



Fact Sheet

Public Comment Start Date: April 23, 2004
Public Comment Expiration Date: May 24, 2004

Technical Contact: Brian Nickel
206-553-6251
800-424-4372, ext. 6251 (within Alaska, Idaho, Oregon
and Washington)
Nickel.Brian@epa.gov

Proposed modification of a National Pollutant Discharge Elimination System (NPDES) permit to discharge pollutants pursuant to the provisions of the Clean Water Act (CWA)

BP Exploration Alaska (BPXA) Northstar Development Unit

EPA Proposes To Modify an NPDES Permit

EPA proposes to modify the NPDES permit for the facility referenced above.

This Fact Sheet includes:

- information on public comment, public hearing, and appeal procedures
- a listing of proposed changes to the conditions for the facility
- a map and description of the discharge location
- technical material supporting the changes in the permit conditions

401 Certification

EPA is requesting that the Alaska Department of Environmental Conservation certify the NPDES permit modification for this facility, under section 401 of the Clean Water Act (CWA). Comments regarding the certification should be directed to:

Regional Administrator
Alaska Department of Environmental Conservation
555 Cordova Street, 3rd floor
Anchorage, Alaska 99501

Public Comment

Fact Sheet - 2004 Modification

NPDES Permit #AK-005277-9

Persons wishing to comment on, or request a Public Hearing for the NPDES permit modification for this facility may do so in writing by the expiration date of the Public Comment period. A request for a Public Hearing must state the nature of the issues to be raised as well as the requester's name, address and telephone number. All comments and requests for Public Hearings must be in writing and should be submitted to EPA as described in the Public Comments Section of the attached Public Notice.

After the Public Notice expires, and all comments have been considered, EPA's regional Director for the Office of Water will make a final decision regarding permit modification. If no substantive comments are received, the tentative conditions in the proposed modification will become final, and the permit will become effective upon issuance. If comments are received, EPA will address the comments and modify the permit. The modification will become effective 30 days after the issuance date, unless an appeal is submitted to the Environmental Appeals Board within 30 days.

Documents are Available for Review

The proposed modification and related documents can be reviewed or obtained by visiting or contacting EPA's Regional Office in Seattle between 8:30 a.m. and 4:00 p.m., Monday through Friday at the address below. The draft permit, fact sheet, and other information can also be downloaded from the Region 10 website at "<http://www.epa.gov/r10earth/water.htm>."

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue, OW-130
Seattle, Washington 98101
(206) 553-6251 or
Toll Free 1-800-424-4372 (within Alaska, Idaho, Oregon and

Washington)

The fact sheet and draft permits are also available at:

EPA Alaska Operations Office
222 West 7th Avenue
Anchorage, AK 99513
907-271-5083

Alaska Department of Environmental Conservation
410 Willoughby Avenue
Suite 303
Juneau, AK 99801
907-465-5010

Table of Contents

Acronyms 4

I. Introduction 5

 A. Overview of Modification 5

 B. Facility Information 5

II. Basis for Modifications 6

 A. Current Permit Requirements 6

 B. Compliance Difficulties 7

 C. Proposed Modifications 7

 1. Ambient Temperature Monitoring Location 7

 Table 1: Difference between Sump and Sea Wall Temperatures 8

 2. Temperature Monitoring Frequency 8

IV. Other Legal Requirements 9

 A. Endangered Species Act and Essential Fish Habitat 9

 B. State Certification 10

 C. Alaska Coastal Management Program 10

 D. Permit Expiration 10

V. References 11

Appendix A: Sea Wall and Sump Concurrent Temperature Data A-1

Appendix B: Temperature Effluent Data B-1

 Table B-1: Temperature Data B-1

Acronyms

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
OPMP	Alaska Department of Natural Resources Office of Project Management and Permitting
BOD ₅	5-Day Biochemical Oxygen Demand
BPXA	BP Exploration Alaska
CFR	Code of Federal Regulations
CWA	Clean Water Act
DMR	Discharge Monitoring Report
EFH	Essential Fish Habitat
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
OW	EPA Office of Water
RTD	Resistance Temperature Detector
TSS	Total Suspended Solids
USFWS	U.S. Fish and Wildlife Service
UV	Ultraviolet

