STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION AUGUSTA, MAINE 04333-0017

DEPARTMENT ORDER

Verso Androscoggin LLC **Franklin County** **Jay, Maine** **A-203-77-22-A**	**Departmental** **Findings of Fact and Order** **New Source Review** **NSR #22**

FINDINGS OF FACT

After review of the air emission license amendment application, staff investigation reports, and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 Maine Revised Statutes (M.R.S.) § 344 and § 590, the Maine Department of Environmental Protection (the Department) finds the following facts:

I. REGISTRATION

A. Introduction

FACILITY	Verso Androscoggin LLC
LICENSE TYPE	06-096 C.M.R. ch. 115, Major Modification
NAICS CODES	322121
NATURE OF BUSINESS	Pulp and Paper Mill
FACILITY LOCATION	Jay, Maine

Verso Androscoggin LLC operates an integrated pulp and paper mill located in Jay, Maine. The facility was established in 1965 and produces a variety of paper grades from bleached and unbleached kraft pulp. The facility is owned by Verso Corporation and operated as Verso Androscoggin LLC. The facility will be referred to in this license by any of the following terms: Verso, Verso Androscoggin, or the Mill.

Verso Androscoggin is an existing stationary source and is considered a Part 70 major source as defined in *Definitions Regulation*, 06-096 Code of Maine Rules (C.M.R.) ch. 100. Verso Androscoggin is currently operating under Part 70 Air Emission License A-203-70-G-R/A which became effective May 20, 2015.

B. Abbreviations and Units of Measure

ADT/day	-	Air Dried Tons/day
BACT	-	Best Available Control Technology
BLS	-	Black Liquor Solids
BPT	-	Best Practical Treatment
CAA	-	Clean Air Act
CAAA	-	Clean Air Act Amendments
C.F.R.	-	Code of Federal Regulations
CO_2e	-	Carbon Dioxide Equivalents
CTG	-	Control Techniques and Guidelines
ERC	-	Emission Reduction Credits
GHG	-	Greenhouse Gases
HAP	-	Hazardous Air Pollutants
HVLC	-	High Volume, Low Concentration
LAER	-	Lowest Achievable Emission Rate
LVHC	-	Low Volume, High Concentration
N.A.	-	Not Applicable
NAAQS	-	National Ambient Air Quality Standards
NESHAP	-	National Emission Standards for Hazardous Air Pollutants
NSR	-	New Source Review
NNSR	-	Non-attainment New Source Review
NSPS	-	New Source Performance Standards
MACT	-	Maximum Achievable Control Technology
MMlb BLS/day	-	Million Pounds of Black Liquor Solids per day
MMBtu/hr	-	Million British Thermal Units per hours
OTR	-	Ozone Transport Region
PSD	-	Prevention of Significant Deterioration
RACT	-	Reasonably Achievable Control Technology
RTO	-	Regenerative Thermal Oxidizer
TMP	-	Thermo-Mechanical Pulp
TRS	-	Total Reduced Sulfur
tpy	-	tons per year

C. New Source Review (NSR) License Description

Verso Androscoggin has submitted an application in accordance with 06-096 C.M.R. ch. 115, *Major and Minor Source Air Emission License Regulations*, to authorize the following changes:

- Modify Paper Machines No. 3 and No. 5 to allow production of diversified paper products.
- Replace the horizontal section of screen tubes on Recovery Boiler #1.

Presently, No. 3 Paper Machine (PM3) and No. 5 Paper Machine (PM5) are being modified to produce a greater diversity of products. To enable PM3 to manufacture these diversified paper products, PM3 will require changes from the stock prep area and wet end through the dryer section of the paper machine. PM5 will require piping changes to allow for the production of these new products.

Concurrently, Recovery Boiler #1 (RB1) will undergo a like-kind replacement of the horizontal section of the screen tubes in the steam generating section. No emissions increases are expected from the tube replacement.

The changes to PM3, PM5, and RB1 that are authorized in this New Source Review (NSR) license and shall be collectively referred to in this license as the PM Conversion Project, or as "the project".

Below is a brief description of the changes to the mill operations and their emission units that will result from the project.

Pulp Mill

At the commencement of the PM Conversion Project some of the pulp that is presently being produced and bleached in Pulp Mills A and B will bypass the bleaching process and be conveyed directly for use on PM3 and PM5. This bypass may involve piping reconfiguration.

Additionally, for the pulp produced for PM3, digester parameters will be changed (for instance, cooking time will be reduced) such that the pulp will contain more lignin being carried to the brownstock washers. Additional refining is needed prior to the paper machine wet end. The change in the kraft pulp cooking process for PM3 will result in less methanol per ton being generated and collected at the brown stock washing/screening units. In addition, the pulp stock for PM3 will bypass the bleach plant which results in the residual lignin, methanol, and other organics being carried to the pulp process tanks and paper machine. The quantity and characteristics of the wastewater conveyed to the wastewater treatment plant, which processes all of the wastewater generated by the Mill, may also be impacted by the larger amount of unbleached pulp being produced making this an affected unit. None of the emission units in the pulp mill area are being modified; they are designated as affected units.

Chemical Recovery

In the Pulp Mill's chemical recovery process, spent black liquor and filtrate called "weak black liquor" is collected from the pulp mill digesters, brown stock, and diffusion washers and sent to the multiple-effect evaporators, where it is concentrated to a solids content that will support combustion. The concentrated black liquor is then fired in the recovery boilers, where the organics are burned off and the resultant heat is used to produce steam. The inorganics contained in the black liquor do not burn and are reduced to smelt that precipitates to the bottom of the boilers and flows into the smelt dissolving tanks. The

smelt is further processed to recover chemicals that are used to produce white liquor for use in the digesters to make kraft pulp.

