

Pollution Control Project Evaluation – November 2001

Willamette Industries, Inc – Port Wentworth, Georgia

Introduction

Georgia's Environmental Protection Division (EPD) is conducting an evaluation of a pollution control project (PCP). This PCP will be for the following modifications at Willamette Industries located in Port Wentworth:

HVLC Project

1. Collect the high volume-low concentration (HVLC) gases emitted from the knotter (or replacement), screening system and decker and routing them to the recovery boiler for incineration;
2. Replacement of the existing knotter with a similar piece of equipment from which HVLC gases will be easier to collect;;

Lime Kiln ESP Project

3. Replacement of the scrubber on the lime kiln with a dry electrostatic precipitator;

These modifications are being done to comply with future standards of the "Cluster Rule", 40 CFR 63 Subpart S – “National Emission Standards for Hazardous Air Pollutants from the Pulp and Paper Industry” and 40 CFR 63 Subpart MM – “National Emission Standards for Hazardous Air Pollutants for Chemical Recovery Combustion Sources at Kraft, Soda, Sulfite, and Stand-Alone Semichemical Pulp Mills”. Two particular portions of these MACTs are affected through this pollution control project, specifically:

1. MACT I – Controls hazardous air pollutant (HAP) emissions from the pulp and paper production areas of mills using kraft, sulfite, semi-chemical and soda pulping processes;
2. MACT II – Controls HAP emissions from the pulping chemical recovery combustion areas of mills; and

Standards for the MACT I are found in 40 CFR 63 Subpart S and the MACT II standards are found in 40 CFR 63 Subpart MM.

The MACT I standards for pulping systems required that existing low volume high concentration (LVHC) HAP emission sources be controlled by April 16, 2001. The standards

for pulping systems also require that existing high volume low concentration (HVLC) HAP emission sources be controlled by April 17, 2006. Sources of HVLC gases include pulp washing equipment, knotters, screens, deckers, oxygen delignification systems and other equipment serving the same function. The 2006 HVLC portion of the MACT standard is being addressed with this pollution control project.

The MACT II rules contain standards for recovery furnaces, smelt dissolving tanks and lime kilns. The standards for these sources require compliance with a particulate matter (PM) limit. Particulate matter is used as a surrogate for metallic HAPs. The MACT II rules require compliance of existing sources by January 12, 2004. The existing lime kiln will not be able to meet the strict standards of MACT II under its current scrubber configuration. The replacement of the scrubber with an ESP will allow the lime kiln to meet the standards.

Background Information

Willamette Industries, Inc – Port Wentworth Mill currently operates under Air Quality Permit No. 2631-051-0010-E-03-0, issued October 18, 2000 for the entire mill.

Title V Application TV-9266 submitted on October 18, 1996 (updated on January 31, 2001) is currently on file with the Division.

Justification for Conducting a PCP

Willamette Industries, Inc – Port Wentworth Mill has requested application # 13080 be processed as a PCP. For the PCP to be acceptable, it must address certain items and criteria that are identified in the U.S. EPA memorandum, dated July 1, 1994, from John S. Seitz, Director of the Office of Air Quality Planning and Standards. The memorandum provides guidance for preparing an acceptable PCP. It was issued to the Director of each of the ten EPA regional offices, who provided the guidance document to each State and local agency handling air quality regulations in the United States.

PCP/Cluster Rule Modifications

As previously mentioned, Willamette Industries proposes the following major pollution control upgrades (and associated work) to the Mill for compliance with the Cluster Rule:

HVLC Project

1. Collect the high volume-low concentration (HVLC) gases emitted from the knotter (or replacement), screening system and decker and routing them to the
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recovery boiler for incineration;

2. Possible replacement of the existing knotter with a similar piece of equipment from which HVLC gases will be easier to collect.

Items 1 & 2 listed above focus on the collection and treatment of the HVLC gas streams from the pulp washing system (source code DK03), the knotter and screening units (KD04), the decker (KD05), the weak liquor storage tanks (WS01), the intermediate liquor storage tanks (ILST), the 70% (strong) liquor storage tank (SLST), the salt cake mix tank (SCMT), the unscreened stock tanks (USST) and the blow tank (BLOW). The piping and enclosures used to collect the HVLC gases will be in compliance with the requirements of 40 CFR 63.443(c).

