FACT SHEET

The United States Environmental Protection Agency (EPA) plans to Re-issue a National Pollutant Discharge Elimination System (NPDES) Permit to:

Applicant: City and Borough of Juneau (CBJ)
1540 Thane Road, Juneau, Alaska 99801

Permit Number: **AK-002321-3**

Public Comment Period:
Starts: **August 27, 2001**
Ends: **September 26, 2001**

Technical Contact: Madonna Narvaez
Phone: (206) 553-1774
1-800-424-4372 ext. 1774 (within Alaska, Idaho, Oregon, and Washington)
Email: narvaez.madonna@epa.gov

EPA's Tentative Determination
EPA proposes to re-issue an NPDES permit to **CBJ**. The draft permit places conditions on the discharge of pollutants from the **Juneau-Douglas Wastewater Treatment Plant** to **the Gastineau Channel**. 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.

This Fact Sheet includes:

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

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 preliminary comments for the draft permit. The comments have been incorporated into this draft permit. EPA is requesting that the Alaska Department of Environmental Conservation certify this NPDES permit for the **Juneau-Douglas Wastewater Treatment Plant**, under section 401 of the Clean Water Act.

Public Comment and Public Hearings

Persons wishing to comment on the tentative determinations contained in the proposed permit may do so, in writing, by the end date of this public comment period. Comments must be received within this public comment period to be considered in the formulation of final determinations regarding the application. All comments should include the name, address, and telephone number of the commenter and 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 this public comment period. A request for a public hearing shall state the nature of the issues to be raised, as well as 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
Re: **Juneau-Douglas Wastewater Treatment Plant**
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 a final decision regarding permit re-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.

Persons wishing to comment on State Certification 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
Alaska Department of Environmental Conservation (ADEC)
410 Willoughby, Suite 303
Juneau, Alaska 99801-1795
Attn: Clynda Luloff

Persons wishing to comment on the State Determination of Consistency with the Alaska Coastal management Program should submit written comments by the end date of this public comment period. Comments, particularly on the proposed project's consistency with the affected local coastal district management program, are requested by the Division of Governmental

Coordination. Comments regarding inconsistency with an affected coastal district's enforceable policy or a state standards set out in 6 AAC 80.040 6 AAC 80.150 must identify the enforceable policy or standard and explain how the project is inconsistent. Written comments must be received by 5:00 pm on the end date of this public comment period to be considered by the Division of Governmental Coordination. Individuals with disabilities who may need auxiliary aids, services, or special modifications to participate in this review may contact the numbers above, or TDD 465-3888.

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

State of Alaska
Central Office
Office of Management and Budget
Division of Governmental Coordination
P.O. Box 110030
Juneau, Alaska 99811-0030

Availability of Documents

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

- permit application and any supporting data submitted by the permittee
- draft permit
- fact sheet
- documents referenced in fact sheet
- other documents (e.g., meeting reports, correspondence, trip reports, telephone memos, calculations, etc.)

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

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

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

EPA Alaska Operations Office, Juneau
709 W. 9th Street, Room 223
P.O. Box 20370
Juneau, Alaska 99802-9998

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I. APPLICANT

Facility Name:	Juneau-Douglas Wastewater Treatment Plant
NPDES Permit Number:	AK-002321-3
Facility Location Address:	1540 Thane Road Juneau, Alaska 99801
Facility Mailing Address:	1540 Thane Road Juneau, Alaska 99801
Facility Contact:	Scott Jeffers, Plant Supervisor
Contact Phone Number:	907-586-5329
Contact Email Address:	Scott_Jeffers@ci.juneau.ak.us

II. FACILITY INFORMATION

A. Facility Description

The City and Borough of Juneau, Alaska owns and operates the Douglas Wastewater Treatment Plant, a municipal plant (SIC 4952) that discharges secondary treated and chlorinated effluent to the Gastineau Channel. The average design flow of the plant is 2.76 MGD. The Douglas plant serves West Juneau, downtown Juneau, and the City of Douglas. Parts of the collection system, particularly the older downtown areas, have combined sewers. Wastewater is primarily from domestic sources: only 18 commercial and industrial dischargers, comprising approximately one percent of the current average annual flow, have been identified in the service area.

Secondary treatment is provided by a complete mix activated sludge system. Unit processes include grit removal, comminution, aerobic sludge digestion, and chlorination. Waste sludge is thickened and disposed of by incineration. The incinerator facility has one fluidized bed combustor and a 2.0 mmBTU/hr emergency oil-fired boiler.

There are three combined sewer overflow (CSO) openings in the collection system and seasonal overflows or “openings” occur. The City is in the process of separating the storm water system from the sewer system.

The 300 foot long outfall and diffuser system discharges at a depth of 30 feet to Gastineau Channel (latitude 58° 17'2" N, 134° 23' 13" W). A map has been included in Appendix A which shows the location of the treatment plant and the discharge location.

B. Background Information

1. Compliance history. [summary of DMR review and Inspection Reports]. A review of the facility's Discharge Monitoring Reports[1] for the past five years indicates that the facility has generally been in compliance with its permit effluent limits.

Based on review of the Discharge Monitoring Reports (DMRs) for the past three years, the Permittee has generally reported compliance with effluent limitations. A summary of average plant performance is listed below:

Parameter	Average
Flow, MGD	1.90
Biochemical Oxygen Demand (BOD_5), mg/l	8.0
BOD_5, lbs/day	155
Total Suspended Solids (TSS), mg/l	10
TSS, lbs/day	161
Fecal Coliform, #/100 ml	39
pH, std. units	6.0 to 7.7
Temperature, °C	10.5
BOD_5 Removal, %	93.7
TSS Removal, %	95.3
Copper, µg/L	18.2

2. Permit History. The current permit will expire on December 31, 2001.

[1]Discharge monitoring reports are forms that the facility uses to report the results of self-monitoring.

