WR File # 24(b)

MEMORANDUM STATE OF ALASKA

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Anchorage District Office

TO: Eric Decker
Env. Specialist
Central/WQ

DATE: April 13, 1995

FILE #:

FROM: Keven K Kleweno, P.E.
District Engineer

SUBJECT: 303(d) List

As requested on April 10, 1995, I have reviewed files and discussed with state and local governmental staff about the two federally permitted treated domestic wastewater discharges into Eagle River. The first issue is that both discharges, Eagle River Westewater Treatment Plant and the Hiland Mountain Correctional Wastewater Treatment Plant, have been properly permitted by the Environmental Protection Agency (EPA).

My review of the Hiland Mountain Correctional Center Wastewater Treatment Plant monitoring results reveals that they have been in compliance for over a year. There appear to be three months when this Department did not receive copies of the monthly monitoring reports. However, all reports submitted for the years 1989 through 1999 reveal that the wastewater treatment plant was in compliance with permit limitations.

Although I have not reviewed the monitoring reports for the Eagle River Wastewater Treatment Plant, I have reviewed the new permit and all submitted information on the mixing zone. Based on this review and my knowledge of the staff that the Municipality of Anchorage has to operate the treatment plant, Eagle River Wastewater Treatment Plant is in compliance with the expired and the new permit that will be issued by EPA at any time.

This office is reviewing plans to install a sewer collection main that will carry the waste stream from the Hiland Mountain Correctional Center and other lots to the Eagle River Treatment Plant. There are several items that first must be resolved. However, the proposed sewer collection main could be installed within the next two years. This will reduce the number of permitted treated domestic wastewater discharges from two to one.

Based on the information that I have reviewed and discussions with knowable staff that I have had, I recommend that Eagle River (in Eagle River, Alaska located within the boundary of the Anchorage District Office) be removed from consideration for the 303(d) list.

Thank you for the opportunity to work with you on this project. If you have any questions, please do not hesitate to contact me.

KKK/cf

TO: FILE
Subject: Eagle River

2-3-92 Jose Vicente, 235-3170, an Engineer, called about Eagle River. Said the Highlands Correctional Facility has an illegal sewage discharge into the river (although they have a treatment system). The facility was supposed to be hooked up to the new mainline sewer trunk extension by LID a couple of years ago, but city relocated trunk & hookup was not made. A new LID is proposed, will be voted on ~ April, would provide hookups. Cost is about $2 million, but he thinks it can be done for half that (incl. pump station). Highlands facility spends over $100,000 per year for own treatment system w/ one operator. If LID passes, problem will be resolved.
Would like DEC to give grants for this/similar sewage hookups; would like DEC to force facility to hookup.

This year is first expected return to Eagle R of coho/king salmon planted by ADF&G. Community is excited about this; he doesn't want sewage problem to interfere.

Dave Sturdevant

WB File
F 24(3)

Fact Sheet

United States Environmental Protection Agency
Region 10
Park Place Building, 13th Floor
1200 Sixth Avenue, WD-137
Seattle, Washington 98101
(206) 553-8332

Public Notice Expiration Date:

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

MUNICIPALITY OF ANCHORAGE
Eagle River Wastewater Treatment Plant

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 (a) the tentative determination of the Environmental Protection Agency (EPA) to reissue the permit, (b) information on public comment, public hearing and appeal procedures, (c) a description of the current discharge, (d) a listing of tentative effluent limitations, schedules of compliance and other conditions, (e) a map and detailed description of the discharge location, (f) a discussion of the proposed total maximum daily loads for the Eagle River, and (g) conditions on the use and disposal of sewage sludge. We call your special attention to the technical material presented in the latter part of this document.

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

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

If no substantive comments are received, the permit will be effective immediately upon issuance. If comments are received, the permit will become effective 30 days after the final determinations are made, unless a request for an evidentiary hearing is submitted within 30 days after receipt of the final determinations.

The proposed NPDES permit and administrative record are on file and may be inspected at the Region 10 Office of EPA, located at 1200 6th Ave, in the Park Place Building, Seattle, WA 98101, any time between 8:30 a.m. and 4:00 p.m., Monday through Friday. The draft permit and fact sheet are also available at EPA at the Alaska Operations Office, Federal Building, Room 537, 222 W. Seventh Ave., #19, Anchorage, AK 99513, or by calling (907) 271-5083.

Technical Information

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I. APPLICANT

Municipality of Anchorage

Mailing Address:
3000 Arctic Blvd.
Anchorage, AK 99503

Facility Location:
11024 Artillery Rd.
Eagle River, AK 99577

NPDES Permit No.: AK-002254-3
Contact: J. Kris Warren, Superintendent

II. ACTIVITY

The Municipality of Anchorage (MOA) operates the Eagle River Wastewater Treatment Plant (WTP), a publicly owned treatment works (SIC code 4952) in Eagle River, Alaska (see Figures 1 and 2). The facility provides secondary treatment prior to discharging the effluent into Eagle River approximately 1.5 river miles west of the Glenn Highway crossing at 61° 19′ 10" N and 149° 35′ 30" W. The plant receives primarily domestic waste water from local residents and commercial establishments. There are no significant industrial dischargers to the facility. The collection system has no combined sewers. The design capacity of the plant is 2.5 million gallons per day (mgd) average dry weather flow.

