

**WASHINGTON STATE DEPARTMENT OF ECOLOGY
POST OFFICE BOX 47600
OLYMPIA, WASHINGTON 98504-7600**

**IN THE MATTER OF
Boise Cascade Corporation
Wallula Mill
P.O. Box 500
Wallula, WA 99363**

**] No. PSD-01-07
] PRELIMINARY APPROVAL
] OF PREVENTION OF
] SIGNIFICANT DETERIORATION
] APPLICATION**

Pursuant to the United States Environmental Protection Agency (EPA) regulations for the Prevention of Significant Deterioration (PSD) set forth in Title 40, Code of Federal Regulations (40 CFR), Part 52 and regulations set forth in the Washington Administrative Code (WAC) 173-400-141, the Washington Department of Ecology (Ecology) is proposing issuance of PSD-01-07. Based on the permit application from Boise Cascade Corporation and Ecology's investigative information used in developing the PSD permit, Ecology now finds the following:

FINDINGS

1. The Boise Cascade Corporation (Boise) Wallula integrated bleached kraft pulp and paper mill (Wallula mill) is a major stationary source that has the potential to emit more than 100 tons per year of several pollutants. This site is located in an area which has been designated Class II for the purpose of PSD evaluation, and as in attainment of the National Ambient Air Quality Standards (NAAQS) for all pollutants except for particulate matter less than 10 microns in diameter (PM₁₀). The area is designated as serious nonattainment for PM₁₀.
2. Boise is proposing modifications to the Wallula mill that will increase the No. 3 Recovery Furnace (RF3) firing rate capacity from the current nominal sustained firing capacity of 2.9 million pounds per day of black liquor solids (MM lbs BLS/day) to a new nominal sustained firing capacity of 3.4 million pounds per day of black liquor solids (MM lbs BLS/day), on an as-fired basis. Boise also plans various improvements to the Hog Fuel Boiler's (HFB) pollution control systems, including upgrading the boiler's combustion system and replacing an existing post-combustion wet scrubber with a new dry Electrostatic Precipitator (ESP). In addition, Boise proposes to make process and environmental improvements in its chemical recovery area, including changes at the slaker and evaporators. These modifications and improvements may be conducted concurrently or sequentially, and approvals for funding by Boise management are separate and distinct.

3. The proposed modifications to the RF3 and HFB are subject to the following New Source Performance Standards (NSPS) in Title 40 of CFR, Part 60 (40 CFR 60):
 - (a) The RF3 is subject to Subpart BB of 40 CFR 60 for Total Reduced Sulfur (TRS).
 - (b) The HFB is subject to Subpart Db of 40 CFR 60 for Oxides of Nitrogen (NO_x) and is subject to Subpart D for Sulfur Dioxide (SO₂).
4. Boise plans to replace the slaker with a new and more effective unit, resulting in an emissions reduction; the evaporators will have no direct emissions to the environment. Since neither the slaker nor the evaporators will cause any emissions increases, the changes do not trigger New Source Review (NSR) requirements or additional NSPS applicability. The slaker emissions reduction has not been relied upon in the issuance of the permit.
5. Boise submitted a PSD application to Ecology for the proposed project on August 29, 2001. After receipt of additional materials in 2001 dated September 28; October 5; November 5, 16, 21, 26, 27, and 30; December 12; and in 2002 on January 23 and February 1, 5, and 6, the application was determined to be complete on February 12, 2002.
6. Changes in emissions resulting from the proposed modifications and estimated emissions from the modified and affected units at the mill, upon completion of the proposed modifications, are presented in Table A below. The proposed modifications are expected to result in increased emissions of Carbon Monoxide (CO), NO_x, Volatile Organic Compounds (VOCs), TRS, and PM₁₀ in quantities greater than the significant emission rates (SER) specified in 40 CFR 52.21(b)(23)(i) and WAC 173-400-113(1)(d) for Prevention of Significant Deterioration (PSD) and WAC 173-400-112(1)(d) for nonattainment NSR. Consequently, with the exception of PM₁₀, the project must undergo review pursuant to 40 CFR 52.21 and WAC 173-400-110 for each of the above criteria pollutants. PM₁₀ emissions are addressed under a separate state regulatory order, to be issued concurrently with this order.

