

September 2015
FACT SHEET
Authorization to Discharge under the
National Pollutant Discharge Elimination System
for the
Reverse Osmosis Reject Water from Wake Island Airfield
NPDES Permit No. MW0020338

Applicant address: United States Air Force
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I. STATUS OF PERMIT

The United States Air Force (“USAF” or “permittee”) was issued a National Pollutant Discharge Elimination System (“NPDES”) Permit No. MW0020338 on June 25, 2010, for the discharge of treated reverse osmosis (“RO”) reject water from Wake Island Airfield, pursuant to the U.S. Environmental Protection Agency Region 9 (“EPA”) regulations set forth in Title 40, Code of Federal Regulations (“CFR”) Part 122.21. The permit became effective on August 1, 2010 and expires on July 31, 2015. USAF applied to EPA for a permit renewal on January 23, 2015 and provided a revised application and supplemental information on May 11, 2015. This fact sheet is based on information provided by the applicant through its application and discharge data submittal, along with the appropriate laws and regulations. The treatment facility has been classified as a minor discharger.

Pursuant to Section 402 of the Clean Water Act (“CWA”), the U.S. EPA is proposing issuance of the NPDES permit renewal to USAF for the discharge of Wake Island Airfield treated RO reject water to the Pacific Ocean (lagoon side), which is a water of the United States.

II. GENERAL DESCRIPTION OF FACILITY

Wake Island (also known as Wake Atoll) is an unincorporated territory of the United States, located in the western Pacific Ocean, approximately 1,500 miles east of Guam and 2,300 miles west of Honolulu, Hawaii. The island is administered by USAF under agreement with the Department of the Interior, and the center of activity on the atoll is at Wake Island Airfield. USAF maintains and operates a reverse osmosis unit at the airfield.

USAF currently maintains Wake Atoll for the benefit of other Department of Defense services and various government agencies and other tenants. All operational needs from an airfield perspective are in place (e.g. runway in excellent condition, lighting operative, POL systems fully functional). Present tenants include the U.S. Geological Survey, Missile Defense Agency, National Oceanic and Atmospheric Administration, Air Force Technical Applications Center, and the National Weather Service. These tenants have facilities on Wake Atoll that are contracted to the Base Operation and Support (BOS) contractor to maintain. The only personnel presently stationed on Wake Atoll are military and BOS contractors.

III. DESCRIPTION OF RECEIVING WATER

The treated RO reject water is discharged into the Wake Atoll lagoon, part of the Pacific Ocean. The coordinates for the discharge outfall are: Latitude 19° 17' 40.92" North and Longitude 166° 38' 40.53" East.

IV. DESCRIPTION OF DISCHARGE

Drinking water for Wake Island Airfield is treated through reverse osmosis. RO works by applying pressure to force a solution through a membrane, retaining the solute on one side (to be discharged) and allowing the pure solvent to pass to the other side (to be distributed). The result is that the wastewater carries the rejected contaminants and therefore may contain elevated levels of sediment, nutrients, salinity, and other parameters present in the intake water.

The facility includes two (2) Model No. SWL318TC Seawater Desalinators. A volume of 374,000 gallons per day of brackish water from two (2) wells in Buildings #1309 and #1310 is pumped to the RO unit in Building #1303, from which 100,000 gallons are pumped to Building #1302 for chlorination and storage for residential and industrial uses on the atoll. (This figure is changed from 168,000 gallons/day in 2010 fact sheet.)

The RO reject water discharge regulated by this draft permit remains to be "Outfall 008" so that the nomenclature is not redundant with dedicated stormwater outfalls 001-007, covered under EPA's 2015 multi-sector general permit (2015 MSGP).

Based on information on the January 2015 permit application and May 2015 supplemental data, the long-term average daily rate of 220,000 gallons or daily maximum of 300,000 gallons is being discharged through Outfall 008. (Updated from 206,000 gallons/day in 2010 fact sheet.)

