

Fact Sheet

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

Permit No.: AK-0043451

Public Comment Period

Public Notice start date:

Public Notice end date:

Technical Contact

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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 UNALASKA
Department of Public Utilities
P.O. BOX 610
UNALASKA, ALASKA 99685

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. This fact sheet includes:

- information on public comment, public hearing and appeal procedures;
- the description of the proposed discharge;
- a listing of proposed effluent limitations and other conditions;
- a map and detailed description of the discharge location; and
- detailed technical material supporting the conditions in the permit.

Public Comment

Persons wishing to comment on the tentative determinations contained in the proposed permit issuance must do so, in writing, by the end date of the of this public comment period. All comments should

include the name, address, and telephone number of commenter, reference the facility name and NPDES permit number, and include a concise statement of the exact basis of any comment and the relevant facts upon which it is based.

Persons wishing to request that a public hearing be held may do so, in writing, by the end date of the public comment period. A request for a public hearing must state the nature of the issues to be raised, reference the facility name and NPDES permit number, and include the requester's name, address, and telephone number. All written comments and requests should be submitted to the attention of the Director, Office of Water at the following address:

U.S. EPA, Region 10
1200 Sixth Avenue, M/S OW-130
Seattle, Washington 98101

**** Comments may also be submitted electronically to the technical contact listed above.****

After the Public Notice expires, and all comments have been considered, EPA's Director for the Office of Water in Region 10 will make final decision regarding permit issuance. If no significant comments are received, the tentative conditions in the draft permit will become final, and the permit will become effective 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 the permit is appealed to the Environmental Appeals Board within 30 days.

Availability of Documents

The following documents are available at the EPA Region 10 office, 1200 Sixth Avenue, Seattle, Washington, between 8:30 a.m. and 4:00 p.m., Monday through Friday.

- permit application and any supporting data submitted by the applicant
- draft permit
- fact sheet
- documents referenced in fact sheet

Copies of the draft permit and fact sheet are available at:

EPA Region 10 website: www.epa.gov/r10earth.htm

EPA Alaska Operations Office, Anchorage
Federal Building, Room 537
222 West 7th Avenue, #19
Anchorage, Alaska 99513,

EPA Alaska Operations Office
410 Willoughby Avenue, Suite 100,
Juneau, Alaska 99801, and

Alaska Department of Environmental Conservation,
Unalaska Field Office,
West Amaknak Road,
Dutch Harbor, Alaska 99692.

State Certification

The state of Alaska Department of Environmental Conservation proposes to certify the draft permit provided the discharge will comply with the applicable provisions of Sections 208(e), 301, 302, 303, 306, and 307 of the Clean Water Act. The state provided a draft certification for the draft permit. The conditions of the draft certification have been incorporated into this draft permit. EPA is requesting that the Alaska Department of Environmental Conservation certify this NPDES permit for the City of Unalaska, Alaska, under section 401 of the Clean Water Act.

Persons wishing to comment on the State's intent to certify should submit written comments by the end date of this public comment period to the state of Alaska, with a copy to EPA, at the following address:

State of Alaska
Department of Environmental Conservation
Fairbanks Office
610 University Avenue
Fairbanks, Alaska 99709

Alaska State Consistency Determination

EPA requests the state of Alaska, Office of Management and Budget, Division of Government Coordination, to review this action for consistency with the approved Alaska Coastal Management Program.

All written comments should be addressed to the attention of Alaska Coastal Management Program Consistency Review and submitted to:

State of Alaska
Anchorage DGC Office
550 West 7th Avenue, Suite 1660
Anchorage, AK 99501

TABLE OF CONTENTS

I.	APPLICANT	6
II.	FACILITY	6
III.	RECEIVING WATER	6
	A. Outfall Location	6
	B. Description of the Receiving Water	6
	C. Water Quality Standards	7
IV.	FACILITY BACKGROUND	7
	A. NPDES Permit History	7
	B. Plant Performance	8
V.	PROPOSED EFFLUENT LIMITATIONS	9
	A. Basis for Permit Effluent Limits	9
	B. Proposed Effluent Limitations	10
VI.	MONITORING REQUIREMENTS	11
	A. Basis for Effluent and Receiving Water Monitoring	11
	B. Proposed Effluent Monitoring	11
	C. Proposed Receiving Water Monitoring	12
VII.	SPECIAL CONDITIONS	13
	A. Quality Assurance Plan (QAP)	13
	B. Best Management Practices (BMP) Plan	13
	C. Sewage Sludge	14
	D. Inflow and Infiltration Study	14
VIII.	OTHER PERMIT REQUIREMENTS	16
	A. Endangered Species Act	16
	B. Essential Fish Habitat	16
	C. Coastal Zone Management Act	16
	D. Marine Protection, Research, and Sanctuaries Act	16
	E. State Certification Requirements	17
	F. Standard Permit Provisions	19
	G. Permit Expiration	19
	APPENDIX A - CITY OF UNALASKA - FACILITY MAP	A-1