Table A			
Emissions Increases¹			
Pollutant	Past Actual Emissions (Most recent two years actual emissions -- 1999-2000) (tons per year)	Future Potential Emissions (tons per year)	Net Change in Emissions for PSD Applicability (tons per year)
NO_x (nitrogen oxides)	1059	1717	658
CO (carbon monoxide)	604	2847	2244

Table A			
Emissions Increases¹			
Pollutant	Past Actual Emissions (Most recent two years actual emissions -- 1999-2000) (tons per year)	Future Potential Emissions (tons per year)	Net Change in Emissions for PSD Applicability (tons per year)
SO ₂ (sulfur dioxide)	1869	1869	0
VOC (volatile organic compounds)	990	1261	272
TRS (total reduced sulfur)	14.4	32	17.4

¹ Emissions increases presented in Table A are from those emission units that have been modified or affected as a result of this project.

7. The VOC emissions increases are contributed by the associated emission units in the pulping and washing operation. The modified units do not contribute to any VOC emissions increases.
8. Best available control technology (BACT) is required for any individual emissions unit that contributes to the emissions increase subject to PSD permitting and that will be modified as part of the proposed project. BACT will be used to control NO_x, CO, and TRS from the RF3; and NO_x, CO, and SO₂ from the HFB. The BACT limit for SO₂ emissions from the HFB is found in the accompanying state regulatory order; BACT limits for NO_x, CO, and TRS are contained in this order.
9. The proposed pollutant increases resulting from the project will not significantly impact air quality attainment under state or NAAQS:
 - (a) The proposed modification will not cause or contribute to pollutant levels in excess of state or NAAQS.
 - (b) The proposed modification will not cause or contribute to air quality pollutant levels above PSD increment thresholds in 40 CFR 52.21(c).
10. Dispersion models used for evaluating the ambient air quality impacts were AERMOD and ISC-PRIME for nearby ambient air quality impacts and the CalPUFF/CalMET system for distant, Class 1 area impacts. None of these models are EPA guideline models, but have been determined to provide superior performance to the equivalent models approved for use by EPA in 40 CFR 51, Appendix W.

11. The quantity of Class 2 NO₂ increment consumed in the immediate area of the Boise Cascade plant by this project has been estimated at 20.7 µg NO₂/m³ by the AERMOD model and 4.9 µg NO₂/m³ by the ISC-PRIME model. The amount of Class 2 NO₂ increment remaining in this area has been estimated to be 4.3 µg NO₂/m³ by the AERMOD model and 20.1 µg NO₂/m³ by the ISC-PRIME model. In either case, the maximum available NO₂ increment has not been consumed.
12. Criteria pollutant concentrations related to the proposed emissions increases will not exceed significance levels in any Class I area or the Columbia River Gorge National Scenic Area.
13. Visibility will not be impaired in any Class I areas. Ecology finds that this project will not adversely impact visibility in the Columbia River Gorge National Scenic Area.
14. Projected deposition of sulfur and nitrogen oxide chemical species on the Class I areas and the Columbia River Gorge National Scenic Area will not be significant.
15. The proposed pollutant increases will not significantly impact known sensitive plant or animal species in any Class I or Class II area.
16. The proposed modifications and production increase will not have a significant effect on the surrounding area's population or economic growth.
17. Ecology finds that all requirements are satisfied for PSD and New Source Review. Approval of the PSD permit is granted subject to the following Approval Conditions.

APPROVAL CONDITIONS

1. Emissions Limits and Related Monitoring and Reporting Requirements for RF3: Upon the completion of construction and start-up of RF3 with multi-level combustion air equipment and associated controls and equipment modifications, Boise shall comply with the emissions limitations, monitoring, and reporting requirements listed in Table 1 for the RF3. The RF3 is granted a testing and break-in period. This period begins upon start-up of the modified RF3, and ends 180 days after start-up of RF3, or upon successful completion of the performance tests for RF3 specified in Approval Condition 7, whichever occurs first. This testing and break-in period is granted to allow Boise to make any changes or adjustments to RF3 CEMS, RF3 modified equipment, and RF3 pollution control equipment.