As a result of the project, there will be reduced quantities of spent black liquor, thus reduced quantities of BLS generated in the digester and from the filtrate being processed, which will result in less organic materials (BLS) burned in the recovery boilers. To offset the reduction of BLS fired in the recovery boilers, Verso Androscoggin will fire more natural gas or distillate fuel in their recovery boilers to maintain steam and electrical generation at present levels.

The reduced BLS will also reduce the amount of smelt going to the smelt dissolving tanks from the recovery boilers, which in turn will reduce the amount of chemicals being processed by the smelt dissolving tanks, the lime kilns and slakers, and the quantity of gases being collected by the HVLC and LVHC gas collection systems.

A maintenance project to replace the horizontal screen tubes in the steam generating section of RB1 will take place as part of the PM Conversion Project. This task involves an in-kind replacement of the tubes and is considered a modification to RB1 because it involves a physical change to the unit. The furnace's maximum design capacity and hourly emissions will remain unchanged, and its ability and capacity to fire BLS will not be affected by the tube replacement. However, in calculating the project related emissions no downtime was taken into account for the future operation of this unit.

Paper Mill

PM3 and PM5 are being classified as modified emissions units, because these machines are being changed to allow the production of diversified paper products using unbleached pulp. PM5 is designed and capable of accommodating the diversified products; this paper machine did run diversified grades when it started up in 1975 and continued to run these grades through 1992. There was abandoned piping for the unbleached grades, and some of the original abandoned piping was replaced. Thus, PM5 will not require any physical modifications or changes to the machine to produce the new products, however the piping associated with PM5 will be reconfigured to allow unbleached pulp to flow to this machine. Since the production frequency of the diversified products will potentially increase, the VOC emissions are expected to increase on both machines.

Verso Androscoggin is located in an area that is either in attainment or classified as unclassifiable for all applicable National Ambient Air Quality Standards (NAAQS), including ozone, as designated in the October 2015 Code of Federal Regulations (C.F.R.). However, according to the U.S. Clean Air Act (CAA), ozone non-attainment new source review (NNSR) requirements for ozone precursor pollutants nitrogen oxides (NO_x) and volatile organic compounds (VOC) apply to facilities in the Northeast Ozone Transport Region (the OTR), as established per federal regulation; this includes the entire state of Maine. Because the Mill is located within the OTR, major stationary source ozone non-attainment new source review regulations potentially apply to NO_x and VOC emissions.

D. Emission Equipment

The following emission units are addressed in this NSR air emission license:

Equipment Modified by the PM Conversion Project

Equipment Modified	Unit Type	Stack #
No. 3 Paper Machine (PM3)	Process Equipment	Multiple vents
No. 5 Paper Machine (PM5)	Process Equipment	Multiple vents

Equipment Modified by the RB1 Screen Tube Replacement Project (Part of the PM Conversion Project)

Equipment Modified	Max. Capacity, Fuel Type	Fuel Type, % sulfur	Year of Install	Stack #
Recovery Boiler #1 (RB1)	2.50 MMlb BLS/day 315 MMBtu/hr	Black liquor, #6 oil, distillate fuel, used oil, natural gas	1965	Combined Recovery Boiler Stack (CRB)

Equipment Affected (but not modified) by the PM Conversion Project

Equipment Affected	Max. Capacity	Fuel Type, % sulfur	Year of Install	Stack #
Recovery Boiler #2 (RB2)	3.44 MMlb BLS/day 405 MMBtu/hr	Black liquor, #6 oil, distillate fuel, used oil, natural gas	1975-1976	Combined Recovery Boiler Stack (CRB)
No. 1 Smelt Dissolving Tank (SDT1)	2.5 MMlb BLS/day	N.A.	1965	SDT1
No. 2 Smelt Dissolving Tank (SDT2)	3.44 MMlb BLS/day	N.A.	1975-1976	SDT2
A Lime Kiln	80 MMBtu/hr (fuel firing) 248 tons/day calcium oxide (CaO)	Fuel oil (including #6 fuel oil, distillate fuel, specification used oil and off-specification used oil); propane pilot gas, and natural gas	1965	LKA
B Lime Kiln	80 MMBtu/hr (fuel firing) 248 tons/day calcium oxide (CaO)		1975	LKB

Equipment Affected	Max. Capacity	Fuel Type, % sulfur	Year of Install	Stack #
A Slaker	248 tons/day CaO	N.A.	1965	Both vent inside a building; fugitive emissions
B Slaker	248 tons/day CaO		1975	
Regenerative Thermal Oxidizer (RTO)	8.0 MMBtu/hr	Propane, negl. Distillate Fuel, 0.3% Natural Gas, negl.	1995	RTO
Wastewater Treatment Plant	N.A.		1964	Fugitive
Bleach Plant A	1819 ADT/day	N.A.	1965	Fugitive
HVLC Source Group	Consists of emissions from multiple process units, collected and incinerated in the RTO			
LVHC Source Group	Consists of emissions from multiple process units, collected and incinerated in the Lime Kilns			

E. Application Classification

All rules, regulations, or statutes referenced in this air emission license refer to the amended version in effect as of the issued date of this license.

Baseline Actual Emissions

Per federal NSR requirements, project emissions increases which are greater than significant emissions increase levels, as defined in 06-096 C.M.R. ch. 100, are subject to the following requirements:

- Prevention of Significant Deterioration of Air Quality (PSD) requirements for those pollutants for which the area is in attainment with the NAAQS; and
- Non-Attainment New Source Review (NNSR) requirements for those pollutants for which the area is in non-attainment or for NO_x and VOC emissions in the OTR.

