Domtar Paper
Company, LLC
Plymouth Mill
P.O. Box 747
Highway 149 North
Plymouth, NC 27962
Tel: (252) 793-8111

August 27, 2020

Mr. William Willets
NC Department of Environmental Quality
Division of Air Quality (DAQ)
1641 Mail Service Center
Raleigh, NC 27699-1641

Re: Addendum to Lignin Solids Removal Process Reconfiguration Project Air Permit Application
Domtar Paper Company, LLC Mill in Plymouth, NC
Permit No. 04291T47/Facility ID 07/59/00069

Dear William:

Domtar Paper Company, LLC – Plymouth (Domtar) submitted an air permit application (NC DAQ permit application number 5900069.19B) for the Lignin Solids Removal Plant Reconfiguration Project (Lignin Project) in February 2019. In December 2019, Domtar submitted an addendum to the Prevention of Significant Deterioration (PSD) emissions increase calculations provided with the Lignin Project to incorporate an energy balancing component of the project, which included emissions reductions from the No. 1 Hog Fuel Boiler (HFB1) due to reduced hog fuel firing. In subsequent discussions, NC DAQ requested that the projected actual fuel use for HFB1 be updated to align with the Mill Optimization Project projected actual fuel use. This addendum includes this update in addition to an update to the HFB1 and No. 2 Hog Fuel Boiler (HFB2) emissions factors to align with the most recent published data from National Council for Air and Stream Improvement (NCASI) and to correct an error in certain site-specific emission factors.

This addendum also includes the proposed relocation of the following process unit: Tank - Acidic Lignin Conditioning (ES-09.2800). In the February 2019 air permit application, ES-09.2800 was routed to the High-Volume, Low-Concentration (HVLC) gas collection system for control via combustion. Due to a design change, this tank will be controlled by the proposed caustic scrubber instead of being routed to the HVLC gas collection system. A revised Table 2-1 – Summary of LSRP Project Changes is included in Attachment 3 and reflects this update. This design change impacts: (1) the PSD emissions increase calculations, (2) the Best Available Control Technology (BACT) analysis, and (3) the potential emissions calculations and air toxics modeling. Even

though these analyses are impacted, the final determination of each has not changed. A discussion of impacts to each section is included in the following sections of this letter.

Summary of Impacts to PSD Applicability Analysis

Relocating ES-09.2800 increases potential emissions from the caustic scrubber stack and decreases emissions from the HFB2 or Thermal Oxidizer (TOx) stack. Note that the TOx serves as a back-up control device to the HVLC system gases and the control efficiency of 32% due to bark scrubbing was removed from the post-project HVLC combustion emissions calculations to represent the maximum emissions scenario. Due to these updates and those described above, the project emissions increases for Total Reduced Sulfur (TRS) and Hydrogen Sulfide (H_2S) remain as the only pollutants above the PSD significant emission rates. Attachment 1 contains replacement tables for the PSD applicability emissions calculations from Appendix B of the February 2019 air permit application. Changes are captured by black cells and white text. Additionally, because the Mill utilized projected actual emissions to evaluate PSD applicability, the Mill will be required to track actual emissions following implementation of the Lignin Project. Attachment 2 includes the proposed permit condition for compliance with 15A NCAC 02D .0530(u): Use of Projected Actual Emissions.

Summary of Impacts to BACT Analysis

The BACT cost tables located in Appendix D of the February 2019 application and proposed numeric BACT limits in Table 5-2 were adjusted to accommodate the change in emissions due to the tank relocation; however, the proposed BACT is still use of a caustic packed bed scrubber for the majority of the sources at the lignin plant that can no longer be controlled in the HVLC system and numeric emissions limits for the remaining uncontrolled sources. Attachment 3 to this addendum includes a full replacement of Table 2-1, Table 5-2, and Appendix D in the February 2019 application. Changes are indicated by black cells and white text.

Table 6 of Appendix D presents the updated economic impact of each control scenario including the incremental cost effectiveness of the other control scenarios compared to the caustic scrubber control scenario. The updated cost effectiveness to control the LSRP gases ranges from approximately $1,500 - $3,900/ton TRS removed and $1,700 - $4,500/ton H_2S removed, with the caustic scrubber being the most cost-effective control scenario. The incremental cost effectiveness was calculated based on the incremental capital costs and incremental emissions reductions associated with each option as compared to use of the stand-alone caustic scrubber which is being proposed as BACT. The updated incremental cost effectiveness to further control the LSRP gases ranges from approximately $12,000 - $27,000/ton TRS removed and $34,000 - $59,000/ton H_2S removed. These options do not provide for significant additional emissions control, are not considered cost effective because they are in excess of $10,000/ton pollutant removed, and the analysis continues to support that BACT is the use of a caustic packed bed scrubber to control the significant TRS sources. Note that the economic impact

analysis presented in Table 7 of Appendix D for the remaining uncontrolled sources was not affected by the tank relocation; therefore, the conclusions remain the same.

Summary of Impacts to Air Toxics Modeling Analysis

The air toxics modeling analysis was revised, in accordance with 15A NCAC 2Q.0700, because potential emissions increased from the scrubber stack and decreased from the HFB2 and TOx due to the relocation of tank ES-09.2800. Air dispersion modeling was performed for the following TAPs with facility-wide emissions exceeding the toxic permitting emission rate (TPER) and that were impacted by this design change:

- Acetaldehyde (75-07-0) – Hourly TPER exceeded;
- Acrolein (107-02-8) – Hourly TPER exceeded;
- Benzene (71-43-2) – Annual TPER exceeded;
- Carbon Disulfide (75-15-0) – Daily TPER exceeded;
- Carbon Tetrachloride (56-23-5) – Annual TPER exceeded;
- Chloroform (67-66-3) – Annual TPER exceeded;
- Formaldehyde (50-00-0) – Hourly TPER exceeded;
- n-Hexane (110-54-3) – Daily TPER exceeded;
- Hydrogen Sulfide (7783-06-4) – Daily TPER exceeded;
- Methyl mercaptan (74-93-1) – Hourly TPER exceeded; and
- Phenol (108-95-2) – Hourly TPER exceeded.

Facility-wide modeling was conducted for the compounds listed above, and the resulting modeled concentrations were compared to the applicable acceptable ambient levels (AALs) in 15A NCAC 02D .1104. The modeling methodology and assumptions remained consistent with the air quality analysis approach described in Section 7.2 through Section 7.5 of the February 2019 application, but used the most recent meteorological data files for Martin County, in accordance with current NC DAQ Air Toxic Modeling Guidance. The RWI dataset (Rocky Mount – Wilson / Newport), processed with AERMET version 18081 and including Adjust Ustar methodology, was processed by, and obtained from, NC DAQ, and was the most current representative meteorological dataset at the time of the analysis.

The revised TAP modeling analysis demonstrates that the maximum optimized TAP emissions from the facility do not result in predicted ambient concentrations that exceed the respective AALs. Potential and optimized emissions rates and air dispersion modeling results from the revised analysis are located in Attachment 4 of this addendum. Proposed facility-wide and source specific TAP emission rates are provided in Tables E-7 and E-8. The supporting potential emissions calculations are located in Attachment 5 of this addendum.

Additional Impacts Analysis

NC DAQ has also requested that the additional impacts analysis in Section 6.11 of the February 2019 air permit application be revised to remove sulfur dioxide (SO_2) and nitrogen oxide (NOx) from the analysis. Although the project no longer triggers PSD review for NO_2 or SO_2, an Additional Impacts Analysis remains applicable for TRS and H_2S. As the conclusions in Section 6.11 are not impacted by the proposed changes to the project, the analysis remains valid, and was not modified in this addendum.

Closing

The Mill appreciates DAQ's review of the proposed project. Should you have any questions concerning this submittal, please contact Diane Hardison by phone at (252) 793-8611 or by email at Diane.Hardison@domtar.com or Claire Corta by phone at (919) 578-4195 or by email at ccorta@all4inc.com.

Sincerely,
Domtar Paper Company, LLC

Diane R. Hardison

Diane R. Hardison
EH&S Manager

Everick W. Spence
Mill Manager

cc: Don Wynne - Domtar
Claire Corta – ALL4
Amy Marshall – ALL4
Heather Sands – NC DAQ

Attachment 1 – PSD Applicability Calculations
Attachment 2 – Proposed Permit Condition
Attachment 3 – BACT Tables
Attachment 4 – Toxics Modeling Tables
Attachment 5 – Potential Emissions Calculations

Domtar Paper
Company, LLC
Plymouth Mill
P.O. Box 747
Highway 149 North
Plymouth, NC 27962
Tel: (252) 793-8111

August 27, 2020

Mr. William Willets
NC Department of Environmental Quality
Division of Air Quality (DAQ)
1641 Mail Service Center
Raleigh, NC 27699-1641

Re: Addendum to Lignin Solids Removal Process Reconfiguration Project Air Permit Application
Domtar Paper Company, LLC Mill in Plymouth, NC
Permit No. 04291T47/Facility ID 07/59/00069

Dear William:

Domtar Paper Company, LLC – Plymouth (Domtar) submitted an air permit application (NC DAQ permit application number 5900069.19B) for the Lignin Solids Removal Plant Reconfiguration Project (Lignin Project) in February 2019. In December 2019, Domtar submitted an addendum to the Prevention of Significant Deterioration (PSD) emissions increase calculations provided with the Lignin Project to incorporate an energy balancing component of the project, which included emissions reductions from the No. 1 Hog Fuel Boiler (HFB1) due to reduced hog fuel firing. In subsequent discussions, NC DAQ requested that the projected actual fuel use for HFB1 be updated to align with the Mill Optimization Project projected actual fuel use. This addendum includes this update in addition to an update to the HFB1 and No. 2 Hog Fuel Boiler (HFB2) emissions factors to align with the most recent published data from National Council for Air and Stream Improvement (NCASI) and to correct an error in certain site-specific emission factors.

This addendum also includes the proposed relocation of the following process unit: Tank - Acidic Lignin Conditioning (ES-09.2800). In the February 2019 air permit application, ES-09.2800 was routed to the High-Volume, Low-Concentration (HVLC) gas collection system for control via combustion. Due to a design change, this tank will be controlled by the proposed caustic scrubber instead of being routed to the HVLC gas collection system. A revised Table 2-1 – Summary of LSRP Project Changes is included in Attachment 3 and reflects this update. This design change impacts: (1) the PSD emissions increase calculations, (2) the Best Available Control Technology (BACT) analysis, and (3) the potential emissions calculations and air toxics modeling. Even

though these analyses are impacted, the final determination of each has not changed. A discussion of impacts to each section is included in the following sections of this letter.

Summary of Impacts to PSD Applicability Analysis

Relocating ES-09.2800 increases potential emissions from the caustic scrubber stack and decreases emissions from the HFB2 or Thermal Oxidizer (TOx) stack. Note that the TOx serves as a back-up control device to the HVLC system gases and the control efficiency of 32% due to bark scrubbing was removed from the post-project HVLC combustion emissions calculations to represent the maximum emissions scenario. Due to these updates and those described above, the project emissions increases for Total Reduced Sulfur (TRS) and Hydrogen Sulfide (H_2S) remain as the only pollutants above the PSD significant emission rates. Attachment 1 contains replacement tables for the PSD applicability emissions calculations from Appendix B of the February 2019 air permit application. Changes are captured by black cells and white text. Additionally, because the Mill utilized projected actual emissions to evaluate PSD applicability, the Mill will be required to track actual emissions following implementation of the Lignin Project. Attachment 2 includes the proposed permit condition for compliance with 15A NCAC 02D .0530(u): Use of Projected Actual Emissions.

Summary of Impacts to BACT Analysis

The BACT cost tables located in Appendix D of the February 2019 application and proposed numeric BACT limits in Table 5-2 were adjusted to accommodate the change in emissions due to the tank relocation; however, the proposed BACT is still use of a caustic packed bed scrubber for the majority of the sources at the lignin plant that can no longer be controlled in the HVLC system and numeric emissions limits for the remaining uncontrolled sources. Attachment 3 to this addendum includes a full replacement of Table 2-1, Table 5-2, and Appendix D in the February 2019 application. Changes are indicated by black cells and white text.

Table 6 of Appendix D presents the updated economic impact of each control scenario including the incremental cost effectiveness of the other control scenarios compared to the caustic scrubber control scenario. The updated cost effectiveness to control the LSRP gases ranges from approximately $1,500 - $3,900/ton TRS removed and $1,700 - $4,500/ton H_2S removed, with the caustic scrubber being the most cost-effective control scenario. The incremental cost effectiveness was calculated based on the incremental capital costs and incremental emissions reductions associated with each option as compared to use of the stand-alone caustic scrubber which is being proposed as BACT. The updated incremental cost effectiveness to further control the LSRP gases ranges from approximately $12,000 - $27,000/ton TRS removed and $34,000 - $59,000/ton H_2S removed. These options do not provide for significant additional emissions control, are not considered cost effective because they are in excess of $10,000/ton pollutant removed, and the analysis continues to support that BACT is the use of a caustic packed bed scrubber to control the significant TRS sources. Note that the economic impact

analysis presented in Table 7 of Appendix D for the remaining uncontrolled sources was not affected by the tank relocation; therefore, the conclusions remain the same.