III. RECEIVING WATER

A. Outfall Location

The treated effluent from the Juneau-Douglas Wastewater Treatment Plant (hereafter referred to as the Juneau-Douglas WWTP) wastewater treatment facility is discharged from outfall 001, located at latitude 58° 17' 2" N and longitude 134° 23' 13" W, to the Gastineau Channel.

B. Description of Receiving Water

Gastineau Channel is a long, narrow, tidal inlet with depths ranging from 240 feet at the entrance to exposed tide flats at the northwestern end. No major freshwater tributaries discharge to the channel. The circulation is driven by tides, with a mean range of 13.8 feet and a diurnal range of 16.4 feet. Peak ebb and flood tide current speeds can reach 2 knots. Water quality data indicate a layer of less saline water near the surface [to depths of 16.4 to 32.8 feet]. Salinities range from 18 ppt near the surface to greater than 30 ppt in waters greater than 32.8 feet deep.

Surface salinities increase towards the upper end of Gastineau Channel, indicating that the source of freshwater is located in the Stephens passage area rather than local inflow to the channel. Temperatures range from 10° C at the surface to less than 7° C at depths greater than approximately 32.8 feet, and pH varies from greater than 8.5 in the surface waters to approximately 7.7 near the bottom.

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 Gastineau Channel, in the vicinity of the outfall, for the following marine use classifications: Classes (2)(A), (2)(B), (2)(C), and (2)(D). These classifications protect the channel for beneficial uses such as water supply for industry; secondary water recreation; and for growth and propagation of fish, shellfish, other aquatic life and wildlife.

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

IV. 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 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. The basis for the proposed effluent limits in the draft permit are provided in Appendix C.

B. Proposed Effluent Limitations

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

1. The effluent pH range must be between 6.0 and 8.5 standard units (S.U.).

2. For BOD_5 and TSS, the monthly average effluent concentration must not exceed 15 percent of the monthly average influent concentration.

3. 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							
Parameter	Unit	Average Monthly		Average Weekly		Maximum Daily	
		Proposed	Current	Proposed	Current	Proposed	Current
BOD_5	mg/l	30	30	45	45	60	60
	lbs/day	690	690	1035	1035	1380	1380
TSS	mg/l	30	30	45	45	60	60
	lbs/day	690	690	1035	1035	1380	1380
Flow	MGD	2.76	---	---	---	6.0	---
Fecal Coliform Bacteria	colonies/100 ml	400	400	800	800	1200	1200
Temperature	°C	---	---	---	---	---	---
DO	mg/l	---	---	---	---	2.0[1]	---
Arsenic, total	µg/l	---	1.4	---	3.8	---	---
	lbs/day	---	---	---	---	---	---
Copper, total recoverable	µg/l	---	18.5	---	26.7	---	---
	lbs/day	---	---	---	---	---	—
Total Ammonia as N	mg/l	---	---	---	---	---	—
	lbs/day	---	---	---	---	---	—
Whole Effluent Toxicity (WET)	TU_c	---	---	---	---	---	—

1 This is a daily minimum. This limit included from ADEC's preliminary certification, as an indicator for proper operation and maintenance.

V. PROPOSED MONITORING REQUIREMENTS

A. Basis for Effluent and Receiving Water Monitoring

Section 308 of the Clean Water Act and federal regulation 40 CFR 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. For comparison purposes, the table also shows the monitoring requirements of the current permit.

Table 2: Proposed and Current Effluent Monitoring for Outfall 001							
Parameter	Unit	Location		Sample Frequency		Sample Type	
		Proposed	Current	Proposed	Current	Proposed	Current
BOD_5	mg/l lbs/day	Influent and Effluent	Influent and Effluent	monthly	monthly	24-hr composite	24-hr composite
TSS	mg/l lbs/day	Influent and Effluent	Influent and Effluent	monthly	monthly	24-hr composite	24-hr composite
Fecal Coliform Bacteria	colonies/100 ml	Effluent	Effluent	1/week	1/week	grab	grab
Temperature	°C	Effluent	Effluent	5/week	5/week	grab	grab
DO	mg/l	Effluent	---	1/week	----	grab	---
Arsenic, total	µg/l	---	Effluent	---	quarterly	---	24 hour composite
Copper, total recoverable	µg/l	---	Effluent	quarterly for two years	quarterly	---	24 hour composite
Total Ammonia as N	mg/l lbs/day	Effluent	Effluent	2/year	quarterly	24-hr composite	24-hr composite
Whole Effluent Toxicity (WET)	TU_c	Effluent	Effluent	Quarterly in 4^{th} year	Quarterly in 1^{st} and 4^{th} years	24-hr composite	24-hr composite

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 proposed receiving water monitoring requirements for the draft permit are provided in Table 4.

