**FACT SHEET FOR NPDES PERMIT WA- 000007-8**

**FACILITY NAME: Longview Fibre Paper and Packaging, Inc**

**DATE OF THIS FACT SHEET – September 25, 2007**

**DATE OF EXPIRING PERMIT – August 1, 2006**

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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 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).

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in this review have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Comments and the resultant changes to the permit will be summarized in Appendix D--Response to Comments.

| **GENERAL INFORMATION** | |
|---|---|
| Applicant | Longview Fibre Paper and Packaging, Inc. |
| Facility Name and Address | P.O. Box 369<br>300 Fibre Way<br>Longview, WA 98632 |
| Type of Facility: | Pulp, Paper, and Paperboard Mill |
| SIC Code | 2621, 2631, & 2653 |
| Discharge Location | Columbia River<br>Latitude: 46° 05' 45" N Longitude: 122° 55' 40" W. |
| Water Body ID Number | WA-CR-1010 - 1.4 miles upstream of Longview Bridge at river mile 67.5 |

## BACKGROUND INFORMATION

*DESCRIPTION OF THE FACILITY*

HISTORY

Longview Fibre Company started producing container-board type paper products in 1927. The company used waste wood from the nearby Long Bell Lumber Company to make Kraft container-board. The total output at that time was 100 tons/day.

The mill underwent a series of upgrades since 1927. The most recent included addition of a new recovery furnace in 1992. On site bleaching was discontinued in 1994. The mill is currently one of the largest in the world producing unbleached paper and containerboard products. Annual average production is approximately 2800 tons of paper per day. The mill is a major discharger.

Since the 2001 NPDES permit was issued, Longview Fibre Company transferred the facility to Longview Fibre Paper and Packaging, Inc. (LFPP). Prior to April 2007 the company stock was publicly traded. In April 2007 the company was purchased by Brookfield Asset Management. The mill continues to be operated as LFPP.

INDUSTRIAL PROCESS

The LFPP pulp mill is located on approximately 350 acres near Longview, WA. Currently the company operates seven converting operations in the western United States producing corrugated containers and specialty packaging.

The mill produces both virgin pulp and recycled pulp. Virgin pulping units include:

- two Kamyr continuous digesters which use the Kraft process,
- two M & D continuous sawdust cookers, and
- a Sunds digester which uses the neutral sulfite semi chemical (NSSC) process.

Recycled pulp is made at an old-corrugated-container (OCC) recycling plant. Additionally, bleached market pulp is purchased as necessary. The pulp mill operates continuously except during upsets and scheduled maintenance down periods. LFPP operates nine paper machines as market conditions demand. Pulp types are blended at the paper machines to create products meeting customer specifications.

An important part of the Kraft pulping process is recovery of energy and chemicals from the spent cooking liquor. The company burns spent Kraft pulping liquor in three recovery furnaces to recover energy and chemicals. Four lime kilns are available to help complete chemical recovery. Additional steam for mill use is generated with three multi-fuel power boilers (primarily hogged fuel) and one oil/natural gas power boiler. A natural gas co-generation unit which produces electricity and steam is also available, but has been used infrequently during the last five years due to energy market conditions.

The company employs approximately 1500 workers at the mill.

DISCHARGE OUTFALL

Process wastewater and stormwater are routed to the process wastewater treatment system. LFPP made final modifications to route all stormwater runoff into the process wastewater collection system in 2003. The process wastewater treatment system includes:

a large primary clarifier,
a two train UNOX pure oxygen activated sludge secondary treatment basin, and
six secondary clarifiers.

An asphalt lined surge basin is also available to hold high strength wastewater and high flows. Contents of the surge basin are metered into the wastewater treatment system for treatment. Treated wastewater is discharged via outfall 001 into the Columbia River.

An additional UNOX train and secondary clarifier are used as a "dedicated control device" (DCD). The DCD treats pulp processing condensates to comply with maximum achievable control technology (MACT) requirements (see 40 CFR Part 63, Subpart S). DCD effluent is routed through the mill process wastewater treatment system for further treatment and discharge.

Sanitary waste generated at the mill is treated at an on-site sanitary wastewater treatment system. The system includes:

a primary clarifier,
a tricking filter tower,
a secondary clarifier, and
a chlorine contact chamber.

A hypochlorite solution is used for disinfection. The treated sanitary effluent joins the treated process wastewater effluent and is discharged via outfall 001.

Outfall 001 was constructed in 1992. The outfall extends 500 feet in a southerly direction into the Columbia River. A diffuser section makes up the last 400 feet of the outfall. The diffuser includes 67 unidirectional ports spaced about 8 feet apart at an average water depth of 40 feet.

Sludge from the sanitary system is anaerobically digested. The anaerobically digested sanitary sludge is pumped to the lime kiln mud thickeners and burned with the lime mud.

The primary and secondary process sludges are combined, then dewatered on site. The dewatered sludge is mixed with hogged fuel and burned in the mixed fuel power boilers.

LFPP also operates a water treatment plant on-site. Water is taken from the old mouth of the Cowlitz River and filtered for mill use. Any unused filtered water is discharged via outfall 001. Filter backwash is treated in the process wastewater treatment system.

*PERMIT STATUS*

A permit for this facility was issued on June 20, 2001. The permit included the following effluent limitations:

OUTFALL # 001

| Parameter | Average Monthly[a] | Maximum Daily[b] |
|---|---|---|
| Based on 3,400 T/D off machine production | | |
| $BOD_5$ | 12,000 | 38,800 |
| TSS | 33,500 | 66,800 |
| Based on 3,900 T/D off machine production[c] | | |
| $BOD_5$ | 14,200 | 43,000 |
| TSS | 37,100 | 73,800 |
| All production rates | | |
| | Daily Minimum | Daily Maximum |
| pH[d] (SU) | 5.4 | 9.0 |
| Production (T/D) | N/A | N/A |
| Temperature[e] | N/A | N/A |

[a] The average monthly effluent limitation is defined as the highest allowable average of all daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

[b] The maximum daily effluent limitation is defined as the highest allowable daily discharge. The daily discharge means the discharge of a pollutant measured during a calendar day. For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For other units of measurement, the daily discharge is the average measurement of the pollutant over the day.

[c] Limits will become applicable when the Permittee has three consecutive months production above 95 percent of the phase I production level ( 3705 tons/day – off machine production).

[d] Indicates the range of permitted values. When pH is continuously monitored excursions between 4.4 and 5.4, or 9.0 and 10.0 shall not be considered violations provided no single excursion exceeds 60 minutes in length and total excursions do not exceed 7 hours and 30 minutes per month. Any excursions below 4.4 and above 10.0 are violations. The instantaneous maximum and minimum pH shall be reported monthly.

[e] Permittee is authorized to discharge temperature subject to the study and schedule set forth in Special Condition S13.

SANITARY EFFLUENT

| Parameter | Average Monthly[a] | Maximum Daily[b] |
|---|---|---|
| $BOD_5$ concentration (mg/L) | 30 | 45 |
| $BOD_5$ (lb/D) | 38 | 90 |
| $TSS_5$ concentration (mg/L) | 30 | 45 |
| TSS (lb/D) | 38 | 90 |
| Fecal coliform (#/100 ml) | 200 | 400 |

| | |
|---|---|
| Chlorine Residual (mg/L) | Range 0.1 to 6.0 |
| BOD and TSS removal (%) | 65 |
| pH[c] (SU) | Range 6.0 to 9.0 at all times |

[a] The average monthly effluent limitation is defined as the highest allowable average of daily discharges over a

calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

b The maximum daily effluent limitation is defined as the highest allowable daily discharge. The daily discharge means the discharge of a pollutant measured during a calendar day. For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For other units of measurement, the daily discharge is the average measurement of the pollutant over the day.

c Indicates the range of permitted values.

An application for permit renewal was received by the Department on January 30, 2006. A completeness letter was sent by the Department on March 27, 2006.

