



Scan

Performance Fibers  
Fernandina Mill

February 28, 2013

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DIVISION OF AIR  
RESOURCE MANAGEMENT

**Certified Mail, Return Receipt Requested**

Department of Environmental Protection  
Division of Air Resources Management, MS5500  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

Re: Rayonier Performance Fibers, LLC  
2012 Annual Actual Emissions Reporting

Rayonier Performance Fibers, LLC, hereby submits the 2012 annual actual emissions report, as required by several of its construction permits and Title V operating permit. Each of the emissions units for which reporting is required, and the specific permit condition requiring the reporting, is provided below.

**I. No. 6 Power Boiler and Recovery Boiler**

Submittal for Construction Permit No. 0890004-021-AC, Specific Condition E.1

Condition E.1, of the above referenced Construction Permit requires an annual report of emissions submitted in conjunction with the Annual Operating Report. Demand Growth emissions are associated with the production increase portion of the Construction Permit. The application demonstrated that the existing power boilers and recovery boiler could achieve and maintain the 175,000 ADMT production rate. The power boilers baseline used in the application is presented in the table below along with the 2012 reported emissions for the No. 6 Power Boiler, which replaced the three old power boilers. The difference is taken as Demand Growth Emissions.

Power Boiler Demand Growth Emissions Accounting:

<b>Pollutant</b>	<b>Baseline Emissions from No. 1, 2 &amp; 3 Boilers (tons/yr)</b>	<b>2012 Annual Emissions No. 6 Power Boiler (tons/yr)</b>	<b>Demand Growth Emissions from Boilers (tons/yr)</b>
PM	276.06	33.75	-242.3
PM10	242.48	33.75	-208.7
SO <sub>2</sub>	181.96	2.64	-179.3
NO <sub>x</sub>	340.95	289.7	-51.3
CO	690.75	200.2	-490.6
VOC	52.40	1.45	-51.0

Likewise, the application demonstrated that the existing Recovery Boiler was capable of burning 70,000 lbs/hour of red liquor solids. Its baseline was not provided in the application, but the emissions below are based on the 2003-2004 Annual Operating Report.

The emissions from the Recovery Boiler for 2012 are compared to determine the Demand Growth Emissions. However, this overstates these emissions by that portion of the Significance Level applied to the Recovery Boiler, which has not been calculated as it makes the determination unnecessarily complicated.

Recovery Boiler Demand Growth Emissions Accounting:

<b>Pollutant</b>	<b>2003-2004 Emissions from Recovery Boiler tons/yr</b>	<b>2012 Annual Emissions from Recovery Boiler (tons/yr)</b>	<b>Demand Growth Emissions from Recovery Boiler tons/yr</b>
PM	61.88	81.4	19.5
PM10	55.26	73.4	18.1
SO <sub>2</sub>	821.25	305.27	-516.0
*NO <sub>x</sub>	1,997.96	1,983.82	-14.1
CO	344.84	559.2	214.4
**VOC	8.45	2.15	-6.30

\*The NO<sub>x</sub> emission factor from the 2003 AOR was recalculated in 2004. For this demand growth discussion, the 2003 NO<sub>x</sub> emissions were recalculated using the 2004 emission factor in order to develop an accurate baseline.

\*\*The VOC emission factor was recalculated in the Recovery Boiler refurbishment application (see Item III below). For this demand growth discussion, the 2004-2005 VOC emissions from that application were used as it represents an updated baseline.

It is reasonable to state that all pulp produced in 2012 could have been accommodated by the previous boilers and thus qualify as emissions due to demand growth.

## **II. No. 6 Power Boiler- Sludge Burning**

Submittal for Construction Permit No. 0890004-026-AC, Section 3, Specific Condition 16.  
Submittal for Title V Permit No. 0890004-029-AV, Specific Condition G.43.

