

Permit No.: AK-003865-2

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle, Washington 98101

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Clean Water Act, 33 U.S.C. §1251 et seq.,
as amended by the Water Quality Act of 1987, P.L. 100-4, the "Act",

COMINCO ALASKA, INC.
(Red Dog Mine)

is authorized to discharge 1) treated wastewater through Outfall 001 at latitude of 68° 4' 17" and longitude of 162° 52' 5" to receiving water named Middle Fork Red Dog Creek, 2) treated construction camp site wastewater through Outfall 002 at latitude of 68° 1' 45" and longitude of 162° 54' 56" to the tundra, and 3) storm water in accordance with discharge point(s), effluent limitations, monitoring requirements and other conditions set forth herein.

This permit shall become effective

This permit and the authorization to discharge shall expire at midnight,

Signed this day

Director, Office of Water, Region 10
U.S. Environmental Protection Agency

This permit modification shall become effective

Signed this day of

Director, Office of Water, Region 10
U.S. Environmental Protection Agency

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I. LIMITATIONS AND MONITORING REQUIREMENTS

A. Outfall 001 Limitations and Monitoring Requirements.

During the period beginning on the effective date of this permit and lasting through the expiration date, the permittee is authorized to discharge effluent from Outfall 001 into Middle Fork Red Dog Creek, provided the following effluent limits and monitoring requirements are met:

1.

Parameter	Daily Maximum	Monthly Average	Weekly Average	Sample Frequency	Sample Type ¹
Cadmium, total recoverable, µg/L	3.4	2.0	---	1/week	24 hour composite
Copper, total recoverable, µg/L	43.7	15.1	---	1/week	24 hour composite
Chromium, total recoverable, µg/L	---	---	---	1/week	24 hour composite
Lead, total recoverable, µg/L	19.6	8.1	---	1/week	24 hour composite
Manganese, total recoverable, µg/L	---	---	---	1/week	24 hour composite
Mercury, total, µg/L	0.02	0.01	---	1/month	24 hour composite
Nickel, total recoverable, µg/L	---	---	---	1/week	24 hour composite
Selenium, total recoverable, µg/L	5.6	4.9	---	1/week	24 hour composite
Zinc, total recoverable, µg/L	257.3	119.6	---	1/week	24 hour composite
Total Suspended Solids, TSS, mg/L	30.0	20.0	---	1/week	24 hour composite
Total Dissolved Solids, TDS, mg/L	See Part I.A.8				
Cyanide, total, µg/L	9.0	4.0	---	1/week	Grab
Fecal Coliform, #/100 ml	---	200	400	1/ 2 months	24 hour composite
Aluminum, total recoverable, µg/L	---	---	---	1/month	24 hour composite
Iron, total recoverable, µg/L	---	---	---	1/month	24 hour composite
Silver, total recoverable, µg/L	---	---	---	1/month	24 hour composite
Total Residual Chlorine, mg/L	---	---	---	1/month	Grab
Biochemical Oxygen Demand, mg/L	---	---	---	1/month	24 hour composite
Total Ammonia as N, mg/L	---	---	---	1/week	24 hour composite
Organic Priority Pollutant Scan ² , µg/L	---	---	---	see note 2	24 hour composite
Turbidity, NTU	---	---	---	1/week	24 hour composite
Temperature, °C	---	---	---	daily	Grab
Hardness, mg/L as CaCO ₃	---	---	---	1/week	24 hour composite

Cumulative Flow, gallons	See Part I.A.2.	---	---	Continuous Recording	
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Parameter	Daily Maximum	Monthly Average	Weekly Average	Sample Frequency	Sample Type ¹
Whole Effluent Toxicity, TUc	12.2	9.7	---	1/month	See Part H
<p>1. Effluent samples collected shall be representative of the effluent discharged without dilution from or contact with any outside sources. Results of analyses conducted under Part I.A.1. of this permit shall be submitted monthly on the discharge monitoring report.</p> <p>2. Volatile organics shall be monitored using EPA analytical method 624, semi-volatile organics shall be monitored using EPA analytical method 625. Testing shall be conducted once in May, July, and September.</p>					

2. The effluent pH from Outfall 001 shall be within the range of 6.0-10.5 standard units. Monitoring for pH shall occur once per week.
3. The maximum cumulative flow discharged from Outfall 001 shall not exceed 2.418 billion gallons from January 1 through December 31 every year.

The permittee shall report the cumulative flow discharged from Outfall 001 for that year to EPA, the Alaska Department of Environmental Conservation (ADEC), and the Alaska Department of Fish and Game (AK F&G) on the discharge monitoring report (DMR) each month. For example, if the permittee discharges 1 million gallons from Outfall 001 in January 1998 and 2 million gallons in February 1998, the February DMR shall state a cumulative flow discharged from Outfall 001 of 3 million gallons (1 million + 2 million = 3 million). In addition, the permittee shall report the total volume discharged each month.

4. There shall be no discharge of floating solids or oily wastes which produce a sheen on the surface of the receiving water.
5. Additional Monitoring and Reporting Requirements:
 - a. The permittee shall conduct analyses using analytical methods approved in 40 CFR §136.
 - b. At a minimum, analytical methods should achieve the following method detection limits:

Parameter	Method Detection Limit ¹
Aluminum, total recoverable	20 µg/L
Cadmium, total recoverable	.1 µg/L
Chromium, total recoverable	1 µg/L
Copper, total recoverable	1 µg/L

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Parameter	Method Detection Limit
Iron, total recoverable	30 µg/L
Cyanide, total	3 µg/L
Lead, total recoverable	.08 µg/L
Manganese, total recoverable	1 µg/L
Mercury, total	.2 µg/L
Nickel, total recoverable	5 µg/L
Selenium, total recoverable	2 µg/L
Silver, total recoverable	2 µg/L
Zinc, total recoverable	2 µg/L
BOD ₅	8 mg/L
Total residual chlorine	10 µg/L
Total ammonia as N	10 µg/L
1. The permittee may request less restrictive method detection limits for ambient monitoring. The request shall be submitted to EPA in writing, and is subject to EPA approval.	

- c. As part of the development of the Quality Assurance Project Plan (see Part I.I.1.b) the permittee shall specify the analytical test method that will be used to achieve each method detection limit.
- d. Effluent limits for cyanide, mercury, and selenium are not quantifiable using EPA approved analytical methods. EPA will use the following Interim Minimum Levels as the compliance evaluation level for these parameters.

Parameter	Interim Minimum Level
Cyanide	9 µg/L
Mercury	.5 µg/L
Selenium	6 µg/L

- e. For purposes of reporting on the Discharge Monitoring Report (DMR), if an analytical value is "less than the method detection level, the permittee shall report "less than [numerical method detection limit]" on the DMR. For example, if the laboratory reports "not detected" for a sample, and states that the MDL is "5 µg/L" then the permittee shall report "< 5 µg/L" on the DMR.

6. Cyanide Monitoring

The permittee shall analyze for total cyanide by the total cyanide after distillation method described in Part 4500-CN C. of Standard Methods for the Examination of Water and Wastewater (Standard Methods), 18th edition, followed by the colorimetric method described in Part 4500-CN E. of Standard Methods.

Cyanide (CN) sampling shall be conducted as follows: The permittee shall check for the presence of interfering substances prior to sample preservation. Any presence of these substances must be removed prior to sample analyses. The maximum holding time for cyanide samples is 24 hours when sulfide or chlorine is present. After removal of interfering substances, the holding time becomes 14 days. The samples may be tested with lead acetate paper before pH adjustments to determine if sulfide is present. If sulfide is present, it can be removed by addition of cadmium nitrate powder or lead carbonate until a negative spot test is obtained. The sample shall be filtered and NaOH shall be added to pH of 12.

7. Total Residual Chlorine Monitoring (TRC)

TRC shall be analyzed immediately after sample collection, using the DPD or amperometric method approved by EPA.

