

# Fact Sheet

United States Environmental Protection Agency  
Region 10  
Park Place Building, 13th Floor  
1200 Sixth Avenue, OW-130  
Seattle, Washington 98101

Date:

Permit No.: AK-002189-0  
Public Notice start date: September 6, 2001  
Public Notice end date: October 9, 2001

PROPOSED REISSUANCE OF A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE POLLUTANTS PURSUANT TO THE PROVISIONS OF THE CLEAN WATER ACT

City of Seward  
P.O. Box 167  
Seward, Alaska 99664

has applied for reissuance of a National Pollutant Discharge Elimination System (NPDES) permit to discharge pollutants pursuant to the provisions of the Clean Water Act (the Act). This fact sheet includes:

- the tentative determination of the Environmental Protection Agency (EPA) to issue the permit,
- information on public comment, public hearing and appeal procedures,
- the description of the current discharge,
- a listing of tentative effluent limitations and other conditions, and
- a sketch or detailed description of the discharge location. We call your special attention to the technical material presented in the latter part of this document.

Persons wishing to comment on the tentative determinations contained in the proposed permit issuance may do so by the expiration date of the Public Notice. All written comments should be submitted to EPA as described in the Public Comments Section of the attached Public Notice.

After the expiration date of the Public Notice, the Director, Office of Water, will make final determinations with respect to the permit issuance. The tentative determinations contained in the draft permit will become final conditions if no substantive comments are received during the Public Notice period.

Persons wishing to comment on the State Certification should submit comments by the Public Notice expiration date to the Alaska Department of Environmental Conservation, Fairbanks Office, 610 University Avenue, Fairbanks, Alaska 99709. A copy of these comments should also be sent to EPA (See addresses below).

If no substantive comments are received, the permit shall become effective immediately upon issuance. If comments are received, EPA will address the comments and issue the permit. The permit will become effective 30 days after the issuance date, unless an appeal is submitted to Environmental Appeals Board within 30 days.

The draft NPDES permit 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 (See address below).

United States Environmental Protection Agency  
Region 10  
1200 Sixth Avenue, OW-130  
Seattle, Washington 98101  
(206) 553-6917 or  
1-800-424-4372 (within Alaska, Idaho, Oregon and Washington)

The fact sheet and draft permit are also available at:

EPA Alaska Operations Office  
709 W 9th Street, Room 223  
P.O. Box 20370  
Juneau, Alaska 99802-0370

The draft permit and fact sheet can also be found by visiting the Region 10 website at [www.epa.gov/r10earth](http://www.epa.gov/r10earth). For technical questions regarding the permit or fact sheet, contact Lisa Jacobsen (206) 553-6917 or [Jacobsen.Lisa@epa.gov](mailto:Jacobsen.Lisa@epa.gov).

## LIST OF ACRONYMS

ADEC	Alaska Department of Conservation
BMP	Best Management Practices
BOD <sub>5</sub>	Five-day Biochemical Oxygen Demand
CFR	Code of Federal Regulations
cfs	Cubic feet per second
CWA	Clean Water Act
DMR	Discharge Monitoring Report
EPA	United States Environmental Protection Agency
MDL	Maximum Daily Limit or Method Detection Limit
mgd	Million gallons per day
mg/l	Milligrams per liter
MPN	Most Probable Number
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
O&M	Operation and Maintenance
POTW	Publicly Owned Treatment Works
RP	Reasonable Potential
TMDL	Total Maximum Daily Load
TSD	<u>Technical Support Document for Water Quality-based Toxics Control, (EPA 1991)</u>
TSS	Total Suspended Solids
USFWS	United State Fish and Wildlife Service
USGS	United States Geological Survey
WWTF	Wastewater Treatment Facility
µg/L	Micrograms per liter