*SUMMARY OF COMPLIANCE WITH THE PERMIT ISSUED JUNE 20, 2001*

The facility was most recently inspected on February 28, 2007. A compliance inspection with sampling was conducted on October 10, 2006.

During the history of the June 20, 2001 permit, the Permittee had the following number of permit violations based on Discharge Monitoring Reports (DMRs) submitted to the Department and inspections conducted by the Department:

| Discharge | Limit | # of violations | # of incidents |
|---|---|---|---|
| Process (001) | TSS daily maximum | 15 | 11 |
| | $BOD_5$ daily maximum | 8 | 3 |
| | $BOD_5$ monthly average | 3 | 3 |
| | pH maximum | 3 | 1 |
| Sanitary | Fecal coliform daily maximum | 3 | 3 |
| | pH minimum | 1 | 1 |
| | pH maximum | 6 | 1 |
| | TSS daily maximum | 4 | 1 |
| | TSS monthly average | 2 | 1 |
| | TSS % removal | 4 | 3 |
| | $BOD_5$ % removal | 1 | 1 |

Appropriate enforcement actions were taken. Total penalties for the period were $116,250.

Compliance improved during 2006. One violation occurred. On July 5, 2006 the TSS daily maximum limit was exceeded. The incident was associated with flow surges during startup after a two day mill shutdown.

Prior to 2006, three major upsets occurred in the process wastewater treatment plant during the permit term:

one causing two days of violations in June 2004,
one causing two days of violations in December 2002, and
one causing four days of violations in November 2001.

All the $BOD_5$ daily maximum, $BOD_5$ monthly average, and pH maximum violations along with seven of the TSS daily maximum violations were associated with these three incidents. Each

incident was caused by a different upstream activity which was corrected to prevent recurrence. Changes made as a result of the upsets include improved piping to convey some spills directly to the surge basin and improved startup procedures after down periods. Total penalties associated with the upset periods were $86,500.

Four other TSS daily maximum violations were associated with mill start-ups: December 29, 2003, December 27, 2004, July 7, 2005, and December 27, 2005. The November 2001 incident previously mentioned was also associated with a mill start-up. Cold weather start-ups have proven difficult for LFPP. Mill upsets during startup often result in variable wastewater flow and loading. Lower wastewater temperatures limit the ability of the wastewater treatment system to react to variability. LFPP made changes necessary to prevent the same specific violation causes from reoccurring, but different causes emerged. In 2006 LFPP did not have a December shutdown and complied with TSS limits during the month.

The three remaining TSS daily maximum violations were associated with short term problems that were corrected.

Two problems accounted for the majority of sanitary treatment plant violations. The TSS daily maximum and TSS monthly average violations were corrected with installation and proper adjustment of the new variable speed pump. The sanitary plant high pH violations were corrected when a hose with high pH water, left running to prevent freezing, was discovered and removed from the sanitary collection system. The remaining violations were short term and promptly corrected.

*WASTEWATER CHARACTERIZATION*

The proposed wastewater discharge is characterized for the following regulated parameters:

**Table 1: Wastewater Characterization**

| Parameter* | Concentration | Units |
|---|---|---|
| Aluminum | 0.42 | mg/L |
| Barium | 0.072 | mg/L |
| Boron | 0.235 | mg/L |
| Cobalt | 0.0003 | mg/L |
| Iron | 0.307 | mg/L |
| Magnesium | 2.36 | mg/L |
| Molybdenum | 0.016 | mg/L |
| Manganese | 0.21 | mg/L |
| Tin | 0.0006 | mg/L |
| Antimony | 0.0021 | mg/L |
| Arsenic | 0.0243 | mg/L |
| Cadmium | 0.0005 | mg/L |
| Chromium | 0.0024 | mg/L |
| Copper | 0.0062 | mg/L |
| Lead | 0.0129 | mg/L |

| Parameter* | Concentration | Units |
|---|---|---|
| Nickel | 0.0029 | mg/L |
| Zinc | 0.206 | mg/L |
| Total Phenols | 0.030 | mg/L |
| Endosulfan Sulfate | 0.014 | *u*g/L |

* metals concentrations are "total" metals.

*SEPA COMPLIANCE*

SEPA review is conducted as appropriate for specific mill projects.

## PROPOSED 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 (40 CFR 131.36). 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, and 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 but 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 the Department of Ecology. The Permittee may be in violation of the permit until the permit is modified to reflect additional discharge of pollutants.

*DESIGN CRITERIA*

In accordance with WAC 173-220-150 (1)(g), flows or waste loadings shall not exceed approved design criteria.

The design criteria for this treatment facility are taken from “High Purity Oxygen System Evaluation” prepared by M2T Technologies in July 2006. Criteria are as follows:

**Table 2: Design Standards for LFPP.**

| Parameter | Design Quantity |
|---|---|
| Monthly average flow | 57.0 MGD |
| $BOD_5$ influent loading (average) | 54,700 lb/day |
| $BOD_5$ influent loading (max) | 83,200 lb/day |
| TSS influent loading (average) | 42,800 lb/day |
| TSS influent loading (max) | 83,200 lb/day |

*TECHNOLOGY-BASED EFFLUENT LIMITATIONS*

Process Wastewater (Outfall 001)

The $BOD_5$ and TSS limit calculations follow the methodology used in the previous (2001) renewal. Prior to 2001, LFPP permanently closed their bleach plant necessitating changes in the method of limit calculation. The method of calculation was thoroughly discussed in the 2001 Fact Sheet and is summarized here.

LFPP currently generates wastewater from three production classes identified in 40 CFR Part 430 - The Pulp, Paper, and Paperboard Point Source Category (April 15, 1998). The classes are unbleached Kraft and neutral sulfite semi-chemical (UBK/NSSC), recycled old corrugated cardboard (OCC), and non-integrated paper production (NI). A discharge allowance for UBK/NSSC and bleached Kraft production was established in the 1980's by the Pollution Control Hearings Board (PCHB - see PCHB Nos. 86-197 and 87-6 Stipulation and Agreed Order executed July 10, 1987). The TSS allowance was equal to 1982 Best Control Technology (BCT) effluent guidelines while the $BOD_5$ limits were more stringent. The 1982 effluent guidelines were updated in 1998, but limits applicable to LFPP did not change. As part of the 2001 permit renewal, the PCHB allowance was prorated to bleached Kraft and UBK/NSSC portions. The bleached Kraft portion of the PCHB allowance was discontinued while the UBK/NSSC portion was retained. The PCHB discharge allowance was determined applicable to UBK/NSSC production of 2231 tons per day. Subsequent production effluent allowances were calculated using 1998 effluent guideline New Source Performance Standards (NSPS). Resulting discharge allowances are summarized in the following table:

| | $BOD_5$ 30 day ave (lb/T) | $BOD_5$ daily max (lb/T) | TSS 30 day ave (lb/T) | TSS daily max (lb/T) |
|---|---|---|---|---|
| UBK/NSSC (PCHB) | 3.26 [a] | 13.40 [a] | 12.50 [a] | 25.00 [a] |
| UBK/NSSC (BCT) | 8.0 [b] | 16.0 [b] | 12.50 [b] | 25.0 [b] |
| UBK/NSSC (NSPS) | 4.2 [c] | 7.8 [c] | 7.6 [c] | 14.6 [c] |
| OCC | 4.2 [d] | 7.8 [d] | 4.6 [d] | 8.8 [d] |
| NI | 3.8 [e] | 8.0 [e] | 3.0 [e] | 7.0 [e] |

[a] calculated PCHB allowance.
[b] 1998 Effluent Guidelines (40 CFR §430.33 Subpart C – BCT for UBK/NSSC Cross Recovery).
[c] 1998 Effluent Guidelines (40 CFR §430.35 Subpart C – NSPS for UBK/NSSC Cross Recovery).
[d] 1998 Effluent Guidelines (40 CFR §430.105 Subpart J – NSPS for Corrugating Medium Furnish).
[e] 1998 Effluent Guidelines (40 CFR 430.125 Subpart L – NSPS for Paperboard from Purchased Pulp).

