexfasciatus* (i'e' ≤ 200mm), are listed separately from the intermediate to adult size classes. Finfish harvest percentages were derived from the total day (12,008 kg) and night (2,932 kg) hook and line catch.

Day Species	Harvest	
	kg	%
Naso unicornis	2,997.31	24.96
Lethrinus harak	758.63	6.32
Liza vaigiensis	631.76	5.26
Caranx ignobilis	558.11	4.65
Caranx melampygous	530.69	4.42
Caranx i'e'	518.60	4.32
Decapterus macrosoma	430.47	3.58
Abudefduf sexfasciatus	419.54	3.49
Aprion virescens	391.25	3.26
Lethrinus xanthochilus	368.81	3.07
Total Top Ten Hook & Line Catch	7,605.17	63.33
Total Combined Hook & Line Catch	9,719.95	65.06

Night Species	Harvest	
	kg	%
Selar crumenophthalmus	840.55	28.67
Caranx i'e'	277.65	9.47
Lutjanus argentimaculatus	234.05	7.98
Caranx sexfasciatus	189.47	6.46
Lethrinus harak	143.42	4.89
Lutjanus fulvus	142.80	4.87
Decapterus macrosoma	103.68	3.54
Lethrinus obsoletus	62.92	2.15
Caranx ignobilis	60.74	2.07
Sphyraena barracuda	59.50	2.03
	2,114.78	72.13

Table 10. FY97 day and night catch composition for the top ten species of finfish harvested by gill net method. Juvenile *Caranx ignobilis, C. melampygous, C. papuensis,* and *C. sexfasciatus* (i'e' ≤ 200mm), *Mulloides flavolineatus* (ti'ao ≤ 100mm), and *Siganus spinus* (mañãhak), are listed separately from the intermediate to adult size classes. Percentages were derived from the total day (4,447 kg) and night (1,316 kg) gillnet catch.

Day Species	Harvest	
	kg	%
Siganus spinus	597.84	13.44
Gerres oblongus	561.85	12.63
Valamugil seheli	328.24	7.38
Mulloides flavolineatus	323.19	7.27
Liza vaigiensis	242.71	5.46
Leiognathus equulus	219.24	4.93
Crenimugil crenilabis	214.31	4.82
Gerres acinaces	190.18	4.28
Myripristis murdjan	189.20	4.25
Caranx papuensis	178.94	4.02
Total Top Ten Gill Net Catch	3,045.70	68.49
Total Combined Gill Net Catch	4,008.35	61.41

Night Species	Harvest	
	kg	%
Acanthurus triostegus	187.66	14.26
Caesio caerulaurea	167.79	12.75
Gerres acinaces	147.82	11.23
Siganus spinus	100.06	7.60
Mulloides flavolineatus	84.18	6.40
Crenimugil crenilabis	71.86	5.46
Liza vaigiensis	56.55	4.30
Hyporhamphus acutus	56.55	4.30
Lethrinus harak	54.25	4.12
Diodon hystrix	35.93	2.73
	962.65	73.15

Table 11

FY97 day and night catch composition for the top ten species of finfish harvested by snorkel spear method. Finfish harvest percentages were derived from the total day (829 kg) and night (1,765 kg) snorkel spear catch.

Day Species	Harvest	
	kg	%
Naso tuberosus	108.10	13.04
Scarus sordidus	92.48	11.16
Scarus microrhinos	83.69	10.10
Kyphosus cinerascens	74.62	9.00
Diodon hystrix	62.77	7.57
Synanceia verrucosa	62.77	7.57
Naso lituratus	57.12	6.89
Acanthurus triostegus	47.42	5.72
Lutjanus fulvus	41.29	4.98
Naso unicornis	35.50	4.28
Total Top Ten Spear Snorkel Catch	665.76	100.00
Total Combined Spear Snorkel Catch	1,843.68	71.07

Night Species	Harvest	
	kg	%
Siganus spinus	312.53	17.71
Naso unicornis	299.56	16.97
Cheilinus trilobatus	127.38	7.22
Acanthurus triostegus	95.75	5.42
Epinelphelus merra	89.56	5.07
Scarus psitticus	73.41	4.16
Naso lituratus	54.57	3.09
Scarus ghobban	49.44	2.80
Parupeneus barberinus	39.53	2.24
Acanthurus lineatus	36.19	2.05
	1,177.92	66.74

State and Federal Laws

II. D. ***<u>State and Federal Laws [40 CFR 125.61 and 125.62(a)(1)]</u>***

II.D.1. Are there water quality standards applicable to the following pollutants for which a modification is requested:

- Biochemical oxygen demand or dissolved oxygen?
- Suspended solids, turbidity, light transmission, light scattering' or maintenance of the euphotic zone?
- pH of the receiving water?