## Table of Contents

LIST OF ACRONYMS .....	3
I. APPLICANT .....	6
II. FACILITY ACTIVITY .....	6
III. RECEIVING WATER .....	6
IV. FACILITY BACKGROUND .....	7
A. NPDES Permit History .....	7
B. Plant Performance .....	8
V. EFFLUENT LIMITATIONS .....	8
VI SLUDGE (BIOSOLIDS) MANAGEMENT .....	10
VII MONITORING REQUIREMENTS .....	10
A. Effluent Monitoring .....	10
B. Receiving Water Monitoring .....	11
C. Representative Sampling .....	12
VIII OTHER PERMIT CONDITIONS .....	12
A. Quality Assurance Plan .....	12
B. Operation & Maintenance Plan .....	12
C. Additional Permit Provisions .....	13
IX. OTHER LEGAL REQUIREMENTS .....	13
A. Endangered Species Act .....	13
B. State Certification .....	13
C. Essential Fish Habitat .....	13
D. Coastal Zone Management Act .....	14
E. Permit Expiration .....	14
REFERENCES .....	15
APPENDIX A -CITY OF SEWARD - FACILITY MAPS .....	A-1
APPENDIX B - CITY OF SEWARD WASTE STREAMS AND TREATMENT PROCESSES .....	B-1

APPENDIX C - BASIS FOR EFFLUENT LIMITATIONS ..... C-1  
APPENDIX D - ESSENTIAL FISH HABITAT ..... D-1

I. APPLICANT

City of Seward

Mailing Address:	Facility Address:
P.O. Box 167	13910 Lowell Point Road
Seward, Alaska 99664	Seward, Alaska 99664

Contact: Steve Homan, Special Projects Engineer  
(907) 224-4060

NPDES Permit No. AK-002189-0

II. FACILITY ACTIVITY

The city of Seward owns and operates a municipal wastewater treatment plant (SIC 4952) that provides secondary treatment prior to discharging into Resurrection Bay. The wastewater treatment plant has a design flow of 0.88 million-gallons-per-day (mgd). Disinfection has not been required at this facility because it is not located near seafood harvesting and processing areas nor is it near a public clamming beach.

The plant serves a population of approximately 3085 and primarily receives domestic wastewater from residential and commercial sources. There are no wastewater contributions from industrial sources.

Treatment is provided by a 2-cell aerated lagoon system. The plant was originally completed in 1981. At mean flows, the total detention time in the aeration system is between 45 and 60 days. Headworks facilities consist of bar screen and comminutors.

III. RECEIVING WATER

The Seward plant discharges effluent into Resurrection Bay approximately 400 feet from shore at a depth of 300 feet below mean low water at the following location:

<u>Outfall Serial No.</u>	<u>Latitude/Longitude</u>
001	60° 05' 00" N / 149° 26' 17" W

Resurrection Bay is classified by the State of Alaska's Water Quality Standards, 18 AAC 70, as classes 2A, 2B, 2C, and 2D for use in aquaculture, seafood processing, and industrial water supply; contact and secondary water recreation; growth and propagation

of fish, shell fish, aquatic life and wildlife; and harvesting for the consumption of raw mollusks or other raw aquatic life.

#### IV. FACILITY BACKGROUND

##### A. NPDES Permit History

Seward's effluent discharge was initially authorized under a National Pollutant Discharge Elimination System (NPDES) permit effective from October 1974 through May 1979. This permit required Seward to meet the secondary treatment limitations described in 40 C.F.R. 133 by July 1, 1977, the statutory deadline required by the Clean Water Act. When the Clean Water Act was amended in 1977, provisions were made for relief from secondary treatment requirements under Section 301(h) and/or an extension of the statutory deadline under Section 301(h). Seward submitted a preliminary application for a 301(h) extension on June 29, 1978.

During 1979 and 1980, while Seward's second NPDES permit was being developed, the City withdrew its 301(h) waiver request and committed to building secondary treatment facilities. EPA subsequently granted Seward the 301(I) time extension for construction of these facilities. The second permit, effective from October 1980 through October 1985, contained the secondary treatment limitations of 40 C.F.R. 133 and a compliance schedule for attaining secondary treatment by 1981.