The same discharge allowances are used to calculate effluent limits for this renewal. The effluent guidelines used to calculate limits are less than 10 years old and are considered "All Known and Available Treatment" (AKART).

The 2001 renewal included base limits and higher "phase 1" limits to go into effect when production for three consecutive months exceeded the base limit production rate. The base limit remained in effect for the duration of the previous permit period.

During 2005-2006 the highest 12-month average production total primary production was 2782 MDT/D. Total primary production is the total paper and board saleable product from the paper machines. The previous permit base limits were calculated based on total primary production of 3100 MDT/D. Production rates for renewal limits will be modified as follows:

| | Total Primary production (MDT/D) | | |
|---|---|---|---|
| | Base | Phase 1 | Phase 2 |
| 2001 Renewal | 3100 | 3600 | -- |
| 2007 Renewal | 2800 | 3200 | 3600 |

Also, the ratio of production types changed since the 2001 renewal. The past and current production ratios are as follows:

| | 2001 Renewal Production | 2007 Renewal Production |
|---|---|---|
| UBK/NSSC | 73.33 % | 65.5 % |
| OCC | 21.07 % | 25.7 % |
| NI | 5.60 % | 8.8 % |

The effluent guidelines are based on off machine production. Cull and trim account for roughly 8.35% of off machine production, so total primary production must be adjusted accordingly. The following table summarizes production allocated to different categories for limit calculation:

| | 2007 Renewal | | |
|---|---|---|---|
| | Base Production (MDT/D) | Phase 1 Production (MDT/D) | Phase 2 Production (MDT/D) |
| UBK/NSSC | 1985 | 2273 | 2555 |
| UBK/NSSC (PCHB) | 1985 | 2231 | 2231 |
| UBK/NSSC (NSPS) | 0 | 42 | 324 |
| OCC | 779 | 892 | 1002 |
| NI | 267 | 305 | 343 |
| Total off machine | 3030 | 3470 | 3900 |
| Total primary production | 2800 | 3200 | 3600 |

The 2001 permit added the sanitary wastewater discharge limits to the process discharge limits to determine to the total 001 discharge limit. The effluent sampling station was recently moved upstream of the junction with the sanitary line. Therefore, the sanitary limits are no longer part of the 001 limit calculation. Limits, rounded to the nearest 100 pounds, are summarized in the following table:

| | $BOD_5$ Monthly Average | $BOD_5$ Daily Maximum | TSS Monthly Average | TSS Daily Maximum |
|---|---|---|---|---|
| Base | 10,800 | 34,800 | 29,200 | 58,300 |
| Phase 1 | 12,400 | 39,600 | 33,200 | 66,400 |
| Phase 2 | 14,100 | 43,000 | 36,000 | 71,700 |

The effluent guidelines also require limits for pentachlorophenol and trichlorophenol at facilities where chlorophenolic-containing biocides are used. LFPP does not use biocides containing chlorophenolic compounds.

The effluent pH limits along with $BOD_5$, TSS, and pH monitoring requirements are initially the same. Provision is made for the $BOD_5$ and/or TSS daily sampling frequency to be reduced to 5×/wk after two consecutive years with no limit violations of the respective parameter. Further sampling frequency reduction to 4×/wk is allowed after an additional two consecutive years with no limit violations of the respective parameter. When sampling 5×/wk or 4×/wk, any two limit violations for a parameter in a 12 consecutive month period requires reversion to daily monitoring for the respective parameter.

Sanitary Wastewater

The previous permit limits for the sanitary wastewater treatment system are carried forward. The limits were noted previously in the “Permit Status” portion of this fact sheet.

The previous and proposed limits are considered AKART. Items of note in the previous limits are:

The chlorine residual limit was expanded from 0.1 - 4.0 mg/L to 0.1 - 6.0 mg/L when the permit was renewed in 2001. The change was made after LFPP demonstrated the increased limit would have no adverse effect on the receiving water.

The $BOD_5$ and TSS removal requirements were set at 65% in the 2001 renewal. The 65% requirement is based on removal efficiency information submitted by LFPP.

*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.

The Department has reviewed existing records and is unable to determine if ambient water quality is either higher or lower than the designated classification criteria given in Chapter 173-201A WAC; therefore, the Department will use the designated classification criteria for this water body in the proposed permit. The discharges authorized by this proposed permit should not cause a loss of beneficial uses.

There are several parameters listed on the 303(d) list of limited water bodies in this segment of the Columbia River. The 2004 303(d) listing for the area near the Permittee's discharge has water listings for temperature and fecal coliform, and tissue listings for PCBs and Dieldrin.

A temperature TMDL was started several years ago for the Snake and Columbia Rivers by EPA, but has been held up and not yet completed. Diminishing riparian vegetation, increased thermal absorption due to dams (with shallower backwaters), return flows from irrigation, and increased numbers of thermal discharges have all had significant effects on the Columbia River temperature as a whole. This is measurable in all areas of the river including the area of the Permittee's outfall. Temperature considerations related to the Permittee's discharge are discussed in the "Considerations of Surface Water Quality-Based Limits for Numeric Criteria" section of this Fact Sheet.

Fecal coliforms were noted in a segment approximately two miles downstream of the Permittee's outfall. However, the background fecal coliform used in evaluating this discharge was not in violation of the water quality criteria. Fecal coliforms are not typically a concern in pulp and paper treated effluent discharges. Also, PCBs and Dieldrin are not typical components of pulp and paper and were not detected in the discharge.

## CRITICAL CONDITIONS

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 pollutants in this discharge is the low flow, high temperature period of late summer.

## MIXING ZONES

A mixing zone is the defined area in the receiving water surrounding the discharge port(s), where wastewater mixes with receiving water. Within mixing zones the pollutant concentrations may exceed water quality numeric standards, so long as the diluting wastewater doesn't interfere with designated uses of the receiving water body (e.g., recreation, water supply, and aquatic life and wildlife habitat, etc.) The pollutant concentrations outside of the mixing zones must meet water quality numeric standards.

State and federal rules allow mixing zones because the concentrations and effects of most pollutants diminish rapidly after discharge, due to dilution. Ecology defines mixing zone sizes to limit the amount of time any exposure to the end-of-pipe discharge could harm water quality, plants, or fish.

The state's water quality standards allow Ecology to authorize mixing zones for the facility's permitted wastewater discharges only if those discharges already receive all known, available, and reasonable methods of prevention, control and treatment (AKART). Mixing zones typically require compliance with water quality criteria within 200 to 300 feet from the point of discharge; and use no more than 25% of the available width of the water body for dilution. We use modeling to estimate the amount of mixing within the mixing zone. Through modeling we determine the potential for violating the water quality standards at the edge of the mixing zone and derive any necessary effluent limits. Steady-state models are the most frequently used tools for conducting mixing zone analyses. Ecology chooses values for each effluent and for receiving water variables that correspond to the time period when the most critical condition is likely to occur (see Ecology's Permit Writer's Manual). Each critical condition parameter (by itself) has a low probability of occurrence and the resulting dilution factor is conservative. The term "reasonable worst-case" applies to these values.

The mixing zone analysis produces a numerical value called a dilution factor (DF). A dilution factor represents the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. For example, a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water comprises 90% of the total volume at the boundary of the mixing zone. We use dilution factors with the water quality criteria to calculate reasonable potentials and effluent limits. Water quality standards include both aquatic life-based criteria and human health-based criteria. The former are applied at both the acute and chronic mixing zone boundaries; the latter are applied only at the chronic boundary. The concentration of pollutants at the boundaries of any of these mixing zones may not exceed the numerical criteria for that zone.

Each aquatic life **acute** criterion is based on the assumption that organisms are not exposed to that concentration for more than one-hour and more often than one exposure in three years. Each aquatic life **chronic** criterion is based on the assumption that organisms are not exposed to that concentration for more than four consecutive days and more often than once in three years.