Condition 3.16 of the above referenced Construction Permit, and Condition G.43 of the above referenced Title V operating permit, requires an annual report of emissions. The application requested the use of the Mill's effluent treatment system solids as fuel for No. 6 Power Boiler. Emissions of PM and NO<sub>x</sub> must be reported on an annual basis. The No. 6 Power Boiler baseline emission factors are as specified in Condition 3.16.d. However, the No. 6 Power Boiler has a continuous emission monitoring system (CEMS) for NO<sub>x</sub>, and the emissions from the

CEMS are more accurate than using an emission factor (also refer to Appendix C of Construction Permit). Therefore, two methods are shown below which calculate baseline and actual annual NO<sub>x</sub> emissions. The first method uses the CEMS NO<sub>x</sub> emissions, using 2009-2010 calendar years (calendar years prior to initiating sludge burning). The second method uses only the heat input to the boiler due to sludge burning, and baseline and sludge burning emission factors. The emissions are shown in the table below.

The permit also specifies, in Condition 3.16.e, the PM and NO<sub>x</sub> emission factors to be used for actual annual emissions. However, the NO<sub>x</sub> CEMS is more accurate for reporting annual emission of NO<sub>x</sub>. The actual annual emissions of PM and NO<sub>x</sub> for 2012 are shown in the table below. The difference is the net increase in emissions due to sludge burning.

#### No. 6 Power Boiler Emissions Accounting:

<b>Pollutant</b>	<b>Baseline Emissions No. 6 Power Boiler (tons/yr)</b>	<b>2012 Reported Emissions No. 6 Power Boiler (tons/yr)</b>	<b>Net Increase in Emissions Due to Sludge Burning (tons/yr)</b>
PM	87.5*	33.75	-53.8
NO <sub>x</sub> (total heat input)	283.7**	289.7***	6.00***
NO <sub>x</sub> (sludge heat input)****	0.29	0.32	0.03

\* Based on 0.048 lb/MMBtu for PM and using average heat input to No. 6 Power Boiler for 2009-2010.

\*\* Based on average NO<sub>x</sub> CEMS emissions for 2009-2010.

\*\*\* Based on actual 2012 NO<sub>x</sub> emissions from CEMS. This increase assumes that sludge burning occurred during all heat input to the boiler.

\*\*\*\* As shown below, only 259 oven-dried metric tons of sludge were burned in 2012, which equates to 3,473 MMBtu/yr heat input. Baseline emissions for NO<sub>x</sub> calculated using this heat input and permit factor of 0.165 lb/MMBtu, and 2012 emissions calculated using permit factor of 0.185 lb/MMBtu.

Per Condition 3.16.e.(1) the total annual mill effluent treatment system solids fired in the boiler must also be reported. The total mill effluent treatment system solids fired in the boiler in 2012 was 259 ODMT/yr.

### III. Recovery Boiler Refurbishment Project

Submittal for Construction Permit No. 0890004-027-AC, Section 3, Specific Condition 3.

Condition 3.3, of the above referenced Construction Permit requires an annual report of emissions submitted within 60 days of the end of each calendar year. The permit allows the repair and replacement of components on the Recovery Boiler, i.e., steam drum and other components. The construction permit and application for that permit documented the baseline emissions from the Recovery Boiler. The baseline emissions and 2012 actual annual emissions

are shown in the table below. In addition, the application documented the future emissions that could be excluded due to demand growth. The 2012 actual emissions, minus the baseline actual emissions, represents the initial increase in emissions due to the project. However, if this initial increase is positive, the demand growth emissions can be excluded from the net increase.