Lime Kiln ESP Project

1. Replacement of the scrubber on the lime kiln with a dry electrostatic precipitator.

The replacement of the scrubber focuses on ensuring that Willamette will meet the strict PM emission standards when burning fuel oil as required by MACT II. An additional effect of this modification is a reduction of “dusting events” attributed by the lime kiln. The existing lime kiln may have difficulty meeting the 0.064 grains per dry standard cubic feet (gr/dscf) at 10% oxygen unless the existing scrubber is replaced.

The new ESP will have a vendor-guarantee outlet grain loading rate of 0.01 gr/dscf. This value is equal to the MACT II standard for new lime kilns and significantly below the standard for existing lime kilns.

PCP Evaluation

Based on the EPA guidance memorandum, there are four requirements that must be met in order for the PCP to be a sound proposal and eligible for approval. These four requirements are:

1. EPD must determine that the proposed PCP, after consideration of the reduction of the targeted pollutant(s) and any negative collateral effects, will be overall environmentally beneficial.
 2. The proposed PCP must demonstrate there are no resultant violations of a National Ambient Air Quality Standard (NAAQS), PSD increment, and that it does not adversely impact an air quality related value (AQRV) in a Class I area.
 3. The affected public must be given the opportunity to review and comment on the
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proposed PCP.

4. Final approval of the proposed PCP must be obtained from Georgia EPD. EPA will be given the opportunity to comment on the proposed permit.

Each of these four requirements is addressed below.

1. Overall Benefit of the PCP

The BID for the Cluster Rule further acknowledges that the EPA issued a policy statement (EPA-453/R-93-050b, October 1997) indicating that projects implemented to comply with the MACT portion of the December 17, 1993, proposed Cluster Rule, were to be considered “environmentally beneficial” under the Agency’s PCP Policy. Also, U.S. EPA guidance (“Pollution Control Projects and New Source Review (NSR) Applicability” July 1, 1994) claims that a control technology designed to comply with MACT standards required in the Cluster Rule can by default be considered to be environmentally beneficial.

To demonstrate that the application qualifies for the PCP exclusion, the project must be environmentally beneficial and any resulting collateral increases of non-targeted pollutants must be minimized. Both projects specified in this review are being performed to meet the strict standards of the Cluster Rule and should be considered Environmentally Beneficial on that issue alone, however the proposed project meets the environmentally beneficial safeguard as follows:

HVLC Project

1. An actual reduction of 69.90 tons per year (tpy) of HAP emissions from the entire Mill;
2. An actual reduction of 130.15 tpy of VOC emissions from the entire Mill;
3. An actual reduction of 24.77 tpy of TRS emissions from the entire Mill; and
4. A reduction in the odor impacts of the Mill due to lower TRS emissions.

In addition, there will be no increase in production from the facility as a result of the HVLC project and the capacity of the recovery boiler will remain unchanged. The HVLC project will not cause an increase in the utilization of any unit.

The collateral increases in emissions associated with the HVLC project, as a result of the incremental increase in material combusted in the boiler, will be very small (only 2.009 tpy of

SO₂ and less than 1 tpy of each of PM, CO, NO_x and VOC). No changes in the permitted emission limits of the recovery boiler will be required. While potential increases appear very significant, all actual emission increases from the HVLC project will be less than PSD significance levels.

The table that follows shows the overall increases/decreases at the facility as a result of this specific project.

Pollutant	Estimated Actual Emission Increases (TPY)	Estimated Actual Emissions Decreases (TPY)	Current Actual Emissions Level (TPY)	Future Potential Emissions Levels (TPY)	Future Potential to Past Actual (TPY)	PSD Significance Level (TPY)
PM	0.211	--	90.25	205.86	115.61	15.0
SO ₂	2.009	--	919.80	2,190.00	1,270.20	40.0
NO _x	0.392	--	676.40	763.43	87.03	40.0
CO	0.082	--	2,409.00	3,262.22	853.22	100.0
VOC	0.003	130.15	159.26	167.54	8.28	40.0
TRS	--	24.77	10.62	23.17	12.55	10.0
HAPs	--	69.90	--	--	--	--

TABLE 1 – Summary of Estimated Actual Emissions Increases and Current Actual-to-Future Potential Emissions for the HVLC Project.