The two types of human health-based water quality criteria distinguish between those pollutants linked to non-cancer effects (non-carcinogenic) and those linked to cancer effects (carcinogenic). The human health-based water quality criteria incorporate several exposure and risk assumptions. These assumptions include:

1. a 70-year lifetime of daily exposures,
2. an ingestion rate for fish or shellfish measured in kg/day,
3. an ingestion rate of two liters/day for drinking water, and
4. a one-in-one-million cancer risk for carcinogenic chemicals.

This permit authorizes a small acute mixing zone, surrounded by a chronic mixing zone around the point of discharge (WAC 173-201A-400; 2006). The water quality standards impose certain conditions before allowing the discharger a mixing zone:

**1. Ecology must specify both the allowed size and location in a permit.**

The proposed permit specifies the size and location of the allowed mixing zones. The mixing zones specified are:

> The acute mixing zone shall extend 34 feet in all directions from the diffuser section of the outfall. The chronic mixing zone shall extend 340 feet in the down river direction and 100 feet in the up river direction from the diffuser section of the outfall, and 50 feet beyond each end of the diffuser section of the outfall.

The diffuser comprises the last 400 feet of the outfall creating a chronic mixing zone 500 feet wide. Thus, the mixing zone comprises 18% of the river width (2790 feet) and satisfies the less than 25% of river width requirement discussed earlier in this section.

**2. The facility must fully apply "all known available and reasonable methods of prevention, control and treatment" (AKART) to its discharge.**

Ecology has determined that the treatment provided and the pollution prevention activities practiced at LFPP meet the requirements of AKART (see "Technology based Limits").

**3. Ecology must consider critical discharge conditions.**

Surface water quality-based limits are derived for the water body's critical condition, (the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or designated water body uses). The critical discharge condition is often pollutant-specific or water body-specific.

Critical discharge conditions are those conditions that result in reduced dilution or increased effect of the pollutant. Factors affecting dilution include the depth of water, the density stratification in the water column, the currents and the rate of discharge. Density stratification is determined by the salinity and temperature of the receiving water. Temperatures are warmer in the surface waters in summer. Therefore, density stratification is generally greatest during the summer months. Density stratification affects how far up in the water column a freshwater

plume may rise. The rate of mixing is greatest when an effluent is rising. The effluent stops rising when the mixed effluent is the same density as the surrounding water. After the effluent stops rising, the rate of mixing is much more gradual. Water depth can affect dilution when a plume might rise to the surface when there is little or no stratification. Ecology's Permit Writer's Manual describes additional guidance on criteria/design conditions for determining dilution factors. The Manual can be obtained from Ecology's website at: http://www.ecy.wa.gov/biblio/92109.html.

Critical conditions are discussed in the "Consideration of Surface Water Quality-Based Limits for Numeric Criteria" section of this fact sheet.

**4. Supporting information must clearly indicate the mixing zone would not:**

**have a reasonable potential to cause the loss of sensitive or important habitat,**
**substantially interfere with the existing or characteristic uses,**
**result in damage to the ecosystem, or**
**adversely affect public health.**

Ecology established Washington State water quality criteria for toxic chemicals using EPA criteria. EPA developed the criteria using toxicity tests with numerous organisms, and set the criteria to generally protect 95% of the species tested and to fully protect all commercially and recreationally important species.

EPA sets acute criteria for toxic chemicals assuming organisms are exposed to the pollutant at the criteria concentration for 1-hour. They set chronic standards assuming organisms are exposed to the pollutant at the criteria concentration for 4 days. Dilution modeling under critical conditions generally shows that both acute and chronic criteria concentrations are reached within minutes of being discharged.

The discharge plume does not impact drifting and non-strong swimming organisms because they cannot 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 the discharge by swimming away. Mixing zones generally do not affect benthic organisms (bottom dwellers) because the buoyant plume rises in the water column. Ecology has additionally determined that the effluent will not exceed 33 degrees C for more than 2 seconds after discharge; and that the temperature of the water will not create lethal conditions or blockages to fish migration (see discussion in "Temperature Modeling" portion of the "Consideration of Surface Water Quality-Based Limits for Numeric Criteria" section of this fact sheet).

Ecology evaluates the cumulative toxicity of an effluent by testing the discharge with whole effluent toxicity (WET) testing (see discussion in "Whole Effluent Toxicity" section of this fact sheet).

Ecology reviewed the above information, the specific information on the characteristics of the discharge, the receiving water characteristics and the discharge location. Based on this review we conclude that the discharge does not have a reasonable potential to cause the loss of sensitive

or important habitat, substantially interfere with existing or characteristic uses, result in damage to the ecosystem or adversely affect public health

**5. The discharge/receiving water mixture must not exceed water quality criteria outside the boundary of a mixing zone.**

Ecology conducted a reasonable potential analysis, using procedures established by the EPA and by Ecology, for each pollutant. We concluded the discharge/receiving water mixture will not violate water quality criteria outside the boundary of the mixing zone (see discussion in the "Consideration of Surface Water Quality-Based Limits for Numeric Criteria" section of this fact sheet).

**6. The size of the mixing zone and the concentrations of the pollutants must be minimized.**

At any given time, the effluent plume uses only a portion of the acute and chronic mixing zone, which minimizes the volume of water involved in mixing. The plume rises through the water column as it mixes therefore much of the receiving water volume at lower depths in the mixing zone is not mixed with discharge. Similarly, because the discharge may stop rising at some depth due to density stratification, waters above that depth will not mix with the discharge. Ecology determined it is impractical to specify in the permit the actual, much more limited volume in which the dilution occurs as the plume rises and moves with the current.

Ecology minimizes the size of mixing zones by requiring dischargers to install diffusers when they are appropriate to the discharge and the specific receiving waterbody. When a diffuser is installed the discharge and the receiving water is more completely mixed in a shorter time period. Ecology also minimizes the size of the mixing zone (in the form of the dilution factor) using design criteria with a low probability of occurrence. For example, Ecology uses the expected 95$^{th}$ percentile pollutant concentration, the 90$^{th}$ percentile background concentration, the centerline dilution factor and the lowest flow occurring once in every 10 years to perform the reasonable potential analysis.

The facility continues to conduct pollution prevention activities and has completed pollution prevention projects. These activities also minimize the concentrations of pollutants in the discharge.

Because of the above reasons, Ecology has effectively minimized the size of the mixing zone authorized in the proposed permit.

**7. Maximum size of mixing zone.**

The authorized mixing zone does not exceed the maximum size restriction.

**8. Acute Mixing Zone.**

**The discharge/receiving water mixture must comply with acute criteria as near to the point of discharge as practicably attainable.**

We determined the acute criteria will be met at 10% of the distance of the chronic mixing zone.

**The pollutant concentration, duration and frequency of exposure to the discharge, will not create a barrier to migration or translocation of indigenous organisms to a degree that has the potential to cause damage to the ecosystem.**

As described above, the toxicity of any pollutant depends upon the exposure, the pollutant concentration and the time the organism is exposed to that concentration. Authorizing a limited acute mixing zone for this discharge assures that it will not create a barrier to migration. The effluent from this discharge will rise as it enters the receiving water, assuring that the rising effluent will not cause translocation of indigenous organism near the point of discharge (below the rising effluent).

**Comply with size restrictions.**

The mixing zone authorized for this discharge complies with the size restrictions published in chapter 173-201A WAC.

**9. Overlap of Mixing Zones.**

This mixing zone does not overlap another mixing zone. The Three Rivers Regional Wastewater Authority discharge is located downstream of the LFPP discharge. The chronic dilution zones come within 88 feet of one another at their closest points, but do not overlap.

DESCRIPTION OF THE RECEIVING WATER

The facility discharges to the Columbia River at river mile 67.5 Other nearby point source outfalls include the Cowlitz, Three Rivers Regional Wastewater Authority. Characteristic uses of the receiving water in the vicinity of the outfall include fish spawning/rearing, primary contact recreation, water supply (domestic, industrial, agricultural), and miscellaneous uses (wildlife habitat, harvesting, commerce/navigation, boating, and aesthetics).