V. EFFLUENT CHARACTERISTICS

A. Application Discharge Data

As part of the application for permit renewal, the permittee provided data from an analysis of the facility’s treated RO discharge, shown in Table 1. Pollutants believed to be absent or never detected in the effluent are not included. Some of the parameters that were reported in the application are not limited in the permit (e.g., chromium, nickel, nitrate and nitrite (as N), total organic nitrogen (as N), phosphorus, magnesium, selenium etc.) The data, expressed only as maximum and average *daily* discharges, meets the existing permit maximum daily effluent limits shown in Table 2.

Table 1. Application Discharge Data⁽¹⁾

Effluent Parameter	Units	Maximum Daily Discharge	Average Daily Discharge
Flow	MGD	0.300	0.220
pH	std. units	6.3 (min) to 8.9 (max)	
Ammonia (as N)	mg/L	0.55	0.22
Total Residual Chlorine	µg/L	0.84	0.49
Chromium, Total	µg/l	5.7	--
Chromium III (calculated)	µg/l	5.7	--
Di(2-Ethylhexyl)phthalate	µg/l	6.2	--
Magnesium, Total	mg/L	2700	1957
Nickel, Total	µg/l	46	--
Nitrate and Nitrite (as N)	mg/L	0.42	0.22
Nitrogen, Total Organic (as N)	mg/L	0.36	0.22
Phosphorus, Total (as P)	mg/L	2.17	1.79
Selenium	µg/l	370	--

(1) From the permittee’s NPDES January 2015 renewal application and May 2015 supplemental data.

B. Recent Discharge Monitoring Reports (DMRs) Data (2012- 2015)

A review of the facility’s most recent DMRs shows numerous deficiencies detailed as follows: (1) From 2012 to June 2014, numerous DMRs were submitted late ranging from 43 days to 102 days overdue; (2) No Ammonia values reported in July 2013 and October 2013 DMRs; (3) No settleable solids values were not reported in the 2012 to June 2014 DMRs; (4) From July 2014 to June 2015, DMRs were not submitted and the reason given was due to staff turnover; and (5) These missing DMRs were subsequently submitted on August 12, 2015 at the request of the EPA Permits Office in order to evaluate compliance with the current permit and to determine effluent limit applicability for permit renewal.

Table 2 provides a summary of permit limitations and highest values reported during July 2012 to June 2015 based on review of available DMRs.

Table 2. Discharge Monitoring Report data for years 2012-June 2015

Effluent Parameter	Units	Existing Permit Discharge Limitations			Discharge Monitoring Data		
		Monthly Average	Weekly Average	Daily Maximum	Highest Monthly Average	Highest Weekly Average	Highest Daily Maximum
Flow rate	MGD	0.220	--	Monitoring only	0.192	--	0.215
pH	std. units	Within 6.0 and 9.0 at all times			6.0 (lowest) to 8.9 (highest)		
Ammonia (as N)	mg/L	Monitoring only	--	Monitoring only	0.42	--	0.66
Chlorine, Total Residual (TRC)	mg/l	1.0	--	1.0	0.57	--	0.59
Settleable Solids	mg/L	1.0	--	2.0	0.01*	--	0.01*
Turbidity	NTU	75	100	225	5.54	Not reported	7.7
Hardness, total as (CaCO ₃)	mg/L	Monitoring only	--	Monitoring only	14000	--	14000

*Value recorded in July 2014-June 2015 DMRs. Information is based on additional effluent data submitted on August 12, 2015 in response to EPA’s request.

VI. SIGNIFICANT CHANGES TO PREVIOUS PERMIT

- Removal of limits for settleable solids due to absence of the pollutant in the effluent.
- Addition of effluent limits and monitoring requirements for magnesium and selenium.
- Incorporation of Ammonia Impact Ratio for reporting ammonia. In addition, measurements for temperature are required to be taken concurrently with ammonia and pH measurements.
- Option of submitting DMRs electronically through EPA’s NetDMR system.