TABLE 4: RECEIVING WATER MONITORING REQUIREMENTS

Parameter	Receiving Water Sampling Frequency	Sample Type	Effluent Sampling Frequency
Fecal Coliform Bacteria, #/100/ml	1/month[1]	grab	1 day/week

1 Monthly during May 1 - October 31; twice during November 1 - April 30.

VI. SPECIAL CONDITIONS

A. Quality Assurance Plan (QAP)

The federal regulation at 40 CFR 122.41(e) requires the permittee to develop a Quality Assurance Plan to ensure that the monitoring data submitted is accurate and to explain data anomalies if they occur. The permittee is required to develop a Quality Assurance Plan within 90 days of the effective date of the final permit and to certify to EPA completion of the plan. The Quality Assurance Plan 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 Juneau-Douglas WWTP to incorporate appropriate BMPs into their O&M manual within one year of the effective date of the permit. Specifically, the Juneau-Douglas WWTP should consider spill prevention and control, optimization 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 Juneau-Douglas WWTP 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. Facility Planning

The permit also requires that the permittee compute an annual average value for flow, and BOD_5 and TSS loading entering the facility based on the previous 12 months of data or all data available. When the average annual values exceed the 85 percent of the design criteria for the WWTP three months in a row, the permittee is required to develop a facility plan and schedule within 18 months from the date of the exceedance. This plan or strategy is required to ensure that the permittee will continue to comply with permit limits if capacity is being exceeded.

E. Combined Sewer Overflow

The EPA does not have national effluent guidelines for Combined Sewer Overflows (CSOs). However, the EPA has published a Combined Sewer Overflow (CSO) Control policy (59 FR 18688) which provides for the control of CSOs and implementation of CSO control requirements through NPDES permits. The CSO controls are technology-based controls that are established on a case-by-case basis using best professional judgement (BPJ) and included in the permit as best management practices (BMPs).

The CSO Control Policy allows for CSO controls to be incorporated into NPDES permits in a two-phased process. The Phase I permit will require the permittee to implement the nine minimum controls (NMC), which are technology-based effluent limits as determined on a BPJ basis, and to document that this requirement has been met. The Phase I permit also requires the permittee to develop a long-term control plan (LTCP). The EPA expects that the implementation of the NMC during Phase I will achieve an interim level of CSO control during the time the permittee is developing an LTCP.

The next permit issued after the Phase I permit will be the Phase II permit. In the Phase II permit, the permittee will be required to implement the CSO controls identified in the LTCP. The water quality-based controls will typically be expressed as performance standards, and technology-based controls will be the NMC, which may be refined to reflect site-specific conditions. The Phase II requirements may continue for several permit cycles until all selected CSO controls identified in the LTCP have been constructed and implemented. Based on evaluation of the information submitted by the permittee, the water quality standards that need to be monitored for are fecal coliform. No additional parameters will be added to the ones currently being monitored by the permittee. After all the selected CSO controls have been implemented, the next permit issuance will contain requirements to continue NMC implementation, properly operate and maintain the completed CSO controls in accordance with the operational plan, and implement the post-construction monitoring program.

Currently there are three active CSO diversions that have in-place flow meters and are used most frequently: High School Diversion, Sealaska Diversion, and Douglas Diversion. In addition there are three other diversions that are available in the event of an extreme emergency, such as a major flood situation: Foodland, Marie Drake, and Old Police Department Diversions.

Work by the City and Borough of Juneau have reduced the number of combined sewers and the need for CSOs. The CSOs are manually operated and opened by an operator in the field. The flow is either measured if flow meters are in placed, or estimated if there are no flow meters. Samples are taken and analyzed for the parameters specified in the existing permit. The City and Borough of Juneau does not have any provision for treatment of the flows from the CSOs. It is anticipated that control will mainly be accomplished through separating the sanitary and storm sewers and whatever treatment plant improvements that may be warranted as a result of the Long Term Control Plan to be developed by the permittee.

VII. OTHER LEGAL REQUIREMENTS

A. State Certification Requirements

Since 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 water quality standards.

Preliminary discussions with the State have included development of the mixing zone and allowable dilution to be used for permit calculations, and establishment of the monitoring stations.

B. Standard Permit Provisions

Sections II, III, and 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.

C. Endangered Species Act of 1973

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 issuance of this permit will not affect any of the threatened or endangered species in the vicinity of the discharge. Review of the USFWS website showed that there are no listed that no federally-listed species or critical habitat are found within the project area.

The NMFS website showed that although the humpback whale and the threatened Steller sea lion do occur in Fritz Cove, it is not believed that this area is close enough to be affected by Juneau-Douglas WWTP discharge.

D. Essential Fish Habitat

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. For more information, see Appendix E, Essential Fish Habitat.

E. Coastal Zone Management Act [for Alaska permits only]

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.

F. 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.

VIII. References

AAC. 1997. *Water Quality Standards.* Alaska Department of Environmental Conservation, 18 AAC 70.

Email message from Clynda Luloff, ADEC, to Madonna Narvaez, EPA, dated August 3, 2001, subject "JD NPDES Permit." Note: "Basic, early version of certification."

EPA, 1991. *Technical Support Document for Water Quality-based Toxics Control*. U.S. Environmental Protection Agency, Office of Water, 3PA\505\2-90-001, March, 1991.

IX. LIST OF ACRONYMS

ADEC	Alaska Department of Environmental Conservation
AML	Average Monthly Limit
BAT	Best Available Technology economically achievable
BCT	Best Conventional pollutant control Technology
BMP	Best Management Practices
BPJ	Best Professional Judgement
BOD	Biochemical Oxygen Demand
BPT	Best Practicable Control Technology currently available
CFR	Code of Federal Regulations
cfs	Cubic feet per second
CWA	Clean Water Act
DMR	Discharge Monitoring Report
CV	Coefficient of Variation
EPA	Environmental Protection Agency
LA	Load Allocation
MDL	Maximum Daily Limit
mgd	Million gallons per day
mg/L	Milligrams per liter
ML	Minimum level
MSWLF	Municipal Solid Waste Landfill
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	Technical Support Document for Water Quality-based Toxics Control (EPA 1991)
TSS	Total Suspended Solids
ug/L	Micrograms per liter
USFWS	United State Fish and Wildlife Service
WLA	Wasteload Allocation
WQBEL	Water quality-based effluent limitation
WWTP	Wastewater treatment plant

APPENDIX A
Wastewater Treatment Plant Location

[for the Region 10 NPDES website, this map is found in a separate file]

APPENDIX B
Anti-Degradation Policy

The state of Alaska has adopted an anti-degradation policy as part of their water quality standard. The anti-degradation policy represents a three tiered approach to maintain and protect various levels of water quality and uses. An explanation of the three tiers of protection are as follows:

- Tier 1 - Protects existing uses and provides the absolute floor of water quality.