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). Surface Water Quality Criteria for this discharge are summarized below:

| | |
|---|---|
| Fecal Coliforms | 100 organisms/100 mL maximum geometric mean |
| Dissolved Oxygen | 8.0 mg/L minimum |
| Temperature | 20 degrees Celsius ($^{o}$ C) maximum due to human activities. When natural conditions cause the temperature to be >20.0$^{o}$ C, neither an increase of >0.3$^{o}$ C from a single source nor a combined increase >1.1$^{o}$ C due to area sources shall not be |

| | |
|---|---|
| | allowed. |
| pH | 6.5 to 8.5 standard units |
| Turbidity | less than 5 NTU above background |
| Toxics | No toxics in toxic amounts (see Appendix C for numeric criteria for toxics of concern for this discharge) |

CONSIDERATION OF SURFACE WATER QUALITY-BASED LIMITS FOR NUMERIC CRITERIA

Pollutant concentrations in the proposed discharge exceed water quality criteria with technology-based controls which the Department has determined to be AKART. Mixing zones are authorized as discussed in the "Mixing Zones" section of this fact sheet.

The dilution factors of effluent to receiving water that occur within these zones have been determined at the critical condition by the use of CORMIX and calculation of percent of receiving water allowable for dilution. The dilution factors have been determined to be:

| | Acute | Chronic |
|---|---|---|
| Aquatic Life | 17 | 120 |
| Human Health, Carcinogen | | 120 |
| Human Health, Non-carcinogen | | 120 |

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.

The critical condition for the Columbia River is the seven day average low river flow with a recurrence interval of ten years (7Q10). The ambient background data used for this permit includes the following from several sources:

| Parameter | Value used |
|---|---|
| 7Q10 low flow | 78,700 cfs – (USGS ,2007). |
| Velocity | 0 ft/sec (tidal influence) – (Parametrix, 2003). |
| Depth | 40 feet – (Parametrix, 2003). |
| Width | 2790 feet – (Ecology,2007a). |
| Temperature | $22^{o}$ C – (Parametrix, 2003). |

| Parameter | Value used |
|---|---|
| pH (high) | 8.7 (winter) – (USGS ,2007). |
| pH (low) | 7.4 (summer) – (USGS ,2007). |
| Dissolved Oxygen | 9.0 mg/L – (USGS ,2007). |
| Total Ammonia-N | 0.012 mg/L – (Ecology,2007a). |
| Fecal Coliform | 52/100 mL dry weather – (Ecology,2007a). |
| Turbidity | 9.8 NTU – (Ecology,2007a). |
| Hardness | 55 mg/L as CaCO3 – (USGS ,2007). |
| Iron | 11 ug/l (filtered) – (USGS ,2007). |
| Manganese | 1.8 ug/L (filtered) – (USGS ,2007). |

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

$BOD_5$--This discharge with technology-based limitations 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.

The impact of the discharge on the receiving water dissolved oxygen was calculated to be less than 0.5 mg/l at the edge of the acute mixing zone and less than 0.1 mg/l at the edge of the chronic mixing zone. Dissolved oxygen is not included in the 303(d) list in the receiving water. The calculations used to determine dissolved oxygen impacts are shown in Appendix C.

pH--The impact of pH was modeled using the calculations from EPA, 1988. The input variables included:

the proposed high and low pH limits,
the high and low receiving water pH measurements for the 10/04 to 9/05 water year at the USGS station near Quincy, OR (USGS, 2007), and
corresponding effluent or receiving water alkalinity and temperature data.

The PHMIX.2 spreadsheet results are included in Appendix C.

The maximum measured ambient receiving water pH was 8.7, slightly greater than the Water Quality Standard maximum pH of 8.5. The model predicted no impact on the receiving water pH due to effluent discharge at the maximum pH limit of 9.0.

The minimum measured ambient receiving water pH was 7.4, well above the Water Quality Standard minimum pH of 6.5. The model predicted a decrease of 0.5 units in the receiving water pH due to effluent discharge at the minimum pH limit of 5.4. The resulting pH of 6.9 is still well within the Water Quality Standards range for pH.

Under critical conditions there is no predicted contribution by the effluent to violation of the Water Quality Standards for Surface Waters. Thus, the predicted impact due to the discharge is not considered significant. Therefore, the technology-based effluent limitations for pH were placed in the permit.

Temperature Field Study--The effects on aquatic organisms of thermal loading has been an issue for several years. The Permittee's effluent temperature is higher than the upstream receiving water (the Columbia River) temperature. Thus, we consider how much the discharge contributes to higher downstream river temperatures. The previous permit required the Permittee to perform a receiving water temperature study in the vicinity of the mill outfall. Study results found the mill did not contribute significantly to the thermal loading of the Columbia River (Parametrix 2003).

The importance of receiving water temperature continues to attract attention. As noted earlier, several points on the Columbia River near the outfall were included on the 2004 federal Section 303(d) list as waters where characteristic uses may be impaired by high temperature. As a result, biologists, those concerned with fisheries, and the Department of Ecology continue to investigate sources of thermal loading to the river. In response to aquatic life concerns, Ecology modified Chapter 173-201A WAC to require that discharge temperatures be low enough to prevent fish from being entrained within any discharge plume for more than two seconds, at temperatures above 33° C. The revised rule helps Permittees avoid creating areas that will cause near instantaneous lethality.

LFPP hired Parametrix to conduct the temperature study required by the last permit. The study included continuous long term temperature monitoring in the Columbia River and a mixing zone evaluation temperature study (Parametrix, 2003). The mixing zone study, conducted in August 2002, included temperature and current speed measurements at varying depths and locations near the outfall. August was selected for the study to coincide with high receiving water temperatures in the Columbia River, which usually occur between mid-August and mid-September. Measurement locations ranged from approximately 200 feet upstream to 500 feet downstream of the outfall diffuser.

The LFPP outfall extends 500 feet in a southerly direction into the Columbia River. A diffuser section makes up the last 400 feet of the outfall. The diffuser includes 67 unidirectional ports spaced about 8 feet apart at an average water depth of 40 feet. The Cowlitz River flows into the Columbia River just upstream of the LFPP discharge. The Cowlitz River flow rate is usually less than 5% of the Columbia River flow while the water temperature is often 2 to 7° C colder than the Columbia during warm weather conditions (USGS, 2007 and Ecology, 2007b). As a result, the LPFF outfall is located in a fairly dynamic portion of the river. The Cowlitz River water stays along the Columbia River bottom resulting in cooler temperatures at depth until mixing is complete.

Parametrix measured the water temperature along vertical transects at distances ranging from approximately 65 to 450 feet downstream of the diffuser (Parametrix 2003). No measurable thermal impacts due to the Permittee's discharge were detected at points more than 100 to 150 feet downstream of the diffuser. Typical current velocities ranged from 0.4 meters per second

(1.3 feet per second) at the surface to 0.15 meters per second (0.49 feet per second) near the riverbed. Current direction was generally perpendicular to the diffuser axis.

Temperature Modeling--Parametrix (2003) used a numerical model to evaluate thermal impacts of the discharge. CORMIX1 was used for near-field analysis and a FARFIELD CALCULATION based on Brooks (1960) was used for far-field analysis. PLUMES (Ed. 3.1) was used as the modeling interface.

Various scenarios were used to run the model. The most restrictive included a mill effluent flow of 3.374 m/s (77 MGD) and a mill effluent temperature of 40° C (104° F). The flow represents the 3-year peak day recorded, although the 77 MGD measurement is suspect and actual flow is thought to have been 67 MGD. The temperature represents the 3-year peak hour. Based on the Columbia River field samples, a surface temperature of 20.88° C and a near bottom temperature of 19.87° C were used. The river temperatures selected represent a reasonable approximation of the $95^{th}$ percentile receiving water temperature. Current velocity measurements collected during the field work were applied.