III. RECEIVING WATER

The Eagle River has been classified and protected by the State of Alaska, in its federally approved water quality standards, as Classes I.A.(i)(ii)(iii)(iv), I.B.(i)(ii) and I.C. The river is protected for use as water supply, water recreation, growth and propagation of fish, shellfish, other aquatic life and wildlife, including waterfowl and furbearers.

Data obtained from Alaska Department of Fish and Game, Sport Fish Division, in Anchorage, show that the Eagle River drainage supports small wild populations of chinook, coho, pink, and sockeye salmon, with occasional chum salmon. Recent surveys for chinook salmon show escapement of 200 to 350 fish annually, mostly from the South Fork between the Falls and its confluence with Eagle River. Chinook salmon may also spawn in the mainstem of the river; however, high turbidity during the spawning period prevents field observations.

In 1990, the Alaska Department of Fish and Game (ADFG) began stocking approximately 100,000 chinook salmon smolt per year at mile 8.2 of the North Fork. Since 1992, ADFG has allowed limited sport fishing from mile 9 of the North Fork to the Bailey Bridge on Fort Richardson. The lower boundary of this sport fishery is downstream of the Eagle River WTP.

The annual sport fishing effort in Eagle River has averaged approximately 2500 angler-days since 1979. Dolly Varden account for most of the sport fishing effort and harvest in the river. Much of the

harvest occurs during spring and fall in the North Fork and the reach downstream of the Glenn Highway. The portion of the river from the sewage treatment plant outfall to the mouth is important for migrating juvenile and adult salmon, and probably provides rearing habitat for juvenile salmon and resident fish.

IV. BACKGROUND

A. NPDES Permit History

The Eagle River WTP was first issued a National Pollutant Discharge Elimination System (NPDES) permit on July 10, 1974. The current permit was issued September 30, 1985. In March, 1990, the MOA submitted a timely NPDES permit application for reissuance. Therefore, under the provisions of 40 CFR §122.6, MOA is authorized to continue discharging under the terms of the expired permit until a new permit is issued.

B. Performance

Based on a review of the Discharge Monitoring Reports (DMRs) submitted after completion of the plant expansion (October 1991 to March 1994), the permittee has generally reported compliance with effluent limitations. A summary of reported plant performance is shown below:

Parameter	Average
Flow	1.10 mgd
Biochemical Oxygen Demand (BOD_5), Weekly Avg Monthly Avg	 6.63 mg/l 4.99 mg/l
Total Suspended Solids (TSS), Weekly Avg Monthly Avg	 3.88 mg/l 2.51 mg/l
Fecal Coliform	1.8/100 ml
Total Residual Chlorine	non-detect
pH, min/max	6.5/6.8
Temperature	15°C
BOD_5 Percent Removal	97%
TSS Percent Removal	98%

The permittee has reported effluent pH levels below the minimum permit limit for five months during this period. Early efforts at controlling pH levels were directed at decreasing cell residence time. While longer cell residence time enhances the growth of organisms which break down ammonia (nitrifiers), the acidic waste product of these organisms decreases the pH level of the effluent. Since July 21, 1992, the plant

has been treating the effluent with soda ash in order to buffer the pH levels.

V. PROJECT DESCRIPTION

MOA completed the secondary treatment plant at Eagle River in June 1981. The plant was placed in service on July 2, 1981. Secondary treatment consisted of three pairs of rotating biological contactors, followed by additional settling in secondary clarifiers.

In March 1989, the MOA began construction of a major expansion at the WTP, replacing existing rotating biological contactors with a conventional activated sludge system and sand filtration. The expansion was completed in September 1991. The capacity of the expanded facility is 2.5 mgd (average dry weather flow), with a maximum monthly flow of 3.8 mgd, and a peak daily flow of 7.7 mgd.

Treatment consists of comminution, screening with rotary screens, primary clarification, aeration, secondary clarification, filtration with a 10-inch sand filter, chlorination, and dechlorination with sulfur dioxide. Scum and sludge from the primary clarifiers and waste sludge from the secondary clarifiers are thickened with a gravity belt thickener and pumped to a sludge holding tank. The collected sludge (approximately 20 wet tons per day) is trucked to the sewage collection system on Turpin Street in Anchorage, where it commingles with sewage that receives primary treatment at the John M. Asplund Water Pollution Control Facility (WPCF). Sludge from the Asplund facility is pumped, thickened, and dewatered before being incinerated. The Asplund facility tests the dewatered sludge monthly for heavy metals. The proposed permit requires Eagle River to change the discharge point of its sludge from the sewer system to the sludge treatment system at Asplund (see part VI.F.).

VI. BASIS FOR PERMIT CONDITIONS

A. General Approach

Sections 101, 301(b), 304, 308, 401, 402, and 405 of the Clean Water Act provide the basis for the effluent limitations and other conditions in the draft permit. EPA evaluates discharges with respect to these sections of the Act and the relevant NPDES regulations in determining which conditions to include in the permit.

In general, EPA first determines which technology-based limits are required. 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 permit limits will thus reflect whichever limits (technology-based or water quality-based) are most stringent.

Under Section 308 of the Act and 40 CFR §122.44(i), EPA must include monitoring requirements in the permit to determine compliance with effluent limitations. Effluent and ambient monitoring may also be required to gather data for future effluent limitations or to monitor effluent impacts on receiving water quality. 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.