VII. DETERMINATION OF NUMERICAL EFFLUENT LIMITATIONS

EPA develops effluent limitations and monitoring requirements in the permit based on an evaluation of the technology used to treat the pollutant (e.g., “technology-based effluent limits”) and the water quality standards applicable to the receiving water (e.g., “water quality-based effluent limits”). Because Wake Atoll does not have established water quality standards, these permit limits are exclusively technology-based.

A. Applicable Technology-based Effluent Limitations

EPA has established national standards based on the performance of treatment and control technologies for wastewater discharges to surface waters for certain industrial categories. Effluent limitations guidelines represent the greatest pollutant reductions that are economically achievable for an industry, and are based on Best Practicable Control

Technology (BPT), Best Conventional Pollutant Control Technology (BCT), and Best Available Technology Economically Achievable (BAT). (Sections 304(b)(1), 304(b)(4), and 304(b)(2) of the CWA respectively).

Regulations promulgated at 40 CFR §122.44(a) require technology-based effluent limitations to be placed in NPDES permits based on effluent limit guidelines where applicable, on Best Professional Judgment (BPJ) in the absence of guidelines, or on a combination of the two. In the absence of promulgated guidelines for the discharge, permit conditions may be established using BPJ procedures. At the time of drafting of this permit renewal, no effluent limit guidelines applicable to the permittee have been developed. In accordance with 40 CFR 125.3, EPA is using BPJ to develop technology-based effluent limitations in this permit.

B. Rationale for Effluent Limits

Flow

The previous permit has an average monthly flow limit of 0.206 MGD which was calculated based on the design capacity of the two RO units provided in the manufacturer's manual. The renewal application indicates a higher monthly average rate of 0.220 MGD with a daily maximum flow rate of 0.300 MGD, which the permittee attributes to fluctuation in population due to intermittent activities. The proposed permit will contain the revised flow rates.

pH

The RO reject water carries the rejected contaminants that may contain elevated levels of sediment, nutrients, salinity, and other parameters present in the intake water that may affect the pH. The proposed permit requires that pH be maintained in the range of 6.0 and 9.0 standard units at all times. The monitoring frequency is once per month, consistent with the previous permit. In addition, pH measurements are to be taken concurrently with ammonia and temperature measurements.

Magnesium

Recent discharge data provided in the permit renewal application shows elevated levels of magnesium in the discharge. Magnesium is likely naturally present in the intake water and may be concentrated by the reverse osmosis process in the wastewater. There are no numeric water quality standards for magnesium. Using BPJ, due to the potential for magnesium to be present in process wastewater at toxic levels, a maximum discharge limit of 2700 mg/l is included in the permit. The monitoring frequency is once per month.

Selenium

Recent discharge data also shows elevated levels of selenium in the discharge. Selenium is likely naturally present in the intake water and may be concentrated by the reverse osmosis process in the wastewater. Based on BPJ, due to the potential for selenium to be present in process wastewater at toxic levels, a maximum effluent limit of 370 µg/l is included in the permit. The monitoring frequency is once per month.

Turbidity

The turbidity limits in this permit have been adopted using BPJ from Table A of the California Ocean Plan. Effluent limitations are established accordingly. The monitoring frequency is once per month, consistent with the previous permit.

Ammonia (as N) and Ammonia Impact Ratio (“AIR”)

EPA’s 1999 *Update of Ambient Water Quality Criteria for Ammonia* recommends acute criteria that are expressed as a function of pH and the presence or absence of salmonids, and chronic criteria that are expressed as a function of pH, temperature, and the presence or absence of fish early life stages. Ammonia is likely naturally present in the intake water and may be concentrated by the reverse osmosis process in the wastewater. Due to the potential for ammonia to be present in process wastewater at toxic levels, effluent limitations have been established in this permit for ammonia. The monitoring frequency is once per month, consistent with the previous permit.

