ALASKA POLLUTANT DISCHARGE ELIMINATION SYSTEM

PERMIT FACT SHEET – FINAL

Permit Number: AK0052566

Alaska SeaLife Center

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Wastewater Discharge Authorization Program
555 Cordova Street
Anchorage, AK 99501

Public Comment Period Start Date: March 21, 2025

Public Comment Period Expiration Date: April 21, 2025

Alaska Online Public Notice System

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Proposed issuance of an Alaska Pollutant Discharge Elimination System (APDES) permit to

SEWARD ASSOCIATION FOR THE ADVANCEMENT OF MARINE SCIENCE

For wastewater discharges from:

Alaska SeaLife Center
301 Railway Avenue
Seward, Alaska 99664

The Alaska Department of Environmental Conservation (the Department or DEC) proposes to reissue an APDES individual permit (permit) to the Seward Association for the Advancement of Marine Science (SAAMS). The permit authorizes and sets conditions on the discharge of pollutants from this facility to waters of the United States. In order to ensure protection of water quality and human health, the permit places limits on the types and amounts of pollutants that can be discharged from the Alaska SeaLife Center and outlines best management practices to which the facility must adhere.

This fact sheet explains the nature of potential discharges from the Alaska SeaLife Center and the development of the permit including:

- information on appeal procedures
- a listing of effluent limitations and other conditions
- technical material supporting the conditions in the permit
- monitoring requirements in the permit

Informal Review and Adjudicatory Hearing

A person authorized under a provision of 18 AAC 15 may request an informal review of a contested decision by the Division Director in accordance with 18 AAC 15.185 and/or an adjudicatory hearing in accordance with 18 AAC 15.195 – 18 AAC 15.340. See DEC's "Appeal a DEC Decision" web page https://dec.alaska.gov/commish/review-guidance/ for access to the required forms and guidance on the appeal process. Please provide a courtesy copy of the adjudicatory hearing request in an electronic format to the parties required to be served under 18 AAC 15.200. Requests must be submitted no later than the deadline specified in 18 AAC 15.

Documents are Available

The permit, fact sheet, application, and related documents can be obtained by visiting or contacting DEC between 8:00 a.m. and 4:30 p.m. Monday through Friday at the addresses below. The permit, fact sheet, application, and other information are located on the Department's Wastewater Discharge Authorization Program website: http://dec.alaska.gov/water/wastewater.

Alaska Department of Environmental Conservation Division of Water Wastewater Discharge Authorization Program 555 Cordova Street Anchorage, AK 99501 (907) 269-6285	Alaska Department of Environmental Conservation Division of Water Wastewater Discharge Authorization Program **Mail**: P.O. Box 111800 **In Person**: 410 Willoughby Avenue, Suite 303 Juneau, AK 99811-1800 (907) 465-5180

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1.0 INTRODUCTION

1.1 Applicant

This fact sheet provides information on the Alaska Pollutant Discharge Elimination System (APDES) permit for the following entity:

Permittee:	Seward Association for the Advancement of Marine Sciences
Facility:	Alaska SeaLife Center
APDES Permit Number:	AK0052566
Facility Location:	301 Railway Avenue Seward, AK 99664
Mailing Address:	PO Box 1329, Seward, AK, 99664
Facility Contact:	Charles Arnold

The map in Fact Sheet Part 2.1, Figure 1 shows the approximate locations of the Alaska SeaLife Center (ASLC), the adjoining Steller South Beach Facility (SSBF) and the location of the outfall.

1.2 Authority

Section 301(a) of the Clean Water Act (CWA) and 18 AAC 83.015 provide that the discharge of pollutants to water of the U.S. is unlawful except in accordance with an APDES permit. The individual permit reissuance is being developed per 18 AAC 83. A violation of a condition contained in the Permit constitutes a violation of the CWA and subjects the permittee of the facility with the permitted discharge to the penalties specified in Alaska Statutes (AS) 46.03.760 and AS 46.03.761.

1.3 Permit History

SAAMS first applied for a wastewater discharge permit on October 13, 1994. DEC issued Waste Disposal Permit, # 9423-DB005 in 1994 for the discharge of nondomestic wastewater to the ASLC. The permit was renewed on January 15, 2001.

On January 20, 2004, DEC issued Wastewater Disposal Permit #0123DB005 to replace permit #9423-DB005. The replacement permit expired on January 19, 2009. DEC issued Individual Permit AK0052566 under the Alaska Pollutant Discharge Elimination System (APDES) program to the facility authorizing non-domestic wastewater discharge on June 14, 2014. The most recent reissuance of the APDES permit took effect on June 1, 2020, with an expiration date of May 31, 2025. SAAMS submitted a timely and complete application for reissuance on November 25, 2024.

2.0 BACKGROUND

2.1 Facility Information

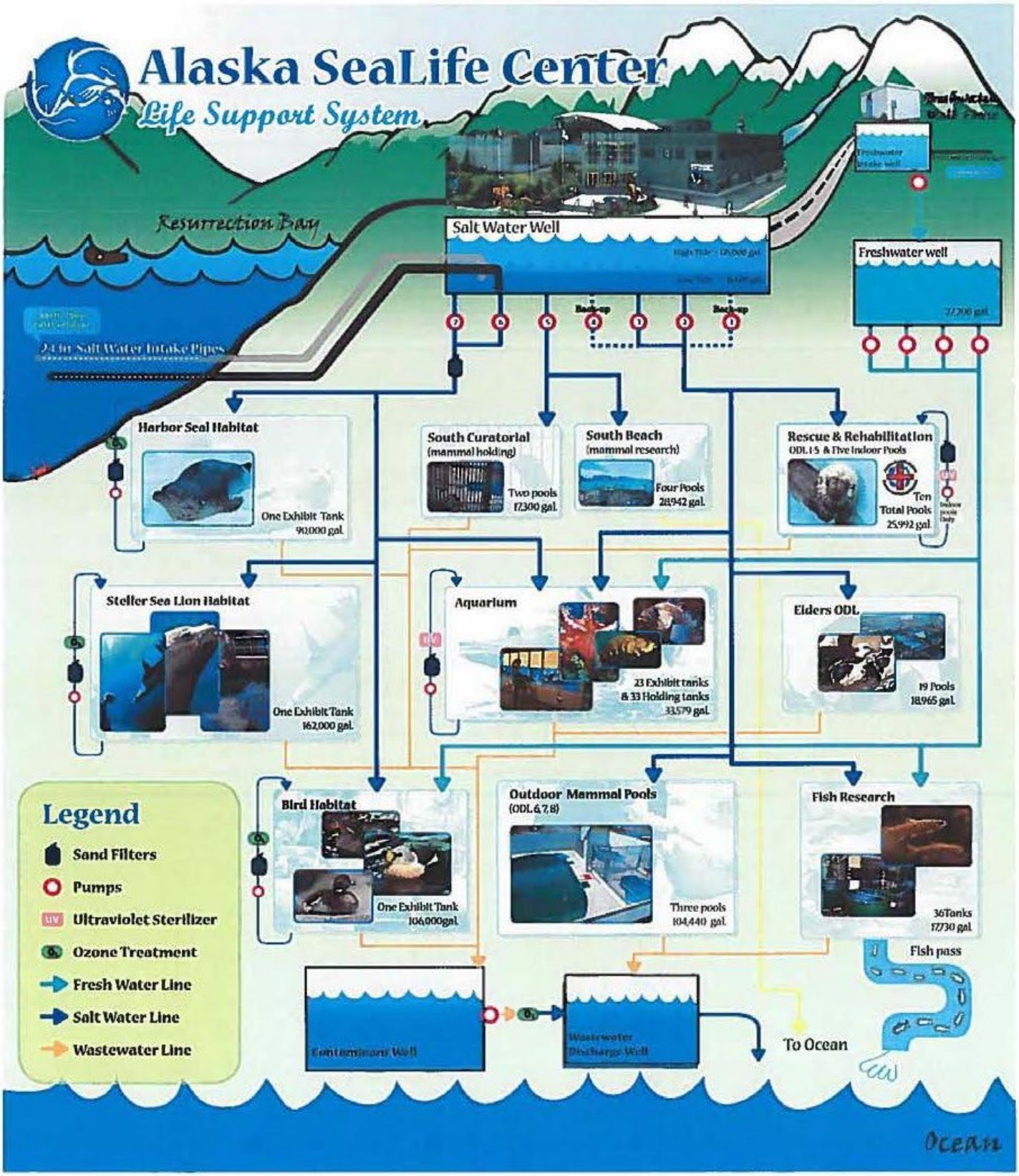
The Seward Association for the Advancement of Marine Science doing business as (dba) the ASLC and the SSBF operate as a public aquarium and Alaska's only permanent marine mammal rehabilitation facility. The center is the only permanent marine mammal rescue and rehabilitation facility in the state. The ASLC and SSBF generate and share scientific knowledge to promote understanding and stewardship of Alaska’s marine ecosystems.