I. Introduction

A. Overview of Modification

The intent of this proposed modification is to reduce the temperature monitoring frequency from continuous to three times per week and change the ambient temperature monitoring location from the sea wall to the seawater intake sump. EPA has determined that these changes will resolve compliance difficulties that the permittee had with the permit while continuing to ensure compliance with the Clean Water Act (CWA) and implementing regulations, as well as the Alaska Water Quality Standards.

The proposed modifications to the Northstar NPDES permit are limited to Outfall 001. The proposed permit modifications do not affect the other permitted discharges: fire suppression system test water (Outfall 002) and construction dewatering (Outfall 005). This Fact Sheet describes the proposed modifications and evaluates the resulting discharges for Outfall 001.

As a result of the modification, the page numbering in the proposed modified permit has changed from the current version, and the Table of Contents has been updated accordingly.

B. Facility Information

BP Exploration (Alaska), Inc. (BPXA) received approval in May 1999 for the construction and operations of the Northstar Development Project as described in the Department of the Army (Corps) permit N-950372, Beaufort Sea 441. In conjunction with the Corps permit, BPXA received an individual NPDES Permit (AK-0052779) issued by the U.S. Environmental Protection Agency (EPA) as authorized by provisions in the Clean Water Act. The NPDES permit became effective on June 23, 1999.

BPXA's Northstar Unit is a self-contained offshore development/production facility located on a gravel island in approximately 39 ft of water roughly 6 miles offshore of Point Storkersen in the Alaskan Beaufort Sea. The gravel island was constructed over the remains of Seal Island, an island built by Shell Oil Company to conduct exploratory activities within the Northstar Unit during the 1980's.

The NPDES Permit issued by EPA authorized the following discharges:

- ▶ Outfall 001(a) - Continuous flush system,
- ▶ Outfall 001(b) - Brine effluent associated with the potable water system (vapor compression distillation),
- ▶ Outfall 001(c) - Effluent from the domestic wastewater treatment system (temporary discharge during periods when the Class I injection well is not

- available),
- ▶ Outfall 002 - Seawater discharged through fire suppression system during periodic tests,
- ▶ Outfall 005 - Construction dewatering (short term during construction).

Outfall 001 consists of up to three commingled streams: continuous flush, brine effluent, and treated domestic wastewater effluent. The continuous flush system is designed to prevent ice formation and biofouling. The desalination brine is a byproduct of the potable water system which renders freshwater from seawater. The freshwater produced is utilized for both human and operational activities. Domestic wastewater, following an activated sludge and ultraviolet (UV) treatment, may also occasionally be commingled with these discharge streams; this particular stream results almost exclusively from human activities related to food preparation, consumption, and bathing, and does not contain any fluids related to the oil production/processing systems. As noted above, collectively these three streams are referred to as Outfall 001.

II. Basis for Modifications

A. Current Permit Requirements

The original NPDES Fact Sheet (Corps 1999) and the Northstar Development Unit Mixing Zone Application, Outfalls 001 and 006 (Woodward-Clyde 1997) identified and evaluated the pollutants and chemicals-of-concern associated with each waste stream and associated outfall. The proposed permit modification will not introduce additional chemicals that were not previously evaluated, nor will it change any effluent limits.

The State authorized a mixing zone for discharges from outfall 001 which extends horizontally from outfall 001 by a 5-meter radius with a minimum dilution ratio of 10.1:1 at the edge of the mixing zone. This ensures that water quality criteria will be met at the edge of the mixing zone for this discharge.