Recovery Boiler Emissions Accounting:

Pollutant	Baseline Emissions from Recovery Boiler (tons/yr)	2012 Annual Emissions from Recovery Boiler (tons/yr)	Initial Increase in Emissions Due to Refurbishment Project (tons/yr)	Demand Growth Excluded Emissions* (tons/yr)	Net Increase in Emissions Due to Refurbishment Project (tons/yr)
PM	109.99	81.4	-28.6		-28.6
PM10	99.93	73.4	-26.5		-26.5
SO <sub>2</sub>	970.87	305.3	-665.6		-665.6
NO <sub>x</sub>	1,977.46	1,983.8	6.4	186.02	0.00
CO	679.97	559.2	-120.8		-120.8
VOC	8.45	2.15	-6.30		-6.30
Pb	0.0137	0.0131	-0.00061		-0.00061
Hg	0.00103	0.00098	-0.000046		-0.000046
SAM	42.66	13.43	-29.2		-29.2
Fluorides	0.066	0.023	-0.043		-0.043

\* Maximum emissions that can be excluded due to demand growth.

### III. No. 6 Digester Project/Interim Pulp Production Increase

Submittal for Construction Permit No. 0890004-031-AC, Section 3, Specific Condition 3.

Condition 3.3 of the above referenced Construction Permit requires an annual report of emissions from the following sources:

- Vent Gas Scrubber/Direct Contact Condenser
- Biological Effluent Treatment System
- Dissolving-Grade Bleaching System
- Evaporator Vents Methanol Condenser.

The permit allowed the mill to increase the pulp production limit from 162,000 to 165,852 ADMT per consecutive 12-months, rolling total, until such time as the new Blow Heat Recovery System becomes operational, at which time the production limit increases to 175,000 ADMT per consecutive 12-months, rolling total. Rayonier completed the Blow Heat Recovery Project in October 2011, and therefore the facility is now authorized to increase production up to 175,000 ADMT per year. However, Rayonier must implement other changes to the pulp dryer in order to

achieve this maximum production rate. Construction Permit No. 0890004-031-AC authorized these changes to be made to the pulp dryer system through the year 2015. Title V revision Permit No. 0890004-037-AV was effective on September 17, 2012, revising the Title V air operation permit and incorporating the terms and conditions of permit Nos. 0890004-018-AC, 0890004-021-AC, 0890004-023-AC, 0890004-031-AC, including authorizing pulp production up to 175,000 ADMT/yr.

The project included the original boiler replacement project permitted under permit No. 0890004-018-AC. The application for that permit documented the baseline emissions for all sources. The baseline emissions and 2012 actual annual emissions are shown in the table below. The difference is the net increase in emissions.

Pulp Production Increase Emissions Accounting:

Source Description	Pollutant Emission Rate (TPY)		
	EU ID	SO <sub>2</sub>	VOC
<b>Baseline Actual Emissions</b>			
--Pulping Systems (VGS)	005	65.42	36.62
--Wastewater Treatment System	010	--	66.27
--Bleaching Systems	011	--	178.01
--Evaporators	021	--	53.72
<b>Total – Baseline Actual</b>		<b>65.42</b>	<b>334.62</b>
<b>2012 Actual Emissions</b>			
--Pulping Systems (VGS)	005	16.44	20.82
--Wastewater Treatment System	010	--	67.73
--Bleaching Systems	011	--	28.12
--Evaporators	021	--	9.50
<b>Total – 2012 Actual</b>		<b>16.44</b>	<b>126.16</b>
<b>Boiler Replacement Project*</b>		<b>-179.32</b>	<b>-50.95</b>
<b>Increase Due to Project</b>		<b>-228.3</b>	<b>-259.40</b>

\* Refer to Item I. above for net change.

**Designated Representative Certification**

*I, the undersigned, am authorized to make this submission on behalf of the owners and operators of the Acid Rain source or Acid Rain units for which the submission is made. I certify under penalty of law that I have personally examined, and am familiar with, the statements and*

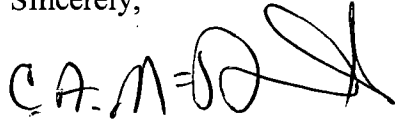
February 27, 2013

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*information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.*

If you have any questions, please contact David Rogers at (904) 277-1346 or [david.rogers@rayonier.com](mailto:david.rogers@rayonier.com).