Table 1. Emissions Limits and Related Monitoring and Reporting Requirements for RF3

Condition Number	Parameter	Limit & Averaging Period (shall not exceed)	Monitoring & Reporting ¹
1.1	SO ₂	1301 tpy, 12-month rolling annual average.	EPA Method 6 or 6C is the primary reference test method. Boise shall perform source tests monthly. Annual average value is calculated using actual emissions from the results of the most recent source tests. Boise shall report monthly all source test results and rolling 12-month mass emissions. ² Source tests shall be conducted at a production rate which is at or above the average production rate in the previous month.
1.2	SO ₂	500 ppmvd @8% O ₂ , hourly average	EPA Method 6 or 6C is the primary reference test method. Boise shall sample monthly consisting of three 1-hour sample runs using Method 6, 6C, or a test method approved in advance in writing by Ecology. Report test results monthly. ²
1.3	NO _x	112 ppmvd @ 8% O ₂ , daily average.	EPA Method 7, 7A, 7B, or 7E is the primary reference test method. Boise shall monitor continuously using an approved CEM that conforms to 40 CFR Part 60 Appendix B, Performance Specification 2. Report exceedances monthly.
1.4	CO	500 ppmvd @ 8% O ₂ , 24-hour average.	EPA Method 10 is the primary reference test method. Boise shall monitor continuously using an approved CEM that conforms to 40 CFR Part 60 Appendix B, Performance Specification 4. Report exceedances monthly.

Table 1. Emissions Limits and Related Monitoring and Reporting Requirements for RF3

Condition Number	Parameter	Limit & Averaging Period (shall not exceed)	Monitoring & Reporting ¹
1.5	TRS	5 ppmvd @ 8% O ₂ , 12-hour average.	EPA Method 16, 16A, or 16B is the primary reference test method. Boise shall monitor continuously using an approved CEM operated in conformance with 40 CFR Part 60 Appendix B, Performance Specification 5. Report monitoring results and exceedances quarterly to Ecology. If the total duration of all 12-hour averaging periods of excess emissions in a quarter is less than one percent of the total number of operating hours (excluding periods of start-up, shutdown, or malfunction) during the quarter, the excess emissions do not constitute a violation of this requirement.

¹ Monitoring is required only when emission unit is operating.

² If monitored emissions are equal to or less than 75% of the emission limitation for any six consecutive months, emissions will be monitored by three 1-hour sample runs per quarter and reported quarterly. The time interval between successive quarterly tests shall not exceed 105 days. If monitored emissions in any one of the six most recent source tests are greater than 75% of the emission limitation listed in either Approval Condition 1.1 or 1.2, the monitoring and reporting frequency will be as stated in the condition itself.

2. Emissions Limits and Related Monitoring and Reporting Requirements for HFB: Upon the completion of construction and start-up of the HFB with over-fire combustion air equipment and associated controls and equipment modifications, Boise shall comply with the emissions limitations, monitoring, and reporting requirements listed in Table 2 for the HFB. The HFB is granted a testing and break-in period. This period begins upon start-up of the modified HFB, and ends 180 days after start-up of the HFB, or upon successful completion of the performance tests for the HFB specified in Approval Condition 7, whichever occurs first. This testing and break-in period is granted to allow Boise to make any changes or adjustments to the HFB, the HFB's associated pollution control equipment or the HFB's pollutant monitoring equipment as are necessary to comply with applicable rules and regulations pertaining to air quality and conditions of operation imposed here in.