Because ammonia criteria are pH-dependent, the permittee is required to calculate an AIR. The AIR is calculated as the ratio of the ammonia value in the effluent and the applicable ammonia standards as determined by using pH data to derive an appropriate value from the ammonia criteria table in Attachment A of the permit. The AIR limitation has been established as a monthly average of 1.0, equivalent to the standard. The permittee is required to report maximum daily and average monthly ammonia (as N) concentrations in addition to an average monthly AIR.

Temperature

Measurements for temperature are required to be taken concurrently with ammonia and pH measurements. This is a new requirement.

Total Residual Chlorine

Chlorine is added to the processed water in order to disinfect the drinking water. Due to acute toxicity presented by chlorine to wildlife, effluent limitations are established in this permit for chlorine. The monitoring frequency is once per month, consistent with the previous permit.

C. Anti-Backsliding

Section 402(o) of the CWA prohibits the renewal or reissuance of an NPDES permit that contains effluent limits less stringent than those established in the previous permit, except as provided in the statute.

The permit removes limitations for settleable solids. In accordance with the exception allowed in 40 CFR 122.44(l)(2)(i)(B)(1), the limits have been removed as a result of new information used in determining that the pollutant is found not to be present in the effluent.

D. **Antidegradation Policy**

EPA's antidegradation policy at 40 CFR 131.12 require that existing water uses and the level of water quality necessary to protect the existing uses be maintained. The limitations removed from the previous permit are a pollutant deemed not to be present in the effluent.

Without established water quality standards for Wake Atoll, no existing uses are established for the receiving water. Without established existing uses, an antidegradation analysis is not applicable.

Although the analysis is not applicable, EPA determined that the discharge is not expected to adversely affect receiving water bodies because the discharge from the permittee may be considered *de minimis* in its potential degradation due to the low volume of discharge (220,000 gallons/day) into the vast receiving water body (the Pacific Ocean). Additionally, technology-based limitations are established to ensure a high level of effluent quality.

VII. **MONITORING AND REPORTING REQUIREMENTS**

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

A. **Effluent Monitoring and Reporting**

The proposed permit requires effluent monitoring to evaluate compliance with the proposed permit conditions. All monitoring data obtained during the previous three months are required to be summarized on monthly DMR forms and reported quarterly. If there is no discharge for the month, report in the No Discharge box on the DMR form for that month. These reports are due January 28, April 28, July 28, and October 28 of each year. Signed copies of these, and all other reports required herein, must be submitted to the US EPA as specified in the proposed permit.

B. **Priority Toxic Pollutant Scan**

The proposed permit requires a Priority Toxics Pollutant scan to be conducted during the fifth year of the five-year permit term to ensure that the discharge does not contain toxic pollutants in concentrations that may cause a violation of water quality standards. The permittee is required to perform all effluent sampling and analyses for the priority pollutants scan in accordance with the methods described in the most recent edition of 40 CFR 136, unless otherwise specified in the proposed permit or by EPA. 40 CFR 131.36 provides a complete list of Priority Toxic Pollutants.

VIII. OTHER CONSIDERATIONS UNDER FEDERAL LAW

A. Impact to Threatened and Endangered Species

Section 7 of the Endangered Species Act of 1973 (16 U.S.C. § 1536) requires federal agencies to ensure that any action authorized, funded, or carried out by the federal agency does not jeopardize the continued existence of a listed or candidate species, or result in the destruction or adverse modification of its habitat.

The US Fish and Wildlife Service has not listed any species as endangered for Wake Atoll. The permit is a reissuance of a permit for an existing facility. No new construction or modifications are associated with the permit reissuance. The effluent limitations of the proposed permit are as stringent as or more stringent than those in the previous permit. The effluent limits in the permit will not result in acute or chronic exposures to contaminants that would affect federally listed threatened or endangered species, or impair any designated critical habitat. The effluent limits and monitoring requirements in the permit are designed to be fully protective of the beneficial uses of the receiving waters.