Baseline actual emissions are equal to the average annual emissions from any consecutive 24-month period within the ten years prior to submittal of a complete license application. The selected 24-month baseline period can differ on a pollutant-by-pollutant basis. Verso Androscoggin has proposed the following 24-month baseline periods from which to determine baseline actual emissions from the emission units modified or affected as part of this project:

Pollutant	24-Month Baseline Period
PM	January 2009 – December 2010
PM_{10} and $PM_{2.5}$	June 2009 – May 2011
SO_2 and H_2SO_4	January 2010-December 2011
NO_x and VOC	June 2013 – May 2015
CO and H_2S	July 2012 – June 2014
Pb	April 2008- March 2010
TRS	April 2011 – March 2013
CO_2e	March 2008 – February 2010

The results of this baseline analysis are presented in Tables 1 and 2.

Table 1
Baseline Actual Emissions for Modified or Affected Equipment

Source	Baseline Actual Emissions (TPY)										
	PM	PM_{10}	$PM_{2.5}$	SO_2	NO_x	CO	VOC	Pb	H_2SO_4	TRS	H_2S
RB #1	52.75	38.96	30.9	18.15	260.64	302.43	12.86	0.0019	1.59	1.08	1.08
RB #2	83.46	61.95	48.48	349.5	295.65	399.18	16.73	0.0035	19.70	1.54	1.54
SDT #1	22.03	22.61	22.61	1.39	--	1.49	1.81	--	--	4.54	4.54
SDT #2	21.57	22.02	22.02	2.20	--	1.95	2.34	0.00034	--	4.79	4.79
Lime Kiln A	53.75	55.13	55.13	1.50	27.72	10.41	3.85	0.00076	0.075	1.65	1.65
Lime Kiln B	51.18	54.00	54.00	1.11	48.84	2.63	3.95	0.00081	0.056	1.64	1.64
Kilns A and B Slaker and Causticizing	1.85	1.88	1.88	--	--	--	5.89	--	--	--	--
A Bleach Plant	--	--	--	--	--	59.83	14.27	--	--	--	--
No. 3 Paper Machine	3.9	2.4	1.2	--	--	--	7.0	--	--	--	--
No. 5 Paper Machine	0.9	0.55	0.3	--	--	--	1.7	--	--	--	--
RTO	4.35	4.36	4.36	2.68	3.42	0.79	7.75	--	0.13	0.035	0.035
WWTP	--	--	--	--	--	--	463.6	--	--	11.09	11.09
B Diffusion Washer	--	--	--	--	--	--	3.56	--	--	--	--
Digesters A and B	--	--	--	--	--	--	--	--	--	--	--

Source	Baseline Actual Emissions (TPY)										
	PM	PM_{10}	$PM_{2.5}$	SO_2	NO_x	CO	VOC	Pb	H_2SO_4	TRS	H_2S
LVHC System	--	--	--	--	--	--	--	--	--	2.38	2.38
HVLC System	--	--	--	--	--	--	29.66	--	--	1.02	1.02
Total Baseline Actual Emissions	295.7	263.8	240.9	376.5	636.3	778.7	575.0	0.0074	21.6	29.8	29.8

Table 2
Baseline Actual GHG/CO_2e Emissions for Modified or Affected Equipment

Source	Baseline Actual Emissions (TPY)	
	Non-Biogenic Total GHG	Non-Biogenic CO_2e
RB #1	5,047	5,767
RB #2	15,865	16,983
SDT #1	--	--
SDT #2	--	--
Lime Kiln A	42,092	42,092
Lime Kiln B	43,344	43,344
Kilns A and B Slaker and Causticizing	--	--
A Bleach Plant	--	--
Paper Machines	--	--
RTO	1,201	1,206
WWTP	--	--
B Diffusion Washer	--	--
Digester A and B	--	--
LVHC System	--	--
HVLC System	--	--
Total Baseline Actual Emissions		
	107,550	109,393

Future Projected Actual Emissions

Projected actual emissions are the maximum actual annual emissions anticipated to occur in the ten-year period following completion of the proposed project. The production rates for all of the modified and affected units were calculated based on the targeted pulp production rate and known numerical relationships between pulp production and other materials at the Mill (such as black liquor solids, calcium oxide, etc.). These production

rates and emission factors for each emission unit were used to determine projected actual emissions, as summarized in Tables 3 and 4.

Table 3
Future Projected Actual Emissions for Modified or Affected Equipment

Source	Projected Actual Emissions (TPY)										
	PM	PM_{10}	$PM_{2.5}$	SO_2	NO_x	CO	VOC	Pb	H_2SO_4	TRS	H_2S
RB #1	59.29	41.54	32.23	36.57	262.05	253.47	10.66	0.00149	1.83	0.98	0.98
RB #2	80.05	56.08	43.51	345.93	312.64	342.20	14.40	0.00202	17.30	1.32	1.32
SDT #1	19.62	19.62	19.62	1.47	--	1.25	1.52	0.000105	--	4.11	0.91
SDT #2	18.55	18.55	18.55	2.10	--	1.69	2.06	0.000142	--	4.21	1.23
Lime Kiln A	15.53	15.53	15.53	0.31	25.97	12.91	3.74	0.000672	0.0672	1.55	1.37
Lime Kiln B	17.07	17.07	17.07	1.51	37.67	4.83	3.74	0.000672	0.0753	1.55	1.37
Kilns A and B Slaker and Causticizing	1.60	1.60	1.60	--	--	--	5.65	--	--	--	--
A Bleach Plant	--	--	--	--	--	54.97	12.31	--	--	--	--
No. 3 Paper Machine	5.48	3.19	1.55	--	--	--	69.81	--	--	*--	*--
No. 5 Paper Machine	0.96	0.56	0.27	--	--	--	6.95	--	--	*--	*--
RTO	4.38	4.38	4.38	2.67	4.03	1.58	7.53	--	0.13	0.13	0.13
WWTP	--	--	--	--	--	--	450.26	--	--	11.25	11.25
B Diffusion Washer	--	--	--	--	--	--	4.31	--	--	--	--
Digesters A and B	--	--	--	--	--	--	--	--	--	--	--
LVHC System	--	--	--	--	--	--	1.93	--	--	3.31	0.48
HVLC System	--	--	--	--	--	--	51.05	--	--	2.01	0.13
Total Future Projected Actual Emissions	222.5	178.1	154.3	390.6	642.4	672.9	645.9	0.0051	19.4	30.4	19.0