B. Technology-based Evaluation

Section 301(b)(1)(B) of the Act requires that discharges from publicly owned treatment works (POTWs) meet secondary treatment by July 1, 1977. Secondary treatment is defined in the federal regulations at 40 CFR §133.102 as follows:

Parameter	Monthly Average (mg/l)	Weekly Average (mg/l)	Percent Removal (%)
BOD_5	30	45	85
TSS	30	45	85
pH	within the range of 6.0 -9.0		

For BOD_5 and TSS, these requirements have been incorporated into the draft permit as effluent limitations. In addition to these technology-based limitations, the draft permit contains daily maximum limits on BOD_5 and TSS of 60 mg/l, as required by Alaska State Regulations (18 AAC 72.990). These limitations remain unchanged from the current permit.

Monthly and weekly effluent loading limitations for BOD_5 and TSS have also been incorporated into the proposed permit. The loading limitations are based on the design capacity of the new plant. These limits are calculated by multiplying the concentration limits by the design flow (2.5 mgd) and a conversion factor of 8.34, as shown below.

Monthly Average Load = (2.5 mgd)(30 mg/l)(8.34)
= 625 lbs/day

Weekly Average Load = (2.5 mgd)(45 mg/l)(8.34)
= 940 lbs/day

These limitations represent an increase over the existing permit limitations, based on increased plant flow due to growth. See part VII. for a discussion of these limits in relation to the anti-degradation requirements.

The technology-based pH limitation for POTWs is 6.0 to 9.0. However, this limitation is less stringent than the limitation in the current permit (6.5 to 8.5). Because the permittee is able to meet the current

limits, under 40 CFR §122.44(l), the permit limits in the reissued permit must be at least as stringent as the limits in the current permit. Therefore, the limits in the draft permit are unchanged from the current permit.

C. Pretreatment Requirements

As required by Section 402(b)(8) of the Clean Water Act, MOA developed a regional pretreatment program, which was approved by EPA on April 9, 1982. Pretreatment implementation conditions are included in the municipality's NPDES permit for the John M. Asplund WPCF (permit number AK-002255-1).

One requirement in the development of the pretreatment program is a survey of industrial users contributing to the Anchorage system. The survey showed that no industrial dischargers contribute to the Eagle River sewage system. Therefore, no pretreatment sampling is required in this permit. However, the pretreatment program, in its entirety, applies to the Eagle River service area as well as to the Anchorage service area. MOA is responsible for implementing the complete program.

D. Water Quality-based Evaluation

1. Statutory Basis for Water Quality-Based Limits

Section 301(b)(1)(C) of the Act 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 Act.

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

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

The regulations also specifically address when toxicity and chemical-specific limits are required. A toxicity limit is required whenever toxicity has the reasonable potential to cause or contribute to an excursion above either a numeric or narrative standard for toxicity. The only exception is where chemical-specific limits will fully achieve the narrative standard. A chemical-specific limit is required whenever

an individual pollutant is at a level of concern (as defined at 40 CFR §122.44[d][1]) relative to the numeric standard for that pollutant.

2. State Water Quality Standards Revision

The state of Alaska has proposed a number of revisions to the water quality standards. If any revision affecting the conditions of this permit is finalized prior to permit reissuance, EPA will adjust the permit requirements in accordance with the new standard.

3. Permit Limit Derivation

In deriving permit limits, reported effluent values are compared to wasteload allocations to determine if limits are needed for individual toxicants. The wasteload allocation is the concentration (or loading) of a pollutant that may be discharged by the permittee without causing or contributing to a violation of water quality standards in the receiving water. It is calculated based on the available dilution, if appropriate, background concentrations, and the water quality standard. Generally, separate wasteload allocations are calculated for each criterion: acute aquatic life, chronic aquatic life, and human health. The most stringent wasteload allocation is then used as the wasteload allocation.

As discussed above, 40 CFR §122.44(d)(1) requires consideration of existing controls on all point or nonpoint sources of pollutants when establishing water quality-based limits on point sources. For this permit, this consideration was given by establishing total maximum daily loads (TMDLs) for the pollutants for which water quality-based limits were needed. A total maximum daily load is the sum of all wasteload allocations, load allocations, background, and a margin of safety. See section VI.D.4., below, for a discussion of wasteload allocations and the TMDLs.

As discussed above, 40 CFR §122.44(d)(1) addresses "reasonable potential" to cause or contribute to an excursion above water quality standards. EPA's *Technical Support Document for Water Quality-based Toxics Control* (*TSD*, 1991) defines "reasonable potential" as being within a percentage of the wasteload allocation. The percentage increases as the uncertainty decreases. Uncertainty decreases with increased numbers of samples. The percentage is also based on the coefficient of variation (a measure of the variability) of the data. When there are not enough data to reliably determine a coefficient of variation, the *TSD* recommends using 0.6 as a default value.

Based on the comparison of effluent data from the facility and the calculated wasteload allocations, water quality-based permit limits for the following parameters are included in the proposed permit: copper, lead, silver, and ammonia. In addition, the current permit limits for fecal coliform bacteria, pH, and chlorine residual were compared with water quality standards to determine whether more stringent limits were necessary to ensure compliance with water quality standards.