Table 2. Emissions Limits and Related Monitoring and Reporting Requirements for HFB			
Condition Number	Parameter	Limit & Averaging Period (shall not exceed)	Monitoring & Reporting¹
2.1	NO _x	0.254 lb/MMBTU 30-day rolling average ²	EPA Method 7, 7A, 7B, or 7E is the primary reference test method. Boise shall install, calibrate, maintain and operate a continuous monitoring system to monitor NO _x from the HFB. Monitor continuously using an approved CEM that conforms to 40 CFR Part 60 Appendix B, Performance Specification 2. CEM data shall be averaged over a rolling 30-day period. Report monitoring results and exceedances semiannually to the Administrator (Ecology) as required by 40 CFR 60.49b(w).
2.2	CO	500 ppmvd @ 7% O ₂ , 12-month rolling annual average	EPA Method 10/10B is the primary reference test method. Source test monthly consisting of three 1-hr sample runs using a modified Ecology Method 10/10B (Tedlar bag method). Annual average is calculated from monthly test results. ³ Report results monthly.
2.3	Operation	Minimum operating condition for CO process monitoring	Maintain a continuous process combustion CO monitor at the boiler outlet ⁴ and monitor in-process CO concentration as a performance indicator. Whenever CO concentration at the boiler outlet is in excess of 2000 ppmvd (7% O ₂) for more than 24 hours, Boise shall within 24 hours initiate corrective action to reduce in-process CO concentration. Failure to initiate corrective action within 24 hours is a violation of WAC 173-405-040(10) and may be a violation of the underlying applicable requirement. Boise shall report 24-hour average in-process CO concentration in excess of 2000 ppmvd (7% O ₂), and corrective action, on a monthly basis.
2.4	Operation	Minimum operating condition for bypassing ESP when firing natural gas exclusively	Maintain ESP bypass valves in closed positions during wood waste firing. Monitor and record the positions of ESP bypass valves at all times. Boise shall report monthly all bypass periods and the type of fuel fired during bypass period.

¹ Monitoring is required only when emission unit is operating.

² The 0.254 lb/MMBtu emission limit satisfies the NSPS limit of 0.30 lb/MMBtu in 40 CFR 60.44b.

³ If monitored emissions are equal to or less than 75% of the emission limitation for any six consecutive months, emissions will be monitored by three 1-hour sample runs per quarter and reported quarterly. The time period between successive quarterly tests shall not exceed 105 days. If monitored emissions in any of the six most recent tests are greater than 75% of the emission limitation in Condition 2.2, the monitoring and reporting frequency will be as stated in Condition 2.2.

⁴ Further combustion of CO is expected to take place between the boiler outlet and the stack. The process combustion CO monitor is an internal process monitor and does not indicate direct emissions to the atmosphere.

3. Emissions Limits and Related Monitoring and Reporting Requirements for No. 1 Power Boiler (PB1): The following condition becomes effective immediately upon the issuance of this order. This condition supercedes the corresponding emission limit found in PSD permit No. PSD-X-77-04, Appendix.¹

Table 3. Emission Limit and Related Monitoring and Reporting Requirements for PB1			
Condition Number	Parameter	Limit & Averaging Period (shall not exceed)	Monitoring & Reporting
3.1	SO ₂	3025 lb/day, annual average.	Based on calculations for maximum emissions, this boiler cannot exceed the SO ₂ mass loading limit when firing natural gas. Fuel oil may be fired at any time in the No. 1 Power Boiler, subject to the stated mass loading limit. Boise shall report emissions annually. Fuel oil fired cannot exceed 2% sulfur content by weight. Maintain fuel receipts showing that all fuel oil fired is ≤ 2% sulfur.

4. Start-up Notifications:

- 4.1 Not less than 30 days prior to the initial start-up of the modified RF3 and HFB, Boise shall notify Ecology in writing of its intent to start-up the modified unit(s).
- 4.2 Not less than 30 days after the end of the testing and break-in periods described in Approval Conditions 1 and 2, Boise shall notify Ecology of the end of these periods.

5. RF3 Fuel Delivery and Combustion Air Optimization:

- 5.1 Not later than 90 days after the initial start-up of the modified RF3, Boise shall notify Ecology if further modifications to its fuel delivery and combustion air system will be performed. Further modifications may include but, are not limited to, relocation of black liquor firing guns and air ports of the combustion air system.
- 5.2 Boise shall submit to Ecology an optimization plan not later than 180 days after the notification in 5.1 above. The plan shall describe envisioned optimization modifications, the schedule for making the modifications, when start-up in the optimized mode will occur, and an evaluation of the expected effect of the optimized RF3 on emissions.
- 5.3 During the period following the 180-day initial start-up, Boise shall operate the RF3 in compliance with the Conditions 1.1 through 1.5.