The permit contains a water quality-based maximum daily effluent limit of 7 °C for temperature, expressed as the maximum difference between the influent and effluent temperatures. Federal regulations at 40 CFR 122.2 define a “Maximum Daily Limit” as the maximum allowable “Daily Discharge.” A “Daily Discharge” is defined for pollutants with limitations expressed in units other than mass as the average measurement of the pollutant over a calendar day or any 24 hour period that reasonably represents a calendar day. Therefore, the permit requires that the average difference between the ambient and effluent temperatures, may not exceed 7 °C for any calendar day or any 24 hour period representing a calendar day.

Currently, the permit requires continuous monitoring of both the effluent and the ambient water for temperature. The permit originally required that the Resistance Temperature Detector (RTD) measuring the ambient water temperature be installed along the outside of the island's sheet piling, approximately 15 feet West of the seawater intake at a depth of 14 to 16 feet below mean lower low water. This location was chosen because the intake sump is equipped with a heater to prevent freezing. If used, this heater would elevate the temperature of the ambient seawater and preclude the use of the sump as an acceptable ambient monitoring location. BPXA has installed RTDs at the locations specified in the permit and has made a good faith effort to comply with the continuous temperature monitoring requirement.

B. Compliance Difficulties

The permittee has had difficulty complying due to unforeseen problems with floating ice repeatedly damaging the ambient RTD. To correct this, BPXA requested a minor modification of the permit, to change the required monitoring location of the RTD from "approximately" 15 feet west of the sea water intake to "at least" 15 feet west of the seawater intake. BPXA proposed to move the RTD 25 feet further West. It was thought that this would be a more protected location and would result in fewer RTD failures.

BPXA was granted the minor modification on November 19, 2002. However, due to problems with the integrity of the seawall at the alternate location, the RTD was never moved to the new location. On November 12, 2003, ice movement again damaged the sea wall RTD. At the same time, the cable to the RTD in the intake sump was also damaged, rendering both RTDs inoperative.

C. Proposed Modifications

1. Ambient Temperature Monitoring Location

BPXA has provided EPA with just over 45 days of concurrent, hourly temperature measurements (1086 data points) from both the sea wall and the intake sump. EPA has analyzed these data to determine if there is any significant difference between the two monitoring locations. Because compliance with the maximum daily effluent limit is based on the difference between the 24 hour averages of the ambient and effluent temperatures, EPA has compared 24 hour rolling averages of the sea wall and intake sump temperatures.

These data show that, in general, the water temperature at the sea wall is slightly warmer than at the intake sump. The following table contains relevant statistics concerning the temperature difference between the sea wall and intake sump temperatures. The difference is expressed as (sea wall temperature) - (sump

temperature), so a negative value means that the sea wall is colder than the sump.

Number of Data Points	1063	1 st Percentile (°C)	-0.012
Maximum (°C)	0.692	5 th Percentile (°C)	-0.009
Minimum (°C)	-0.019	Median (°C)	0.095
Average (°C)	0.141	95 th Percentile (°C)	0.495
Standard Deviation (°C)	0.161	99 th Percentile (°C)	0.638

The temperature at the sea wall was warmer than the temperature at the sump for most of the measurements, and at no time was the rolling averaged temperature at the sea wall more than 0.019 °C colder than at the intake sump. The effluent is invariably warmer than the intake water, and the effluent limit for temperature is expressed as a daily maximum difference between the ambient and effluent temperature. Therefore, under most conditions, sampling the ambient water temperature at the intake sump will be at least as protective as sampling it at the sea wall, and the intake sump location will be more reliable because it is well protected from ice.

Therefore, EPA proposes to change the ambient sampling point for temperature from the sea wall to the intake sump with no change in the numeric temperature effluent limit, and add a permit condition requiring that the intake sump heater remain off for at least 8 hours prior to ambient sampling. Please see Appendix A for details of the comparison between the sea wall and intake sump water temperatures.

2. Temperature Monitoring Frequency

Because there have been no numeric violations of the temperature effluent limit during the past permit cycle, EPA has determined that a reduction in frequency is appropriate and that monitoring for temperature three times per week with grab samples will adequately characterize the discharge. Other pollutant parameters (BOD₅, TSS, total residual chlorine, fecal coliform, salinity and pH) are currently monitored once per week. At this frequency, the maximum daily temperature reported on the monthly DMR will be based on at least 12 samples. Please see Appendix B for detailed temperature effluent data. Allowing BPXA to sample the ambient temperature using grab samples will allow BPXA to maintain compliance with their permit should the intake sump RTD be damaged, while still ensuring Alaska’s water quality standards are met beyond the 5 meter mixing

zone.

