Original Fact Sheet (submitted for public review May 11-July 22, 2005)

Revised Fact Sheet (issued with permit on March 15, 2007)

FACT SHEET FOR NPDES PERMIT WA-000295-0
FACILITY NAME INTALCO ALUMINUM CORPORATION

SUMMARY

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INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System of permits (NPDES permits), which is administered by the Environmental Protection Agency (EPA). The EPA has authorized the State of Washington to administer the NPDES permit program. Chapter 90.48 RCW defines the Department of Ecology's (Ecology) authority and obligations in administering the wastewater discharge permit program.

The regulations adopted by the State include procedures for issuing permits (Chapter 173-220 WAC), water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC), and sediment management standards (Chapter 173-204 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the state is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit. One of the requirements (WAC 173-220-060) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least thirty days before the permit is issued (WAC 173-220-050). The fact sheet and draft permit are available for review (see Appendix A--Public Involvement of the fact sheet for more detail on the Public Notice procedures). Appendices B and C include a glossary of the terms used in this fact sheet and a reference to access the spreadsheet tools commonly used by Ecology.

The fact sheet and draft permit were reviewed by the Permittee. Errors and omissions identified in that review were corrected before going to public notice. After the public comment period closed, Ecology summarized the substantive comments and the responses to each comment. The summary and response to comments is included in Appendix D of this fact sheet. Parties who submitted comments will receive a copy of Ecology's responses. The fact sheet was revised after the public comment period (which ended on July 22, 2005) to correct errors, to expand on explanations for conditions in the permit, and to explain changes that were made to the permit in response to public comment and other policy updates.

GENERAL INFORMATION	
Applicant	Intalco Aluminum Corporation
Facility Name and Address	Intalco Aluminum Corporation 4050 Mountain View Road P.O. Box 937 Ferndale, Washington 98248
Type of Facility:	Primary Aluminum Smelting
SIC Code	3334
Discharge Locations Outfall 001 Outfall 002 Outfall 003 Outfall 004 Outfall 005 Outfall 011 Outfall 012	Strait of Georgia Latitude: 48° 50' 26.8" N Longitude: 122° 43' 13.6" W Latitude: 48º 50’ 22” N Longitude: 122º 42’ 56.1” W Latitude: 48º 50’ 49” N Longitude: 122º 42’ 56.1” W Latitude: 48º 50’ 13” N Longitude: 122º 42’ 52” W Latitude: 48º 50’ 31” N Longitude: 122º 42’ 49” W Latitude: 48º 50’ 33” N Longitude: 122º 42’ 53” W Latitude: 48º 50’ 25” N Longitude: 122º 42’ 53” W
Water Body ID Number	WA-01-0030
Receiving Water	Strait of Georgia

BACKGROUND INFORMATION

DESCRIPTION OF THE FACILITY

HISTORY

The Intalco Aluminum Corporation (Intalco) began the operations of a primary aluminum smelter near Ferndale, Washington in 1966. At full production the facility employs approximately 800 people. The smelter is currently operating at approximately 40% capacity with a workforce of 400 people.

INDUSTRIAL PROCESS

The Ferndale facility produces primary aluminum metal by the Hall-Heroult reduction process. The facility operates three pot lines, which contain a total of 720 side worked, pre-bake anode reduction cells. The smelter, in the past, has been capable of producing approximately 307,000 tons of aluminum metal per year at full production. All metal produced is cast on-site into various sizes and forms: sows, tees, slabs, billets, and ingots.

Potline A was shutdown in June of 2001. Intalco has been operating Potlines B and C at a reduced production level since then. Intalco signed a 5-year power contract with Bonneville Power Association on August 01, 2006. Intalco proposes to operate two fully operational potlines (a total of 480 pots operating in Potlines A and C) by mid-2007. They propose to do this by migrating pots from Potline B to Potline C and starting up Potline A.

DISCHARGE LOCATIONS

The facility is located near Cherry Point along the Strait of Georgia. The process wastewater outfall line (001) is suspended from the shipping pier and extends approximately 1100 feet from the edge of the shoreline. The stormwater outfall line (002) is approximately 800 feet south of the process outfall line and extends approximately 250 feet from the shoreline in a westerly direction. The approximate locations of Outfalls 001, 002, 003, 004, 005, 011, and 012 are as follows. The locations of these discharges are also shown on the map in **Appendix E**.

Outfall	Latitude	Longitude
001	48º 50’ 26.8” N	122º 43’ 13.6” W
002	48º 50’ 22” N	122º 42’ 56.1” W
003	48º 50’ 49” N	122º 42’ 56.1” W
004	48º 50’ 13” N	122º 42’ 52” W
005	48º 50’ 31” N	122º 42’ 49” W
011	48º 50’ 33” N	122º 42’ 53” W
012	48º 50’ 25” N	122º 42’ 53” W

DISCHARGE DESCRIPTIONS

Intalco maintains a total of seven outfalls (001, 002, 003, 004, 005, 011, and 012). The discharge from each of the outfalls is described below.

Outfall 001:

Non-contact cooling water from Intalco's air compressors is the largest component of the discharge at Outfall 001. Treated wastewaters from Intalco's primary and secondary wastewater treatment systems, sanitary lagoon, anode contact cooling water from the carbon plant, and water heater/steam cleaner systems are commingled with the non-contact cooling water before discharge at Outfall 001. Major pollutants include total suspended solids (TSS), fluoride, and aluminum. Other possible pollutants include cyanide, benzo(a)pyrene, and oil and grease.

The effluent to Outfall 001 is conveyed through a 24-inch diameter fiberglass reinforced plastic pipe and discharged through a 24-inch diameter, 120-foot long diffuser. The discharge is continuous and in the past has averaged 3.0 million gallons per day (MGD), with a maximum of 5.0 MGD. The Permittee is supplied with treated (coagulated) water from the Nooksack River by the Whatcom Public Utility District #1 (PUD). The plant's air compressors are water-cooled by the PUD water. That cooling water constitutes approximately 80-90% of the volume of discharge at Outfall 001.

Intalco's Primary Wastewater Treatment System (PWTS) treats wastewater from the potline's air pollution control system (wet scrubbers). The PWTS consists of two clarifiers (the older clarifier is only used when the other clarifier is shut down for maintenance). The clarifier provides treatment in the form of precipitation and sedimentation to remove solids and to reduce the turbidity in the wet scrubber wastewater. Cooling water from the cast house is used as makeup water in the PWTS. A small stream of blowdown from the boiler used to heat the caustic storage tank (part of the Secondary Wastewater Treatment System described below) is also treated in the PWTS. Most of the treated effluent from the clarifier is recycled back into the wet scrubbers. The remainder of the effluent is routed to the Secondary Wastewater Treatment System (SWTS) for removal of dissolved fluoride.

The SWTP is comprised of an equalization tank (ET) and two treatment trains running in parallel. Each treatment train consists of a reaction tank and a flocculation tank. Additional tanks supporting the treatment process are those used for storage of the treatment chemicals (calcium chloride, sulfuric acid, and coagulant). Wastewater routed from the PWTS to the SWTS for fluoride treatment is pumped into the ET where it is combined with leachate from the on-site landfill leachate collection system. Pollutants in the PWTS effluent include high concentrations of particulate and fluoride. The landfill leachate contains high concentrations of fluoride and occasional high concentrations of cyanide. Wastewater in the equalization tank is pumped to the treatment train in the SWTS. Chemical treatment is followed by further treatment of the effluent in the form of sedimentation of solids in the clarifier. Some of the solids that settle out in the clarifier are recycled back into the clarifier. The remainder of the solids (sludge) are dewatered in a rotary vacuum drum filter. The dewatered sludge is disposed of in the Permittee's on-site RCRA landfill.

Intalco's domestic wastewater is discharged to the plant's aerated sanitary lagoon. Effluent from the lagoon is treated by ultraviolet (UV) disinfection before being discharged into a pipeline to Outfall 001. Total discharge volume is continuous and in the past has averaged 0.035 MGD. The flow rate is expected to go down with the reduction in workforce to less than 400 employees. The permit allows for a reduction in removal efficiency when the average number of employees in a month is below 400. The permitted pollutants in the discharge are biochemical oxygen demand (BOD), total suspended solids (TSS), and fecal coliforms.

Anode contact cooling water is generated during the anode production process. Intalco's anodes are made from petroleum coke and coal tar pitch. The coke and pitch are mixed together and then shaped into an anode with a mechanical press under high temperature and pressure. To facilitate maintaining the shape of the anode, the anodes are cooled with a strong spray of cold water after removal from the press. During the spraying process, the contact water is contaminated with coke and pitch containing Polycyclic Aromatic Hydrocarbons (PAHs) [including benzo(a)pyrene (B(a)P)]. This wastewater is filtered through a screen (to remove solids with adsorbed PAHs). The filtered wastewater is then discharged to the process sewer system without any additional treatment before it is discharged at Outfall 001. The permit requires the Permittee to conduct a treatment efficiency study of the anode contact cooling water filtration system to determine if it meets all known available and reasonable methods of treatment (AKART) standards. The treatment efficiency study is discussed in more detail later on in this document.

Intalco operates a steam-cleaning station in each of three maintenance shops (Automotive, Central, and Annex). These stations are used to clean various pieces of plant equipment prior to maintenance activities. The wastewater from these stations is treated with sand filtration to remove suspended solids and with a coalescing filter to remove oil and grease. The filtered wastewater is then discharged to the process sewer system without any additional treatment before it is discharged at Outfall 001.

Outfall 002:

Due to the nature of the aluminum smelting process, there is potential for stormwater to contact raw materials, byproduct, or waste materials that could contaminate the stormwater. To mitigate the discharge of any suspended solid material, all stormwater collected from the industrial portion of the plant site is routed through a stormwater settling pond in the southwest corner of the plant. The stormwater pond provides approximately 1.7 million gallons of capacity. The pond (built in 1992) is a flow-through system designed to allow solids to settle from the stormwater. The stormwater pond is designed to treat maximum stormwater flow rates up to 30 cubic feet per second (cfs). The pond was conservatively sized (1.9 million gallons) based on the 6-month, 24-hour design storm volume of 1.5 million gallons. The hydraulic capacity of the stormwater system (including diversion structures) was designed for a 100-year, 24-hour (4.0 inches of rain) storm. All flow in excess of 28 cfs is diverted around the pond via a series of three overflow structures.

Stormwater from outside the industrially developed plant site flows through two separate ditches. The two separate ditches combine with the stormwater pond effluent at the Outfall 002 monitoring and compliance point (D-10). At this point, the water is further treated to remove oil

and other floating materials with a continuously operated mechanical oil skimmer. Absorbent materials (e.g. socks) are located immediately prior to the location where the effluent enters the discharge pipe.

The discharge to Outfall 002 is conveyed through a 30-inch diameter fiberglass reinforced plastic pipe and has no diffuser. This discharge, in the past, has been continuous and has averaged 0.6 MGD, with a typical range of 0.1 to 2.4 MGD for a monthly average. During storm events the flow may reach levels as high as 12.5 MGD. The primary sources of water for this discharge include stormwater runoff from the 320 acres in-plant area and also the off-plant area of Intalco. Major pollutants discharged from Outfall 002 include total suspended solids, fluoride, and aluminum.

Periods of zero discharge occur at Outfall 002 during dry summer weather.

Outfalls 003, 004, and 005:

Outfall 003 discharges stormwater runoff and leachate from industrial solid waste in a historic landfill known as the Beach I Landfill. This landfill was operated from 1966 to 1978 by Intalco and is located northwest of the main plant site along a bluff overlooking the Strait of Georgia.

Outfall 004 discharges stormwater runoff and leachate from industrial solid waste in a historic landfill known as Beach II Landfill. This landfill was operated from 1971 to 1984 by Intalco and is located southwest of the main plant site along a bluff overlooking the Strait of Georgia.

Outfall 005 discharges stormwater runoff and leachate from industrial solid waste in a historic landfill known as the Construction Debris Landfill. This landfill was operated from 1966 to 1973 by Intalco and is located due west of the main plant site along a bluff overlooking the Strait of Georgia.

The control and elimination of these discharges is discussed in more detail in the Landfill Monitoring section later on in this document.

Outfalls 011 and 012:

The silo storage area at the entrance to the pier contains three 100-foot diameter alumina storage silos. The drainage area of the alumina silo storage area is about 550 feet by 200 feet (2.5 acres) and is divided into two watersheds.

The northern portion of the silo storage area drains to a single catch basin and discharges to Outfall 011. This outfall is embedded deep in the riprap shoreline along the northern edge of the silo storage area. Drainage from the stormwater collection ditch on the north side of the road enters a catch basin at the southeast corner of the truck escape ramp and is also discharged at Outfall 011. Additional drainage from the terraces on the hillside east of the road is conveyed through a series of catch basins and drains to the same catch basin at southeast corner of the truck escape ramp and is discharged at Outfall 011. Major pollutants include TSS, fluoride, and aluminum. Intalco is required to reduce the TSS concentration in the discharge at Outfall 011 by implementing the BMPs in Condition S14.A. of the permit.

The middle and southern portion of the silo storage area drain to three catch basins arranged in a north-south alignment and connected in series in a single pipe. These three southern most catch basins discharge to Outfall 012. This outfall is embedded deep in the riprap shoreline along the southern edge of the silo storage area. Outfall 012 is located in an area that is difficult to access due to vegetation and is only accessible on foot. Major pollutants include total suspended solids (TSS), fecal coliform, fluoride, and aluminum. The results of an analysis of the Outfall 012 discharge showed that the TSS concentration was higher than the Ecology stormwater benchmark and the fecal coliform results were equal to the commonly used monthly average fecal coliform permit limit. On May 12, 2004 Ecology inspected Outfall 012 and noticed that there was a lot of animal waste in the vicinity of the outfall. The drainage area to Outfall 012 is localized and there are no sources of human waste in this area. Therefore, Ecology believes that animal waste, not human waste, contributed to the high fecal coliform levels observed at Outfall 012. Intalco is required to reduce the TSS concentration in the discharge at Outfall 012 by implementing the BMPs in Condition S14.A. of the permit.

The Permittee will be required to collect monthly grab samples from the catch basin sumps for Outfalls 011 and 012 when flow is available. The samples will be analyzed for TSS, aluminum, and fluoride. After one year of testing at Outfalls 011 and 012, the Permittee will have the option to petition Ecology in writing to reduce or eliminate this monitoring.

DIVERTING WATER TO THE BP COGENERATION FACILITY

Whatcom County Public Utility District No. 1 (PUD) owns the water rights for water in the Ferndale area and Intalco and the BP Cherry Point refinery contract for water through the PUD. The PUD withdraws water from the Nooksack River. Intalco has recently completed an agreement with the PUD and BP for a water reuse project. Under the agreement, Intalco will provide the water needed to operate the proposed BP cogeneration facility. Intalco will divert up to 4.5 MGD of non-contact, once-through cooling water normally discharged through Outfall 001, to the cogeneration facility for use in their evaporative cooling system.

Implementation of this system is expected about six months prior to the start-up of the cogeneration facility. This project will allow for the reuse of industrial wastewater rather than consuming new water resources from the Nooksack River.