¹ The underlying PSD Permit limit from No. PSD-X-77-04, incorporated into Air Operating Permit No. 000369-7 as Condition I.G.3, related to firing fuel oil in PB1.

- 5.4 Boise shall notify Ecology at least 30 days in advance of the start up of the optimized RF3.

6. HFB Fuel Delivery and Combustion Air Optimization:

- 6.1 Not later than the first 90 days after the initial start-up of the modified HFB, Boise shall notify Ecology if further modifications to fuel delivery and combustion air systems will be performed, including but not limited to modifications to overfire air, underfire air, auger, and modulating air systems.
- 6.2 Boise shall submit to Ecology an optimization plan not later than 180 days after the notification in 6.1 above. The plan shall describe envisioned optimization modifications, the schedule for making the modifications, when start-up in the optimized mode will occur and an evaluation of the expected effect of the optimized HFB on emissions.
- 6.3 During the period following the 180-day initial start-up, Boise shall operate the HFB in compliance with the emission limits in Approval Conditions 2.1 through 2.4.
- 6.4 Boise shall notify Ecology at least 30 days in advance of the start up of the optimized HFB.

7. Initial Performance Tests:

- 7.1 Initial performance tests shall be conducted in accordance with the appropriate methods set forth in 40 CFR, Part 60, Appendix A as amended through July 1, 2001. Each performance test shall consist of three separate runs using the applicable test method, in accordance with 40 CFR 60.8 (f). Initial performance tests are to be performed once only for the start-up of each modified emission unit subject to this determination.
- 7.2 Boise shall provide written notice to Ecology not less than 30 days prior to the scheduled performance test. Such notification shall include a detailed description of the intended performance test plan(s).
- 7.3 Not later than 180 days after start-up of the modified RF3, Boise shall complete initial performance tests on the RF3 to demonstrate compliance with the limits in Approval Condition 1. If Boise notifies Ecology that the RF3 will be optimized as per Approval Condition 5 above, the Initial Performance Tests for the RF3 may, upon written approval of Ecology, be postponed until no later than 180 days after the start up of the optimized unit, according to the schedule given in Approval Condition 5, above.
- 7.4 Not later than 180 days after start-up of the modified HFB, Boise shall complete initial performance tests on the HFB to demonstrate compliance with the limits identified in Approval Conditions 2.1 and 2.2. If Boise notifies Ecology that the HFB will be optimized as per Approval Condition 6 above, the Initial Performance Tests for HFB may, upon written approval of Ecology, be postponed until no later than 180 days after the start up of the optimized unit, according to the schedule given in Approval Condition 6, above.

8. Continuous Emissions Monitoring Systems: Any continuous emissions monitoring system (CEMS) required by this permit shall conform with EPA 40 CFR 60, Appendix B Performance Specifications as indicated below:

- (a) CEMS for NO_x – Performance Specification 2.
- (b) CEMS for O₂ – Performance Specification 3.
- (c) CEMS for CO – Performance Specification 4.
- (d) CEMS for TRS – Performance Specification 5.

During the initial testing and break-in period allowed in Approval Conditions 1 and 2, Boise shall evaluate the installed CEMSs against the above performance specifications and make any adjustments necessary for compliance.

9. Alternate compliance test methods: Ecology may approve alternate compliance determination methods that are of equivalent stringency for any air pollutant regulated by this permit. Boise must request and receive Ecology approval in writing prior to using an alternative compliance test method. If Boise wishes to use an alternate to an EPA test method, the alternate must be submitted to and approved by EPA prior to its use.

10. Replacement of Existing Overlapping Conditions: The conditions listed in this approval will supersede any overlapping conditions listed in PSD-X-77-04 and PSD-95-04 Scenario 1. The rescinded conditions and their superceding conditions are summarized in Table B below.