The proposed modification requires BPXA to measure ambient temperature with the RTD whenever it is operational and use grab samples only as a backup sampling method. When the RTD is operational, BPXA must base the daily temperature difference on the average difference between 24 hours of temperature data collected on a given day, although they are now only required to collect this data 3 days per week, rather than continuously.

The change from continuous to three times per week monitoring does not allow discharges of temperature which may endanger human health or the environment to go unreported. Such an action is prohibited by the following two standard NPDES permit conditions:

III.D. Representative Sampling (Routine and Non-Routine Discharges):

The Permittee shall collect all effluent samples from the effluent stream prior to discharge into the receiving waters. Samples and measurements shall be representative of the volume and nature of the monitored discharge.

In order to ensure that the effluent limits set forth in this Permit are not violated at times other than when routine samples are taken, the Permittee shall collect additional samples at the appropriate outfall(s) whenever any discharge occurs that may reasonably be expected to cause or contribute to a violation that is unlikely to be detected by a routine sample. The Permittee shall analyze the additional samples for those parameters listed in Part I of this Permit that are likely to be affected by the discharge.

The Permittee shall collect such additional samples as soon as possible after the discharge. The samples shall be analyzed in accordance with Part III.F below. In the event of an anticipated bypass as defined in Part VI of this Permit, the Permittee shall collect and analyze additional samples as soon as the bypassed effluent reaches the Outfall. The Permittee shall report all additional monitoring in accordance with Part III.G below.

III.G. Additional Monitoring by Permittee: If the Permittee monitors any pollutant more frequently than required by this Permit, using test procedures approved under 40 CFR 136 or as specified in this Permit, the Permittee shall include the results of this monitoring in the calculation and reporting of the data submitted in the DMR. The Permittee shall indicate on the DMR whenever it has performed additional monitoring, and shall explain why it performed such monitoring.

Upon request by the Director, the Permittee shall submit results of any other sampling, regardless of the test method used.

IV. Other Legal Requirements

A. Endangered Species Act and Essential Fish Habitat

Endangered Species Act (ESA) and Essential Fish Habitat (EFH) consultation for this project was completed in 1999, prior to issuance of the NPDES permit. This modification does not change any effluent limits, therefore Alaska water quality criteria will continue to be met at the edge of the previously authorized 5 meter mixing zone. Therefore, EPA has determined that issuance of this permit modification will have no affect on endangered species or EFH beyond those previously addressed during the 1999 consultation process. EPA will provide National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) and the U.S. Fish and Wildlife Service (USFWS) (collectively referred to as the Services) with copies of the draft permit modification and fact sheet during the public notice period. Any comments received from the Services regarding ESA and EFH will be considered prior to issuance of the permit modification.

B. State Certification

Section 401 of the CWA requires EPA to seek certification from the Alaska Department of Environmental Conservation (ADEC) that the permit will be protective of the State water quality standards before issuing a final permit. As a result of the certification, the State may require more stringent permit conditions or additional monitoring requirements to ensure that the permit complies with water quality standards. In addition, the regulations require a certification to include statements of the extent to which each condition of the permit can be made less stringent without violating the requirements of State law.

On April 19, 2004, EPA received a “pre-certification” from ADEC. This pre-certification is a tentative determination that the proposed modified permit will continue to be protective of Alaska’s water quality standards.

C. Alaska Coastal Management Program

On October 16, 2000, this project was found to be consistent with the Alaska Coastal Management Program (ACMP). According to the current regulations, 6 AAC 50.810(i)(4), modifications that are within the scope of the original project that was reviewed and have no additional effect on coastal uses and resources are not subject to further consistency review. Since this proposed modification will not change any effluent limits and does not authorize any additional activities or discharges, EPA has determined that this modification is within the scope of the original project and therefore no further consistency review is required.