Seward's treatment facility began operation in 1981. The Facilities Plan indicated that the first phase of construction, consisting of a series of aerated lagoons with a treatment capacity of 1 mgd, should be adequate for the first eight years of operation. Then when the plant reached its 1 mgd capacity, rotating biological contactors (RBCs) could be added to increase plant capacity to 1.7 mgd. The lagoon was originally designed to provide, at a minimum, 85 percent biochemical oxygen demand (BOD) and 65 percent total suspended solids (TSS) removal.

In August 1991, the lagoon suffered catastrophic failure. The lagoon was redesigned in 1992 to a 2-cell lagoon. The redesign was based on design data from the original lagoon design that was supplemented with data accumulated during 9 years of operation. The following parameters were incorporated in the 1992 redesign:

Population	3,500
Design Flow	0.88 mgd
BOD lbs/day	980
TSS lbs/day	945

Lagoon retention time at 0.88 mgd 41 days

Historically, the facility had difficulty meeting the permit limits for percent removal and effluent BOD during the summer months. The facility requested that their limits be changed to be within the range of the EPA-defined level of treatment for a lagoon system, treatment equivalent to secondary. (See discussion in Appendix C. II. Pollutant-specific Analysis.) Their request was granted for their permit dated July 1996. An application was received on January 24, 2001. Their current permit expired on July 26, 2001, however, since a timely application was received by EPA from the permittee, the permit was administratively extended.

#### B. Plant Performance

The data analysis of the DMRs from July 1999 to June 2001, submitted by the permittee, has demonstrated that Seward needs treatment equivalent to secondary only seasonally and the rest of the year secondary treatment can be achieved. During the first year of the permit the permittee was out of compliance several times, but in the last four years the facility has been out of compliance nine times; four times in July of 1998 both for BOD weekly and monthly averages, once in June of 2000 for TSS weekly average, and four times in October of 2000 for BOD.

### V. EFFLUENT LIMITATIONS

EPA followed the Clean Water Act, State and federal regulations, and EPA's 1991 Technical Support Document for Water Quality-Based Toxics Control (TSD) to develop the proposed effluent limits. In general, the Clean Water Act requires that the effluent limits for a particular pollutant be the more stringent of either the technology-based or water quality-based limits.

Technology-based limits are set based on the level of treatment that is achievable using readily available technology. In the case of this facility, technology-based limits cover three parameters: five day biochemical oxygen demand (BOD<sub>5</sub>), total suspended solids (TSS), and pH.

The Agency evaluates the technology-based limits to determine whether they are adequate to ensure that water quality standards are met in the receiving water. If the limits are not adequate, EPA must develop more stringent water quality-based limits. These limits are designed to prevent exceedances of the Alaska water quality standards in Resurrection Bay.

Table 1 compares the limits in the 1996 permit with those in the draft permit. *Appendix C* provides the basis for the development of the effluent limits.



Table 1A: Outfall 001 Effluent Limits During the Months of <u>July, August, September, October</u>								
Parameter	Average Monthly Limit		Average Weekly Limit		Maximum Daily Limit		Range Limit	
	Draft	1996	Draft	1996	Draft	1996	Draft	1996
BOD <sub>5</sub>								
mg/l	45	45	65	65	65	---	---	---
lb/day	330	330	477	477	477			
Percent Removal <sup>1</sup>	65 <sup>1</sup>	65 <sup>1</sup>						
TSS								
mg/l	45	45	65	65	65	---	---	---
lb/day	330	330	477	477	477			
Percent Removal <sup>1</sup>	65	65						
Fecal coliform #/100 ml	5 x 10 <sup>4</sup>	5 x 10 <sup>4</sup>	---	---	---	---	---	---
pH, std units	---	---	---	---	---	---	6.5-8.5 <sup>2</sup>	6.5-8.5 <sup>2</sup>
Footnotes:								
1 The percent removal requirements represent a minimum.								
2 The 1996 and draft permits require that the pH be within the specified range at all times.								