Table 4
Future Projected GHG/CO_2e Actual Emissions
for Modified or Affected Equipment

Source	Projected Actual Emissions (TPY)	
	Non-Biogenic Total GHG	Non-Biogenic CO_2e
RB #1	33,005	33,689
RB #2	36,008	36,925
SDT #1	--	--
SDT #2	--	--
Lime Kiln A	44,214	44,264
Lime Kiln B	44,214	44,264
Kilns A and B Slaker and Causticizing	--	--
A Bleach Plant	--	--
Paper Machines	--	--
RTO	1,332	1,337
WWTP	--	--
B Diffusion Washer	--	--
Digester A and B	--	--
LVHC System	--	--
HVLC System	--	--
Total Projected Actual Emissions		
	158,773	160,479

The determination of PSD/NNSR applicability was made based on the total project related emissions increases from the modified and affected emissions units, calculated by subtracting the baseline actual emissions from the projected actual emissions. The project-related emissions increases of regulated NSR pollutants are presented in the following table, which shows VOC emissions increases greater than the significant emission increase level for VOC (as an ozone precursor pollutant). No other pollutants are projected to exceed the significant emissions increase levels as defined in 06-096 C.M.R. ch. 100.

* Table Note: There are no applicable TRS or H_2S emission factors or test data to accurately calculate emissions changes from the paper machines. Based on process knowledge and engineering judgment, TRS and H_2S emissions from this project are been determined to be less than significant.

Table 5
Difference Between Baseline Actual and Projected Actual Emissions
[(Table 3 Totals) – (Table 1 Totals)]

Source	Projected-Related Emissions (TPY)										
	PM	PM_{10}	$PM_{2.5}$	SO_2	NO_x	CO	VOC	Pb	H_2SO_4	TRS	H_2S
RB #1	6.54	2.58	1.33	18.44	1.41	-48.96	-2.2	-0.0004	0.24	-0.1	-0.1
RB #2	-3.41	-5.87	-4.97	-3.57	16.99	-56.98	-2.33	-0.0015	-2.4	-0.22	-0.22
SDT #1	-2.41	-2.99	-2.99	0.08	0	-0.24	-0.29	0.00011	0	-0.43	-3.63
SDT #2	-3.02	-3.47	-3.47	-0.1	0	-0.26	-0.28	-0.0002	0	-0.58	-3.56
Lime Kiln A	-38.22	-39.6	-39.6	-1.19	-1.75	2.5	-0.11	-9E-05	-0.0078	-0.1	-0.28
Lime Kiln B	-34.11	-36.93	-36.93	0.4	-11.17	2.2	-0.21	-0.0001	0.0193	-0.09	-0.27
Kilns A and B Slaker and Causticizing	-0.25	-0.28	-0.28	0	0	0	-0.24	0	0	0	0
A Bleach Plant	0	0	0	0	0	-4.86	-1.96	0	0	0	0
No. 3 Paper Machine	1.58	0.79	0.35	0	0	0	62.81	0	0	*0	*0
No. 5 Paper Machine	0.06	.06	-0.03	0	0	0	5.25	0	0	*0	*0
RTO	0.03	0.02	0.02	-0.01	0.61	0.79	-0.22	0	0	0.095	0.095
WWTP	0	0	0	0	0	0	-13.34	0	0	0.16	0.14
B Diffusion Washer	0	0	0	0	0	0	0.75	0	0	0	0
Digesters A and B	0	0	0	0	0	0	0	0	0	0	0
LVHC System	0	0	0	0	0	0	1.93	0	0	0.93	-1.9
HVLC System	0	0	0	0	0	0	21.39	0	0	0.99	-0.89
Total Project Related Emissions Increases											
	-73.2	-85.7	-86.6	14.1	6.1	-105.8	71.0	0.0	-2.1	0.7	-10.7
Significant Emission Increase Levels (tons/year)											
	25	15	10	40	40	100	**40**	0.6	7	10	10
Above Significant Emission Increase Levels?											
	No	No	No	No	No	No	**Yes**	No	No	No	No

***TRS and H_2S are less than significant**

Table 6
Difference Between Baseline Actual and Projected Actual Emissions
[(Table 4 Totals) – (Table 2 Totals)]

Source	Projected-Related Emissions (TPY)	
	Non-Biogenic Total GHG	Non-Biogenic CO_2e
RB #1	27,959	27,922
RB #2	20,143	19,941
SDT #1	--	--
SDT #2	--	--
Lime Kiln A	2,121	2,171
Lime Kiln B	869.6	919.7
Kilns A and B Slaker and Causticizing	--	--
A Bleach Plant	--	--
Paper Machines	--	--
RTO	130.9	131.4
WWTP	--	--
B Diffusion Washer	--	--
Digester A and B	--	--
LVHC System	--	--
HVLC System	--	--
Total Projected-Related Emissions		
	51,223	51,086

Table 7
Difference Between Baseline Actual and Projected Actual Emissions
[(Table 4 Totals) – (Table 2 Totals)]