D. Permit Expiration

The permit expiration date is not changed by this permit modification. This permit will expire at midnight, June 23, 2004. However, because EPA received an application for renewal of this permit on December 22, 2003, the current permit will be administratively extended until the permit can be reissued, as provided for

in 40 CFR 122.6.

V. References

U.S. Army Corps of Engineers (Corps) 1999. Final Environmental Impact Statement Beaufort Sea Oil and Gas Development/Northstar Project. 4 volumes + appendices. Prepared by the U.S. Army Corps of Engineers, Alaska District. February 1999.

Woodward-Clyde Consultants (Woodward-Clyde) 1997. Northstar Development Unit Mixing Zone Application, Outfalls 001 and 006. Prepared by Woodward-Clyde Consultants for BP Exploration (Alaska), Inc. December 1997.

Appendix A: Sea Wall and Sump Concurrent Temperature Data

Figure A-1 shows the relationship between the rolling average sea wall and intake sump temperatures by plotting the sea wall temperature (y-axis) against the sump temperature (x-axis). The solid line is a plot of the sump temperature against itself. If the sea wall temperature were exactly the same as the sump temperature, all points would fall on this line.

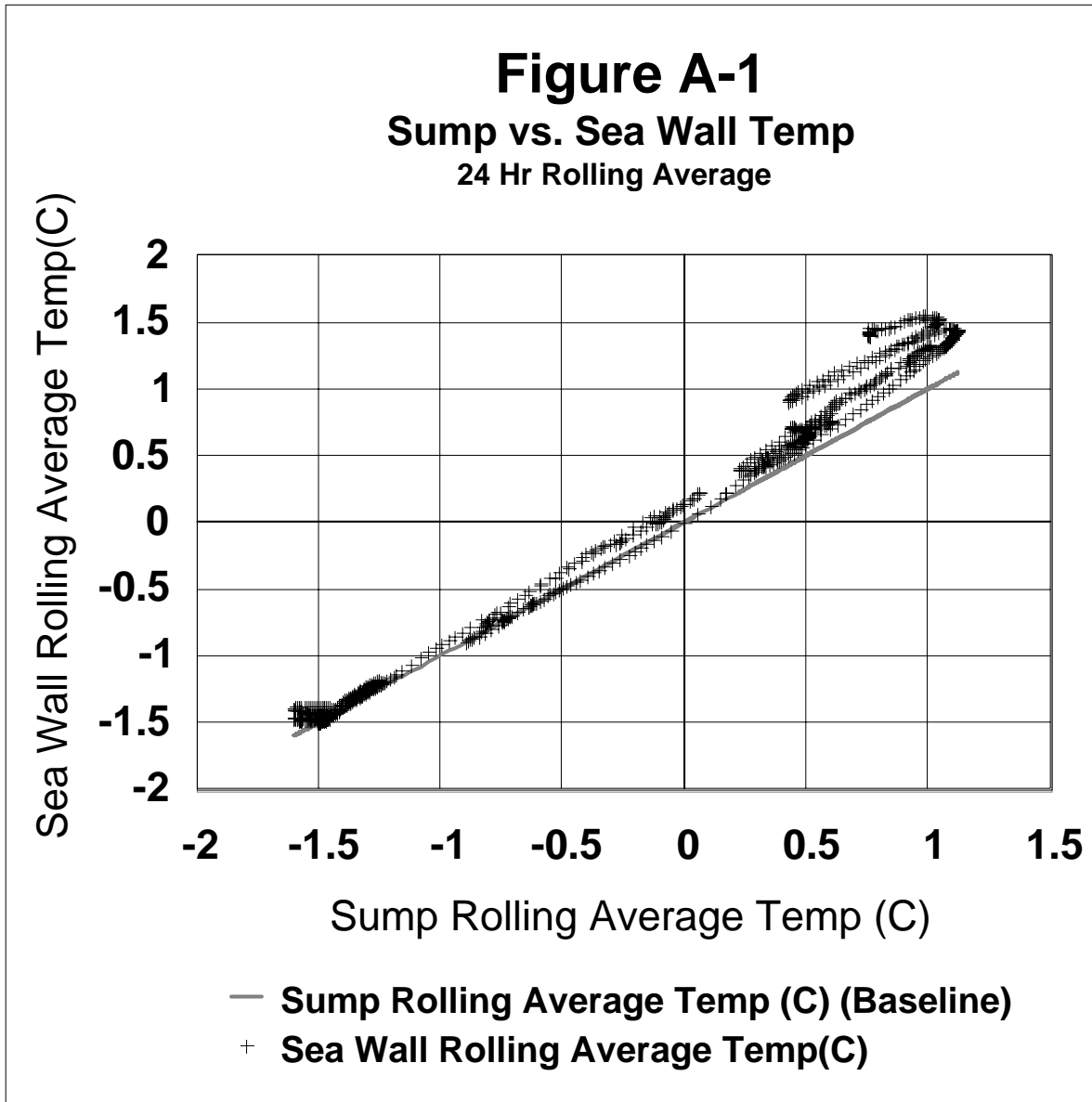


Figure A-2 shows the rolling average temperatures at the sea wall and the intake sump plotted against time, on the same axis.