- Tier 2 - Protects the level of water quality necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water in waters that are currently of higher quality than required to support these uses. Before water quality in Tier 2 wastes can be lowered , there must be an anti-degradation review consisting of: (1) a finding that it is necessary to accommodate important economical or social development in the area where the waters are located (2) full satisfaction of all intergovernmental coordination and public participation provisions; and (3) assurance that the highest statutory and regulatory requirements for point sources and best management practices for nonpoint sources are achieved. Furthermore, water quality may not be lowered to less than the level necessary to fully protect the “fishable/swimmable” uses and other existing uses.

- Tier 3 - Protects the quality of outstanding national resources, such as waters of national and State parks and wildlife refuges and waters of exceptional recreational or ecological significance. There may be no new or increased discharges to these waters and no new or increased discharges to tributaries of these waters that would result in lower water quality.

APPENDIX C
Basis for Effluent Limitations

Sections 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 discharges with respect to these sections of the CWA and the relevant 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 into the permit. 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 at the edge of the mixing zone. If exceedances could occur, EPA must include water quality-based limits in the permit. The draft permit limits will reflect whichever requirements (technology-based or water quality-based) are more stringent. The limits which EPA is proposing in the draft permit are found in Part IV. of this Fact Sheet.

1. Technology-based Evaluation.

Section 301(b)(1)(B) of the CWA requires that discharges from publicly owned treatment works (POTWs) meet technology-based requirements defined as "secondary treatment" by July 1, 1977. The CWA initially focused on the control of "traditional" pollutants (conventional pollutants and some metals) through the use of "best practicable control technology currently available" (BPT). Section 301(b)(1)(3) of the CWA allowed a deadline for achieving BPT of March 31, 1989, under certain circumstances, but that deadline has also passed. Thus, permits issued after March 31, 1989, must include any conditions necessary to ensure that BPT is achieved.

Section 301(b)(2) of the CWA requires further technology-based controls on effluents. This section of the CWA requires that all permits contain effluent limitations which: (1) control toxic pollutants and nonconventional pollutants through the use of "best available technology economically achievable" (BAT), and (2) represent "best conventional pollutant control technology" (BCT) for conventional pollutants by March 31, 1989. In no case may BCT or BAT be less stringent than BPT.

In many cases, BPT, BCT, and BAT limitations are based on effluent guidelines developed by EPA for specific industries. Where EPA has not yet developed guidelines for a particular industry or a particular pollutant, permit conditions must be established using best professional judgement (BPJ) procedures (40 CFR §§ 122.43, 122.44, and 125.3). Secondary treatment requirements exist for BOD, TSS and pH, as discussed in Section 3 below.

2. Water Quality-based Evaluation.

In addition to the technology-based limits discussed above, EPA evaluated the discharge to determine compliance with section 301(b)(1)(C) of the CWA. This section requires the establishment 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 at 40 CFR § 122.44(d)(1) 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 limits must be stringent enough to ensure that water quality standards are met, and must be consistent with any available wasteload allocation (WLA).

a) When there are not numeric criteria, EPA must interpret the narrative criteria in order to evaluate reasonable potential. This can be accomplished in one of three methods:

   i. Establish a permit limit using a calculated criterion using a proposed State water quality criterion, or an explicit State policy;

   ii. Establish permit limits on a case-by-case basis using EPA's water quality criteria; or

   iii. Establish an indicator parameter.

The Juneau-Douglas WWTP effluent was evaluated for ammonia and whole effluent toxicity, based on the narrative criterion of "no toxics in toxic amounts." (See 18 AAC 70.020(b)(2)(C)). In order to interpret this regarding ammonia, EPA used the EPA saltwater ammonia criteria. The State has proposed adoption of the EPA saltwater criteria for ammonia. For whole effluent toxicity, EPA used the state standard at 18 AAC 70.030, "Whole Effluent Toxicity."

b) EPA uses the approach outlined below when determining whether water quality-based limits are needed and when developing those limits.

   i. Determine the appropriate state-adopted criteria.

   ii. Determine whether there is "reasonable potential" to exceed the criteria.

   iii. If there is reasonable potential to exceed the criteria, then develop a WLA.

iv. Develop effluent limitations, based on WLAs.

c) The following sections below provide a detailed discussion of these steps.

i. Water Quality Criteria

The first step in developing water quality-based limits is to determine the applicable water quality criteria. The applicable criteria are determined based on the beneficial uses of the receiving water as identified in Section III of the Fact Sheet. For any given pollutant, different uses may have different criteria. To protect all beneficial uses, the permit limits are based on the most stringent of the water quality criteria applicable to those uses.

Table C-1 lists the most stringent criteria applicable to the discharge. These criteria are contained in Alaska's water quality standards (18 AAC 70) and the National Toxics Rule (40 CFR 131.36).