PERMIT STATUS

The previous permit for this facility was issued on September 1, 1998 and modified on June 1, 2000 and January 4, 2002. The effluent limitations for Outfall 001, Outfall 002, and the Sanitary Lagoon were as shown in the following tables:

Effluent Limitations: Outfall # 001			
Parameter	**Units**	**Monthly Average**	**Daily Maximum**
Total Suspended Solids	lbs/day mg/l	150 10	185 --
Fluoride	lbs/day	68	296
Aluminum	lbs/day	10.3	30
Free Cyanide	mg/l	<0.012	0.012
Benzo(a)Pyrene	mg/l	<0.01	0.01
Oil and Grease	mg/l	5	10
pH		Within the range of 6.0 - 9.0	

Effluent Limitations: Outfall # 002			
Parameter	**Units**	**Monthly Average**	**Daily Maximum**
Total Suspended Solids	mg/l	35	75
Fluoride	mg/l	35	50
Aluminum	mg/l	10	15
Benzo(a)Pyrene	mg/l	--	<0.01
Oil and Grease	mg/l	5	10
pH		Within the range of 6.0 - 9.0	

Effluent Limitations: Sanitary Lagoon Discharge			
Parameter	**Units**	**30-Day Average**	**7-Day Average**
Biochemical Oxygen Demand	mg/l lbs/day	45.0 22.4	65.0 32.4
Total Suspended Solids	mg/l lbs/day	45.0 22.4	65.0 32.4
Fecal Coliform	Colonies/100 ml	200	400
Chlorine	mg/l	Minimum - 0.1	Maximum - 1.5
pH		Within the range of 6.0 - 9.0	

An application for permit renewal was submitted to Ecology on March 5, 2003 and accepted by on June 24, 2003. Additional 2F forms for Outfalls 003, 004, and 005 were submitted to and accepted by Ecology.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

The facility last received an unannounced Class II inspection on May 23-24, 2006. The facility was found to be in compliance with the permit limits at the time of the inspection. The last non-sampling inspection was completed on May 03, 2006.

In general, the Permittee has remained in compliance with effluent limits and other permit requirements during the previous permit term, based on monthly Discharge Monitoring Reports (DMRs) and inspections conducted by Ecology. **Appendix F** summarizes the incidents of noncompliance.

The previous permit required a number of special studies to be completed during the term of the permit. Studies of the effluent included annual priority pollutant testing, acute and chronic toxicity testing, a stormwater characterization study, and stormwater sampling. Other studies or requirements included an outfall evaluation, preparation of stormwater pollution prevention plans, a sediment study, an engineering study for chlorination, preparation of a stormwater pond operational plan and engineering report, development of a potline ditch cleaning schedule, an aluminum and fluoride source study, and a potroom roof run-off study. All of the studies were completed as required by the NPDES permit and are discussed in the next section and later in this document.

REVIEW OF PREVIOUS PERMIT REQUIREMENTS

1. Primary Wastewater Treatment System Operational Plan:

   Intalco is required to operate process wastewater treatment systems according to procedures and criteria described in an operating plan. Condition S.7 of the previous

permit requires Intalco to update and maintain operational plans on site for the process wastewater treatment systems. Intalco has not updated the operational plan for the primary treatment system. Condition S10.A of the permit requires Intalco to update their O&M Manual to include the PWTS.

2. Secondary Wastewater Treatment System Operational Plan:

Intalco submitted a copy of the updated operational plan for the secondary treatment system in March 2004. The operational plan for the SWTS fulfills the requirements of the previous permit.

3. Sanitary Wastewater Treatment System Operational Plan:

Intalco submitted a copy of the "Sanitary Water Treatment Facility Operations and Maintenance Manual" in March 2004. This manual fulfills the requirements of previous permit.

4. Stormwater Pond Operational Plan:

Condition S7. of the previous permit required Intalco to develop and maintain a Stormwater Pond Operational Plan. In order to meet the requirements for the operational plan, Intalco conducted site hydrologic and rainfall characterizations and developed a stormwater model. Intalco was also required to submit an as-built engineering report which included design criteria for TSS removal efficiencies at the stormwater pond. Intalco submitted the operating plan and the as-built engineering report as sections of the Stormwater Runoff Study Final Report dated July 27, 2001 (final report). Ecology reviewed the final report and determined that Intalco had fulfilled the requirements of the previous permit. The stormwater pond's influent flow design criteria (in Condition S4. of the permit) is taken from Intalco's report titled "Proposed Stormwater Pond Outfall Changes" (dated October 14, 2003). Intalco made recommendations regarding the maintenance of the stormwater pond in the final report that have been included as requirements in Condition S14.A. of the permit.

5. Stormwater Pollution Prevention Plan:

Condition S.9. of the previous permit required Intalco to submit a Stormwater Pollution Prevention Plan (SWPPP). Intalco was required to implement the operational and source control BMPs outlined in the SWPPP, submit a schedule for cleaning alumina and other debris from the potline ditches, and conduct a study to determine the contributions of aluminum and fluoride to the stormwater system from runoff from the roofs of the potroom buildings.

Intalco submitted the SWPPP on August 27, 1999, additional information for the SWPPP in January 2000, the schedule for cleaning the potline ditches in January of 2000, and the final potroom roof runoff study results in July of 2001. Intalco leased a new more effective sweeper and began implementing the potline ditch cleaning schedule in

September 2000. Based on a review of these documents, Ecology determined that Intalco has fulfilled the requirements of the previous permit. Intalco recommended BMPs and other action items in the SWPPP and also in the Stormwater Runoff Study Final Report. Condition S14.A. of the permit requires Intalco to implement the BMPs and other action items and to update the SWPPP.

6. Stormwater Characterization Study:
Condition S11. of the previous permit required Intalco to submit a stormwater sampling and analysis plan to Ecology for review and approval within the first year of the permit. The purpose of the Plan was to characterize the stormwater pond performance to determine the stormwater pond's pollutant contribution to Outfall 002 versus off-site contributions. Intalco submitted a final stormwater sampling and analysis plan in March 2000. Intalco conducted the stormwater characterization study from April 2000 through March 2001. The results of the study are compiled in a document entitled "Stormwater Runoff Study Final Report" dated July 27, 2001. Ecology reviewed the results of the study and determined that the submittal met the requirements of the previous permit. The final report included BMPs that Intalco recommended. Ecology requires Intalco to implement and follow these BMPs in Condition S14.A. of the permit.

WASTEWATER CHARACTERIZATION

The proposed wastewater discharges were characterized by Intalco in the permit application process for conventional pollutants, metals, cyanide, volatile organic compounds, acid compounds, base neutral compounds, and pesticides. Long term average values reported below for Outfalls 001 and 002 and the sanitary lagoon effluent are based on extensive (daily to weekly) monitoring completed during the term of the permit. The table below also includes long term averages for pollutants with significant concentrations and/or of interest; the metals and organics listed include all of those that were quantified at greater than detection limits. These long term averages were calculated from six years of annual priority pollutant testing (1999-2004). Additional information is included in Appendices G and H.

Wastewater Characterization (Long Term Average Value)		
Parameter	**Concentration**	**Mass**
OUTFALL 001		
TSS	4.20 mg/L	106 lbs/day
Fluoride	0.883 mg/L	23.4 lbs/day
Aluminum	0.57 mg/L	15.82 lbs/day
Free Cyanide	<0.005 mg/L	0.0025 lbs/day
B(a)P	<0.0001 mg/L	0 lbs/day
Oil & Grease	0.40 mg/L	10.4 lbs/day
Temperature	13.12°C	
pH	6.3-8.3	
Ammonia	0.105 mg/L	
Chlorine	0.025 mg/L	
Nitrate-Nitrite	0.644 mg/L	
Nickel	0.008 mg/L	
Zinc	0.012 mg/L	
Phenols	0.068 mg/L	
Total Organic Carbon	1.9 mg/L	
OUTFALL 002		
TSS	7.72 mg/L	52.6 lbs/day
Fluoride	16.1 mg/L	68.5 lbs/day
Aluminum	0.57 mg/L	17.96 lbs/day
Free Cyanide	<0.005 mg/L	--
B(a)P	<0.0001 mg/L	--
Oil & Grease	0.47 mg/L	2.41 lbs/day
Temperature	13.12°C	
pH	6.3-8.2	
Ammonia	0.077 mg/L	
Nitrate-Nitrite	0.088 mg/L	
Arsenic	0.0004 mg/L	
Chromium	0.0006 mg/L	

Wastewater Characterization (Long Term Average Value) – Continued		
Parameter	**Concentration**	**Mass**
OUTFALL 002 (continued)		
Nickel	0.015 mg/L	
Zinc	0.045 mg/L	
SANITARY LAGOON EFFLUENT		
BOD	13.35 mg/L	4.34 lbs/day
TSS	9.55 mg/L	3.08 lbs/day
Fecal Coliform	1.7 cfu/100mL	
pH	6.3-8.2	

SEPA COMPLIANCE

This permit renewal has no SEPA compliance issues.

PERMIT LIMITATIONS

Federal and State regulations require that effluent limitations set forth in a NPDES permit must be either technology- or water quality-based. Technology-based limitations are based upon the treatment methods available to treat specific pollutants. Technology-based limitations are set by regulation or developed on a case-by-case basis (40 CFR 125.3, and Chapter 173-220 WAC). Water quality-based limitations are based upon compliance with the Surface Water Quality Standards (Chapter 173-201A WAC), Ground Water Standards (Chapter 173-200 WAC), Sediment Quality Standards (Chapter 173-204 WAC) or the National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992). The more stringent of these two limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

The limits in this permit are based in part on information received in the application. The effluent constituents in the application were evaluated on a technology- and water quality-basis. The limits necessary to meet the rules and regulations of the State of Washington were determined and included in this permit. Ecology does not develop effluent limits for all pollutants that may be reported on the application as present in the effluent**.** Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, or do not have a reasonable potential to cause a water quality violation**.** Effluent limits are not always developed for pollutants that may be in the discharge are not reported as present in the application. In those circumstances the permit does not authorize discharge of the non-reported pollutants. Effluent discharge conditions may change from the conditions reported in the permit application. If significant changes occur in any constituent, as described in 40 CFR 122.42(a), the Permittee is required to notify Ecology. The Permittee may be in violation of the permit until the permit is modified to reflect additional discharge of pollutants.

DESIGN CRITERIA

Intalco conducted a study to determine current capacities and treatment efficiencies of their wastewater treatment systems. Intalco submitted the results of that study to Ecology in a document titled "Primary Water Treatment Plant, Secondary Water Treatment Plant, and Sanitary Water Treatment Facility Capacities and Efficiencies" dated June 2004. These reports provide preliminary information. The permit will require treatment efficiency studies, when warranted, to determine the criteria necessary to monitor the efficiency of these systems.

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

Ecology reviewed the applicant's Form R (Toxic Release Inventory Reporting Form), list of Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III hazardous substances, and Form 2C of the NPDES Permit Application. also reviewed the discharge monitoring reports (DMRs), study results, and wastewater inspection results generated during the term of the previous permit.

After reviewing this data, Ecology determined that, in general, the effluent limits from the previous permit will remain the same. These limits are believed to be effective regulatory controls.

Technology-based limitations are set by regulations or developed on a case-by-case basis. EPA periodically evaluates specific industries, such as primary aluminum smelting, and publishes federal effluent guidelines which represent technology-based effluent limitations. In Washington, state law imposes a requirement to provide all known available and reasonable methods of treatment (AKART), and this requirement is functionally an overlay on the federal requirements. AKART may dictate more stringent technology-based limits than the federal effluent guidelines.

The applicable federal effluent guidelines for the primary aluminum smelting subcategory were promulgated by EPA on July 7, 1987 and are published in 40 CFR 421 Subpart B. EPA periodically reviews its effluent guidelines and determines when guidelines for specific industries need to be updated. In EPA's *Technical Support Document for the 2004 Effluent Guidelines Program Plan* EPA reviewed the primary aluminum smelting subcategory and determined that "reduction in pollutant loadings from raw wastewater to discharges indicate that the current treatment in the industry should be resulting in 99+ percent reductions for those pollutants regulated in the 1990 rule" and that concentrations of benzo(a)pyrene "are generally below treatable concentrations and additional reductions of this pollutant may not be possible." EPA determined in 2004 that the effluent guidelines for the entire Nonferrous Metals Manufacturing Point Source Category (of which primary aluminum smelting is a subcategory) did not need to be revised

The effluent limitations for toxic, non-conventional, and conventional pollutants at Outfalls 001 and 002 in the previous permit were established using Best Professional Judgment (BPJ). Although the applicant has discharges that are applicable subcategories in the federal effluent guidelines in 40 CFR Part 421 - Subpart B, these guidelines were not used to develop the limits. The limits for Outfall 001 are performance based and were developed by running a statistical

analysis on two years of representative monitoring data using a method consistent with EPA and Ecology effluent limit setting guidelines.

The performance-based limits are more stringent than the federal effluent guidelines. Ecology has determined that the limits for Outfall 001 are based on AKART but is also requiring treatment efficiency studies in this permit. A possible outcome of these studies would be a refinement of AKART for this facility.

The concentration limits for the sanitary lagoon are taken directly from the discharge standards and effluent limitations for domestic wastewater facilities, Chapter 173-221 WAC. On January 21, 2004, Intalco submitted a request for an alternative percent removal effluent limitation at the sanitary lagoon during periods of reduced operations or temporary curtailment. Ecology reviewed the Permittee's request and determined that the Permittee meets the criteria required in Chapter 173-221-050 WAC and Chapter V, Section 3.5.1 of Permit Writer's Manual. Therefore, the removal efficiency for BOD and TSS in the sanitary lagoon discharge was reduced from a minimum of 65% to 55% when a monthly average of < 400 persons are employed onsite. The Permittee is required to report the number of personnel onsite to Ecology in the monthly discharge monitoring report. Upon an increase in personnel to $\geq$ 400 persons monthly average, the removal efficiency for BOD and TSS is required to revert to a minimum of 65%.

Mass-based limits for B(a)P, antimony, and nickel were removed from the 1991 and 1998 NPDES permits for undefined reasons. Per 40 CFR 122.44(a)(1) and 122.44(1)(2)(ii), Ecology is reinstating these limits. Ecology used representative production rates and the federal effluent guidelines for the primary aluminum smelting subcategories in 40 CFR 421 to derive the respective production-based effluent limits summarized in the table below (see the footnote for a discussion of the derivation of the limits).

PRODUCTION-BASED EFFLUENT LIMITS					
		Effluent Limitation Guideline		**Production-Based Effluent Limit**	
B(a)P	**Production Rate million pounds (MMlb)**	**Maximum Day (lb/MMlb)**	**Maximum Monthly Average (lb/MMlb)**	**Daily Maximum (lbs/day)**	**Maximum Monthly Average (lbs/day)**
Anode Contact Cooling and Briquette Quenching (40 CFR 421.23(b))	1.8	0.007	0.003	0.013	0.005
Potroom Wet Air Pollution Control (40 CFR 421.23(m))	2.1	0.056	0.026	0.118	0.055
Direct Chill Contact Cooling (40 CFR 421.23(q))	2.1	NA	NA	NA	NA
B(a)P Permit Limits when aluminum production is greater than 15,614 tons per month				**0.13**	**0.06**
B(a)P Permit Limits when aluminum production is less than or equal to 15,614 tons per month				**0.065**	**0.03**

PRODUCTION-BASED EFFLUENT LIMITS (CONTINUED)					
Antimony	**Production Rate million pounds (MMlb)**	**Effluent Limitation Guideline**		**Production-Based Effluent Limit**	
		Maximum Day (lb/MMlb)	**Maximum Monthly Average (lb/MMlb)**	**Daily Maximum (lbs/day)**	**Maximum Monthly Average (lbs/day)**
Anode Contact Cooling and Briquette Quenching	1.8	0.403	0.18	0.725	0.324
Potroom Wet Air Pollution Control	2.1	3.204	1.428	6.728	2.999
Direct Chill Contact Cooling	2.1	2.565	1.143	5.387	2.400
Antimony Permit Limits when aluminum production is greater than 15,614 tons per month				**12.8**	**5.7**
Antimony Permit Limits when aluminum production is less than or equal to 15,614 tons per month				**6.4**	**2.85**
Nickel	**Production Rate million pounds (MMlb)**	**Effluent Limitation Guideline**		**Production-Based Effluent Limit**	
		Maximum Day (lb/MMlb)	**Maximum Monthly Average (lb/MMlb)**	**Daily Maximum (lbs/day)**	**Maximum Monthly Average (lbs/day)**
Anode Contact Cooling and Briquette Quenching	1.8	0.115	0.077	0.207	0.139
Potroom Wet Air Pollution Control	2.1	0.913	0.614	1.917	1.289
Direct Chill Contact Cooling	2.1	0.731	0.492	1.535	1.033
Nickel Permit Limits when aluminum production is greater than 15,614 tons per month				**3.7**	**2.5**
Nickel Permit Limits when aluminum production is less than or equal to 15,614 tons per month				**1.85**	**1.25**

Ecology used monthly average production data from 1999 and 2000 to determine the production rates used to derive the monthly average limits for each of the processes. The monthly average production rates were also used to derive the maximum daily limits because the Permittee had no daily production data available. Ecology used the respective actual maximum monthly average production rates (converted to a daily maximum production rate assuming 24 hours of operation for 30 days each month) to derive the daily maximum production-based limit.