Sincerely,

A handwritten signature in black ink, appearing to read "C.A. McDonald", with a stylized flourish extending to the right.

C.A. McDonald  
General Manager

cc: Mr. Ray Barata, FDEP, Jacksonville NE District  
David A. Buff, Golder Associates Inc.  
Natalia Gonzalez, Golder Associates Inc.

Table 1: 2012 Actual Annual Emissions, Rayonier Performance Fibers, Fernandina Beach

Pollutant	Baseline Emissions (TPY)	Emission Factor	Ref	Activity Factor	Actual Annual Emissions (TPY)
<b>EU No. 006 - Vent Gas Scrubber and Direct Contact Condenser</b>					
Sulfur Dioxide - SO <sub>2</sub>		19 ppm SO <sub>2</sub>	1	20,512 dscfm (average)	16.50
Volatile Organic Compounds - VOC		0.180 lb/ODUBT -- Non-Me VOC	2	217,246 ODUBT/yr	19.59 1.23 20.82
<b>EU No. 008 - Recovery Boiler</b>					
Sulfur Dioxide - SO <sub>2</sub>	970.87				
-- Residual Oil		2.51 lb/10 <sup>3</sup> gal No. 6 Fuel Oil	3	1,239 10 <sup>3</sup> gal/yr	1.56
-- RLS		--		--	303.71
-- Total		64 ppm	4	115,712 dscfm (average)	305.27
Nitrogen Oxides - NO <sub>x</sub>	1977.46				
-- Residual Oil		47 lb/10 <sup>3</sup> gal No. 6 Fuel Oil	5	1,239 10 <sup>3</sup> gal/yr	29.13
-- RLS		--		--	1,954.70
-- Total		15.87 lb/ton RLS	5	253,200 ton RLS/yr	1,983.82
Carbon Monoxide - CO	679.97				
-- Residual Oil		5 lb/10 <sup>3</sup> gal No. 6 Fuel Oil	5	1,239 10 <sup>3</sup> gal/yr	3.10
-- RLS		--		--	556.1
-- Total		288.98 ppm	4	115,712 dscfm (average)	559.2
Particulate Matter Total - PM	109.99				
-- Residual Oil		2.46 lb/10 <sup>3</sup> gal No. 6 Fuel Oil	5	1,239 10 <sup>3</sup> gal/yr	1.53
-- RLS		0.83 lb/ton RLS	10	253,200 ton RLS/yr	79.8
-- Total					81.4
Particulate Matter - PM <sub>10</sub>	99.93				
-- Residual Oil		1.53 lb/10 <sup>3</sup> gal No. 6 Fuel Oil	11	1,239 10 <sup>3</sup> gal/yr	0.95
-- RLS		90.70% --	12	--	72.4
-- Total					73.4
Volatile Organic Compounds - VOC	8.45				
-- Residual Oil		0.25 lb/10 <sup>3</sup> gal No. 6 Fuel Oil	5	1,239 10 <sup>3</sup> gal/yr	0.15
-- RLS		0.016 lb/ton RLS	9	253,200 ton RLS/yr	1.99
-- Total					2.16
Mercury - Hg	0.000738				
-- Residual Oil		1.13E-04 lb/10 <sup>3</sup> gal No. 6 Fuel Oil	5	1,239 10 <sup>3</sup> gal/yr	7.0E-05
-- RLS		7.2E-06 lb/ton RLS	5	253,200 ton RLS/yr	9.1E-04
-- Total					9.84E-04
Sulfuric Acid Mist - SAM	42.66				
-- Residual Oil		4.4% of SO <sub>2</sub> from No. 6 Fuel Oil	5	--	0.088
-- RLS		4.4% of SO <sub>2</sub> from RLS	5	--	13.36
-- Total					13.43
Lead - Pb	0.014				
-- Residual Oil		1.5E-03 lb/10 <sup>3</sup> gal No. 6 Fuel Oil	5	1,239 10 <sup>3</sup> gal/yr	0.00094
-- RLS		9.8E-05 lb/ton RLS	5	253,200 ton RLS/yr	0.0122
-- Total					0.0131
Fluorides - F	0.066				
-- Residual Oil		3.7E-02 lb/10 <sup>3</sup> gal No. 6 Fuel Oil	5	1,239 10 <sup>3</sup> gal/yr	0.0229
-- RLS		-- lb/ton RLS	5	253,200 ton RLS/yr	--
-- Total					0.0229
<b>EU No. 010 - Biological Effluent Treatment System</b>					
Volatile Organic Compounds - VOC		0.52 lb MeOH/ODUBT -- Non-MeOH VOC	7	217,246 ODUBT/yr	56.48 11.24 67.7
<b>EU No. 011 - Dissolving-Grade Bleaching System</b>					
Volatile Organic Compounds - VOC			8		
-- Miscellaneous Sources		0.21 lb/ODUBT		217,246 ODUBT/yr	22.81
-- Post-Blow Heat Recovery System		0.049 lb/ODUBT (0.067 lb/ADMT)		217,246 ODUBT/yr	5.31
-- Total					28.1
<b>EU No. 021 - Evaporator Vents Methanol Condenser</b>					
Volatile Organic Compounds - VOC (as methanol)		0.075 lb/ton RLS	9	253,200 ton RLS/yr	9.80
<b>EU No. 022 - No. 6 Power Boiler</b>					
Sulfur Dioxide - SO <sub>2</sub>		-- From CEMs data			2.84
Nitrogen Oxides - NO <sub>x</sub>		-- From CEMs data			289.7
Carbon Monoxide - CO		-- From CEMs data			200.2
Particulate Matter Total - PM		0.0179 lb/MMBtu	8	3,770,910 MMBtu/yr	33.75
Particulate Matter - PM <sub>10</sub>		100% of PM	5	--	33.75
Volatile Organic Compounds - VOC		7.7E-04 lb/MMBtu (bark)	10	3,770,910 MMBtu/yr	1.45