SAAMS operates the ASLC and the adjoining SSBF in Seward, Alaska. The ASLC and SSBF are industrial facilities operating research and development in the physical, engineering, life sciences Zoo and Botanical Garden under the North American Industry Classification System (NAICS). The ASLC facility contains seawater and freshwater systems that support two large marine mammal habitats, one seabird habitat, indoor and outdoor research pools, rescue and rehabilitation tanks and pools, and numerous aquaria.

Figure 1 is a facility map with the locations of the saltwater intakes, the permitted Outfall 001A, the facility location, the freshwater well intake point, the effluent well, and the SSBF. The map was submitted to DEC on December 16, 2024. Figure 2 is a flow diagram submitted SAAMS with the application.

Figure 1: Alaska SeaLife Center Facility Vicinity Map

Figure 2: Alaska SeaLife Center Process Flow Diagram



During the previous APDES permit issuance, no facility changes were implemented and there are no current plans for upgrades to the facility. Figure 2 provides a schematic of the facility's process flow system.

Untreated influent seawater enters the ASLC via two 24-inch intake pipes denoted as 'ASLC Sea Water Intake A' and 'ASLC Sea Water Intake B' in Figure 1. These intakes are capped with screens and capture baskets that extend 750 feet offshore into Resurrection Bay to a depth of 300 feet. The maximum intake rate is 6,200 gallons per minute (gpm). Seawater is pumped to a 225,000-gallon saltwater reservoir (salt water well) located below the floor of the pump room to a depth of 42 feet. A pigging unit is used in one of the seawater intake pipes to clear foreign matter and sediment from the intake. A continuous flow of influent seawater is pumped from the salt water well into the habitat pools, aquaria, laboratory, and South Curatorial/South Beach facility through one of three influent water lines: the habitat line, the research line or the line to the South Curatorial/South Beach facility. Seawater is completely exchanged throughout the ASLC approximately nine times per day.

Seawater in the habitat line is directed to the harbor seal habitat, the Steller sea lion habitat, the bird habitat, the west holding area, and the aquaria. Each of the main habitat tanks employs a set of high-pressure sand filters and an ozone treatment system to clarify and disinfect influent seawater before it enters the exhibits.

The research line water supplies untreated seawater to the Rescue and Rehabilitation Outside Deck Laboratories (ODLs) 1-5, five indoor pools and to the wet labs. The research water line also supplies seawater to the quarantine system, the Eiders' ODL, the outdoor mammal pools (ODLs 6, 7 and 8), 36 tanks in the Fish Research section, 23 indoor habitat tanks and 31 indoor holding tanks.

The South Curatorial/South Beach facility is supplied by the third line from the saltwater well.

Spent seawater drains from tanks and pools through one of two wastewater streams to a common contaminant well, a 4,620-gallon concrete tank. From the contaminant well, the wastewater undergoes ozone treatment and is piped into the wastewater discharge well. From there, the wastewater discharges to Resurrection Bay via Outfall 001A.

Fresh water from a natural spring near Lowell creek southwest of the facility, collects in a 27,200-gallon concrete reservoir located east of the facility. The fresh water from the reservoir is pumped to the ASLC at a maximum rate of 500 gpm to provide the high-quality untreated fresh water needed for the bird habitat, to the freshwater aquaria and research.

Table 1 lists information about the pools and tanks located at the ASLC and SSBF.

Table 1: Description of Pools and Tanks at ASLC and SSBF

Description	Number of Pools/Tanks	Volume in Gallons	Influent line supplying seawater	Treatment prior to discharge
Harbor seal habitat tank	1	90,800	Habitat	Ozone
Steller sea lion habitat tank	1	102,000	Habitat	Ozone
Bird habitat tank	1	106,000	Habitat	Ozone
South Curatorial mammal holding pools	2	17,300	South Curatorial/ South Beach	Ozone
SSBF marine animal research pools	4	28,942	South Curatorial/ South Beach	Ozone
Rescue and Rehabilitation ODL/indoor pools	10	25,902	Research	Ultraviolet (UV)
Eiders' ODL pools	19	18,965	Research	Ozone
Mammals' ODL pools	3	104,440	Research	Ozone
Fish research tanks	36	17,730	Research	Ozone
Indoor aquarium tanks and holding pools	54	31,579	Habitat and Research	UV

2.2 Wastewater Treatment

The permit is limited to non-domestic wastewater discharges. Wastewater discharged from the ASLC and SSBF is limited to spent seawater, filtered and treated from animal habitats and tanks. There are no collected screenings, grit, solids, or other pollutants removed in the course of wastewater treatment that are disposed at a separate facility. All domestic wastewater from the laboratories and the facility's public services discharges separately to the permitted Seward Wastewater Treatment Facility (Seward WWTF). The amount of domestic wastewater discharged from the ASLC is approximately 46,000 gallons per day for an average high use day during the summer. Facility wash-down water and stormwater runoff from exterior surfaces is also discharged to the Seward WWTF. Stormwater runoff from the ASLC parking lot drains to an oil/water separator and is discharged to the City of Seward storm drain. The building cooling and heating exchangers are supplied with raw saltwater directly from the 225,000-gallon saltwater reservoir and, after passing through the heat exchangers, goes directly to the discharge well, without coming into contact with vegetable-grade glycol in the cooling and heating system.

Non-domestic wastewater from the ASLC's tanks and pools, including filter backwash and wastewater from the SSBF, discharges through one of two waste streams to a 125,000-gallon contaminant well. Filter backwash water that may contain concentrated natural solids is disinfected with ozone at 2 parts per million and held in contact tanks for four minutes to kill all pathogens and reduce the biochemical oxygen demand prior to discharge into the contaminant well.