Table 1B: Outfall 001 Effluent Limits During the Months of <u>November through June</u>								
Parameter	Average Monthly Limit		Average Weekly Limit		Maximum Daily Limit		Range Limit	
	Draft	1996	Draft	1996	Draft	1996	Draft	1996
Flow, mgd	0.88	0.88	---	---	---	---	---	---
BOD <sub>5</sub>								
mg/l	30	45	45	65	65	---	---	---
lb/day	220	330	330	477	477			
Percent Removal <sup>1</sup>	85 <sup>1</sup>	65 <sup>1</sup>						
TSS								
mg/l	30	45	45	65	65	---	---	---
lb/day	220	330	330	477	477			
Percent Removal <sup>1</sup>	85 <sup>1</sup>	65 <sup>1</sup>						

Table 1B: Outfall 001 Effluent Limits During the Months of <u>November through June</u>								
Parameter	Average Monthly Limit		Average Weekly Limit		Maximum Daily Limit		Range Limit	
	Draft	1996	Draft	1996	Draft	1996	Draft	1996
Fecal coliform #/100 ml	5 x 10 <sup>4</sup>	5 x 10 <sup>4</sup>	---	---	---	---	---	---
pH, std units	---	---	---	---	---	---	6.5-8.5 <sup>2</sup>	6.5-8.5 <sup>2</sup>
Footnotes: 1 The percent removal requirements represent a minimum. 2 The 1996 and draft permits require that the pH be within the specified range at all times.								

The draft permit prohibits the discharge of waste streams that are not part of the normal operation of the facility, as reported in the permit application. The draft permit also requires that the discharge be free from floating solids, debris, sludge, deposits, foam, scum, or other residue suspended or submerged in concentrations that cause/may cause a nuisance.

## VI SLUDGE (BIOSOLIDS) MANAGEMENT

Sludge is not expected to be removed during this permit cycle. There is no need for a new sludge management application at this time. However, the permittee must ensure that a biosolids permit application (Form 2S) is on file with the EPA before the permittee plans to dispose of any biosolids during this permit term.

## VII MONITORING REQUIREMENTS

Pursuant to Section 308 of the Clean Water Act and 40 C.F.R. §122.44(I), the permittee must conduct monitoring to determine compliance with effluent limitations or to assist in the development of effluent limitations. Monitoring frequencies are based on EPA's determination of the minimum sampling frequency required to adequately monitor plant performance. Required sample types are based on EPA's determination of the potential for effluent variability. These determinations take into consideration several factors, of which the most important are the size and type of facility.

### A. Effluent Monitoring

The draft permit requires monitoring for the following parameters and frequencies:

PARAMETER	SAMPLE FREQUENCY	SAMPLE TYPE
Total Flow (Influent or effluent)	Continuous	Recording
BOD (Influent and Effluent)	2/Month	24-hour composite
TSS (Influent and Effluent)	2/Month	24-hour composite
Fecal Coliform Bacteria (Effluent)	1/Week	Grab
Temperature (Effluent)	1/Month	Grab
pH (Effluent)	5/week	Grab
Total Ammonia as N (Effluent)	1/Month	Grab

EPA has determined that the existing monitoring frequencies are adequate to characterize plant effluent.

In accordance with the EPA policy directed at the assessment and regulation of the discharge of toxic substances to waters of the United States, whole effluent toxicity (WET) testing had been incorporated into the 1996 permit. The required WET testing was aimed at determining the toxic effects of the discharge on aquatic life. Results of the WET testing show that the whole effluent toxicity is not a problem. Therefore, there is no longer a requirement for WET testing of the discharge.

There are new requirements for ammonia and temperature testing of the discharge. The data will provide information to determine if a limit is needed for ammonia in the wastewater for future permits.

#### B. Receiving Water Monitoring

EPA has no current data for evaluating the level of ammonia in the receiving water. As a result, the draft permit requires monthly monitoring outside of the mixing zone in Resurrection Bay to establish the presence or absence of background ammonia that would be used to compare to the ammonia from the discharge.