TABLE C-1 Applicable Water Quality Criteria

Parameter[1]	**Acute Criterion ug/L, except where noted**	**Chronic Criterion ug/L, except where noted**
Arsenic III	69	36
Copper	2.9	NA
Total Ammonia[2], mg/L	6.7	1.0
Whole Effluent Toxicity[3], TU_c	NA	1.0

1 Freshwater; all forms of metals in total recoverable.
2 Based on narrative criterion of "no toxics in toxic amounts." 18 AAC 70.020(b)(2)(C)
3 Based on narrative criterion of "no toxics in toxic amounts." 18 AAC 70.020(b)(2)(C); WET effluent limit of 1.0 TUc, 18 AAC 70.030

ii. Reasonable Potential Evaluation

When evaluating the effluent to determine if a water quality-based effluent limit (WQBEL) is needed based on chemical specific numeric criteria, a projection of the receiving water concentration (downstream of where the effluent enters the receiving water) for the pollutant of concern is made. If the projected concentration of the receiving water exceeds the applicable numeric criterion, then there is a reasonable potential that the discharge may cause or contribute to an excursion above the applicable water quality standards, and a WQBEL is required.

EPA has used the recommendations in Chapter 3 of the *Technical Support Document for Water Quality-based Toxics Control* (TSD, EPA 1991) to conduct this "reasonable potential" analysis for the Juneau-Douglas wastewater treatment plant (WWTP). Reasonable potential (RP) calculations have been made for those pollutants with monitoring data and state criteria. The projected maximum receiving water concentration C_d is determined using the following mass balance equation.

$$\mathbf{C_d X (Q_e + Q_u) = (C_e X Q_e) + (C_u X Q_u)} \text{ where,}$$

C_d = statistically projected downstream receiving water concentration
Q_d = receiving water flow downstream of the effluent discharge = Q_e + Q_u
C_e = maximum effluent concentration
Q_e = maximum effluent flow
C_u = upstream, or background, concentration of pollutant
Q_u = upstream flow

Because the Juneau-Douglas WWTP effluent discharges to a marine environment, upstream and downstream flows are not applicable. Instead, an appropriate mixing model is used to calculate the minimum dilution at critical conditions. Rearranging the basic mass balance equation, the predicted receiving water concentration (C_d) can be calculated as follows:

$$C_d = (C_e/\text{dilution}) + (C_u \text{ X dilution}).$$

If C_u is equal to 0, as is the case in the Gastineau Channel around the Juneau-Douglas outfall, the equation becomes

$$C_d = C_e / \text{dilution}.$$

In an email message from Clynda Luloff, ADEC, to Madonna Narvaez, dated August 3, 2001, ADEC has determined that the maximum dilution for this discharge is 26:1. This value is based on the discharge of 2.7 MGD flow at the tenth percentile low current, when there is freshwater overlaying the marine water below with subsequent trapping of the plume. This is the nearfield dilution, at a distance of approximately three meters horizontally from the discharge port.

(1) **Mixing zone/flow conditions**

The dilution used to evaluate compliance with the ammonia, arsenic, copper and whole effluent toxicity criteria are based on a mixing zone application submitted by the City and Borough of Juneau and tentatively approved by the Alaska

Department of Conservation (ADEC). In accordance with state water quality standards, only ADEC may authorize mixing zones. If the State does not authorize a mixing zone in its 401 certification, the permit limits will be re-calculated to ensure compliance with the standards at the point of discharge.

ADEC will designate a zone of initial dilution (ZID) for whole effluent toxicity, copper, arsenic, pH, and ammonia contained in the discharge from the Juneau-Douglas WWTP. The ZID is the region of initial mixing surrounding or adjacent to the end of the outfall or diffuser pipe. The ZID is defined as an oval of 27.4 meters (90 ft long) perpendicular to shore and 20.0 meters (65.6 ft) centered on the diffuser and located perpendicular to the shoreline. The minimum allowable dilution is 26:1. The most stringent marine criteria listed in the State of Alaska Water Quality Standards must be met outside of the ZID, except for fecal coliform bacteria must be met outside of the mixing zone. The mixing zone is defined as a circle of 90 meters radius, centered on the outfall line and extending from the marine bottom to the surface. Based on modeling performed for the 1996 permit, the same size mixing zone yielded an allowable dilution of 12:1.

(2) **Step 1 - Maximum projected downstream concentration**

The maximum projected downstream concentration (C_d) is calculated based on the maximum reported effluent concentration and a multiplier (called a reasonable potential multiplier, RP) to account for uncertainty.

(3) **Determine the maximum effluent concentrations.**

The maximum effluent concentrations were determined for total ammonia, copper, and whole effluent toxicity.

(4) **Determine the RP multiplier.**

The RP multiplier depends upon the number and variability of the effluent data points. The standard deviation (or scatter of the observation around the mean) of the data is expressed as a percentage of the mean or coefficient of variation (CV). The CV is a measurement of variability of the data. When there are not enough data (i.e., less than 10 data points) to reliably determine a CV, the TSD recommends using 0.6 as a default value. A reasonable potential multiplier may vary from a low of 1 to a high of 368. The RP multiplier is calculated, assuming 99% confidence level and 99% probability basis (using equations from Section 3.3.2 of the TSD):

RP multiplier = C_{99}/C_x where,

$\sigma^2 = \ln(CV^2 + 1)$
$C_{99} = \exp(2.326\ \sigma - 0.5\ \sigma^2)$
C_x = percentile represented by highest concentration in the data base

(5) **Calculate the maximum projected effluent concentration (C_e).**

C_e = (maximum effluent concentration from (a)) x (RP multiplier from (b)).

(6) **Step 2 - Determine reasonable potential**

EPA assumed a background concentration of zero for each of the parameters evaluated based on data available for Gastineau Channel. The maximum effluent flow is 2.76 mgd.