**Footnotes:**

- SO<sub>2</sub> Based on calculation 19 ppm x 64 / 2000 lb/ton x 20,436 dscfm/min / 385 dscfm/mol x 60 min/hr x 8,488 hrs/yr, where the flow rate is based on the average of the past three annual stack test and the 19 ppm is from the PV report Env 3H Air Report Acid Plant.
- Emissions based on VGS stack test data from 2009-2011.
- = [(Oil Usage(1000 gal/yr)) x Density of Oil(lb/gal) x (%S/100) x [MW(SO<sub>2</sub>)/MW(S)] x [1 - A scrub. eff SO<sub>2</sub>(%)] / [2000 lbs/ton]
- Actual annual emissions of CO and SO<sub>2</sub> based on process monitor and CEMS data. For CO, used 2011 data from CO process monitor, since monitor experienced operational issues in 2012.
- Based on the same emissions factors of NO<sub>x</sub>, Pb, Hg, F, SAM, and VOC as used in the application to establish baseline emissions, per Permit No. 0890004-027-AC
- Based on 5-year average of stack tests.
- Emission Factor for methanol based on average grade from Water 9 model, 2012 Source Testing and Consulting Services.
- The emission factor of methanol from miscellaneous sources is based on NCASI Form R Handbook data. The methanol emission factor for hot caustic extraction stage after the Blow Heat Recovery was installed are based on Blow Heat Recovery Performance Report January 2012.
- Based on Recovery Boiler stack tests for methanol, which averaged 0.075 lb/ton RLS based on 5-year average 2008-2012. For the Recovery Boiler, test result multiplied by factor of 20.6 percent, based on NCASI T.B. 884 that shows VOC from recovery boilers average 20.6 percent of methanol emissions.
- Based on 2007 stack test for VOC emissions.