APPENDIX B - BASIS FOR EFFLUENT LIMITATIONS B-1

APPENDIX C - ENDANGERED SPECIES ACT C-1

APPENDIX D - ESSENTIAL FISH HABITAT ASSESSMENT D-1

I. APPLICANT

City of Unalaska

Mailing Address:
P.O. Box 610
Unalaska, Alaska 99685

Facility Address:
19 Gilman Road
Dutch Harbor, Alaska 99692

NPDES Permit Number AK0043451

Facility Contact Andrea Fulton
(907) 581-1260

II. FACILITY

The City of Unalaska is operating a municipal sewage treatment facility and collection system that serves the City of Unalaska on Unalaska Island and Amaknak Island. It serves a population of 4,300. A map has been included in Appendix A which shows the location of the treatment plant and the discharge location.

The primary treatment plant removes solids from domestic and industrial wastewater with a rotary sheer screen having one millimeter diameter openings. Screened waste solids are collected on a conveyor belt and disposed of at the city landfill. The leachate from the Municipal Landfill is also disposed of through the wastewater treatment plant. The ocean outfall is 16 inches in diameter and discharges at a depth of approximately 100 feet in Unalaska Bay. The plant's design flow is 0.8 million gallons per day (mgd).

III. RECEIVING WATER

A. Outfall Location

The treated effluent from the Unalaska wastewater treatment plant is discharged from the outfall 001, located midway between Arch Rock and Cave Rock off of the southwestern shoreline of Amaknak Island at latitude 53°53'01" North, longitude 16°633'01" West, and in the USGS Hydrologic Unit no. 19030102.

B. Description of the Receiving Water

Unalaska Bay is an embayment that is open on the north into the Bering Sea and has an average depth of about 300 to 400 feet. The city of Unalaska discharges primary treated effluent into south Unalaska Bay. An ultraviolet (UV) disinfection system is used to remove fecal coliform from the effluent because the effluent discharge pipe is located near seafood harvesting and processing areas.

Water quality parameters that could be affected by the proposed discharge include

biochemical oxygen demand, total suspended solids, pH, fecal coliform, nutrients, metals, dissolved oxygen, total aqueous hydrocarbon, total aromatic hydrocarbon, residues, and settleable solids.

C. Water Quality Standards

The State's water quality standards are composed of use classifications, numeric and/or narrative water quality criteria, and an anti-degradation policy. The use classification system designates the beneficial uses that each water body is expected to achieve (such as cold water biota, contact recreation, etc.) The numeric and/or narrative water quality criteria are the criteria deemed necessary by the State to support the beneficial use classification of each water body. The anti-degradation policy represents a three tiered approach to maintain and protect various levels of water quality and uses.

The Alaska Water Quality Standards (18 AAC 70.020) protect the south Unalaska Bay, in the vicinity of the outfall, the following marine classifications: Classes (2)(A)(i)(ii)(iii), (B)(i)(ii), (C), and (D) for use in aquaculture, seafood processing, and industrial water supply, 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.

The criteria that the state of Alaska has deemed necessary to protect the beneficial uses for the south Unalaska Bay and the State's anti-degradation policy are summarized in Appendix B.

IV. FACILITY BACKGROUND

A. NPDES Permit History

1978: The City of Unalaska submitted an application for a waiver of secondary treatment requirements under section 301(h) of the Clean Water Act. EPA determined that since discharges would be to marine waters and the city was identified as an Alaska Native Village, the waiver requirements would be satisfied upon approval of the facility's plan. The facility's plan was approved by EPA and the Alaska Department of Environmental Conservation (ADEC) prior to an award of federal grant funds used to construct the facility.

1980: EPA evaluated the potential water quality impacts of the city's proposed discharge. Several different outfall sites had been identified but modeling results indicated that the proposed discharge site would not cause violations of water quality standards in the receiving water. Both EPA and ADEC have determined that primary treatment as defined by federal regulations EPA 125.56(b)(1)(B) and state regulations 18 AAC 72.990(50) will provide sufficient treatment to protect

designated water uses.

1992: The Alaska Department of Environmental Conservation (ADEC) identified south Unalaska Bay as requiring water quality-based controls (Section 303d list). Increased discharges from seafood processing operations over the past decades have prompted concerns about water quality in greater Unalaska Bay. Waste products from seafood processors and the sewage treatment plant are discharged directly into the waters of the bay. These discharges are responsible for the degradation of the receiving waters.

1995: The EPA completed an assessment of the pollution and water quality of the bay. The "Water Quality Assessment of Greater Unalaska Bay" (EPA 1995a) reviewed the pollution sources impacting the marine environment and supported the determination of total maximum daily loads for these pollutants.

In August of 1995 EPA prepared and distributed a preliminary draft NPDES permit to ADEC and the City of Unalaska for review and comment. At that time ADEC found that the mixing zone merited re-evaluation due to significant population growth and ADEC required the City of Unalaska to submit a new mixing zone application. ADEC continued the existing mixing zone of 1987 on an interim basis until the completed application was submitted by the City of Unalaska and evaluated by the department.