Because the Permittee has not operated at full production in recent years, Ecology has established tiered production limits with the higher tier applicable when production exceeds 15,614 tons per month, and the lower tier applicable when production is less than or equal to 15,614 tons per month. 15,614 tons per month aluminum production is half the actual maximum monthly average production rate that occurred between 1999 and 2000 when the Permittee operated at full production.

The Permittee's actual maximum monthly average production data for the Anode Contact Cooling and Briquette Quenching process was based on 16 hours of production per day. The Permittee plans to operate this process 24 hours a day during the next permit cycle. Ecology converted the

maximum monthly average production rate into a maximum daily production rate based on 24 hour per day operation for a 30 day month per the calculations below. Ecology used the new maximum daily production rate to derive the maximum daily limits for the Anode Contact Cooling and Briquette Quenching process.

Calculations:
Maximum monthly average production rate = 17668 tons per month
(17668 tons/month)x(month/30 days)= 589 tons/day
(589 tons/day)/(16 hours/day)= 37 tons/hour
(37 tons/hour)x(24 hours/day)=888 tons/24 hour day
(888 tons/day)x(2000lb/ton)x(MM lb/1.0x10^6 lb)= 1.8 MM lb/day = Maximum Daily Production

With the netting out allowance for TSS and aluminum at Outfall 001, the intake water (PUD) levels were often higher than effluent levels. This resulted in a large number of zeros in the data set. After evaluating several different ways to set limits for TSS and aluminum at Outfall 001 under the "netting out" provision, the permit writer decided to assign limits from the previous permit (issued February 14, 1992). The limits for daily maximum and monthly average TSS and daily maximum aluminum were determined by multiplying EPA Best Available Technology Economically Achievable (BAT) treatability levels by production normalized flows from process and non-process wastewater sources.

The effluent pH limitation in the permit will continue to be 6.0 to 9.0. This limitation is based on Best Practicable Control Technology (BPT) from guidelines in 40 CFR Part 421.22. This range (6.0 to 9.0) will not result in water quality violations.

Stormwater discharged at Outfall 002 is managed by a combination of best management practices and treatment by a stormwater detention pond, which Ecology has determined constitutes AKART for this facility. Because the monitoring data from Outfall 002 are highly auto correlated they do not meet the requirements for normal statistical distribution, a requirement for proper use of guidelines for establishing performance-based effluent limits. For this reason, limits for Outfall 002 are based on Best Professional Judgement (BPJ).

NETTING OUT

The industrial water supplied to Intalco by Whatcom County PUD No. 1 is treated Nooksack River water. The treatment process consists of coagulation/flocculation followed by gravity separation. The treated water is not filtered and contains concentrations of TSS, aluminum, antimony, and nickel. About 80-90% of Intalco's process water discharge is non-contact cooling water. The concentration of these constituents in the PUD supply water is neither increased nor decreased by use of once-through non-contact cooling. The TSS and aluminum levels in the incoming source water do not meet the technology-based limits for primary aluminum smelters that are based upon the amount of product produced.

Since the TSS, aluminum, antimony and nickel levels in the effluent at Outfall 001 are not fully representative of the impacts from the smelter, the NPDES permit allows Intalco to "net out" incoming pollutants in the intake water. Netting out allows Intalco to subtract the amount of

TSS, aluminum, antimony and nickel in the intake water from the values in the effluent to determine compliance with effluent limits. The effluent limits established for Outfall 001 are for the net discharge of TSS, aluminum, antimony and nickel.

Netting out is allowed in federal regulation, 40 CFR 122.45(g). There is a restriction that the discharge is to the same water body as the intake water unless there is a finding of no environmental degradation. Ecology policy uses the results of whole effluent toxicity (WET) tests as the criteria for determining environmental degradation. WET tests for Outfall 001 indicate that no reasonable potential exists for acute or chronic receiving water toxicity.

The permit will be reopened and the netting out provision for TSS, aluminum, antimony and nickel will be removed if any new information, such as the results of herring bioassay testing, shows that the receiving water environment is adversely affected by these constituents.

STORMWATER ALLOCATION AT OUTFALL 001

Condition S1.D of the permit requires Intalco to divert Outfall 002 stormwater to Outfall 001, pursuant to a specific time schedule.

After completing the diversion of stormwater from Outfall 002 to Outfall 001, the effluent limits for Outfall 001 will be adjusted to allow an allocation for the following parameters in the additional flow: TSS, B(a)P, aluminum, and fluoride. The stormwater allocation for each of these parameters will be determined by converting the concentration-based limit for Outfall 002 from the previous permit (1998) to a mass-based increment and adding it to the baseline effluent limit for Outfall 001. The additional stormwater flow from Outfall 002 entering Outfall 001 will be determined by continuous flow monitoring at D-10.

The maximum daily stormwater allocation for fluoride was calculated as follows:

Fa = Fc x flow x (3,785,000 l/million gallons)/(454,000 mg/lb)

Fa = 416.9 x flow

Where:

Fa = Stormwater allocation for fluoride (lb/million gallons)
Fc = Maximum daily concentration limit for fluoride in 1998 permit (50 mg/l)
flow = Stormwater flow from Outfall 002 (millions of gallons/day)

The same formula was used to calculate the average monthly stormwater allocation for fluoride and the stormwater allocations for TSS and aluminum. The stormwater allocation for B(a)P is based on the maximum stormwater B(a)P concentration measured in 20 months of Outfall 002 sampling. The allocations are tabulated below:

Parameter	Stormwater Allocation (lbs/million gallons)	
	Monthly Average	Daily Maximum
Total Suspended Solids	292	625
Fluoride	292	417
Aluminum	83	125
B(a)P	0.0017	0.0017

ELIMINATING THE TOTAL SUSPENDED SOLIDS (TSS) CONCENTRATION LIMIT FOR OUTFALL 001

The previous permit contained two separate monthly average discharge limits for Total Suspended Solids (TSS) from Outfall 001:

- 150 pounds/day (mass limit)
- 10 milligrams/liter (concentration limit)

During the permit renewal process, Intalco requested that the TSS concentration limit (10 mg/l) be eliminated from the new permit. Intalco believed that the mass limit was more stringent and thus protective of the receiving water.

Over the term of the current permit (September 1998 through the present), Intalco has exceeded the daily maximum TSS limit on two occasions. The assignable causes for both of these exceedances were related to upsets in the operation of the facility's secondary wastewater treatment plant. Intalco has never exceeded the monthly average TSS concentration limit or the monthly average TSS mass limit.

At Ecology's request, Intalco analyzed a database of over 1200 daily TSS measurements from the discharge. Intalco was able to show a correlation between TSS concentration and TSS mass discharges at Outfall 001. A monthly average discharge of TSS at a concentration of 10 mg/l is predicted to represent a mass discharge of 193 lb/day. Therefore, the 10 mg/l TSS concentration limit established in the current permit is less stringent than the 150 lb/day TSS mass limit. After reviewing Intalco's analysis, Ecology agreed that the concentration limit is less stringent than the mass-based limit and eliminated it in the permit.

REDUCED MONITORING FOR ANTIMONY, NICKEL, B(a)P, COPPER, CYANIDE, AND OIL AND GREASE

According to 40 CFR 122.44(a)(2)(i), any limit that is based on federal effluent guidelines may not be removed from a permit unless the source of the pollutant has been completely eliminated and not just controlled. This rule allows a reduction in monitoring at appropriate levels. If the Permittee has demonstrated with adequate historic data that they can meet the permit limit then monitoring may be reduced to once per year (the minimum required under federal rules – 40 CFR 122.44(i)(2). If the permit limit was based on BPJ and Ecology is convinced that the pollutant has no potential to cause environmental harm, the limit can be removed from the permit and replaced by reduced monitoring of the pollutant.

In the permit, monitoring for B(a)P, antimony, nickel, copper, cyanide, and oil and grease at Outfall 001 and for copper, cyanide, B(a)P, and oil and grease at Outfall 002 have been reduced from the previous permit. See the discussion of production-based limits for B(a)P, antimony, and nickel in "**TECHNOLOGY-BASED EFFLUENT LIMITATIONS"** earlier in this document. See the discussion of the reduced monitoring for B(a)P, and antimony and nickel in "**PERFORMANCE-BASED REDUCTION OF MONITORING FREQUENCIES**" later in this document. The Permittee is required to monitor for copper as part of the annual priority pollutant scan (PPS) at both outfalls (Condition S1.I) and is required to monitor for cyanide as part of the annual PPS at Outfall 002. The monitoring frequency for O&G was reduced to monthly for both outfalls. These monitoring changes were made based on reviews of historical monitoring data and the fact that the sources of the respective pollutants have either been eliminated or are being controlled. The following paragraphs provide information about the Permittee's management of the sources of B(a)P, copper, cyanide, and oil and grease. The limits for copper, cyanide, and oil and grease from the previous permit were not changed

<u>B(a)P</u>

Benzo-a-pyrene (B(a)P) is present in very small amounts in the coal tar pitch used in the manufacture of anodes for the reduction process. Several improvements in handling practices and treatment of wastewater have reduced the likelihood of B(a)P and other related polycyclic aromatic hydrocarbons (PAH) being released to the process or stormwater outfalls. The most significant source of B(a)P discharge to the process outfall is from anode contact cooling water. To mitigate this potential, a filtration system has been installed to augment the existing API separator. See the discussions of the anode contact cooling water under Outfall 001 in "Discharge Descriptions" above and in "Treatment Efficiency Studies" later in this document.

In the past, there was a potential for contamination of stormwater with B(a)P because off-specification materials containing B(a)P were stored outside. These off-specification materials were diverted from the anode forming process when process upsets occurred and stored until they could be reused in the process. Recently, the areas where this temporary storage occurred have been covered and bermed to prevent stormwater from contacting this material and to prevent stormwater inside the berm from being released to the surrounding area. These materials are therefore no longer contributing to stormwater contamination.

Over the last permit term, 100% and 99% of the samples collected to monitor B(a)P in the discharges from Outfalls 001 and 002 respectively have been below the detection limit of 0.001 mg/l.

Copper

The source of copper in Intalco's wastewater is believed to be from PUD intake water. Since the copper monitoring requirement was established in Intalco's 1998 NPDES permit, 85% of the samples collected to monitor copper have had copper concentrations below the detection limit of 6 micrograms/liter. To date, with the exception of 7 samples, all of the copper values for the 591 other samples collected were less than 15 micrograms/liter. A summary of the copper monitoring data collected over the term of the previous NPDES permit (September 1998-October 2004) is provided in **Appendix I**.

In October 2003, 5 samples from monitored discharges were found to contain copper concentrations above 250 micrograms/liter which were apparently false positives due to laboratory reagent water contamination. Monitoring results in December 2003 also indicated higher than normal copper concentrations. Intalco conducted an investigation of the root cause of these high copper concentrations. Intalco sampled several potential sources of contamination and analyzed them for traces of copper. The sources included the laboratory de-ionized water system, the acid supplies used for both preservation and digestion, and a representative sampling of volumetric glassware, and digestion vessels. Although the investigation did not conclusively find the source of the contamination, all of the aforementioned except the de-ionized water system were ruled out as potential sources of copper contamination.

The samples collected from the de-ionized water system did not indicate copper contamination. However, inspection of the de-ionized water distribution discovered one faucet with a significant leak. When the valve system was removed and examined for damage, a badly corroded brass screw was found holding the washer onto the body of the valve stem. The screw was removed and replaced with a polypropylene screw. Subsequent analyses of the discharge samples for January through October 2004 show that the copper values have returned to the very low levels considered normal.

Cyanide

The Permittee maintains a triple-lined landfill on site which is used for the disposal of spent potliner (SPL). This landfill has a leachate collection system and a containment berm in place. Cyanide is a component of the SPL in the landfill. A break in the triple liner or a breech in the containment berm could result in a potential discharge of cyanide to the stormwater system.

A review of monthly discharge monitoring reports (DMR) back through January 1994 indicated that 100% of the stormwater samples collected at Outfall 002 and analyzed for cyanide were below the method detection limit of 0.005 mg/l. Given 10 years of data indicating that there has been no cyanide detected in the Outfall 002 discharge, Ecology decided to reduce cyanide monitoring from weekly to annually.

Oil and Grease

Intalco has made significant advances in source reduction or treatment of organic materials over the last ten years. The largest potential for oil contamination occurs in the cooling water used in the "Direct chill" or DC casting process. This water has the potential to become contaminated with oils used in the hydraulics of this process. All of the water used in the DC casting process is pumped to a cooling tower equipped with an oil flocculation and flotation process. The oil, if present, is then removed and disposed as a solid waste in an approved landfill.

Additional measures have been taken to reduce oil and grease contamination from the facility. These measures include the installation of small treatment systems to serve steam-cleaning operations at the automotive, central maintenance, and annex maintenance shops. The treatment systems consist of a coalescing filter and sand filter to remove both oil and grease and suspended solids. The waste materials from theses filters are disposed as solid waste.

Frequency distributions of the Permittee's oil and grease (O&G) monitoring data collected from 1991 through 2004 for Outfalls 001 and 002 are presented in Tables 1 and 2 below. The Practical Quantitation Limit (PQL) and the Method Detection Limit (MDL) for O&G were 3.0 mg/L and 1.0 mg/L respectively. Based on a review of this data, Ecology reduced the monitoring frequency from daily to monthly for both Outfalls.

Table 1 – Oil & Grease Monitoring Data for Outfall 001

Concentration (mg/L) Range (Maximum Daily Permit Limit = 10 mg/L)	Frequency of Occurrence	% of Total Data in Concentration Range
0-1	2995	60.29%
1-2	1417	28.52%
2-3	382	7.69%
3-4	122	2.46%
4-5	29	0.58%
5-6	14	0.28%
6-7	6	0.12%
7-8	2	0.04%
8-9	0	0.00%
9-10	0	0.00%
>10[(1)]	1	0.02%

[1]Occurred on July 20, 1991

Table 2 – Oil & Grease Monitoring Data for Outfall 002		
Concentration (mg/L) Range (Maximum Daily Permit Limit = 10 mg/L)	**Frequency of Occurrence**	**% of Total Data in Concentration Range**
0-1	2275	46.33%
1-2	1613	32.85%
2-3	625	12.73%
3-4	250	5.09%
4-5	89	1.81%
5-6	28	0.57%
6-7	14	0.29%
7-8	14	0.29%
8-9	2	0.04%
9-10	0	0.00%
>10	0	0.00%

SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established Surface Water Quality Standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is a state regulation designed to protect the beneficial uses of the surface waters of the state. Surface water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin wide total maximum daily loading study (TMDL).