C. Representative Sampling

The draft permit specifically requires representative sampling whenever a bypass, spill, or non-routine discharge of pollutants occurs, if the discharge may reasonably be expected to cause or contribute to a violation of an effluent limit under the permit. This provision is included in the draft permit because routine monitoring could easily miss permit violations and/or water quality standards exceedances that could result from bypasses, spills, or non-routine discharges. This requirement directs the permittee to conduct additional, targeted monitoring to quantify the effects of these occurrences on the final effluent discharge.

VIII OTHER PERMIT CONDITIONS

A. Quality Assurance Plan

Under 40 C.F.R. §122.41(e), the permittee must properly operate and maintain all facilities which it uses to achieve compliance with the conditions of the permit. This regulation also requires the permittee to ensure adequate laboratory controls and appropriate quality assurance procedures.

The draft permit requires the permittee to develop a plan that addresses sampling techniques, sample preservation and shipment procedures, instrument calibration and preventive maintenance procedures, and personnel qualifications and training. The plan must be completed within 120 days of the issuance date of the permit. The permittee must notify EPA when the plan is complete.

B. Operation & Maintenance Plan

Section 402 of the Clean Water Act and federal regulations 40 CFR § 122.44(k)(2) and (3) authorize EPA to require best management practices, (BMPs), in NPDES permits. BMPs are measures for controlling the generation of pollutants and their release to waterways. For municipal facilities, these measures are typically included in the facility's Operation & Maintenance (O&M) plan. These measures are important tools for waste minimization and pollution prevention.

The draft permit requires the City of Seward to incorporate appropriate BMPs into their O&M plan within 120 days of permit issuance. Specifically, the City must consider spill prevention and control; optimization of chemical usage; preventive maintenance program; research, development and implementation of a public information and education program to control the introduction of household

hazardous materials to the sewer system; and water conservation. To the extent that any of these issues have already been addressed, the City need only reference the appropriate document in its O&M plan. The O&M plan must be revised as new practices are developed.

C. Additional Permit Provisions

In addition to facility-specific requirements, sections III, IV, and V of the draft permit contain “boilerplate” requirements. Boilerplate is standard regulatory language that applies to all permittees and must be included in NPDES permits. Because the boilerplate requirements are based on regulations, they cannot be challenged in the context of an NPDES permit action. The boilerplate covers requirements such as monitoring, recording, reporting requirements, compliance responsibilities, and general requirements.

IX. OTHER LEGAL REQUIREMENTS

A. Endangered Species Act

Section 7 of the Endangered Species Act of 1973 requires federal agencies to consult with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) if their actions could beneficially or adversely affect any threatened or endangered species. NMFS has indicated that there are no threatened or endangered species in the vicinity of the discharge. USFWS in a letter dated July 5, 2001, indicated that reissuance of this permit is not likely to adversely affect the Steller’s eider (*Polysticta stelleri*).

B. State Certification

Because state waters are involved in this permitting action, the provisions of Section 401 of the Act apply. 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.

C. Essential Fish Habitat (EFH)

The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires EPA to consult with the National Marine Fisheries Service (NMFS) when a proposed discharge has the potential to adversely affect (reduce

quality and/or quantity of) EFH. The EPA has tentatively determined that the issuance of this permit will not affect any EFH species in the vicinity of the discharge, therefore no consultation is required. This fact sheet and the draft permit will be submitted to NMFS for review during the public notice period. Any recommendations received from NMFS regarding EFH will be considered prior to final issuance of this permit (see Appendix D for further details).

D. Coastal Zone Management Act

Pursuant to 40 CFR § 122.49(d), requirements of the state coastal zone management program must be satisfied before the permit may be issued. The applicant has certified that the activities authorized by the draft permit are consistent with the Alaska Coastal Management Plan.

E. Permit Expiration

This permit will expire five years from the effective date.

## **REFERENCES**

EPA. 1991. Technical Support Document for Water Quality-based Toxics Control. U.S. Environmental Protection Agency, Office of Water, EPA/505/2-90-001, March 1991.