Yes, for all listed.

II.D.2. If yes, what is the water use classification for your discharge area?

Good marine water (M-2)

What are the applicable standards for your discharge area for each of the parameters for which a modification is requested?

See II.B.2.

Provide a copy of all applicable water quality standards or a citation to where they can be found.

Revised Guam Water Quality Standards, 1992 (Appendix C)

II.D.3. Will the modified discharge: [40 CFR 125.59(b)(3)]

- Be consistent with applicable State coastal zone management program(s) approved under the Coastal Zone Management Act as amended, 16 U.S.C. 1451 et seq? [See 16 U.S.C. 1456(c)(3)(A)]

Yes.

- Be located in a marine sanctuary designated under Title III of the Marine Protection, Research, and Sanctuaries Act (MPRSA) as amended, 16 U.S.C. 1431 et seq., or in an estuarine sanctuary designated under the Coastal Zone Management Act as amended, 16 U.S.C. 1461?

No.

- Be consistent with the Endangered Species Act as amended, 16 U.S.C. 1531 et seq.? Provide the names of any threatened or endangered species that inhabit or obtain nutrients from waters that may be affected by the modified discharge. Identify any critical habitat that may be affected by the modified discharge and evalute whether the modified discharge will affect threatened or endangered species or modify a critical habitat. [See 16 U.S.C. 1536(a)(2)]

None.

II.D.4. Are you aware of any State or Federal laws or regulations (other than the Clean Water Act or the three statutes identified in item 3 above) or an executive order which is applicable to your discharge? If yes, provide sufficient information to demonstrate that your modified discharge will comply with such law(s), regulation(s), or order(s). [40 CFR 125.59 (b)(3)]

No.

GWA has forwarded a copy of its permit application package (relevant sections) to the Bureau of Planning for review. The Bureau is the clearinghouse for all federally funded programs and as such, obtains comments from agencies who's programs may be impacted by planned activities such as wastewater discharges into ocean waters. Letters were delivered to Guam's Bureau of Planning, Department of Agriculture, and the Environmental Protection Agency requesting for consistency determinations with their respective programs. Responses to these letters will be forwarded to U.S.E.P.A. upon receipt. These comments will address consistency with applicable State Coastal Zone Management Program(s) approved under the Coastal Zone Management Act as amended, the modified discharge's consistency with marine sanctuary regulations and with the Endangered Species Act, and consistency with water quality standards. Copies of these letters are attached as Appendix D.

Regulations under Guam's Water Pollution Control Act are applicable. A copy of this Act is attached as Appendix E.

Physical Characteristics of Discharge

TECHNICAL EVALUATION

III.A. Physical Characteristics of the Discharge

III.A.1. What is the critical initial dilution for your current and modified discharge(s) during 1) the period(s) of maximum stratification? and 2) any other critical periods(s) of discharge volume/composition, water quality, biological seasons, or oceanographic conditions?

There is no significant periods of stratification or any other critical period. There is no stratification of the waters above the diffusers except that caused by the discharge itself. The effluent is low density (non saline) and because of this the effluent rises rapidly to the surface where it flows horizontally in the top 1m of surface water. The depth of water above the diffusers is 18.29 m.

Austin, Smith & Associates, Inc. Engineers projected the initial dilution of the plant effluent to be 100. (Table 7.) In the November 21, 1990 transmittal from Susan Cox (USEPA) regarding Priority Pollutant Scan Results, initial dilution values for the Northern District Plant was given as 118:1.

III.A.2. What are the dimensions of the zone of initial dilution for your modified discharge(s)

According to the Amended Section 301(h) Technical Support Document the dimensions for the zone of initial dilution (ZID) can be considered to include the bottom areas and water column above the area that circumscribed by the distance d from any point of the diffuser.

d = depth of water above deepest point of discharge = 18.29 m (60 ft)
L = length of diffuser section = 129 m (423 ft)

ZID width = 2d	ZID length = L	ZID area = 2d x L
= 36.58 m	= 129 m	= 4718.82 m^2

III.A.3. What are the effects of ambient currents and stratification on dispersion and transport of the discharge plume/wastefield ?

The effluent plume rises rapidly to the surface and dissipates over 1m depth. Matson (1990) concluded that complete dilution occurs in the top 1 meter of water, and that the effluent dissipates with the surface currents. Both Jones and Randall, 1973a and Huddell et al , 1971 current studies indicate that currents flowed NE and SW. Huddell states that NE currents were predominant. However, Jones and Randall indicated that they are tidally controlled and are equally split between NE and SW. Either way the currents are in a generally oblique offshore direction.