NUMERICAL CRITERIA FOR THE PROTECTION OF AQUATIC LIFE

"Numerical" water quality criteria are numerical values set forth in the State of Washington's Water Quality Standards for Surface Waters (Chapter 173-201A WAC). They specify the levels of pollutants allowed in receiving water while remaining protective of aquatic life. Numerical criteria set forth in the Water Quality Standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used in a permit.

NUMERICAL CRITERIA FOR THE PROTECTION OF HUMAN HEALTH

The U.S. EPA has promulgated 91 numeric water quality criteria for the protection of human health that are applicable to Washington State (EPA 1992). These criteria are designed to protect humans from cancer and other disease and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

NARRATIVE CRITERIA

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the State of Washington.

ANTIDEGRADATION

The State of Washington's Antidegradation Policy requires that discharges into a receiving water shall not further degrade the existing water quality of the water body. In cases where the natural conditions of a receiving water are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when the natural conditions of a receiving water are of higher quality than the criteria assigned, the natural conditions shall be protected. More information on the State Antidegradation Policy can be obtained by referring to WAC 173-201A-070.

Ecology has reviewed existing water quality data from Ecology's long-term monitoring station GRG002 and from Eric Crecelius (2000). The data show that the ambient water meets the temperature, dissolved oxygen, pH, turbidity, ammonia, cyanide and metals standards for the designated Class AA marine waters given in Chapter 173-201A WAC. Therefore, will use the designated classification criteria for this water body in the permit. The discharges authorized by this permit should not cause a loss of beneficial uses.

EFFLUENT QUALITY

Pollutant concentrations of chlorine, copper, cyanide, and nickel in the proposed discharge from Outfall 001 exceed aquatic life water quality criteria at the point of discharge with technology-based controls that Ecology has determined to be AKART. Similarly, PAHs in the proposed discharge from Outfall 001 exceed the human health water quality criteria. Therefore, Ecology considered whether the discharge from Outfall 001 qualifies for a mixing zone in accordance with WAC 173-201A-400.

Pollutant concentrations of copper, and nickel in the proposed discharge from Outfall 002 exceed aquatic life water quality criteria at the point of discharge with BMPs and technology-based controls that Ecology has determined to be AKART. Similarly, PAHs in the proposed discharge from Outfall 002 exceed the human health water quality criteria. Therefore, considered whether the discharge from 002 qualifies for a mixing zone in accordance with WAC 173-201A-400.

DESCRIPTION OF THE RECEIVING WATER

The Permittee discharges to marine waters in the Strait of Georgia and these waters are designated waters of extraordinary quality in the vicinity of Outfalls 001, 002, 003-005, 011, and 012. Characteristic uses include the following: fish migration; fish and shellfish rearing,

spawning and harvesting; wildlife habitat; primary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation. Water quality of this class shall markedly and uniformly exceed the requirements for all or substantially all uses.

The closest Ecology long-term core monitoring station, GRG002, is located in the Strait of Georgia near Patos Island. It is far enough away from the Cherry Point industries to prevent their discharges from influencing readings taken there. There is also substantial data for this station. The station at Bellingham Bay, BLL009, is also very close but is influenced by activity in Bellingham and is not suitable for a background data station. The closest long-term rotating station is LOP001 in Lopez Sound.

SURFACE WATER QUALITY CRITERIA

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA 1992). Criteria for this discharge are summarized below:

Fecal Coliforms	14 organisms/100 mL maximum geometric mean
Dissolved Oxygen	7.0 mg/L minimum
Temperature	13 degrees Celsius maximum or incremental increases above background
pH	7.0 to 8.5 standard units
Turbidity	less than 5 NTU above background
Toxics	No toxics in toxic amounts (see **Appendix L** for numeric criteria for toxics of concern for this discharge)

The Strait of Georgia is listed on the 2003/2004 Clean Water Act 303(d) list. It is listed for a variety of pollutants found in the sediments near Outfall 001. The following pollutants were found in the sediments around the Intalco discharge outfalls: hexachlorobenzene, bis(2-ethylhexylphthalate), dibenzofuran, phenol, PCBs, and PAHs. 1,2,4-trichlorobenzene and 1,2-dichlorobenzene were not detected but the detection limits for these parameters exceeded the *Sediment Quality Standards*. Stations near the Intalco discharge that have exceeded numeric sediment quality standards have passed confirmatory bioassay testing in accordance with the Sediment Management Standards (SMS) rule (Chapter 173-204 WAC). Under the SMS rule, sediments that pass confirmatory bioassays meet the sediment quality standards regardless of the numeric sediment chemistry results.

Intalco is required to submit a Sediment Sampling and Analysis Plan in Condition S11.A. of the permit. The additional monitoring to recharacterize the sediment in the vicinity of Outfalls 001 and 002 will be conducted during the beginning of the next permit cycle.

MIXING ZONES

The Water Quality Standards allow Ecology to authorize mixing zones around a point of discharge. Both "acute" and "chronic" mixing zones may be authorized for pollutants that can have a toxic effect on the aquatic environment near the point of discharge. The concentration of pollutants at the boundary of these mixing zones may not exceed the numerical criteria for that type of zone. Mixing zones for toxicants can only be authorized for discharges that are receiving all known, available, and reasonable methods of prevention, control and treatment (AKART) and in accordance with other mixing zone requirements of WAC 173-201A-400.

The National Toxics Rule (EPA, 1992) allows mixing zones to be used to meet human health criteria. Ecology has decided to use the chronic mixing zone for human health criteria.

Ecology has established a compliance schedule in the permit to divert stormwater from the present discharge at Outfall 002 to Outfall 001. After the diversion is complete, Ecology will allow some stormwater to be discharged from Outfall 002 at times when the hydraulic capacity of Outfall 001 would be exceeded, a condition that is expected to occur very infrequently. The following discussion regarding Outfall 002 pertains to the mixing zone for stormwater both before and after the diversion.

MIXING ZONE DETERMINATIONS FOR OUTFALLS 001 AND 002

1. WAC 173-201A-400(1) requires that the allowable size and location of a mixing zone and associated effluent limits be established in a permit.

   This permit specifies the size and location of the allowable mixing zones for Outfalls 001 and 002 and the associated effluent limits.

2. WAC 173-201A-400(2) requires a discharger to fully apply AKART prior to being authorized a mixing zone.

   Ecology has determined that the treatment provided for the discharges at Outfalls 001 and 002 and the pollution prevention activities practiced at Intalco meet the requirements of AKART.

3. WAC 173-201A-400(3) requires mixing zone determinations to consider critical discharge conditions.

   Critical discharge conditions are those conditions that result in reduced dilution. Factors affecting dilution include the depth of water, the density stratification in the water column, the density of the effluent, the currents and the rate of discharge. The Permit Writer’s Manual provides guidance on how to derive the critical conditions for evaluating

dilution from an outfall. Ecology followed that guidance in determining the acute, chronic, and human health criteria dilution factors.

Critical flow conditions for Outfall 001 were re-evaluated for this permit to consider four different flow conditions, which the discharge could experience during the term of the permit. The conditions are:

- Flows based on full production and non-contact cooling water (This is the existing condition)
- Flows based on the addition of Outfall 002 stormwater to full production and non-contact cooling water.
- Flows based on full production only with the non-contact cooling water removed (there are plans for a co-generation facility to be built by the BP refinery, which will use the non-contact cooling water).
- Flows based on full production, no non-contact cooling water, and the addition of Outfall 002 stormwater.

4. WAC 173-201A-400(4) states that no mixing zone shall be granted unless supporting information clearly indicates that the mixing zone would not have a reasonable potential to cause a loss of sensitive or important habitat, substantially interfere with the existing or characteristic uses of the water body, result in damage to the ecosystem, or adversely affect public health as determined by the department.

   The wastewater discharges at Outfalls 001 and 002 have been evaluated to determine if there is a reasonable potential to exceed water quality standards. Water quality standards are based on EPA criteria. EPA's criteria were developed from toxicity tests with numerous organisms. Water quality standards include relevant durations of exposure and are not based on instantaneous exposures.

   Acute standards generally are based on a 1-hour exposure at the criteria level and chronic standards generally are based on a 4-day exposure at the criteria level. The dilution modeling under critical conditions showed that the acute dilution at Outfall 001 was attained in less than 1 minute and the chronic dilution in less than 9 minutes. The dilution modeling under critical conditions showed that the acute dilution at Outfall 002 was attained in less than 3 minutes and the chronic dilution in less than 9 minutes. Drifting and non-strong swimming organisms in the water column would not be affected by Intalco's discharge because they cannot physically stay in the plume close to the outfall long enough to be affected. Strong swimming fish could maintain a position within the plume, but they can also avoid it.

   Benthic organisms are not affected by the mixing zone because the plume is buoyant and rises in the water column. The diffuser for Outfall 001 itself is attached to pier pilings above the bottom which further prevents exposures to benthic organisms.

   Whole effluent toxicity (WET) testing provides a means of evaluating the cumulative toxicity of an effluent. WET testing performed by Intalco for Outfall 001 indicates that there is no reasonable potential for acute or chronic receiving water toxicity. During this

permit term, stormwater from Outfall 002 will be diverted to Outfall 001 and non-contact cooling water from the smelter is scheduled to be routed to the BP cogeneration facility for reuse. Non-contact cooling water will no longer be discharged via Outfall 001 if the BP cogeneration project is implemented. Consequently, Outfall 001 discharges will require additional WET characterization following these changes.

Stormwater at Outfall 002 has occasionally shown toxicity at dilutions less than the chronic critical effluent concentration. Ongoing implementation and refinement of stormwater best management practices (BMPs) is effectively reducing stormwater toxicity. WET limits are set based on dilution factors. When stormwater is re-routed to Outfall 001, the increased mixing allowance will further reduce the potential for the stormwater to actually have toxic effects in the receiving water.

The mixing zone for Outfall 001 is small and is centered at a distance of 1,100 feet from shore. The mixing zone does not overlap the herring spawning areas, which are closer to shore. The mixing zone for Outfall 002 is small and is centered at a distance of 250 feet from shore. When the stormwater is re-routed to Outfall 001, then the mixing zone for Outfall 002 will essentially be unused except for when the hydraulic capacity of Outfall 001 is reached. This is likely to be a very rare occurrence and it is unlikely that these events would occur during the herring spawning season.

There is no documented linkage between Intalco's treated process water and stormwater effluents and the reduction in the local herring population. Intalco will use the recently developed herring bioassay tests to evaluate the possible effects of their effluents on herring and to compare the herring bioassay results with other EPA approved bioassay tests.

When considering all of the above, Ecology has determined that the mixing zones for Outfalls 001 and 002 do not have a reasonable potential to cause a loss of sensitive or important habitat, substantially interfere with the existing or characteristic uses of the water body, result in damage to the ecosystem, or adversely affect public health. However, Ecology has determined that moving the stormwater discharge from Outfall 002 to Outfall 001 is a reasonable, available, and prudent measure that will provide further protection for nearshore habitat. The very infrequent use of Outfall 002 after the diversion is complete should not result in harmful effects.

5. WAC 173-201A-400(5) requires that water quality criteria shall not be violated outside of the boundary of a mixing zone.

   Ecology conducted a reasonable potential to exceed analysis for Outfalls 001 and 002 (see **Appendix L**), using procedures established by EPA and Ecology, for each pollutant to assure that there will be no violations of the water quality criteria outside the boundary of the mixing zones. The RPTE analysis used the lowest dilution ratios from all of the mixing scenarios that were modeled. Modeling studies by ENSR in 2001 also evaluated the aggregate impact of the different industrial discharges in the Cherry Point area and documented that the combined discharges do not result in exceedances of water quality criteria. Whole effluent toxicity test results at Outfall 002 have also shown much improvement as adjustments and additions have been made to BMPs implemented by Intalco.

6. WAC 173-201A-400(6) requires that the size of a mixing zone and the concentrations of pollutants present shall be minimized.

   The mixing zone size constraints provided in WAC 173-201A-400(7) and (8) are among the most limiting in the country. At any given time, the effluent plume actually utilizes only a portion of the acute and chronic mixing zone, which effectively minimizes the volume of water actually involved in mixing. Because tidal currents change direction, the entire volume of the zone is needed to accommodate changes in plume orientation. The plume rises through the water column as it mixes and consequently most of the water volume in the mixing zone below the depth at which the mixed effluent traps, is not involved. Similarly, because the effluent will trap at some depth when density stratification is sufficient, waters above the trapping depth will also not be involved in the mixing.

   In the case of stormwater, much of the time the rate of discharge is much less than the rate that the allowed dilution is based on. That means that much of the time, the actual dilution will be greater, or that the allowed dilution will be realized closer to the outfall, in less time than under the critical conditions.

   It is impractical to attempt to specify in the permit the actual, more limited volume in which the dilution occurs as the plume rises, traps and moves with the current. However, the conservative modeled dilution factors implicitly reduce the mixing zone volume from the volume described in the permit to just the volume actually utilized by the plume.

   The size of the mixing zone (in the form of the dilution factor) has been minimized by the use of design criteria with low probability of occurrence. For example, the reasonable potential to exceed analysis used the expected 95th percentile pollutant concentration, the 90^{th} percentile background concentration, the flux average dilution factor, and the most restrictive ambient current relevant to the acute and chronic aquatic life and human health criteria.

   The chronic mixing zones for Outfalls 001 and 002 are small, extending 217 feet and 209 feet, respectively, in all horizontal directions from the discharge points. The acute mixing zones are much smaller, extending 22 feet and 21 feet, respectively in all horizontal directions. When stormwater is re-routed to Outfall 001, the mixing zone for Outfall 002 will only be used during extreme storm events, and that is expected to be a rare occurrence.

   For all of the above reasons, the size of the mixing zones for Outfalls 001 and 002 and the concentrations of the pollutants present are appropriately and effectively minimized.

7. WAC 173-201A-400(7)(b) and (8)(b) specify the sizing requirements for mixing zones in estuarine waters.

   The boundaries of the mixing zones were sized in accordance with the regulatory requirements. The chronic mixing zone for Outfall 001 extends 217 feet in all horizontal directions from the diffuser. The acute mixing zone for Outfall 001 extends 22 feet in any spatial direction from the diffuser. The chronic mixing zone extends 209 feet in all horizontal directions from Outfall 002. The acute mixing zone extends 21 feet in any

spatial direction from Outfall 002. The chronic mixing zones for each outfall extend from the seabed to the water surface. The human health mixing zones for each outfall are the same size as the chronic mixing zones.

8. WAC 173-201A-400(8) requires that a zone where acute criteria may be exceeded is allowed only if it can be demonstrated to the department's satisfaction that the concentration of, and duration and frequency of exposure to the discharge, will not create a barrier to the migration or translocation of indigenous organisms to a degree that has the potential to cause damage to the ecosystem.