The three large habitat tanks at the ASLC operate as semi-closed systems. Seawater in the habitat tanks circulates through high-rate pressure sand and gravel filters at a rate of 1,238 gpm; the daily average of the systems. Because there are regular backwashes for filtration, and the system cycles regularly, there is no way to measure the maximum flow rate. Each habitat tank has two skimmers. The skimmers are simple grates whose purpose is to collect any surface solids or debris so that only water is in the waste stream. Wastewater from all three habitat systems is piped to the contaminant well through the first discharge line at a maximum flow rate of 1,300 gpm. The habitat filters, pumps and valve controls are automated by a RCK Controls, Inc. control system that also measures salinity, pH, temperature and oxidation-reduction potential. RCK control information is stored on a computer in the life support office.

The Quarantine and Rescue and Rehabilitation facilities also operate as semi-closed systems to provide a stable environment isolated from outside contamination while protecting the external environment from contamination

by the quarantined animals. The semi-closed recirculating life support systems consist of combinations of circulating pumps, pressure sand filters, and UV disinfection that supplies seawater to all quarantine areas at an approximate capacity of 150 gpm.

Other tanks with sand and UV disinfection at the ASLC are the aquaria exhibit tanks. Aquaria exhibit tanks receive a continuous flow of seawater and fresh water or have semi-closed recirculating life support systems. Discharge water, including filter backwash, from the rescue, research and quarantine areas and aquaria tanks is piped to the contaminant well through the first discharge line; the same discharge line as the habitat tanks. Wastewater from the fish research tanks is discharged to a separate, second wastewater line; however, both wastewater discharge lines are directed to the contaminant well.

The outdoor research pools have seawater supplied at a rate of 600 gpm. The maximum capacity for flow to SSBF is 3,200 gpm if there is no intake flow to all other tanks or pools. The average flow rate is 600 gpm since the water is shared with the other tanks and pools, while the indoor research tanks' seawater is supplied at a rate of 250 gpm. The indoor research tanks discharge wastewater to the contaminant well through the first discharge line, while ODL tanks 7 and 8 discharge wastewater to the contaminant well through the wastewater line from the same line as the fish research tanks, the second discharge line.

Discharge water from the 19 pools in the Eiders' ODL is not disinfected with ozone or UV before being piped to the contaminant well through the first discharge line.

The SSBF receives a continuous flow of untreated seawater from the ASLC saltwater well to four pools used for marine mammal research. Pool wastewater discharges without treatment to a common concrete deck trench drain, then to a six-inch buried pipeline connected to the ASLC first wastewater line. Before a major facility modification in 2017, wastewater from the SSBF discharged through a buried 24-inch storm drain directly into Resurrection Bay through an above-water outfall, Outfall 001B. This outfall is currently inactive; however, it remains as a potential discharge port. The permit does not authorize wastewater discharges from Outfall 001B.

Wastewater collected in the 4,620-gallon contaminant well from the two discharge lines is disinfected with ozone before being pumped into the 125,000-gallon wastewater discharge well. Wastewater flows from the wastewater discharge well through a 225-foot long outfall pipe to a depth of 50 feet into Resurrection Bay at Outfall 001A. Outfall 001A is a single port discharge unit without a diffuser. The maximum daily flow rate discharge to Outfall 001A is 8.1 mgd and has an estimated average daily flow rate of 4.2 mgd.

2.3 Wastewater Characterization and Pollutants of Concern

The ASLC and SSBF discharge only spent seawater, filtered and treated from animal habitats and tanks. Pollutants of concern known to be present in the effluent of the ASLC and SSBF are limited to fecal coliform (FC) bacteria, enterococci bacteria, dissolved oxygen (DO), temperature, and pH. Additional information on the pollutants of concern can be found in the Fact Sheet Appendix A.

The parameters monitored in the previous APDES permit cycle were FC bacteria, enterococci bacteria, DO and pH. Based on the monitoring results, the same parameters remain as pollutants of concern, with continued monitoring. New water quality-based effluent limits (WQBELs) for FC and enterococci bacteria are applied in the permit. A new monitoring requirement for temperature is applied in the permit, in order to determine if non-contact heating operations within the facility affect water temperatures of the effluent. Results for detected pollutants from the previous permit cycle are summarized in Table 3 and Table 4.

Table 2 characterizes the effluent with the parameters monitored in the previous cycle. This summary for the combined ASLC and SSBF effluent that is discharged from permitted Outfall 001A. The range and average for pH is derived from the form 2e submitted by SAAMS on November 22, 2024. The rest is summarized from Discharge Monitoring Reports (DMRs) submissions.

Table 2:Effluent Summary for Outfall 001A from June 2020 - October 2024

Parameter	Units [a]	Range (Minimum – Maximum)	Average
Flow	mgd	0 - 4.20[b]	4.20[c]
pH	SU	6.7 - 8.12	7.7
Temperature	°C	2.8 - 13.00	8.09
DO	mg/L	7.5 - 21.90	10.87
FC Bacteria	FC/100 mL	ND - 222	NA[d]
Enterococci Bacteria	cfu/100 mL	ND - 42	NA[e]

Footnotes:

a. Units: mgd = million gallons per day, °C = degrees Celsius, mg/L = milligrams per liter, FC/100 mL = fecal coliform per 100 milliliters, cfu/100 mL = colony forming units per 100 milliliters, SU= standard units.
b. Flow is calculated by estimating pump capacity. The facility continually reported a daily maximum of 4.199 mgd for this period.
c. This value is the calculated average of all daily maximums reported during this period. The facility continually reported 3.828 mgd for all weekly and monthly averages for this period.
d. 23 of the 25 samples submitted by ASLC were Non-Detect (ND) or within WQS. Two results exceeded the daily maximum limit 14 FC/100mL and one result exceeded the monthly average limit 43 FC/100mL.See Appendix A Section A.1.2.4 for further information.
e. 11 of 12 results were ND or within WQS. One result exceeded the daily limit of 35 cfu/100mL. See Appendix A Section A.1.2.5 for further information.

2.4 Compliance History

DEC reviewed DMRs from June 2020 to November 2024 to determine the facility's compliance with effluent limits. The fecal coliform monthly average limit of 43 and daily maximum limit of 14 were exceeded two and one times, respectively, during the period. The enterococci monthly average limit of 35 was exceeded once. No citizen complaints were lodged against the facility during the previous permit cycle. No inspection reports were generated by DEC or EPA between the previous inspection on April 25, 2019, and
February 1, 2025.

3.0 EFFLUENT LIMITS AND MONITORING REQUIREMENTS

3.1 Basis for Permit Effluent Limits

Per 18 AAC 83.015, the Department prohibits the discharge of pollutants to waters of the U.S. unless the permittee has first obtained a permit issued by the APDES Program that meet the purposes of AS 46.03 and is in accordance with the CWA Section 402. Per these statutory and regulatory provisions, the Permit includes effluent limits that require the discharger to (1) meet standards reflecting levels of technological capability, (2) comply with 18 AAC 70 –WQS, and (3) comply with other state requirements that may be more stringent.