Current actual emissions assume the permitted production limit of 438,000 ADTP/yr. Future potential emissions are equal to the permit limits, if a permit limit exists. Otherwise, future potential emissions are based on the most appropriate available emission factors and the maximum capacity of the unit. It is conservatively assumed that all PM is PM₁₀ and that all TRS is in the form of hydrogen sulfide.

Lime Kiln Project

1. A reduction of 46.42 tons per year (tpy) of PM emissions from the Lime Kiln;
2. A reduction of 0.39 tpy of metallic HAP emissions from the Lime Kiln; and
3. A reduction or elimination of dusting events due to PM emissions from the Lime Kiln.

In addition, there will be no increase in production from the facility as a result of the Lime Kiln project and the capacity of the kiln will remain unchanged. The Lime Kiln project will not cause an increase in the utilization of any unit.

The collateral increases in emissions associated with the Lime Kiln project, as a result of the replacement of the scrubber with an ESP, will be very small (only 7 tpy of SO₂). This increase is due to the fact that while the scrubber was designed for PM removal, slight reductions in SO₂ were also present. No changes in the permitted emission limits of the lime kiln will be required. While potential increases appear significant, all actual emission increases from the Lime Kiln project will be less than PSD significance levels.

The table that follows shows the overall increases/decreases at the facility as a result of this specific project.

Pollutant	Estimated Actual Emission Increases (TPY)	Estimated Actual Emissions Decreases (TPY)	Current Actual Emissions Level (TPY)	Future Potential Emissions Levels (TPY)	Future Potential to Past Actual (TPY)	PSD Significance Level (TPY)
PM	--	46.42	59.33	12.91	-46.42	15.0
SO ₂	7.18	--	4.38	217.25	212.87	40.0
NO _x	--	--	124.70	149.48	24.78	40.0
CO	--	--	21.90	21.90	0.00	100.0
VOC	--	--	4.50	5.39	0.89	40.0
TRS	--	--	1.02	6.39	5.37	10.0
HAPs	--	--	--	--	--	--

TABLE 2 – Summary of Estimated Actual Emissions Increases and Current Actual-to-Future Potential Emissions for the Lime Kiln Project.

Current actual emissions assume the permitted production limit of 438,000 ADTP/yr. Future potential emissions are equal to the permit limits, if a permit limit exists. Otherwise, future potential emissions are based on the most appropriate available emission factors and the maximum capacity of the unit. The future potential level of PM is calculated based on the vendor guaranteed outlet grain loading rate of 0.01 gr/dscf, in addition, it is conservatively assumed that all PM is PM₁₀ and that all TRS is in the form of hydrogen sulfide.

Impacts of Both Projects

The table that follows shows the overall increases/decreases at the facility as a result of both projects.

Pollutant	Estimated Actual Emission Increases (TPY)	Estimated Actual Emissions Decreases (TPY)	Net Potential to Past Actual (TPY)	PSD Significance Level (TPY)
PM	--	46.42	69.19	15.0
SO ₂	9.189	--	1,483.07	40.0
NO _x	0.392	--	111.81	40.0
CO	0.082	--	853.22	100.0
VOC	--	130.15	9.17	40.0
TRS	--	24.77	17.92	10.0
HAPs	--	70.29	--	--

TABLE 3 – Summary of Estimated Actual Emissions Increases and Current Actual-to- Future Potential Emissions for Both Projects.

Table 3 shows that even when both projects are considered together, the impact on emissions is environmentally beneficial. The actual increase in SO₂, CO and NO_x emissions from both projects will be less than PSD significance levels. The decrease in actual PM, VOC, TRS and HAPS emission decreases are much larger than the collateral increases in SO₂, CO and NO_x.

Based on the information presented above and in application #13080, the proposed changes to the HVLC collection/treatment and process condensate handling systems and the replacement of the Lime Kiln scrubber meet the requirements for the environmentally beneficial test as specified in the US EPA memo dated July 1, 1994 for Pollution Control Project applicability.