EPA. 1996. U.S. EPA NPDES Permit Writer's Manual. U.S. Environmental Protection Agency, Office of Water, EPA/833/B-96-003.

AAC. 2000. Water Quality Standards. Alaska Department of Environmental Conservation, 18 AAC 70.

**APPENDIX A -CITY OF SEWARD - FACILITY MAPS**



**APPENDIX B - CITY OF SEWARD WASTE STREAMS AND TREATMENT PROCESSES**

**I. Discharge Composition**

In its NPDES application, the City of Seward reported the pollutants listed in Table B-1 as being detected in its discharge from outfall 001. The toxic and conventional pollutant categories are defined in the regulations (40 CFR § 401.15 and 401.16, respectively).

<b>Table B-1: Pollutants Detected in Discharge</b>		
<b>Pollutant type</b>	<b>Parameter</b>	<b>Maximum Reported Concentration</b>
Conventional	5-day biochemical oxygen demand (BOD <sub>5</sub> ), weekly average	140 mg/l
	Total Suspended Solids (TSS), weekly average	76 mg/l
	pH, min - max	7.6-7.8
	Fecal coliform Bacteria, weekly average	45,150/100ml
Toxic	Toxicity	25 TU <sub>c</sub>
.		

**II. Project Description**

The lagoon is comprised of an earthen dike lined with a 30-mil-thick, reinforced ethylene interpolymer alloy liner (XR-5). Slopes are 2:1 (2 horizontal to 1 vertical). The lagoon holds about 30 million gallons, has 22:1 feet of water depth at its lowest point, and is divided into two cells. The lagoon contains a concrete partition wall and hypalon curtain that is used to separate the two cells.

Several treatment processes occur simultaneously in the partial-mix aerated lagoon. The sewage entering the mixing zone is immediately mixed. This dilution helps reduce the possibility of process upset by buffering hydraulic surges and diluting concentrated

loadings. The first cell maintains aerobic conditions throughout the cell and allows growth of bacteria that eat the putrescible materials. The mixing zone has sufficient agitation to reduce settlement of bacterial floc. Cell 2 is basically a polishing pond with just enough air provided to keep the wastewater aerobic.

The redesigned lagoon operates with two cells under normal conditions. However, a single cell may be utilized in the event that the other cell requires maintenance or repair. This provides redundancy and allows continuous operation of the treatment system during maintenance or emergency operations.

## APPENDIX C - BASIS FOR EFFLUENT LIMITATIONS

### I. Basis for Effluent Limitations

The Clean Water Act (CWA) requires Publicly Owned Treatment Works (POTW) to meet certain effluent limits based on available wastewater treatment technology. These types of effluent limits are called technology based effluent limits. EPA may find, by analyzing the effect of an effluent discharge on the receiving water, that technology based effluent limits are not sufficiently stringent to meet water quality standards. In such cases, EPA is required to develop more stringent water quality-based effluent limits which are designed to ensure that the water quality standards of the receiving water are met.

Technology based effluent limits may not limit every parameter that is in an effluent. For example, technology based effluent limits for POTWs have only been developed for five-day biochemical oxygen demand (BOD<sub>5</sub>), total suspended solids (TSS), and pH, yet effluent from a POTW may contain other pollutants such as chlorine, ammonia, or metals depending on the type of treatment system used and the service area of the POTW (i.e., industrial facilities as well as residential areas discharge into the POTW). When technology based effluent limits do not exist for a particular pollutant, EPA must still determine if the pollutants expected to be in the effluent will cause or contribute to a violation of the water quality standards for the water body. If they do, EPA is required to develop water quality-based effluent limits. The effluent limits in the draft permit reflect whichever limits (technology-based or water quality-based) are more stringent.

The following explains in more detail the derivation of technology based effluent limits, and water quality based effluent limits. Part A discusses technology based effluent limits, Part B discusses water quality based effluent limits.