1996: CH2MHill for the city completed the application for the reauthorization of the mixing zone in November. The ADEC Certificate of Reasonable Assurance with letter dated February 11, 1997 determined that the City of Unalaska could no longer discharge non-disinfected wastewater into South Unalaska Bay. A mixing zone for non-disinfected discharge would be of such a large size as to be unacceptable to both the local community and ADEC. A plan was developed by ADEC, EPA and the City of Unalaska on how the city would disinfect their wastewater. After two preliminary design reports and a pilot study, the city decided to implement UV treatment for disinfection of the effluent.

1997: Leachate from the Municipal landfill started to flow into the City's wastewater collection system for treatment in September. The leachate is collected in lined solid waste disposal cells and then pumped and discharged directly into the sanitary sewage collection system. Leachate flows have been measured to contribute between 2.9 and 4.9 million gallons per year to the domestic wastewater. As the landfill expands, the flows are estimated to increase to 5.4 million gallons per year over the next several years. Currently, there are no pre-treatment requirements for leachate from this landfill.

B. Plant Performance

The UV system came on line January 1, 2001, and although fecal coliform numbers have dropped considerably, the permittee has not been able to meet their current average monthly limit of 10,000 FC/100ml. The leachate from the land fill contributes large quantities of iron and solids and it is believed that these parameters

may be causing an interference with the UV system. Iron has a high absorbency of UV radiation, TSS absorbs UV radiation and shields embedded bacteria. Another consideration is the way the facility samples their effluent. The standard protocol is to take a grab sample and the facility has been collecting a 24 hour composite sample as directed by their current permit. The draft permit will require the facility to use a grab sample and to monitor more frequently, from quarterly to weekly. *[EPA 832-F-99-064, September 1999 Wastewater Technology Fact Sheet Ultraviolet Disinfection]*

Because South Unalaska Bay is an impaired body of water (Section 303(d) listed) for 5-day biochemical oxygen demand (BOD⁵), Unalaska has a wasteload allocation based on total maximum daily load (TMDL) for BOD₅ of 2343 lbs/day. In order to meet this load limit ADEC had given the permittee a limit on concentration of BOD₅ and flow. The facility has been above their flow limit 3 times since the issuance of the permit during the quarters of; January through March 1998, October through December 1998, and January through March 2001. Only during the quarter of October through December 1998, were they over their current load limit for BOD₅. The proposed load limit may be difficult for the facility to reach and the City of Unalaska may have to consider additional in equipment to meet their limit.

It is also believed that the facility has an inflow and infiltration (I&I) problem, and this may be contributing to the facility being unable to stay within their flow limit. The draft permit has a requirement for the permittee to complete a study to determine if I&I is an issue for the facilities and if it is contributing a substantial amount to flow.

V. PROPOSED EFFLUENT LIMITATIONS

A. Basis for Permit 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 limits or water quality-based limits. A technology-based effluent limit requires a minimum level of treatment for municipal point sources based on currently available treatment technologies. A water quality-based effluent limit is designed to ensure that the water quality standards of a water body are being met. EPA followed the Clean Water Act, State and federal regulations, and the "Technical Support Document for Water Quality-based Toxics Control" (EPA 1991; EPA/505/2-90-001, pp. 67-121) to develop the proposed effluent limits. However, at present, the city of Unalaska is designated as a Native Alaskan Village under Section 113, which allows treatment works that meet state water quality criteria to discharge effluent treated to less than secondary levels to marine environments.

Also, based upon the "Total Maximum Daily Load (TMDL) for Biochemical

Oxygen Demand in the Waters of South Unalaska Bay, Alaska" (EPA 1995b), the average monthly limitation on the wasteload discharge of BOD₅ has been established as equivalent to the wasteload allocation of BOD₅ for the Unalaska Sewage Treatment Plant of 2,343 lbs BOD₅/day. However, the ADEC has included in their pre-certification of the permit, a requirement for concentration of BOD₅ in the permit and a limit for flow. With these two limits in place the amount of load that is allowed is much less than 2,343lbs/day BOD₅.

B. Proposed Effluent Limitations

Table 1 and the following list summarizes the effluent limitations that are in the draft permit

1. For BOD₅ the monthly average effluent concentration must not be less than 30 percent.
2. There must be no discharge of floating, suspended, or submerged matter of any kind in concentrations causing nuisance or objectionable conditions or that may impair designated beneficial uses.