   The limited acute mixing zones authorized for Outfalls 001 and 002 will assure that they will not create a barrier to migration. The effluents from the two discharges will rise as they enter the receiving water assuring that they will not cause translocation of indigenous organisms. Dilution modeling has demonstrated that mixing in the acute zones occurs very rapidly as the less dense effluent rises through the water column due to both the diffuser design and the buoyancy of the effluent. Acute mixing occurs in less than a minute for Outfall 001 and in less than 3 minutes for Outfall 002 and the duration and frequency of exposure to elevated concentrations by any drifting or non-strong swimming organisms is minimized because the organisms simply cannot stay in one place while the plume moves past them. Because the mixing zone poses no barrier to organisms, strong swimming species are able to avoid the plume. Exposure to elevated concentrations in the effluents by benthic organisms is avoided because the plumes rise in the water column.

   The acute mixing zones are sized at 10% of the distance of the chronic mixing zones.

Because the requirements of WAC 173-201A-400 have been satisfied, mixing zones are authorized in accordance with the following geometric configurations and dilution factors.

9. WAC 173-201A-400(9) specifies conditions for allowing the overlap of mixing zones.

   The mixing zones for Outfalls 001 and 002 do not overlap with each other or with another mixing zone.

DIFFUSER INFORMATION

The diffuser at Outfall 001 is approximately 120 feet long with a diameter of 24 inches. There are 12 ports on each side (north and south faces) of the diffuser. Each port is 6 inches in diameter. The average distance between each of the ports is 8 feet, 8 inches. The end of the diffuser has a blind flange with a 6 inch port in the center. The mean lower low water (MLLW) depth at the diffuser is 16 feet.

Outfall 002 extends 250 feet from the shoreline. The open-ended pipe is 30 inches in diameter. The MLLW depth at the discharge point is 9 feet.

This information and additional information is available in the report entitled “Outfalls 001 and 002 Dilution Ratio Study” submitted to Ecology on December 1, 2006 (Cosmopolitan Engineering Group, 2006).

CHRONIC MIXING ZONES

WAC 173-201A-400(7)(b) specifies that mixing zones shall not extend in any horizontal direction from the discharge ports for a distance greater than 200 feet plus the depth of water over the discharge ports as measured during MLLW. Given a MLLW depth of 16 feet for the diffuser at Outfall 001, the horizontal distance is 216 feet. The mixing zone extends from the seabed to the top of the water surface. The horizontal distance of the chronic mixing zone at Outfall 002 is 209 feet.

ACUTE MIXING ZONES

WAC 173-201A-400(8)(b) specifies that in estuarine waters a zone where acute criteria may be exceeded shall not extend beyond 10% of the distance established for the chronic zone. The acute mixing zone for Outfall 001 extends 22 feet in any spatial direction from any discharge port. The acute mixing zone for Outfall 002 extends 21 feet in any spatial direction from the discharge pipe.

The dilution factors of effluent to receiving water that occur within these zones have been determined by the use of a dye study and modeling. The 1991 dye study, the 2002 and 2004 modeling were re-analyzed in August 2006 and revised in November 2006. The report entitled "Outfalls 001 and 002 Dilution Ratio Study" was prepared by Cosmopolitan Engineering Group for Intalco. The models used for near field effects were the EPA dilution models DKHW and UM3. Far field effects were predicted using the EPA dilution model UM3. The dilution factors determined from this analysis are as follows:

Full Production plus non-contact cooling water and separate stormwater outfall (current condition)			
		Acute	**Chronic**
Aquatic Life	Outfall 001	27	41
	Outfall 002	5	33
Human Health, Carcinogen			
	Outfall 001	NA	56
	Outfall 002	NA	38
Human Health, Non-carcinogen			
	Outfall 001	NA	53
	Outfall 002	NA	38

Full Production plus non-contact cooling water plus stormwater (diverting Outfall 002 to Outfall 001)			
		Acute	**Chronic**
Aquatic Life	Outfall 001	26	40
Human Health, Carcinogen			
	Outfall 001	NA	54
Human Health, Non-carcinogen			
	Outfall 001	NA	52

Full production minus non-contact cooling water and separate stormwater outfall (sending cooling water to BP Cogen before the diversion is complete)			
		Acute	Chronic
Aquatic Life	Outfall 001	40	66
	Outfall 002	5	33
Human Health, Carcinogen			
	Outfall 001	NA	87
	Outfall 002	NA	38
Human Health, Non-carcinogen			
	Outfall 001	NA	87
	Outfall 002	NA	38

Full Production minus non-contact cooling water plus stormwater (diverting Outfall 002 to Outfall 001 and sending cooling water to BP Cogen)			
		Acute	Chronic
Aquatic Life	Outfall 001	28	61
Human Health, Carcinogen			
	Outfall 001	NA	83
Human Health, Non-carcinogen			
	Outfall 001	NA	83

Additional information regarding the updated mixing zone analysis is shown in **Appendix J**. A complete record of the dilution analysis for the Intalco aluminum smelter is available in Ecology's files.

CONSIDERATION OF SURFACE WATER QUALITY-BASED LIMITS FOR NUMERIC CRITERIA

Pollutant concentrations in the proposed discharges exceed water quality criteria with technology-based controls, which Ecology has determined to be AKART. A mixing zone is authorized for each discharge in accordance with the geometric configuration, flow restriction, and other restrictions for mixing zones in Chapter 173-201A WAC as described above.

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near field) or at a considerable distance from the point of discharge (far field). Toxic pollutants, for example, are near-field pollutants--their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as BOD is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating surface water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

The derivation of surface water quality-based limits also takes into account the variability of the pollutant concentrations in both the effluent and the receiving water.

Surface water quality-based limits are derived for the water body's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body uses.

The critical condition for the Georgia Strait at Outfalls 001 and 002 occurs during the neap tide at MLLW and with 90th percentile background pollutant concentrations. Ambient data at critical conditions in the vicinity of the two outfalls was taken from both historical data at Ecology's Ambient Monitoring Station GRG002 and an intensive monitoring study conducted in July-September 1999 entitled "Concentration of Metals in Marine Water and Effluent of the Alcoa Intalco Works," prepared by Eric Crecelius, Battelle Marine Sciences Laboratory, April 2000):

Parameter	**Value Used**
Temperature	19.3^{o} C
pH (high)	7.9
Dissolved Oxygen	8.0 mg/l
Ammonia-N, total	0.45 mg/l
Cyanide, total	<0.01 mg/l
Fluoride	1.27 mg/l
Aluminum, dissolved	11.4 µg/l
Cadmium, dissolved	0.11 µg/l
Copper, dissolved	0.93 µg/l
Lead, dissolved	0.02 µg/L
Mercury	0.0012 µg/L
Zinc, dissolved	2.90 µg/L
Other Metals	Below detection limits

The impacts of dissolved oxygen deficiency, temperature, pH, turbidity, ammonia, metals, and other toxics were determined as shown below, using the dilution factors at critical conditions described above.

BOD_5

This discharge results in a small amount of BOD loading relative to the large amount of dilution occurring in the receiving water at critical conditions. Technology-based limitations will be protective of dissolved oxygen criteria in the receiving water.

Temperature

The impact of the discharges from Outfalls 001 and 002 on the temperature of the receiving water was analyzed using the guidance for the State's new temperature standards, WAC 173-201A-210. To determine the reasonable potential to exceed temperature standards, Ecology evaluated the following criteria:

1. Annual Summer Maximum Criteria – Each water body has an annual maximum temperature criterion. These threshold criteria protect specific categories of aquatic life by controlling the effect of human actions on summer temperatures. The reasonable potential to exceed the annual summer maximum criteria for Outfalls 001 and 002 was determined by using the following equation:

$$T_{chronic} = T_{ambient90} + (T_{effluent95} - T_{ambient90})/DF$$

Where:

- $T_{chronic}$ = Receiving water temperature at the chronic mixing zone boundary
- $T_{ambient90}$ = 90th percentile of background temperatures at Station GRG002 from January 1999 through June 2005
- $T_{effluent95}$ = 95th percentile of daily maximum effluent temperatures from January 1999 through October 2006.
- **DF** = Chronic dilution factor at the critical condition

If $T_{chronic}$ is greater than the criterion of 13 ºC for extraordinary quality receiving waters, an effluent limit is needed.

Table 1 in **Appendix K** shows that the $T_{chronic}$ in all cases for both Outfalls 001 and 002 is less than the temperature criterion of 13 ºC. Therefore, there is no predicted violation of Water Quality Standards and an effluent limit is not required.

2. Incremental Warming Criteria – Where background temperatures are cooler than criterion - At locations and times when background temperatures are cooler than the assigned threshold criterion, point sources are permitted to warm the water at the edge of the mixing zone by only a defined increment **t**. The reasonable potential to exceed incremental warming criteria for Outfalls 001 and 002 was determined using the equations below:

- $T_{chronic} = T_{ambient} + (T_{effluent95} - T_{ambient})/DF$

- **$t = 12/(T_{ambient} - 2)$**

Where:

- **$T_{chronic}$** = Receiving water temperature at the chronic mixing zone boundary
- **$T_{ambient}$** = Instantaneous maximum background temperature during critical time period at Station GRG002 from January 1999 through June 2005
- **$T_{effluent95}$** = 95th percentile of daily maximum effluent temperatures from January 1999 through October 2006
- **DF** = Chronic dilution factor at the critical condition

If the ambient background temperature (**$T_{ambient}$**) is cooler than the threshold criterion, and if **$T_{chronic}$** is greater than **($T_{ambient} + t$)**, an effluent limit is needed.

Tables 2 and 3 in **Appendix K** show the reasonable potential to exceed evaluation for several ambient temperatures selected from the spring months (March-June) of 1999 through 2005. Outfalls 001 and 002 discharge into the Cherry Point area where the herring spawn during the spring season. Therefore, spring temperatures were chosen as the critical time period for this evaluation.

In all cases, the **$T_{chronic}$** for Outfalls 001 and 002 in Tables 2 and 3 is less than **($T_{ambient} + t$)**. Therefore, there is no predicted violation of Water Quality Standards and an effluent limit is not required.

3. Incremental Warming Criteria – When the criterion is exceeded due to natural conditions – At locations and times when a threshold criterion is being exceeded due to natural conditions, all human sources, considered cumulatively, must not warm the waterbody more than 0.3ºC above the naturally warm condition. If the ambient temperature (expressed as the 90th percentile of background temperatures, **$T_{ambient90}$**) is warmer than the threshold criterion, then an incremental warming analysis must be performed.

The **$T_{ambient90}$** for the Strait of Georgia in the vicinity of Outfalls 001 and 002 is 11.8 ºC, which is less than the threshold temperature criterion of 13 ºC. Therefore, the incremental warming criteria is not applicable.

pH

Because of the high buffering capacity of marine water, compliance with the technology-based effluent limits of 6.0 to 9.0 will assure compliance with the Water Quality Standards for Surface Waters.

Turbidity

The impact of turbidity was evaluated based on the range of turbidity in the effluent and turbidity of the receiving water. Due to the large degree of dilution, it was determined that the turbidity criteria would not be violated outside the designated mixing zone.

Toxic Pollutants

Federal regulations (40 CFR 122.44) require NPDES permits to contain effluent limits for toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. This process occurs concurrently with the derivation of technology-based effluent limits. Facilities with technology-based effluent limits defined in regulation are not exempted from meeting the Water Quality Standards for Surface Waters or from having surface water quality-based effluent limits.

The following toxics were determined to be present in the discharge: ammonia, heavy metals, cyanide, phenols, and trace PAHs. A reasonable potential analysis (**Appendix L)** was conducted on these parameters to determine whether or not effluent limitations would be required in this permit.

Valid ambient background data was available for ammonia, total cyanide, fluoride, aluminum, dissolved cadmium, dissolved copper, dissolved lead, mercury, and dissolved zinc. Calculations using all applicable data resulted in a determination that there is no reasonable potential for this discharge to cause a violation of water quality standards (**See Appendix L**). This determination assumes that the Permittee meets the other effluent limits of this permit.

Water quality criteria for metals in Chapter 173-201A WAC are based on the dissolved fraction of the metal, except for arsenic and mercury.

Metal criteria may also be adjusted using the water effects ratio approach established by USEPA, as generally guided by the procedures in USEPA Water Quality Standards Handbook, December 1983, as supplemented or replaced.

Ammonia

Ammonia is considered to be a toxic pollutant and was evaluated for reasonable potential to exceed water quality standards. Determining the site-specific acute and chronic criteria for ammonia is slightly more complicated than simply obtaining the criteria from the regulations and comparing them to the effluent data. Ammonia's toxicity is dependent on that portion which is available in the unionized form. The amount of unionized ammonia is dependent on the pH, salinity, and temperature of the receiving water in the marine environment. In order to evaluate ammonia toxicity, receiving water information must be used.

One ambient receiving water station was evaluated to determine the site-specific acute and chronic criteria and to obtain background ammonia data. The Ecology ambient monitoring station GRG002 was used in this analysis. Acute and chronic ammonia criteria were calculated using Hampson's model in a spreadsheet form. From those criteria, the 90th percentile value was chosen to represent the critical condition as recommended by the Ecology Permit Writer's Manual. The values for the ambient station and the 90th percentile values for background total

ammonia concentrations were used in the reasonable potential calculation shown in **Appendix L**. With the available dilution, it was determined that there is no reasonable potential for Intalco to exceed water quality standards for ammonia at the edge of the dilution zone.

WHOLE EFFLUENT TOXICITY

The Water Quality Standards for Surface Waters require that the effluent not cause toxic effects in the receiving waters. Many toxic pollutants cannot be detected by commonly available detection methods. However, toxicity can be measured directly by exposing living organisms to the wastewater in laboratory tests and measuring the response of the organisms. Toxicity tests measure the aggregate toxicity of the whole effluent, and therefore this approach is called whole effluent toxicity (WET) testing. Some WET tests measure acute toxicity and other WET tests measure chronic toxicity.

Acute toxicity tests measure mortality as the significant response to the toxicity of the effluent. Dischargers who monitor their wastewater with acute toxicity tests are providing an indication of the potential lethal effect of the effluent to organisms in the receiving environment.

Chronic toxicity tests measure various sublethal toxic responses such as retarded growth or reduced reproduction. Chronic toxicity tests often involve either a complete life cycle test of an organism with an extremely short life cycle or a partial life cycle test on a critical stage of one of a test organism's life cycles. Organism survival is also measured in some chronic toxicity tests.

Accredited WET testing laboratories have the proper WET testing protocols, data requirements, and reporting format. Accredited laboratories are knowledgeable about WET testing and capable of calculating an NOEC, LC_{50}, EC_{50}, IC_{25}, etc. All accredited labs have been provided the most recent version of Ecology's Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria* which is referenced in the permit. Any Permittee interested in receiving a copy of this publication may call the Ecology Publications Distribution Center 360-407-7472 for a copy. Ecology recommends that Permittees send a copy of the acute and chronic toxicity sections of their permits to their laboratory of choice.

The WET tests for Outfall 001 during effluent characterization indicate that no reasonable potential exists to cause receiving water acute or chronic toxicity (See **Appendix M)**. The Permittee will not be given an acute or chronic limit for the current discharge configuration at Outfall 001. The permit requires Intalco to conduct new characterization testing of the combined effluent at Outfall 001 following the diversion of Outfall 002 and to retest the effluent again prior to application for permit renewal. This additional testing is to demonstrate that acute or chronic toxicity has not increased in the effluent.

If the Permittee makes process or material changes which, in Ecology's opinion, results in an increased potential for effluent toxicity, then Ecology may require additional effluent characterization in a regulatory order, by permit modification, or in the permit renewal. Toxicity is assumed to have increased if WET testing conducted for submission with a permit application fails to meet the performance standards in WAC 173-205-020, "whole effluent toxicity performance standard". The Permittee may demonstrate to Ecology that changes have not increased effluent toxicity by performing additional WET testing after the time the process or material changes have been made.