Non-Biogenic GHG and CO_2e Emissions Increase Analysis	
Total GHG	CO_2e
Total Baseline Actual Emissions (tons/year)	
107,550	109,393
Total Projected Actual Emissions (tons/year)	
158,773	160,479
Project-Related Emissions Increases (tons/year)	
51,223	51,086
Significant Emission Increase Levels (tons/year)	
75,000	**75,000**
Above Significant Emission Increase Levels?	
No	No

Netting Analysis

Because the project-related emissions increases of VOC is a significant emission increase, a netting analysis that accounts for contemporaneous emissions increases and decreases at the facility has been conducted. The purpose of the netting analysis is to evaluate creditable emissions increases and decreases associated with projects at the facility that occurred over the contemporaneous period such that the net increase or decrease in emissions is included in this applicability analysis. As defined in 06-096 C.M.R. ch. 100, "contemporaneous period" refers to the timeframe that occurs between the date five years before construction of the particular change and the date that the increase from the particular change occurs. There have been no projects during the contemporaneous period for the proposed project that resulted in emissions increases or decreases of VOC; therefore, the proposed project will result in a net emissions increase that is significant for VOC only.

Note: Only non-biogenic GHG and CO_2e were considered in this analysis based on the guidance provided in a memo dated March 1, 2018, from EPA Administrator Scott Pruitt to Governor Paul LePage recognizing biomass and energy derived from biomass, including BLS, as being both carbon-neutral and a source of renewable energy.

The results of the netting evaluation show the PM Conversion Project is considered a major modification for VOC, in accordance with 40 C.F.R. § 52.21(b)(2)(i) and 06-096 C.M.R. 100, thus triggering major NSR requirements for VOC. NSR requirements include ozone NNSR requirements for VOC emissions. The project is classified as a minor modification in regard to all other regulated air pollutants.

Therefore, this NSR license is determined to be a major modification under *Minor and Major Source Air Emission License Regulations* 06-096 CMR 115 (as amended), since the changes being made are not addressed or prohibited in the Part 70 air emission license. An application to incorporate the requirements of this NSR license into the Part 70 air emission license shall be submitted no later than 12 months from commencement of the requested operation.

II. CONTROL TECHNOLOGY EVALUATIONS

A. Introduction

In order to receive a license, the applicant must control emissions from each unit to a level considered by the Department to represent Best Practical Treatment (BPT), as defined in *Definitions Regulation*, 06-096 C.M.R. ch. 100. Separate control requirement categories exist for new and existing equipment as well as for those sources located in designated nonattainment areas.

BPT for new sources and modifications requires a demonstration that emissions are receiving Best Available Control Technology (BACT), as defined in 06-096 C.M.R. ch. 100.

However, because PM3 VOC emissions will significantly increase, NNSR requires Lowest Achievable Emission Rate (LAER) for a non-attainment pollutant.

LAER means the more stringent rate of emissions based on the following:

1. The most stringent emission limitation which is contained in the implementation plan of any State for that class or category of source, unless the owner or operator of the proposed source demonstrates that those limitations are not achievable; or

2. The most stringent emission limitation which is achieved in practice by that class or category of source, whichever is more stringent. In no event may LAER result in emission of any pollutant in excess of those standards and limitations promulgated pursuant to Section 111 or 112 of the United States Clean Air Act as amended, or any emission standard established by the Department.

The emission units being modified as a part of this NSR are RB1, PM3, and PM5.

Recovery Boiler #1 (RB1)
The regulated pollutants emitted from RB1 are PM, PM_{10}, $PM_{2.5}$, SO_2, NO_x, CO, and VOC. There are no expected emission changes in hourly emissions from the RB1 Screen Tubes Replacement Project. (Total annual project related emissions of PM, PM_{10}, $PM_{2.5}$, SO_2, and NO_x increase because the future project related emissions are based on the RB1 operating continuously.)

RB1 received a BACT determination for PM, PM_{10}, $PM_{2.5}$, SO_2, NO_x, CO, and VOC, as part of NSR license A-203-77-14-A (3/13/2012) which allowed the replacement of a front wall section of this unit. The Department finds that the emission limits and work practice standards for RB1 determined to represent BACT in NSR license A-203-77-14-A (3/13/2012) are still representative of BACT.

Paper Machines No. 3 and No. 5
The regulated pollutants emitted from PM3 and PM5 are PM, PM_{10}, $PM_{2.5}$, and VOC. The modified equipment will not cause an increase in the emissions of any PM pollutants since the overall paper machine production rates will not increase above historic levels. Because PM3 and PM5 are already permitted and incorporate BPT for PM, PM_{10}, and $PM_{2.5}$, no further demonstration is required for PM emissions from PM3 and PM5.
(Note: PM emission factor based on the tons of the bleach and unbleached paper products is the same for both products, the decrease in the PM project actual emissions is because production is expected to decrease slightly with the new paper products.)

The proposed PM Conversion Project will result in a major modification for VOC emissions from PM3 and PM5, thus making those emissions subject to NNSR for VOC. This requires the application of more stringent LAER for reducing emissions of nonattainment pollutants or their precursors.

Following is the LAER analysis for VOC emissions from PM3 and PM5.

LAER Findings

Paper machines can potentially emit VOC from several locations within the paper machine itself. VOCs can be emitted from the addition of VOC-containing chemical additives to the paper forming process, while other VOC (primarily methanol) are carried over from the pulp manufacturing process in the paper machine whitewater and can be released during paper forming. There are no plans to apply any VOC based coatings to the diversified paper products to be manufactured on PM3. Therefore, PM3 will not emit any VOC from coatings. PM5's diversified products will not use solvent based coatings, and PM5 will continue to use coatings and additives in its bleached Kraft products. This section presents the VOC LAER determination for PM3 and PM5 accounting only for VOC emissions carried over from the Pulp Mills and emitted during the paper forming process (i.e., methanol from whitewater and additives).