Summary of Impacts to Air Toxics Modeling Analysis

The air toxics modeling analysis was revised, in accordance with 15A NCAC 2Q.0700, because potential emissions increased from the scrubber stack and decreased from the HFB2 and TOx due to the relocation of tank ES-09.2800. Air dispersion modeling was performed for the following TAPs with facility-wide emissions exceeding the toxic permitting emission rate (TPER) and that were impacted by this design change:

- Acetaldehyde (75-07-0) – Hourly TPER exceeded;
- Acrolein (107-02-8) – Hourly TPER exceeded;
- Benzene (71-43-2) – Annual TPER exceeded;
- Carbon Disulfide (75-15-0) – Daily TPER exceeded;
- Carbon Tetrachloride (56-23-5) – Annual TPER exceeded;
- Chloroform (67-66-3) – Annual TPER exceeded;
- Formaldehyde (50-00-0) – Hourly TPER exceeded;
- n-Hexane (110-54-3) – Daily TPER exceeded;
- Hydrogen Sulfide (7783-06-4) – Daily TPER exceeded;
- Methyl mercaptan (74-93-1) – Hourly TPER exceeded; and
- Phenol (108-95-2) – Hourly TPER exceeded.

Facility-wide modeling was conducted for the compounds listed above, and the resulting modeled concentrations were compared to the applicable acceptable ambient levels (AALs) in 15A NCAC 02D .1104. The modeling methodology and assumptions remained consistent with the air quality analysis approach described in Section 7.2 through Section 7.5 of the February 2019 application, but used the most recent meteorological data files for Martin County, in accordance with current NC DAQ Air Toxic Modeling Guidance. The RWI dataset (Rocky Mount – Wilson / Newport), processed with AERMET version 18081 and including Adjust Ustar methodology, was processed by, and obtained from, NC DAQ, and was the most current representative meteorological dataset at the time of the analysis.

The revised TAP modeling analysis demonstrates that the maximum optimized TAP emissions from the facility do not result in predicted ambient concentrations that exceed the respective AALs. Potential and optimized emissions rates and air dispersion modeling results from the revised analysis are located in Attachment 4 of this addendum. Proposed facility-wide and source specific TAP emission rates are provided in Tables E-7 and E-8. The supporting potential emissions calculations are located in Attachment 5 of this addendum.

Additional Impacts Analysis

NC DAQ has also requested that the additional impacts analysis in Section 6.11 of the February 2019 air permit application be revised to remove sulfur dioxide (SO_2) and nitrogen oxide (NOx) from the analysis. Although the project no longer triggers PSD review for NO_2 or SO_2, an Additional Impacts Analysis remains applicable for TRS and H_2S. As the conclusions in Section 6.11 are not impacted by the proposed changes to the project, the analysis remains valid, and was not modified in this addendum.

Closing

The Mill appreciates DAQ's review of the proposed project. Should you have any questions concerning this submittal, please contact Diane Hardison by phone at (252) 793-8611 or by email at Diane.Hardison@domtar.com or Claire Corta by phone at (919) 578-4195 or by email at ccorta@all4inc.com.

Sincerely,
Domtar Paper Company, LLC

Diane R. Hardison

Diane R. Hardison
EH&S Manager

Everick W. Spence
Mill Manager

cc: Don Wynne - Domtar
Claire Corta – ALL4
Amy Marshall – ALL4
Heather Sands – NC DAQ

Attachment 1 – PSD Applicability Calculations
Attachment 2 – Proposed Permit Condition
Attachment 3 – BACT Tables
Attachment 4 – Toxics Modeling Tables
Attachment 5 – Potential Emissions Calculations

Attachment 1 – PSD Applicability Calculations

Table 1
Domtar Plymouth Pulp Mill
Lignin Modification Project
PSD Compound Emissions Increase Summary

	PSD Emissions, tpy												
	VOC	**PM**	**PM-10**	**PM-2.5**	**SO_2**	**NOx**	**CO**	**H_2S**	**TRS**	**F**	**H_2SO_4**	**Pb**	**CO_2e**
Baseline Actual Emissions (BAE)	153	469	392	338	100	1,775	8,776	12.7	16.3	2.44E-01	9.91	6.00E-02	2,079,220
Could Have Accommodated (CHA) Emissions (for Modified & Affected Units)	166	512	437	373	101	1,985	9,193	12.8	16.6	2.93E-01	10.35	8.00E-02	2,297,290
Potential to Emit (PTE) Emissions (for Modified & Affected Units)	195	457	366	297	127	1,815	7,012	31.1	52.7	2.22E-01	10.09	8.61E-02	2,142,738
Project Emissions Increases	28.8	-54.63	-71.68	-75.78	25.9	-170.0	-2181	18.2	36.1	-0.07	-2.63E-01	6.10E-03	-154,552
PSD Significant Emission Rates	40	25	15	10	40	40	100	10	10	3	7	6.00E-01	75,000
Is PSD review required?	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**Yes**	**Yes**	**No**	**No**	**No**	**No**

Table 2
Domtar Plymouth Pulp Mill
Lignin Modification Project
Production Summary

Production Parameter	UOM	Baseline Production	Accommodated Production	Potential Production[2]	Notes
Lignin Solids Production	ODT/yr	9,138	9,138	38,581	Potential production is the capacity of the Lignin Plant.
Lignin Hours of Operation	hr/yr	5,317	5,317	8,760	Maximum hours are based on an operating time of 24 hours a day, 7 days a week, and 365 days per year.
Blended Hog Fuel (HFB1)	dry tons/year	194,287	194,287	37,266	Projected Actual set equal to HFB1 hog fuel use in the Mill Optimization Project.
Blended Hog Fuel (HFB2)	dry tons/year	219,520	302,807	338,830	Fuel use from January 2017 was annualized to estimate production that could have been accommodated during the baseline. The incremental increase in fuel use required to run the lignin plant at capacity was applied to the accommodated production.
Natural Gas (HFB1)[2]	MMscf/yr	185	185	455	Fuel use from January 2017 was annualized to estimate production that could have been accommodated during the baseline. CHA was less than the baseline so CHA=Baseline.
Natural Gas (HFB2)[2]	MMscf/yr	228	228	228	Fuel use from January 2017 was annualized to estimate production that could have been accommodated during the baseline. CHA was less than the baseline so CHA=Baseline. No increase in gas usage projected.
Lignin to Bark Pile (HFB2)	BDT/yr	9,157	9,157	38,581	Lignin is produced as a valuable commodity. However, calculation conservatively assumes 100% of lignin produced is burned in HFB2.
Black Liquor Solids (RF)	TBLS/yr	1,005,939	1,048,633	1,048,633	A reduction in TBLS is expected from the project; however projected actual production is conservatively assumed to be equal to CHA.
No. 2 Fuel Oil (RF)	gal/yr	1,134,046	1,134,046	1,134,046	No increase on No. 2 Fuel Oil, accommodated and potential are set equal to baseline.

1. The project involves several tank replacements in the lignin area, therefore the emissions calculations set accommodated production equal to baseline production for the lignin sources as the replacement tanks will be considered new.

2. Note that Projected Actual emissions are described as potential production in table 2 for the affected sources since the incremental increase in fuel use and decrease in black liquor solids processed is based on the potential incremental increase in lignin solids production.

3. Natural Gas Heat Value: 1057 BTU/scf (based on the average of 2016-2017 fuel data)

Table 3
Domtar Plymouth Pulp Mill
Lignin Modification Project
Baseline Actual Emissions Summary

Lignin Modification Project	PM tpy	PM-10 tpy	PM-2.5 tpy	VOC tpy	SO_2 tpy	NOx tpy	CO tpy	TRS tpy	H_2S tpy	F tpy	H_2SO_4 tpy	Lead tpy	CO_2e tpy
BASELINE ACTUAL EMISSIONS													
No. 1 Hog Fuel Boiler (ES-64-25.0290)	99.0	129	129	20.15	5.20	359	3,347			1.15E-01	0.30	3.24E-03	331,368
No. 2 Hog Fuel Boiler (ES-65-25.0310)	81	103	81.1	22.79	3.18	479	594			1.29E-01	0.34	5.60E-02	460,368
No. 2 Hog Fuel Conveying (FS-007)	2.20	2.20											
Hogged Fuel Storage Pile at Boilers (FS-011)	1.20E-02	5.66E-03	8.57E-04										
No. 2 HF Ash Transport Steam Exhauster (ES-65-50.0160)	0.77	9.92E-01											
No. 2 HF Ash Silo (ES-65-50.0190)	0.77	9.92E-01											
No. 2 HF Scrubber Ash Silo (ES-65-60.0860)	2.42E-02	3.10E-02											
No. 5 Recovery Boiler (ES-10-25.0110)	265	133	107	58.2	7.16	919	4,834	2.67	1.80		7.51	8.31E-04	1,287,453
Salt Cake Mix Tank (ES-10-08.0010)				7.07E-01			1.48E-02						
No. 5 Precipitator Mix Tank (ES-10-45.0450)				7.84E-01				5.49E-02					
North & South Smelt Tanks (ES-14-05.0050, .0300)	20.9	20.6	18.7	48.7	5.90	18.0	1.18	4.32	2.53				
Lignin Feed Liquor Tank (ES-09-27.1000)				8.99E-01									
Feed Liquor Cooler 1 (ES-09-27.1100)				9.73E-03									
Feed Liquor Carbonator (ES-09-27.1400)				9.73E-03									
Dilute Process Tanks Controlled by White Liquor Scrubber (ES-09-27.1200, ES-09-27.1800, ES-09-27.2000, ES-09-27.2300,				1.66E-04			8.59E-04						
Acidification Process Tanks (ES-09-27.2700 and ES-09-27.2770)				1.09E-01				9.21	8.32				
Acidification Process Tank (ES-09-27.2800)				5.47E-02									
Lignin Filter Cloth Wash Tank 2 Controlled by Caustic Scrubber (ES-09-27.3100)				1.19E-03			1.23E-04						
Lignin Filter Conveyor 1 (ES-09-27.2610 and ES-09-27.2620)				4.75E-05			2.45E-04						
Lignin Filters 1 and 2 (ES-09-27.2100 and ES-09-27.3000)				2.37E-03			2.45E-04						
Lignin Handling	4.59E-01	4.58E-01	4.57E-01										
HVLC Combustion		1.76	1.76	1.94E-01	78.3						1.76		31.2
Fugitives				5.39E-03									
Caustic Scrubber													
Total	**469**	**392**	**338**	**153**	**100**	**1,775**	**8,776**	**16.3**	**12.7**	**2.44E-01**	**9.91**	**6.00E-02**	**2,079,220**

Table 4
Domtar Plymouth Pulp Mill
Lignin Modification Project
Could Have Accommodated Emissions Summary

Lignin Modification Project	PM	PM-10	PM-2.5	VOC	SO_2	NOx	CO	TRS	H_2S	F	H_2SO_4	Lead	CO_2e
	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy
COULD HAVE ACCOMMODATED EMISSIONS													
No. 1 Hog Fuel Boiler (ES-64-25.0290)	99.0	129	129	20.15	5.20	359	3,347			1.15E-01	0.30	3.24E-03	331,368
No. 2 Hog Fuel Boiler (ES-65-25.0310)	109	140	110	31.3	4.32	650	806			1.79E-01	0.46	7.59E-02	624,334
No. 2 Hog Fuel Conveying (FS-007)	3.03	3.03											
Hogged Fuel Storage Pile at Boilers (FS-011)	1.65E-02	7.81E-03	1.18E-03										
No. 2 HF Ash Transport Steam Exhauster (ES-65-50.0160)	1.05	1.35											
No. 2 HF Ash Silo (ES-65-50.0190)	1.05	1.35											
No. 2 HF Scrubber Ash Silo (ES-65-60.0860)	3.28E-02	4.20E-02											
No. 5 Recovery Boiler (ES-10-25.0110)	276	138	112	60.7	7.43	957	5,039	2.79	1.88		7.83	8.66E-04	1,341,557
Salt Cake Mix Tank (ES-10-08.0010)				7.37E-01			1.54E-02						
No. 5 Precipitator Mix Tank (ES-10-45.0450)				8.17E-01				5.72E-02					
North & South Smelt Tanks (ES-14-05.0050, .0300)	21.8	21.5	19.5	50.7	6.16	18.8	1.23	4.50	2.64				
Lignin Feed Liquor Tank (ES-09-27.1000)				8.99E-01									
Feed Liquor Cooler 1 (ES-09-27.1100)				9.73E-03									
Feed Liquor Carbonator (ES-09-27.1400)				9.73E-03									
Dilute Process Tanks Controlled by White Liquor Scrubber (ES-09-27.1200, ES-09-27.1800, ES-09-27.2000, ES-09-27.2300, ES-09-27.2400, ES-09-27.2500, and ES-09-27.3200)				1.66E-04			8.59E-04						
Acidification Process Tanks (ES-09-27.2700 and ES-09-27.2770)				1.09E-01				9.21	8.32				
Acidification Process Tank (ES-09-27.2800)				5.47E-02									
Lignin Filter Cloth Wash Tank 2 Controlled by Caustic Scrubber (ES-09-27.3100)				1.19E-03			1.23E-04						
Lignin Filter Conveyor 1 (ES-09-27.2610 and ES-09-27.2620)				4.75E-05			2.45E-04						
Lignin Filters 1 and 2 (ES-09-27.2100 and ES-09-27.3000)				2.37E-03			2.45E-04						
Lignin Handling	4.59E-01	4.58E-01	4.57E-01										
HVLC Combustion		1.76	1.76	1.94E-01	78.3						1.76		31.2
Fugitives				5.39E-03									
Caustic Scrubber													
Total	**512**	**437**	**373**	**166**	**101**	**1,985**	**9,193**	**16.6**	**12.8**	**2.93E-01**	**10.35**	**8.00E-02**	**2,297,290**