Acute toxicity of Outfall 002 was measured during compliance monitoring in the previous permit term (See **Appendix M)**. On five occasions the acute toxicity was found to be at levels that, in accordance with WAC 173-205-050(2)(a), have a reasonable potential to cause receiving water toxicity. **An acute toxicity limit is therefore required.** The acute toxicity limit is no statistically significant difference in test organism survival between the acute critical effluent concentration (ACEC), 16.7% of the effluent, and the control.

The acute toxicity limit is set relative to the zone of acute criteria exceedance (acute mixing zone) established in accordance with WAC 173-201A-400. The ACEC is the concentration of effluent existing at the boundary of the acute mixing zone during critical conditions.

Monitoring for compliance with an acute toxicity limit is accomplished by conducting an acute toxicity test using a sample of effluent diluted to equal the ACEC and comparing test organism survival in the ACEC to survival in nontoxic control water. The Permittee is in compliance with the acute toxicity limit if there is no statistically significant difference in test organism survival between the ACEC and the control.

Chronic toxicity of Outfall 002 was also measured during compliance monitoring in the previous permit term (See **Appendix M)**. On ten occasions the chronic toxicity was found to be at levels that, in accordance with WAC 173-205-050(2)(a), have a reasonable potential to cause receiving water toxicity. **A chronic toxicity limit is therefore required.** The chronic toxicity limit is no statistically significant difference in test organism response between the chronic critical effluent concentration (CCEC), 3.0% of the effluent, and the control.

The chronic toxicity limit is set relative to the mixing zone established in accordance with WAC 173-201A-400. The CCEC is the concentration of effluent existing at the boundary of the mixing zone during critical conditions.

Monitoring for compliance with a chronic toxicity limit is accomplished by conducting a chronic toxicity test using a sample of effluent diluted to equal the CCEC and comparing test organism response in the CCEC to organism response in nontoxic control water. The Permittee is in compliance with the chronic toxicity limit if there is no statistically significant difference in test organism response between the CCEC and the control.

TOXICITY IDENTIFICATION/REDUCTION (TI/RE)

In May 1999, the stormwater discharge from Outfall 002 failed the chronic toxicity testing (WET) required in Condition S3. of the previous permit. Intalco began additional chronic testing in June 1999 per the requirements of WAC 173-205. The additional chronic testing exhibited toxicity failures. The toxicity failures triggered Intalco's permit requirement to submit a Toxicity Identification/Reduction Evaluation (TI/RE) Plan to Ecology for review and approval. The purpose of the TI/RE Plan was to evaluate and determine the source of the toxicity and to identify measures to eliminate or reduce the toxicity.

The results of Intalco's Toxicity Identification Evaluation (TIE) identified aluminum as the source of toxicity with complicating factors resulting from the presence of fluoride.

Intalco conducted an Initial Source Assessment Study in response to the TI/RE from January through March 2000. The objectives of the study were to: 1) measure the concentrations of total and soluble aluminum, fluoride, and total suspended solids (TSS) in stormwater runoff at various locations, 2) identify the areas that contain processes which are significant source contributors, 3) determine which areas would benefit from source reduction strategies and/or stormwater treatment, and 4) identify additional sampling studies to better quantify specific source contributions. Intalco conducted a Refined Source Assessment from March 2000 through June 2001 in response to the findings of the Initial Source Assessment.

In response to the TI/RE, Intalco reviewed and revised their housekeeping best management practices (BMPs) starting in June 2000. The BMPs included increased routine sweeping, covering the dross and collector bar storage areas, and instituting annual wet and dry season inspections as described in Section 10 of Intalco's Stormwater Pollution Prevention Plan.

The final report submitted by Intalco in response to the TI/RE is titled "Proposed Stormwater Pond Outfall Changes", dated October 14, 2003. In this report, Intalco proposed modifying the stormwater discharge outlet to divert stormwater through Outfall 001. Stormwater flows that exceed the hydraulic capacity of Outfall 001 would be discharged through Outfall 002. The Outfall 002 diversion is discussed in more detail later in this document.

Ecology has reviewed and approved all of the documents related to the TI/RE. Condition S.9 of the previous permit required Intalco to implement the BMPs and source reduction methods that were proposed as a result of the TI/RE. The draft permit requires a number of new BMPs to further reduce pollutant loading in the stormwater. Ecology has determined that in addition to stormwater treatment, source control/source reduction through BMPs, the diversion of Outfall 002 to Outfall 001 is AKART for the Intalco facility. Condition S.1.D of the permit requires Intalco to complete the diversion within two years of the effective date of the permit. Conditions S8. and S9. of the permit require Intalco to recharacterize the effluent from Outfall 001 for acute and chronic toxicity. These studies are scheduled to occur after the Outfall 002 diversion has been completed and is operational to evaluate the impacts of mixing the effluent from Outfall 002 with effluent from Outfall 001.

CHERRY POINT HERRING

Background Information

Ecology has been working with several stakeholders including other state agencies, area industries, and the tribes (the Cherry Point Technical Workgroup) to investigate the Cherry Point herring decline. Over the past six years, Ecology has worked with Western Washington University's Shannon Point Marine Center (SPMC) to develop herring tests to evaluate effluent toxicity as a source of the decline in the Cherry Point herring and to evaluate risks from industrial discharges to other herring stocks. As a result of these efforts, SPMC developed three herring tests. These three tests are a 96-hour larval acute survival test, a 10-day embryo survival and normal development test, and a 10-day larval survival and growth test. SPMC and a commercial lab, Nautilus Environmental, conducted validation studies of the three herring tests

during the 2005 herring spawning season. A validation study determines if a lab can get a reasonably consistent answer each time a test is performed using the same toxicant.

Both labs successfully validated the 96-hour larval acute survival test and the 10-day embryo survival and normal development test. In November 2005, Ecology approved the regulatory use of these tests. The labs could not completely validate the 10-day larval survival and growth test, but its partial success and the knowledge gained promise better performance next time.

Ecology has identified a number of other herring studies that are important in building on the success of the herring test development. These studies included comparing the herring embryo and larval survival and growth tests with Environmental Protection Agency (EPA) tests, an ambient toxicity study, and a temperature tolerance study. These studies and a request for funding were proposed to the Cherry Point Technical Workgroup and several other parties in 2004. No support was offered at that time.

Following the announcement regarding the validation of the two herring tests and after review and comment on the permit requirements in Tesoro's and Intalco's proposed NPDES permits, several industries approached Ecology to discuss alternatives to including the validated herring tests in the NPDES permits.

Ecology and the industries discussed further refinement of the larval survival and growth test, validation of this test, and comparisons of the survival and growth test and the embryo test to EPA tests. In order to provide an assessment on Cherry Point herring while perfecting the larval survival and growth test and conducting the EPA comparisons, Ecology proposed an ambient toxicity study and temperature tolerance study. Industry agreed to support these studies in lieu of herring studies being included in this NPDES permit term.

Agreed Order

Ecology has issued an agreed order with the BP Cherry Point Refinery, ConocoPhillips Ferndale Refinery, Shell Puget Sound Refinery, Tesoro Anacortes Refinery, and the Alcoa-Intalco Works Aluminum Smelter (Industries) to conduct additional herring research and studies.

The Agreed Order (No. 3192) requires the five industries to conduct larval acute survival tests twice annually at each of their process wastewater and stormwater outfalls and to provide $227,000 in funding toward: 1) further refinement and validation of the larval survival and growth test, 2) comparisons of herring test sensitivity to surrogate EPA tests, 3) an evaluation of ambient water toxicity at Cherry Point, 4) a temperature tolerance study of embryos from Cherry Point and two other regional herring stocks, and 5) to ensure a supply of herring gonads for use in these studies.

The Order also includes a requirement to follow up on adverse effects found during the course of these studies with additional testing and/or investigation. Ecology will review the results of the studies required under the Order and include validated herring or equivalent EPA surrogate test requirements in the industry National Pollutant Discharge Elimination System (NPDES) permits during the next permit cycle.

Additional Benefits

After further refinement, the larval survival and growth test may be validated and approved for regulatory use. This will provide another tool for evaluating chronic effects on herring from effluent toxicity and expand the number of available commercial labs that can perform the test. Assuming that the EPA tests are equally or more sensitive than the herring tests, the EPA tests are better for monitoring effluents. The species used in the EPA tests are available year round, the tests can be performed more easily, and they are more economical.

The ambient toxicity test will help Ecology to evaluate the combined effects of industry effluent plumes on herring embryos. Herring embryos are sensitive to high water temperatures. The temperature tolerance study will help Ecology to determine if water temperatures measured at Cherry Point are high enough to cause adverse effects on herring embryos.

Herring Toxicity Testing Requirements for Intalco

Under the Agreed Order, Intalco will conduct herring larval toxicity testing on the final effluent from Outfall 001 twice a year beginning in January 2007. Intalco shall also conduct herring larval toxicity testing on the effluent from their stormwater outfall (002) twice a year beginning in January 2009, if the diversion to Outfall 001 has not occurred.

HUMAN HEALTH

Washington's water quality standards now include 91 numeric health-based criteria that must be considered in NPDES permits. These criteria were promulgated for the state by the U.S. EPA in its National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992).

Ecology has determined that the Permittee's effluent is likely to have chemicals of concern for human health. The Permittee's high priority status is based on its status as a major discharger and knowledge of data or process information indicating that regulated chemicals occur in the discharges from the facility.

A determination of the discharge's potential to cause an exceedance of the water quality standards was conducted as required by 40 CFR 122.44(d) for Outfalls 001 and 002. The reasonable potential determination was evaluated following procedures in the Technical Support Document for Water Quality-Based Toxics Control (EPA/505/2-90-001) and Ecology's Permit Writer's Manual (Ecology Publication 92-109, July, 1994). The determination indicated that the discharges from Outfalls 001 and 002 have no reasonable potential to cause a violation of water quality standards, thus an effluent limit is not warranted. See **Appendix L.**

Arsenic

In 1992 the USEPA adopted risk-based arsenic criteria for the protection of human health for the State of Washington. The criterion for marine waters is 0.14 μg/L inorganic arsenic, and is based on exposure from fish and shellfish tissue ingestion. The freshwater criterion is 0.018 μg/L, and is based on exposure from fish and shellfish tissue and water ingestion. These criteria have caused confusion in implementation because they differ from the drinking water maximum contaminant level (MCL) of 10 μg/L, which is not risk-based, and because the human health

criteria are sometimes exceeded by natural background concentrations of arsenic in surface water and ground water.

In Washington, when a natural background concentration exceeds the criterion, the natural background concentration becomes the criterion, and no dilution zone is allowed. This could result in a situation where natural groundwater or surface water used as a municipal or industrial source-water would need additional treatment to meet numeric effluent limits even though no arsenic was added as waste. Although this is not the case for all dischargers, we do not have data at this time to quantify the extent of the problem.

A regulatory mechanism to deal with the issues associated with natural background concentrations of arsenic in groundwater-derived drinking waters is currently lacking. Consequently, the Water Quality Program, at this time, has decided to use a three-pronged strategy to address the issues associated with the arsenic criteria. The three strategy elements are:

1. Pursue, at the national level, a solution to the regulatory issue of groundwater sources with high arsenic concentrations causing municipal treatment plant effluent to exceed criteria. The revision of the drinking water MCL for arsenic offered a national opportunity to discuss how drinking water sources can affect NPDES wastewater dischargers, however Ecology was unsuccessful in focusing the discussion on developing a national policy for arsenic regulation that acknowledges the risks and costs associated with management of the public exposure to natural background concentrations of arsenic through water sources. The current arsenic MCL of 10 µg/L could also result in municipal treatment plants being unable to meet criteria-based effluent limits. Ecology will continue to pursue this issue as opportunities arise.

2. Additional and more focused data collection. The Water Quality Program will in some cases require additional and more focused arsenic data collection, will encourage or require dischargers to test for source water arsenic concentrations, and will pursue development of a proposal to have Ecology's Environmental Assessment Program conduct drinking water source monitoring as well as some additional ambient monitoring data. At this time, Washington NPDES permits will contain numeric effluent limits for arsenic based only on treatment technology and aquatic life protection as appropriate.

3. Data sharing. Ecology will share data with USEPA as they work to develop new risk-based criteria for arsenic and as they develop a strategy to regulate arsenic.

SEDIMENT QUALITY

Ecology has promulgated aquatic sediment standards (Chapter 173-204 WAC) to protect aquatic biota and human health. These standards state that Ecology may require Permittees to evaluate the potential for the discharge to cause a violation of applicable standards (WAC 173-204-400).

In September 1999, Intalco conducted a marine sediment sampling and analysis study. The purpose of the Fall 1999 study was to 1) comply with the current NPDES permit sediment monitoring requirements, 2) determine if sediment remedial actions were necessary, and 3) evaluate sediment quality concerns related to the Department of Natural Resources (DNR) lease

requirements. To meet these objectives, the study focused on: characterizing chemicals of potential concern (COC), concentrations and biological effects within and adjacent to the NPDES outfall mixing zones, analyzing facility process indicator chemicals including aluminum, fluoride, and cyanide, and analyzing select samples for the full suite of Sediment Management Standard (SMS) chemicals.

Sediment was collected and analyzed from depths of 2 cm and 10 cm in order to assess sediment quality in the areas of ongoing discharge and in the biologically active zone, respectively. COCs were determined to be LPAHs, HPAHs, PCBs, and various semi-volatile organic compounds. The full suite of SMS chemicals were analyzed at stations in areas that had not been previously characterized.

The sediment sampling found Sediment Quality Standard (SQS) and cleanup screening level (CSL) exceedances of both PCBs and PAHs in the upper 2 cm and the upper 10 cm of sediment. Other chemical exceedances included bis(2-ethylhexylphthalate), dibenzofuran, and phenol.

The aluminum, fluoride, and phenol concentrations in the sediment were found to be equivalent to those found in reference samples collected in the Carr Inlet. The levels of phenols are believed to be due to the decomposition of coniferous wastes. Cyanide was not detected in any of the sediments collected during the investigation. The detection of chemicals that exceeded SQS chemical criteria was consistent with historical sampling data.

Confirmatory bioassays were performed on the upper 10 cm of samples that exceeded the SQS chemical criteria. No adverse biological effects were found in any of the sediment samples indicating that elevated chemical concentrations in sediments adjacent to the Intalco facility were not associated with adverse ecological effects. Under WAC 173-204-310(2), sediment samples that pass all of the confirmatory biological tests are considered to pass sediment quality standards despite any exceedances of chemical standards.

After a review of the chemistry and bioassay data collected during the 1999 study, Ecology agreed that remedial cleanup action of the sediments adjacent to Intalco is not necessary. However, chemical exceedances in surface sediments remain a concern. Chemical exceedances in the upper 10 cm near the process and stormwater outfalls may represent effects from the current discharges or another continuing source and need further investigation. Condition S11. of the permit includes a requirement to submit a Sediment Sampling and Analyses plan to conduct additional sediment sampling and analysis for PAHs, PCBs, aluminum, fluoride, and cyanide. The sediment recharacterization will be required early in the next permit term to evaluate sediment condition following the clean-up and closure of the Beach and Construction Landfills as discussed later in this document.

FUGITIVE ALUMINA IMPACT STUDY

Concerns have been raised about the spillage of alumina ore during ship unloading and its possible accumulation in sediments around Intalco's marine terminal. In December 1999, Intalco submitted a notice of construction application requesting approval to upgrade their alumina ore unloading air pollution control system. Ecology reviewed the application and issued an order of approval to upgrade the control system. After the approval order was issued, Intalco

determined that their pier was not structurally able to accommodate the proposed upgrades and the upgrades were not installed.