Results of the near-field modeling demonstrated the water temperature was <33° C after moving 0.2 m from the diffuser. Effluent discharge velocity is generally more important than river velocity in calculating initial dilution upon discharge. At the discharge velocity of 6.355 m/s, the time period for temperature reduction to <33° C is 0.03 seconds. The requirement to prevent fish from being entrained within any discharge plume for more than two seconds at temperatures above 33° C is met.

The temperature standards also require temperature impacts at the edge of the mixing zone not exceed 0.3° C when the receiving water is naturally warm. The Columbia River is considered warm when the temperature is >20° C. Calculation using the chronic dilution ratio (120:1), an effluent temperature of 40° C, and a receiving water temperature of 22° C demonstrate the expected maximum temperature increase at the edge of the mixing zone of 0.15° C. Thus, the edge of the mixing zone temperature requirement is met.

Thus, a discharge temperature limit is not necessary at this time.

Turbidity--The impact of turbidity was evaluated based on the range of turbidity in the effluent and turbidity of the receiving water. Average effluent turbidity for 2006 was 37.8 NTU. 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 for which toxicity criteria were available were determined to be present in the discharge:

| | |
|---|---|
| ALUMINUM | IRON |
| ANTIMONY | LEAD |
| ARSENIC | MANGANESE |
| CADMIUM | MERCURY |
| CHROMIUM | NICKEL |
| COPPER | ZINC |
| ENDOSULFAN SULFATE | AMMONIA |

A reasonable potential analysis (See Appendix C) was conducted on these parameters to determine whether or not effluent limitations would be required in this permit.

The determination of the reasonable potential to exceed the water quality criteria was evaluated with procedures given in EPA, 1991 (Appendix C) at the critical condition. The critical condition in this case is noted in tables earlier in this section.

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. All effluent concentrations were less than water quality criteria. This determination assumes that the Permittee meets the other effluent limits of this permit.

WHOLE EFFLUENT TOXICITY

Whole effluent toxicity testing was conducted during the previous permit cycle. Results are briefly summarized in the following table:

| Organism | Test | Range of Results |
|---|---|---|
| Fathead Minnow | 96 hour survival in 100% effluent (acute) | 97.5-100% survival |
| Ceriodaphnia dubia | 48 hour survival in 100% effluent (acute) | 100% survival |
| Fathead Minnow | 7 day growth/survival (chronic) | NOEC = 100% effluent |
| Ceriodaphnia dubia | 7 day reproduction/survival (chronic) | NOEL = 100% effluent |

The last two samples were collected during the final full calendar year of the permit term on 3/22/05 and 9/11/05. Results were as follows:

| Organism | Test | 3/22/05 sample | 9/11/05 sample |
|---|---|---|---|
| Fathead Minnow | 96 hour survival in 100% effluent (acute) | 100% survival | 97.5% survival |
| Ceriodaphnia dubia | 48 hour survival in 100% effluent (acute) | 100% survival | 100% survival |

| Organism | Test | 3/22/05 sample | 9/11/05 sample |
|---|---|---|---|
| Fathead Minnow | 7 day growth/survival (chronic) | NOEC = 100% effluent | NOEC = 100% effluent |
| Ceriodaphnia dubia | 7 day reproduction/survival (chronic) | NOEL = 100% effluent | NOEL = 100% effluent |

The WET tests during effluent characterization indicate that no reasonable potential exists to cause receiving water acute toxicity, and the Permittee will not be given an acute WET limit and will only be required to retest the effluent prior to application for permit renewal in order to demonstrate that acute toxicity has not increased in the effluent.

Also, the WET tests during effluent characterization indicate that no reasonable potential exists to cause receiving water chronic toxicity, and the Permittee will not be given a chronic WET limit and will only be required to retest the effluent prior to application for permit renewal in order to demonstrate that chronic toxicity has not increased in the effluent.

If the Permittee makes process or material changes which, in the Department's opinion, results in an increased potential for effluent toxicity, then the Department 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 the Department that changes have not increased effluent toxicity by performing additional WET testing after the time the process or material changes have been made.

### 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).

The initial screening procedure indicated iron and manganese were potential chemicals of concern for human health. 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). The reasonable potential determination was evaluated with procedures given in the Technical Support Document for Water Quality-Based Toxics Control (EPA/505/2-90-001) and the Department's Permit Writer's Manual (Ecology Publication 92-109, July, 1994). The determination indicated that the discharge has no reasonable potential to cause a violation of water quality standards, thus an effluent limit is not warranted (see appendix C),

### SEDIMENT QUALITY

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

The Department has determined through a review of the discharger characteristics and effluent characteristics that this discharge has no reasonable potential to violate Sediment Management Standards. Also, the diffuser location is not considered to be in a sediment deposition zone.

*GROUND WATER QUALITY LIMITATIONS*

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

This Permittee has no discharge to ground and therefore no limitations are required based on potential effects to ground water.

*COMPARISON OF EFFLUENT LIMITS WITH THE PERMIT ISSUED ON JUNE 20, 2001*

Process Outfall Limits (001)

The changes in limits as described in the Technology-Based Effluent Limitations section of this fact sheet are summarized in the following table:

| Parameter | Average Monthly (existing) | Average Monthly (Proposed) | Maximum Daily (existing) | Maximum Daily (proposed) |
|---|---|---|---|---|
| 2800 MDT/D | | | | |
| $BOD_5$ | | 10,800 | | 34,800 |
| TSS | | 29,200 | | 58,300 |
| 3100 MDT/D | | | | |
| $BOD_5$ | 12,000 | | 38,800 | |
| TSS | 33,500 | | 66,800 | |
| 3200 MDT/D | | | | |
| $BOD_5$ | | 12,400 | | 39,600 |
| TSS | | 33,200 | | 66,400 |
| 3600 MDT/D | | | | |
| $BOD_5$ | 14,200 | 14,100 | 43,000 | 43,000 |
| TSS | 37,100 | 36,000 | 73,800 | 71,700 |

As discussed in detail in that section, the changes to $BOD_5$ and TSS limits are primarily due to changes in the amount and type of production at the mill. A minor adjustment was also made due to relocation of the process effluent sampling station so the sanitary effluent is not included in the sample.

Sanitary Effluent

The sanitary effluent proposed limits are the same as the existing limits. No changes are proposed.

## 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 proposed permit under Condition S.2. 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.

*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 laboratory at this facility is accredited for:

Biochemical Oxygen Demand, BOD/CBOD
Chemical Oxygen Demand (COD)
Chlorine Residual, Total
Dissolved Oxygen
pH
Solids, Total Suspended

Accredited contract laboratories are used, as necessary, for analysis of parameters for which the facility laboratory is not accredited.

## OTHER PERMIT CONDITIONS

*REPORTING AND RECORDKEEPING*

The conditions of S3. are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-220-210).

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. These typically are waters used to pressure test storage tanks or fire water systems or leaks from drinking water systems. These are typically clean waste waters but may be contaminated with pollutants. The permit contains an authorization for non-routine and unanticipated discharges. The permit requires a characterization of these waste waters 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 CONTROL PLAN*

The Department has determined that the Permittee stores a quantity of chemicals that have the potential to cause water pollution if accidentally released. The Department 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 proposed permit requires the Permittee to update this plan and submit it to the Department.

*SOLID WASTE PLAN*

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

This proposed 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 the Department.

*OUTFALL EVALUATION*

Proposed permit condition S.13 requires the Permittee to conduct an outfall inspection 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.

*TREATMENT SYSTEM OPERATING PLAN*

In accordance with state and federal regulations, the Permittee is required to take all reasonable steps to properly operate and maintain the treatment system (40 CFR 122.41(e)) and WAC 173-220-150 (1)(g). The mill wastewater treatment operation and maintenance manual will be reviewed and updated as necessary. It has been determined that the implementation of the procedures in the Treatment System Operating Plan is a reasonable measure to ensure compliance with the terms and limitations in the permit.

*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 the Department.