In deriving the water quality-based permit limits, Region 10 applied the statistical permit limit derivation approach described in the *TSD*. This approach takes into account effluent variability, sampling frequency, and the difference in time frames between the water quality standards and monthly average and daily maximum limits. In addition to the numeric water quality criteria and dilution values, EPA used the following values in deriving limits, using the formulas in the *TSD*:

Probability value for long-term average calculation	99%
Probability value for monthly average limit calculation	95%
Probability value for daily maximum limit calculation	99%
Coefficient of Variation	
Ammonia	1.6
Other Parameters	0.6
Frequency of monitoring	
Metals	Quarterly
Ammonia	Monthly

The limits which EPA is proposing in the draft permit for each parameter are discussed below. In some cases, the maximum daily limit may appear to exceed the wasteload allocation value. However, this is due to the difference in time frames between the two values. The wasteload allocation is based on the same time frame as the criteria (for example, four days for a chronic wasteload allocation), whereas the maximum daily limit is based on a single day. It is possible to exceed the four-day average on any given day and still meet the average. The proposed permit limits will ensure that both the wasteload allocations and criteria are met.

a) Mixing Zones

On August 5, 1993, the MOA submitted a mixing zone request to the State of Alaska Department of Environmental Conservation (ADEC). Based on the analysis submitted with this request and discussions with ADEC, the water quality-based limitations in the draft permit are derived using seasonal mixing zones. The permittee requested a summer mixing zone of 500 feet downstream and 6 laterally from the discharge, with a dilution of 11:1. The requested winter mixing zone is 2500 feet by 10 feet, with a dilution of 5.8:1. These mixing zones are for both acute and chronic criteria.

EPA evaluated these mixing zones to ensure that they were consistent with the requirements of the National Toxics Rule (NTR, 57 FR 60848, December 22, 1992). In addition, to establishing numeric water quality criteria for toxic pollutants, the NTR established flows that must be used to evaluate compliance with the criteria. Under the NTR, states must use flows at least as stringent as the flows in the rule when authorizing mixing zones. For the State of Alaska, the NTR established acute aquatic life criteria and human health criteria. The applicable flows associated with these criteria are the 1 day, 10 year low flow (1Q10) for acute criteria, the 30 day 5 year low flow (30Q5) for human health criteria for non-carcinogens, and the harmonic mean flow for

human health criteria for carcinogens. The 1Q10 represents the lowest daily flow that is expected to occur once in 10 years. Similarly, the 30Q5 is the lowest 30 day average flow expected to occur once in 5 years. The harmonic mean is an approximation of the long-term average flow.

Because the mixing zones requested by the permittee are for both acute and chronic criteria, the dilution available using the 1Q10 flow was compared with the requested dilution to determine which is more stringent. The 1Q10 flows for Eagle River are 21 and 138 mgd in winter and summer, respectively. Use of the entire flow for dilution would result in respective dilutions of 9.4:1 and 56:1, which is less stringent than the dilutions proposed in the draft permit. Therefore, the proposed mixing zones will comply with the requirements in the NTR.

In accordance with state water quality standards, only ADEC may authorize mixing zones. Therefore, although the limits in this permit are based on informal discussion with the State, the limits in the final permit will be based on the mixing zone specified in the State's 401 certification. If the State does not authorize a mixing zone in its certification, the permit limits will be calculated to ensure compliance with the standards at the point of discharge.

a) Metals

For copper, lead, and silver, toxicity increases with decreasing hardness (measured in mg/l $CaCO_3$). In establishing a hardness value for evaluating the criteria, available data were used to calculate a fifth percentile hardness to represent worst case. In the Eagle River, the fifth percentile hardness was calculated as 33 mg/l $CaCO_3$ for the summer months and 66 mg/l $CaCO_3$ for the winter months. Because of this seasonal variation in hardness, seasonal water quality standards for metals were calculated.

As discussed above, in determining whether a water quality-based limit was needed for each parameter, the effluent concentration was compared to the wasteload allocation. As part of its permit application, the permittee submitted metals data collected both before and after the treatment plant upgrade. These data do not show a significant difference in metals concentration before and after the upgrade. Therefore, all available data were used to determine whether the discharge has reasonable potential to cause or contribute to exeedances of water quality standards.

The following table summarizes the reported effluent concentrations, wasteload allocations, and proposed effluent limitations for copper, lead, and silver, with "S" denoting summer and "W" denoting winter. Note that no winter limitation is proposed for silver. EPA determined that there was no reasonable potential to exceed the winter criteria for silver at the edge of the mixing zone.

Parameter	Max Reported Effluent Conc (µg/l)	Acute/ Chronic Criteria (µg/l)		Wasteload Allocation (µg/l)		Effluent Limitations			
						Daily Max (µg/l)		Mo Avg (µg/l)	
		S	W	S	W	S	W	S	W
Copper	53	6.2/ 4.6	12/ 8.3	50	48	69	70	47	48
Lead	17	20/ 0.78	48/ 1.9	8.5	11	14	18	9.6	12
Silver	2.8	0.60 /NA	2.0/ NA	6.6	11	6.6	NA	4.5	NA

b) pH

The State water quality standard for pH is 6.5 to 8.5. In the current permit, the effluent limit (6.5 to 8.5) results in meeting the water quality standards at the point of discharge. As discussed in Section VI.B., above, this limitation remains unchanged in the draft permit.

c) Ammonia

Low concentrations of ammonia can be toxic to freshwater fish, particularly salmonids. Un-ionized ammonia (NH_3) is the principal toxic form of ammonia. The percentage of ammonia that exists in the receiving water in the NH_3 form varies with pH and temperature. When measured as un-ionized ammonia, toxicity increases as temperature and pH decrease. However, when measured as total ammonia, toxicity increases as temperature and pH increase, because the fraction of ammonia that is in the un-ionized form increases.