Table 5
Domtar Plymouth Pulp Mill
Lignin Modification Project
Potential Emissions Summary

Lignin Modification Project	PM	PM-10	PM-2.5	VOC	SO_2	NOx	CO	TRS	H_2S	F	H_2SO_4	Lead	CO_2e
	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy
POTENTIAL EMISSIONS													
No. 1 Hog Fuel Boiler (ES-64-25.0290)	31.8	41	41	4.31	1.12	115	1,074			2.20E-02	0.10	7.25E-04	105,810
No. 2 Hog Fuel Boiler (ES-65-25.0310)	122	156	122	35.0	4.81	724	898			2.00E-01	0.51	8.45E-02	695,253
No. 2 Hog Fuel Conveying (FS-007)	3.39	3.39											
Hogged Fuel Storage Pile at Boilers (FS-011)	1.85E-02	8.74E-03	1.32E-03										
No. 2 HF Ash Transport Steam Exhauster (ES-65-50.0160)	1.17	1.50											
No. 2 HF Ash Silo (ES-65-50.0190)	1.17	1.50											
No. 2 HF Scrubber Ash Silo (ES-65-60.0860)	3.65E-02	4.68E-02											
No. 5 Recovery Boiler (ES-10-25.0110)	276	138	112	60.7	7.43	957	5,039	2.79	1.88		7.83	8.66E-04	1,341,557
Salt Cake Mix Tank (ES-10-08.0010)				7.37E-01			1.54E-02						
No. 5 Precipitator Mix Tank (ES-10-45.0450)				8.17E-01				5.72E-02					
North & South Smelt Tanks (ES-14-05.0050, .0300)	21.8	21.5	19.5	50.7	6.16	18.8	1.23	4.50	2.64				
Lignin Feed Liquor Tank (ES-09-27.1000)				1.48				6.34E-01	2.14E-01				
Feed Liquor Cooler 1 (ES-09-27.1100)				8.01E-01									
Feed Liquor Carbonator (ES-09-27.1400)				1.60E-02									
Dilute Process Tanks Controlled by White Liquor Scrubber (ES-09-27.1200, ES-09-27.1800, ES-09-27.2000, ES-09-27.2300, ES-09-27.2400, ES-09-27.2500, and ES-09-27.3200)				3.51E-02			3.63E-03						
Acidification Process Tanks (ES-09-27.2700 and ES-09-27.2770)				4.62E-01									
Acidification Process Tank (ES-09-27.2800)				1.15E+01									
Lignin Filter Cloth Wash Tank 2 Controlled by Caustic Scrubber (ES-09-27.3100)				5.01E-03			5.18E-04						
Lignin Filter Conveyor 1 (ES-09-27.2610 and ES-09-27.2620)				1.00E-02			1.04E-03						
Lignin Filters 1 and 2 (ES-09-27.2100 and ES-09-27.3000)				1.00E-02			1.04E-03						
Lignin Handling	7.96E-02	7.60E-02	7.32E-02										
HVLC Combustion		1.65	1.65	0.64	108			1.17	1.06		1.65		119
Fugitives				8.88E-03				1.67	1.66				
Caustic Scrubber (Includes controlled sources above)				27.2				41.8	23.6				
Total	**457**	**366**	**297**	**195**	**127**	**1,815**	**7,012**	**52.7**	**31.1**	**0.22**	**10.09**	**8.61E-02**	**2,142,738**

Table 6
Domtar Plymouth Pulp Mill
Lignin Modification Project
Pre-Project HVLC Combustion

Baseline Hours of Operation: 5,317
Accommodated Hours of Operation: 5,317

TRS Emissions from HVLC System[1]													
		Molar Weight	**Uncontrolled Emission Rate**	**Uncontrolled Baseline Emissions**		**Uncontrolled Accommodated Emissions**		**HFB Control Efficiency**	**Conversion to CO_2**	**Controlled Baseline Emissions**		**Controlled Accommodated Emissions**	
Compound	**VOC?**	**(lb/lb-mole)**	**lb/hr**	**(tpy as C)**	**(tpy)**	**(tpy as C)**	**(tpy)**	**(%)**	**(%)**	**(tpy as C)**	**(tpy)**	**(tpy as C)**	**(tpy)**
H_2S	No	34.1	22.7	---	60.3	---	60.3	98%	---	---	1.21	---	1.21
MeSH	Yes	48.1	9.65E-01	6.40E-01	2.57E+00	6.40E-01	2.57E+00	98%	---	1.28E-02	5.13E-02	1.28E-02	5.13E-02
DMS	Yes	62.1	1.64E-01	1.68E-01	4.36E-01	1.68E-01	4.36E-01	98%	---	3.37E-03	8.72E-03	3.37E-03	8.72E-03
DMDS	Yes	94.2	8.99E-02	0.06	0.2	0.06	0.2	98%	---	1.22E-03	4.78E-03	1.22E-03	4.78E-03
TRS (as H2S)	---	---	23.5	---	62.6	---	62.6	---	---	---	**1.25**	---	**1.25**
Emissions from TRS Combustion													
VOC from TRS Combustion	---	---	---	---	---	---	---	---	---	1.74E-02	6.48E-02	1.74E-02	6.48E-02
SO2 from TRS Combustion	---	64.0	---	---	---	---	---	32%	---	---	78.3	---	78.3
CO2 from TRS Combustion	---	44.0	---	---	---	---	---	---	98%	0.85	3.12	---	3.12
SO_2, H_2SO_4/CPM Emissions from HVLC System[2]													
Carbon Disulfide	Yes	76.1	---	1.91E-03	1.21E-02	1.91E-03	1.21E-02	98%	---	3.83E-05	2.43E-04	3.83E-05	2.43E-04
SO_2 from CS2 Combustion	---	64.0	---	---	---	---	---	32%	---	---	1.36E-02	---	1.36E-02
SO_2 from TRS Combustion	---	64.0	---	---	---	---	---	32%	---	---	78.3	---	78.3
Total SO_2	---	---	---	---	---	---	---	---	---	---	**78.3**	---	**78.3**
Total H_2SO_4/CPM	---	98.0	---	---	---	---	---	---	---	---	**1.8**	---	**1.8**
CO_2 Emissions from HVLC System[2]													
VOC as C	---	---	---	7.8	---	7.8	---	---	---	1.56E-01	---	1.56E-01	---
CO_2 (from VOC combustion)	---	44.0	---	---	---	---	---	---	98%	---	28.1	---	28.1
CO_2 (from TRS combustion)	---	44.0	---	---	---	---	---	---	98%	---	3.12E+00	---	3.12E+00
Total CO_2	---	---	---	---	---	---	---	---	---	---	**31.22**	---	**31.22**
VOC Emissions from HVLC System													
VOC (speciated)	---	44.0	---			---	---	---	---	---	1.29E-01	---	1.29E-01
VOC from TRS Combustion	---	---	---			---	---	---	---	1.74E-02	6.48E-02	1.74E-02	6.48E-02
Total VOC	---	44.0	---			---	---	---	---	---	**1.94E-01**	---	**1.94E-01**

Notes:
1. Uncontrolled emission rates for TRS compounds are from the 2016 test program conducted for the 2016 Lignin Air Permit Application. Note the 50% safety factor was removed from the baseline factors.
2. Carbon Disulfide and VOC as C baseline and accommodated controlled emissions are the sum of emissions from the following sources: Feed Liquor Cooler, Feed Liquor Carbonator, Lignin Slurry Conditioning Tank, Lignin Slurry Buffer Tank, Lignin Filter Cloth Wash Tank, and the Lignin Filter Filtrate Tanks and Conveyors.

Table 7
Domtar Plymouth Pulp Mill
Lignin Modification Project
Post-Project HVLC Combustion

Potential Hours of Operation: 8,760

TRS Emissions from HVLC System[1]										
		Molar Weight	**Total Volumetric Flow**	**Conc.**	**Uncontrolled Potential Emissions**		**HFB2/TOx Control Efficiency**	**Conversion to CO_2**	**Controlled Potential Emissions**	
Compound	**VOC?**	**(lb/lb-mole)**	**(dscfm)**	**(ppmvd)**	**(tpy as C)**	**(tpy)**	**(%)**	**(%)**	**(tpy as C)**	**(tpy)**
H_2S	No	34.1	203	11,250	---	53	98%	---	---	1.06
MeSH	Yes	48.1	203	825	1	5	98%	---	0.03	0.11
DMS	Yes	62.1	203	188	1	2	98%	---	0.01	0.03
DMDS	Yes	94.2	203	75	0	1	98%	---	0.00	0.02
TRS (as H2S)	---	---	---	---	---		---	---	0.04	**1.17**
TRS as Compounds	---	---	---	---	---		---	---	---	**1.22**
Emissions from TRS Combustion										
VOC from TRS Combustion	---	---	---	---	---	---	---	---	0.04	0.16
SO2 from TRS Combustion	---	64.0	---	---	---	---	0%	---	---	107.8
CO2 from TRS Combustion	---	44.0	---	---	---	---	---	98%	---	8.06
SO_2, H_2SO_4/CPM Emissions from HVLC System[2]										
Carbon Disulfide	Yes	76.1	---	---	2.39E-03	1.51E-02	98%	---	4.78E-05	3.03E-04
SO_2 from CS2 Combustion	---	64.0	---	---	---	---	0%	---	---	2.50E-02
SO_2 from TRS Combustion	---	64.0	---	---	---	---	0%	---	---	107.8
Total SO_2	---	---	---	---	---	---	---	---	---	**107.8**
Total H_2SO_4/CPM	---	98.0	---	---	---	---	---	---	---	**1.7**
CO_2 Emissions from HVLC System[2]										
VOC as C	---	---	---	---	30.9	---	---	---	0.62	---
CO_2 (from VOC combustion)	---	44.0	---	---	---	---	---	98%	---	111.15
CO_2 (from TRS combustion)	---	44.0	---	---	---	---	---	98%	---	8.06
Total CO_2	---	---	---	---	---	---	---	---	---	**119.21**
VOC Emissions from HVLC System										
VOC (speciated)	---	44.0	---	---	---	---	---	---	---	0.48
VOC from TRS Combustion	---	---	---	---	---	---	---	---	0.04	0.16
Total VOC	---	44.0	---	---	---	---	---	---	---	**0.64**

Notes:

1. Flow rates and concentrations are provided by the vendor and represent worst case TRS content. Emission rates include a 50% safety margin to account for variability due to process fluctuations and temporal conditions that can impact emission levels.

2. Carbon Disulfide and VOC as C "post-project controlled" emissions are a sum of the potential emissions from the Feed Liquor Carbonator and Acidification Process Tanks.

3. Worst case SO_2 emissions assume that there is no SO_2 control due to bark scrubbing since HVLC gases may be routed to either the No. 2 Hog Fuel Boiler or Thermal Oxidizer for TRS/VOC control. The Thermal Oxidizer is a backup HVLC gas control device.

Table 8
Domtar Plymouth Pulp Mill
Lignin Modification Project
Post-Project Caustic Scrubber Stack Emissions

Potential Hours of Operation: 8,760

Emissions from Caustic Scrubber[1]					
Compound	**VOC?**	**Molar Weight (lb/lb-mole)**	**Total Volumetric Flow (dscfm)**	**Conc. (ppmvd)**	**Controlled Emissions (tpy)**
Total VOC Compounds	---	---	---	---	27.2
TRS (as H2S)	---	---	---	---	41.8
TRS as Compounds					50.8
H_2S from Scrubber	No	34.1	15,386	66	23.6
MeSH from Scrubber	Yes	48.1	15,386	32	15.9
DMS from Scrubber	Yes	62.1	15,386	11	6.8
DMDS from Scrubber	Yes	94.2	15,386	5	4.4

Notes:

1. Flow rates and concentrations are provided by the vendor and represent worst case TRS content and include a 50% safety margin.