Table B Replacement of Overlapping Conditions		
Permit Limit Description	Overlapping Condition in Previous Permits	Condition Which Supersede Previous Condition
RF3 NO_x Emissions	PSD-95-04, Condition I-2	Approval Condition 1.2
RF3 CO Emissions	PSD-95-04, Condition I-3	Approval Condition 1.3
RF3 TRS Emissions	PSD-95-04, Condition I-5	Approval Condition 1.5

The HFB PM₁₀ and SO₂ emissions limits in PSD-X-77-04 no longer apply. These conditions are superseded by Approval Condition 2 in the state regulatory approval order number DE02AQIS-3588 issued concurrent to this order. Approval Condition 3.1 of this order supersedes the corresponding condition found in PSD-X-77-04, as incorporated into the Air Operating Permit No. 000369-7 as Condition I.G.3.

11. Enforcement: Any activity that is undertaken at the Boise Wallula mill, in a manner which is inconsistent with this determination, shall be subject to Ecology enforcement under applicable regulations. Nothing in this determination shall be construed so as to relieve Boise of its obligations under any state, local, or federal laws or regulations.

12. Reporting:

Boise shall retain copies of all required reports to Ecology for at least five years.

Source test reports and process data relevant to required emission limit testing shall be submitted to Ecology's Industrial Section, and Ecology's Air Quality Program Technical Information and Engineering Services Section's Engineering Unit within thirty days of the end of each calendar month (unless a different testing and reporting schedule has been approved by Ecology) in which the final source test report is received.

Test reports shall be submitted in a format approved by Ecology which shall include but not be limited to the following:

- (a) Process or control equipment operating parameters relevant to the source test.
- (b) For each applicable emission unit, the pollutant concentrations in the units and averaging times of the standard.
- (c) For each applicable emission unit, total pollutant mass emissions in the units and averaging times of the standard.
- (d) Results of any stack tests required by this permit during the monitoring period.
- (e) The duration and nature of the downtime of any required Continuous Emissions Monitoring System (quarterly report kept on site for inspection).

12.1 All other reports required by Approval Conditions 1 through 7 shall be submitted to Ecology's Industrial Section, and Ecology's Air Quality Program Technical Information and Engineering Services Section's Engineering Unit.

12.2 Once the requirements of this PSD approval are incorporated into an issued Air Operating Permit, reports pursuant to Approval Conditions 1 through 7, 12, and 13 are no longer required to be submitted to the Air Quality Program Technical Information and Engineering Services Section's Engineering Unit.

13. Excess Emissions reporting: For each occurrence of monitored or measured emissions in excess of the limits in this permit, an excess emission report shall be provided to Ecology's Industrial Section or its authorized representative by the 15th day of the month following the reporting period. The excess emission report shall include the following information:

- (a) Time of the occurrence.
- (b) Magnitude of the emission or process parameters excess.
- (c) Duration of the excess.

- (d) The probable cause.
- (e) Corrective actions taken or planned
- (f) Any other agency contacted besides Ecology.

14. O&M Manuals: At all times, including periods of abnormal operation and upset, Boise shall, to the extent practicable, operate and maintain emissions units with modifications covered by this permit that have the potential to affect emissions to the atmosphere, along with associated air pollution control equipment, in a manner consistent with good air pollution control practice. For said units, Operations and Maintenance (O&M) manuals shall be prepared, reviewed annually, and updated as needed. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to Ecology which may include, but is not limited to, monitoring results, opacity observations, inspections of the source, and reviews to determine that the mill is following its O&M procedures.

15. Approval Duration: This approval shall become invalid if construction of the project is not commenced within eighteen (18) months after receipt of final approval. If construction of the facility is discontinued for a period of eighteen (18) months, approval for unconstructed elements of this project is invalid. Ecology may extend the 18-month period upon a satisfactory showing that an extension is justified, pursuant to 40 CFR 52.21(r)(2) and applicable EPA guidance. Emission limits from individual units shall become effective only after completion of construction and start-up of the modified emission units.

Inspection and Entry: Upon consent of Boise or upon presentation of credentials and other documents as may be required by law, Ecology or an authorized representative shall be allowed to:

- (a) Enter the source at reasonable times;
- (b) Have access to and copy at reasonable times any records that must be kept under this permit and only those records;
- (c) Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit; and
- (d) As authorized by WAC 173-400-105 and the Federal Clean Air Act, sample or monitor, at reasonable times, substances or parameters for the purpose of assuring compliance with the permit or other applicable requirements. [WAC 173-400-105(4); WAC 173-401-630(2)]

Reviewed by

PSD Permit
Boise Cascade Wallula
7/16/02
page 14

04/04/2002

Tapas K. Das , Ph.D., P.E.
Air Quality Program
Washington Department of Ecology

Date

Approved by:

Mary Burg
Manager, Air Quality Program
Washington Department of Ecology

Date

APPENDIX A Algorithms for Emissions Calculations

The following algorithms set forth the calculation method for those emission limits that the designated reference test method itself does not yield a direct emission measurement; the SO₂ tons per year limits are of this type. Boise may use an equivalent method with written approval from Ecology.