Based on data collected between January and September 1992, the permittee reported a maximum effluent ammonia concentration of 25 mg/l. This concentration was compared to the wasteload allocation, which is based on Alaska's water quality standard for ammonia. Alaska's ammonia standard is based on EPA's *Quality Criteria for Water* (*Gold Book*), which provides criteria for total ammonia concentrations for waters where salmonids or other sensitive cold water species are present. To reflect the relationship between toxicity and pH/temperature, the criteria are dependent on pH and temperature.

Ambient temperature and pH data are available for the Eagle River from samples taken between 1949 and 1981. As with metals, because of seasonal variation in the receiving water (in this case, in pH and temperature), the draft permit contains seasonal ammonia limits. The following table contains the receiving water conditions, criteria, wasteload allocations and effluent limits for ammonia. The ambient conditions represent the 95th percentile for temperature and pH.

	Ambient pH	Ambient Temp (°C)	Acute/ Chronic Criteria (mg/l,N)	Waste-load Alloc (mg/l,N)	Effluent Limitations	
					Daily Max (mg/l,N)	Monthly Avg (mg/l,N)
Summer	6.3	11.4	25/1.8	20	36	17
Winter	7.1	3.6	21/2.0	12	21	10

d) Chlorine

The current permit requires that chlorine be at non-detect at a detection limit of 10 µg/l. Based on the State water quality standard of 2 µg/l and the mixing zones proposed in the draft permit, the wasteload allocations for chlorine are 22 µg/l and 12 µg/l in summer and winter, respectively. Therefore, the current permit limits for chlorine are adequate to ensure compliance with water quality standards and have been retained in the draft permit.

e) Fecal Coliform

The state water quality standard for fecal coliform bacteria is 20 per 100 ml based on a geometric mean, with not more than 10 percent of the samples exceeding 40 per 100 ml. The current permit contains this standard as an effluent limit, which means that water quality standards are achieved at end-of-pipe. Therefore, these limits have been retained in the current permit.

f) Residues

The State water quality standard for residues states that floating solids, debris, sludges, deposits, foam, and scum "shall not alone or in combination with other substances or wastes make the water unfit or unsafe for use, cause a film, sheen, nor discoloration on the surface of the water or adjoining shoreline, cause leaching of toxic or deleterious substances, or 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." The current permit ensures compliance with this standard by prohibiting the discharge of floating solids, visible foam, or oily wastes. This prohibition has been retained in the draft permit.

4. Total Maximum Daily Load

Where technology-based limits are not sufficient to achieve compliance with water quality standards, a total maximum daily load (TMDL) should be established. The first step in establishing a TMDL is to determine the assimilative capacity (the loading of pollutant that a water body

can assimilate without causing or contributing to a violation of water quality standards). The next step is to divide the assimilative capacity into allocations for non-point sources (called load allocations, or LAs), allocations for point sources (called wasteload allocations, or WLAs), after taking into account natural background loadings and a margin of safety to account for any uncertainties. The TMDL is the sum of the LAs, WLAs, background, and the margin of safety. Permit limitations are then developed for point sources that are consistent with the WLAs.

In some cases, the permit limits may be more stringent than those based on the TMDL. For example, where a wasteload allocation is based on a mixing zone that allows a percentage of the receiving water for dilution, it may be more stringent than a wasteload allocation that allows the entire assimilative capacity of the receiving water.

As discussed in section VI.D.3., above, technology-based limitations alone are not adequate to ensure that water quality standards for copper, lead, silver, chlorine, and ammonia are met at the end-of-pipe. Therefore, TMDLs were developed for these pollutants. TMDLs for fecal coliform bacteria and pH were not developed because the effluent limitations for these parameters result in meeting water quality standards at the point of discharge.

Although there are no significant non-point sources of the pollutants of concern, the city's storm water runoff may be a significant point source. As part of their storm water application, the Municipality of Anchorage submitted data on copper discharges to Eagle River. Data consist of three samples ranging from non-detect (at an unspecified detection limit) to 10 μg/l. It is not clear from the application whether the copper was analyzed as total or total recoverable metal. Six data points were collected for flow, ranging from zero to 0.84 cubic feet per second. There were no data collected for other metals of concern. Because of the uncertainties associated with the data, no WLA was established for the city's storm water discharge.

Receiving water data for Eagle River (from EPA's STORET data base) are limited to a few samples for some pollutants and do not have any quality assurance/quality control information associated with them. In addition, the metals data is in dissolved form, not the total recoverable form on which the water quality standard is based. Because of these uncertainties, EPA is assuming a background concentration of zero for these parameters. To address the uncertainties in the data for both the background concentrations and the contribution from the city's storm water, the draft permit requires the permittee to conduct an ambient monitoring program. (See section VI.E.3.)