NE tradewinds are dominant in all seasons, but are especially pronounced in the winter (Jan.- May). During the summer (July - Oct.) the effect of the trade winds are diminished and winds from every direction are not uncommon. Transportation of the discharge across the reef by wind driven surface currents are in frequent. On occasion high fecal coliform numbers have been found at the shoreline monitoring station A, situated perpendicular to the outfall. This indicates that on some occasions currents are onshore. Jones and Randall (1973b) noted that at times with heavy wave assault, currents are inshore and create a strong flushing action on the reef flats. This flushing would tend to minimize any concentration of sewage that does find its way to the reef flat.

GEPA conducted an environmental assessment of the Northern District WWTP receiving

waters (Borja, and Wood, 1986). They note that dominant currents along the western shoreline of Guam move in a southerly direction, at speeds averaging 0.5 to 0.8 knots. Therefore prevailing currents and wind driven currents would tend to carry the wastewater plume offshore and out into the prevailing offshore current that flows in a southwesterly direction off Tanguisson Point.

Borja, M. and H. Wood. 1986. Environmental Impact of Sewage Effluent at the Marine Outfall of the Northern District Sewage Treatment Plant, Guam. Guam Environmental Protection Agency, Technical Report.

Jones, R. S. and R. H. Randall. 1973a. A Study of Biological Impact caused by Natural and Man-Induced Changes on a Tropical Reef. University of Guam, Marine Laboratory Technical Report No.7.

Jones, R. S. and R. H. Randall. 1973b. A Preliminary Marine Survey for the Northern District Sewage System. University of Guam, Marine Laboratory, Environmental Survey Report No.8.

Huddell, H. D., J. G. Willett and G. Marchand. 1974. Nearshore currents and Coral Reef Ecology of the West coast Of Guam, Mariana Islands. Naval Oceanographic Office, Washington, D.C.

Matson E.A. 1990. Effects of the Agat, Agana, and Northern District Wastewater Effluents on Receiving Water Quality. Marine Laboratory Technical Report No. 93.

III.A.4. **only small discharges must respond**

III.A.5. Sedimentation of Suspended Solids

- ***a. What fraction of the modified discharge's suspended solids will accumulate within the vicinity of the modified discharge?***
- ***b. What are the calculated area(s) and rate(s) of sediment accumulation within the vicinity of the modified discharge(s) ($g/m^2/yr$)?***
- ***c. What is the fate of settleable solids transported beyond the calculated sediment accumulation area?***

The tabulations for sediment deposition are based on the method for large discharges outlined in Appendix B-I of the Amended Section 301(h) Technical Support Document, EPA 842-b-94-007, Sept 1994. The quantitative prediction of seabed accumulation is based only on the processes of deposition and decay.

The Northern District WWTP has not had properly functioning anaerobic digesters for several years. These are currently under repair and we expect that the quality of the effluent will improve greatly from that of the past few years. Because of this suspended solids mass emission rate (kg/day) used was based on the best yearly percent removal. This was in FY90 when the plant averaged 66% removal. At present influent averages 218 mg/L. We are predicting a flow

of 10 MGD by the end of the permit.

Information current speeds for onshore, offshore and longshore directions were not directly available. Previous reports have given only average current speeds and predominant directions. The average speeds recorded in the Tanguisson area are between 0.2 kts and 0.4 kts (10 cm/sec to 20.6 cm/sec). Calculations to obtain suspended solids accumulation use the EPA default current speeds. This would give us a worse case scenario. Faster current speeds would mean that the area that the suspended solids would accumulate in over a period of time would be more. However, the amount of accumulated solids per square meter (g/m^2) would be less.

Prediction of Deposition

A portion of the settled solids is inert, the organic fraction of the settled solids is a primary concern. For primary or advanced primary discharge 80 percent of the suspended solids are organic and 20 percent are inorganic.

Settling velocities for the effluent were not available, therefor suggested values from appendix B-I were used.

primary or advance primary effluent

5 percent have $V_s \geq 0.1$
20 percent have $V_s \geq 0.01$
30 percent have $V_s \geq 0.006$
50 percent have $V_s \geq 0.001$

remainder of solids settle so slowly that they are assumed to remain suspended in the water column indefinitely.

Current speeds used were:

	default
Upcoast	5 cm/sec
Downcoast	5 cm/sec
Onshore	3 cm/sec
Offshore	3 cm/sec

Bottom Slope:

Onshore	0.12 m/m
Offshore	0.18 m/m

Height of rise of plume is 17.29 m

Mass emission Rate = 2802 kg/day

Results

Calculations based on default current speeds. The settleable organic components by group and maximum settling distances for each group are given in Table 12. The deposition rates and accumulation rates for each contour are given in Table 13. The highest steady state accumulation was 62 g/m^2 in a 0.25 km^2 area surrounding the outfall. A detailed bathymeteric map was not available to plot the predicted steady state sediment accumulation around the outfall.