Available Control Technologies

A U.S. EPA's RACT/BACT/LAER Clearinghouse (RBLC) search yielded the following potentially relevant control technologies for kraft paper machine emissions:

- Use of low-VOC containing materials and additives
- VOC Limits on Raw Materials,
- Adsorption,
- Biofiltration, and
- Thermal Oxidation.

Technically Infeasible Options

The following three control technology options were considered to be technically infeasible as described below. The technically infeasible options include the following:

- VOC Limits on Raw Materials,
- Adsorption, and
- Biofiltration.

1. VOC Limits on Raw Materials

   The majority of VOC emissions from PM3 and PM5 results from methanol. The additives used at Verso Androscoggin are carefully selected and optimized specifically for the products they produce. Since Verso Androscoggin must carefully select the additives used by PM3 and PM5, the approach for taking mandated VOC limits on raw materials is not considered technically feasible, as it could negatively impact the quality of Verso Androscoggin's final product.

2. Adsorption

   Carbon adsorption has no known applications on a paper machine. PM emissions in the exhaust gases vented from PM3 and PM5 operations would be problematic for operating a carbon adsorption system to reduce VOC emissions because the PM

impedes the adsorption of VOC onto an activated carbon bed. Therefore, PM controls would be required prior to implementing a carbon adsorption control technology to the paper machine. Currently, there are no PM controls on PM3 and PM5 and none are required for compliance purposes. Installing such PM controls would be both technically challenging and cost prohibitive given the extremely high volumetric gas flow rate from PM3 and PM5, which are approximately 509,295 and 180,203 actual cubic feet per minute (ACFM), respectively. Therefore, carbon adsorption is not considered to be a technically feasible control technology for VOC emissions for PM3 and PM5.

3. Biofiltration
Biofiltration has no known applications in the pulp and paper industry and is typically used for odor control. This technology has an excessive size requirement (i.e., footprint) and, due to the layout of PM3 and PM5, a biofiltration system would be too large to install. In addition, the presence of PM in the paper machine's exhaust stream could impact the performance of the biofilter medium. For these reasons, biofiltration is considered to be a technically infeasible control technology for VOC emissions from PM3 and PM5.

Viable VOC Control Technologies

The remaining technically feasible control options for the control of VOC emissions from PM3 and PM5 have been ranked by control effectiveness in the table below:

VOC Control Technology Ranking for PM Conversion Project

Control Technology Option	Control Efficiency	Ranking
Thermal Oxidation	95 – 99%	1
Use of Low VOC containing coating and additives	Varies	2

1. Thermal Oxidation
Thermal Oxidation is a technology that could be applied to reduce the VOC in the paper machine exhaust gases. Different thermal oxidation technologies include catalytic oxidation, regenerative and recuperative thermal oxidation, and direct thermal oxidation. Catalytic oxidation is considered to be technically infeasible due to the high moisture content in a portion of the paper machine exhaust gases, particularly those associated with the wet-end of the paper machine where the initial paper forming occurs. High moisture levels in the exhaust gas will adversely affect the catalyst performance. Direct thermal oxidation with no heat recovery will result in exorbitant fuel costs, given the high exhaust gas volumetric flow rate and very low VOC concentrations from PM3 and PM5, and would also contribute additional emissions of other pollutants, such as NO_x and CO.

Regenerative thermal oxidation would require collection of a large volume of exhaust gases having very low VOC concentrations from various locations prior to treatment in a regenerative thermal oxidizer (RTO). Based on data supplied by Verso Androscoggin to the U.S. EPA as part of the information collection request (ICR) for the *National Emission Standards for Hazardous Air Pollutants from the Pulp and Paper Industry - Subpart S* residual risk evaluation, the total vent gas flow rate from PM3 and PM5 are approximately 509,295 and 180,203 ACFM, respectively. The estimated costs for an RTO for a similar but smaller paper machine are presented in the table below. The paper machine represented by the data in the table only exhausts 48% of the total gas volume that is exhausted from PM3 and PM5, so it is reasonable to conclude that the installation of an RTO on PM3 and PM5 would cost substantially more based on the higher volume of gases to be handled. The table below is included to illustrate the magnitude of cost associated with an RTO installation on a paper machine to control VOC.

Source Description	Exhaust Gas Flow into the RTO (acfm)	RTO Equipment Price	Auxiliary Equipment Price	Total Purchased Equipment Price	Installed Cost (Conservatively Low Estimate)
Paper Machine	327,717	$ 9.7 MM	$3.9 MM	$13.6 MM	$34.0 MM

Conservatively assuming these same equipment and installation costs for PM3 and PM5 for the control of the projected 75.93 tpy of VOC at a 99% control efficiency, is estimated to cost $69,450 per ton of VOC. In consideration of the high capital costs associated with the RTO system and the relatively low concentration of VOC that could be controlled from PM3 and PM5, and the fact that this type of control has not been demonstrated or installed as an effective control of VOC emissions from a paper machine, this control technology is considered infeasible.

2. Use of Low or non-VOC containing materials and additives
Verso Androscoggin currently uses low-VOC or non-VOC containing materials and additives. A control cost analysis was not conducted for this control alternative. Verso Androscoggin does not anticipate any additional economic, environmental, and energy impacts associated with this control technique.