2. NAAQS and PSD Increment Evaluation

According to the EPA guidance memorandum, the proposed PCP must demonstrate that the proposed emissions increase would not cause or contribute to a violation of a National Ambient Air Quality Standard (NAAQS) or PSD increment, and that it would not adversely impact any air quality related values (AQRV) in a Class I area.

Using the modeling submitted by Willamette in July 2001, the maximum incremental ambient impacts from the potential emission increase from the project do not exceed modeling significance levels for NO_x, CO and SO₂. The following table was provided by the facility.

Pollutant	Modeled Emissions Rate (lb/hr)	Averaging Permit (hr)	Maximum Modeled Ambient Impact (ug/m3)	Modeling Significance Level (ug/m3)	Modeled Impact >MSL? (yes/no)
NO _x		Annual	1.87 x 10 ⁻⁴	1	No
CO	185.1	1	4.35 x 10 ⁻³	2000	No
	185.1	8	1.42 x 10 ⁻³	500	No
SO ₂	35.0	3	1.17	25	No
	35.0	24	0.44	5	No
	35.0	Annual	0.03	1	No

TABLE 4 – Significance Modeling Results

As seen in the above table, the facility, as it will exist following the proposed modification, will not cause or contribute to a violation of the Modeling Significance Levels. Since these significance levels were not breached, no further modeling for NAAQS or PSD increments was needed. The potential emissions from other pollutants were not greater than the significant emission rates.

Willamette Industries is located within 100 km of the Wolf Island Wilderness Area a Class I area and within 200 km of the Cape Romain and Okefenokee National Wilderness Area, also Class I areas. The John S. Seitz memo from EPA indicates that “pollution control projects are outside major NSR coverage in accordance with the general rules”, therefore contact with the Federal Land Manager was deemed not necessary. However, during the preparation of the application, the proposed projects were discussed with Ms. Kirsten King of the Fish and Wildlife Service. Ms. King stated that the FLMs have typically not required AQRV reviews of PCP projects completed in order to comply with the Cluster Rule requirements, if there is no associated production increase. There is no associated production increase with any of the projects in this review. A copy of the application was provided to Ms. King at her request.

3. Opportunity for Public Comment

The public will be given an opportunity to comment on this PCP. The mill will publish a public notice in the local newspaper for Savannah and the surrounding area. The public notice will also be sent to each party on EPD's mailing list of interested parties prior to the publication date. The application and draft permit will be available for public review at the *Bibb County Courthouse* and the Air Protection Branch, Atlanta office, at the time of publication. The public will be offered a 30-day comment period.

4. Final Approval of PCP

The proposed PCP will be provided to EPA Region 4, in draft form, for their initial review and to give them the opportunity to supply comments. After any comments made by the public and/or EPA Region 4 have been addressed, the PCP will be given final approval.

Additional Permitting Actions – Application 13152 “Concentrator Project”

The facility submitted an additional application, No. 13152, for modifications to the current evaporator system. This application is a separate modification from this pollution control project and will be considered as such.

On October 18, 2000, Air Permit 2631-051-0010-E-03-0 was issued to Willamette to increase the pulping capacity of the plant from 1,625 tons per day (including 740 air dried tons per day of bleached pulp) to 1,200 air dried tons of bleached pulp per day. The facility has determined that it will need additional evaporator capacity to produce the 1,200 adtp/day. The facility proposes to rectify this situation by adding a concentrator to the existing #3 Evaporator Line and permanently retiring the No. 2 Evaporator Line.

In order that this modification not trigger PSD, a PSD Netting exercise was conducted by the facility. Summaries of the netting analysis are included in this narrative, complete details of the netting analysis are included in Application 13152, section 7.