Table 16A

Domtar Plymouth Pulp Mill

Lignin Modification Project

Estimated Emissions from Acidification Process Tanks (PL09-27.2700 & ES-09.2770)

PL09-27.2700, ES-09.2770 Vented through PL09-27.1400 and all vented to HVLC System for Control

Excluding TRS

Pollutant	Pollutant Category[1]	Emission Factor[2] lb/ADTP	Emission Factor[2] lb/ODTP	Post Project Control by: HVLC System	Emissions[4] BAE ton/yr	CHA ton/yr	PTE ton/yr
VOC[3] (speciated)	---	5.38E-01	5.98E-01	98%	1.09E-01	1.09E-01	4.62E-01
VOC (as carbon)	---	7.10E-01	7.89E-01	98%	1.44E-01	1.44E-01	6.09E-01
Acetaldehyde	H, T, V	1.14E-02	1.27E-02	98%	2.31E-03	2.31E-03	9.77E-03
Acrolein	H, T, V	6.27E-03	6.97E-03	98%	1.27E-03	1.27E-03	5.38E-03
Benzene	H, T, V	4.92E-04	5.47E-04	98%	9.99E-05	9.99E-05	4.22E-04
Camphene	V	1.10E-02	1.22E-02	98%	2.23E-03	2.23E-03	9.43E-03
Camphor	V	1.90E-02	2.11E-02	98%	3.86E-03	3.86E-03	1.63E-02
Carbon Disulfide	H, T, V	1.50E-04	1.67E-04	98%	3.05E-05	3.05E-05	1.29E-04
Carbon Tetrachloride	H, T, V	6.82E-03	7.58E-03	98%	1.38E-03	1.38E-03	5.85E-03
3-Carene	V	1.20E-03	1.33E-03	98%	2.44E-04	2.44E-04	1.03E-03
Chlorobenzene	H, T, V	5.20E-04	5.78E-04	98%	1.06E-04	1.06E-04	4.46E-04
Chloroform	H, T, V	1.50E-03	1.67E-03	98%	3.05E-04	3.05E-04	1.29E-03
Cumene	H, V	1.17E-03	1.30E-03	98%	2.38E-04	2.38E-04	1.00E-03
p-Cymene	Terpene	3.76E-03	4.18E-03	0%	3.82E-02	3.82E-02	1.61E-01
Ethanol	V	8.60E-03	9.56E-03	98%	1.75E-03	1.75E-03	7.37E-03
Ethyl Benzene	H, V	1.23E-03	1.37E-03	98%	2.50E-04	2.50E-04	1.05E-03
Formaldehyde	H, T, V	5.40E-03	6.00E-03	98%	1.10E-03	1.10E-03	4.63E-03
n-Hexane	H, T, V	6.60E-04	7.33E-04	98%	1.34E-04	1.34E-04	5.66E-04
Isopropanol	V	1.53E-02	1.70E-02	98%	3.11E-03	3.11E-03	1.31E-02
Limonene	Terpene	6.00E-02	6.67E-02	0%	6.09E-01	6.09E-01	2.57E+00
Methanol	H, V	7.50E-02	8.33E-02	98%	1.52E-02	1.52E-02	6.43E-02
Methyl Ethyl Ketone	T, V	1.00E-02	1.11E-02	98%	2.03E-03	2.03E-03	8.57E-03
Methyl Isobutyl Ketone	H, T, V	3.50E-03	3.89E-03	98%	7.11E-04	7.11E-04	3.00E-03
alpha-Pinene	Terpene	1.30E-01	1.44E-01	0%	1.32E+00	1.32E+00	5.57E+00
beta-Pinene	Terpene	5.60E-02	6.22E-02	0%	5.69E-01	5.69E-01	2.40E+00
Phenol	H, T, V	5.70E-03	6.33E-03	98%	1.16E-03	1.16E-03	4.89E-03
Styrene	H, T, V	5.00E-03	5.56E-03	98%	1.02E-03	1.02E-03	4.29E-03
Terpenes	V	3.39E-01	3.77E-01	98%	6.89E-02	6.89E-02	2.91E-01
alpha-Terpeneol	Terpene	8.80E-02	9.78E-02	0%	8.93E-01	8.93E-01	3.77E+00
gamma-Terpenene	Terpene	1.60E-03	1.78E-03	0%	1.62E-02	1.62E-02	6.86E-02
Toluene	H, T, V	1.50E-03	1.67E-03	98%	3.05E-04	3.05E-04	1.29E-03
1,2,4-Trichlorobenzene	H, V	5.70E-03	6.33E-03	98%	1.16E-03	1.16E-03	4.89E-03
Xylene, m-,p-	Xylenes	1.50E-03	1.67E-03	0%	1.52E-02	1.52E-02	6.43E-02
o-Xylene	Xylenes	4.57E-04	5.08E-04	0%	4.64E-03	4.64E-03	1.96E-02
Xylenes	H, T, V	1.96E-03	2.17E-03	98%	3.97E-04	3.97E-04	1.68E-03

Basis:

	Baseline Actual	Accommodated	Potential
Annual ODT of lignin	9,138	9,138	38,581

Notes:

1) H=Clean Air Act Hazardous Air Pollutant, V=Volatile Organic Compound, T=Toxic Air Pollutant
2) NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources.
3) VOC annual emissions are estimated as the sum of all the speciated volatile organic compounds.
4) Emissions are for 2 Total Tanks.

Table 16B

Domtar Plymouth Pulp Mill

Lignin Modification Project

Estimated Emissions from Acidification Process Tanks (PL09-27.2800)

Excluding TRS

Pollutant	Pollutant Category[1]	Emission Factor[2]	Emission Factor[2]	Pre Project Control by:	Post Project Control by:	Emissions[4]		
						BAE	CHA	PTE
		lb/ADTP	lb/ODTP	Uncontrolled	HVLC System	ton/yr	ton/yr	ton/yr
VOC[3] (speciated)	---	5.38E-01	5.98E-01	98%	0%	5.47E-02	5.47E-02	1.15E+01
VOC (as carbon)	---	7.10E-01	7.89E-01	98%	0%	7.21E-02	7.21E-02	1.52E+01
Acetaldehyde	H, T, V	1.14E-02	1.27E-02	98%	0%	1.16E-03	1.16E-03	2.44E-01
Acrolein	H, T, V	6.27E-03	6.97E-03	98%	0%	6.37E-04	6.37E-04	1.34E-01
Benzene	H, T, V	4.92E-04	5.47E-04	98%	0%	5.00E-05	5.00E-05	1.05E-02
Camphene	V	1.10E-02	1.22E-02	98%	0%	1.12E-03	1.12E-03	2.36E-01
Camphor	V	1.90E-02	2.11E-02	98%	0%	1.93E-03	1.93E-03	4.07E-01
Carbon Disulfide	H, T, V	1.50E-04	1.67E-04	98%	0%	1.52E-05	1.52E-05	3.22E-03
Carbon Tetrachloride	H, T, V	6.82E-03	7.58E-03	98%	0%	6.92E-04	6.92E-04	1.46E-01
3-Carene	V	1.20E-03	1.33E-03	98%	0%	1.22E-04	1.22E-04	2.57E-02
Chlorobenzene	H, T, V	5.20E-04	5.78E-04	98%	0%	5.28E-05	5.28E-05	1.11E-02
Chloroform	H, T, V	1.50E-03	1.67E-03	98%	0%	1.52E-04	1.52E-04	3.22E-02
Cumene	H, V	1.17E-03	1.30E-03	98%	0%	1.19E-04	1.19E-04	2.51E-02
p-Cymene	Terpene	3.76E-03	4.18E-03	0%	0%	1.91E-02	1.91E-02	8.06E-02
Ethanol	V	8.60E-03	9.56E-03	98%	0%	8.73E-04	8.73E-04	1.84E-01
Ethyl Benzene	H, V	1.23E-03	1.37E-03	98%	0%	1.25E-04	1.25E-04	2.64E-02
Formaldehyde	H, T, V	5.40E-03	6.00E-03	98%	0%	5.48E-04	5.48E-04	1.16E-01
n-Hexane	H, T, V	6.60E-04	7.33E-04	98%	0%	6.70E-05	6.70E-05	1.41E-02
Isopropanol	V	1.53E-02	1.70E-02	98%	0%	1.55E-03	1.55E-03	3.28E-01
Limonene	Terpene	6.00E-02	6.67E-02	0%	0%	3.05E-01	3.05E-01	1.29E+00
Methanol	H, V	7.50E-02	8.33E-02	98%	0%	7.61E-03	7.61E-03	1.61E+00
Methyl Ethyl Ketone	T, V	1.00E-02	1.11E-02	98%	0%	1.02E-03	1.02E-03	2.14E-01
Methyl Isobutyl Ketone	H, T, V	3.50E-03	3.89E-03	98%	0%	3.55E-04	3.55E-04	7.50E-02
alpha-Pinene	Terpene	1.30E-01	1.44E-01	0%	0%	6.60E-01	6.60E-01	2.79E+00
beta-Pinene	Terpene	5.60E-02	6.22E-02	0%	0%	2.84E-01	2.84E-01	1.20E+00
Phenol	H, T, V	5.70E-03	6.33E-03	98%	0%	5.79E-04	5.79E-04	1.22E-01
Styrene	H, T, V	5.00E-03	5.56E-03	98%	0%	5.08E-04	5.08E-04	1.07E-01
Terpenes	V	3.39E-01	3.77E-01	98%	0%	3.45E-02	3.45E-02	7.27E+00
alpha-Terpeneol	Terpene	8.80E-02	9.78E-02	0%	0%	4.47E-01	4.47E-01	1.89E+00
gamma-Terpenene	Terpene	1.60E-03	1.78E-03	0%	0%	8.12E-03	8.12E-03	3.43E-02
Toluene	H, T, V	1.50E-03	1.67E-03	98%	0%	1.52E-04	1.52E-04	3.22E-02
1,2,4-Trichlorobenzene	H, V	5.70E-03	6.33E-03	98%	0%	5.79E-04	5.79E-04	1.22E-01
Xylene, m-,p-	Xylenes	1.50E-03	1.67E-03	0%	0%	7.61E-03	7.61E-03	3.22E-02
o-Xylene	Xylenes	4.57E-04	5.08E-04	0%	0%	2.32E-03	2.32E-03	9.80E-03
Xylenes	H, T, V	1.96E-03	2.17E-03	98%	0%	1.99E-04	1.99E-04	4.19E-02

Basis:

	Baseline Actual	Accommodated	Potential
Annual ODT of lignin	9,138	9,138	38,581

Notes:

1) H=Clean Air Act Hazardous Air Pollutant, V=Volatile Organic Compound, T=Toxic Air Pollutant
2) NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources.
3) VOC annual emissions are estimated as the sum of all the speciated volatile organic compounds.
4) Emissions are for 1 Total Tank.

Table 21
Domtar Plymouth Pulp Mill
Lignin Modification Project
No. 2 Hog Fuel Boiler - Tested Pollutants

Pollutant	Emission Factor		Total Emissions		
			BAE	CHA	PTE
	lb/MMBtu	Ref.	ton/yr	ton/yr	ton/yr
NOx	2.46E-01	4	479.39	650.02	723.82
CO	3.05E-01	6	594.48	806.06	897.57
Filterable PM	4.13E-02	2	80.52	109.18	121.57
Condensable PM	3.20E-02	2	62.39	84.59	94.20
Total PM (Filterable + Condensable)	7.33E-02	2	142.91	193.77	215.77
PM10	5.30E-02	3,7	103.33	140.11	156.01
PM2.5	4.16E-02	3,7	81.10	109.97	122.46
Lead	2.87E-05	8	5.60E-02	7.59E-02	8.45E-02
Sulfuric Acid	1.74E-04	9	3.39E-01	4.60E-01	5.12E-01
SO2	1.63E-03	9	3.18E+00	4.32E+00	4.81E+00

Basis:

	Baseline Actual	Accommodated	Potential
Blended hog fuel combustion (dry ton/yr)	219,520	302,807	338,830
HFB2 Natural Gas Combustion (MMscf/yr)	228	228	228
Total firing rate (MMBtu/yr)[1]	3,899,259	5,287,069	5,887,323

Notes:

1) Fuel Heating Values:

Blended Hog Fuel 16,663,000 BTU/dry ton

Natural Gas 1,057 BTU/scf

Heat value is based upon the average of 8391 BTU/dry lb from 2016 fuel data and 8272 BTU/dry lb from 2017 fuel data.

Blended hog fuel includes lignin.

2) Filterable Particulate refers to the Method 5 catch, and is the average tested emission factor utilized in the 2017 inventory. Condensable Particulate refers to the Method 202 catch. The total particulate emission factor is the sum of the average condensable PM emission factor and the average filterable PM emission factor. [Note FPM emission factor updated due to correction in inventory.]

3) PM-10 factor is from Aug 2009 ICR Testing. The PM-2.5 factor (based on one test) is larger than the average PM-10 factor based on multiple tests. Therefore, the PM-2.5 factor is calculated as the ratio of PM-2.5 to PM-10 during the 2000 test times the average PM-10 emission factor.

4) Derived emission factors from the average of 2016-2017 CEMS data and 2016-2017 total heat input.

5) Stack test on 7/17/2013, Biomass/HVLC/LSRP in operation.

6) HAP metals and PM testing on 3/8/2016.

7) HAP metals and PM testing on 3/2/2015.

8) Stack test on 7/10/2012, Hog Fuel.

9) December 2019 Stack Test, Condition VI firing hog fuel and natural gas only.