Review of other State Implement Plans and Regulations
As part of this analysis, Verso Androscoggin reviewed other state's regulations and EPA's Control Techniques Guidelines (CTG) as they pertain to paper machine VOC emissions. States, including Maine, have implemented VOC regulations including those for paper coating that include recommendations from EPA's Control Techniques Guideline EPA-450/2-77-008 *1977/05* Control of Volatile Organic Emissions from Existing Stationary Sources – Volume II: Surface Coating of Cans, Coils, Paper, Fabrics, Automobiles, and

Light-Duty Trucks and EPA 453/R-07-003 *2007/09* Control Techniques Guidelines for Paper, Film, and Foil Coatings. 06-096 C.M.R. 123 – *Control of Volatile Organic Compounds from Paper, Film and Foil Coating Operations*, is based on EPA's CTG's. A review of Part 52 and EPA SIP approved rules and State regulations did not find any regulations beyond those written for paper coating operations for VOC following EPA EPA-450/2-77-008 *1977/05 or* EPA 453/R-07-003 *2007.* These paper coating regulations do not apply to size presses or on-machine coaters.

There are no other known regulations specifically implemented for paper machines. Regulatory searches only found paper coating regulations, which are not applicable. Add on pollution control techniques for paper machine vents are considered impractical because of the high moisture content and high volume of the vent exhaust gases. The pollutant concentrations in the vent gases from paper formation are minimal.

Department VOC LAER Determination

There are no instances where add-on control technologies such as thermal oxidation, adsorption, or biofiltration have been applied to paper machines or demonstrated as effective control of VOC emissions. Therefore, these technologies do not qualify as LAER for PM3 and PM5.

The Department finds that the existing methods used by Verso Androscoggin, collectively referred to as good operating practices, constitute LAER for VOC emissions from the emission units modified as part of this project. Therefore, LAER is no additional control than what is already in place at Verso Androscoggin.

B. VOC Offsets

Because Verso Androscoggin is located in the OTR and the PM Conversion Project is a major modification with respect to VOC, it is subject to applicable emission offset requirements of 06-096 C.M.R. ch. 113 *Growth Offset Regulation* (Chapter 113). [06-096 C.M.R. ch. 113]

Chapter 113 allows for VOC offset trading for a new source or modification subject to this Chapter located in an attainment area, if the source from which the offset is obtained is located within another attainment area or within an ozone nonattainment area, and either of which are located in the OTR.

In accordance with Chapter 113, Verso Androscoggin is required to obtain documented emission reduction credits (ERCs) at an offset ratio of 1.15 to 1. The ERCs must result in permanent, enforceable, surplus, real, and quantifiable reductions in emissions. The net VOC emissions increase for this project is 71.0 tpy; therefore, the required VOC offset is 81.6 tpy of VOC offset credits which are to be certified in accordance with the requirements of Chapter 113 prior to commencement of operation of the changes authorized by this NSR license.

On January 12, 2016, the Bucksport Mill LLC (formerly Verso Bucksport) located in Bucksport, Maine, received an air emission license A-22-77-17-O granting certification of 243.0 tons of VOC offset credits under 06-096 C.M.R. ch. 113. The VOC offset credits were generated as a result of the shutdown of the Paper Machines (No. 1, 2, 4, and 5), the Groundwood Mill, and the Thermo-Mechanical Pulping Plant (TMP) at the Bucksport facility.

On January 22, 2016, the Bucksport Mill notified the Department that all 243.0 tons of VOC offset credits would be transferred to the Verso Androscoggin per Condition (2) of Air Emission License A-22-77-17-O. Therefore, Verso Androscoggin will utilize 81.6 tons of these transferred VOC credits for the PM Conversion Project.

C. New Source Performance Standards (NSPS): 40 C.F.R. Part 60

U.S. EPA has promulgated standards of performance for specific air pollution sources in 40 C.F.R. Part 60. The following Part 60 Subparts potential apply to the proposed project:

- Subpart A – General Provisions
- Subpart BB – Standards of Performance for Kraft Pulp Mills
- Subpart BBa - Standards of Performance for Kraft Pulp Mills Affected Source for Which Construction, Reconstruction, or Modification Commenced after May 23, 2013.

NSPS apply to new sources that are constructed after the effective date as specified in each standard, or to units that are modified or reconstructed after the effective date. The concept of modification under NSPS is detailed in Subpart A, §60.14. The concept of reconstruction under NSPS is detailed in Subpart A, §60.15. The provisions of 40 C.F.R. Part 60, Subpart A apply to the owner or operator of a stationary source that is subject to any of the NSPS.

In order for the proposed project to qualify as reconstruction of any of the affected sources, the fixed capital cost of the new screen tubes for RB1 would need to exceed 50% of the fixed capital cost required to replace the existing affected source. Since the cost of the RB1 screen tube replacement will not exceed 50% of the fixed capital cost required to construct a comparable recovery boiler, the project does not constitute reconstruction under NSPS.

Verso Androscoggin evaluated whether RB1 would be considered a "modified" boiler under the NSPS after the proposed project is completed. The term "modification" is described in §60.14(a) and (b) as follows:

*"...any **physical or operational change** to an existing facility which results in an **increase in the emission rate** to the atmosphere of **any pollutant to which a standard applies** shall be considered a **modification** within the meaning of section 111 of the Clean Air Act. Upon modification, an existing facility shall become an affected facility for **each pollutant** to*

which a standard applies and for which there is an increase in the emission rate to the atmosphere. Emission rate shall be expressed as ***kg/hr*** [or lb/hr] *of any pollutant discharged into the atmosphere for which a standard is applicable."*

Since the RB1 Screen Tubes Replacement Project will not affect the current BLS or fossil fuel firing capacity of the furnace, it will not result in a short-term (i.e., lb/hr) emissions increase of any criteria pollutant regulated by a NSPS. Therefore, RB1 is not considered to be a modified emissions source and is not subject to any new NSPS requirements.