The CWA requires that the limits for a particular pollutant be the more stringent of either technology-based effluent limits (TBELs) or WQBELs. TBELs are set according to the level of treatment that is achievable using available technology. A WQBEL is designed to ensure that the Alaska Water Quality Standards (WQS) of a water body are met. WQBELs may be more stringent than TBELs. There are no applicable Effluent Limitation Guidelines (ELGs) mandating TBELs promulgated to control the facility's discharge, and the Department has not proposed to implement any case-by-case TBELs derived using Best Professional Judgment. The permit contains WQBELS for FC and enterococci bacteria.

The following section summarizes the proposed effluent limits. A more expansive technical and legal basis for the proposed effluent limits is provided in the Fact Sheet Appendix A.

3.2 Basis for Effluent Monitoring

In accordance with AS 46.03.110(d), the Department may specify in a permit the terms and conditions under which waste material may be disposed. Monitoring in a permit is required to determine compliance with effluent limits. Monitoring may also be required to gather effluent and receiving water data to determine if additional effluent limits are required and/or to monitor effluent impact on the receiving water body quality.

3.3 Effluent Limits and Monitoring Requirements

The permit contains WQBELs only. The following summarizes the proposed effluent limits. More details are provided in the Fact Sheet Appendix A. The permit contains new WQBELs for FC and enterococci bacteria and it contains a new monitoring requirement for enterococci bacteria.

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. The permittee has the option of taking more frequent samples than required under the permit. These additional samples must be used for averaging (for pollutants results reported on a monthly or weekly average) if they are conducted using the Department – approved test methods (generally found in 18 AAC 70 and 40 CFR Part 136 [adopted by reference in 18 AAC 83.010]).

For all effluent monitoring, the permittee must use a sufficiently sensitive EPA approved test method that quantifies the pollutants to a level lower than applicable limits or water quality standards or use the most sensitive test method available, per Title 40 Code of Federal Regulations (CFR) §136 (Guidelines Establishing Test Procedures for the Analysis of Pollutants), adopted by reference at 18 AAC 83.010(f).

3.3.1 Outfall 001A

The permit carries forward Outfall 001A effluent limits and monitoring requirements for pH, DO, FC bacteria, Enterococci bacteria, and temperature from the previous permit. The permit does not include new effluent limits or monitoring requirements.

Monthly DO monitoring was a requirement in the previous permit and is carried forward in the permit. DO monitoring was included previously to monitor the potential WQS impacts due to the use of ozone disinfection of contaminated water. SAAMS conducted monthly DO monitoring throughout the previous permitting cycle. DEC reviewed 49 samples, within a range of 7.5 - 21.90 mg/L. DEC inquired about the two samples that exceeded WQS; 21.9mg/L and 19.1mg/L reported in September 2022 and May 2024, respectively. More information about dissolved oxygen can be found in Appendix A.

For the majority of the previous permit cycle, the ASLC disinfection system was effective at controlling the bacteria levels. DEC reviewed 25 FC bacteria results from the previous permitting cycle. In April and July of 2024, results of 222 and 30 FC/100mL respectively, were submitted. The two results exceeded the daily maximum limit 14 FC/100mL and one result exceeded the monthly average limit 43 FC/100mL. The ASLC has demonstrated that it can meet WQS for FC at the end of the pipe through appropriate disinfection methods. Therefore, the Department has determined the effluent limits of 43 FC/100 mL (Daily Maximum) and 14 FC/100 mL (Monthly Average), consistent with the WQS for FC bacteria, are appropriate. The previous permit required FC to be monitored once per quarter on a year-round basis and this monitoring frequency is carried forward in the permit. More information about FC bacteria can be found in the Fact Sheet Appendix A.

In the previous permit cycle, enterococci bacteria monitoring was required on a quarterly basis, however SAAMS occasionally reported enterococci results more frequently. DEC reviewed 12 enterococci bacteria results from the previous permitting cycle. 11 of 12 results were ND or within WQS. . One result in September of 2024 was measured at 42 cfu/100 mL, however DEC assumed that ASLC was unlikely to be exceeding the monthly average effluent limit of 35 cfu/100mL if additional monitoring had occurred based on their performance over the permit period. The exceedance of the enterococci WQS notwithstanding, the ASLC has demonstrated that it can meet the Alaska WQS for enterococci at the end of the pipe through its disinfection

methods. For the present permit requirements, the Daily Maximum limit for enterococci bacteria is 130 cfu/100 mL and the Monthly Average limit is 35 FC/100 mL, consistent with the Alaska marine WQS for enterococci. Quarterly monitoring for enterococci bacteria is carried forward in conjunction with the monitoring frequency in the previous permit. More information about enterococci bacteria can be found in the Fact Sheet Appendix A.

The WQBEL and monitoring frequency for pH is carried over from the previous permit. While ASLC no longer adds hydrochloric acid to any of its waters for pH control, pH was added as a parameter due to the fact that animal waste may affect pH levels in the effluent. The WQS-WQBEL pH limits are 6.5 to 8.5 SU. During the previous permit cycle, SAAMS recorded the effluent pH once each month. DEC evaluated 59 pH results in a range of 6.76 – 8.12 SU, all pH measurements were within WQS.

The permit requires the applicant to monitor effluent temperature one time per month and report the daily maximum observed temperature on the discharge monitoring report submitted each month. The ASLC uses a heat exchange system, removing heat from influent seawater to raise the ambient temperature of the facility. The Department reviewed 51 temperature results from June 2020 to November 2024 and found that there were no exceedances of water quality standards. Therefore, the effluent results do not constitute a change in the effluent limits or monitoring, but recording the daily maximum once per month will continue to be required.

Table 6 presents the effluent monitoring requirements for Outfall 001A.

Table 3: Outfall 001A - Effluent Limits and Monitoring Requirements

Parameter	Effluent Limits					Monitoring Requirements		
	Units [a]	Daily Minimum	Monthly Average	Weekly Average	Daily Maximum	Sample Location	Sample Frequency	Sample Type
Total Discharge Flow	mgd	N/A	8.1	Report	8.1	Effluent	1/Week	Estimated
pH	SU	6.5	N/A	N/A	8.5	Effluent	1/Month	Grab
Temperature	° C	N/A	N/A	N/A	Report	Effluent	1/Month	Grab
DO	mg/L	Report	N/A	N/A	Report	Effluent	1/Month	Grab
FC Bacteria	FC/ 100 mL	N/A	14 [b]	N/A	43 [c]	Effluent	1/Quarter [d]	Grab
Enterococci Bacteria	cfu/ 100 mL	N/A	35 [b]	N/A	130 [c]	Effluent	1/Quarter [e]	Grab

Footnotes:

a. Units: mgd = million gallons per day, SU = standard units, °C = degrees Celsius, mg/L = milligrams per liter, FC/100 mL = Fecal Coliform per 100 milliliters, and cfu/100 mL = colony forming units per 100 milliliters.

b. If more than one FC bacteria or enterococci bacteria sample is collected within the reporting period, the average results must be reported as the geometric mean. When calculating the geometric mean, replace all results of zero, 0, with a one, 1. The geometric mean of "n" quantities is the "nth" root of the quantities. For example, the geometric mean of 100, 200, and 300 is $(100 \times 200 \times 300)^{1/3} = 181.7$.

c. If less than ten samples are collected within a 30-day period, the effluent limit cannot be exceeded. If ten or more samples are collected within a 30-day period, not more than 10% of the samples may exceed the effluent limit.

d. Once per quarter means the time period of three months based on the calendar year: Jan-March, April-June, July-Sept, and Oct-Dec

e. One sample shall be collected for each of two quarters defined as May-June and July-September, on the same day as a fecal coliform bacteria sample is collected.