Table 22
Domtar Plymouth Pulp Mill
Lignin Modification Project
No. 2 Hog Fuel Boiler - Published Emission Factors

Pollutant	Hog Fuel					Natural Gas					Total		
	Emission Factor		Emissions			Emission Factor		Emissions			Emissions		
			BAE	CHA	PTE			BAE	CHA	PTE	BAE	CHA	PTE
	lb/MMBtu	Ref	ton/yr	ton/yr	ton/yr	lb/MMscf	Ref	ton/yr	ton/yr	ton/yr	ton/yr	ton/yr	ton/yr
CO2e	--	2	460,354	624,320	695,238	--	2	15	15	15	460,368	624,334	695,253
CO2	2.34E+02	2	455,302	617,352	687,441	CEMS	2				455,302	617,352	687,441
CH4	1.59E-02	2	29.03	40.05	44.81	2.33E+00	2	0.27	0.27	0.27	29.30	40.31	45.08
N2O	7.94E-03	2	14.52	20.02	22.40	2.33E-01	2	0.03	0.03	0.03	14.54	20.05	22.43
VOC (speciated)	1.23E-02	3	2.25E+01	3.11E+01	3.48E+01	2.14E+00	5	2.44E-01	2.44E-01	2.44E-01	22.79	31.35	35.05
Hydrogen Fluoride	7.08E-05	4	1.29E-01	1.79E-01	2.00E-01						1.29E-01	1.79E-01	2.00E-01

Basis:

	Baseline Actual	Accommodated	Potential
HFB2 Blended Hog Fuel (dry tons/yr)	219,520	302,807	338,830
HFB2 Blended Hog Fuel (MMBtu/yr)[1]	3,657,861	5,045,671	5,645,925
HFB2 Natural Gas Combustion (MMscf/yr)	228	228	228
Total firing rate (MMBtu/yr)[1]	3,899,259	5,287,069	5,887,323

Notes:

1) Fuel Heating Values:

Blended Hog Fuel	16,663,000	BTU/dry ton
Natural Gas	1,057	BTU/scf
Lignin	11,644	BTU/dry lb

Heat value is based upon the average of 8391 BTU/dry lb from 2016 fuel data and 8272 BTU/dry lb from 2017 fuel data.

Heat value for Lignin based on (12.63 Btu/dscf) x (17,081 max dscf/min) x (60 min/hr) x (24 hr/d) / (2050 max ODTP/d).

2) CO2 factors are from site specific CEMS data. CH4 and N2O are from 40 CFR Part 98, Table C-2, CO2e = CO2+ CH4*25 + N2O*298

3) Sum of VOC compounds from NCASI Technical Bulletin 1050, Table 7.1, 7.3, 7.5 and 7.6

4) NCASI Technical Bulletin 1050, Table 7.1, Dry Cont.

5) Sum of VOC compounds from NCASI Technical Bulletin 1050, Table 8.22 Summary of Non-Metal Air Toxic Emissions from Natural Gas Fired Boilers and NCASI TB1050 Table 8.23 -Equivalent to AP-42, Chapter 1.4, Table 1.4-3: Emission Factors for Speciated Organic Compounds from Natural Gas Combustion.

Table 23
Domtar Plymouth Pulp Mill
Lignin Modification Project
No. 2 Hog Fuel Boiler - Sum of VOC Compounds

Fuel	Pollutant	Emission Factor	UOM
Hog Fuel	Acetaldehyde	1.58E-04	lb/MMBtu
Hog Fuel	Acrolein	1.83E-04	lb/MMBtu
Hog Fuel	Acenaphthene	1.03E-07	lb/MMBtu
Hog Fuel	Acetophenone	1.84E-06	lb/MMBtu
Hog Fuel	Acenaphthylene	5.81E-07	lb/MMBtu
Hog Fuel	Anthracene	1.76E-07	lb/MMBtu
Hog Fuel	Benzaldehyde	1.37E-04	lb/MMBtu
Hog Fuel	Benzene	2.46E-04	lb/MMBtu
Hog Fuel	Benzo(a)anthracene	1.26E-08	lb/MMBtu
Hog Fuel	Benzo(a)fluorene	3.10E-08	lb/MMBtu
Hog Fuel	Benzo(a)phenanthrene	9.13E-09	lb/MMBtu
Hog Fuel	Benzo(a)pyrene	3.98E-08	lb/MMBtu
Hog Fuel	Benzo(b)fluoranthene	1.26E-08	lb/MMBtu
Hog Fuel	Benzo(b)fluorene	4.35E-09	lb/MMBtu
Hog Fuel	Benzo(k)fluoranthene	1.83E-08	lb/MMBtu
Hog Fuel	Benzo(g,h,i)perylene	9.90E-09	lb/MMBtu
Hog Fuel	Benzo(e)pyrene	7.95E-08	lb/MMBtu
Hog Fuel	Benzoic Acid	2.30E-05	lb/MMBtu
Hog Fuel	Benzo(j)fluoranthene	1.56E-07	lb/MMBtu
Hog Fuel	Bis(2-Ethylhexyl)phthalate	4.65E-08	lb/MMBtu
Hog Fuel	Bromomethane (Methyl Bromide)	3.67E-06	lb/MMBtu
Hog Fuel	Butyl benzyl phthalate	2.68E-05	lb/MMBtu
Hog Fuel	n-Butyraldehyde	6.88E-05	lb/MMBtu
Hog Fuel	Carbon tetrachloride	9.87E-06	lb/MMBtu
Hog Fuel	Chlorobenzene	1.66E-05	lb/MMBtu
Hog Fuel	Chloroform	2.00E-05	lb/MMBtu
Hog Fuel	Chloromethane	3.00E-05	lb/MMBtu
Hog Fuel	2-Chloronaphthalene	1.20E-08	lb/MMBtu
Hog Fuel	2-Chlorophenol	2.35E-08	lb/MMBtu
Hog Fuel	Coronene	3.03E-08	lb/MMBtu
Hog Fuel	Crotonaldehyde	4.48E-05	lb/MMBtu
Hog Fuel	Cumene	1.77E-05	lb/MMBtu
Hog Fuel	p-Cymene	2.61E-06	lb/MMBtu
Hog Fuel	Decachlorobiphenyl	2.65E-10	lb/MMBtu
Hog Fuel	Dibenzo(a,c)anthracene	3.88E-09	lb/MMBtu
Hog Fuel	Dibenzo(a,h)anthracene	8.88E-09	lb/MMBtu
Hog Fuel	Dibutylphthalate	3.33E-05	lb/MMBtu
Hog Fuel	Dichlorobiphenyl	9.00E-10	lb/MMBtu

Table 23
Domtar Plymouth Pulp Mill
Lignin Modification Project
No. 2 Hog Fuel Boiler - Sum of VOC Compounds

Fuel	Pollutant	Emission Factor	UOM
Hog Fuel	1,2-Dichloroethane	2.92E-05	lb/MMBtu
Hog Fuel	Dichloroisopropyl ether	6.15E-07	lb/MMBtu
Hog Fuel	Diethyl phthalate	4.36E-05	lb/MMBtu
Hog Fuel	2,4-Dinitrophenol	1.80E-07	lb/MMBtu
Hog Fuel	1,2-Dibromoethylene	5.48E-05	lb/MMBtu
Hog Fuel	1,2-Dichloroethylene	1.37E-03	lb/MMBtu
Hog Fuel	1,2-Dichloropropane	1.68E-05	lb/MMBtu
Hog Fuel	1,4-Dichlorobenzene	2.79E-04	lb/MMBtu
Hog Fuel	7,12-Dimethylbenz[a]anthracene	4.57E-09	lb/MMBtu
Hog Fuel	9,10-Dimethylanthracene	2.14E-09	lb/MMBtu
Hog Fuel	9-Methylphenanthrene	8.73E-08	lb/MMBtu
Hog Fuel	2,4-Dinitrotoluene	9.42E-07	lb/MMBtu
Hog Fuel	4,6-Dinitro-2-methylphenol	2.10E-06	lb/MMBtu
Hog Fuel	Di-n-octyl phthalate	1.10E-07	lb/MMBtu
Hog Fuel	Ethanol	5.78E-04	lb/MMBtu
Hog Fuel	Ethyl Benezene	3.91E-06	lb/MMBtu
Hog Fuel	Fluoranthene	3.25E-07	lb/MMBtu
Hog Fuel	Fluorene	1.89E-07	lb/MMBtu
Hog Fuel	Formaldehyde	4.10E-04	lb/MMBtu
Hog Fuel	Hexachlorobiphenyl	5.45E-10	lb/MMBtu
Hog Fuel	Hexaldehyde	7.89E-05	lb/MMBtu
Hog Fuel	Hydrogen Cyanide	2.05E-05	lb/MMBtu
Hog Fuel	Hexachlorodibenzo-p-dioxin (HCDD)	5.92E-13	lb/MMBtu
Hog Fuel	1,2,3,4,6,7,8-heptachlorodibenzo-p-dioxin	5.91E-12	lb/MMBtu
Hog Fuel	1,2,3,4,6,7,8-heptachlorodibenzofuran	2.86E-12	lb/MMBtu
Hog Fuel	1,2,3,4,6,7,8,9-	8.94E-12	lb/MMBtu
Hog Fuel	1,2,3,4,6,7,8,9-	2.43E-12	lb/MMBtu
Hog Fuel	1,2,3,4,7,8-	1.54E-12	lb/MMBtu
Hog Fuel	1,2,3,4,7,8-	8.70E-13	lb/MMBtu
Hog Fuel	1,2,3,4,7,8,9-	7.98E-13	lb/MMBtu
Hog Fuel	1,2,3,6,7,8-	1.54E-12	lb/MMBtu
Hog Fuel	1,2,3,7,8-pentachlorodibenzo·	1.64E-13	lb/MMBtu
Hog Fuel	1,2,3,7,8-	9.59E-13	lb/MMBtu
Hog Fuel	1,2,3,7,8,9-	5.42E-13	lb/MMBtu
Hog Fuel	1,2,3,7,8,9-	6.67E-13	lb/MMBtu

Table 23
Domtar Plymouth Pulp Mill
Lignin Modification Project
No. 2 Hog Fuel Boiler - Sum of VOC Compounds

Fuel	Pollutant	Emission Factor	UOM
Hog Fuel	2,3,4,6,7,8-	1.41E-12	lb/MMBtu
Hog Fuel	2,3,4,7,8-	2.79E-12	lb/MMBtu
Hog Fuel	2,3,7,8-	3.00E-12	lb/MMBtu
Hog Fuel	2,3,7,8-Tetrachlorodibenzo-p-	9.53E-13	lb/MMBtu
Hog Fuel	Indeno(1,2,3,c,d)pyrene	9.13E-09	lb/MMBtu
Hog Fuel	Isobutyraldehyde	1.47E-04	lb/MMBtu
Hog Fuel	Isopropanol	4.52E-03	lb/MMBtu
Hog Fuel	Isovaleraldehyde	6.32E-05	lb/MMBtu
Hog Fuel	Methanol	4.85E-04	lb/MMBtu
Hog Fuel	1-Methylnaphthalene	2.54E-06	lb/MMBtu
Hog Fuel	1-Methylphenanthrene	2.59E-07	lb/MMBtu
Hog Fuel	2-Methylanthracene	1.60E-08	lb/MMBtu
Hog Fuel	2-Methylnaphthalene	1.29E-06	lb/MMBtu
Hog Fuel	3-Methylcholanthrene	8.68E-09	lb/MMBtu
Hog Fuel	Methyl Ethyl Ketone	7.84E-06	lb/MMBtu
Hog Fuel	Methyl Isobutyl Ketone	4.45E-04	lb/MMBtu
Hog Fuel	Monochlorobiphenyl	2.18E-10	lb/MMBtu
Hog Fuel	n-Hexane	2.88E-04	lb/MMBtu
Hog Fuel	Naphthalene	1.84E-05	lb/MMBtu
Hog Fuel	2-Nitrophenol	2.43E-07	lb/MMBtu
Hog Fuel	4-Nitrophenol	1.14E-07	lb/MMBtu
Hog Fuel	Pentachlorobiphenyl	1.20E-09	lb/MMBtu
Hog Fuel	Pentachlorophenol	2.14E-07	lb/MMBtu
Hog Fuel	Perylene	6.58E-09	lb/MMBtu
Hog Fuel	alpha-Pinene	8.36E-06	lb/MMBtu
Hog Fuel	beta-Pinene	1.64E-03	lb/MMBtu
Hog Fuel	Phenanthrene	2.64E-06	lb/MMBtu
Hog Fuel	Phenol	1.79E-05	lb/MMBtu
Hog Fuel	Picene	2.46E-09	lb/MMBtu
Hog Fuel	Propionaldehyde	2.20E-04	lb/MMBtu
Hog Fuel	Pyrene	9.88E-07	lb/MMBtu
Hog Fuel	Styrene	4.69E-04	lb/MMBtu
Hog Fuel	Alpha-Terpineol	4.73E-06	lb/MMBtu
Hog Fuel	Tetrachlorobiphenyl	2.50E-09	lb/MMBtu
Hog Fuel	Tetrachloroethylene	2.46E-05	lb/MMBtu
Hog Fuel	Toluene	3.67E-06	lb/MMBtu
Hog Fuel	Trichlorobiphenyl	1.78E-09	lb/MMBtu
Hog Fuel	Trichloroethylene	1.99E-05	lb/MMBtu
Hog Fuel	2,4,6-Trichlorophenol	2.00E-07	lb/MMBtu