#### A. Technology-based Effluent Limitations

The CWA requires POTWs to meet performance-based requirements based on available wastewater treatment technology. Section 301 of the CWA established a required performance level, referred to as “secondary treatment,” that all POTWs were required to meet by July 1, 1977. EPA developed “secondary treatment” regulations which are specified in 40 CFR § 133. These technology-based effluent limits apply to all municipal wastewater treatment plants and identify the minimum level of effluent quality attainable.

## B. Water Quality-Based Effluent Limits

Section 301(b)(1)(C) of the CWA requires the development of limitations in permits necessary to meet water quality standards by July 1, 1977. Discharges to state waters must also comply with limitations imposed by the state as part of its certification of NPDES permits under section 401 of the CWA.

The NPDES regulation (40 CFR § 122.44(d)(1)) implementing section 301(b)(1)(C) of the CWA requires that permits include limits for all pollutants or parameters which are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality.

The regulations require that this evaluation be made using procedures which 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. The limits must be stringent enough to ensure that water quality standards are met, and must be consistent with any available wasteload allocation.

## II. Pollutant-specific Analysis

This section outlines the basis for each of the effluent limitations in the City of Seward's draft permit.

### A. BOD<sub>5</sub> and TSS Concentration Based Limits

The definition of secondary treatment includes special considerations for lagoons. The regulations allow less stringent limits for facilities such as Seward, that use lagoons. However, these less stringent limits can only be allowed when it has been determined that the more stringent secondary treatment requirements cannot be met through proper operation and maintenance of the facility. These alternative limits are called "treatment equivalent to secondary" (40 CFR § 133.101(g) and 40 CFR § 133.105(d)). The Alternative State Requirements (ASR) provision contained in 40 CFR § 133.105 (d) of the regulation allows States the flexibility to set permit limits above the maximum levels of 45 mg/l monthly average and 65 mg/l weekly average BOD<sub>5</sub> and TSS from lagoons meeting certain

requirements. EPA has published approved ASRs in 49 FR 37005, September 20, 1984 where the State of Alaska alternate TSS limit for 30 day average is 70 mg/l. However, from review of Seward's DMRs, Seward can clearly meet the federal standard, so the limit in the permit is 65mg/l for TSS 30 day average.

A review of the city DMR data for the last 2 years show that the city can meet the secondary treatment requirements for BOD<sub>5</sub> and TSS from November through June. However, the city is unable to meet these requirements from July through October. Therefore, from July through October treatment equivalent to secondary requirements will apply.

The BOD<sub>5</sub> and TSS concentrations based limits for the permit are:

- 1) For November through June:
  - Average Monthly Limit = 30 mg/l
  - Average Weekly Limit = 45mg/l
  - Percent Removal Required = 85%
  
- 2) For July, August, September, and October:
  - Average Monthly Limit = 45 mg/l
  - Average Weekly Limit = 65 mg/l
  - Percent Removal Required = 65%

B. BOD<sub>5</sub> and TSS Mass Based Limits

Federal Regulations at 40 CFR 7 § 122.45(f)(1) require effluent limit to be expressed as mass based limits using the design flow of the facility (0.88 mgd). These limits are calculated as follows:

Loading Limits = (design flow) (concentration limit) (conversion factor of 8.34)

The BOD<sub>5</sub> and TSS mass based limits for the permit are:

- 1) For November through June:
  - Average Monthly Limit = 220 lb/day
  - Average Weekly Limit = 330 lb/day
  
- 2) For July, August, September, and October:
  - Average Monthly Limit = 330 lb/day
  - Average Weekly Limit = 477 lb/day

C. Total Ammonia (as N)

Un-ionized ammonia ( $\text{NH}_3$ ) is the principal toxic form of ammonia. The ammonium ion ( $\text{NH}_4^+$ ) is much less toxic. The relative percentages of these two forms of ammonia in the marine water vary as the temperature, pH, and salinity vary. As the pH and temperature increase, the percentage of ammonia that is in the un-ionized form increases, causing increased toxicity. Also, when the salinity increases along with the increase of pH and temperature, the toxicity increases even more. (*Federal Register volume 54, number 851, Thursday May 4, 1989 Notices [OW-FRL-3566-2]*) Because the toxicity of ammonia in marine water is dependent upon pH, temperature, and salinity the criteria are also pH, temperature, and salinity dependent.