8. Total Dissolved Solids (TDS) Limitations and Monitoring Requirements

- a. There shall be no discharge from Outfall 001 until after Arctic Grayling have finished spawning. At the beginning of each discharge season the permittee must consult with the EPA, ADEC and the Alaska Department of Fish and Game regarding the end of Arctic Grayling spawning, and must receive written approval from EPA prior to starting to discharge after the Grayling spawning has finished.
- b. After the Arctic Grayling have finished spawning the permittee shall limit the TDS discharged from Outfall 001 so as to maintain in-stream TDS concentrations at or below the following concentrations at all times (See Section I.D.1 for the location of each station):
 - (1) Station 10: 1500 mg/L during the discharge season.
 - (2) Station 150: 1000 mg/L during the discharge season.
 - (3) Station 160: 500 mg/L from July 25th through the end of the discharge season.
- c. TDS must be monitored by direct laboratory testing once per week at Station 10, Station 150, Station 160, and in the effluent. All sampling shall be grab samples. Additionally, the permittee must record conductivity

measurements simultaneously with each sample at each location. The results of all such monitoring and measurements must be submitted with the monthly discharge monitoring report (DMR).

- d. At the end of each month the permittee must update the TDS/Conductivity correlation curves with the direct laboratory testing data for Station 10 and Station 160.
- e. Once per month carbonates, chlorides, sulfates, potassium, magnesium, calcium, and sodium must be analyzed at Station 10, Station 150, Station 160, and the effluent. The results of all testing must be submitted with the monthly discharge monitoring report (DMR).
- f. The permittee shall calculate and record the allowable flow volume from Outfall 001 at least twice each day, and shall submit all of the specified data and calculation results each month along with the discharge monitoring report (DMR). The permittee shall base each calculation on data collected within two hours of each shift change, and shall make each calculation within one hour of the collection of data. The calculations and data for Station 160 shall be made and recorded when the TDS limit for Station 160 is in effect. The allowable flow calculated from measurements taken at Station 10 and 160 must reflect the stream conditions at each station that are occurring at the same time frame at each of the stream stations. The following shall be collected and calculated:

EFFLUENT

- (1) Measure the conductivity of effluent
- (2) Calculate the TDS concentration of the effluent (C_e) based on the measured conductivity
- (3) Measure the effluent flow (Q_e)

STATION 10

- (1) Measure conductivity at Station 10
- (2) Calculate the total TDS concentration at station 10 ($C_{10(\text{total})}$) using the measured conductivity at Station 10
- (3) Measure the total flow at station 10 ($Q_{10(\text{total})}$)
- (4) Calculate the flow at station 10 (Q_{10}) minus the effluent flow at station 10 by using the equation:
$$Q_{10} = Q_{10(\text{total})} - Q_e$$

- (5) Calculate the TDS concentration at station 10 (C_{10}) minus the TDS contribution from the effluent using the following equation:

$$C_{10} = \frac{(C_{10(\text{total})} \cdot Q_{10(\text{total})}) - (C_e \cdot Q_e)}{(Q_{10(\text{total})} - Q_e)}$$

- (6) Calculate the allowable effluent flow ($Q_{\text{allowable}}$) expected to result in 1500 mg/L TDS at station 10 using the following equation:

$$Q_{\text{allowable}} = \frac{Q_{10} (1500 - C_{10})}{(C_e - 1500)}$$

STATION 160

- (1) Measure the conductivity at Station 160
- (2) Calculate the total TDS concentration at station 160 ($C_{160(\text{total})}$) using the measured conductivity of Station 160
- (3) Measure the total flow at station 160 ($Q_{160(\text{total})}$)
- (4) Calculate the flow at station 160 (Q_{160}) minus the effluent flow at station 160 by using the equation:
 $Q_{160} = Q_{160(\text{total})} - Q_e$
- (5) Calculate the TDS concentration at Station 160 (C_{160}) minus the TDS contribution from the effluent using the following equation:
 $C_{160} = \frac{(C_{160(\text{total})} \cdot Q_{160(\text{total})}) - (C_e \cdot Q_e)}{(Q_{160(\text{total})} - Q_e)}$
- (6) Calculate the allowable effluent flow ($Q_{\text{allowable}}$) expected to result in 500 mg/L TDS at station 160 using the following equation:
 $Q_{\text{allowable}} = \frac{Q_{160} (500 - C_{160})}{(C_e - 500)}$
- (7) The $Q_{\text{allowable}}$ calculated above must be compared to the $Q_{\text{allowable}}$ calculated for station 10. The permittee must discharge at the more restrictive $Q_{\text{allowable}}$.

Calculations of TDS concentrations based on conductivity shall be made using correlation curves that are based on TDS and conductivity measurements made pursuant to this permit.

B. Construction Camp Site Requirements.

The permittee is authorized to discharge treated wastewater in the Construction Camp through Outfall 002 into the tundra provided the following effluent limits and monitoring requirements are met:

1. Samples collected shall be representative of the effluent discharged without dilution from or contact with other sources. The permittee shall collect the samples after the last treatment unit prior to discharge.
2. The date of sampling shall be recorded.
- 3.

Parameter ¹	Monthly Average	Weekly Average	Sample Location	Sample Frequency	Sample Type ²
BOD ₅ , mg/L	30	45	influent and effluent	1/month	Composite
BOD ₅ , lb/day	N/A	N/A	influent and effluent	1/month	Composite
TSS, mg/L	30	45	influent and effluent	1/month	Composite
TSS, lb/day	N/A	N/A	influent and effluent	1/month	Composite
Fecal Coliform #/100 ml	200	400	effluent	1/month	Grab
Total Residual Chlorine, mg/l	N/A	N/A	effluent	1/month	Grab
Ammonia as N, mg/L	N/A	N/A	effluent	1/quarter	Grab
Flow, mgd	N/A	N/A	effluent	Continuous	Measurement

1. For additional monitoring requirements see Part I.A.5.b.
 2. Composite Samples of effluent shall be composed of a mixture of four discrete grab samples of effluent. The grab samples shall be collected and combined within a 24 hour period. Each grab sample shall be collected and stored in accordance with procedures prescribed in Standard Methods, 18th Edition.

4. The effluent pH from Outfall 002 shall be within the range of 6.5-9.0 standard units. The pH shall be monitored once per month.
5. Percent removal requirements for BOD₅ and TSS are as follows: for any month, the monthly average effluent load shall not exceed 15 percent of the monthly average influent load. Loading shall be calculated using the following formula: 8.34 x pollutant concentration (mg/l) x daily flow (mgd).
6. There shall be no discharge of floating solids or oily wastes which produce a sheen on the surface of the receiving water.

7. TRC shall be analyzed immediately after sample collection, using the DPD or amperometric method approved by EPA.
 8. Results of the sample analyses shall be submitted monthly with the discharge monitoring reports.
- C. Other Requirements.
1. Mine drainage shall be:
 - a. directed into the tailings impoundment; or
 - b. retained until it can be treated.
 2. The permittee shall ensure that precipitation falling on the Kivalina Shale pile shall be directed into the tailings impoundment.
 3. Mine seepage from the ore site shall be collected by the Dirty Water Ditch. The water in the Dirty Water Sump shall be:
 - a. pumped into the tailings impoundment; or
 - b. retained until it can be treated.
 4. When water in the Dirty Water Sump is pumped into the tailings impoundment, the pumped volume shall be recorded. The total volume pumped for each month shall be recorded and reported with the DMR for that month.
 5. The permittee shall ensure that water in the Dirty Water Sump does not leak into Red Dog Creek.
 6. Water in the Seepage Pond, at the base of the tailings impoundment dam, shall be pumped back into the tailings impoundment, pumped to the high density sludge treatment facility, or recycled through the mill.
 7. The permittee shall ensure that water in the Seepage Pond does not leak into Red Dog Creek.
 8. The permittee shall ensure that water in the tailings impoundment does not leak into Red Dog Creek. The permittee shall immediately pursue corrective actions if any water in the tailings impoundment leaks into Red Dog Creek.
 9. The permittee may use treated wastewater as dust suppressant on roads, pads and airport runways within the jurisdiction of this permit. Best management practices shall be used to insure that all waters sprayed do not drain into waters of the U.S. The permittee shall not use untreated wastewater as dust suppressant.
 10. The permittee shall not use treated wastewater as dust suppressant on the haul road to the port.