3.4 Receiving Waterbody Limits and Monitoring

Resurrection Bay is protected for the following uses per 18 AAC 70.020(a)(2)(A) – (D): water supply for aquaculture, seafood processing, and industrial uses; water recreation, both contact and secondary recreation; growth and propagation of fish, shellfish, other aquatic life, and wildlife and harvesting for consumption of raw mollusks or other raw aquatic life. No receiving water monitoring was required in the previous APDES permit and no receiving water monitoring is required in the current permit.

4.0 RECEIVING WATER BODY

4.1 Description of Receiving Waterbody

Resurrection Bay is a fiord on the eastern side of the Kenai Peninsula. It is unclassified in *Alaska's Final 2022 Integrated Water Quality Monitoring and Assessment Report* (Alaska's Final 2022 Integrated Report). The bay has a maximum length of 18 miles and a maximum width of 5 miles. Resurrection Bay is surrounded by mountains in the Chugach Range on three sides and opens to the North Pacific Ocean to the south. The bay has a maximum depth of 972 feet and is ice-free throughout the year. The primary freshwater inflows to the bay are the Resurrection River and Fourth of July Creek, although there are many smaller tributaries. The community of Seward is the main settlement in Resurrection Bay and is located at the head of the bay. The seafloor of the bay is composed of glacial sediments overlying metasedimentary bedrock.

4.2 Outfall Description

The ASLC discharges treated effluent from Outfall 001A into Resurrection Bay at a depth of 250 feet below the surface of the water. The outfall pipe, placed 50 feet below mean lower low water level, is located approximately 50 feet to the east of the building, at a bearing of approximately S36 33" 50"E and extends 225 feet. Geographic coordinates of the outfall terminus are latitude:60.0989030° N, and longitude:149.4399160° W. The Outfall 001A terminus is a single port discharge unit without a diffuser and does not have intermittent or periodic discharges. The discharge flow is not metered. The flow in mgd is estimated, based on pump capacity. DEC suggests installing a continuous flow monitor to measure total discharge flow, instead of estimating flow by pump capacity.

The SSBF discharges untreated effluent to a contaminant well at the ASLC where it is treated and discharged through Outfall 001A.

4.3 Water Quality Standards

Section 301(b)(1)(C) of the CWA required the development of limits in permits necessary to meet water quality standards by July 1, 1977. Per 18 AAC 83.435, APDES permits must include conditions to ensure compliance with WQS. The state's WQS are composed of waterbody use classifications, numeric and/or narrative water quality criteria, and an Antidegradation policy. The use classification system identifies the designated uses that each waterbody is expected to achieve. The numeric and/or narrative water quality criteria are the criteria deemed necessary by the state to support the designated use classification of each waterbody. The Antidegradation policy ensures that the existing uses and the level of water quality necessary to protect the uses are maintained and protected.

Water bodies in Alaska are designated for all uses unless the water has been reclassified under 18 AAC 70.230 as listed under 18 AAC 70.230(e). Some waterbodies in Alaska can also have site–specific water quality criterion per 18 AAC 70.235, such as those listed under 18 AAC 70.236(b). The receiving water for this discharge, Resurrection Bay, has not been reclassified, nor have site-specific water quality criteria been established. Therefore, existing uses and designated uses are the same and Resurrection Bay must be protected for all marine water use classes listed in 18 AAC 70.020(a)(2)(A-D): water supply for aquaculture, seafood processing, and industrial uses; water recreation, both contact and secondary recreation; growth and propagation of fish, shellfish, other aquatic life, and wildlife and harvesting for consumption of raw mollusks or other raw aquatic life.

4.4 Water Quality Status of Receiving Water

Any part of a waterbody for which the water quality does not, or is not expected to, intrinsically meet applicable WQS is defined as a "water quality limited segment" and placed on the state's impaired waterbody list. For an impaired waterbody, Section 303(d) of the CWA requires states to develop a Total Maximum Daily Load (TMDL) management plan for the waterbody. The TMDL documents the amount of a pollutant a waterbody

can assimilate without violating a state's WQS and allocates that load to known point sources and nonpoint sources.

ASLC discharges to the assessment unit Seward Harbor in Alaska's 2024 Integrated Report. Seward Harbor is a category 2 for FC and Enterococcus, and a category 3 for dissolved oxygen, copper, nickel, and zinc. Seward Harbor lies within the Upper Resurrection Bay assessment unit which is a category 2 for FC and Enterococcus, and a category 3 for copper, dissolved oxygen, nickel, pH, and Zinc.

4.5 Mixing Zone Analysis

In accordance with state regulations 18 AAC 70.240, as amended through November 13, 2022, the Department has authority to authorize a mixing zone in a permit. The applicant did not request a mixing zone. The permit applies all effluent limits at the end of the pipe; therefore, the Department has not authorized a mixing zone.

5.0 ANTIBACKSLIDING

Per 18 AAC 83.480, "interim effluent limitations, standards, or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit, unless the circumstances on which the previous permit was based have materially and substantially changed since the permit was issued, and the change in circumstances would cause for permit modification or revocation and reissuance under 18 AAC 83.135." 18 AAC 83.480(c) also states that a permit may not be reissued "to contain an effluent limitation that is less stringent than required by effluent guidelines in effect at the time the permit is renewed or reissued."

The effluent limitations in this permit reissuance are consistent with 18 AAC 83.430. Therefore, the permit effluent limitations, standards, and conditions in AK0052566 are as stringent as in the previously issued permit. Accordingly, no further backsliding analysis is required for this permit reissuance.

6.0 ANTIDEGRADATION

Section 303(d)(4) of the CWA states that, for water bodies where the water quality meets or exceeds the level necessary to support the water body's designated uses, WQBELs may be revised as long as the revision is consistent with the State's Antidegradation policy. The State's Antidegradation policy is found in the 18 AAC 70 Water Quality Standards (WQS) regulations at 18 AAC 70.015. The Department's approach to implementing the Antidegradation policy is found in 18 AAC 70.016 *Antidegradation implementation methods for discharges authorized under the federal Clean Water Act*. Both the Antidegradation policy and the implementation methods are consistent with 40 CFR 131.12 and approved by EPA. This section analyzes and provides rationale for the Department's decisions in the permit issuance with respect to the Antidegradation policy and implementation methods.

Using the policy and corresponding implementation methods, the Department determines a Tier 1 or Tier 2 classification and protection level on a parameter by parameter basis. A Tier 3 protection level applies to a designated water. At this time, no Tier 3 waters have been designated in Alaska.

18 AAC 70.015(a)(1) states that the existing water uses and the level of water quality necessary to protect existing uses must be maintained and protected (Tier 1 protection level).

There are no marine waters (and specifically Resurrection Bay) on DEC's most recent Integrated Report; therefore, no parameters have been identified where only the Tier 1 protection level applies. Accordingly, this antidegradation analysis conservatively assumes that the Tier 2 protection level applies to all parameters, consistent with 18 AAC 70.016(c)(1).

18 AAC 70.015(a)(2) states that if the quality of water exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality must be maintained and protected, unless the Department authorizes a reduction in water quality (Tier 2 protection level).