Table 12

Tabulations of Settleable Organic Components by Group and Maximum Settling Distance by Group. Calculations are made using default current speeds.

Mass emmission Rate = M_T = 2802 kg/day

Organic Component = M_o = 0.8 M_T for primary effluent

Percent by Settling Velocity Group	Organic Component by group	Maximum Settling Distance from Outfall[a] (meters)			
		Upcoast	Downcoast	Onshore	Offshore
Primary Effluent					
5 (V_s = 0.1 cm/sec)	0.04 M_T = 112 kg/day	864	864	113	81
20 (V_s = 0.01 cm/sec)	0.16 M_T = 448 kg/day	8645	8645	140	94
30 (V_s = 0.006 cm/sec)	0.24 M_T = 672 kg/day	14408	14408	142	95
50 (V_s = 0.001 cm/sec)	0.40 M_T = 1121 kg/day	86450	86450	144	96
	sum = 0.84 M_T or 2353 kg/day				

[a] The distance D is calculated as: D =

where:

V_a = Ambient velocity = 5 cm/sec upcoast and downcoast (default), and 3 cm/sec onshore and offshore (default)

H_T = Average trapping level of plume, measured above the bottom = 17.29 m

V_s = Appropriate settling velocity by group for primary discharges.

If the bottom slope is 5 percent or greater, D should be calculated as follows:

$$D = \frac{H_T}{S + \frac{V_s}{V_a}}$$

where:

S = slope, m/m

Table 13

Tabulations of Deposition Rates and Accummulation Rates by Contour. Calculations are made using default current speeds.

Organic Mass Component by Group	Bottom Area	Mass Deposition Rate, by group	Total Organic Deposition Rate Within Area ($g/m^2/day$)	Accumulation (g/m^2) Steady-State	Accumulation (g/m^2) 90-day
Primary Effluent					
0.04 M_T = 112 kg/day	251800 m^2	0.44 $g/m^2/day$	0.62 $g/m^2/day$	62 g/m^2	37 g/m^2
0.16 M_T = 448 kg/day	6467500 m^2	0.07 $g/m^2/day$	0.18 $g/m^2/day$	18 g/m^2	11 g/m^2
0.24 M_T = 672 kg/day	8647500 m^2	0.08 $g/m^2/day$	0.11 $g/m^2/day$	11 g/m^2	7 g/m^2
0.40 M_T = 1121 kg/day	31790000 m^2	0.04 $g/m^2/day$	0.04 $g/m^2/day$	4 g/m^2	2 g/m^2

Compliance with Water Quality Standards

III.B. Compliance with Applicable Water Quality Standards and CWA 304(a)(1) water quality criteria [40 CFR 125.61(b) and 125.62(a)].

III.B.1. What is the concentration of dissolved oxygen immediately following initial dilution for the period(s) of maximum stratification and any other critical periods(s) of discharge volume/composition, water quality, biological seasons, or oceanographic conditions?

Dissolved oxygen has been measured directly in the effluent boil, at bottom, mid and surface depths, starting in 1989. The results of these measurements are given in Table 5, section II.B. The D.O. readings have varied during this time. From June 1989 until April 1991 readings were above 75% saturation after initial dilution (75% saturation ranges from 5.0 to 5.3 mg/L). However, from May 1991 until October 1993 D.O. readings ranged from 2.7 to 6.1 mg/L, averaging 3.9 mg/L in the surface water and 4.5 mg/L in the mid and bottom waters. The control site also had low D.O. readings, ranging from 3.7 to 6.6 mg/L, averaging 4.4 mg/L in the surface waters and 4.9 in the mid and bottom waters. During this period not only did the control station have low D.O. readings, but low D.O. readings were also recorded at both Agana and Agat receiving waters. It is likely that these readings are due to meter failure, poor calibration or sampling techniques. From June 1994 until present the readings have been well above 75% D.O. saturation. There is no indication that the D.O. in the waters in the zone of initial dilution (station C), or in the near fields (station D) have been adversely impacted by the discharge, when compared to the readings obtained from the control station (E).

III.B.2. What is the farfield dissolved oxygen depression and resulting concentration due to BOD exertion of the wastefield during period(s) of maximum stratification any other critical period(s) ?

There are no periods of maximum stratification or any other critical periods. The farfields have not been monitored in the past. However, the D.O. readings taken at station D, which is located approximately 200 m south of the boil, do not indicate that there has been any adverse dissolved oxygen depression due to the discharge (Table 5, section II.B.). Readings were similar to those found at the control station.

III.B.3. What are the dissolved oxygen depressions and resulting concentration near the bottom due to steady sediment demand and resuspension of sediments?

The water readings taken at the boil (station C) and in the nearfields (station D) do not indicate that there are adverse depressions in the D.O. of the waters near the bottom, when compared to the D.O. readings of bottom waters at the control site (Table 5, section II.B.). However, a study on D.O. depression due to steady sediment demand has not been conducted.