11. When Middle Fork Red Dog Creek is frozen upstream of the Outfall 001 discharge, all of the following requirements shall be met:
 - a. The permittee shall use a pressurized spray to freeze the discharge from the wastewater treatment plant (Outfall 001).
 - b. All effluent limitations and monitoring requirements in Part I.A. shall be met.
 - c. The permittee shall notify ADEC prior to discharge when Red Dog Creek is frozen.
 - d. On every other day, the permittee shall observe if there is any visible Outfall 001 discharge downstream. The permittee shall document both the apparent visible downstream extent of the unfrozen discharge and the visible downstream extent of frozen discharge (the distance from the mouth of Red Dog Creek shall be recorded). This information shall be submitted to ADEC.
 - e. ADEC and the AK F&G shall be notified immediately should the visible Outfall 001 discharge come within one mile of the mouth of Red Dog Creek.
 - f. If the visible Outfall 001 discharge reaches the mouth of Main Stem Red Dog Creek, the permittee shall take all necessary measures to promote additional freezing at the discharge site.
 - g. If the visible Outfall 001 discharge cannot be stopped from reaching Ikalukrok Creek at the mouth of Dudd Creek, all effluent discharges must cease.
12. The snow or ice piles created by the permittee's Outfall 001 discharge shall not reach Ikalukrok Creek.
13. The permittee shall ensure that operations at Red Dog Mine do not cause downstream water quality problems, such as the exclusion of fish or fish kills in Ikalukrok Creek or the exclusion of fish migrating up to the North Fork of Red Dog Creek.
14. The permit may be reopened if new information indicates that additional limits or restrictions are necessary to control pollutants discharged from this site.
15. The permittee shall not discharge any water not specifically authorized in this permit. Any unauthorized discharge shall be reported in accordance with conditions in the non-compliance reporting sections in Part II. of the permit.

D. Ambient Monitoring Requirements.

1. The permittee shall collect samples at the ambient monitoring stations¹ listed below (see part V, Ambient Monitoring Sampling Stations).

Station 2: Wulik River

Station 160: Ikalukrok Creek, approximately 3 miles below the confluence with Dudd Creek.

Station 150: Ikalukrok Creek, approximately 0.65 miles below the confluence with the Main Stem

Station 9: Ikalukrok Creek upstream of confluence with Red Dog Creek.

Station 10: Mouth of Red Dog Creek

Station 12: North Fork Red Dog Creek

Station 20: Middle Fork Red Dog Creek upstream of the confluence with North Fork Red Dog Creek

Station 140: Middle Fork Red Dog Creek upstream of the influence of outfall 001

Tributaries: Immediately upstream of where each tributary empties into the “clean” water ditch.

2. Ambient monitoring shall be conducted when there is flowing water (under ice or during open water conditions). For example, if there is flowing water at Station 2, but not at the other stations, the permittee shall sample at Station 2.
3. Ambient monitoring, outlined in this section, may be discontinued when the permittee has ceased discharging from Outfall 001 to Middle Fork Red Dog Creek for a period of 30 consecutive days. Ambient monitoring shall recommence when the permittee re-initiates a discharge from Outfall 001.
4. All ambient samples shall be grab samples.
5. The date of ambient sampling shall be recorded.

¹ Ambient monitoring stations 2, 9, 10, 12, and 140 are identified in Dames and Moore's Environmental Baseline Studies - Red Dog Project.

6. Ambient monitoring results shall be submitted to EPA, ADEC, and AK F&G with the monthly DMR. In addition, the permittee shall indicate if exploratory work was being conducted in the vicinity of the tributaries that flow into the clean water ditch.
7. The following ambient monitoring shall be conducted:

Parameter ¹	Station 2	Station 150 ²	Station 9 ²	Station 10 ²	Station 12 ²	Station 20	Station 140 ²	Tributary ²
Aluminum, total recoverable, µg/L	1/month	2/month	2/month	2/month	2/month	---	2/month	1/month
Cadmium, total recoverable, µg/L	1/month	2/month	2/month	2/month	2/month	---	2/month	1/month
Chromium, total recoverable, µg/L	1/month	2/month	2/month	2/month	2/month	---	2/month	1/month
Copper, total recoverable, µg/L	1/month	2/month	2/month	2/month	2/month	---	2/month	1/month
Cyanide ³ , total, µg/L	1/month	2/month	---	2/month	---	---	---	---
Cyanide ⁴ , WAD, µg/L	---	---	---	---	---	2/month	---	---
Iron, total recoverable, µg/L	1/month	2/month	2/month	2/month	2/month	---	2/month	1/month
Lead, total recoverable, µg/L	1/month	2/month	2/month	2/month	2/month	---	2/month	1/month
Manganese, total recoverable, µg/L	1/month	2/month	2/month	2/month	2/month	---	2/month	1/month
Nickel, total recoverable, µg/L	1/month	2/month	2/month	2/month	2/month	---	2/month	1/month
Selenium, total recoverable, µg/L	1/month	2/month	2/month	2/month	2/month	---	2/month	---
Silver, total recoverable, µg/L	1/month	2/month	2/month	2/month	2/month	---	2/month	---
Zinc, total recoverable, µg/L	1/month	2/month	2/month	2/month	2/month	---	2/month	1/month
Total ammonia as N, µg/L	1/month	2/month	2/month	2/month	2/month	---	2/month	---
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Parameter	Station 2	Station 150 ²	Station 9 ²	Station 10 ²	Station 12 ²	Station 20	Station 140 ²	Tributary ²
Conductivity, $\mu\text{mhos/cm}$	1/month	see I.A.8.	2/month	see I.A.8.	2/month	---	2/month	---
Hardness, mg/L CaCO_3	1/month	2/month	2/month	2/month	2/month	---	2/month	---
Temperature, °Celsius	1/month	2/month	2/month	2/month	2/month	---	2/month	---
Total Dissolved Solids, mg/L	1/month	see I.A.8.	2/month	see I.A.8.	2/month	---	2/month	---
pH, standard Units	1/month	2/month	2/month	2/month	2/month	---	2/month	---
Dissolved Oxygen ⁵ , mg/L	3/month	3/month	---	3/month	---	---	---	---
Hydrogen Sulfide ⁶ , mg/L	3/month	3/month	---	3/month	---	---	---	---
Turbidity, NTU	---	---	---	---	3/month	---	3/month	---
Whole Effluent Toxicity ⁷ , TU _c	---	---	1/month	---	1/month	---	---	---

1. For additional monitoring requirements for aluminum, cadmium, chromium, copper, cyanide, iron, lead, manganese, mercury, nickel, selenium, silver, and zinc see section I.A.5.b.
2. The permittee shall spread out the sample collection dates so that the samples collected are representative of the calendar month. To the extent practicable, ambient monitoring shall coincide with effluent monitoring. If weather, safety, shipping, and other environmental constraints prevent the permittee from collecting representative samples, the permittee shall document the condition which prevented the representative samples from being collected on the discharge monitoring reports.
3. For additional monitoring requirements for cyanide, see section I.A.6.
4. The permittee shall notify the ADEC and the ADF&G immediately by telephone should WAD cyanide concentrations exceed the detection limit of .01 ppm.
5. Dissolved Oxygen shall be monitored from October 1 through May 31 when the ambient temperature is greater than 25°F.
6. Hydrogen sulfide shall be sampled under ice from January 1 through March 31.
7. See Part H. for additional testing requirements.

8. Streamflow shall be determined daily at Stations 2, 160, 8, 9, 10, 12, and 140. Streamflow shall be determined using standard methods recognized by the U.S. Geological Survey: gaging station data, discharge measurement, estimation using all available information. With the exception of the sites where streamflow estimates are made by adding or subtracting measured or gaged tributary flows, estimates should not be the sole means of determining flow at a site at all times; some discharge measurements

shall be made for verification. The definition of "discharge measurement" is included in the definition section of this permit.

Streamflow data and the methods used to determine streamflow shall be submitted to EPA and ADEC monthly with the DMR.