Table 23
Domtar Plymouth Pulp Mill
Lignin Modification Project
No. 2 Hog Fuel Boiler - Sum of VOC Compounds

Fuel	Pollutant	Emission Factor	UOM
Hog Fuel	Vinyl Chloride	1.84E-05	lb/MMBtu
Hog Fuel	Xylenes (mixed isomers)	5.22E-06	lb/MMBtu
Hog Fuel	**Sum of VOCs**	**1.23E-02**	**lb/MMBtu**
Natural Gas	Benzene	2.10E-03	lb/MMScf
Natural Gas	Dichlorobenzene	1.20E-03	lb/MMScf
Natural Gas	Fluoranthene	3.00E-06	lb/MMScf
Natural Gas	Fluorene	2.80E-06	lb/MMScf
Natural Gas	Formaldehyde	3.30E-01	lb/MMScf
Natural Gas	2-Methylnaphthalene	2.40E-05	lb/MMScf
Natural Gas	Naphthalene	6.10E-04	lb/MMScf
Natural Gas	n-Hexane	1.80E+00	lb/MMScf
Natural Gas	Phenanthrene	1.70E-05	lb/MMScf
Natural Gas	Pyrene	5.00E-06	lb/MMScf
Natural Gas	Toluene	3.40E-03	lb/MMScf
Natural Gas	**Sum of VOCs**	2.14E+00	**lb/MMScf**

Table 38
Domtar Plymouth Pulp Mill
Lignin Modification Project
No. 1 Hog Fuel Boiler - Tested Pollutants

Pollutant	Emission Factor		Total Emissions		
			BAE	CHA	PTE
	lb/MMBtu	Ref.	ton/yr	ton/yr	ton/yr
NOx	2.09E-01	2	359.02	359.02	115.24
CO	1.95E+00	6	3346.90	3346.90	1074.28
Filterable PM	5.77E-02	3	99.04	99.04	31.79
Condensable PM	3.48E-02	3	59.73	59.73	19.17
Total PM (Filterable + Condensable)	9.25E-02	3	158.77	158.77	50.96
PM10	7.53E-02	4	129.25	129.25	41.49
PM2.5[4]	7.53E-02	5	129.25	129.25	41.49
Sulfuric Acid	1.74E-04	7	0.30	0.30	0.10

Basis:

	Baseline Actual	Accommodated	Potential
Blended hog fuel combustion (dry ton/yr)	194,287	194,287	37,266
HFB1 Natural Gas Combustion (MMscf/yr)	185	185	455
Total firing rate (MMBtu/yr)[1]	3,432,962	3,432,962	1,101,903

Notes:

1) Fuel Heating Values:

Blended Hog Fuel	16,663,000	BTU/dry ton
Natural Gas	1,057	BTU/scf

2) Derived emission factors from the average of 2016-2017 CEMS data and 2016-2017 total heat input.

3) Filterable Particulate refers to the Method 5 catch, and is the average tested emission factor utilized in the 2017 inventory. Condensable Particulate refers to the Method 202 catch. The total particulate emission factor is the sum of the average condensable PM emission factor and the average filterable PM emission factor. [Note FPM emission factor updated due to correction in inventory.]

4) Only the most recent test data were used in determining the emission factor. 2001 Stack Test Data.

5) The PM-2.5 factor (based on one test) is larger than the PM-10 factor based on multiple tests. Therefore, the PM-2.5 factor was set equal to the PM-10 factor.

6) Only the most recent test data were used in determining the emission factor. 2016 Stack Test Data.

7) December 2019 Stack Test, Condition VI firing hog fuel and natural gas only. Assumes HFB2 factor is representative of either boiler.

Table 39
Domtar Plymouth Pulp Mill
Lignin Modification Project
No. 1 Hog Fuel Boiler - Published Emission Factors

Pollutant	Hog Fuel					Natural Gas					Total		
	Emission Factor		Emissions			Emission Factor		Emissions			Emissions		
			BAE	CHA	PTE			BAE	CHA	PTE	BAE	CHA	PTE
	lb/MMBtu	Ref	ton/yr	ton/yr	ton/yr	lb/MMscf	Ref	ton/yr	ton/yr	ton/yr	ton/yr	ton/yr	ton/yr
CO2e	--	4	331,357	331,357	105,780	--	4	11.81	11.81	29.05	331,368.37	331,368.37	105,809.54
CO2	1.90E+02	4	326,886	326,886	104,923	CEMS	4				326,885.78	326,885.78	104,922.95
CH4	1.59E-02	4	25.69	25.69	4.93	2.33E+00	4	0.22	0.22	0.53	25.91	25.91	5.46
N2O	7.94E-03	4	12.85	12.85	2.46	2.33E-01	4	0.02	0.02	0.05	12.87	12.87	2.52
SO2	3.18E-03	2	5.15	5.15	0.99	6.00E-01	6	0.06	0.06	0.14	5.20	5.20	1.12
VOC (speciated)	1.23E-02	5	19.96	19.96	3.83	2.14E+00	7	0.20	0.20	0.49	20.15	20.15	4.31
Hydrogen Fluoride	7.08E-05	3	0.11	0.11	0.02						0.11	0.11	0.02
Lead	1.97E-06	3	3.19E-03	3.19E-03	6.12E-04	5.00E-04	6	4.63E-05	4.63E-05	1.14E-04	3.24E-03	3.24E-03	7.25E-04

Basis:

	Baseline Actual	Accommodated	Potential
HFB1 Blended Hog Fuel (dry tons/yr)	194,287	194,287	37,266
HFB1 Blended Hog Fuel (MMBtu/yr)[1]	3,237,412	3,237,412	620,963
HFB1 Natural Gas Combustion (MMscf/yr)	185	185	455
Total firing rate (MMBtu/yr)[1]	3,432,962	3,432,962	1,101,903

Notes:

1) Fuel Heating Values:

Blended Hog Fuel 16,663,000 BTU/dry ton

Natural Gas 1,057 BTU/scf

2) Emission factor for sulfur dioxide is from Table 10.4 of NCASI TB 1020, median value. [Median value also located in Table 5.1 of NCASI TB1013]

3) NCASI Technical Bulletin 1050, Table 7.1 -Dry Cont and Table 7.3.

4) CO2 factors are from site specific CEMS data. CH4 and N2O are from 40 CFR Part 98, Table C-2, CO2e = CO2+ CH4*25 + N2O*298

5) Sum of VOC compounds from NCASI Technical Bulletin 1050, Table 7.1, 7.3, 7.5 and 7.6.

6) AP-42, Chapter 1.4, Table 1.4-2: Emission Factors for Criteria Pollutants and Greenhouse Gases from Natural Gas Combustion.

7) Sum of VOC compounds from NCASI Technical Bulletin 1050, Table 8.22 Summary of Non-Metal Air Toxic Emissions from Natural Gas Fired Boilers and NCASI TB1050 Table 8.23 -Equivalent to AP-42, Chapter 1.4, Table 1.4-3: Emission Factors for Speciated Organic Compounds from Natural Gas Combustion.

Attachment 2 – Proposed Permit Condition

1. 15A NCAC 02D .0530(u): USE OF PROJECTED ACTUAL EMISSIONS

All Lignin Recovery Process Sources
No. 1 Hog Fuel Boiler (ES-64-25-0290) [excluding non-lignin NCG combustion]
No. 2 Hog Fuel Boiler (ES-65-25-0310) [excluding non-lignin NCG combustion]
No. 2 Hog Fuel Conveying (FS-007)
Hogged Fuel Storage Pile at Boilers (FS-011)
No. 2 HF Ash Transport Steam Exhauster (ES-65-50.0160)
No. 2 HF Ash Silo (ES-65-50-0190)
No. 2 HF Scrubber Ash Silo (ES-65-60-0860)
No. 5 Recovery Boiler (ES-10-25-0110)
Salt Cake Mix Tank (ES-10-08-0010)
No. 5 Precipitator Mix Tank (ES-10-45-0450)
North & South Smelt Tanks (ES-14-05-0050, -0300)

Reporting [15A NCAC 02Q .0508 (f)]

a. The Permittee has used projected actual emissions to avoid applicability of prevention of significant deterioration requirements pursuant to application 5900069.19B for the Lignin Solids Removal Plant Reconfiguration Project, consisting of modifications to the Lignin Recovery Process Sources and which impacted sources specified above. In order to verify the assumptions used in the projected actual emissions calculations, the Permittee shall comply with the requirements in Section 2.2 G.2.b, below.

Monitoring/Recordkeeping/Reporting [15A NCAC 02D .0530(u) and 2Q .0308]

b. The Permittee shall perform the following:

i. Upon commencement of regular operation of the modified Lignin Recovery Process, the Permittee shall maintain records of annual CO, Lead, NO_X, PM, PM_{10}, $PM_{2.5}$, SO_2, H_2SO_4 mist, VOC, Fluorides, and CO_2e emissions in tons per year, on a calendar year basis related to the Lignin Solids Removal Plant Reconfiguration Project as listed above. The Permittee shall calculate these annual emissions for ten years following startup of regular operations of the modified Lignin Recovery Process.

ii. The Permittee shall submit a report to the director, postmarked on or before June 30th, after the end of each calendar year during which these records must be generated. The report shall contain the items listed in 40 CFR 51.166(r)(6)(v)(a) through (c).

iii. The Permittee shall make the information documented and maintained under this condition available to the Director or the general public pursuant to the requirements in 40 CFR 70.4(b)(3)(viii).

iv. The Permittee shall provide a comparison of the reported actual emissions (post-construction emissions) for each of the ten calendar years to the projected actual emissions (pre-construction projection) as included below:

Pollutant	Projected Actual Emissions* (tons per year)
CO	7,012
Pb	8.61E-02
NO_X	1,815
PM (filterable only)	457
PM_{10}	366
$PM_{2.5}$	297
SO_2	127
H_2SO_4 mist	10.1
VOC	195
F	0.22
CO_2e	2,142,738

* These projections are not enforceable limitations. If projected emissions are exceeded, consistent with 15A NCAC 02D .0530, the Permittee shall include, in its annual report, an explanation as to why the actual rates exceeded the projection.

Attachment 3 – BACT Tables

Table 2-1 - Summary of LSRP Project Changes

Existing				Post Modification		
Permit ID	**Emission Source Description[1]**	**Control Device ID**	**Control Device Description**	**Control Device ID**	**Control Device Description**	**Equipment Modifications**
ES-09-27.1000	40% Black Liquor Tank (Tank - Lignin Feed Liquor)	NA	NA	NA	NA	Replace tank to improve metallurgy due to corrosion and fit with an agitator to prevent solids buildup.
ES-09-27 .1100	40% Black Liquor Cooler (Cooler - 1 Feed Liquor)	ES-65-25-0310 or ES-64-25-0290 or ES-10-25-0110 or CD-65-60-TO (as backup)	HVLC collection system to No. 2 hog fuel boiler (primary) or No. 1 hog fuel boiler (secondary) or No. 5 recovery boiler or thermal oxidizer (as backup).	ES-09-27.3800	Two-Phase Packed-Bed Caustic Scrubber	
ES-09-27.1200	Filtrate 1 Storage Tank (Tank - 1 Lignin Filter Filtrate Storage)			ES-09-27.3800	Two-Phase Packed-Bed Caustic Scrubber	Fit with agitators to prevent solids buildup.
ES-09-27 .1400	Carbonator Tower (Carbonator - Feed Liquor)			ES-65-25-0310 or ES-64-25-0290 or ES-10-25-0110 or CD-64-22-2000 (as backup)	HVLC collection system to No. 2 hog fuel boiler (primary) or No. 1 hog fuel boiler (secondary) or No. 5 recovery boiler or thermal oxidizer (as backup).	
ES-09-27.1800	Agitated Conditioning Tank (Tank - Lignin Slurry Conditioning)			ES-09-27.3800	Two-Phase Packed-Bed Caustic Scrubber	Replace with a taller tank to achieve more the surge capacity and metallurgy will be improved due to corrosion. Fit with agitators to prevent solids buildup.
ES-09-27-2000	Agitated Buffer Tank (Tank - Lignin Slurry Buffer)			ES-09-27.3800	Two-Phase Packed-Bed Caustic Scrubber	Replace with a taller tank to achieve more the surge capacity and metallurgy will be improved due to corrosion. Fit with agitators to prevent solids buildup.
ES-09-27.2300	Cloth Wash Water Tank 1 (Tank - 1 Lignin Filter Cloth Wash)			ES-09-27.3800	Two-Phase Packed-Bed Caustic Scrubber	The Tank - 1 Lignin Filter Cloth Wash (2300) will be purged to one of the alkaline filtrate tanks via the existing #1 Lignin Filter Cloth Wash Recirculation Pump (2340) to prevent overflow. Fit with agitators to prevent solids buildup.
ES-09-27 .2400	Filtrate Tank 1 (Tank - 1 Lignin Filter Filtrate)			ES-09-27.3800	Two-Phase Packed-Bed Caustic Scrubber	Fit with agitators to prevent solids buildup.
ES-09-27-2500	Filtrate 1 Buffer Tank (Tank - 1 Lignin Filter Filtrate Buffer)			ES-09-27.3800	Two-Phase Packed-Bed Caustic Scrubber	Fit with agitators to prevent solids buildup.
ES-09-27.2610	Dewatered Lignin Conveyor 1 (Conveyor - #1 Lignin Filter Horizontal)			ES-09-27.3800	Two-Phase Packed-Bed Caustic Scrubber	
ES-09-27 .2620	Dewatered Lignin Conveyor 2 (Conveyor - #1 Lignin Filter Incline)			ES-09-27.3800	Two-Phase Packed-Bed Caustic Scrubber	
ES-09-27 .3200	Stage 2 Filtrate Tank 2 (Tank - 2 Lignin Filter Acidic Filtrate)			ES-09-27.3800	Two-Phase Packed-Bed Caustic Scrubber	The current Acidic Lignin Conditioning Tank (2800) will be repurposed as the new Tank - 2 Lignin Filter Acidic Filtrate (3200). LVHC loop seal will be routed to 3200.