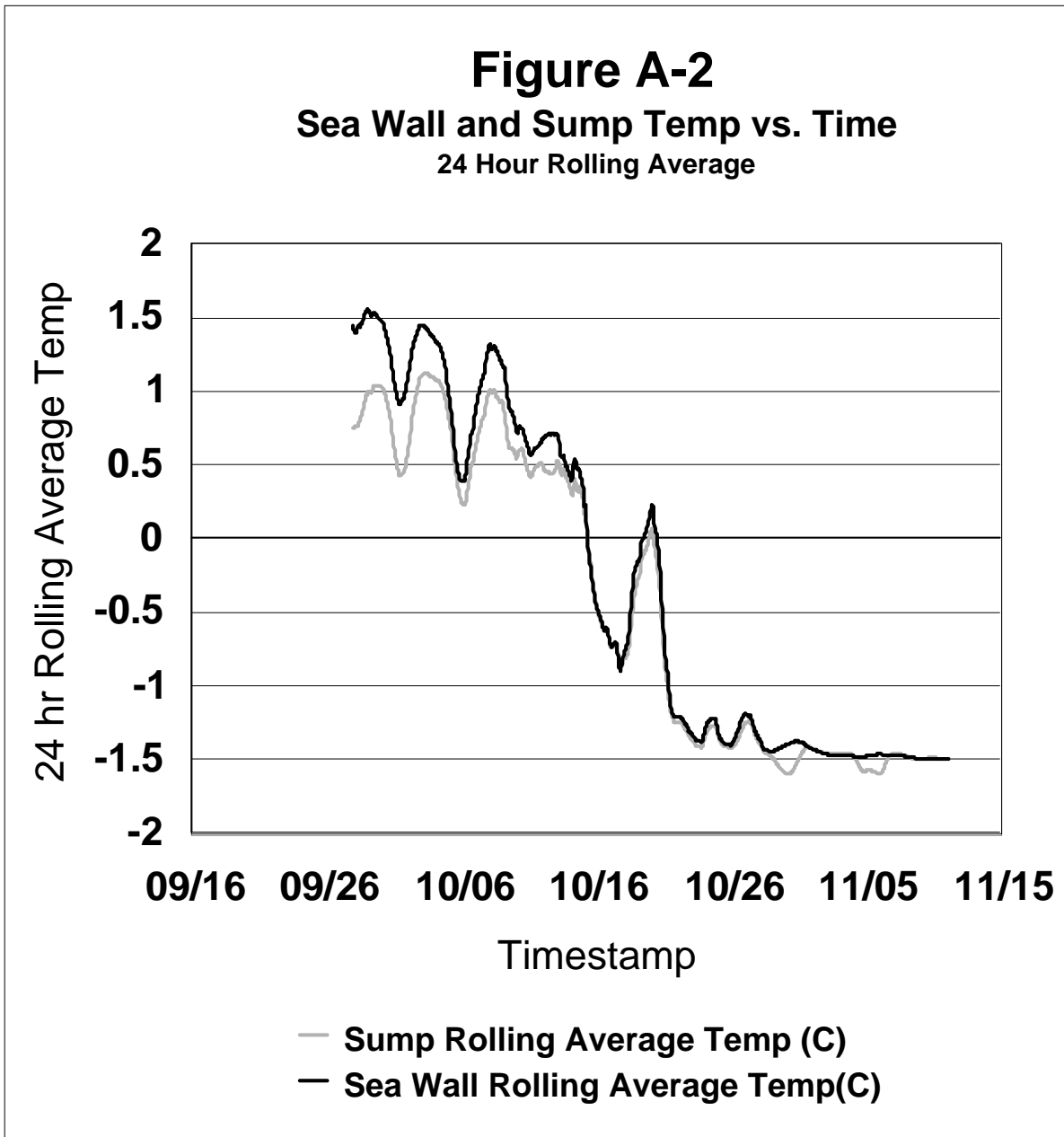