E. Precipitation and Evaporation Monitoring Requirements.

1. The permittee shall establish and maintain monitoring stations at the mine site to determine the net annual precipitation rate.
2. The precipitation and evaporation monitoring program shall begin on the effective date of this permit and end on the expiration date.
3. Precipitation (rain and snow) data shall be recorded daily. The permittee does not need to check the rain gauge on the days with no precipitation. However, the permittee shall record that the precipitation was zero on that day.
4. Evaporation data shall be recorded daily from June 1 to August 31 every year. Evaporation data shall be gathered earlier if the evaporation pan is not frozen. The permittee shall operate the evaporation pan properly to assure that the daily evaporation rate can be determined.
5. Spring snow pack readings shall be taken before spring melt each year. For snow pack readings, the measurement shall be submitted on with DMR for the next month.
6. Records of precipitation and evaporation monitoring shall include:
 - a. The date and time of readings;
 - b. The name(s) of the individual(s) who performed the readings; and
 - c. Signature(s) of the individual(s) who performed the readings.
7. The precipitation and evaporation monitoring records shall be kept on site and made available to EPA and ADEC upon request.
8. The total precipitation and total evaporation rates shall be reported each month with the DMR.

F. Bioassessment Program Requirements.

1. During the period beginning on the effective date of the permit and lasting through the expiration date, the permittee shall perform the following bioassessment program every year to monitor and evaluate changes that may occur as a result of activities associated with the wastewater discharge from the mine. The permittee may elect to incorporate conditions of part I.F.1 into the plan prepared under part I.F.2 in order to avoid

duplicative requirements.

- a. The permittee shall monitor and record the fisheries use (especially Dolly Varden and arctic grayling) of North Fork Red Dog Creek, Red Dog Creek, Anxiety Ridge, and Ikalukrok Creek during the ice free season using appropriate sample techniques, e.g., minnow traps, visual surveys. Number of species, estimated age, size, type of species, any external abnormality, and fish condition shall be recorded.
- b. The permittee shall analyze and record the concentrations of zinc, lead, copper, aluminum, cadmium, and selenium in muscle, gill, liver, and kidney from adult Dolly Varden in the Wulik River. The permittee shall collect this information twice per year, once during the fall prior to freeze-up (minimum sample size of six fish) and once in the spring after breakup (minimum sample size of six fish).
- c. The permittee shall use aerial surveys to estimate the number of adult Dolly Varden overwintering in the Wulik River from mouth to a point approximately five miles upstream of the confluence of Ikalukrok Creek and Wulik River.
- d. Benthic invertebrates shall be monitored annually at the following locations:
 - (1) North Fork Red Dog Creek - at least 10 meters above the confluence
 - (2) Main Stem Red Dog Creek - at least 100 meters upstream of the confluence with North Fork
 - (3) Main Stem Red Dog Creek - at least 10 meters below the confluence of main stem and North Fork
 - (4) Upper Ikalukrok Creek - at least 10 meters above the confluence of the Ikalukrok and Main Stem Red Dog Creek.
 - (5) Ikalukrok Creek - at least 10 meters below the confluence of the Ikalukrok and Main Stem Red Dog Creek.

Five samples shall be taken (and kept separate) per site. Samples shall be collected using a drift net equipped with a 300-micron mesh collection net. Collected samples shall be placed in labeled plastic containers and preserved with 70 percent ethyl alcohol. Samples shall be enumerated and identified to the lowest practical taxonomic level and genus, where possible (except for oligochaetes to order). Data shall be reported for density per unit area; the Shannon Diversity index, and taxa richness calculated for each sample.

2. Bioassessment conditions required by the Alaska Department of Environmental Conservation Certificate of Reasonable Assurance: Within 30 days of the effective date of the permit, the permittee shall submit for review and approval to ADEC and ADF&G, a monitoring and analysis plan designed to detect possible aquatic community changes related to the mine effluent as follows:

Sample Site	Factors Measured
Middle Fork Red Dog Creek	Periphyton (as chlorophyll-a concentrations) Aquatic invertebrates: taxonomic richness and abundance
North Fork Red Dog Creek;	Periphyton (as chlorophyll-a concentrations) Aquatic invertebrates: taxonomic richness and abundance Fish presence and use
Main Stem Red Dog Creek	Periphyton (as chlorophyll-a concentrations) Aquatic invertebrates: taxonomic richness and abundance Fish presence and use
Ikalukrok Creek, stations 9, 7, and upstream and downstream of Dudd Creek	Periphyton (as chlorophyll-a concentrations) Aquatic invertebrates: taxonomic richness and abundance Fish presence and use
Ikalukrok Creek	Fall aerial survey of returning chum salmon
Wulik River	Metals concentrations in Dolly Varden gill, liver, muscle, and kidney. Fall aerial survey of overwintering Dolly Varden
Anxiety Ridge	Fish presence and use
Evaingiknuk Creek	Fish presence and use
Buddy Creek	Fish presence and use

Upon approval, the permittee shall implement the plan.

3. The permittee shall submit annual reports which summarize the results of the bioassessment program to EPA and ADEC by May 15 of the next year.

G. Precipitate Study.

Within 30 days of the effective date of the permit, the permittee shall submit for approval to ADEC and to ADF&G, a monitoring and analysis plan designed to answer questions on the precipitate on the streambed of Middle Fork Red Dog Creek. The plan should address the extent the precipitate extends downstream, the volume of precipitate, and its chemical composition. The plan should also address the timing and conditions under which the precipitate becomes mobilized, and when it becomes mobilized its effects on downstream water quality. Upon approval, the permittee shall implement the plan.

H. Whole Effluent Toxicity Testing

Toxicity tests shall be performed once per month on samples from the effluent, and on ambient water from Stations 9 and 12.

1. Test Species and Methods:

- a. The permittee shall conduct short-term tests with the water flea, *Ceriodaphnia dubia* (survival and reproduction test), and the fathead minnow, *Pimephales promelas* (larval survival and growth test).
- b. The presence of chronic toxicity shall be estimated as specified in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, Third Edition, EPA/600-4-91-002, July 1994.

2. Quality Assurance

- a. Toxicity tests shall include the following dilutions of effluent: 0%, 1.0%, 6%, 11%, 48%, 73%, and 100%.
- b. If organisms are not cultured in-house, concurrent testing with reference toxicants shall be conducted. Where organisms are cultured in-house, monthly reference toxicant testing is sufficient.
- c. If either the reference toxicant tests or the effluent tests do not meet all test acceptability criteria (TAC) as specified in the test methods manual, then the permittee must re-sample and re-test as soon as possible.
- d. Reference toxicant test shall be conducted using the same test conditions as the effluent toxicity test (i.e., same test duration, etc.).
- e. Control and dilution water shall be laboratory water. In no case shall water that has failed the TAC be used for dilution or control water.
- f. Effluent Chemical Testing: Chemical specific testing for the parameters listed in Part I.A.1 of this permit shall be performed on a split sample collected for WET testing. If the timing of sample collection for WET coincides with the sample collection required in Part I.A.1. of this permit, then the chemical analysis of the split sample will fulfill the requirements of Part 1.A.1.

Ambient Chemical Testing: Chemical specific testing for the parameters listed in Part I.D.7 (for stations 9 and 12) of this permit shall be performed on a split sample collected for WET testing. If the timing of sample collection for WET

coincides with the sample collection required in Part I.D.7. of this permit, then the chemical analysis of the split sample will fulfill the requirements of Part 1.D.7.

3. Preparation of Generic Workplan

The permittee shall prepare and submit to EPA a copy of the permittee's toxicity reduction evaluation (TRE) workplan within 30 days of the effective date of this permit. This plan shall describe the steps the permittee intends to follow in the event that the effluent exceeds the chronic toxicity limits, and should include at a minimum:

- a. A description of the investigation and evaluation techniques that would be used to identify potential causes/sources of toxicity, effluent variability, treatment system efficiency;
- b. A description of the facility's method of maximizing in-house treatment efficiency, good housekeeping practices, and list of all chemicals used in operation of the facility;
- c. Identify who will conduct a toxicity identification evaluation (TIE) if one is necessary (i.e., is there in-house expertise, or will the study be sent out to contractors?).