Table 1 Proposed and Current Effluent Limitations for Outfall 001						
Parameters	Average monthly Limit		Maximum Daily limit		Range limit	
	Draft	1997	Draft	1997	Draft	1997
Flow mgd	0.6	0.6	0.9	0.9		
BOD ₅ ¹ mg/l lb/day (WLA)	140 700	---	200 1501	468 2,343		
TSS ¹ mg/l lb/day	140 700	---	200 1501	---		
pH standard units					6.5 to 8.5	6.5 to 8.5
Dissolved Oxygen (DO) mg/l					6.0 to 17.0	---
Total Aqueous Hydrocarbon µg/l			15	---		
Total Aromatic Hydrocarbons µg/l			10	---		

Table 1 Proposed and Current Effluent Limitations for Outfall 001						
Parameters	Average monthly Limit		Maximum Daily limit		Range limit	
	Draft	1997	Draft	1997	Draft	1997
Fecal coliform ² #/100ml	10,000	---	15,000	10,000		
Footnote						
1 The loading limits for BOD ₅ & TSS = (concentration)*(design flow)*(conversion factor of 8.34)						
2. Based on the geometric mean of all samples taken during a month. See definition in the permit.						

VI MONITORING REQUIREMENTS

A. Basis for Effluent and Receiving Water Monitoring

Section 308 of the Clean Water Act and federal regulation 40 C.F.R. 122.44(I), require effluent monitoring in NPDES permits to determine compliance with effluent limitations. Section 308 also allows additional effluent and receiving water monitoring to gather data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality. The permittee is responsible for conducting the monitoring and for reporting results on Discharge Monitoring Reports to EPA.

B. Proposed Effluent Monitoring

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. Table 2 presents the proposed effluent monitoring requirements for the draft permit.

In addition to monitoring for BOD₅, TSS, fecal coliform, flow, and pH; metals, total aqueous hydrocarbon and total aromatic hydrocarbon have been added to this permit. Testing done in 2001 of the landfill leachate indicated high levels of certain metals. The effluent will be monitored to determined the metal concentrations going into the South Unalaska Bay.

MONITORING FREQUENCY OF EFFLUENT		
PARAMETER	SAMPLE FREQUENCY	SAMPLE TYPE
Flow mgd	continuous	recording
BOD ₅ ¹ mg/l	monthly	24 hour composite
TSS ¹ mg/l	monthly	24 hour composite

MONITORING FREQUENCY OF EFFLUENT		
PARAMETER	SAMPLE FREQUENCY	SAMPLE TYPE
pH S.U.	quarterly	grab
Fecal Coliform #/100ml	weekly	grab
Temperature ³	semi-annual	grab
Total Ammonia ³ as N µg/l	quarterly	24 hour composite
Arsenic ^{2,3} µg/l	semi-annual	24 hour composite
Chromium ^{2,3,4} µg/l	semi-annual	24 hour composite
Iron ^{2,3} µg/l	semi-annual	24 hour composite
Copper ^{2,3} µg/l	semi-annual	24 hour composite
Zinc ^{2,3} µg/l	semi-annual	24 hour composite
Total Aqueous Hydrocarbon ^{2,3}	semi-annual	24 hour composite
Total Aromatic Hydrocarbon ^{2,3}	semi-annual	24 hour composite
Footnotes: 1. Effluent and Influent sampling to be done within the same 24 hour period. 2. Sampling will take place when leachate from the landfill is discharged through the treatment system. 3. Samples shall be taken twice a year, once during dry season and once during the wet season. 4. Testing for total Chromium the first two years and if any values are greater than 50 µg/l then the next two years samples will be tested for total Chromium and Chromium VI.		

C. Proposed Receiving Water Monitoring

Receiving water monitoring is needed to evaluate if the effluent is causing or contributing to an instream excursion of the water quality criteria. The information gathered under this permit will be used to evaluate the effluent for the next permit reissuance.

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 of south Unalaska Bay to establish the presence or absence of background ammonia that would be used to compare to the ammonia from the discharge.

Parameter	Units	Sampling Frequency	Type of Sample
Total Ammonia as N	mg/L	semi-annual	24 hour composite

Table 3: Surface Water Monitoring			
Parameter	Units	Sampling Frequency	Type of Sample
Temperature	°C	semi-annual	grab
Salinity	mg/L	semi-annual	grab
pH	standard units	semi-annual	grab

D. Proposed Leachate-only Monitoring

Leachate monitoring is needed to evaluate if the leachate is contributing metals to the effluent. Also, the monitoring will provide data to show if there is an increase of metals in the effluent over time, as well as an increase of metals in the leachate. Results from this monitoring will help to determine if pre-treatment is needed at the landfill in the future. See Table 4.

Table 4: Leachate - only Monitoring			
Metals	Units	Sampling Frequency	Type of Sample
Total Arsenic ^{1,2}	µg/l	semi-annual	24 hour composite
Total Chromium ^{1,2,3}	µg/l	semi-annual	24 hour composite
Total Iron ^{1,2}	µg/l	semi-annual	24 hour composite
Total Copper ^{1,2}	µg/l	semi-annual	24 hour composite
Total Zinc ^{1,2}	µg/l	semi-annual	24 hour composite
Footnotes			
1. Sampling will take place when leachate from the landfill is discharged through the treatment system.			
2. Samples shall be taken twice a year, once during dry season and once during the wet season.			
3. Samples shall be tested for total Chromium the first two years and if any values are greater than 50 µg/l then samples shall be tested for Chromium VI, as well as total Chromium.			