III.B.4. What is the increase in receiving water suspended solids concentration immediately following initial dilution of the modified discharge(s)?

Suspended solids have not been monitored in the receiving waters. However, turbidity has been measured at three depths, bottom, mid and surface, at the three monitoring stations since 1989.

There has been no incidences of adverse increases in turbidity (above 1 NTU of ambient), as outlined in the Guam Water Quality Standards.

III.B.5. What is the change in receiving water pH immediately following initial dilution of the modified discharge(s) ?

Again there has been little or no change in receiving water pH from that of the ambient waters. The receiving waters after initial dilution and the ambient waters average at around pH. 8.3 following initial dilution.

III.B.6. Does (will) the modified discharge comply with applicable water quality standards for:
- ***Dissolved Oxygen?***
- ***Suspended Solids or surrogate standards?***
- ***pH?***

Past monitoring of the receiving waters for these parameters has not indicated that the discharge has caused any adverse conditions when compared to the readings obtained from the ambient waters at the control station. There was a period when low D.O. readings that did not comply with the water quality standards (<75% D.O. saturation) were recorded from May 1991 until October 1993. However, the ambient waters were also recorded as having similar low D.O. levels. This leads me to believe that these readings were due to incorrect sampling, or meter operation. Low D.O. readings have not been recorded in the last year, and water quality standards have been meet. Suspended solids have not been part of the parameters measure in the past. However, turbidity readings at all locations and depths have been within the Guam Water Quality Standards (GWQS) as are pH.

III.B.7. Provide data to demonstrate that all applicable State water quality standards, and all applicable water quality criteria established under Section 304(a)(1) of the Clean Water Act for which there are no directly corresponding numerical applicable water quality standards approved by EPA, are met at and beyond the boundary of the ZID under critical environmental and treatment plant conditions in the waters surrounding or adjacent to the point at which your effluent is discharged.

The results of the water quality monitoring conducted since 1989 are given in Table 5. Section II.B There are occasions when readings indicate that water quality standards are not met, such as the period of D.O. readings below 75% saturation (May 1991 until October 1993), and a pH above 9 during 1991. However, when receiving water results are compared to the results of ambient waters at the control station, they are very similar. These readings may be a result of improper sampling, meter operation or analysis. All water quality parameters apart from fecal coliform have meet the water quality standards in the last year.

III.B.8. Provide the determination required by 40 CFR 125.61(b)(2) for compliance with all applicable provisions of State law, including water quality standards or, if the determination has not yet been received, a copy of a letter to the appropriate agency(s) requesting the required determination.

GWA has forwarded copies of its permit application package to the Bureau of Planning for review. The bureau is the clearinghouse for all federally funded programs and as such, obtains comments from agencies who's programs may be impacted by planned activities such as wastewater discharges into ocean waters. Letters have been transmitted to Guam's Bureau of Planning, department of Agriculture and the Environmental Protection Agency requesting for consistency determinations with their respective programs. Responses to these letters will be forwarded to U.S.E.P.A. upon receipt. These comments will address consistency with applicable State Coastal Zone Management Program(s) approved under the Coastal Zone Management Act as amended, the modified discharge's consistency with marine sanctuary regulations and with the Endangered Species Act, and consistency with water quality standards. Copies of these letters are attached as Appendix D.

Regulations under Guam's Water Pollution Control Act are applicable. A copy of this Act is attached as Appendix E.

Impact in Public Water Supplies

III. C. <u>Impact on Public Water Supplies.</u>

III.C.1. Is there a planned or existing public water supply (desalinization facility) intake in the vicinity of the current or modified discharge?

No.

Biological Impact of Discharge

III.D. Biological Impact of Discharge

III.D.1. Does (will) a balanced indigenous population of shellfish, fish, and existing wildlife exist:

- ***Immediately beyond the ZID of the current and modified discharge(s)?***

- ***In all other areas beyond the ZID where marine life is actually or potentially affected by the current and modified permit.***

Previous Biological Monitoring Surveys were conducted by UOG Marine Laboratory did not include sites beyond the ZID.

III.D.2. Have distinctive habitats of limited distribution been impacted adversely by the current discharge and will such habitats be impacted adversely by the modified discharge?

Coral reef communities are considered distinctive habitats of limited distribution. Guam is nearly completely surrounded by coastal coral reefs. A report on the Review and Analysis of Past Biological Monitoring Data for the Northern District WWTP Outfall, Guam is found in ITEM N .

III.D.3. Have commercial or recreational fisheries been impacted adversely by the current discharge (e.g. warnings, restrictions, closures, or mass mortalities) or will they be impacted adversely by the modified discharge?