4. Reporting:

- a. Results of toxicity tests shall be reported on the Discharge Monitoring Report (DMR) for the month in which the tests are conducted. Results shall be reported in chronic toxic units (TU_c), where $TU_c = 100/IC25$.
- b. The full report shall be submitted by the end of the month in which the DMR is submitted.
- c. The full report shall consist of : (1) the toxicity test results; (2) the dates of sample collection and initiation of each toxicity test; (3) the flow rate at the time of sample collection; and (5) the results of the effluent analysis for chemical parameters required for the outfall as defined in Part I.A.1. of the permit.
- d. Test results for chronic tests shall be reported according to the chronic manual chapter on Report Preparation.

5. Chronic Toxicity Limits

- a. If chronic toxicity in the effluent exceeds:

Maximum Daily Limit = 12.2 TU_c
Average Monthly Limit = 9.7 TU_c

Then, in accordance with the permittee's TRE workplan and, at a minimum, EPA manual EPA/600/2-88/00, the permittee shall initiate a TRE within fifteen (15) days of receipt of sample results of the exceedance.

- b. The permittee shall notify EPA and ADEC in writing within fifteen (15) days of receipt of the effluent WET results that exceed the chronic toxicity limits. Notification shall include the following:
 - (1) The finding of the TRE or other investigation to identify the cause(s) of toxicity;
 - (2) Actions taken or that will be taken to mitigate the impact of the discharge, to correct the noncompliance and to prevent the recurrence of toxicity;
 - (3) where corrective actions including a TRE have not been completed, an expeditious schedule under which corrective actions will be implemented.

6. Toxicity Identification Evaluation (TIE)

If chronic toxicity is detected in the effluent in any two of the toxicity tests conducted during the discharge season, then the permittee shall, in accordance with EPA acute and chronic manuals EPA/600/6-91/005F (Phase I), EPA/600/R-92/080 (Phase II), and EPA 600/R-92/081 (Phase III), initiate a TIE within fifteen (15) days.

7. Reopener:

This permit may be modified in accordance with the requirements set forth at 40 CFR Parts 122 and 124, to include appropriate conditions or limits to address demonstrated effluent toxicity based on newly available information, or to implement any EPA-approved new State water quality standards applicable to effluent toxicity.

I. Quality Assurance Requirements.

1. The permittee shall develop Quality Assurance Project Plans (QAPPs), which shall be used to assist in planning for the collection and analysis of environmental samples in support of the permit, and in explaining data anomalies when they occur.
 - a. Throughout all sample collection and analysis activities, the permittee shall use the EPA-approved quality assurance, quality control, and chain-of-custody procedures described in *Requirements for Quality Project Plans*, EPA QA/R-5, and *Guidance on Quality Assurance Project Plans*, EPA QA/G-5. The permittee's QAPPs shall be prepared in the format which is specified in these documents. The following reference may be helpful in preparing the QAPPs for this permit:

You and Quality Assurance in Region 10, EPA, Regional 10, Quality and Data

Management Program, March 1988.

- b. The QAPPs shall include details on the number of samples, type of sample containers, preservation of samples, holding times, method detection levels for each target compound, analytical methods, type and number of quality assurance field samples, precision and accuracy requirements, sample preparation requirements, sample shipping methods, and laboratory data delivery requirements.

The QAPP shall identify the test method that will be used, for each parameter, to achieve the MDLs specified in Part I.A.5.b.

- c. The QAPPs shall specify the collection and analysis of quality assurance samples for each sampling event, such as (1) matrix spiked (MS) and duplicate samples on ten percent of samples; and (2) analysis of Field Transfer Blanks (sample blanks) to identify contamination of samples.
 - d. Duplicate samples are not required for the following parameters: temperature, turbidity, flow.
 - e. Matrix spiked samples are not required for the following tests listed in Table 1 of 40 CFR Part 136: acidity, alkalinity, bacteriological tests, chlorine, dissolved oxygen, hardness, pH, residues (solids), temperature, turbidity.
 - f. The permittee shall amend the QAPPs, whenever there is a modification in the sample collection, the sample analysis, or whenever conditions or requirements of the QAPPs change.
 - g. Name(s), address(es) and telephone number(s) of the laboratories, used by or proposed to be used by the permittee, shall be specified in the QAPPs.
 - h. Copies of QAPPs shall be kept on site and shall be made available to EPA and ADEC upon request.
2. The permittee shall submit its QAPPs to EPA and ADEC for review and approval within 120 days of the effective date of this permit. The QAPPs shall include calculations to determine allowable effluent volumes and protocols for lab analyses.
 3. Upon QAPPs' approval from EPA and ADEC, the permittee shall implement the provisions of the QAPPs required under this Part as a condition of this permit. Non-compliance with the conditions and requirements of QAPPs shall constitute non-compliance with this permit.
 4. The permittee shall require the laboratory director to sign the following statement:

I certify that the measurement results in support of this permit, NPDES permit, No. AK-003865-2, are in compliance with requirements under 40 CFR Part 136 and other analytical requirements specified in this permit.

Signature: _____ Date: _____

The permittee may require the above statement in the service contract.

5. Within 30 days of sample analysis, the permittee shall ensure that all data used in support of this permit are validated. Data validation results shall be kept on site and shall address the elements described in the following reference:

USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA-540/R-94-013, February 1994.

Parameters not addressed in the above document should also be validated using the same guidelines. The above documents may be obtained from the National Technical Information Service (NTIS) at (703) 487-4650. Data validation records shall be kept on site and made available to EPA and ADEC upon request.

6. The permittee shall ensure all documents are archived either on site or at the contract laboratories. The following types of documents for sample collection, shipment, and analyses shall be archived:

All Sample Tracking Reports (i.e., the signed chain-of-custody forms and the signed packing lists)

Sample Log-In Forms

All of the Sample tags and Air or Freight Bills

Custody seals

Any telephone logs referring to the samples

Case Narrative signed by the laboratory manager or his/her designee certifying the accuracy and validity of all data reported and describing any changes or problems encountered during the analyses along with documenting their resolution(s)

Tabulated sample results, with units, percent solids, and sample weights or volumes clearly specified

Blank data with tabulated results. Specify which samples go with which blank

Surrogate spike analysis result summaries with calculated percent recovery values

Matrix Spike/Duplicate (MS/D) result summaries with calculated percent recovery and relative percent difference values

Sample data from laboratories including

- All tabulated results

- All data system printouts

- Manual worksheets (log books, logs of any preparation of samples)

- Extraction, dilution and cleanup logs and percent moisture for all samples, blanks

- Continuing Calibration Standard forms that include the laboratory name, laboratory code, Job Number, SDG number, calibration sources, concentration units, analytes, true values, found values and the calculated percent Recovery (%R)

- The Initial Calibration curve(s) labeled with date and time of preparation

- Bench sheets for sample preparation and analysis of samples and standards indicating dates, times, methods of sample digestion/preparation and analysis, and volumes/amounts/concentrations of standard and reagents added, instrument run time/date, dilutions made, etc.

- Preparation/weight logs for percent moisture determinations. All bench sheets and logs will be labeled with the date and shall bear the analyst's signature.

Raw Quality Control data from laboratories including

- Blank data in chronological order:
 - i) Tabulated results
 - ii) All blank data system printouts

- MS/D data in chronological order:
 - i) Tabulated results
 - ii) All MS/D data system printouts

The above documentation shall be kept for at least three years from the date of the measurement or report. These documents shall be made available to EPA and ADEC upon request.

7. The permittee shall archive sample data and project records for three years from the date of sample analysis.
8. The permittee shall use laboratories or contract laboratories that participate in quality assurance/quality control (QA/QC) programs which are equivalent to that required by EPA for EPA's contract laboratories (EPA Contract Laboratory Program).
9. The permittee shall ensure that all laboratories' QA plans address all elements specified in the following EPA document:

Guidance on Preparation of Laboratory Quality Assurance Plans, U.S. EPA Region 10, EPA 910/9-92-032, February 14, 1991.

Permittee's copies of the laboratories' QA plan(s) shall be made available upon request and shall be available for inspection at the permittee's offices.

10. The permittee shall use laboratories that have facilities, equipment, staff, quality assurance programs, and quality control procedures to perform sample measurements in support of this permit. The permittee may conduct an on-site Technical Systems Audit of the laboratories to make this determination.
11. For the samples analyzed by the permittee's in-house laboratory, the permittee shall comply with conditions specified in this Part of the permit. For the samples analyzed by the contract laboratories, the permittee shall ensure that the conditions of the permit are followed. This could be achieved by the permittee developing requirements in a "contract for services" document.