VII SPECIAL CONDITIONS

A. Quality Assurance Plan (QAP)

The federal regulation at 40 CFR 122.41(e) requires the permittee to develop and submit a QAP to ensure that the monitoring data submitted is accurate and to explain data anomalies if they occur. The permittee is required to develop a QAP and notify EPA within 120 days of the effective date of the final permit. The QAP must consist of standard operating procedures the permittee must follow for collecting, handling, storing and shipping samples, laboratory analysis, and data reporting.

B. Best Management Practices (BMP) 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, or 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) manual. These measures are important tools for waste minimization and pollution prevention.

The draft permit requires the City of Unalaska to incorporate appropriate BMPs into their O&M manual and notify EPA within 180 days of the effective date of the final permit. Specifically, the City of Unalaska should consider spill prevention and control, chemical use, public education aimed at controlling 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 in the facility's current O&M manual, the City of Unalaska need only reference the O&M manual in the BMP plan. The BMP plan must be revised as new practices are developed for the facility.

C. Sewage Sludge

Section 405 of the Clean Water Act requires NPDES permits to include sewage sludge use and disposal standards unless these requirements are included in another permit. However, the sewage sludge standards at 40 CFR Part 503 are self-implementing which means the permittee is required to comply with the them whether or not they have an NPDES permit that includes sewage sludge requirements. Since EPA Region 10 has recently decided to separate waste water and sewage sludge permitting, sewage sludge requirements are not included in this draft permit. EPA will issue a sludge only permit to this facility at a later date.

Until the issuance of a sludge only permit, the facility's sludge activities will continue to be subject to the national sewage sludge standards and any requirements of the State. The Part 503 regulations require that the permittee have a current sewage sludge application on file with EPA.

D. Inflow and Infiltration Study

The permittee has indicated that they have significant inflow and infiltration (I&I) into their system. The draft permit is proposing that the permittee conduct an I&I study to determine the extent of the problem. The permittee has 4 years to finish the study and must submit a report to EPA and ADEC 180 days before the expiration date of the permit. The report can be sent with the renewal application that is due 180 days before the expiration date of the permit.

The following I&I regulations are provided as clarification to the necessary requirements and to assist the permittee in developing an adequate I&I study:

1. 40 CFR Part 35.2005(b)(16) *Excessive infiltration/inflow*. The quantities of infiltration/inflow which can be economically eliminated from a sewer system as determined in a cost-effectiveness analysis that compares the costs for correcting the infiltration/inflow conditions to the total costs for transportation and treatment of the infiltration/inflow.
2. 40 CFR Part 35.2005(b)(28) *Nonexcessive infiltration*. The quantity of flow which is less than 120 gallons per capita per day (domestic base flow and infiltration) or the quantity of infiltration which cannot be economically and effectively eliminated from a sewer system as determined in a cost-effectiveness analysis.
3. 40 CFR Part 35.2005(b)(29) *Nonexcessive flow*. The maximum total flow rate during storm events which does not result in chronic operational problems related to hydraulic overloading of the treatment works or which does not result in a total flow of more than 275 gallons per capita per day (domestic base flow plus infiltration plus inflow). Chronic operational problems may include surcharging, backups, bypasses, and overflows.
4. 40 CFR Part 35.2120 *Infiltration/Inflow*. (a) *General*. The applicant shall demonstrate to the Regional Administrator's satisfaction that each sewer system discharging into the proposed treatment works project is not or will not be subject to excessive infiltration/inflow. (b) *Inflow*. If the rainfall induced peak inflow rate results or will result in chronic operational problems during storm events, or the rainfall-induced total flow rate exceeds 275 gpd during storm events, the applicant shall perform a study of the sewer system to determine the quantity of excessive inflow and to propose a rehabilitation program to eliminate the excessive inflow. All cases in which facilities are planned for the specific storage and/or treatment of inflow shall be subject to a cost-effectiveness analysis. (c) *Infiltration*. (1) If the flow rate at the existing treatment facility is 120 gallons per capita per day or less during periods of high groundwater, the applicant shall build the project including sufficient capacity to transport and treat any existing infiltration. However, if the applicant believes any specific portion of its sewer system is subject to excessive infiltration, the applicant may confirm its belief in a cost-effectiveness analysis and propose a sewer rehabilitation program to eliminate that specific excessive infiltration. (2) If the flow rate at the existing treatment facility is more than 120 gallons per capita per day during periods of high groundwater, the applicant shall either: (i) Perform a study of the sewer system to determine the quantity of excessive infiltration and to propose a sewer rehabilitation program to eliminate the excessive infiltration;

or (ii) If the flow rate is not significantly more than 120 gallons per capita per day, request the Regional Administrator to determine that he may proceed without further study, in which case the allowable project cost will be limited to the cost of a project with a capacity of 120 gallons per capita per day under Appendix A.G.2.a.