Determination of Compliance with the SO₂ tpy Emissions Limit at the RF3

$$\text{SO}_2 \text{ (mass per time)} = \text{Concentration} * \text{Air Flow Rate} * \text{Unit Conversion Factor} * \text{Time Adjustment}$$

Where,

Concentration is case specific in terms of averaging period as required by the permit. The concentration should be obtained using EPA Method 6 or any other test method approved by the Department of Ecology.

Air Flow Rate must be representative of normal operations and is in the unit of dry standard cubic feet per minute during the applicable source test period.

Unit Conversion Factor is the density of SO₂, 0.166 lb per cubic foot of SO₂ based on a molecular weight of 64 lb/lb-mol and an ideal gas volume of standard conditions of 385 ft³/lb-mol.

Time Adjustment is case specific and is dependent on the flow rate time unit.

This value will then be averaged with the preceding year of the applicable calculated SO₂ emission rates (monthly, quarterly, or other test frequency, as applicable) to determine the rolling annual average.

Determination of Compliance with the SO₂ lb/day Emissions Limit at the PB1

$$\text{SO}_2 \text{ (mass per time)} = \text{AP-42 Emission Factor} * \text{Fuel Sulfur Content} * \text{Amount of Fuel Used}$$

Where,

AP-42 Emission Factor is the SO₂ emission factor listed in U.S. EPA's "Compilation of Air Pollutants Emission Factors (AP-42)". The SO₂ emission factor is expressed in pounds per thousand gallons (lb/1000 gallons) as a multiple of the fuel sulfur content. At the time of issuance of this order, AP-42 lists the SO₂ emission factor to be 157S lb SO₂ /1000 gallons, where S is the fuel sulfur content as defined below.

Fuel Sulfur Content is the sulfur content of the fossil fuel in percent. For example, if Boise proposes to use 1.7 % sulfur fuel, therefore, the fuel sulfur content to be used in the above equation is 1.7.

Amount of Fuel Used is the amount of fuel used in a year, in 1000 gallons.

This value (lb/year) will then be divided by 365 days per year to determine the lb/day value based on an annual average. Compare with the 3025 lb/day SO₂ limit to determine compliance.

APPENDIX B

Glossary of Terms Used in this Approval Order

Annual average. In defining the averaging period of a particular limit, annual average means the calendar year average. Determining compliance with a limit with an annual average shall be based on the unit's operation for a calendar year.

Calendar year average. The calendar year average is the average value of a given parameter over the period beginning on January 1 and ending on December 31.

Corrective action. Action taken by permittee with the intent of removing the identified deviation.

Operating/in operation. In operation means engaged in activity related to the primary design function of the source. For example, a straight recovery furnace is in operation only when combusting black liquor, and a lime kiln is in operation only when feeding lime mud.

Rolling annual average. In defining the averaging period of a particular emissions limit, the rolling annual average means the average of the emissions readings of the previous year leading up to the reporting date. For a rolling annual average limit with an associated monthly reporting requirement the rolling annual average is a 12-month rolling average, calculated monthly. The need for this term is necessitated by the possibility of different reporting frequencies for a single emissions limit, based on the performance of the unit compared to the permit limit.

Start-up. For RF3, start-up is defined as the time when black liquor is introduced into the unit. For HFB, start-up is defined as the time when wood waste is introduced into the unit.

30-day rolling average. In defining the averaging period of a particular emissions limit, the rolling 30-day average means the average of the emissions readings of the previous 30 days leading up to the reporting date.

60-minute period. The period from the top of one hour to the top of the next hour (e.g., 07:00:00 to 07:59:59).