The Department may allow a reduction of water quality only after the specific analysis and requirements under 18 AAC 70.016(b)(5)(A-C), 18 AAC 70.016(c)(7)(A-F), and 18 AAC 70.016(d) are met. The Department's findings are as follows:

18 AAC 70.016(b)(5)

(A) *existing uses and the water quality necessary for protection of existing uses have been identified based on available evidence, including water quality and use related data, information submitted by the applicant, and water quality and use related data and information received during public comment;*

(B) *existing uses will be maintained and protected; and*

(C) *the discharge will not cause water quality to be lowered further where the department finds that the parameter already exceeds applicable criteria in 18 AAC 70.020(b), 18 AAC 70.030, or 18 AAC 70.236(b).*

Per 18 AAC 70.020 and 18 AAC 70.050 all marine waters are protected for all uses; therefore, the most stringent water quality criteria found in 18 AAC 70.020 and in the *Alaska Water Quality Criteria Manual for Toxic and Other Deleterious Organic and Inorganic Substances* (Toxics manual) apply and were evaluated. This will ensure existing uses and the water quality necessary for protection of existing uses of the receiving waterbody are fully maintained and protected.

The permit places limits and conditions on the discharge of pollutants. The limits and conditions are established after comparing TBELs and WQBELs and applying the more restrictive of these limits. The WQ criteria, upon which the permit effluent limits are based, serve the specific purpose of protecting the existing and designated uses of the receiving water. WQBELs are set equal to the most stringent water quality criteria available for any of the protected water use classes.

The conventional pollutant of concern in non-process wastewater in an industrial facility categorized as a Zoo and Botanical Garden is pH. Additional wastewater pollutants are FC and enterococci bacteria, temperature and DO. The permit includes numeric effluent limits or continued monitoring addressing each of these pollutants of concern. The permit requires facilities to implement BMPs to minimize the production of waste and the discharge of pollutants to waters of the U.S., to ensure that non-process wastewater facilities provide for the protection or attainment of existing and designated uses.

Section 1.2.2 of the permit requires that the discharge shall not cause or contribute to a violation of the Alaska WQS at 18 AAC 70. As previously stated, there are no marine waters that are listed as impaired; therefore, no parameters were identified as already exceeding the applicable criteria in 18 AAC 70.020(b) or 18 AAC 70.030. Marine waters covered under the general permit are not listed under 18 AAC 70.236(b) as subject to site-specific criteria and therefore does not apply.

The Department concludes the terms and conditions of the permit will be adequate to fully protect and maintain the existing uses of the water and that the findings under 18 AAC 70.016(b)(5) are met.

18 AAC 70.016(c)

(c) ***Tier 2 analysis for the lowering or potential lowering of water quality not exceeding applicable criteria.*** *Tier 2 applies when the water quality for a parameter in a water of the United States within this state does not exceed the applicable criteria under 18 AAC 70.020(b), 18 AAC 70.030, or 18 AAC 70.236(b) and receives the protection under 18 AAC 70.015(a)(2).*

(3) *the department will not conduct a Tier 2 antidegradation analysis for*

(A) *reissuance of a license or general or individual permit for a discharge that the applicant is not proposing to expand;*

In 2020, DEC conservatively assumed that the discharge from the ASLC was a discharge to a Tier 2 waterbody and accordingly conducted a Tier 2 antidegradation analysis. DEC determined that the ASLC permit would meet both the 18 AAC 70 Antidegradation Policy and Implementation regulations.

18 AAC 70.016(c)(2)(A) states that when evaluating development of a license or general or individual permit for a discharge, the department will conduct a Tier 2 antidegradation analysis for a proposed new or expanded discharge. 18 AAC 70.990(75) states that new or expanded with respect to discharges means discharges that are regulated for the first time or discharges that are expanded such that they could result in an increase in a permitted parameter load or concentration or other changes in discharge characteristics that could lower water quality or have other adverse environmental impacts. Discharge is further defined in 18 AAC 83.990(22) as a discharge of a pollutant.

All pollutants regulated under the permit were also regulated under the prior permit, therefore, not considered a new discharge. The discharge covered under AK0052566 is not expanded from the previous permit. There will not be an increase in a permitted parameter load, concentration, or other change in discharge characteristics that could lower water quality of have other adverse environmental impacts.

18 AAC 70.016(c)(3)(A) states that the Department will not conduct a Tier 2 antidegradation analysis for reissuance of a license or general or individual permit for a discharge that the applicant is not proposing to expand. Therefore, consistent with 18 AAC 70.016(c)(2)(A) and 18 AAC 70.16(c)(3)(A), DEC is not conducting a Tier 2 antidegradation analysis for this permit reissuance.

7.0 OTHER PERMIT CONDITIONS

7.1 Quality Assurance Project Plan

The permittee is required to develop procedures to ensure that the monitoring data submitted are accurate and to explain data anomalies if they occur. The permittee is required to update, implement and/or maintain the Quality Assurance Project Plan (QAPP). The QAPP shall consist of standard operating procedures the permittee must follow for collecting, handling, storing and shipping samples; laboratory analysis; precision and accuracy requirements; data reporting, including method detection/reporting limits; and quality assurance/quality control criteria. The permittee is required to amend the QAPP whenever any procedure addressed by the QAPP is modified. The plan shall be retained on site and made available to the Department upon request.

7.2 Best Management Practices Plan

In accordance with AS 46.03.110 (d), the Department may specify in a permit the terms and conditions under which waste material may be disposed of. The permit requires the permittee to develop and implement a BMP plan in order to prevent or minimize the potential for the release of pollutants to waters and lands of the State of Alaska through plant site runoff, spillage or leaks, or erosion. The permittee must review the BMP plan annually and certify the review was completed. These annual statements will be kept on file with the BMP and made available to the Department upon request. The BMP Plan shall include measures to address the following areas of concern identified in a 2019 DEC inspection:

The BMP plan shall include measures to review periodically the effectiveness of preventative maintenance and tests of operational integrity of the ozone and UV disinfection systems.

7.3 Electronic Discharge Monitoring Report

The permittee must submit DMR data electronically through NetDMR per Phase I of the E-Reporting Rule (40 CFR 127) upon the effective date of the permit. Authorized persons may access permit information by logging into the NetDMR Portal (https://cdxnodengn.epa.gov/oeca-netdmr-web/action/login). DMRs submitted in compliance with the E-Reporting Rule are not required to be submitted as described in permit APPENDIX A – Standard Conditions unless requested or approved by the Department. Any DMR data required by the Permit that cannot be reported in a NetDMR field (e.g. mixing zone receiving water data, etc.), shall be included as an

attachment to the NetDMR submittal. DEC has established an e-Reporting Information website at https://dec.alaska.gov/water/compliance/electronic-reporting-rule/ that contains general information about this new reporting format.

Phase II of the E-Reporting rule will integrate electronic reporting for all other reports required by the Permit (e.g., Annual Reports and Certifications) and implementation is expected to occur during the term of the permit. Permittees should monitor DEC's E-Reporting Information website (https://dec.alaska.gov/water/compliance/electronic-reporting-rule/) for updates on Phase II of the E-Reporting Rule and will be notified when they must begin submitting all other reports electronically. Until such time, other reports required by the Permit may be submitted in accordance with permit APPENDIX A – Standard Conditions.