5. 40 CFR 35 Appendix A.G.2.a. When the Regional Administrator determines that the flow rate is not significantly more than 120 gallons per capita per day under §35.2120(c)(2)(ii), the incremental cost of treatment works capacity which is more than 120 gallons per capita per day.

VIII OTHER PERMIT REQUIREMENTS

A. Endangered Species Act

Section 7 of the Endangered Species Act 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. EPA has determined that the reissuance of this permit is unlikely to adversely affect any of the threatened or endangered species in the vicinity of the discharge. See Appendix C for further details.

B. 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 reissuance of this permit will not affect any EFH species in the vicinity of the discharge, therefore, consultation is not required for this action. 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 reissuance of this permit. See Appendix D for further details.

C. Coastal Zone Management Act

The City of Unalaska had certified that the activities authorized by this draft permit are consistent with local and state Coastal Management Plans. The draft permit and consistency determination will be submitted to the State of Alaska for state interagency review at the time of public notice. The requirements for State Coastal Zone Management Review and approval must be satisfied before the permit may be issued.

D. Marine Protection, Research, and Sanctuaries Act

No marine sanctuaries as designated by this Act exist in the vicinity of the permit area.

E. State Certification Requirements

Because this permit authorizes the discharge to Alaska State waters, section 401 of the Clean Water Act requires EPA to seek state certification before issuing a final permit. As a result of the certification, the state may require more stringent permit conditions to ensure that the permit complies with the water quality standards. Preliminary discussions with the State have included development of the mixing zone and allowable dilution to be used for permit calculations. The following are a list of requirements that EPA has incorporated into the permit from the State's pre-certification:

- The ADEC will require a flow rate limitation of 0.9 mgd for a daily maximum and 0.6 for a monthly average.
- The ADEC will require a BOD₅ monthly average limitation of 140 mg/l, and a daily maximum limitation of 200 mg/l in the effluent.
- The ADEC will require a TSS monthly average limitation of 140 mg/l, and a daily maximum limitation of 200 mg/l in the effluent.
- The State of Alaska certification of this permit will require effluent limitations for fecal coliform bacteria of 10,000 per 100 ml for a monthly average and 15,000 per 100 ml for a daily maximum. To be sampled weekly.
- The ADEC will require a dissolved oxygen (DO) limit for marine water but the ADEC is requiring limits that are not in their standards. Alaska water quality standards state that the range shall be no less than 6.0 mg/l and no more than 17.0 mg/l of DO. The pre-certification limit values were no less than 2.0 mg/l and no greater than 17.0 mg/l of DO. The EPA incorporated the limits that are from the standards into the permit.
- The ADEC will designate a mixing zone (MZ) for fecal coliform bacteria contained in the discharge from the City of Unalaska Wastewater Treatment Facility. the mixing zone is defined as a 150 meter radius circle, centered on the outfall, over the diffuser and extending from the marine bottom to the surface.
- ADEC will designate a zone of initial dilution (ZID) for dissolved oxygen (DO), pH, total chlorine, nutrients, temperature, metals, and whole effluent toxicity (WET). The ZID is temporarily defined as a radius of 50 meters,

centered on the outfall line and over the diffuser, extending from the diffuser to the surface. The ZID provides a dilution of 100:1. The most stringent limits for the parameters listed in the State of Alaska Water Quality Standards must be met at the edge of the ZID, (except for fecal coliform bacteria which must be met outside of the mixing zone). Actual modeling of the ZID has not been conducted yet, so the underlined values may change in the final certification.

- The ADEC will require maximum chlorine effluent limit of 0.2 mg/l; with 0.002 mg/l required to be met at the edge of the ZID. The effluent limit may change in the final permit if the dilution factor is changed after the modeling of the ZID.
- The ADEC will require monitoring of the effluent at a minimum of twice per year for total aqueous hydrocarbon and total aromatic hydrocarbon when leachate from the landfill is discharged through the treatment system. The water quality standard limit that must be met in the effluent is 15 µg/l for total aqueous hydrocarbon and 10 µg/l for total aromatic hydrocarbons
- The ADEC will require that signs be placed on the shoreline near the mixing zone and outfall line. The signs should state that treated domestic wastewater is being discharged, the name and owner of the facility and the approximate location and size of the mixing zone. The signs should inform the public that certain activities, such as the harvesting of shellfish for raw consumption and bathing should not take place in the mixing zone and give a contact number for additional information.