## PERMIT ISSUANCE PROCEDURES

*PERMIT MODIFICATIONS*

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

*RECOMMENDATION FOR PERMIT ISSUANCE*

This proposed 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. The Department proposes that this proposed permit be issued for five years.

## REFERENCES FOR TEXT AND APPENDICES


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## APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to reissue a permit to the applicant listed on page 1 of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

The Department will publish a Public Notice of Draft (PNOD) in *The Daily News* (Longview, WA) 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 office listed below.

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300 Desmond Drive, SE
Lacey, WA 98503
To schedule an appointment, phone: 360/407-6916

A copy of the draft document and fact sheet are also available at:

Longview Main Public Library
1600 Louisiana Street
Longview, Washington
Reference Desk – 360/442-5300

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30) day comment period to the address above. 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.
Written comments should be mailed to:

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

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 at 360/407-6773, e-mail at mhef461@ecy.wa.gov, or by mail at the address listed above.

This permit and fact sheet were written by Marc Heffner.

## 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.

**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.

**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).

**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).

**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.

Dissolved oxygen concentration following initial dilution.
References: EPA/600/6-85/002b and EPA/430/9-82-011

Based on Lotus File IDOD2.WK1 Revised 19-Oct-93

| INPUT | |
|---|---|
| 1. Dilution Factor at Mixing Zone Boundary (acute): | 17 |
| 2. Ambient Dissolved Oxygen Concentration (mg/L): | 9 |
| 3. Effluent Dissolved Oxygen Concentration (mg/L):* | 0 |
| 4. Effluent Immediate Dissolved Oxygen Demand (mg/L): | 0 |

| OUTPUT | |
|---|---|
| Dissolved Oxygen at Mixing Zone Boundary (mg/L): | 8.47 |

| INPUT | |
|---|---|
| 1. Dilution Factor at Mixing Zone Boundary (chronic): | 120 |
| 2. Ambient Dissolved Oxygen Concentration (mg/L): | 9 |
| 3. Effluent Dissolved Oxygen Concentration (mg/L):* | 0 |
| 4. Effluent Immediate Dissolved Oxygen Demand (mg/L): | 0 |

| OUTPUT | |
|---|---|
| Dissolved Oxygen at Mixing Zone Boundary (mg/L): | 8.93 |

* assumed to be 0 mg/L to model worst case condition

Calculation of pH of a mixture of two flows. Based on the procedure in EPA's DESCON program (EPA, 1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington D.C.)

Based on Lotus File PHMIX2.WK1 Revised 19-Oct-93

## INPUT

| | |
|---|---|
| 1. DILUTION FACTOR AT MIXING ZONE BOUNDARY | 120.000 |
| 1. UPSTREAM/BACKGROUND CHARACTERISTICS | |
| Temperature (deg C): | 7.80 |
| pH: | 8.70 |
| Alkalinity (mg CaCO3/L): | 61.00 |
| 2. EFFLUENT CHARACTERISTICS | |
| Temperature (deg C): | 34.40 |
| pH: | 9.00 |
| Alkalinity (mg CaCO3/L): | 170.00 |

## OUTPUT

| | |
|---|---|
| 1. IONIZATION CONSTANTS | |
| Upstream/Background pKa: | 6.49 |
| Effluent pKa: | 6.31 |
| 2. IONIZATION FRACTIONS | |
| Upstream/Background Ionization Fraction: | 0.99 |
| Effluent Ionization Fraction: | 1.00 |
| 3. TOTAL INORGANIC CARBON | |
| Upstream/Background Total Inorganic Carbon (mg CaCO3/L): | 61.37 |
| Effluent Total Inorganic Carbon (mg CaCO3/L): | 170.34 |
| 4. CONDITIONS AT MIXING ZONE BOUNDARY | |
| Temperature (deg C): | 8.02 |
| Alkalinity (mg CaCO3/L): | 61.91 |
| Total Inorganic Carbon (mg CaCO3/L): | 62.28 |
| pKa: | 6.48 |
| pH at Mixing Zone Boundary: | 8.70 |

Calculation of pH of a mixture of two flows. Based on the procedure in EPA's DESCON program (EPA, 1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington D.C.)

Based on Lotus File PHMIX2.WK1 Revised 19-Oct-93

## INPUT

| | |
|---|---|
| 1. DILUTION FACTOR AT MIXING ZONE BOUNDARY | 120.000 |
| 1. UPSTREAM/BACKGROUND CHARACTERISTICS | |
| Temperature (deg C): | 21.70 |
| pH: | 7.40 |
| Alkalinity (mg CaCO3/L): | 54.00 |
| 2. EFFLUENT CHARACTERISTICS | |
| Temperature (deg C): | 38.30 |
| pH: | 5.40 |
| Alkalinity (mg CaCO3/L): | 170.00 |

## OUTPUT

| | |
|---|---|
| 1. IONIZATION CONSTANTS | |
| Upstream/Background pKa: | 6.37 |
| Effluent pKa: | 6.29 |
| 2. IONIZATION FRACTIONS | |
| Upstream/Background Ionization Fraction: | 0.91 |
| Effluent Ionization Fraction: | 0.11 |
| 3. TOTAL INORGANIC CARBON | |
| Upstream/Background Total Inorganic Carbon (mg CaCO3/L): | 59.04 |
| Effluent Total Inorganic Carbon (mg CaCO3/L): | 1502.10 |
| 4. CONDITIONS AT MIXING ZONE BOUNDARY | |
| Temperature (deg C): | 21.84 |
| Alkalinity (mg CaCO3/L): | 54.97 |
| Total Inorganic Carbon (mg CaCO3/L): | 71.07 |
| pKa: | 6.37 |
| pH at Mixing Zone Boundary: | 6.90 |

LFPP Criteria Comparison - 2007 NPDES Renewal

WATER QUALITY CRITERIA (in ug/L unless otherwise noted)

| Pollutant, CAS No. & NPDES Application Ref. No. | PRIORITY PLTNT? | CARCIN GEN? | Water Quality Criteria Fresh acute | Water Quality Criteria Fresh chronic | Human Health Criteria Fresh | Organoleptic Effects | Metals Translators Fresh Acute | Metals Translators Fresh Chronic | LFPP Effluent (ug/L |
|---|---|---|---|---|---|---|---|---|---|
| ECEIVING WATER TSS (IF UNKNOWN LEAVE BLANK) > | 0 | | | | | | | | |
| TA INSERT A, OR IF FROM CRITICAL PERIOD INSERT S> | S | | | | | | | | |
| ENTER HARDNESS>>>>>>>>> | 55 | | | | | | | | |
| ALUMINUM, total recoverable, pH 6.5-9.0 7429905 | N | N | 750 | | | | | | 420 |
| ANTIMONY (INORGANIC) 7440360 1M | Y | N | | | 14 | | | | 2.1 |
| ARSENIC (dissolved) 7440382 2M | Y | Y | 360 | 190 | | | 1.00 | 1.00 | 24.3 |
| CADMIUM - 7440439 4M Hardness dependent | Y | N | 1.94 | 0.66 | | | 0.943 | 0.943 | 0.5 |
| CHROMIUM(HEX) 18540299 | Y | N | 15 | 10 | | | 0.982 | 0.962 | 2.4 |
| CHROMIUM(TRI) -16065831 5M Hardness dependent | N | N | 336.30 | 109.09 | | | | | 2.4 |
| COPPER - 744058 6M Hardness dependent | Y | N | 9.69 | 6.81 | | 1000.00 | 1.000 | 1.000 | 6.2 |
| ENDOSULFAN SULFATE 1031078 13P | Y | N | | | 0.93 | | | | 0.014 |
| IRON 7439896 | N | N | | 1000 | 300.00 | | | | 307 |
| LEAD - 7439921 7M Dependent on hardness | Y | N | 33.49 | 1.31 | | | 0.466 | 0.466 | 0.0129 |
| MANGANESE 7439965 | N | N | | | 50.00 | | | | 210 |
| MERCURY 7439976 8M | Y | N | 2.10 | 0.012 | 0.14 | | 0.85 | | |
| NICKEL - 7440020 9M - Dependent on hardness | Y | N | 853.55 | 94.79 | 610 | | 0.998 | 0.997 | 2.9 |
| ZINC- 7440666 13M hardness dependent | Y | N | 68.96 | 62.97 | | 5000.00 | 1.000 | 1.000 | 26 |