Since Intalco determined that the control system could not be upgraded, Intalco has made a considerable investment of resources into upgrading and maintaining the integrity of the seal on the clamshell and into operating the clamshell to minimize fugitive emissions. Intalco has also implemented a number of BMPs to minimize the fugitive emissions. Currently most of the alumina ore fugitive emissions are generated as the clamshell is lifted out of the ships hold. Based on the evaluations that have been made and the results of the BMPs that have been implemented, it is not likely that Intalco will be able to further reduce or eliminate alumina ore fugitive emissions.

Ecology is planning to issue an order by mid-2007 under their air and water quality authorities that will require Intalco to evaluate the potential impact of fugitive emissions from alumina ore unloading on sediments near the Intalco pier. If the evaluation determines that there is a significant impact to sediments, Ecology will require Intalco to propose a method(s) to mitigate that impact.

GROUND WATER QUALITY LIMITATIONS

Ecology has promulgated Ground Water Quality Standards (Chapter 173-200 WAC) to protect beneficial uses of ground water. Permits issued by Ecology shall be conditioned in such a manner so as not to allow violations of those standards (WAC 173-200-100).

The stormwater pond is lined with a PVC liner. The sanitary lagoon in Intalco's wastewater treatment system consists of an unlined native clay bottom that could potentially discharge to ground water.

There is no data available to determine if there is a potential for an impact to ground water beneath the sanitary lagoon. As a result Intalco will be required to submit a ground water impact study plan to be implemented in the third and fourth year of the permit. The plan must include sampling and testing schedules for the sanitary lagoon for all of the parameters included in the groundwater quality standards (GWQS) (except pesticides, radionuclides, PBBs and dioxin), and a hydrogeologic investigation to estimate the impact to ground water. If this study determines that there is a potential for the wastewater in the sanitary lagoon to cause an exceedance of the GWQS, Intalco will be required to install monitoring wells to investigate any actual effects on the ground water.

COMPARISON OF EFFLUENT LIMITS WITH THE EXISTING PERMIT ISSUED ON SEPTEMBER 1, 1998

Effluent Limitations: Outfall # 001					
Parameter	**Units**	**Existing Permit**		**New Permit**	
		Monthly Average	**Daily Maximum**	**Monthly Average**	**Daily Maximum**
Total Suspended Solids	lbs/day mg/l	150 10	185 --	150 --	185 --
Fluoride	lbs/day	68	296	68	296
Aluminum	lbs/day	10.3	30	10.3	30
Free Cyanide	mg/l	<0.012	0.012	<0.012	0.012
Benzo(a)Pyrene	mg/l	<0.01	0.01	0.03 [a]/0.06 [b] (lb/day)	0.065 [a]/0.13 [b] (lb/day)
Antimony	mg/l	NL[c]	NL[c]	2.85 [a]/5.7 [b] (lb/day)	6.4 [a]/12.8 [b] (lb/day)
Nickel	mg/l	NL[c]	NL[c]	1.25 [a]/2.5 [b] (lb/day)	1.85 [a]/3.7 [b] (lb/day)
Oil and Grease	mg/l	5	10	5	10
pH		Within the range of 6.0 - 9.0		Within the range of 6.0 - 9.0	

[a] Permit Limit when aluminum production is less than or equal to 15,614 tons per month

[b] Permit Limit when aluminum production is greater than 15,614 tons per month

[c] NL= No Limit

Effluent Limitations: Outfall # 002					
Parameter	**Units**	**Existing Permit**		**New permit**	
		Monthly Average	**Daily Maximum**	**Monthly Average**	**Daily Maximum**
Total Suspended Solids	mg/l	35	75	35	75
Fluoride	mg/l	35	50	35	50
Aluminum	mg/l	10	15	10	15

Effluent Limitations: Outfall # 002					
Free Cyanide	mg/l	--	--	--	--
Benzo(a)Pyrene	mg/l	--	<0.01	--	<0.01
Oil and Grease	mg/l	5	10	5	10
pH		Within the range of 6.0 - 9.0		Within the range of 6.0 - 9.0	

Effluent Limitations: Sanitary Lagoon					
		Existing Permit		**New permit**	
Parameter	**Units**	**30-Day Average**	**7-Day Average**	**30-Day Average**	**7-Day Average**
Biochemical Oxygen Demand	mg/l lbs/day	45.0 22.4	65.0 32.4	45.0 22.4	65.0 32.4
Total Suspended Solids	mg/l lbs/day	45.0 22.4	65.0 32.4	45.0 22.4	65.0 32.4
Fecal Coliform	Colonies/100 ml	200	400	200	400
Chlorine	mg/l	<0.012	0.012	--	--
Minimum Number of Operating Tubes		--		12	
pH		Within the range of 6.0 - 9.0		Within the range of 6.0 - 9.0	

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are required (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and the effluent limitations are being achieved.

The monitoring schedule is detailed in the permit under Condition S1. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

PERFORMANCE-BASED REDUCTION OF MONITORING FREQUENCIES

EPA published guidance in April of 1996 entitled, "Interim Guidance for Performance-Based Reduction of NPDES Permit Monitoring Frequencies". EPA's goal is to reduce the regulatory burden associated with reporting and monitoring on the basis of excellent performance. The guidance recommends looking at and comparing long term average values to permit limits to evaluate a facility's performance.

Several parameters in Intalco's treated effluent were evaluated using this guidance. In addition to using the approach recommended in the guidance, daily maximum values were also compared with permit limits. **Appendix O** summarizes the current and proposed monitoring frequencies based on two years of representative monitoring data (January 2000 – December 2002).

For the parameters evaluated, Intalco's monitoring history has demonstrated an ability to consistently meet regulatory limits and knowledge of the treatment system operation. The proposed monitoring frequencies are based on the guidance recommendations and best professional judgment.

Ecology deviated from the policy recommendations for fluoride and cyanide at Outfall 001 and fluoride and aluminum at Outfall 002 by increasing monitoring upstream at the secondary treatment plant and the stormwater pond. The monitoring frequencies for antimony and nickel, copper, and oil and grease at Outfall 001 and copper, cyanide, B(a)P, and oil and grease at Outfall 002 were further reduced because years of monitoring data and other plant knowledge have shown that the sources of these pollutants either no longer exist or have been controlled. More detailed information about these specific pollutants is discussed earlier in this document.

<u>B(a)P</u>

Intalco conducted weekly B(a)P monitoring of Outfall 001 from April 1991 through September 1998 and monthly monitoring since October 1998. The Outfall 001 data indicates that B(a)P concentrations have not been above the detection limit (0.001 mg/L) since February 1996. Prior to that, there were 10 occasions (between June 1995 and February 1996) when B(a)P was above the detection level (the highest level of B(a)P of those 10 occasions was 0.016 lb/day). Using the maximum water flow at Outfall 001 (3.5 million gallons per day), the 0.001 mg/L concentration translates to a long term average (LTA) of 0.03 lb/day, which is 100% of the proposed monthly average permit limit (0.03 lb/day when production is less than or equal to 15,614 tons per month) and 50% of the proposed monthly average permit limit (0.06 lb/day when production is greater than 15,614 tons per month). The highest level (0.016 lb/day) reported is 25% of the proposed daily maximum permit limit (0.065 lb/day when production is less than or equal to 15,614 tons per month) and 12% of the proposed daily maximum permit limit (0.13 lb/day when production is greater than 15,614 tons per month).

Ecology determined a monitoring frequency of once per month and once per quarter at Outfall 001 for B(a)P based on the previous monitoring frequency (once per month) and the ratio of the LTA to the proposed monthly average permit limits for both tiers as outlined in EPA's "Interim Guidance for Performance-Based Reduction of NPDES Permit Monitoring Frequencies" dated April 1996 (EPA's Guidance). In EPA's Guidance, the 100% ratio of LTA to the proposed monthly average limit for B(a)P when production is less than or equal to 15,614 tons per month requires monitoring once per month. The 50% ratio of LTA to the proposed monthly average

limit for B(a)P when production is greater than 15,614 tons per month requires monitoring once per quarter. Because there have been no incidents of B(a)P reported above the detection level of 0.0001 mg/l since March 2005, Ecology determined that requiring monitoring once per quarter is appropriate.

Antimony and Nickel

As discussed earlier in "**TECHNOLOGY-BASED EFFLUENT LIMITATIONS",** Ecology added mass-based limits (at Outfall 001) for antimony and nickel to this permit. Ecology reviewed the historical antimony and nickel data collected from 1988-1998 at Outfall 001. The table below provides a frequency distribution of that data. The data indicates that a significant amount of the total nickel and antimony in the effluent comes into the plant in the water supplied by the Public Utility District. The LTA of antimony (0.206 lb/day) is 7% of the proposed monthly average permit limit (2.85 lb/day when production is less than or equal to 15,614 tons per month) and 4% of the proposed monthly average permit limit (5.7 lb/day when production is greater than 15,614 tons per month). The highest level reported (0.375 lb/day) is 6% of the proposed daily maximum permit limit (6.4 lb/day when production is less than or equal to 15,614 tons per month) and 3% of the proposed daily maximum permit limit (12.8 lb/day when production is greater than 15,614 tons per month).

The LTA of nickel (0.198 lb/day) is 16% of the proposed monthly average permit limit (1.25 lb/day when production is less than or equal to 15,614 tons per month) and 8% of the proposed monthly average permit limit (2.5 lb/day when production is greater than 15,614 tons per month). The highest level reported (0.646 lb/day) is 35% of the proposed daily maximum permit limit (1.85 lb/day when production is less than or equal to 15,614 tons per month) and 17% of the proposed daily maximum permit limit (3.7 lb/day when production is greater than 15,614 tons per month). In the last 2 years of data collection (1997 and 1998), the highest level of nickel reported (0.256 lb/day) is 14% of the proposed daily maximum permit limit.

Ecology determined a monitoring frequency of once every 6 months for antimony and nickel based on the previous monitoring frequency (once per month in the permit cycles during 1988-1998 - summarized in the table below) and the ratio of the LTAs to the monthly average permit limits (<25%) as outlined in EPA's Guidance.

Frequency Distribution of Antimony and Nickel Daily Mass Discharge Data (1988-1998)

Metal Concentration Range	Effluent Nickel	Influent Nickel	Effluent Antimony	Influent Antimony
0.0-0.2 lb/day	174	195	121	50
0.2-0.4 lb/day	88	87	159	236
0.4-0.6 lb/day	14	4	0	0
0.6-0.8 lb/day	4	0	0	0
0.8-1.0 lb/day	0	0	0	0

ACTION LEVELS FOR POLLUTANTS DISCHARGED FROM THE STORMWATER POND AND THE SECONDARY WASTEWATER TREATMENT SYSTEM

Ecology established "action levels" in the permit for TSS, fluoride, and aluminum discharged in the stormwater pond (SWP) effluent and for TSS and fluoride discharged in the Secondary Wastewater Treatment System effluent. These action levels were placed in the permit to ensure that the Permittee is consistently implementing the required BMPs designed to reduce or eliminate the respective pollutants, evaluating the cause of any upward trends in pollutant discharges, and taking corrective action to reverse those trends. Ecology determined the action levels for the SWP and the SWTS based on an analysis of the 2003 and 2004 monthly monitoring data submitted by the Permittee in their discharge monitoring reports (DMRs).

When action levels are exceeded at the SWP, the Permittee must review BMPs, check for spills to the stormwater system, and check ditches and weir integrity and placement. When action levels are exceeded at the SWTS, the Permittee must review BMPs, check addition rates of treatment chemicals, and influent flows and loading.

LANDFILL MONITORING

Intalco signed an Agreed Order with Ecology for the remedial investigation and feasibility study of three historic landfills on its property in Ferndale, Washington under the Model Toxics Control Act (MTCA). The three landfills -- known as Beach One, Beach Two, and the Construction Debris Landfill -- were used from 1965 until the 1970s and early 1980s to dispose of industrial solid waste generated at the Intalco plant. The landfills are located on bluffs above the Straight of Georgia.

The Agreed Order required Intalco to determine the volume and type of material found in each landfill and to characterize any surface or ground water contamination from the landfills. This information was used as the basis for evaluating the different cleanup methods that were most appropriate for the site. The cleanup plan for the site was to remove the debris from the two Beach Landfills on the bluffs and place it in the permitted hazardous and solid waste landfill (Spent Potliner (SPL) Landfill) on the Intalco property and to close and cap the Construction Debris Landfill in place. The landfills were cleaned up and closed in the summer and fall of 2006 under a Consent Decree issued by Ecology.

Intalco stopped using the landfills in 1984 and closed them by placing soil covers over the debris. Intalco has been monitoring seeps located in the hillside below the closed landfills since 1985. While there has been no determination of an immediate threat to human health or the environment from contaminants leaving the site, in November 1999, tests at three landfill monitoring stations (Outfalls 003, 004, and 005) indicated contaminants from the landfills may be leaching into surface water runoff.

The results of the November 1999 monitoring as compared to current stormwater limits and the marine water quality standards are shown in **Appendix N**. The majority of the results exceed both stormwater limits and surface water quality standards.

Intalco excavated and removed all waste materials and contaminated native soils from the Beach I and Beach II Landfills and installed an impermeable cap on the Closed Construction Debris Landfill. Ecology determined that this aggressive source control is AKART for the discharges from Outfalls 003, 004, and 005. Additional monitoring of these discharges will be conducted in accordance with the Consent Decree issued by Ecology.

The NPDES permit includes new monitoring requirements at the Secondary Treatment Plant to test for PCBs and priority pollutant metals in the leachate from the SPL Landfill. Groundwater monitoring is required in the consent decree as part of the MTCA cleanup to evaluate impacts to groundwater from the closed landfills.

STORMWATER POND MONITORING

Condition S1.C of the permit requires Intalco to monitor the stormwater pond effluent whenever the average 2-hour flow from the stormwater pond is $\geq$3.7cfs (with a maximum required frequency of 3 days per week). Intalco determined, based on the results of their Stormwater Pond Characterization Study, that the minimum rainfall that occurs before significant flow begins at compliance point D-10 is about 0.05 inches of rainfall or 0.20 million gallons, which is one-tenth of the design storm volume. A volume of 0.20 million gallons is equal to a 3.7 cfs flow rate over a two hour time interval. After evaluating Intalco's precipitation data for January 2002 through September 2004, Ecology determined that a stormwater pond monitoring frequency based on the threshold volume of 3.7 cfs would be sufficient.

Intalco will be expected to maintain historic performance levels to continue to receive the reduced monitoring. If the performance levels of the facility deteriorate, monitoring frequencies will revert to the frequencies in the current permit.

EFFLUENT LIMITS BELOW QUANTITATION

The water quality-based effluent limits for cyanide in the wastewater are below the capability of current analytical technology to quantify. The Quantitation Level is the level at which concentrations can be reliably reported with a specified level of error. For maximum daily effluent limits, if the measured effluent concentration is below the Quantitation Level, the Permittee reports NQ for non-quantifiable. For average monthly effluent limits, all effluent concentrations below the Quantitation Level but above the Method Detection Level are used as reported for calculating the average monthly value.

EFFLUENT LIMITS BELOW DETECTION

The Method Detection Level (MDL) is the minimum concentration of an analyte that can be measured and reported with a 99 percent confidence that its concentration is greater than zero as determined by a specific laboratory method. For maximum daily limits, if the concentrations are below the MDL the Permittee reports ND for non-detectable. For average monthly limits, all values above the MDL are used as reported and all values below the MDL are calculated as zero.