Other requirements that EPA chose not to incorporate into the permit at this time because the state did not provide sufficient data or calculations to support these requirements are the following;

- The ADEC will require monitoring the outside edge of the mixing zone for fecal coliform bacteria. The samples must be collected from minimum of three locations; 1- shoreline sample (shoreline area of human uses closest to the outfall), 2- two samples from different locations at the outside edge of the mixing zone. Sampling to be performed four times per year, during the first two years of th permit (April, June, August, & December or January). Upon no violations, (that are attributable to the quality of the discharged effluent), of the monthly average of 14FC/100ml for shoreline samples, the monitoring may be decreased to once per year at the three stations. The monitoring shall be performed on the same day as the effluent monitoring.
- The ADEC will require that fecal coliform numbers shall not exceed 200 FC/100ml at the shoreline if the designated mixing zone touches the shoreline.

- The ADEC will require fecal coliform bacteria limitations of 14 FC/100ml for a monthly average and 43 FC/100ml for a daily maximum be met at the outside edge of the mixing zone.
- The ADEC will require a pH effluent limitation of 6.0 to 9.0 S.U.; with 8.5 to 8.5 S.U. required to be met at the edge of the ZID.
- The ADEC will require a minimum effluent limitation for dissolved oxygen (DO) of 2.0 mg/l and a maximum effluent limitations of 17 mg/l; with 6.0 mg/l required to be met at the surface (first 1 meter) edge of the ZID.

Persons who wish to comment on these requirements must send their comments to ADEC and a copy to EPA.

F. Standard Permit Provisions

Sections II, III, IV of the draft permit contain standard regulatory language that must be included in all NPDES permits. Because they are regulations, they cannot be challenged in the context of an NPDES permit action. The standard regulatory language covers requirements such as monitoring, recording, reporting requirements, compliance responsibilities, and other general requirements.

G. Permit Expiration

Section 402(1)(B) of the Clean Water Act require that NPDES permits are issued for a period not to exceed five years, therefore, this permit will expire five years from the effective date of the permit.

APPENDIX A - CITY OF UNALASKA - FACILITY MAP

APPENDIX B - BASIS FOR EFFLUENT LIMITATIONS

I. Statutory and Regulatory Basis of Limits

Section 101, 301(b), 304, 308, 401, 402, and 405 of the Clean Water Act (CWA) provide the basis for the effluent limitations and other conditions in the draft permit. The EPA evaluates the discharge(s) with respect to this section of the CWA and the relevant National Pollutant Discharge Elimination System (NPDES) regulations to determine which conditions to include in the draft permit.

In general, the EPA first determines which technology-based limits must be incorporated in the permit. The EPA then evaluates the effluent quality expected to result from these controls to see if it could result in any exceedances of the water quality standards in the receiving water. If exceedances could occur, EPA must include water quality-based limits in the permit. The proposed permit limits will reflect whichever requirements (technology-based or water quality-based) are more stringent.

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 (BOD₅), 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 non-point 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 Unalaska's draft permit.

A. BOD₅ and TSS Concentration Based Limits

The Unalaska Wastewater Facility is publicly owned treatment works (POTW). As such, the facility is subject to the technology-based requirements for BOD₅ and TSS of 40 CFR 133.102, however, the City is identified as a Native Alaska Village that discharges into marine waters and waiver requirements for secondary treatment were approved once the facility plan was accepted by EPA. This decision was based on the Federal Register, Vol. 44, No.175. Friday, September 7, 1979, "Modification of Secondary Treatment Requirements for Discharge into Marine Waters, Notice on Native Alaskan Villages". In summary, this notice delineates EPA's position on the applicability of 40 CFR Part 125 to Native Alaskan Villages and EPA's intention to consider other methods and alternative technologies for meeting the wastewater treatment needs in these native villages.

The BOD₅ and TSS concentrations based limits for the permit are; 140 mg/l for monthly average and 200 mg/l daily maximum, for both. And the facility must remove at least 30 percent of BOD₅ from the wastewater.

B. BOD₅ and TSS Mass Based Limits

Federal Regulations at 40 CFR 122.45(f)(1) require effluent limit to be expressed as mass based limits using the design flow of the facility (0.8 mgd). These limits are calculated as follows:

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

The BOD₅ and TSS mass based limits for the permit are; 700 lbs/day monthly average and 1501 lbs/day daily maximum, for both.

C. Total Ammonia (as N)

Un-ionized ammonia (NH₃) is the principal toxic form of ammonia. The ammonium ion (NH₄⁺) 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 Unalaska will be required to monitor their effluent for ammonia, pH, and temperature twice a year. The city will also be required to monitor the receiving water for ammonia, pH, temperature, as well as, salinity twice a year. 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 5×10^4 (50 thousand), per 100/ml will result in compliance with the fecal coliform criterion at the edge of the mixing zone.

The fecal coliform limits are 10,000/100 ml and 15,000/100 ml geometric mean for average monthly and for daily maximum, respectively.

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.

The pH limits are a range of 6.5 to 8.5 standard units.

F. Dissolved Oxygen (DO)

Alaska water quality standards (18AACC 70.020(b) for marine water DO are:

May not be less than	6.0 mg/l
May not be greater than	17.0 mg/l

The 1997 permit did not have a requirement for DO. The ADEC has included a DO requirement into the draft permit.