There has been no evidence of mass mortalities or elevated toxic levels found in fish that are potentially impacted by the current discharge. However, due to loss of power after Supertyphoon Paka public warnings not to fish or bath in the waters from Tanguisson Beach to Shark's Hole (in the vicinty of the outfall) were issued by Guam EPA. Clippings from the local news paper, Pacific Daily News regarding these warnings are attached in figures 24 & 25.

III.D.4. Does the current or modified discharge cause the following within or beyond the ZID

- ***Mass mortality of fishes or invertebrates due to oxygen depletion, high concentrations of toxics, or other conditions?***
- ***An increase incidence of disease in marine organisms?***
- ***An abnormal body burden of any toxic material in marine organisms?***
- ***Any other extreme, adverse biological impacts?***

There are no reported incidences of fish or invertebrate mortality due to oxygen depletion, high concentration of toxics or other conditions. Monitoring results of dissolved oxygen in the receiving waters indicate >75% oxygen saturation. There is no reported incidences of an increase incidence of disease in marine organisms or any other extreme adverse biological impacts.

As previously stated, GWA has requested Letters of Determination from the Bureau of Planning, Department of Agriculture and Guam Environmental Protection Agency (See *State and Federal Laws*, Section II.D.4 of application questionnaire). Upon receipt of their letters, GWA will immediately forward their responses to your office.

Samples for the required *Toxicity and Priority Pollutant Scans* were collected on the 8th and 9th of March for the Northern District and Agana STPs. The samples were then immediately sent off to the Montgomery & Watson Labs in Pasadena California. GWA has received E-Mail confirmation that the analysis of the samples are presently in progress.

Needs to be done once priority pollutant scan completed
Evaluate potential for bioaccumulation is to compare the concentrations of toxic pollutants after initial dilution with EPA Aquatic life water quality criteria. Two types of information required:
(1) Concentration of the pollutant in the discharge effluent (scans need to be done)
(2) Critical initial dilution (= 100)
the value of (1) divided by (2) should then be compared with available criterion. Also important to study sediment accumulation patterns. Demonstrate adequate initial dilution and sufficient circulation to prevent localized accumulation of solids.
Only necessary to conduct tissue and sediment analysis if effluent and dilution analysis indicate potential for bioaccumulation.

Once the above computations are completed by GWA's Biologist, the computations along with the package containing the results of the scans will be immediately forwarded to your office.

III.D.5.
NA

III.D.6.
NA

III.D.7.
NA

III.D.8.
NA

Pacific Daily News

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HAFA ADAI, IT'S SATURDAY

75¢ on Guam

Inarajan mayor plans census

By Lalaine Estella
Pacific Daily News

Teams of three spread out across Inarajan village yesterday, spreading the news of an upcoming census the old-fashioned way — on foot.

Betty Jo Camacho, who was assisting the mayor in his effort to update the village's roll, said going house-to-house was the best way to ensure that everyone was notified of the head count, which begins next week.

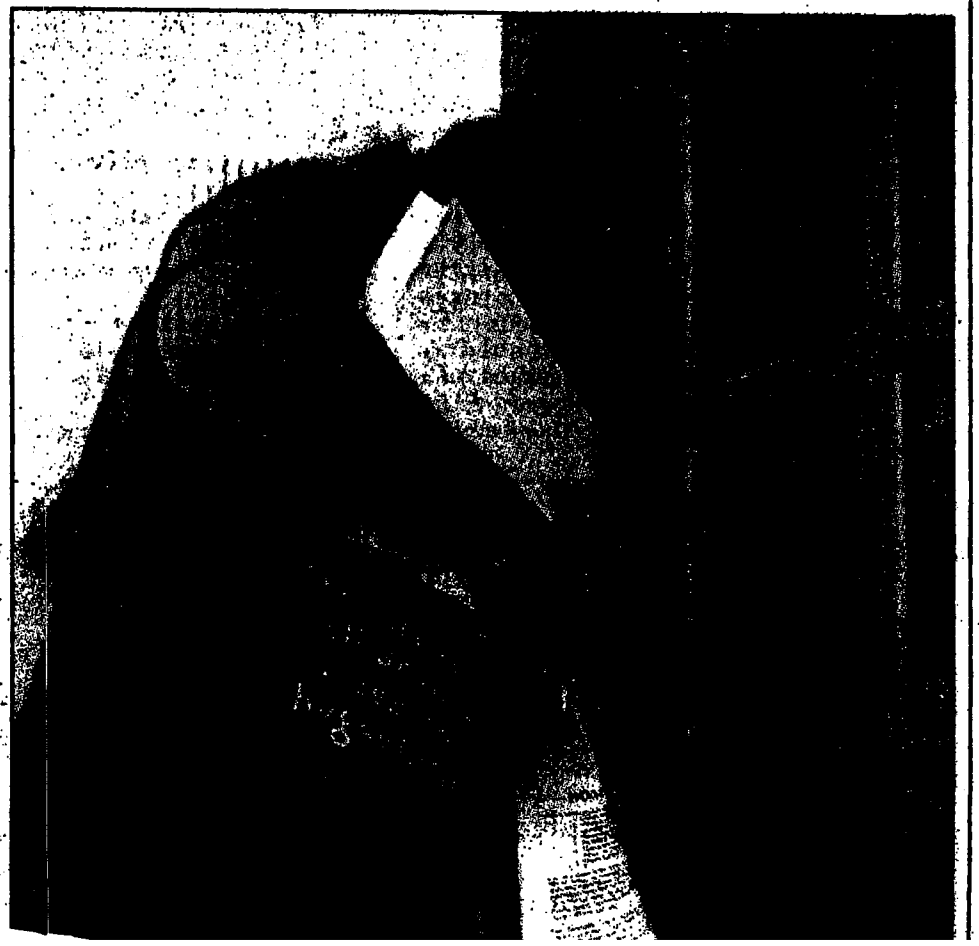
"I think this is the way it's always been done," Camacho said as she walked down Victor P. San Nicolas Street.