*= INSUFFICIENT DATA TO DEVELOP CRITERIA VALUE PRESENTED IS THE LOEL-LOWEST OBSERVED

| | | |
|---|---|---|
| [a] | CADMIUM ACUTE CONVERSION FACTOR | 0.97 |
| [b] | CADMIUM CHRONIC CONVERSION FACTOR | 0.93 |
| [c] | LEAD CONVERSION FACTOR | 0.88 |

Red font = National Toxics Rule (FR 64, Nov. 9, 1999)
Black font = WAC 173-201A (Nov. 1997)
Blue font = EPA National Recommended Water Quality Criteria:2002 (EPA 822-R-02-47)
Green font = Other source - see comment

SPREADSHEET CREATED BY D. NUNNALLEE, REV. 1-92 BY G. SHERVEY

Reasonable Potential Calculation
for
Protection of Human Health

| Revised 3/00 | Ambient Concentration (Geometric Mean) | Water Quality Criteria for Protection of Human Health | Max concentration at edge of chronic mixing zone. | LIMIT REQ'D? | Expected Number of Compliance Samples per Month | AVERAGE MONTHLY EFFLUENT LIMIT | MAXIMUM DAILY EFFLUENT LIMIT | Estimated Percentile at 95% Confidence | | Max effluent conc. measured | Coeff Variation | | # of samples from which # in col. K was taken |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Parameter | *ug/L* | *ug/L* | *ug/L* | | | *ug/L* | *ug/L* | | *Pn* | *ug/L* | *CV* | **S** | *n* |
| Iron | 11 | 300.00 | 17.28 | **NO** | | **NONE** | **NONE** | 0.50 | 0.05 | 307.00 | 0.60 | 0.6 | 1 |
| Mangenese | 1 | 50.00 | 5.35 | **NO** | | **NONE** | **NONE** | 0.50 | 0.05 | 210.00 | 0.60 | 0.6 | 1 |

Calculation Of Ammonia Concentration and Criteria for fresh water. Based on EPA Quality Criteria for Water (EPA 400/5-86-001) and WAC 173-201A. Revised 1-5-94 (corrected total ammonia criterion). Revised 3/10/95 to calculate chronic criteria in accordance with EPA Memorandum from Heber to WQ Stds Coordinators dated July 30, 1992.

| INPUT | |
|---|---|
| 1. Ambient Temperature (deg C; 0<T<30) | 21.8 |
| 2. Ambient pH (6.5<pH<9.0) | 8.00 |
| 3. Acute TCAP (Salmonids present- 20; absent- 25) | 20 |
| 4. Chronic TCAP (Salmonids present- 15; absent- 20) | 15 |

| OUTPUT | |
|---|---|
| 1. Intermediate Calculations: | |
| Acute FT | 1.00 |
| Chronic FT | 1.41 |
| FPH | 1.00 |
| RATIO | 14 |
| pKa | 9.34 |
| Fraction Of Total Ammonia Present As Un-ionized | 4.3314% |
| 2. Un-ionized Ammonia Criteria | |
| Acute (1-hour) Un-ionized Ammonia Criterion (ug NH3/L) | 259.8 |
| Chronic (4-day) Un-ionized Ammonia Criterion (ug NH3/L) | 41.9 |
| 3. Total Ammonia Criteria: | |
| Acute Total Ammonia Criterion (mg NH3+ NH4/L) | 6.0 |
| Chronic Total Ammonia Criterion (mg NH3+ NH4/L) | 1.0 |
| 4. Total Ammonia Criteria expressed as Nitrogen: | |
| Acute Ammonia Criterion as mg N | 4.9 |
| Chronic Ammonia Criterion as N | 0.80 |
| LFPP effluent concentration as N | 0.71 |

## APPENDIX D--RESPONSE TO COMMENTS

The public comment period was August 10, 2007 to September 10, 2007. One comment letter was received. The letter was submitted by:

Alan D. Whitford
Environmental Services Manager
Longview Fibre Paper and Packaging, Inc. (LFPP)

The letter contained two comments. The comments and Ecology responses follow.

Comment #1:

The first is that the second paragraph in Section S3. REPORTING AND RECORDKEEPING REQUIREMENTS should be deleted. The paragraph states that "The spill of oil or hazardous materials must be reported in accordance with the instructions obtained at the following website: http://www.ecy.wa.gov/programs /spills/other/reportaspill.htm" There are two objections to this paragraph. First, requirements to report spills are not part of NPDES permit requirements and they should be kept separate. Second, the reference to a website that may change in the future is an unreasonable requirement. The holder of the permit needs to know what he/she is agreeing to do. A website that could change at any time is not a valid or appropriate mechanism for permit language. The regulations applicable to spills that may or may not have anything to do with the operation or compliance of the point source discharge should not be part of the NPDES permit.

Ecology Response to Comment #1:

Ecology agrees that spill reporting requirements are in effect whether included, or not included, in the NPDES Permit. The intent is to clearly state that NPDES reporting does not relieve the permittee from the oil or hazardous materials spill reporting requirements. In response to the comment, the paragraph was modified as follows:

~~The spill of oil or hazardous materials **must** be reported in accordance with the instructions obtained at the following website: http://www.ecy.wa.gov/programs/spills/other/reportaspill.htm~~

This section describes NPDES reporting requirements, but does not include specific reporting requirements for oil or hazardous materials spills. At the time of permit issuance, specific reporting requirements for oil or hazardous materials spills were posted at the following website:

http://www.ecy.wa.gov/programs/spills/other/reportaspill.htm

Comment #2:

Second, the last sentence of S6. FACILITY LOADING should be deleted. The requirement to "include a plan and schedule to reduce the flow and/or waste loading, or to increase

wastewater treatment plant capacity" is not reasonable. If the discharge from the facility is meeting the effluent limits, then reductions in the flow and loading to the secondary treatment system are not necessary. A requirement such as this could result in a waste of resources, including energy and chemicals. NPDES permits are intended to regulate point source discharges, not the material going to the secondary treatment plant. If the treatment plant is doing a better job of removing pollutants due to improvements in operation or other changes, the facility should not be required to change the treatment plant. Finally, if it is determined that a plan and schedule are necessary, it is not possible to do so in the time available prior to the next monthly report. Depending on the circumstances, it would most certainly take far more time.

Ecology Response to Comment #2:

Ecology is concerned that should plant loading exceed design criteria, violations of NPDES Permit limits may soon follow. Also, before authorizing a mixing zone, Ecology is obligated to assure all known, available, and reasonable methods of treatment (AKART) is provided by the permittee. The permit limits have been determined to be AKART. The requirement is considered prudent to assure permit limits are met and AKART is provided.

Notification is required when loading for the average of three (3) consecutive months exceeds the design criteria. Given the exceedence requiring notification is a three month average, the likelihood of an exceedence becomes apparent prior to the actual occurrence. The required notification schedule should provide adequate time.

Ecology does not intend this requirement to result in a waste of resources. The wastewater treatment plant design capacity and actual capacity may differ. Adding an option to the possible plan and study list - re-evaluating wastewater treatment capacity - reduces the likelihood of wasting resources. The revision helps strike a suitable balance between resource conservation and environmental protection.

In response to the comment, the paragraph was modified as follows:

~~The notification shall include a plan and schedule to reduce the flow and/or waste loading, or to increase wastewater treatment plant capacity.~~

The notification shall include a plan and schedule to evaluate:
reducing wastewater treatment plant load, and/or
increasing wastewater treatment plant capacity, and/or
re-evaluating wastewater treatment plant capacity.