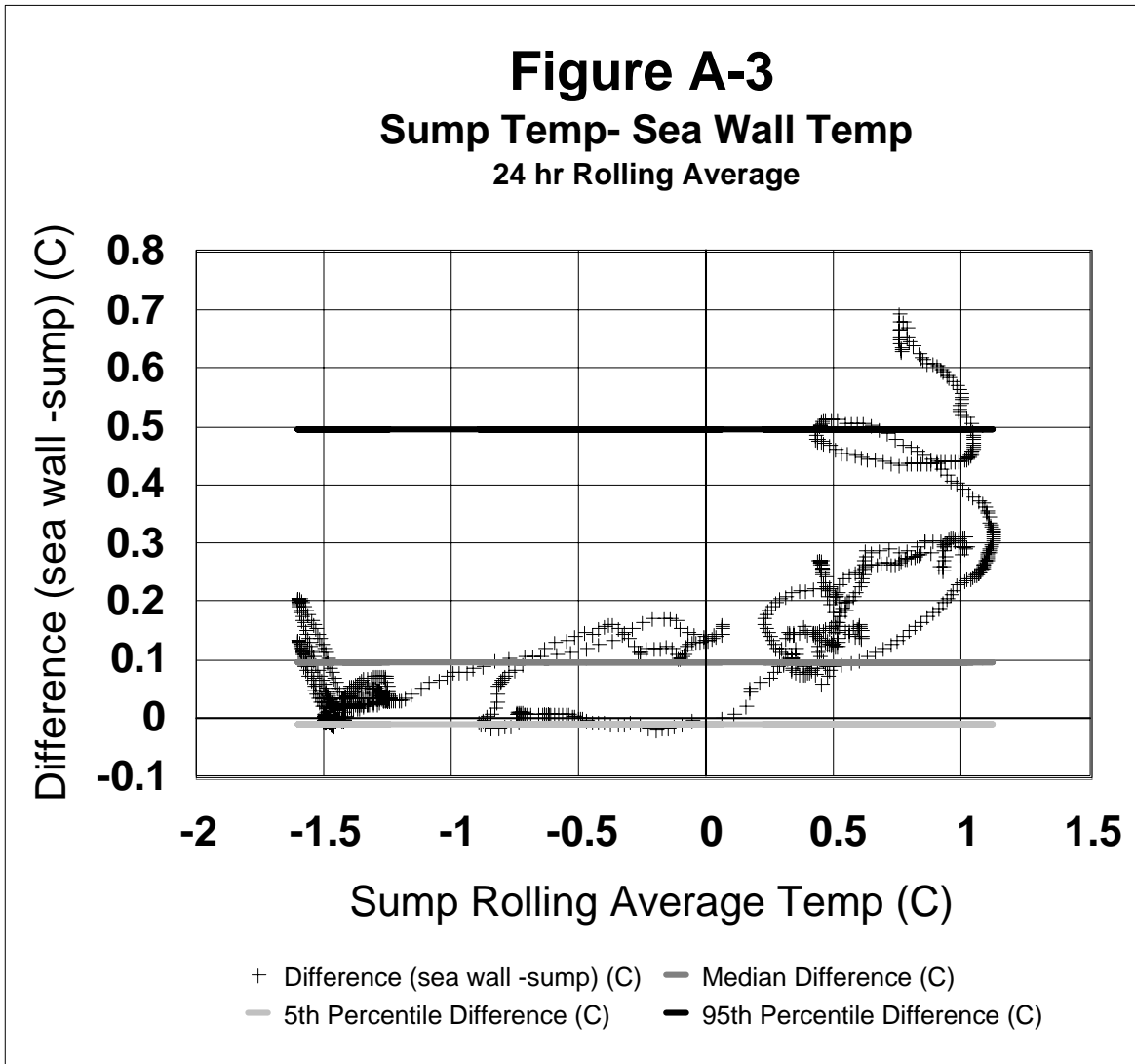