J. Site Management Pollution Prevention Plan Requirements.

1. The permittee shall develop a site management pollution prevention plan (the Plan) to prevent and minimize the potential for the release of pollutants from their property to waters of the United States. The permittee must implement the provisions of the Plan as conditions of this permit within 180 days of the effective date of this permit. The Plan shall be retained on-site and be made available to EPA and ADEC upon request.
2. The permittee shall develop the Plan within 90 days of the effective date of this permit and submit it to EPA and ADEC within 120 days of the effective date of this permit. The Plan shall be signed in accordance with Part IV.H of the permit.
3. The Plan shall be consistent with the above objectives and the general guidance contained in the following publications:

Best Management Practices Guidance Document, EPA, 1981.

Storm Water Management Plans for Industrial Activities, EPA, 1992.

Storm Water Management Plans for Construction Activities, EPA, 1992.

The permittee shall establish specific best management practices to meet the objectives and shall address each component or system capable of generating or causing a release of pollutants. Moreover, the Plan shall include, at a minimum, the following items:

- a. **Pollution Prevention Team.** The Plan shall identify a specific individual or individuals within the facility organization as members of the Pollution Prevention Team. The pollution prevention team shall be responsible for developing the Plan and assisting the facility or plant manager in its implementation, maintenance, and revision. The Plan shall clearly identify who is responsible for the implementation of each condition of the Plan. The activities and responsibilities of the team shall address all aspects of the facility's discharges. In lieu of naming specific individuals as members of the pollution prevention team, the permittee may name the corporate position(s) responsible for developing and implementing the Plan.
- b. **Description of Sources.**
 - (i) A site map indicating an outline of the portions of the drainage area of each point source that are within the facility boundaries, each existing structural control measure to reduce pollutants in storm water runoff, surface water bodies, locations where significant materials are exposed to precipitation, and the locations (if applicable) of the following activities and sites where such activities or sites are exposed to precipitation:

buildings
camps
airport

any disturbed area
construction areas

- (ii) A site map indicating the flow direction of mine drainage.
 - (iii) For each area that generates storm water discharges associated with industrial activity with a reasonable potential for containing amounts of pollutants, a prediction of the direction of flow, and an identification of the types of pollutants which are likely to be present in storm water discharges associated with industrial activity. Factors to consider include the toxicity of chemical; quantity of chemicals used, produced or discharged; the likelihood of contact with storm water; and history of significant leaks or spills of toxic or hazardous pollutants. Flows with a potential for causing erosion shall be identified.
 - (iv) For each area that generates storm water discharges associated with construction or exploration activities, descriptions of the following components shall be included in the Plan:
 - the nature of the activity;
 - estimates of the total area of the site and the area of the site that is expected to be disturbed by mining activities or related land-disturbing activities;
 - existing data describing the soil or the existing data describing the quality of any discharge from the site;
 - a site map indicating drainage patterns and approximate slopes anticipated after land-disturbing activities, areas of soil disturbance, the location of major control structures identified in the Plan, areas where stabilization practices are expected to occur; and
 - the name of the receiving water(s) and the ultimate receiving water(s).
- c. Inventory of Exposed Materials. An inventory of the types of materials handled at the site that potentially may be exposed to precipitation and the materials that have the potential for failure (tank overflow or leakage). The inventory shall include a narrative description of significant materials that have been handled, treated, stored or disposed in a manner to allow exposure to storm water; method, location, and size of on-site storage or disposal; materials management

practices employed to minimize contact of materials with storm water runoff; the location and a description of existing structural and non-structural control measures to reduce pollutants in storm water runoff; and a description of any treatment the storm water receives.

- d. Spills and Leaks. A list of significant spills that may occur at the site and at areas that are exposed to precipitation or that otherwise drain to a storm water conveyance at the facility. Such list shall be updated as appropriate during the term of the permit.
- e. Risk Identification and Summary of Potential Pollutant Sources. The Plan shall identify all activities, sites, and significant materials which may potentially be pollutant sources. The Plan shall also include a narrative description of the potential pollutant sources from the following activities: loading and unloading operations; outdoor storage activities; outdoor manufacturing or processing activities; dust or particulate generating processes; and on-site waste disposal practices. The description shall specifically list any potential source of pollutants at the site, and for each potential source, any pollutant or pollutant parameter (e.g. biochemical oxygen demand, etc.) of concern shall be identified. The Plan shall provide a description of potential sources which may reasonably be expected to add amounts of pollutants to storm water discharges.
- f. Measures and Controls. The facility shall develop a description of pollution prevention controls appropriate for the facility and implement such controls. The appropriateness and priorities of controls in the Plan shall reflect identified potential sources of pollutants at the facility. The description of management controls shall address the following minimum components, including a schedule for implementing such controls:
 - (i) Good Housekeeping - Good housekeeping requires the maintenance of areas which may contribute pollutants.
 - (ii) Preventive Maintenance - A preventive maintenance program shall involve timely inspection and maintenance of storm water management devices (e.g., cleaning oil/water separators, catch basins, pumps, channels, ditch) as well as inspecting and testing facility equipment and systems to uncover conditions that could cause breakdowns or failures resulting in discharges of pollutants to surface waters, and ensuring appropriate maintenance of such equipment and systems.
 - (iii) Spill Prevention and Response Procedures - Areas where spills could result in the discharge of pollutants shall be identified clearly in the Plan. Where appropriate, specifying material handling procedures, storage requirements, and use of equipment such as diversion valves in the Plan should be considered. Procedures for cleaning up spills shall be

identified in the Plan and made available to the appropriate personnel. The necessary equipment to implement a clean up should be available to personnel.

- (iv) Measures and Controls for storm water associated with construction or exploration activities outside of the area which drains into the tailings impoundment - The Plan shall describe the relationship between the implementation and maintenance of controls and measures and the various stages or phases of earth disturbance (for example, clearing and grubbing necessary for perimeter controls, initiation of perimeter controls, remaining clearing and grubbing, road grading, remaining site grading, storm drain installation, final grading, stabilization, removal of control measures). The description of controls shall address the following minimum components:
- erosion and sediment controls;
 - stabilization practices;
 - structural practices;
 - storm water management (description of measure to control pollutants in storm water discharges);
 - other controls to eliminate contact of storm water with materials on site; and
 - measures to reduce pollutant loadings.
- g. Employee Training. The Plan shall identify periodic dates for employee training programs. The training programs shall inform personnel responsible for implementing activities identified in the Plan or otherwise responsible for all levels of responsibility of the components and goals of the Plan. Training should address topics such as spill response, good housekeeping and material management practices.
- h. Sediment and Erosion Control. The Plan shall identify areas which, due to topography, activities, or other factors, have a high potential for soil erosion, and identify structural, vegetative, and/or stabilization measures to be used to limit erosion.
- i. Specific Best Management Practices. The Plan shall establish specific best management practices or other measures which ensure that the following specific requirements are met:

- (i) Ensure that berms, including any pond walls, ditches, dikes, dams and similar water retention structures shall be constructed in a manner that they reject the passage of unwanted water.
 - (ii) Ensure that measures are taken to assure that pollutant materials removed from the process water and wastewater streams will be retained and not discharged to waters of the United States.
 - (iii) Ensure that all water control devices, including but not limited to structures and berms, and all solids retention structures such as berms, dikes, and pond structures and dams, shall be maintained to continue their effectiveness and to protect from failure.
 - (iv) Ensure proper management of solid and hazardous waste in accordance with regulations promulgated under the Resource Conservation and Recovery Act (RCRA) and the Alaska Solid Waste Management Regulations (18 AAC 60). Management practices required under RCRA regulations shall be referenced in the Plan.
 - (v) Reflect requirements for Spill Prevention, Control, and Countermeasure (SPCC) plans under Section 311 of the Clean Water Act and 40 CFR Part 112. The Plan may incorporate any part of such plans by reference.
4. a. Qualified facility personnel shall conduct routine inspections on a monthly basis on areas susceptible to leaks (including leaks from the tailings impoundment), spills and other identified problem areas.
- b. For an inspection, the following conditions shall be met:
- (i) A visual inspection of equipment needed to implement the Plan, such as spill response equipment, shall be made.
 - (ii) Areas impacted by storm water discharge shall be visually inspected for evidence of, or the potential for, pollutants entering the drainage system. Measures to reduce pollutant loadings shall be evaluated to determine whether they are adequate and properly implemented in accordance with the terms of the permit or whether additional control measures are needed. Structural storm water management measures, sediment and erosion control measures, and other structural pollution prevention measures identified in the Plan shall be observed to ensure that they are operating correctly.
- c. The permittee shall inspect disturbed areas of the construction or exploration site exposed to precipitation outside of the area which drains into the tailings impoundment as follows:

- (i) weekly during the months of May, June, September and October; and
 - (ii) within 24 hours of the end of a 24-hour rain event that is 0.5 inches or greater.
5. Twice per year, the permittee shall 1) identify areas impacted by storm water discharges associated with construction or exploration activities, and 2) evaluate whether measures identified in the Plan to reduce pollutant loadings generated by storm water discharges associated with construction or exploration activities are adequate and properly implemented.
6. Based on the results of the inspections, the permittee shall initiate corrective measures within 30 days of such inspection or as soon as practicable under extenuating circumstances. The permittee shall notify EPA and ADEC of the extenuating circumstances within 15 days of the inspection. Any corrective measures shall be documented and be included in the Plan.
7. The permittee shall prepare an annual report summarizing 1) the scope of the inspections, 2) personnel making the inspections, 3) the dates of the inspections, 4) corrective actions taken as a result of the inspection, 5) description of the quality and quantity of storm water discharged, 6) construction activities during the year, 7) employee training conducted during the year, and 8) Plan modifications made during the year.

In addition, the report shall identify any incidents of non-compliance. Where a report does not identify any incidents of non-compliance, the report shall contain a certification that the facility is in compliance with the Plan and this permit.

This report shall be signed in accordance with Part IV.H. of this permit and shall be submitted to EPA and ADEC by February 10 of the next year.

8. The permittee shall amend the Plan whenever there is a change in design, construction, operation, or maintenance, which has an effect on the potential for the discharge of pollutants to the waters of the United States or if the Plan proves to be ineffective in eliminating or minimizing pollutants from sources impacting water quality, or in otherwise achieving the general objectives of controlling pollutants. Amendments to the Plan are subject to review by EPA and ADEC, and they shall be kept on site and made available to EPA and ADEC upon request.

The Plan shall be updated to include new construction or exploration activities. The update must be completed seven (7) days prior to commencement date of new construction or exploration activities.

K. Definitions.

1. "Average monthly discharge limitation" means the highest allowable average of "daily discharges" over a calendar month, calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month.
2. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.
3. A "24 hour composite" sample shall mean a flow-proportioned mixture of not less than 8 discrete aliquots in 24 hours. Each aliquot shall be a grab sample of not less than 100 ml and shall be collected and stored in accordance with procedures prescribed in the most recent edition of *Standard Methods for the Examination of Water and Wastewater*.
4. "Chronic toxicity" measures a sublethal effect (e.g., reduced growth, reduced reproduction) to experimental test organisms exposed to an effluent or ambient water compared to that of the control organisms.
5. "Daily discharge" means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the "daily discharge" is calculated as the average measurement of the pollutant over the day.
6. "Discharge measurement" means measuring width, depths, and velocities using a tape or tagline, sounding equipment, and a current meter.
7. "Director" means the Regional Administrator, or an authorized representative, of EPA, Region 10.
8. "Dirty Water Ditch" is the collection channel for the ore body seeps.
9. "Dirty Water Sump" is the pit into which the Dirty Water Ditch flows.
10. "Estimating" streamflow means 1) using gaging station data or discharge measurements upstream or downstream of the sampling site, 2) interpolating between discharge measurements made at the sampling site before and after the sampling date, 3) estimating the width, the depth, and roughly measuring the velocity by timing a float, or 4) correlating flows at gaged or measured sites by hydrographic or measurement comparisons.
11. "Fecal coliform" means those bacteria that can ferment lactose at $44.5^{\circ} \pm 0.2^{\circ}\text{C}$ to produce gas in a multiple tube procedure. It also means all bacteria that produce blue

colonies within 24 hours of incubation at $44.5^{\circ} \pm 0.2^{\circ}\text{C}$ in an M-FC broth medium. For fecal coliform analysis, the average shall be computed as the logarithmic mean.

12. "Gaging station data" means stage record or gage-height readings and a stage discharge relation or rating from which discharge can be computed.
13. A "Grab" sample is a single sample or measurement taken at a specific time or over a short period of time as is feasible.
14. "Inhibition concentration", IC, is a point estimate of the toxicant concentration that causes a given percent reduction (p) in a non-quantal biological measurement (e.g., Interpolation Method).
15. "Laboratories" mean all laboratories used by the permittee to analyze samples for this permit. Laboratories include the permittee's consultants (if applicable), the permittee's in-house laboratories and other laboratories, and the permittee's contracted laboratories.
16. "Maximum daily discharge limitation" means the highest allowable "daily discharge."
17. "Mine" means an active mining area, including all land and property placed under, or above the surface of such land, used or resulting from the work of extracting metal ore or minerals from their natural deposits by any means or methods, including secondary recovery of metal ore from refuse or other storage piles, wastes, or rock dumps and mill tailings derived from the mining, cleaning, or concentration of metal ores.
18. "Mine drainage" means any water drained, pumped or siphoned from a "mine", including seeps from the ore.
19. No observed effect concentration (NOEC) is the highest concentration of toxicant to which organisms are exposed in a chronic test, that causes no observable adverse effect on the test organisms (e.g., the highest concentration of toxicant to which the values for the observed responses are not statistically significantly different from the controls).
20. "Precipitation" means rainfall or snowmelt.
21. "Reroute" of Red Dog Creek is defined as divert, channel, or direct the Red Dog Creek to flow differently from its natural course or from its course in 1993. Rerouting of Red Dog Creek will allow the permittee to mine at locations that are currently unreachable because of the interference of water.
22. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be

expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

23. "Storm water" means storm water runoff, snow melt runoff, and surface runoff and drainage. Runoff from waste rock piles, ore and sub-ore piles, spent ore piles, overburden, unreclaimed disturbed areas and other active mining areas constitutes "mine drainage", not storm water.
24. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

II. MONITORING, RECORDING AND REPORTING REQUIREMENTS

- A. **Representative Sampling.** Samples taken in compliance with the monitoring requirements established under Part I shall be collected from the effluent stream prior to discharge into the receiving waters. Samples and measurements shall be representative of the volume and nature of the monitored discharge.
- B. **Monitoring Procedures.** Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit. Test procedures selected must have detection limits such that compliance with the permit limitations can be demonstrated.
- C. **Reporting of Monitoring Results.** Monitoring results shall be summarized each month on the Discharge Monitoring Report (DMR) form (EPA No. 3320-1). The reports shall be submitted monthly and are to be postmarked by the 15th day of the following month. All values below the method detection level (MDL) shall be reported as [less than the MDL]. For example, if the cyanide result is less than the MDL of 3 µg/l, the permittee shall report "< 3 µg/l" on the DMR. All values at or above the MDL shall be reported as the measured values. The permittee shall report all MDLs for the pollutants analyzed. Monitoring data should be provided to ADEC and AK F&G by means of compatible computer formats at the frequency described in this NPDES permit. Legible copies of the DMRs, and all other reports, shall be signed and certified in accordance with the requirements of Part IV.H., Signatory Requirements, and submitted to the Director, Water Division and the State agency at the following addresses:

original to: United States Environmental Protection Agency

Region 10
1200 Sixth Avenue, WD-135
Seattle, Washington 98101

copy to: Alaska Department of Environmental Conservation
Fairbanks Office
610 University Avenue
Fairbanks, Alaska 99709-3643

Alaska Department of Fish and Game
Habitat and Restoration Division
1300 College Road
Fairbanks, Alaska 99701-1599

- D. Additional Monitoring by the Permittee. If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR 136 or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR. Such increased frequency shall also be indicated.
- E. Records Contents. Records of monitoring information shall include:
1. The date, exact place, and time of sampling or measurements;
 2. The individual(s) who performed the sampling or measurements;
 3. The date(s) analyses were performed;
 4. The individual(s) who performed the analyses;
 5. The analytical techniques or methods used; and
 6. The results of such analyses.
- F. Retention of Records. The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three years from the date of the sample, measurement, report or application. This period may be extended by request of the Director or ADEC at any time. Data collected on-site, copies of Discharge Monitoring Reports, and a copy of this NPDES permit must be maintained on-site during the duration of activity at the permitted location.