The following table compares the loading capacity with the wasteload allocations derived for the WTP based on the mixing zones approved by the State (with summer designated as "S" and winter designated as "W"). The remaining loading is reserved for the WLA for the city's storm water discharge and a margin of safety, until sufficient data are collected to

determine actual contributions from background and storm water. If the data show that the wasteload allocation based on the mixing zone, combined with the storm water WLA and ambient concentrations, exceeds the allowable loading based on the TMDL, the wasteload allocation can be adjusted so that water quality standards can be achieved.

Parameter	Wasteload Allocation (lb/day)		Loading Capacity (lb/day)		Storm Water WLA and Margin of Safety (lb/day)	
	S	W	S	W	S	W
Copper	1.0	1.0	5.1	1.4	4.1	0.4
Lead	0.18	0.23	0.86	0.32	0.68	0.09
Silver	0.14	NA	0.66	NA	0.52	NA
Chlorine	0.46	0.24	2.2	0.33	1.8	0.09
Ammonia	420	240	2000	330	1580	90

E. Monitoring Requirements

The following monitoring requirements have been included in the permit pursuant to section 308 of the Act and 40 CFR §122.44(i). Monitoring frequencies are based on the nature and effect of the pollutants, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance.

1. Influent & Effluent Monitoring

The proposed permit requires monitoring for the following parameters.

Parameter	Sample Frequency	Sample Type
Flow	Continuous	Recording
BOD_5 (Influent and Effluent)	Weekly	24-hour composite
TSS (Influent and Effluent)	Weekly	24-hour composite
Fecal Coliform Bacteria	2/week	Grab
Chlorine Residual	Continuous	Recording
pH	5/week	Grab
Metals	Quarterly	24-hour composite
Total Ammonia	Monthly	24-hour composite

Parameter	Sample Frequency	Sample Type
Flow, Average and Max Monthly	Continuous	Recording
Temperature	5/week	Grab
Chronic Toxicity	Quarterly	24-hour composite
Acute Toxicity	Annually	24-hour composite

2. Whole Effluent Toxicity Testing

Under 40 CFR 122.44(d), permits must contain limits on whole effluent toxicity when a discharge has reasonable potential to cause or contribute to an exceedance of the water quality standard. In the case of the Eagle River WTP, there are no data to evaluate "reasonable potential" for the discharge. Therefore, the draft permit requires quarterly monitoring for chronic toxicity, with acute toxicity testing in the first and third years of the permit.

For chronic testing, the permittee is required to perform the following tests: *Pimephales promelas* (fathead minnow), larval survival and growth test and *Ceriodaphnia dubia*, three-brood, 7-day survival and reproduction test. Either static renewal or flow-through testing may be used. For acute testing, the permit requires a 96-hour LC_{50} test using *Onchorynchus kisutch* (coho salmon).

3. Ambient Monitoring Program

As discussed in section VI.D.4., above, the TMDLs for metals in the Eagle River assume that background concentrations of the metals are zero. To address this uncertainty, the draft permit requires the permittee to submit a study plan for ambient monitoring of copper, lead, silver, and zinc.

The objective of ambient monitoring study is to determine the "natural conditions" of the receiving water, as well as to determine the concentrations of metals contributed by the city's storm water discharges. The State of Alaska water quality standards define natural conditions as ". . . the sum of the physical, chemical, biological, or radiological conditions that exist in a water body before any human-caused discharge to, or addition of material to, the water".

The draft permit requires the permittee to submit a study plan for approval within 90 days of the effective date of permit. The study plan must address the issues such as appropriate sampling locations, temporal and spatial variability in the receiving water, appropriate sampling and analytical methods (including clean techniques, if necessary), analytical variability, and quality assurance/quality control for

sampling and analysis. Upon approval, the permittee must implement the study within 30 days.

Based on the results of this study, EPA can determine whether the TMDLs should be revised to include other load/wasteload allocations, or to adjust the background concentration. The draft permit contains a reopener stating that the permit may be reopened if, based on a revised TMDL, changes in permit limits are determined to be necessary.

F. Sludge Management Requirements

Section 405(f) of the Clean Water Act requires any NPDES permit issued to a treatment works treating domestic wastewater to include sludge use and disposal requirements. In addition, the sludge permitting regulations in 40 CFR §§122 and 124 apply to all treatment works treating domestic wastewater, even in a transfer situation.

Pursuant to 40 CFR §122.41(a), a condition has been incorporated into the proposed permit requiring the permittee to comply with all existing federal and state laws, and all regulations applying to sludge use and disposal. This includes future self-implementing standards under the Act. In addition, EPA has announced that it is working on changes to the incinerator portion of the 40 CFR 503 standards, such as authorizing certain facilities to temporarily substitute a carbon monoxide standard for the total hydrocarbon standard, and making the carbon monoxide, total hydrocarbon, and other portions of the incinerator standards self-implementing.

The applicant plans to continue transporting sludge to the John M. Asplund WPCF incinerator. Therefore, the responsibility of the sludge generator (Eagle River WTP) is somewhat reduced but not eliminated. Although both facilities are owned by the Municipality of Anchorage, the sludge from each facility is permitted and regulated separately in order to protect the environment and ensure compliance with the provisions of 40 CFR §503.