Table 2-1 - Summary of LSRP Project Changes

Existing				Post Modification		
Permit ID	**Emission Source Description[1]**	**Control Device ID**	**Control Device Description**	**Control Device ID**	**Control Device Description**	**Equipment Modifications**
ES-09-27 .2100	Filter Press 1A (Filter - 1 Lignin)	Partially controlled by vacuum pull to HVLC system as noted in the permit.		ES-09-27.3800	Two-Phase Packed-Bed Caustic Scrubber	Add chambers to filter press to reach design capacity.
ES-09.2700 (09-27.2700)	Agitated Acidification Tank (Tank - Lignin Acidification)	ES-09-27.1400	Carbonator Tower	ES-09-27.1400, ES-65-25-0310 or ES-64-25-0290 or ES-10-25-0110 or CD-65-60-TO (as backup)	Carbonator Tower and HVLC collection system to No. 2 hog fuel boiler (primary) or No. 1 hog fuel boiler (secondary) or No. 5 recovery boiler or thermal oxidizer (as backup).	
ES-09 .2770 (09-27.2770)	Acidification Overflow/Foam Tank (Tank - Lignin Foam)					
ES-09.2800	Agitated Acid Conditioning Tank (Tank - Acidic Lignin Conditioning)			ES-09-27.3800	Two-Phase Packed-Bed Caustic Scrubber	The current Acidic Lignin Conditioning Tank (2800) will be repurposed as the new Tank - 2 Lignin Filter Acidic Filtrate (3200). A new tank will be built and serve as the new Acidic Lignin Conditioning Tank (2800) with improved metallurgy due to corrosion, increased surge capacity, and constant recirculation via a new dedicated pump for H2S stripping.
ES-09-27 .3000	Filter Press 2A (Filter - 2 Lignin Filter)	NA	NA	ES-09-27.3900	Dust Collection System including Wet Cyclone	Add chambers to filter press to reach design capacity. The dust collection system will prevent the majority of emissions from escaping the conveyor chute (IES-09-27.3400). Existing wall fans will evacuate any remaining emissions from the building.
ES-09-27.3100	Cloth Wash Water Tank 2 (Tank - 2 Lignin Filter Cloth Wash)	NA	NA	ES-09-27.3800	Two-Phase Packed-Bed Caustic Scrubber	The Tank - 2 Lignin Filter Cloth Wash (3100) experiences issues with solids buildup. To manage this a larger tank drain, agitator, and recirculating shear pump will be installed to grind up solids and suspend them in the tank.
IES-09-27.2900	Wash water tank (Tank - Acid Wash Water)	NA	NA	NA	NA	
IES-09-27-3700	Acid Sump Pit (Sump - Lignin Acid Area)	NA	NA	NA	NA	
IES-09-27.3400	LRP Lignin Conveyor No. 3 (Conveyor - #2 Lignin Filter Horizontal)	NA	NA	ES-09-27.3900	Dust Collection System including Wet Cyclone	Dust collector ID # 09-27-3900. Purge from dust collector going into process, therefore the dust collector does not exhaust directly to the atmosphere.
IES-09-27-3600	Alkaline Sump Pit (Sump - Lignin Liquor Area)	NA	NA	NA	NA	

1. SAP name in ( ) for reference

Table 5-2 - Summary of Proposed BACT

Permit ID	Emission Source Description[1]	Proposed BACT	BACT Limit TRS as Compounds	BACT Limit H2S	Monitoring
ES-09-27 .1100	40% Black Liquor Cooler (Cooler - 1 Feed Liquor)	Caustic Scrubber	11.6 lb/hr (24-hr Block Average)	5.4 lb/hr (24-hr Block Average)	Flow Rate and pH (24-hr Block Average)
ES-09-27.1200	Filtrate 1 Storage Tank (Tank - 1 Lignin Filter Filtrate Storage)				
ES-09-27.1800	Agitated Conditioning Tank (Tank - Lignin Slurry Conditioning)				
ES-09-27-2000	Agitated Buffer Tank (Tank - Lignin Slurry Buffer)				
ES-09-27.2300	Cloth Wash Water Tank 1 (Tank - 1 Lignin Filter Cloth Wash)				
ES-09-27 .2400	Filtrate Tank 1 (Tank - 1 Lignin Filter Filtrate)				
ES-09-27-2500	Filtrate 1 Buffer Tank (Tank - 1 Lignin Filter Filtrate Buffer)				
ES-09-27.2610	Dewatered Lignin Conveyor 1 (Conveyor - #1 Lignin Filter Horizontal)				
ES-09-27 .2620	Dewatered Lignin Conveyor 2 (Conveyor - #1 Lignin Filter Incline)				
ES-09-27 .3200	Stage 2 Filtrate Tank 2 (Tank - 2 Lignin Filter Acidic Filtrate)				
ES-09-27 .2100	Filter Press 1A (Filter - 1 Lignin)				
ES-09-27.3100	Cloth Wash Water Tank 2 (Tank - 2 Lignin Filter Cloth Wash)				
ES-09.2800	Agitated Acid Conditioning Tank (Tank - Acidic Lignin Conditioning)				
ES-09-27 .1400	Carbonator Tower (Carbonator - Feed Liquor)	Existing HVLC collection system to incineration	1.3 TPY	1.1 TPY	None - Capture and control the HVLC streams in the same manner as the current HVLC sources.
ES-09.2700 (09-27.2700)	Agitated Acidification Tank (Tank - Lignin Acidification)				
ES-09 .2770 (09-27.2770)	Acidification Overflow/Foam Tank (Tank - Lignin Foam)				
ES-09-27 .3000	Filter Press 2A (Filter - 2 Lignin Filter)	No additional controls [2]	2.6 TPY	2.0 TPY	Uncontrolled sources are insignificant. Annual emissions are reported with the air emissions inventory.
IES-09-27.3400	LRP Lignin Conveyor No. 3 (Conveyor - #2 Lignin Filter Horizontal)				
ES-09-27.1000	40% Black Liquor Tank (Tank - Lignin Feed Liquor)				
IES-09-27.2900	Wash water tank (Tank - Acid Wash Water)				
IES-09-27-3700	Acid Sump Pit (Sump - Lignin Acid Area)				
IES-09-27-3600	Alkaline Sump Pit (Sump - Lignin Liquor Area)				

1. SAP name in ( ) for reference

2. Note 0.5 TPY of uncontrolled H2S from the No. 2 Lignin Filter area is accounted for in the total exhaust from the scrubber stack.

APPENDIX D

Table 1
Domtar Plymouth Pulp Mill
Lignin Modification Project
TRS Emissions Summary

Potential Hours of Operation: 8,760

Uncontrolled LSRP Gasses Routed to Proposed Scrubber[1]						Controlled Emission Rate if Incinerated	
Compound	**VOC?**	**Molar Weight (lb/lb-mole)**	**Total Volumetric Flow (dscfm)**	**Uncontrolled Concentration (ppmvd)**	**Uncontrolled Potential Emissions (tpy)**	**Incineration Control Efficiency (%)**	**Controlled Potential Emissions Incineration (tpy)**
H_2S	No	34.1	12,536	1,604	467.3	98%	9.35
MeSH	Yes	48.1	12,536	153	62.9	98%	1.26
DMS	Yes	62.1	12,536	13.5	7.2	98%	0.14
DMDS	Yes	94.2	12,536	4.5	3.6	98%	0.07
Total TRS Compounds					541.0	98%	10.82
SO2 from TRS Combustion		64.0			0.00	0%	**954.0**

1. Flow rates and concentrations are provided by the vendor and represent worst case TRS content.

Emissions from #2 Lignin Filter Press Building Fugitives[2]					
Compound	**VOC?**	**Molar Weight (lb/lb-mole)**	**Total Volumetric Flow (dscfm)**	**Uncontrolled Concentration (ppmvd)**	**Uncontrolled Potential Emissions (tpy)**
Total TRS Compounds	---	---	---	---	1.9
H_2S from Building Fugitives	No	34.1	8,000	8	1.4
H_2S to Scrubber Stack	No	34.1	2850	8	0.5
Emissions from Fugitives: LSRP LVHC Drain Loop and No. 1 Filtrate Sump					
	VOC?	**Molar Weight**	**Uncontrolled Emission Rates[3] (lb/hr)**	**Potential Hours of Operation[1]:**	**Uncontrolled Emissions**
Total TRS Compounds	---	---	1.26E-01	4,380	0.28
H_2S	No	34.1	1.22E-01	4,380	0.27
Emissions from the Lignin Feed Liquor Tank (ES-09-27.1000) [4,5]					
Total TRS Compounds	---	---	2.04E-01	8,760	0.89
H_2S	No	34.1	4.89E-02	8,760	0.21
Total Uncontrolled H_2S					2.4
Total Uncontrolled TRS Compounds					3.1

1. Fugitives are assumed to be 50% of lignin run time. Fugitives from the LSRP LVHC Drain Loop and No. 1 Filtrate Sump
2. Flow rate and concentration are provided by the vendor and represent worst case TRS content.
3. Emission factors are the sum of the Drain Loop and Filtrate Sump emission rates from 2016 test data.
4. NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor

5. MMC from NCASI Technical Bulletin No. 849, August 2002, Table A-11, Unit Code SBLTY1 – Mill Y 50% Black Liq. Storage Tank Vent. The selected factor is most representative of the mill HBL tank emissions based on the site specific test data collected in 1999 on the south weak black liquor storage tank that showed MMC was ND.

TABLE 2
Domtar Plymouth Mill - Lignin Project
Total Capital and Annual Costs for Installation of a Caustic Scrubber for TRS/H_2S Control on the LSRP
Control of LSRP Sources Planned for the Proposed Scrubber

	Cost Factor / Equation		Component Cost	Cost Reference
Installation Cost of Caustic Scrubber			$4,068,491	[1]
TOTAL CAPITAL INVESTMENT			$4,068,491	Sum

Annual Cost	Cost Factor/ Equation	Unit Cost in 2018 dollars	Component Cost	
Direct Annual Costs, DC				
Operating Labor				
Operator	1/2 hr / shift	31.14 $/hr	$17,049	[2, 3, 4]
Supervisor	15% of operator		$2,557	[2]
Maintenance				
Labor	1/2 hr / shift	34.92 $/hr	$19,119	[2, 3, 4]
Material	100% of Lbr		$19,119	[2]
Utilities				
Electricity (Fan and Pumps)	78 hp	.1000 $/kW-hr	$50,626	[1, 4]
Cost for Caustic Use			$0	[1, 4]
Total DC			$108,469	
Indirect Annual Costs, IC				
Overhead	60% of Labor and Materials		$34,706	[2]
Administrative charges	2% TCI		$81,370	[2]
Property Taxes	1% TCI		$40,685	[2]
Insurance	1% TCI		$40,685	[2]
Capital Recovery Costs = CRF*TCI				
Capital Recovery (CR) = capital recovery factor (CRF)* total capital investment (TCI)				
Capital Recovery Factor = i (1+ i) ^ n / ((1+i)^ n-1) ; i= interest rate , n= years				
Capital Recovery Factor =	0.1095			
Capital Recovery = (CR) is 0.1095 *TCI (assuming a 20 yr life @ 9% interest)			$445,689	[5]
Total IC			$643,135	[2]
Total Annual Cost			**$751,604**	[2]

TABLE 2
Domtar Plymouth Mill - Lignin Project
Total Capital and Annual Costs for Installation of a Caustic Scrubber for TRS/H_2S Control on the LSRP
Control of LSRP Sources Planned for the Proposed Scrubber

Max TRS reduction is calculated as follows based on a control efficiency of		95%	Hydrogen sulfide	[6]
		75%	Methyl mercaptan	[6]

TRS Emission Sources to Control:

	H2S	MeSH	DMS and DMDS	
Total Uncontrolled Emissions	467	63	11	[6]
Pollutant Reduction (tpy) =	444	47	0	[6]
			491	
			TOTAL TRS Reduction	

Cost Effectiveness is calculated using the Annual Cost.
Cost Effectiveness ($/ton TRS/H2S removed) = Annual Cost ($/yr) / TRS reduction(tons/yr)

Cost Effectiveness: $/ton TRS removed =	**$1,530**
Cost Effectiveness: $/ton H2S removed =	**$1,693**

References:

[1] Scrubber quote provided from Valmet and NCG piping from NHWL Estimate. The cost includes equipment, installation, engineering, and NCG Piping cost. Scrubber fan is 50 hp and pumps are 7.5 and 20 HP. Cost for caustic is expected to be negligible cost when accounting for sulfur recovery to Mill.