G. Flow

The City has declared that the original design flow of the Unalaska WWTP is 0.8 mgd, on average. Flow limits of 0.6 and 0.9 mgd for monthly average and daily maximum, respectively, were specified in the 1997 permit. The ADEC has specified the same flow limits for the draft permit.

H. Residues

The Alaska water quality standards require surface waters of the state to be free of floating solids, debris, sludge, deposits, foam, scum, or other residues of any kind in concentrations causing nuisance, objectionable, or detrimental conditions or that make the water unfit or unsafe for the use. Residues may not, alone or in combination with other substances or wastes, (1) make the water unfit or unsafe for the use; (2) cause acute or chronic problem levels as determined by bioassay or other appropriate methods; (3) cause a film, sheen, or discoloration on the surface of the water or adjoining shorelines; (4) cause leaching of toxic or deleterious substances; or (5) cause a sludge, solid, or emulsion to be deposited beneath or upon the surface of the water, within the water column, on the bottom, or upon adjoining shorelines.

I. Total Chlorine Residual

The Alaska State water quality standards require surface waters of the state

designated for aquatic life not to exceed a one-hour average concentration of 19 µg/l total residual chlorine or a four-day average concentration of 11 µg/l. Even though this facility is not using chlorine at this time as their primary form of disinfection it may be used if the results from the UV disinfection are causing the facility to be out of compliance with their fecal coliform limit. If chlorine is used as a form of additional treatment of the effluent it was determined that the daily maximum value would be sufficient for monitoring purposes.

J Whole Effluent Toxicity (WET)

WET toxicity testing was done in the previous permit that was issued February 28, 1997, it was determined that WET is not an issue at this facility, therefore, the draft permit does not require WET testing anymore.

III Anti-degradation

In addition to water quality-based limitations for pollutants that could cause or contribute to exceedances of standards, EPA must consider the State's anti-degradation policy (18 AAC 70.015). This policy is designated to protect existing water quality when the existing quality is better than that required to meet the standard and to prevent the water quality from being degraded below the standard when existing quality just meets the standard. The draft permit will result in no increases in the authorized pollutant loadings to south Unalaska Bay. Therefore, the draft permit is consistent with Alaska's anti-degradation policy.

APPENDIX C - ENDANGERED SPECIES ACT

The U.S. Fish and Wildlife Service (USFWS) identified the Steller's eider (*Polysticta stelleri*) as a federally-listed threatened specie. The National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS) has identified the Steller sea lion (*Eumetopias jubatus*) and the humpback whale (*Megaptera novaeangliae*) as federally-listed endangered species.

EPA has determined that the requirements contained in the draft permit will have **no effect** on the Steller's eider, or the humpback whale. The Steller's eider may be in the vicinity of the outfall at certain times of the year but the Stellar's eider breeding range is not within this area of Alaska. The Steller's eider breeds in the arctic coastal plain in northern Alaska. The eider nests in the central arctic coastal plain, primarily near Barrow. The majority of the eiders winter from the eastern Aleutian Islands to the southern portion of Cook Inlet. Causes for decline are unknown but several potential threats have been identified. Lead poisoning, caused by eiders ingesting spent lead shot as they feed; predation by ravens, large gulls, and foxes on the breeding ground; and shipping and fishing poses the risk of oil spills and disturbance of feeding flocks in marine waters. Issuance of this permit will not create any of these potential threats to the Steller's eider.

The humpback whale occurs seasonally in the central Bering Sea and may occur near shore areas, including Unalaska. However, it is unlikely to occur within the area of wastewater treatment plant discharge.

EPA has determined that the requirements contained in the draft permit are **not likely to have an adverse effect** on the Stellar sea lion . The Stellar sea lion is commonly found along Unalaska and Amaknak Islands. Reason for their decline is not known. However, researchers believe that a decline in the fish they eat is the biggest cause. The decline in fish could be due to increasing commercial fisheries in the Gulf of Alaska. There is evidence sea lions are attracted to process discharges, particularly unground fish wastes and livers. Several seafood processing discharge lines occur in south Unalaska Bay. Drowning, entanglement in nets, and gunshot are all possible reasons for their decline, as well. Issuance of this permit will not create any of these potential threats to the Steller sea lion.

EPA will provide NMFS and USFWS with copies of the proposed draft permit and fact sheet during the public notice period. Any comments received from these agencies regarding this determination will be considered prior to reissuance of this permit.

APPENDIX D - ESSENTIAL FISH HABITAT ASSESSMENT

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, 2002, 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 south Unalaska 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, Northern Rock fish, Dusty Rockfish, Atka Mackerel, Greenland turbot, Alaska plaice, sculpin spp., skates spp.; Pink, Chum, Sockeye, Chinook and Coho salmon; and Red King, Golden King, Scarlet, Tanner, Grouse Tanner, and Triangle Tanner crab.

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 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.