Currently, the Eagle River WTP discharges sludge directly into the sewage flow entering the John M. Asplund WPCF. Because the John M. Asplund WPCF provides only primary treatment, it is likely that some of the secondary sludge generated by Eagle River WTP could enter waters of the United States, in violation of §405 of the Act. Therefore, the draft permit requires the permittee to change the point of sludge delivery from the sewer system to the sludge management facility at the Asplund treatment plant within 24 months. This schedule should allow a reasonable amount of time for any procurement, construction, or personnel actions necessary to accommodate the change in sludge delivery practices.

To ensure compliance with the Act and 40 CFR §503, the draft permit contains the following requirements:

- General provisions: The permittee must handle and dispose of the sludge in such a way as to protect human health and the environment. In addition, the permittee must comply with all federal and state regulations.

- Use/Disposal contingency plan: Since incineration is dependent on mechanical systems, there is a potential for periods of break-down or major repair or maintenance. Also, the community has a recognized potential for severe earthquakes which might damage the sludge management system(s). The development and implementation of a contingency plan is necessary to maintain compliance with 40 CFR §503 in the event that the John M. Asplund WPCF incinerator is unavailable. The contingency plan must be implemented within 36 months of the effective date of the permit.

- Sludge feedstock management: The application did not contain information on the recipient facility or processing of the sludge, and no permit exists or will be soon available to cover the recipient facility's sludge management. Also, the recipient facility's operator may change or the manner of sludge processing may change over time. Therefore, the draft permit requires the permittee to develop a feedstock management plan within 24 months of the effective date of the permit.

  The feedstock management plan should describe the recipient's final use or disposal practices and control feedstock quality, quantity, and delivery. This additional information is needed to determine if any factors in the operations of the sludge generating facility pose a threat of a violation of 40 CFR §503. If such a threat is present, the permit may be reopened to establish necessary limits or conditions.

- Suspend delivery for non-compliance: The act of delivering sludge to a recipient facility not in compliance with its sludge permit or with 40 CFR §503 has a clear potential to aggravate the violation or any potential environmental harm from sludge mismanagement. Therefore, the draft permit requires that the permittee suspend transfer of sludge to any recipient facility that is not in compliance with 40 CFR §503 or its own permit. In addition, the sludge generator is responsible for establishing contract provisions (or, in this case, internal administrative mechanisms) in order to receive periodic assurance of compliance and/or become aware of problems and/or non-compliance with the provisions of 40 CFR §503.

- Suspend delivery upon regulatory notice: Federal, state, or local regulatory agencies dealing with sludge problems or issues at the Asplund facility must have the ability to mitigate or minimize the extent of those problems, or any adverse environmental effects, by reducing the total amount of sludge entering the facility. Therefore, EPA may require the plant to suspend delivery of sludge upon receipt of a written request from another regulatory agency.

If this request is received by either the sludge generator or recipient, the permittee must deliver a copy of the request to EPA within 12 hours.

The draft permit requires annual monitoring of sludge feedstock for beryllium, mercury, arsenic, cadmium, chromium, lead, and nickel. These monitoring requirements are based on of 40 CFR §503, Subpart E, which requires sampling for these parameters at least once per year for incineration of sludge volumes less than 290 metric tons of sludge per year (dry weight basis).

The permittee must provide 180 days prior notice to EPA for any planned changes in sludge management practices. This notification is necessary for the agency to request additional information and to determine if requirements in addition to, or more stringent than, the provisions of 40 CFR §503 need to be imposed on the new sludge management practice. Such changes in sludge management may be cause for modification, revocation, or reissuance of the permit. However, because 40 CFR §503 is a self-implementing regulation, the permittee must comply with any more stringent conditions even before the permit is modified.

G. Quality Assurance Plan

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

The draft permit requires the permittee to submit a quality assurance project plan to EPA within 90 days of the effective date of the permit. The plan is intended to address sampling techniques, sample preservation and shipment procedures, instrument calibration and preventive maintenance procedures, and personnel qualifications and training.

VII. ANTIDEGRADATION

In proposing to reissue this permit, EPA has considered Alaska's antidegradation policy (18 AAC 70.010(c)). This provision states that, where the natural characteristics of the waterbody are higher than the water quality criteria, the existing quality must be maintained. Although data are not available to determine whether the receiving water is of higher quality than the water quality criteria, the limits proposed for this permit were evaluated to determine whether they would result in a decrease in water quality.

With the exception of BOD_5 and TSS, the issuance of this permit will not result in increased loading of pollutants to the receiving water. With respect to BOD_5 and TSS, the loading will increase due to increased effluent flow, but the concentration of those pollutants in the effluent will not.

An analysis of the effect of the increased loading on the receiving water shows that the increased BOD_5 loading will not result in a measurable decrease in the dissolved oxygen in Eagle River. With respect to TSS, the increased loading is not expected to affect water quality as long as the TSS concentrations in the water, which affect water turbidity, do not change. Therefore, the limits in the permit are consistent with Alaska's antidegradation policy.

VIII. OTHER LEGAL REQUIREMENTS

A. Endangered Species Act

EPA contacted US Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) to determine whether there are any threatened or endangered species were in the vicinity of the discharge. EPA received a letter from USFWS on September 14, 1993, stating that they had no records of any threatened, endangered, or candidate species in the area of the discharge. On October 3, 1993, EPA received a letter from NMFS stating that none of the threatened or endangered species for which they have responsibility occur near the facility.