City of Seward will be required to monitor their effluent for ammonia, pH, and temperature once a month. The city will also be required to monitor the receiving water for ammonia, pH, temperature, as well as, salinity. This data will be used to determine if a limit is needed in future permits.

D Fecal Coliform Bacteria

The state water quality criterion for fecal coliform bacteria median MPN is 14 per 100 ml based on a 5-tube decimal dilution test, with not more than 10 percent of the samples exceeding 43 per 100 ml. The state has provided a preliminary mixing zone determination for fecal coliform bacteria with a dilution factor of 3500 to 1. An effluent limit of  $5 \times 10^4$  (50 thousand), per 100/ml will result in compliance with the fecal coliform criterion at the edge of the mixing zone.

E pH

The technology-based pH limitation for POTWs is 6.0 to 9.0. The pH limit in the current permit is 6.5 - 8.5 based on compliance with the state's water quality criterion for pH at the point of the discharge. It is anticipated that a mixing zone will not be authorized for pH. Therefore, to ensure that the State's water quality standards are met, the pH criteria must be met before the effluent is discharged to the receiving water.

F Whole Effluent Toxicity (WET)

WET toxicity testing was done in the previous permit that expired July 26, 2001 and it was determined that WET is not an issue at this facility, therefore, the draft permit does not require WET testing anymore.

## APPENDIX D - ESSENTIAL FISH HABITAT

Essential fish habitat (EFH) is the waters and substrate (sediments, etc.) necessary for fish to spawn, breed, feed, or grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires EPA to consult with the National Marine Fisheries Service (NMFS) when a proposed discharge has the potential to adversely affect (reduce quality and/or quantity of) EFH. The EPA has tentatively determined that the issuance of this permit will not affect any EFH species in the vicinity of the discharge, therefore no consultation is required. This fact sheet and the draft permit will be submitted to NMFS for review during the public notice period. Any recommendations received from NMFS regarding EFH will be considered prior to final issuance of this permit.

The NMFS has requested that EFH assessments contain the following requirements:

1. **Species in the Facility Area.** During a phone conversation on June 27, 2001, the NMFS recommended the following websites for specific EFH information relating to the project area:
  - <http://www.fakr.noaa.gov/habitat/> and
  - <http://www.fakr.noaa.gov/arcims/>.

The Habitat Assessment Reports stated the Resurrection Bay has been designated to support the following species for EFH: Weathervane scallops, Walleye pollock, Pacific cod, Flathead sole, yellowfin sole, rock sole, Arrowtooth flounder, sculpin spp., skates spp. and Pink, Chum, Sockeye, Chinook and Coho salmon.

2. **Facility Description and Discharge Location.** The facility activities and wastewater sources are described in Part II of this Fact Sheet, and the discharge location is described in Part III.
3. **EFH Evaluation.** The EPA has tentatively determined that the issuance of this permit will not affect any EFH species in the vicinity of the discharge for the following reasons:
  - a. The proposed permit has been developed in accordance with the Alaska water quality standards to protect aquatic life species in the Bay. NPDES permits are established to protect water quality in accordance with State water quality standards. The standards are developed to protect the designated uses of the waterbody, including growth and propagation of aquatic life and wildlife. Self-monitoring conducted by the applicant indicates that the facility will be able to comply with all limits of the proposed permit.

- b. The derivation of permit limits and monitoring requirements (refer to Appendix C of this fact sheet for specifics pertaining to the proposed permit) for an NPDES discharger include the basic elements of ecological risk analysis as specified in the TSD (EPA, 1991). This analysis includes, but is not limited to, the following: effluent characterization, pollutants of concern identification, threshold concentration determination, exposure considerations, dilution modeling and analysis, multiple sources and natural background consideration, fate and transport variability, and monitoring duration and frequency.