PAKA

The last village census was conducted three years ago, Mayor Jesse L.G. Perez said. At the time of the last count, just over 2,300 people lived in Inarajan.

Perez said the census is needed for two reasons.

"My community has prospered over the past three years, and the population has increased," he said. Perez said that having an accurate number of residents will help him [illegible] road and capital im-



Sewage floats to surface off Tanguisson

By Roya Camp
Pacific Daily News

Nearly raw sewage has been pouring into the ocean at Tanguisson Point since Supertyphoon Paka, environmental and water officials said yesterday.

The sewage is coming from the Northern District Sewage Treatment Plant through the plant's discharge pipe north of Tanguisson Beach.

No illnesses have been reported as a result of the contamination, according to Bert Johnston, Guam Waterworks Authority assistant general manager, and Michael Lee, an environmental engineer with the U.S. Environmental Protection Agency. Lee, of the agency's Region 9 San Francisco office, is on the island to help the Guam Environmental Protection Agency handle cleanup of typhoon debris sites and monitor other environmental matters.

People are being urged to avoid swimming or fishing in the area around the pipe, from Tanguisson Beach to Shark's Hole, Guam EPA spokeswoman Grace O. Garces said yesterday.

The plant, one of eight operated by the authority, serves Andersen Air Force Base and commercial and residential customers in Yigo, Dededo, Barrigada Heights and most of Tumon. The plant process-

▲ See Sewage, Page 5

Figure 24

Pacific Daily News, Saturday, January 24, 1998

Sewage: 'Didn't want to ... get all into it'

▲ Continued from Page 1

es between 6 million and 7 million gallons of sewage daily, Johnston said.

Guam Waterworks and the Guam EPA organized a Jan. 16 dive to check possible damage to the pipe, but called it off after they saw floating material and a plume of sewage, Lee said.

"When they went to the outfall, they saw evidence of the sewage and sewage rising to the surface," he said. "It was spreading all over the place. They didn't want to dive and get all into it."

The pipe is supposed to release treated sewer water about 1,000 feet from shore through a pipe under about 60 feet of seawater, Johnston said.

Sewage still is being screened at the northern district plant and some is being pumped out, dried and disposed of at the Ordot Landfill, but because the treatment plant isn't working properly, most of it is escaping into the ocean, Lee said.

The plant has been under a federal EPA order since 1988 to improve the sewage treatment level before piping the wastewater into the ocean.

BEACH ADVISORIES

The Guam Environmental Protection Agency is urging people to avoid swimming or fishing at the following beaches until further notice:

- ▲ Matapang Beach, Guma Trankilidat and Tanguisson Beach in Tumon.
- ▲ Sleepy Lagoon and Dungca's Beach in Tamuning.
- ▲ USS Beach in Piti.
- ▲ Family Beach in Cabras.
- ▲ East Agana Bay and the Agana Channel in Agana.
- ▲ Asan Bay in Asan.
- ▲ Bangi Island in Agat.
- ▲ Talofofo Bay and Togcha Bay in Talofofo.

The plant had been partially renovated to address problems caused when it was damaged in the 1993 earthquake. Additional work subsequently was performed, but two parts of the treatment system still aren't functioning, Lee said.

"I think the typhoon aggravated it, but the problem was already there," he said.

Guam Waterworks last week hired Detry Pumping Service, a local wastewater pumping company, to pump solid sewage out of the treatment units, keeping them clear for better treatment and preventing the material from escaping into the ocean.

The plant could be fully functioning after it is inspected and the additional equipment is brought on line. Johnston said yesterday he didn't know if the inspection has taken place yet.