Thus, EPA believes that this permit reissuance will not affect any federally listed species under the US Fish and Wildlife Services or the NOAA National Marine Fisheries jurisdictions that may be present in the area of discharge. EPA believes that effluent released in compliance with this permit will have no effect on any federally-listed threatened or endangered species or its critical habitat that may be present in the vicinity of the discharge. If, in the future, EPA obtains information or is provided information that indicates that there could be adverse impacts to federally listed species, EPA will contact the appropriate agency or agencies and initiate consultation, to ensure that such impacts are minimized or mitigated.

B. Impact to Coastal Zones

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

No state or territory coastal management program has been established for Wake Atoll, therefore consistency with CZMA is assumed.

C. Impact to Essential Fish Habitat

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

The proposed permit contains technology-based effluent limits. The proposed permit does not allow directly discharge to areas of essential fish habitat. Therefore, EPA has determined that the proposed permit will not adversely affect essential fish habitat.

D. Impact to National Historic Properties

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

IX. STANDARD CONDITIONS

A. Reopener Provision

At this time, we have no reason to establish any other water quality-based limits. Should any monitoring indicate that the discharge causes, has the reasonable potential to cause, or contributes to excursion above a water quality criteria, the permit may be reopened for the imposition of water quality-based limits and/or whole effluent toxicity limits. The proposed permit may be modified, in accordance with the requirements set forth at 40 CFR 122.44 and 124.14, to include appropriate conditions or limits to address demonstrated effluent toxicity based on newly available information, or to implement any EPA-approved new water quality standards.

B. Standard Provisions

The permit requires the permittee to comply with EPA Region 9 “*Standard Federal NPDES Permit Conditions*,” dated July 27, 2011 as attached.

X. ADMINISTRATIVE INFORMATION – PUBLIC NOTICE, PUBLIC COMMENTS AND REQUESTS FOR PUBLIC HEARINGS

In accordance with 40 CFR 124.10, public notice shall be given by the U.S. EPA Director that a draft NPDES permit has been prepared by mailing a copy of the notice to the permit applicant

and other Federal and State agencies, and through EPA Region 9 website at: <http://www.epa.gov/region09/water/npdes/pubnotices.html>. The public notice shall allow at least 30 days for public comment on the draft permit.

In accordance with 40 CFR 124.11 and 12, during the public comment period, any interested person may submit written comments on the draft permit, and may request a public hearing if no hearing has already been scheduled. A request for public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing. In accordance with 40 CFR 124.13, all persons must raise all reasonably ascertainable issues and submit all reasonably available arguments supporting their position within thirty (30) days from the date of the public notice. Comments may be received either in person or mailed to:

U.S. Environmental Protection Agency, Region 9
NPDES Permits Section (WTR-2-3)
Attn: Linh Tran
75 Hawthorne Street
San Francisco, CA 94105
Telephone: (415) 972-3511

Interested persons may obtain further information, including copies of the draft permit, fact sheet/statement of basis, and the permit application, by contacting Linh Tran at the U.S. EPA address, above. Copies of the administrative record (other than those which U.S. EPA maintains as confidential) are available for public inspection between 8:00 a.m. and 4:30 p.m., Monday through Friday (excluding federal holidays).