7.4 Standard Conditions

Appendix A of the permit contains standard regulatory language that must be included in all APDES permits. These requirements are based on regulations and cannot be challenged in the context of an individual APDES permit action. The standard regulatory language covers requirements such as monitoring, recording, reporting requirements, compliance responsibilities, and other general requirements.

8.0 OTHER LEGAL REQUIREMENTS

8.1 Ocean Discharge Criteria

Section 403(a) of the CWA, Ocean Discharge Criteria, prohibits the issuance of a permit under Section 402 of the CWA for a discharge into the territorial sea, the water of the contiguous zone, or the oceans except in compliance with Section 403. Permits for discharges seaward of the baseline of the territorial seas must comply with the requirements of Section 403, which include development of an Ocean Discharge Criteria Evaluation (ODCE).

Charts depicting Alaska's baseline plus additional boundary lines are available at https://alaskafisheries.noaa.gov/mapping/arcgis/rest/services/NOAA_Baseline/MapServer. The charts are provided for information purposes only. The U.S. Baseline Committee makes the official determinations of baseline.

A review of the charts revealed that a baseline has been established from the southern tip of Resurrection Peninsula at Cape Resurrection and extends southwest, across Resurrection Bay to Aialik Cape. The ASLC and SSBF discharge landward of this baseline; therefore, Section 403 of the CWA does not apply to the permit, and an Ocean Discharge Criteria Evaluation is not required.

8.2 Endangered Species Act

The National Marine Fisheries Service (NMFS) is responsible for administration of the Endangered Species Act (ESA) for listed cetaceans, seals, sea lions, sea turtles, anadromous fish, marine fish, marine plants, and corals. All other species (including polar bears, walrus, and sea otters) are administered by the United States Fish & Wildlife Service (USFWS).

The Endangered Species Act (ESA) requires federal agencies to consult with the National Oceanic and Atmospheric Administration (NOAA), NMFS and the USFWS if their actions could beneficially or adversely affect any threatened or endangered species. As a state agency, DEC is not required to consult with these federal agencies regarding permitting actions; however, DEC voluntarily contacted the agencies to notify them of the proposed permit issuance and to obtain listings of threatened and endangered species near the discharge.

On January 3, 2025, USFWS was contacted regarding information on any threatened or endangered species that would be affected in the area of the discharge location. DEC did not receive a response.

On January 3, 2025, NMFS was contacted regarding information on any threatened or endangered species that would be affected in the area of the discharge location. On January 6, 2025, NMFS informed DEC that there were no concerns or comments at the time of correspondence regarding ESA and designated critical habitat that would be impacted by the reissuance of this permit. NMFS also disseminated the to a biologist on staff should they want to provide input, and the Habitat Conservation Division who handles EFH consultations. DEC did not receive correspondence from either of the subsequent parties.

DEC investigated the endangered species documented to be proximal to the facility using the *Information for Planning and Consultation* tool (*IPaC* found at: https://ipac.ecosphere.fws.gov/) and found the following species to be present in the receiving water.

Short-tailed Albatross: Endangered

Northern Sea Otter: Threatened

This fact sheet and the permit will be submitted to the agencies for review during the public notice period and any comments received from these agencies will be considered prior to issuance of the permit.

8.3 Essential Fish Habitat

Essential fish habitat (EFH) includes the waters and substrate (sediments, etc.) necessary for fish from commercially fished species to spawn, breed, feed, or grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires federal agencies to consult with NOAA when a proposed discharge has the potential to adversely affect (reduce quality and/or quantity of) EFH.

As a state agency, DEC is not required to consult with NOAA on EFH; however, DEC voluntarily contacts agencies to notify them of the proposed permit issuance and to obtain listings of EFH in the area.

NMS and FWS were contacted about EFH, as described in Fact Sheet Part 8.2.

The Alaska Department of Fish and Game also maintains regulatory and interactive maps that identify anadromous streams, fish passage, and fish inventory at: http://www.adfg.alaska.gov/sf/SARR/AWC/index.cfm?ADFG=maps.maps.

DEC reviewed the interactive map for Resurrection Bay near the ASLC location and did not identify EFH in Resurrection Bay near the areas of discharge.

This fact sheet and the permit will be submitted to the agencies for review during the public notice period and any comments received from these agencies will be considered prior to issuance of the permit.

8.4 Permit Expiration

The permit will expire five years from the effective date of the permit.

9.0 REFERENCES

DEC 2018, *Water Quality Standards*, as amended April 6, 2018, Alaska Department of Environmental Conservation 18 AAC 70

DEC 2008, *Alaska Water Quality Criteria Manual for Toxic and Other Deleterious Organic and Inorganic Substances*, as amended through December 12, 2008, Alaska Department of Environmental Conservation 18 AAC 70

DEC 2022, *State of Alaska 2022 FINAL Integrated Water Quality Monitoring and Assessment Report*, December 2024.

Alaska Department of Fish and Game, *Anadromous Waters Catalog*, Interactive Map for the SEWARD SEW250, available at http://www.sf.adfg.state.ak.us/AnadromousRegPDFs/scn/SEW250.pdf

Alaska Department of Fish and Game, *Catalog of Water Important for Spawning, Rearing, or Migration of Anadromous Fishes – Southcentral Region*, Effective June 1, 2019.

Leonard, Kathleen, (kathleen.leonard@noaa.gov). "Re: T&ES and EFH Alaska SeaLife Center and Ward Cove Industrial Site WW Treatment Facility". January 6, 2025.

Franks, Sierra, (sierra.franks@noaa.gov). "Re: T&ES and EFH Alaska SeaLife Center and Ward Cove Industrial Site WW Treatment Facility". January 6, 2025.

Arnold, Charles, (chipa@alaskasealife.org). "Re: Effluent Inquiry". February 11, 2025.

NOAA Fisheries, *Final Environmental Impact Statement for Essential Fish Habitat Identification and Conservation in Alaska*, April 2005.

NOAA Fisheries, ArcGIS REST Services Directory https://alaskafisheries.noaa.gov/arcgis/rest/services/NOAA_Baseline/MapServer .

USFWS, Information for Planning and Consultation https://ipac.ecosphere.fws.gov/ .

USEPA, 40 CFR§ 122.44 – Establishing limitations, standards, and other permit conditions.

USEPA, Guidance Manual for Developing Best Management Practices (BMP). October, 1993.

APPENDIX A. BASIS FOR EFFLUENT LIMITS

The Clean Water Act (CWA) requires that the effluent limit for a particular pollutant be the more stringent of either technology-based effluent limits (TBELs) or water quality-based effluent limits (WQBELs). TBELs are established by the Environmental Protection Agency (EPA) for many industries in the form of Effluent Limitation Guidelines (ELGs), are based on available pollution control technology and are adopted by reference in 18 AAC 83. The Department adopts the subject ELGs by reference in 18 AAC 83.010. There are no TBELs or Effluent Limit Guidelines (ELGs) that apply to this permit. The permit contains WQBELS designed to ensure that the WQS of the receiving water body are met.

In accordance with Alaska Pollutant Discharge Elimination System regulations at 18 AAC 83.475, best management practices (BMPs) can be used to control or abate the discharge of pollutants in several circumstances, including, when numeric effluent limits are infeasible. BMPs are defined at 18 AAC 83.990(9) as schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States (U.S.). CWA Section 304 (e) authorizes the inclusion of BMPs as requirements in discharge permits.