In addition, PM3 and PM5 are not considered an affected facility under any NSPS Subpart, and no other affected emissions sources will experience short-term emissions increases as a result of this project.

D. National Emission Standards for Hazardous Air Pollutants (NESHAP): 40 C.F.R. Part 63
Pursuant to the Clean Air Act Amendments (CAAA) of 1990, process specific NESHAP were promulgated, which are also referred to as Maximum Achievable Control Technology (MACT) Standards. The potential applicability of specific subparts of 40 C.F.R. Part 63 is discussed below.

Subpart S – NESHAP for the Pulp and Paper Industry
No new provisions of 40 C.F.R. Part 63, Subpart S will apply to the Verso Androscoggin emission sources as a result of the proposed project because 40 C.F.R. Part 63 does not include requirements for modified sources, and the proposed project will not construct or reconstruct any sources subject to 40 C.F.R. Part 63, Subpart S. Pursuant to 40 C.F.R. §63.440(b) and (c), Subpart S is already applicable to several existing affected sources at Verso Androscoggin (e.g., pulping system, black liquor evaporation, and bleaching systems). The proposed project will not affect the current regulatory applicability, and Verso Androscoggin shall continue to comply with the currently applicable provisions of 40 C.F.R. Part 63, Subpart S in the same manner after completion of the proposed project.

Subpart MM – NESHAP for Chemical Recovery Combustion Sources at Kraft, Soda, Sulfite, and Stand-Alone Semi-chemical Pulp Mills
No new provisions of 40 C.F.R. Part 63, Subpart MM will apply to Verso Androscoggin sources as a result the proposed project because 40 C.F.R. Part 63 does not include requirements for modified sources, and the proposed project will not construct or reconstruct any sources subject to 40 C.F.R. Part 63, Subpart MM. Pursuant to 40 C.F.R. §63.860(b), Subpart MM is already applicable to several existing affected sources at Verso Androscoggin (e.g., recovery furnaces, smelt dissolving tanks, and lime kilns). The proposed project will not affect the regulatory applicability, and Verso Androscoggin will continue to comply with the currently applicable provisions of 40 C.F.R. Part 63, Subpart MM in the same manner after completion of the proposed project.

Subpart JJJJ – NESHAP for Paper and Other Web Coating
This subpart regulates paper machine coating operations. The coated paper that Verso Androscoggin currently produces is part of the paper substrate formation and thus not

subject to this NESHAP. The future products that PM3 and PM5 will produce as a result of the PM Conversion Project will not be coated paper products.

E. State Regulations

06-096 C.M.R. 123 - Control of Volatile Organic Compounds from Paper, Film and Foil Coating Operations

This regulation establishes requirements for testing evaluating and limiting volatile organic compound emissions from paper, film and foil coating operations. This regulation does not apply to the paper machines addressed in this license. PM3 and PM5 have size presses and on-machine coaters that apply sizing or water-based clays; 06-096 C.M.R. 123 does not apply to paper machines performing these activities.

F. Incorporation into the Part 70 Air Emission License

The requirements in this 06-096 C.M.R. ch. 115 New Source Review license shall apply to the facility upon issuance. Per *Part 70 Air Emission License Regulations*, 06-096 C.M.R. ch. 140 § 1(C)(8), for a modification at the facility that has undergone NSR requirements or been processed through 06-096 C.M.R. ch. 115, the source must apply for an amendment to their Part 70 license within one year of commencing the proposed operations, as provided in 40 C.F.R. Part 70.5.

G. Annual Emissions

No licensed annual emission increases are occurring as a result of this NSR license.

III. AMBIENT AIR QUALITY ANALYSIS

Verso Androscoggin previously submitted an ambient air quality analysis demonstrating that emissions from the facility, in conjunction with all other sources, do not violate ambient air quality standards. NO_2 modeling was conducting in association with air emission license A-203-77-13-A dated January 19, 2012; SO_2, PM_{10}, and CO modeling was conducted in association with air emission license A-203-71-E-R (September 3, 1996). An additional ambient air quality analysis is not required for this NSR license.

ORDER

Based on the above Findings and subject to conditions listed below, the Department concludes that the emissions from this source:

- will receive Best Practical Treatment,
- will not violate applicable emission standards,
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.

The Department hereby grants New Source Review License A-203-77-22-A pursuant to the preconstruction licensing requirements of 06-096 C.M.R. ch. 115 and subject to the standard and special conditions below.

Severability. The invalidity or unenforceability of any provision of this License or part thereof shall not affect the remainder of the provision or any other provisions. This License shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

SPECIFIC CONDITIONS

(1) Verso Androscoggin is authorized to complete the PM Conversion Project and the RB1 Screen Tubes Replacement Project as described in this NSR license.

(2) Verso Androscoggin shall utilize 81.6 tons of the offset credits previously certified and currently available as set forth in Bucksport Mill LLC license A-22-77-17-O to offset the 71.0 tons of project related VOC emissions increases at a 1.15 to 1 ratio. [06-096 C.M.R. 113 and Air Emission Licenses A-22-77-17-O (1/12/2016)]

(3) Verso Androscoggin shall submit an application to incorporate this NSR license into the facility's Part 70 air emission license no later than 12 months from commencement of the requested operation. [06-096 C.M.R. ch. 140 § 1(C)(8)]

DONE AND DATED IN AUGUSTA, MAINE THIS 15 DAY OF May , 2018.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Marc Allen Robert Cove for
PAUL MERCER, COMMISSIONER

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: 2/22/2018
Date of application acceptance: 2/26/2018

Date filed with the Board of Environmental Protection:

This Order prepared by Patric Sherman and Lisa Higgins, Bureau of Air Quality.

Filed
MAY 15 2018
State of Maine
Board of Environmental Protection