Under Section 7 of the Endangered Species Act, if a biological evaluation is not initiated within 90 days of receipt of the species list, the acting Agency (in this case, EPA) must confirm the accuracy of the list. Because USFWS and NMFS indicated that no threatened or endangered species were present, a biological evaluation is not necessary. However, because substantial time has elapsed between receipt of the lists and the issuance of the draft permit, EPA contacted USFWS and NMFS in July 1994 and confirmed that the lists were still valid. Therefore, EPA has determined that the discharge will not impact any threatened or endangered species.

B. State Certification

Because state waters are involved in this permitting action, the provisions of Section 401 of the Act apply. In accordance with 40 CFR §124.10(c)(1), public notice of the draft permit has been provided to the State of Alaska agencies having jurisdiction over fish, shellfish, and wildlife resources.

As part of the certification, the State will be asked to certify the mixing zones used in calculating the effluent limitations in the proposed permit. If certification of the mixing zones is not provided, the limitations in the permit will be recalculated based on meeting water quality standards at the point of discharge.

C. Permit Term

This permit shall expire five years from the effective date.

FIGURE 1

Location of Eagle River, Alaska

FIGURE 2

Location of Eagle River WTP

FIGURE 1

Location of Eagle River, Alaska

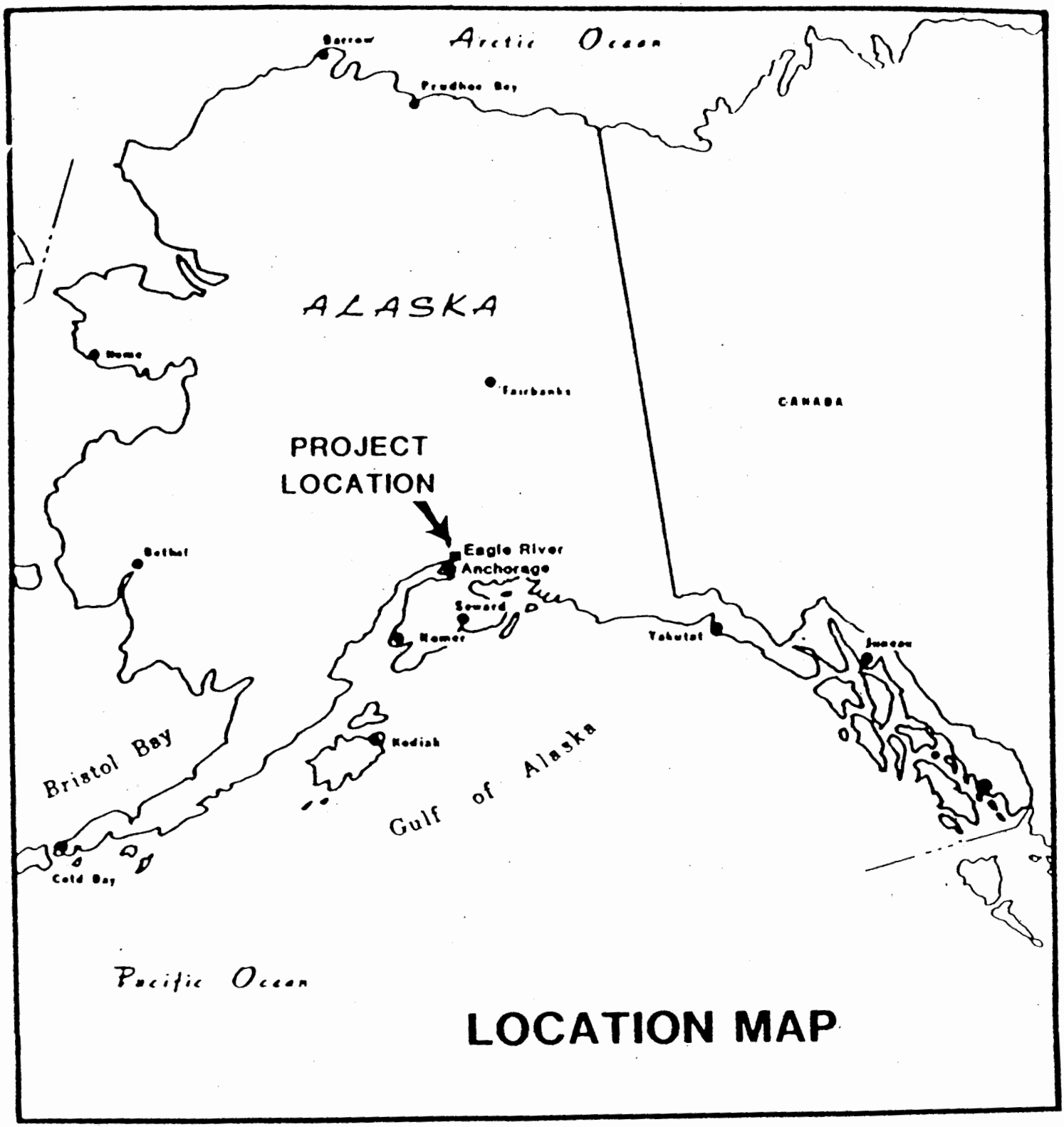

FIGURE 2

Location of Eagle River WTP