LAB ACCREDITATION

With the exception of certain parameters the permit requires all monitoring data to be prepared by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, *Accreditation of Environmental Laboratories.* The Intalco laboratory is currently accredited for:

Chloride	SM4500-Cl E
Chlorine Residual, Total	SM4500-Cl G
Cyanide, Total	EPA335.3
Cyanide, Weak Acid Dissociable	SM4500-CN I
Fluoride	SM4500-F E
Hexane Extractable Material	EPA1664
pH	SM4500-H
Solids, Total Suspended	SM2540 D
Specific Conductance	EPA120.1
Sulfate	SM4500-SO4 F
Aluminum	EPA200.7, EPA6010
Calcium	EPA200.7, EPA6010
Copper	EPA200.7, EPA6010
Potassium	SM3500-K B
Sodium	EPA200.7, EPA6010

OTHER PERMIT CONDITIONS

OUTFALL 002 DIVERSION

Permit Condition S1.D requires Intalco to construct a diversion structure so that nearly all stormwater would discharge through Outfall 001 (process water outfall) rather than Outfall 002 (the existing stormwater outfall). Only stormwater flows in excess of the hydraulic capacity of Outfall 001 would be discharged through Outfall 002. It is predicted that a discharge of stormwater through Outfall 002 would occur very infrequently, approximately once every five years or less. This discharge would take place during a high volume short duration rain event, typically during winter or spring months.

As discussed elsewhere in the fact sheet, Intalco has a history of toxicity problems in the discharge from Outfall 002. The sources of many of these problems have been corrected and will continue to be addressed by implementing and following BMPs at the smelter. However, the location of the Outfall 002 structure is an ongoing concern; it currently discharges to fairly shallow water and is not equipped with a diffuser. Stormwater discharged through Outfall 002 has the potential to cause toxicity and temperature impacts in the receiving water despite Intalco's ability to comply with permit limits and water quality standards at the edge of the mixing zone.

Receiving water temperature and toxicity are of particular concern because of the presence of Cherry Point herring. Cherry Point herring have historically spawned in the vicinity of and at the depth of the discharge of Outfall 002. The Cherry Point herring's rate of development is temperature dependent and there has been a demonstrated increase in receiving water temperature in their spawning areas.

Cherry Point herring populations are currently rebounding after being severely depressed to near extinction. The receiving water environment needs to be properly managed so that the herring stock continue to increase their numbers and have every chance to rebuild.

Ecology has determined that the best way to minimize potential toxicity and temperature impacts in the receiving water is to require Intalco to implement additional BMPs and to divert the Outfall 002 discharge through Outfall 001. Outfall 001 is in deeper water and discharges through a diffuser away from the herring spawning habitat. It has better dilution within the mixing zone so discharging stormwater from Outfall 002 to Outfall 001 will provide greater water quality protection.

Following the diversion, monitoring will continue at the outlet of the stormwater pond to ensure the effectiveness of upstream treatment. The permit specifies action levels for the stormwater discharge at which Intalco will be required to investigate potential problems and take corrective action as necessary. The permit also requires monitoring for any discharges at Outfall 002 after the diversion.

TEMPORARY CURTAILMENT

A condition is included in the permit allowing the Permittee to petition for reduced monitoring and the suspension of studies and certain permit requirements during temporary curtailment of smelter operations.

REPORTING AND RECORDKEEPING

The conditions in S2. of the permit are based on the authority to specify any appropriate monitoring, reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-220-210).

OPERATION AND MAINTENANCE MANUAL

In accordance with state and federal regulations, the Permittee is required to take all reasonable steps to properly operate and maintain their wastewater treatment systems (40 CFR 122.41(e)) and WAC 173-220-150 (1)(g). An operation and maintenance (O & M) manual was submitted as required by state regulation for the construction of wastewater treatment facilities (WAC 173-240-150). Intalco is required to update the O&M manual (per Condition S3 of the permit) to include changes made to the PWTS, the SWTS, and the anode cooling water treatment system as described in Condition S10 of the permit. It has been determined that the implementation of the procedures in the O & M manual and Treatment System Operating Plan is a reasonable measure to ensure compliance with the terms and limitations in the permit.

SOLID WASTE PLAN

Ecology has determined that the Permittee has a potential to cause pollution of the waters of the state from leachate of solid waste.

This permit requires, under the authority of RCW 90.48.080, that the Permittee update the solid waste plan designed to prevent solid waste from causing pollution of the waters of the state. The plan must be submitted to the local permitting agency for approval, if necessary, and to Ecology.

The Permittee shall not allow leachate from its solid waste material to enter state waters without providing all known, available, and reasonable methods of treatment, nor allow such leachate to cause violations of the State Surface Water Quality Standards, Chapter 173-201A WAC, or the State Ground Water Quality Standards, Chapter 173-200 WAC. The Permittee shall apply for a permit or permit modification as may be required for such discharges to state ground or surface waters.

The Permittee shall manage the pile of furnace brick from the anode plant located adjacent to the solid waste landfill in accordance with the management plan required by the Whatcom County Health Department. The management plan shall emphasize recycling as much of the brick as possible and disposing of the remainder in the on-site landfill.

NON-ROUTINE AND UNANTICIPATED DISCHARGES

Occasionally, this facility may generate wastewater which is not characterized in their permit application because it is not a routine discharge and was not anticipated at the time of application. This wastewater is typically water used to pressure test storage tanks or fire water systems or leaks from drinking water systems. It is typically clean but may be contaminated with pollutants. The permit contains an authorization for non-routine and unanticipated discharges. The authorization requires prior characterization of these wastewaters for pollutants and examination of the opportunities for reuse. Depending on the nature and extent of pollutants in this wastewater and opportunities for reuse, Ecology may authorize a direct discharge via the process wastewater outfall or through a stormwater outfall for clean water, require the wastewater to be placed through the facilities wastewater treatment process, or require the water to be reused.

SPILL PLAN

Ecology has determined that the Permittee stores a quantity of chemicals that have the potential to cause water pollution if accidentally released. Ecology has the authority to require the Permittee to develop best management plans to prevent this accidental release under section 402(a)(1) of the Federal Water Pollution Control Act (FWPCA) and RCW 90.48.080.

The Permittee has developed a plan for preventing the accidental release of pollutants to state waters and for minimizing damages if such a spill occurs. The permit requires the Permittee to update this plan and submit it to Ecology.

TREATMENT EFFICIENCY STUDIES

PRIMARY WASTEWATER TREATMENT SYSTEM (PWTS) AND SECONDARY WASTEWATER TREATMENT SYSTEM (SWTS)

Intalco is required to operate process wastewater treatment systems according to procedures and criteria described in an operating plan. The previous permit required Intalco to update and maintain operational plans onsite for the process wastewater treatment systems. Intalco's PWTS is a clarifier that is used to treat the wastewater from the wet air pollution control system (wet scrubbers). The Secondary Wastewater Treatment System (SWTS) is comprised of several treatment tanks and a clarifier. The wastewater from the PWTS and landfill leachate is treated through chemical precipitation and sedimentation in the SWTS.

Condition S10.A. of the permit requires Intalco to update their O&M Plan to include their operational plan for the PWTS. Condition S10.B. requires Intalco to conduct a treatment efficiency study on the SWTS to determine if it meeting the design criteria and to propose and implement any changes needed to upgrade the system.

ANODE COOLING WATER

Anode contact water is generated during the anode production process. This wastewater is filtered through a screen before it is commingled with other treated wastewaters and discharged through Outfall 001.

Ecology is requiring Intalco (Condition S10.C of the permit) to complete a study of the anode contact cooling water filtration system to determine if it meets AKART standards. If the system does not meet AKART, Intalco will be required to upgrade the system to AKART standards.

OUTFALL EVALUATION

In accordance with Condition S.6 of the previous permit, Intalco conducted an underwater inspection of Outfalls 001 and 002 in June 1999. Overall, both outfalls were in good condition. No significant damage or deterioration to the pipes was found. At Outfall 001, the clamp bolts located at Bent 64 were loose and the vertical support rod on Bent 65 was malfunctioning due to a failed weld at the pipe clamp connection. Intalco replaced the bolts on the pipe clamp at Bent

64 and the support rod at Bent 65 and removed marine organisms fouling the diffuser openings during the scheduled pier maintenance program in 2000.

Condition S12. in the permit requires the Permittee to conduct an outfall inspection once per permit cycle and submit a report detailing the findings of that inspection. The purpose of the inspection is to determine the condition of the discharge pipe and diffusers and to evaluate the extent of sediment accumulations in the vicinity of the outfall.

BEST MANAGEMENT PRACTICES AND STORMWATER POLLUTION PREVENTION PLAN

Condition S14.A. of the permit lists BMPs that will help to further reduce or eliminate pollutants in the process and stormwater that is discharged to Outfalls 001 and 002, respectively. Permit Condition S14.B., requires Intalco to demonstrate compliance with these BMPs or submit a compliance schedule to implement these BMPs in the Stormwater Pollution Prevention Plan. Intalco identified the listed BMPs in their Stormwater Pollution Prevention Plan and in their Stormwater Runoff Study Final Report (in the sections titled "As-Built Pond Engineering Report", "Site Hydrologic Characterization", Rainfall Characterization", "Stormwater Model", and "Stormwater Pond Characterization") submitted in compliance with Conditions S.9 and S.11 of the previous permit.

The stormwater BMPs required in the permit generally fall into two categories, non-capital and capital improvements. Non-capital improvements are BMPs that eliminate or minimize exposure of stormwater runoff to pollutants. These BMPs include good housekeeping, preventive maintenance, inspections, sediment/erosion control, employee training, spill prevention and cleanup measures. Capital improvements are BMPs which prevent runoff from contacting storm water or which contain/divert/treat contaminated stormwater discharges so that they do not impact surface waters. These BMPs require capital expenditures and include detention/retention ponds, berms, treatment systems, covering systems, and stormwater diversions.

GENERAL CONDITIONS

General Conditions are based directly on state and federal law and regulations and have been standardized for all individual industrial NPDES permits issued by Ecology.

PERMIT ISSUANCE PROCEDURES

PERMIT MODIFICATIONS

Ecology may modify this permit to impose numerical limitations, if necessary to meet Water Quality Standards for Surface Waters, Sediment Quality Standards, or Water Quality Standards for Ground Waters, based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

Ecology may also modify this permit as a result of new or amended state or federal regulations.

RECOMMENDATION FOR PERMIT ISSUANCE

This permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to control toxics, protect human health, aquatic life, and the beneficial uses of waters of the State of Washington. Ecology is recommending that this permit be issued for (5) years.

REFERENCES FOR TEXT AND APPENDICES

Cosmopolitan Engineering Group. 2006. Intalco Aluminum Corporation - Outfalls 001 and 002 Dilution Ratio Study, revised November 2006.

Crecelius, E. 2000. Concentration of Metals in Marine Water and Effluent of the Alcoa Intalco Works. Battelle Marine Sciences Laboratory, April 2000.

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1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.

1991. Technical Support Document for Water Quality-based Toxics Control. EPA/505/2-90-001.

1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water. EPA/600/6-85/002a.

1983. Water Quality Standards Handbook. USEPA Office of Water, Washington, D.C.

Tsivoglou, E.C., and J.R. Wallace.

Washington State Department of Ecology.

1994. Permit Writer's Manual. Publication Number 92-109

Washington State Department of Ecology.

Laws and Regulations(http://www.ecy.wa.gov/laws-rules/index.html)

Permit and Wastewater Related Information (http://www.ecy.wa.gov/programs/wq/wastewater/index.html

Wright, R.M., and A.J. McDonnell.

Fishcher, H.B., E.F. List, R.C.Y. Koh, J. Imberger, and N.H. Brooks, 1979. Mixing in Inland and Coastal Waters, Academic Press, Inc., Harcourt Brace Jovanovich Publishers, New York NW, pp. 126-127.

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to reissue a permit to the Intalco Aluminum Corporation. The permit contains conditions and effluent limitations that are described in this fact sheet.

The Department will publish a Public Notice of Draft (PNOD) on May 11, 2005 in the Bellingham Herald and the Ferndale Westside Record Journal to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the Ecology office listed below. Written comments should be mailed to:

Judy Schwieters
Department of Ecology
Industrial Section
P.O. Box 47706
Olympia, WA 98504-7706

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the sixty (60) day comment period. All comments and requests for a hearing must be submitted in writing to the address above by the 5:00 p.m.on Monday July 11, 2005. The request for a hearing shall indicate the interest of the party and reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-220-090). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing (WAC 173-220-100).

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, (360) 407-6955, or by writing to the address listed above.

This permit and fact sheet were written by **Liem Nguyen and Judy Schwieters.**

Update:

Public Notice Published: May 11, 2005

Public Comment Period: May11, 2005 through July22, 2005

APPENDIX B--GLOSSARY

Acute Toxicity--The lethal effect of a compound on an organism that occurs in a short period of time, usually 48 to 96 hours.

AKART-- An acronym for "all known, available, and reasonable methods of treatment".

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation --The average of the measured values obtained over a calendar month's time.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD_5--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD_5 is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of a treatment facility.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic Toxicity--The effect of a compound on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean Water Act (CWA)--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

APPENDIX B—GLOSSARY (CONTINUED)

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Continuous Monitoring –Uninterrupted, unless otherwise noted in the permit.

Critical Condition--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Dilution Factor--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the percent effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

Engineering Report--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

APPENDIX B—GLOSSARY (CONTINUED)

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Major Facility--A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

Minor Facility--A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Mixing Zone--An area that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in state regulations (Chapter 173-201A WAC).

National Pollutant Discharge Elimination System (NPDES)--The NPDES (Section 402 of the Clean Water Act) is the Federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the State of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both State and Federal laws.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Quantitation Level (QL)-- A calculated value five times the MDL (method detection level).

Practical Quantitation Limit (PQL) -- is the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. The PDL is a calculated value that is five times the MDL (method detection level).

Responsible Corporate Officer-- A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or have gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures (40 CFR 122.22).

APPENDIX B—GLOSSARY (CONTINUED)

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Suspended Solids (TSS)--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Upset--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, lack of preventative maintenance, or careless or improper operation.

Water Quality-based Effluent Limit--A limit on the concentration of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

APPENDIX C--TECHNICAL CALCULATIONS

Several of the Excel® spreadsheet tools used to evaluate a discharger's ability to meet Washington State water quality standards can be found on the Department's homepage at http://www.ecy.wa.gov/programs/wq/wastewater/index.html.

APPENDIX D—RESPONSE TO COMMENTS

APPENDIX E—MAP OF DISCHARGE LOCATIONS

APPENDIX F—SUMMARY OF NONCOMPLIANCE

APPENDIX G—DISCHARGE MONITORING SUMMARY

APPENDIX H—WASTEWATER CHARACTERIZATION

APPENDIX I—COPPER MONITORING RESULTS

APPENDIX J—MIXING ZONE ANALYSES

APPENDIX K—TEMPERATURE ANALYSIS

APPENDIX L—REASONABLE POTENTIAL TO EXCEED (AQUATIC LIFE CRITERIA AND HUMAN HEALTH) ANALYSES FOR OUTFALL 001

APPENDIX L—REASONABLE POTENTIAL TO EXCEED (AQUATIC LIFE CRITERIA AND HUMAN HEALTH) ANALYSES FOR OUTFALL 002

APPENDIX M—ACUTE AND CHRONIC WET TEST RESULTS FOR OUTFALLS 001 &002

APPENDIX N—LANDFILL MONITORING RESULTS

APPENDIX O—PERFORMANCE BASED REDUCTION OF MONITORING FREQUENCIES