A.1 Water Quality Based Effluent Limits for Outfall 001A

A.1.1 Statutory and Regulatory Basis

18 AAC 70.010 prohibits conduct that causes or contributes to a violation of the WQS. 18 AAC 15.090 requires that permits include terms and conditions to ensure criteria are met, including operating, monitoring, and reporting requirements.

The regulations require the permitting authority to make this evaluation using procedures that account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant in the effluent, species sensitivity (for toxicity), and where appropriate, dilution in the receiving water body. The limits must be stringent enough to ensure that WQS are met and must be consistent with any available wasteload allocation (WLA).

A.1.2 Specific Water Quality-Based Effluent Limits

A.1.2.1 Floating, Suspended or Submerged Matter, including Oil and Grease

The WQS for floating, suspended or submerged matter, including oil and grease, are narrative. The most stringent standard, found at 18 AAC 70.020(b)(8)(A)(i), requires that fresh waters, "may not, alone or in combination with other substances or wastes, make the water unfit or unsafe for the use; cause a film, sheen, or discoloration on the receiving of the water or adjoining shorelines; cause leaching of toxic or deleterious substances; or cause a sludge, solid, or emulsion to be deposited beneath or upon the receiving of the water, within the water column, on the bottom, or upon adjoining shorelines."

A.1.2.2 pH

Alaska WQS at 18 AAC 70.020(b)(18)(A)(i), (Water Supply – aquaculture) and 18 AAC 70.020(b)(18)(C) (Growth and Propagation of Fish, Shellfish, Other Aquatic Life, and Wildlife) states that the pH water quality criteria may not be less than 6.5 or greater than 8.5. Standard Units (SU). DEC reviewed 50 pH effluent monitoring results from the Alaska SeaLife Center (ASLC) Outfall 001A from June 2020 to November 2024. During this time period, the lowest daily maximum pH value observed at Outfall 001A from the ASLC was 6.76 SU and the highest daily maximum pH value was 8.12 SU. The previous permit implemented WQBELs for pH that required a minimum of 6.5 SU and a maximum of 8.5 SU, monitored at a frequency of once per month. This WQBEL and monitoring frequency requirement is carried forward from the previous permit.

A.1.2.3 Temperature

The WQS at 18 AAC 70.020(b)(22)(A)(i) Water Supply: aquaculture and (ii) seafood processing and 18 AAC 70.020(b)(22)(C) Growth and Propagation of Fish, Shellfish, Other Aquatic Life, and Wildlife and (D) Harvesting for Consumption of Raw Mollusks or Other Raw Aquatic Life state that temperature may not exceed 15 degrees Celsius (°C).

The permit requires the applicant to monitor effluent temperature one time per month and report the daily maximum observed temperature each month on the discharge monitoring report.

A.1.2.4 Fecal Coliform Bacteria

The criteria at 18 AAC 70.020(b)(14)(D), Harvesting for Consumption of Raw Mollusks or Other Raw Aquatic Life criteria require that in a 30-day period, the fecal coliform (FC) bacteria geometric mean of samples may not exceed 14 Fecal Coliform colonies (FC)/100 milliliters (mL) and not more than 10% of the samples may exceed a most probable number of 43 FC/100 mL, using the five-tube decimal dilution test.

The DEC review of 25 ASLC effluent monitoring data for FC bacteria from June 2020 to November 2024 indicated a range of results from "0" (non-detect) to 222 FC/100 mL. The review revealed that 23 of the 25 FC bacteria results were at or below the 18 AAC 70.020(b)(14)(D) geometric mean criterion of 14 FC/100 mL. In these four years, the facility's performance demonstrated that the effluent could consistently meet FC bacteria effluent limits at the point of discharge, as long as the ozone and ultraviolet (UV) disinfection system was working properly. Therefore, a mixing zone for FC is not required and the WQS-WQBEL corresponding to the water quality criteria (WQC) for FC of a 30-day geometric mean of 14 FC/100 mL and the Maximum Daily Load of 43 FC/100 mL will be carried forward from the previous permit. Effluent monitoring for FC bacteria is required on a quarterly basis, year-round.

A.1.2.5 Enterococci Bacteria

In January 2017, DEC adopted EPA's recommended RWCQ and revised 18 AAC 70.020(b)(14)(B)(i) to adopt enterococci bacteria as the recommended contact recreation WQ criteria for fresh waters. The water quality criteria for enterococci bacteria are a monthly geometric mean of 35 colony forming units (cfu)/100 mL and a statistical threshold value of 130 CFU/100 mL. Effluent monitoring is required on a quarterly basis from April through October, when primary contact recreation in which full immersion and ingestion of water is more likely to occur. The enterococci bacteria monitoring will be performed in conjunction with FC bacteria monitoring.

DEC review of 12 ASLC effluent monitoring data for enterococci bacteria from June 2020 to November 2024 indicated a range of results from "0" (non-detect) to 42 colony forming units (cfu)/100 mL. The review revealed that 11 of the 12 enterococci bacteria results were at or below the 18 AAC 70.020(b)(14)(B)(i) 35 cfu/100 mL criteria. The ASLC has demonstrated that it can meet the Alaska WQS for FC bacteria at the end of the pipe through its disinfection methods, as long as the ozone and UV disinfection system was working properly. DEC determined that the same disinfection methods would also be effective against enterococci bacteria and assume that WQS for enterococci can be met at the end of the pipe. Therefore, a mixing zone for enterococci is not required and the monthly average effluent limit and the WQS-WQBEL corresponding to the WQC for enterococci of a 30-day geometric mean of 35 cfu/100 mL and the Maximum Daily Load of 130 cfu/100 mL will be carried forward from the previous permit. Effluent monitoring for enterococci bacteria is required on a quarterly basis, between May and September.

A.1.2.6 Dissolved Oxygen

The criteria for water supply/aquaculture are the most stringent standards for dissolved oxygen (DO). The standards at 18 AAC 70.020(b)(15)(A)(i) require that "Surface DO concentration in coastal water may not be less than 6.0 mg/l for a depth of one meter except when natural conditions cause this value to be depressed. DO may not be reduced below 4 mg/L at any point beneath the surface. DO concentrations in estuaries and tidal tributaries may not be less than 5.0 mg/l except where natural conditions cause this value to be depressed. In

no case may DO levels exceed 17 mg/l. The concentration of total dissolved gas may not exceed 110% of saturation at any point of sample collection."

The previous permit required dissolved oxygen (DO) in the effluent to be monitored once per month and reported in the monthly Discharge Monitoring Reports (DMRs). A DEC review of 49 ASLC effluent monitoring results for DO from June 2020 to November 2024 indicated a range of values from 7.5 mg/L to 21.9 mg/L.

Regarding the highest values—19.1 mg/L and 21.9 mg/L—which exceeded the daily maximum water quality standard (WQS) for DO, ASLC stated in an email to DEC on February 4, 2025, that these values were not representative of their effluent during normal operations. They attributed the excess dissolved oxygen to ozone used in their water treatment process.

The review concluded that ASLC is capable of meeting the WQS outlined in 18 AAC 70.020(b)(15)(A)(i). Therefore, DEC determined that ASLC has demonstrated its ability to meet the Alaska WQS for DO at the end of the pipe and has carried forward the monthly DO monitoring requirement from the previous permit.