- G. Twenty-four Hour Notice of Noncompliance Reporting.
1. The following occurrences of noncompliance shall be reported by telephone within 24 hours from the time the permittee becomes aware of the circumstances:
 - a. Any noncompliance which may endanger health or the environment;
 - b. Any unanticipated bypass which exceeds any effluent limitation in the permit (See Part III.G., Bypass of Treatment Facilities.);
 - c. Any upset which exceeds any effluent limitation in the permit (See Part III.H., Upset Conditions.); or
 - d. Violation of a maximum daily discharge limitation for any of the pollutants listed in the permit to be reported within 24 hours.
 2. A written submission shall also be provided within five days of the time that the permittee becomes aware of the circumstances. The written submission shall contain:
 - a. A description of the noncompliance and its cause;
 - b. The period of noncompliance, including exact dates and times;
 - c. The estimated time noncompliance is expected to continue if it has not been corrected; and
 - d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.
 3. The Director may waive the written report on a case-by-case basis if the oral report has been received within 24 hours by the Water Compliance Section in Seattle, Washington, by phone, (206) 553-1846.
 4. Reports shall be submitted to the addresses in Part II.C., Reporting of Monitoring Results.
- H. Other Noncompliance Reporting. Instances of noncompliance not required to be reported within 24 hours shall be reported at the time that monitoring reports for Part II.C. are submitted. The reports shall contain the information listed in Part II.G.2.
- I. Inspection and Entry. The permittee shall allow the Director, ADEC, or an

authorized representative (including an authorized contractor acting as a representative of the Administrator), upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
4. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the Act, any substances or parameters at any location.

III. COMPLIANCE RESPONSIBILITIES

- A. **Duty to Comply.** The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. The permittee shall give advance notice to the Director and ADEC of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.
- B. **Penalties for Violations of Permit Conditions.**
 1. **Civil Penalty.** The Act provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act shall be subject to a civil penalty, not to exceed \$25,000 per day for each violation.
 2. **Criminal Penalties:**
 - a. **Negligent Violations.** The Act provides that any person who negligently violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act shall be punished by a fine of not less than \$2,500 nor more than \$25,000 per day of violation, or by imprisonment for not more than 1 year, or by both.
 - b. **Knowing Violations.** The Act provides that any person who knowingly violates a permit condition implementing Sections 301, 302, 306,

307, 308, 318, or 405 of the Act shall be punished by a fine of not less than \$5,000 nor more than \$50,000 per day of violation, or by imprisonment for not more than 3 years, or by both.

- c. **Knowing Endangerment.** The Act provides that any person who knowingly violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than \$250,000 or imprisonment of not more than 15 years, or both. A person which is an organization shall, upon conviction of violating this subparagraph, be subject to a fine of not more than \$1,000,000.
- d. **False Statements.** The Act provides that any person who knowingly makes any false material statement, representation, or certification in any application, record, report, plan, or other document filed or required to be maintained under this Act or who knowingly falsifies, tampers with, or renders inaccurate any monitoring device or method required to be maintained under this Act, shall upon conviction, be punished by a fine of not more than \$10,000, or by imprisonment for not more than 2 years, or by both.

Except as provided in permit conditions in Part III.G., Bypass of Treatment Facilities and Part III.H., Upset Conditions, nothing in this permit shall be construed to relieve the permittee of the civil or criminal penalties for noncompliance.

- C. **Need to Halt or Reduce Activity not a Defense.** It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
- D. **Duty to Mitigate.** The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.
- E. **Proper Operation and Maintenance.** The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

- F. Removed Substances. Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering navigable waters.
- G. Bypass of Treatment Facilities:
1. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs 2 and 3 of this section.
 2. Notice:
 - a. Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least 10 days before the date of the bypass.
 - b. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required under Part II.G., Twenty-four Hour Notice of Noncompliance Reporting.
 3. Prohibition of bypass.
 - a. Bypass is prohibited and the Director or ADEC may take enforcement action against a permittee for a bypass, unless:
 - (1) The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
 - (2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
 - (3) The permittee submitted notices as required under paragraph 2 of this section.

- b. The Director and ADEC may approve an anticipated bypass, after considering its adverse effects, if the Director and ADEC determine that it will meet the three conditions listed above in paragraph 3.a. of this section.

H. Upset Conditions.

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph 2 of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
 2. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
 - a. An upset occurred and that the permittee can identify the cause(s) of the upset;
 - b. The permitted facility was at the time being properly operated;
 - c. The permittee submitted notice of the upset as required under Part II.G., Twenty-four Hour Notice of Noncompliance Reporting; and
 - d. The permittee complied with any remedial measures required under Part III.D., Duty to Mitigate.
 3. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.
- I. Toxic Pollutants. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Act for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

IV. GENERAL REQUIREMENTS

- A. Changes in Discharge of Toxic Substances. Notification shall be provided to the Director and ADEC as soon as the permittee knows of, or has reason to believe:

1. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
 - a. One hundred micrograms per liter (100 ug/l);
 - b. Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;
 - c. Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or
 - d. The level established by the Director in accordance with 40 CFR 122.44(f).

 2. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
 - a. Five hundred micrograms per liter (500 ug/l);
 - b. One milligram per liter (1 mg/l) for antimony;
 - c. Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or
 - d. The level established by the Director in accordance with 40 CFR 122.44(f).
- B. Planned Changes. The permittee shall give notice to the Director and ADEC as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:
1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source as determined in 40 CFR 122.29(b); or
 2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants

which are subject neither to effluent limitations in the permit, nor to notification requirements under Part IV.A.1.

- C. Anticipated Noncompliance. The permittee shall also give advance notice to the Director and ADEC of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.
- D. Permit Actions. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.
- E. Duty to Reapply. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. The application should be submitted at least 180 days before the expiration date of this permit.
- F. Duty to Provide Information. The permittee shall furnish to the Director and ADEC, within a reasonable time, any information which the Director or ADEC may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director or ADEC, upon request, copies of records required to be kept by this permit.
- G. Other Information. When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or any report to the Director or ADEC, it shall promptly submit such facts or information.
- H. Signatory Requirements. All applications, reports or information submitted to the Director and ADEC shall be signed and certified.
 - 1. All permit applications shall be signed as follows:
 - a. For a corporation: by a responsible corporate officer.
 - b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively.
 - c. For a municipality, state, federal, or other public agency: by either a principal executive officer or ranking elected official.
 - 2. All reports required by the permit and other information requested by the Director or ADEC shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized

representative only if:

- a. The authorization is made in writing by a person described above and submitted to the Director and ADEC, and
 - b. The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)
3. Changes to authorization. If an authorization under paragraph IV.H.2. is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph IV.H.2. must be submitted to the Director and ADEC prior to or together with any reports, information, or applications to be signed by an authorized representative.
 4. Certification. Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."
 - I. Availability of Reports. Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Director and ADEC. As required by the Act, permit applications, permits and effluent data shall not be considered confidential.
 - J. Oil and Hazardous Substance Liability. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under

Section 311 of the Act.

- K. **Property Rights.** The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.
- L. **Severability.** The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.
- M. **Transfers.** This permit may be automatically transferred to a new permittee if:
 - 1. The current permittee notifies the Director at least 30 days in advance of the proposed transfer date;
 - 2. The notice includes a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them; and
 - 3. The Director does not notify the existing permittee and the proposed new permittee of his or her intent to modify, or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph 2 above.
- N. **State Laws.** Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation under authority preserved by Section 510 of the Act.

V. AMBIENT MONITORING SAMPLING LOCATIONS