Emissions Unit	CO (tpy)	VOC (tpy)	TRS (tpy)
Bleaching Operations	88.54	25.66	0.60
No. 3 Evaporator Line & proposed concentrator	--	0.66	0.05
Blow Tank	--	5.13	1.67
Unscreened stock tanks	--	10.27	3.33
Diffusion washer	--	16.69	2.17
Knotting & screening	--	2.30	0.16
Decker	--	24.38	4.36
Pulp machine	--	35.91	6.54
Total potential emissions increases	88.54	121.00	18.88
PSD Significance Levels	100.00	40.00	10.00
Netting required?	NO	YES	YES

TABLE 5 – Potential Emissions Increases due to the “Concentrator Project”

Contemporaneous emissions increases and decreases must be considered in any netting analysis. Since the initial construction of the modifications already permitted commenced in October, 2001, the contemporaneous period for this modification begins in October 1996 and extends to the completion of the modifications to increase the capacity of the bleached market pulp production line. Three modifications have affected VOC or TRS emissions and must be considered, they are:

1. The expansion to recycle operations and installation of a new shoe press on the linerboard machine in November 1996
(VOC increase of 0.64 tpy, TRS increase of 0.64 tpy)
2. The shutdown of the linerboard operations in October 1998
(Brownstock washers: VOC decrease 118.10 tpy, TRS decrease 21.65 tpy,
Linerboard Machines: VOC decrease 226.32 tpy, TRS decrease 2.48 tpy)
3. The shutdown of Power Boilers #3 and #3 in October 1998
(VOC decrease of 0.22 tpy)

In addition to the three modifications previously completed, the turpentine storage tanks have been replaced, however they had a negligible effect on VOC and TRS emissions. The permanent shutdown of the No. 2 Evaporator Line will result in a contemporaneous emissions decrease, however the historical throughput of the No. 2 Evaporator Line is unknown, so this emissions decrease will be conservatively excluded from the netting analysis.

The pollution control project discussed throughout this narrative may be completed during the contemporaneous period, however they will result in a decrease of VOC and TRS emissions. Therefore, the emissions decrease from the PCP will be conservatively excluded from the netting analysis.

	VOC (tpy)	TRS (tpy)
Potential emissions increase from modified/installed units and debottlenecked units	121.00	18.88
Contemporaneous emissions increases	0.64	0.64
Contemporaneous emissions decreases	344.64	24.13
Net emissions increases	-223.00	-4.61
PSD Significance levels	40.00	10.00
PSD Triggered?	NO	NO

TABLE 6: Summary of Netting Calculations

As can be seen in Table 6, the net emissions increases of VOC and TRS from the modifications previously permitted and the proposed evaporator modifications are less than PSD significance levels. Therefore, PSD review is not required.

Conclusions

It is the determination of the EPD that the overall impact of implementation of the proposed project is "on balance" environmentally beneficial. As such, conditions will be drafted to require certain testing and monitoring for the new equipment. This will be in line with some of the Cluster Rule requirements. They will include the following:

Pollution Control Project

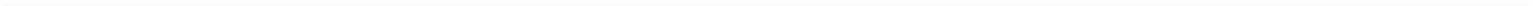
1. Condition 29b of the existing permit will require that the ESP (instead of the scrubber) be operated and maintained at all times within normal operating parameters. These parameters will be established during the annual performance test on the Lime Kiln.
2. Condition 21b of the existing permit will require monitoring of the ESP (instead of the scrubber) to ensure compliance with the applicable standards.
3. Condition 52 requires the collection and routing of the HVLC gases to the Recovery Furnace for incineration.
4. Condition 53 allows the facility to burn the HVLC gases in the #4 Power Boiler (also known as the #4 Combination Boiler) when the recovery boiler is not operating or is malfunctioning.

Concentrator Project

5. Condition 29d was modified to remove references to the #2 Evaporator set and add a reference to the new concentrator.

Condition 54 requires notification of when each project (HVLC project, Line Kiln Project and Concentrator Project) is completed. In addition, all Cluster Rule requirements will be formally spelled-out in the Title V Permit which is scheduled to be issued in 2002.

No new NSPS requirements are required due to any of the modifications presented in this review. The No. 3 Evaporator set is already subject to NSPS Subpart BB. The #4 Power Boiler already has limits on the time and amount of NCGs that may be burned in the unit and limits on the opacity, sulfur dioxide and NOx emissions from the unit.



Therefore, I recommend the issuance of Air Quality Permit 2631-051-0010-E-04-0 for the modifications specified in this PCP to Willamette Industries, Inc in Port Wentworth, Georgia.