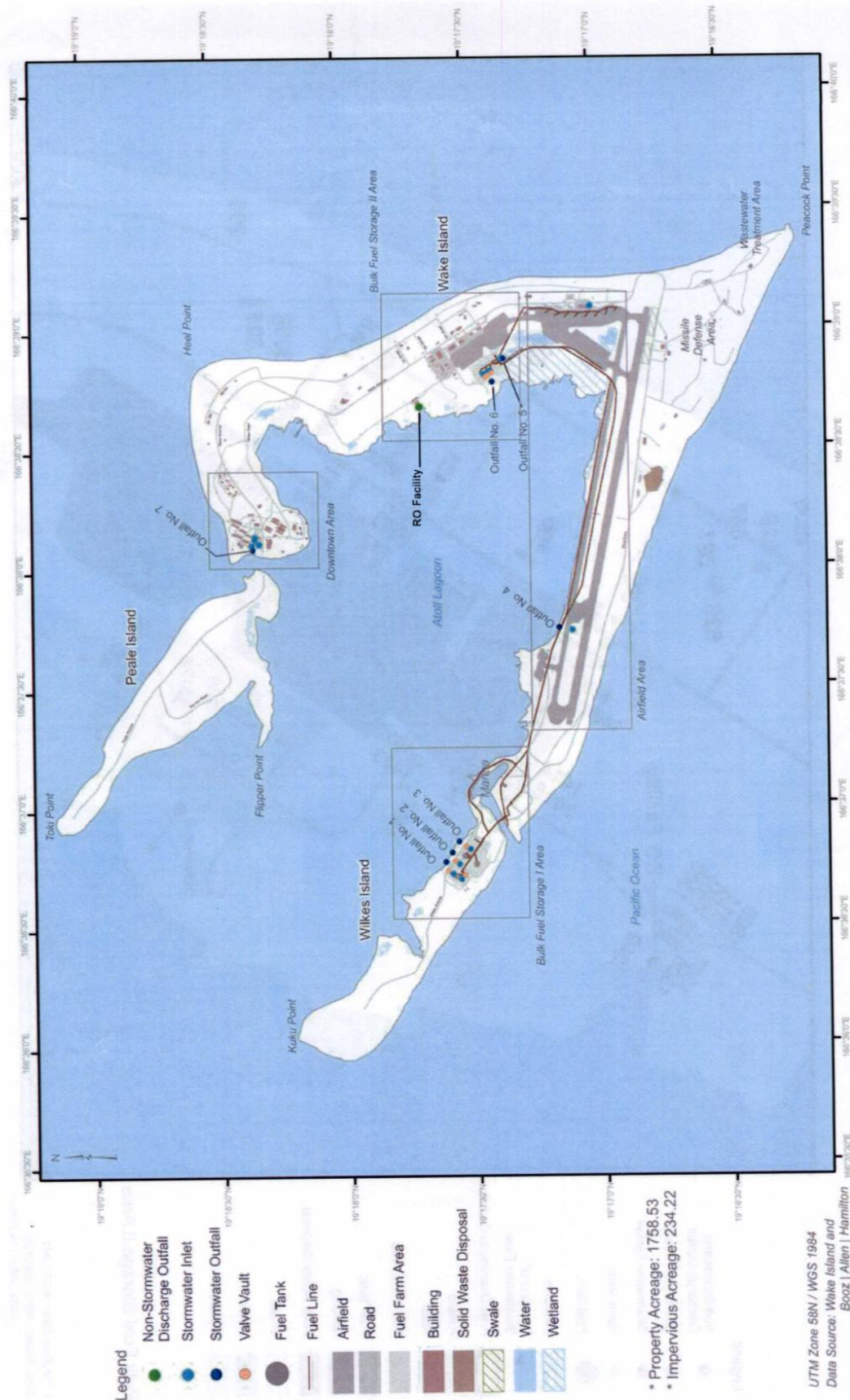
In accordance with 40 CFR 124.12, the U.S. EPA Director shall hold a public hearing when, on the basis of requests, a significant degree of public interest in the draft permit exists. The Director may also hold a public hearing when, for instance, such a hearing might clarify one or more issues involved in the permit decision. Public notice of such hearing shall be given as specified in 40 CFR 124.10.

XI. WATER QUALITY CERTIFICATION REQUIREMENTS (40 CFR 124.53 and 124.54)

For States, Territories, or Tribes with EPA approved water quality standards, EPA is requesting certification from the affected State, Territory, or Tribe that the proposed permit will meet all applicable water quality standards. Certification under section 401 of the CWA shall be in writing and shall include the conditions necessary to assure compliance with referenced applicable provisions of sections 208(e), 301, 302, 303, 306, and 307 of the CWA and appropriate requirements of Territory law.

For Wake Atoll, no State agency exists to issue such a certification. Therefore, no water quality certification is required.

Figure 1: General Location Map



XII. Flow Schematic