The following Table compares the maximum projected receiving water concentration (C_d) with the most stringent water quality criteria (C_{dd}). Water quality-based effluent limits were developed for those parameters that exhibit a reasonable potential to exceed the water quality criteria (that is, where C_d is greater than C_{dd}). The development of water quality-based effluent limits is described in Section C.

Table C-2: Maximum Projected Effluent Concentrations and Reasonable Potential Determination

$C_d = C_e$/dilution
If $C_d > C_{dd}$, then there is reasonable potential and a limit is required

Dilution = 26:1 %MZ = 100 (use 1.0 in eqn) C_u = 0 for all parameters

Parameter	C_{max} [1,2]	CV[3]	RPF[4]	C_e [1,5]	C_d [1]	C_{dd} [1,6]	RP
Copper[7]	44	0.19	1.31	57.8	2.2	2.9	N
Total Ammonia, mg/L	2.5	1.35	4.97	12.4	0.478	1.0	N
Whole Effluent Toxicity, TU_c	4.8	0.6	4.74	22.9	0.88	1.0	N

1 µg/L, unless otherwise specified.
2 "C_{max}" = the maximum effluent concentration observed.
3 "CV" is the coefficient of variation.
4 "RPF" is the reasonable potential factor.
5 "C_e" is the maximum projected effluent concentration. $C_e = C_{max}$ X RPF
6 "C_d" is the projected maximum receiving water concentration. "C_{dd}" is the chronic aquatic life criterion. For copper, it is the acute aquatic life criterion as there is no saltwater chronic aquatic life criterion.
7 Measured as total recoverable.

Sample calculations are included at the end of this appendix for total ammonia and whole effluent toxicity.

iii. Wasteload allocation development

Once it has been determined that a water quality-based limit is required for a pollutant, the first step in developing a permit limit is development of a WLA for the pollutant. A WLA is the concentration (or loading) of a pollutant that the Permittee may discharge without causing or contributing to an exceedance of water quality standards in the receiving water.

Where the state authorizes a mixing zone for the discharge, the WLA is calculated as a mass balance, based on the available dilution, background concentrations of the pollutant(s), and the water quality criteria. Because the different criteria (acute aquatic life, chronic aquatic life, human health) apply over different time frames and may have different mixing zones, it is not possible to compare them directly to determine which criterion results in the most stringent limits. For example, the acute criteria are applied as a one-hour average and may have a smaller mixing zone, while the chronic criteria are applied as a four-day average and may have a larger mixing zone. The human health criteria are generally based on a 70-year exposure period. To allow for comparison, each criterion is statistically converted to a long-term average effluent concentration. The criterion that results in the most stringent long-term average concentration is the WLA that is used to calculate the permit limits.

(1) Permit Limit Derivation

Once the WLA has been developed, EPA applies the statistical permit limit derivation approach described in Chapter 5 of the TSD to obtain daily maximum and monthly average permit limits. This approach takes into account effluent variability, sampling frequency, water quality standards, and the difference in time frames between the monthly average and daily maximum limits.

The daily maximum limit is based on the CV of the data and the probability basis, while the monthly average limit is dependent on these two variables and the monitoring frequency. As recommended in the TSD, EPA used a probability basis of 95 percent for monthly average limit calculation and 99 percent for the daily maximum limit calculation. As with the reasonable potential calculation, when there is not enough data to calculate a CV (i.e., less than 10 samples), EPA assumes a CV of 0.6 for both monthly average and daily maximum calculations. However, for the Juneau-Douglas evaluation, there was enough data to calculate facility-specific CV's. Because there was no reasonable potential for any of the parameters evaluated, no water quality-based effluent limits were derived for the proposed permit.

(2) Antibacksliding

The current permit included water quality-based permit limits for arsenic and copper. The current regulations at 40 CFR § 122.44(l) only address technology-based effluent limits. The 1987 amendments to the Clean Water Act established a general prohibition against backsliding from water quality-based permit limits. Section 402(o)(1) of the Clean Water Act prohibits the relaxation of water quality-based effluent limits except in compliance with section 303(d)(4) of the Clean Water Act. Under section 303(d)(4), two scenarios are discussed: attainment and nonattainment waters. Gastineau Channel, the receiving water for the Juneau-Douglas WWTP discharge, is an attainment water. In this situation, section 303(d)(4)(B) allows for relaxation of permit limits based on section 303 total maximum daily load wasteload allocation, water quality standards established under section 303 of the Clean Water Act, or any other permit standard. Since the current permit was issued in 1996, Alaska water quality standards for arsenic have been revised to saltwater aquatic criteria of 69 ug/L and 36 ug/L, acute and chronic, respectively. As a result, the discharge no longer poses a reasonable potential to cause or contribute to an exceedance of water quality standards for arsenic and the arsenic limits have been removed from the draft permit and backsliding is allowed.

The copper criteria have not been revised, but ADEC did conduct modeling of the effluent discharge, using more applicable parameters than were used in the previous modeling performed. Using the new information with salinity, temperature, and other receiving water data gathered since the 1996 permit was issued, the model resulted in an allowable dilution of 26:1 instead of the previous 12:1, . As a result, the discharge no longer poses a reasonable potential to cause or contribute to an exceedance of water quality standards for copper, and the copper limits have been removed from the draft permit. In this situation, backsliding is allowed based on the new information exception under section 402(o)(2) of the Clean Water Act.