The federal EPA could fine the authority for the ongoing sewage spill, but because the agency is making a good-faith effort to fix the situation, that isn't being considered now, Lee said.

"We know they're being pulled a lot of different ways as a result of this," he said. "It's been a long-term, longtime problem to get that plant back to the way it should be."

After the equipment is brought on line, it still will be a couple of weeks before the sewage will be treated to the level the federal EPA is requiring.

Johnston said yesterday he wasn't worried about the possibility of fines.

"My concern is the environment," he said. "I want to get this corrected as soon as possible."

Man arrested after attack on security guard

Pacific Daily News

A man who allegedly beat a Guam Premium Outlets security guard late Thursday night was arrested yesterday when he returned to the scene of the crime.

Police spokesman Larry Flores said the security guard was acquainted with Anthony S.A. Blas of Mangilao, who was arrested in connection with aggravated assault. Blas was later booked and released.

Blas apparently had asked the victim to fight, but the security guard refused, Flores said. Blas, 28, then grabbed a flashlight from his parked vehicle and struck the guard several times in the head and face, Flores said.

"The security guard managed to grab the flashlight from the suspect, who then fled on foot toward the back of the building," Flores said. The security guard's cuts were treat-

Figure 24

Fugure 25

Pacific Daily News, Monday, February 23, 1998

NEWSTIP HOTLINE : Call 47

e-mail: news@pdnguam.com

GUAM

Polluted beach warning

Samples taken by the Guam Environmental Protection Agency on Wednesday indicate that the following areas were polluted above acceptable bacteriological standards:

▲ Agat: Bangi Island and Namo Beach

▲ Talofofo: Talofofo Bay

▲ Dededo: Tanguisson Beach to Shark's Hole.

People are advised not to swim or fish in these waters. In addition, the public also is advised not to harvest or consume seaweed, fish or marine animals from Tanguisson Beach.

The Monitoring Laboratory Services Division of GEPA takes water samples every Wednesday to provide this service. For more information call 475-1658/9.

Pacific Daily News, Monday, March 16, 1998

Polluted beaches on EPA's hit list

Swimmers, fishermen and others are warned to avoid the following areas because of pollution:

▲ Agat: Namo Beach

▲ Asan: Asan Bay

▲ Tamuning: Dungca's Beach

▲ Dededo: Tanguisson Beach to Shark's Hole

Guam Environmental Protection Agency samples from those areas taken Wednesday indicate they were polluted above accepted bacteriological standards.

For more information contact the Monitoring Laboratory Services Division at 475-1664/5.

Pacific Daily News, Monday, February 9, 1998

Polluted beaches on EPA's hit list

Residents are advised not to swim, fish or play in the following areas:

▲ Agat: Bangi Island

▲ Talofofo: Talofofo Bay

▲ Dededo: Tanguisson Beach to Shark's Hole.

Tests by the Guam Environmental Protection Agency taken last Wednesday indicate the the waters in the above areas were polluted above accepted biological standards. In addition, no harvesting or consumption of seaweed, fish or marine organisms is allowed in Tanguisson.

Pacific Daily News

Clearing the record

We care about accuracy. If you would like to clear the record, call the Daily News at 477-9711, ext. 412.

Sewage 'particulates' float off Tanguisson

By Lalaine Estella PDN 3/11/98

Pacific Daily News

Alarmed at finding solid waste floating off Tanguisson Beach yesterday, environmental and waterworks officials plan to conduct a dive inspection of the area on Friday.

For years, sewage from the Northern District Sewage Treatment Plant has spilled untreated from the plant's offshore pipes into the ocean. The pipes, or outfall, extends 1,000 feet out from the beach.

"A surveillance team went out (yesterday) to take surface samples of water emanating from the outfall," said Grace O. Garces, spokeswoman for the Guam Environmental Protection Agency. The bacteriological results won't be ready until tomorrow, she said.

"(But) according to the surveillance team, there are still solid particulates floating out there," Garces said. "It could be anything people put down their toilets and the plumbing system, including sewage," Garces said.

The beach area from the Tanguisson power plant to Shark's Hole remains on the agency's polluted recreational waters list. The public is urged not to swim or fish in the area.

The Guam Waterworks Authority plans to replace some pipes that carry treated sewage out to sea, but they won't be in place until the end of the year.

"The process in is progress," said utility spokesman Patrick Lujan, "The actual drilling (for the pipes) won't happen until next month. ... We're on target to meet our deadline."

Guam EPA and utility officials will conduct a dive inspection of the area on Friday. A similar inspection was scheduled in January but was canceled after officials saw what appeared to be floating sewage.

Guam EPA officials in the meantime have acquired special dive suits to safeguard inspectors in such polluted waters.