Figure A-3 shows the difference between the rolling averaged temperature at the sea wall and at the intake sump. The difference is expressed as the sea wall temperature minus the sump temperature. The three horizontal lines show the 5th, 50th (median) and 95th percentile differences. The largest differences occur at higher water temperatures.



Appendix B: Temperature Effluent Data

Table B-1: Temperature Data (effluent - ambient)			
Effluent limit: 7 °C			
Date	Delta T (°C)	Date	Delta T (°C)
12/31/2000	6.4	01/19/2004	2.97
01/31/2001	6	01/20/2004	1.14
02/28/2001	6	01/21/2004	1.06
03/31/2001	5.5	01/22/2004	3.82
04/30/2001	5.5	01/23/2004	3.32
06/30/2001	6.6	01/24/2004	1.16
07/31/2001	6.7	01/25/2004	1.23
10/31/2001	0.8	01/26/2004	1.23
11/30/2001	5.3	01/27/2004	1.36
12/31/2001	3	01/28/2004	1.21
01/31/2002	4.3	01/29/2004	1.2
02/28/2002	6.3	01/30/2004	1.23
03/31/2002	3.3	01/31/2004	1.24
04/30/2002	5.6	02/01/2004	1.09
05/31/2002	3.6	02/02/2004	1.14
06/30/2002	3.2	02/03/2004	1.31
07/31/2002	3.8	02/04/2004	1.16
08/31/2002	2.7	02/05/2004	1.19
09/30/2002	3.8	02/06/2004	1.17
10/31/2002	4.7	02/07/2004	1.17
11/30/2002	4.7	02/08/2004	1.13
12/31/2002	2.2	02/09/2004	1.05
01/31/2003	1.5	02/10/2004	1.13
02/28/2003	1.4	02/11/2004	1.18
03/31/2003	5	02/12/2004	1.14
04/30/2003	2.8	02/13/2004	1.12
05/31/2003	4.3	02/14/2004	1.15
06/30/2003	4	02/15/2004	2.1
07/31/2003	4.7	02/16/2004	4.94
08/31/2003	5	02/17/2004	5.13
09/30/2003	5.17	02/18/2004	1.81
10/31/2003	5.57	02/19/2004	1.29
11/30/2003	5.84	02/20/2004	1.17
01/11/2004	5.4	02/21/2004	1.36
01/12/2004	5.1	02/22/2004	1.25
01/13/2004	5.67	02/23/2004	1.21
01/14/2004	5.95	02/24/2004	1.2
01/15/2004	6.17	02/25/2004	1.22
01/16/2004	6.13	02/26/2004	1.18
01/17/2004	5.92	02/27/2004	1.18
01/18/2004	6.16	02/28/2004	1.21
		02/29/2004	1.28

Note: Data from 1/11/04 and later are based on an ambient sample taken at the intake sump.