3. Effluent Limitations and Monitoring Requirements.

This discussion outlines the basis for each of the effluent limitations in the Juneau-Douglas WWTP proposed NPDES permit. The limitations proposed are either technology-based, water quality-based, or a combination of technology and water quality-based information.

a) Biochemical Oxygen Demand (BOD_5) and Total Suspended Solids (TSS)

The Juneau-Douglas WWTP is a secondary treatment facility that employs biological treatment. As such, the facility is subject to the technology-based requirements for five-day biochemical oxygen demand (BOD_5) and total suspended solids (TSS) of 40 CFR § 133.102, as outlined in Table C-3.

Table C-3: Secondary Treatment Requirements

Parameter	Monthly Average (mg/L)	Weekly Average (mg/L)	Percent Removal (%)
BOD_5	30	45	85
TSS	30	45	85

In addition to the concentration limits, 40 CFR § 122.45(f) requires that NPDES permits contain mass-based limits for such pollutants as BOD_5 and TSS. The draft permit establishes loading limits based on Mendenhall's current design capacity of 2.76 mgd (40 CFR § 122.45(b)). The limits are calculated by multiplying the concentration limits by the design flow and a conversion factor of 8.34 pound•liter/milligram•million gallons, as shown below:

Monthly Average Load: = (2.76 mgd)(30 mg/L)(8.34)
= **690 lbs/day**

Weekly Average Load: = (2.76 mgd)(45 mg/L)(8.34)
= **1035 lbs/day**

Maximum Daily Load: = (2.76 mgd)(60 mg/L)(8.34)
= **1380 lbs/day**

The daily maximum limits for BOD_5 and TSS are retained from the current permit.

b) pH

In addition to limits on BOD_5 and TSS, 40 CFR § 133.102 specifies a pH range from 6.0 to 9.0 standard units for POTWs. The State water quality standards for protection of aquatic life (18 AAC 70.020) require that ambient pH be in the range of 6.5 - 8.5 standard units. Based on evaluation of the receiving water data, EPA has determined that retaining the current permit limits for pH of 6.0 to 8.5 standard units will assure compliance with water quality standards.

c) Fecal Coliform Bacteria

In establishing fecal coliform limits for Juneau-Douglas WWTP draft permit, EPA considered seven different requirements: Alaska's water quality standard for primary recreation; Alaska's water quality standard for secondary recreation; the limits in the 1996 permit, Alaska's water quality standard for seafood processing, Alaska wastewater disposal regulations at 18 AAC 72 for disinfection, and harvesting for consumption of raw mollusks or other raw aquatic life.

i. The State water quality standards contain criteria for fecal coliform bacteria for waters protected for contact recreation (18 AAC 70.020 (b)(1)(B)(i)).

Monthly geometric mean: 100/100 ml (based on a minimum of 5 monthly samples).

Not more than 1 sample or no more than 10 percent if more than 10 samples are collected may exceed 200/100 ml.

ii. The State standards for secondary contact recreation (18 AAC 70.020(b)(1)(B)(ii)):

monthly geometric mean of 200/100 ml (based on a minimum of 5 monthly samples) and

no more than 10 percent may exceed 400/100 ml.

iii. The State standards for water supply, drinking, culinary, and food processing (18 AAC 70.020(b)(1)(A)(i):

geometric mean MPN may not exceed 20 FC/100 ml and

not more than 10 percent of the samples may exceed a fecal coliform geometric mean MPN of 40 FC/100 ml.

iv. The 1996 permit contained a monthly average limit of 400/100ml, a weekly average limit of 800 FC/100 ml, and a daily maximum limit of 1200 FC/100.

v. Alaska wastewater disposal regulations at 18 AAC 72 define "disinfect" as a means to treat by means of a chemical, physical, or other process, such as chlorination and produces an effluent with the following characteristics:

(1) an arithmetic mean of the values for a minimum of five effluent samples collected in 30 consecutive days that does not exceed 200 FC/100 ml; and

(2) an arithmetic mean of the values for a minimum of five effluent samples collected in 7 consecutive days that does not exceed 400 FC/100 ml.

vi. The State standards for harvesting for consumption of raw mollusks or other raw aquatic life:

vii. the fecal coliform median MPN may not exceed 14 FC/100 ml and

viii. not more than 10 percent of the samples may exceed a median fecal coliform median MPN of 43 FC/100 ml.

The draft permit incorporates the most stringent of the fecal coliform limits for the monitoring period.

Table C-4: Fecal Coliform Limits

Time Period	Monthly Average[1]	Weekly Average[2]	Daily Maximum[3]
Fecal Coliform Bacteria	400	800	1200

1 Based on a dilution of 26:1, the geometric mean, based on 5 samples taken over 30 separate days, may not exceed this value.
2 The arithmetic mean of at least 5 samples collected over 7 separate days may not exceed this value.
3 No more than 10 percent of the samples may exceed a daily of this value.

d) Total Residual Chlorine

The State water quality standard for total residual chlorine for protection of aquatic life (18 AAC 70.020(b)(1)(A)(iii)) is 2.0 ug/L measured for salmonid fish, or 10.0 ug/L for other organisms. The Juneau-Douglas WWTP no longer chlorinates the effluent. The plant now uses an ultraviolet process to disinfect. Accordingly, the limits for chlorine contained in the current permit have been removed from the draft permit.

e) Temperature

The State of Alaska marine water quality criteria for temperature for the Gastineau Channel states that the discharge may not cause the weekly average temperature to

increase more than 1 °C. EPA does not have sufficient information to apply temperature limits to the Juneau-Douglas WWTP effluent. Therefore, monitoring is required in the draft permit.

f) Total Ammonia (as N)

Low concentrations of ammonia can be toxic to freshwater fish, particularly salmonids. Un-ionized ammonia (NH_3) is the principal toxic form of ammonia. Based on the available information, ammonia limits are not needed for the Juneau-Douglas WWTP effluent.

g) Residues

The state water quality standard (18 AAC 70.020) requires surface waters of the State to be free from floating or submerged matter of any kind in concentrations causing nuisance or objectionable conditions or that may impair designated beneficial uses. This condition will be retained in the draft permit.

h) Dissolved Gas

The state water quality standard (18 AAC 70.020(1)(C)) requires that dissolved oxygen (D.O.) must be greater than 6 mg/L in coastal waters. In no case may D.O. be less than 4 mg/L at any point beneath the surface of the water. EPA does not have sufficient information to apply D.O. limits to the Juneau-Douglas WWTP effluent. Therefore, monitoring is required in the draft permit.

i) Metals

Based on available information, as shown in Table C-2, reasonable potential does not exist for the Juneau-Douglas effluent discharge to exceed or contribute to exceedances of copper criteria. As a result, the draft permit removes the existing permit limits for copper. The draft permit does require quarterly monitoring for copper for two years. If none of the samples exceed 75 ug/L, then monitoring for copper will be removed from the permit. The trigger is based on not showing reasonable potential. Dividing 75 (the maximum effluent concentration) by 26 (the allowable dilution) yields 2.9, the saltwater acute criterion for copper. Reasonable potential would be triggered if the result is greater than the criterion.

j) WET

Alaska water quality standards at 18 AAC 70.023 state that effluents discharged to a water may not impart chronic toxicity to organic organisms, expressed as 1.0

chronic toxic unit (TUc), at the point of discharge, or if ADEC authorizes a mixing zone in a certification, at or beyond the mixing zone boundary, based on the minimum effluent dilution achieved in the mixing zone.

Based on available information, WET limits are not necessary for this discharge. Because the Juneau-Douglas WWTP is a major facility (i.e., design flow is greater than or equal to 1.0 MGD), WET monitoring is required in the fourth year of the permit and the results are to be submitted with the permit re-application.

APPENDIX D
Sample Calculations

1. Sample Calculations for Reasonable Potential Analysis

Total Ammonia

In the case of the Gastineau Channel the beneficial use that needs to be protected is aquatic life. The acute criterion for ammonia is 6.7 mg/L and the chronic criterion is 1.0 mg/L. The acute criterion protects against short term impacts to aquatic life, and the chronic criterion protects against long term impacts to aquatic life. The ammonia criteria are calculated based upon the 95th percentile of receiving water pH and temperature values, and the 5^{th} percentile of salinity values.

The following mass balance equation is used to determine the downstream receiving water concentration:

$C_d = C_e$/dilution

where,
C_d = receiving water concentration downstream of the effluent discharge
C_e = maximum projected effluent concentration = 12.4 mg/L
Dilution = maximum effluent flow = 7.58 cfs
%MZ = assume 100 percent mixing zone is authorized by the ADEC

The maximum projected concentration (C_e) for the effluent is equal to the highest observed concentration value of the data set multiplied by the reasonable potential multiplier. Data from February 1997 through June 2001 was used to determine the maximum projected concentration. The highest value observed was 2.5 mg/L. The CV is 1.35. The reasonable potential multiplier is 4.97. The maximum projected concentration (C_e) is 12.4 mg/L (2.5 mg/L X 4.97).

The downstream receiving water concentration (C_d) is:

$C_d = C_e$/dilution

C_d = 12.4/26 = 0.478 mg/L

The projected concentration downstream does not exceed the chronic criterion for ammonia (1.0 mg/L), therefore, a water quality-based effluent limit is not required.

Whole Effluent Toxicity

In the case of the Gastineau Channel, the beneficial use that needs to be protected is aquatic life. Alaska water quality standards at 18 AAC 70.023 state that effluents discharged to a water may not impart chronic toxicity to organic organisms, expressed as 1.0 chronic toxic unit (TUc), at the point of discharge, or if ADEC authorizes a mixing zone in a certification, at or beyond the mixing zone boundary, based on the minimum effluent dilution achieved in the mixing zone.

The maximum projected concentration (C_e) for the effluent is equal to the highest observed value of the data set multiplied by the reasonable potential multiplier. Data from 1997 was used to determine the maximum projected concentration. The highest value of 4.8 TU_c was observed in the test using a bivalve. The CV is 0.6. The reasonable potential multiplier is 4.74. The maximum projected concentration (C_e) is 22.9 TU_c (4.8 TU_c X 4.74).

$C_d = C_e$/dilution

where,

C_d =	receiving water concentration downstream of the effluent discharge
C_e =	maximum projected effluent concentration = 22.9 TU_c
Dilution =	26:1
%MZ =	assume 100 percent mixing zone is authorized by the ADEC

The downstream receiving water concentration (C_d) is:

C_d = 22.9/26 = 0.88 TU_c

The projected concentration downstream is less than the chronic criterion for whole effluent toxicity (1.0 TU_c). Therefore, a water quality-based effluent limit is not required.

APPENDIX E
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. List EFH species in the facility area. In an email dated August 3, 2001, NMFS stated that the Gastineau Channel has been designated to support the following species for EFH: dusky rockfish, Pacific cod, Pacific ocean perch, Shortraker rockfish, rougheye rockfish, sablefish, sculpin, skate, walleye pollock, yelloweye rockfish, and all five species of Pacific salmon, chinook, coho, chum, sockeye and pink.

2. Describe the facility and discharge location. The facility activities and wastewater sources are described in Part II.A and B of this Fact Sheet, and the discharge location is described in Part III.A.

3. Evaluate potential effects to EFH. 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 Gastineau Channel. 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.

c) The NMFS website as of March 2001 indicated that there are no critical habitats in the vicinity of the discharge.