[2] OAQPS Control Cost Manual, sixth edition, EPA 452-02-001, chapter 1, January 2002 (for Gas Absorber Systems).

[3] Assumed 8760 hours per year of operation

[4] Plymouth, DOMTAR Mill Cost and Shift Data (3 shifts/day)

[5] Interest rate (9%) from previous Domtar Projects and life expectancy (20 years) provided by Tony Criscitiello, DOMTAR (9-28-15 email)

[6] Vendor H2S and methyl mercaptan removal efficiencies. Uncontrolled emission rate provided by Valmet includes a 50% safety factor..

TABLE 3
Domtar Plymouth Mill - Lignin Project
Total Capital and Annual Costs for Installation of Thermal Oxidizer followed by a Scrubber for TRS/H_2S Control on the LSRP
Control of LSRP Sources Planned for the Proposed Scrubber

	Cost Factor / Equation	Component Cost	Cost Reference
Capital Cost of Thermal Oxidizer		$3,347,471	[1]
Capital Cost of Scrubber		$2,840,228	[8]
TOTAL CAPITAL INVESTMENT		$6,187,699	Sum

Annual Cost	Cost Factor/ Equation	Unit Cost in 2018 dollars	Component Cost	
Direct Annual Costs, DC				
Operating Labor				
Operator	1/2 hr / shift	31.14 $/hr	$34,098	[2, 3, 4]
Supervisor	15% of operator		$5,115	[2]
Maintenance				
Labor	1/2 hr / shift	34.92 $/hr	$38,237	[2, 3, 4]
Material	100% of Lbr		$38,237	[2]
Utilities				
Electricity (Fan)	56 hp	.1000 $/kW-hr	$36,646	[1, 4]
Natural Gas Cost (Fuel Usage)	23 MMBtu/hr	4.45 $/MMBtu	$896,613	[1, 4]
Electricity (Fan and Pumps)	78 hp	.1000 $/kW-hr	$50,626	[4, 8]
Cost for Caustic Use			$0	[4, 8]
Total DC			$1,099,573	
Indirect Annual Costs, IC				
Overhead	60% of Labor and Materials		$69,413	[2]
Administrative charges	2% TCI		$123,754	[2]
Property Taxes	1% TCI		$61,877	[2]
Insurance	1% TCI		$61,877	[2]
Capital Recovery Costs = CRF*TCI				
Capital Recovery (CR) = capital recovery factor (CRF)* total capital investment (TCI)				
Capital Recovery Factor = i (1+ i) ^ n / ((1+i)^ n-1) ; i= interest rate , n= years				
Capital Recovery Factor =	0.1095			
Capital Recovery = (CR) is 0.1095 *TCI (assuming a 20 yr life @ 9% interest)			$677,841	[2, 5]
Total IC			$994,761	[2]
Total Annual Cost			**$2,094,334**	[2]

TABLE 3
Domtar Plymouth Mill - Lignin Project
Total Capital and Annual Costs for Installation of Thermal Oxidizer followed by a Scrubber for TRS/H_2S Control on the LSRP
Control of LSRP Sources Planned for the Proposed Scrubber

Max TRS reduction from incineration is calculated as follows based on a control efficiency of	98%	Hydrogen sulfide and TRS	[6]
Max TRS reduction is calculated as follows based on a control efficiency of	95%	Hydrogen sulfide	[7]
	75%	Methyl mercaptan	[7]

TRS Emission Sources to Control:

	H2S	MeSH	DMS and DMDS	
Total Uncontrolled Emissions (tpy)	467	63	11	[7]
(1) Pollutant Reduction Incineration (tpy) =	458	62	11	
(2) Pollutant Reduction Scrubber (tpy) =	9	1	0.2	
(3) Total Pollutant Reduction (tpy) =	467	63	11	
			540	
			TOTAL TRS Reduction	

Cost Effectiveness is calculated using the Annual Cost.
Cost Effectiveness ($/ton TRS/H2S removed) = Annual Cost ($/yr) / TRS reduction(tons/yr)

Cost Effectiveness: $/ton TRS removed =	**$3,877**
Cost Effectiveness: $/ton H2S removed =	**$4,487**

References:

[1] TO quote provided from Lundberg for the optimization thermal oxidizer and NCG piping from NHWL Estimate. The cost includes equipment, installation, engineering, and NCG Piping cost. The capital cost of the thermal oxidizer was scaled down using a engineering cost scaling factor of 0.6 ; Capital Cost = Optimization TO Cost * (LSRP Design Flow/ Optimization Design Flow)^0.6. The burner and fan size were scaled down based on the reduction in volumetric flow.

[2] EPA OAQPS Air Pollution Control Cost Manual (7th edition), November 2017, Section 3.2, Chapter 2. Used typical life expectancy of 20 years. Scrubber life expectancy (20 years) provided by Tony Criscitiello, DOMTAR (9-28-15 email).

[3] Assumed 8760 hours per year of operation

[4] Plymouth, DOMTAR Mill Cost, Shift Data (3 shifts/day), 2x for maintenance and labor of two control devices

[5] Interest rate (9%) from previous Domtar Projects

[6] EPA CATC Fact sheet for Thermal Incinerators, https://www3.epa.gov/ttnchie1/mkb/documents/fthermal.pdf for typical removal efficiencies.

[7] Uncontrolled emission rate provided by Valmet includes a 50% safety factor. Vendor H2S and methyl mercaptan removal efficiencies by scrubber.

[8] Scrubber quote provided from Valmet. The cost includes equipment, installation, engineering, and excludes the NCG Piping and stack cost as this is already included with the TO estimate. Scrubber fan is 50 hp and pumps are 7.5 and 20 HP. The capital cost, pump size, and fan size were utilized directly from the project scrubber cost as we have assumed the TO exhaust will be quenched. Cost for caustic is expected to be negligible cost when accounting for sulfur recovery to Mill.

TABLE 4
Domtar Plymouth Mill - Lignin Project
Total Capital and Annual Costs for Installation of Regenerative Thermal Oxidizer followed by a Scrubber for TRS/H_2S Control on the LSRP
Control of LSRP Sources Planned for the Proposed Scrubber

	Cost Factor / Equation	Component Cost	Cost Reference
Capital Cost of Regenerative Thermal Oxidizer		$1,800,000	[1]
Capital Cost of RTO Foundation	8% Equipment Cost	$144,000	[2]
Capital Cost of Piping from NCG system		$1,108,263	[8]
Capital Cost of Scrubber		$2,840,228	[8]
TOTAL CAPITAL INVESTMENT		$5,892,491	Sum

Annual Cost	Cost Factor/ Equation	Unit Cost in 2018 dollars	Component Cost	
Direct Annual Costs, DC				
Operating Labor				
Operator	1/2 hr / shift	31.14 $/hr	$34,098	[2, 3, 4]
Supervisor	15% of operator		$5,115	[2]
Maintenance				
Labor	1/2 hr / shift	34.92 $/hr	$38,237	[2, 3, 4]
Material	100% of Lbr		$38,237	[2]
Utilities				
Electricity (Fan)	44 hp	.1000 $/kW-hr	$29,050	[1]
Natural Gas Cost (Fuel Usage)		4.45 $/MMBtu	$0	[1]
Electricity (Fan and Pumps)	78 hp	.1000 $/kW-hr	$50,626	[4, 8]
Cost for Caustic Use			$0	[4, 8]
Total DC			$195,363	
Indirect Annual Costs, IC				
Overhead	60% of Labor and Materials		$69,413	[2]
Administrative charges	2% TCI		$117,850	[2]
Property Taxes	1% TCI		$58,925	[2]
Insurance	1% TCI		$58,925	[2]
Capital Recovery Costs = CRF*TCI				
Capital Recovery (CR) = capital recovery factor (CRF)* total capital investment (TCI)				
Capital Recovery Factor = i (1+ i) ^ n / ((1+i)^ n-1) ; i= interest rate , n= years				
Capital Recovery Factor Scrubber (20 yr life)=		0.1095		[2, 5]
Capital Recovery Factor RTO (2 yr life)=		0.5685		[1]
Capital Recovery = (CRF) * TCI =			$1,471,562	[1, 2, 5]
Total IC			$1,776,674	[2]
Total Annual Cost			**$1,972,038**	[2]

TABLE 4
Domtar Plymouth Mill - Lignin Project
Total Capital and Annual Costs for Installation of Regenerative Thermal Oxidizer followed by a Scrubber for TRS/H_2S Control on the LSRP
Control of LSRP Sources Planned for the Proposed Scrubber

Max TRS reduction from incineration is calculated as follows based on a control efficiency of	98%	Hydrogen sulfide and TRS	[6]
Max TRS reduction is calculated as follows based on a control efficiency of	95%	Hydrogen sulfide	[7]
	75%	Methyl mercaptan	[7]

TRS Emission Sources to Control:

	H2S	MeSH	DMS and DMDS	
Total Uncontrolled Emissions (tpy)	467	63	11	[7]
(1) Pollutant Reduction Incineration (tpy) =	458	62	11	
(2) Pollutant Reduction Scrubber (tpy) =	9	1	0.2	
(3) Total Pollutant Reduction (tpy) =	467	63	11	
			540	
			TOTAL TRS Reduction	

Cost Effectiveness is calculated using the Annual Cost.
Cost Effectiveness ($/ton TRS/H2S removed) = Annual Cost ($/yr) / TRS reduction(tons/yr)

Cost Effectiveness: $/ton TRS removed =	**$3,650**
Cost Effectiveness: $/ton H2S removed =	**$4,225**

References:

[1] RTO quote provided by Durr Systems Inc. The cost includes equipment, installation, engineering, and training. The cost excludes the foundation and NCG piping. Durr did not provide a fan size and anticipates annual fuel cost will be minimal post startup. The quote assumes the RTO will be made of Hastelloy Steel due to the potential for Sulfuric Acid corrosion. When asked to provide an extended warranty on the materials of construction, the vendor would be willing to guarantee the integrity of this system for only two years. Accordingly, the RTO was amortized over 2 years.

[2] EPA OAQPS Air Pollution Control Cost Manual (7th edition), November 2017, Section 3.2, Chapter 2. Used typical life expectancy of 20 years. Scrubber life expectancy (20 years) provided by Tony Criscitiello, DOMTAR (9-28-15 email).
The pressure drop for the fan power was estimated for the RTO using 19 in w.c. from the cost manual pg. 2-50. Assumed the flow rate is similar to that entering the proposed scrubber (12,003 scfm).

[3] Assumed 8760 hours per year of operation

[4] Plymouth, DOMTAR Mill Cost, Shift Data (3 shifts/day), 2x for maintenance and labor of two control devices

[5] Interest rate (9%) from previous Domtar Projects

[6] EPA CATC Fact sheet for Thermal Incinerators, https://www3.epa.gov/ttnchie1/mkb/documents/fthermal.pdf for typical removal efficiencies.

[7] Uncontrolled emission rate provided by Valmet includes a 50% safety factor. Vendor H2S and methyl mercaptan removal efficiencies by scrubber.

[8] Scrubber quote provided from Valmet. The cost includes equipment, installation, engineering, and excludes the stack cost as this is already included with the RTO estimate. The NCG piping cost from NHWL was added as this was not included in the RTO cost estimate. Scrubber fan is 50 hp and pumps are 7.5 and 20 HP. The capital cost, pump size, and fan size were utilized directly from the project scrubber cost as we have assumed the RTO exhaust will be quenched. Cost for caustic is expected to be negligible cost when accounting for sulfur recovery to Mill.

TABLE 5
Domtar Plymouth Mill - Lignin Project
Total Capital and Annual Costs for Incineration in the Existing Recovery Furnace for TRS/H_2S Control from the LSRP
Control of LSRP Sources Planned for the Proposed Scrubber

	Cost Factor / Equation	Component Cost	Cost Reference
Cost for Piping LSRP gases to the Existing Recovery Boiler		$5,791,453	[1]
Modifications to the Boiler			
Upgrades to HVLC Collection System (enclosures/capture and delivery system)			
TOTAL CAPITAL INVESTMENT		$5,791,453	Sum

Annual Cost	Cost Factor/ Equation	Unit Cost in 2018 dollars	Component Cost	
Direct Annual Costs, DC				
Operating Labor				
Operator	1/2 hr / shift	31.14 $/hr	$17,049	[2, 3, 4]
Supervisor	15% of operator		$2,557	[2]
Maintenance				
Labor	1/2 hr / shift	34.92 $/hr	$19,119	[2, 3, 4]
Material	100% of Lbr		$19,119	[2]
Utilities				
Steam (low pressure)	1,300 lb/hr	6.46 $/1000 lb	$73,566	[1, 4]
Electricity (Fan)	300 hp	.1000 $/kW-hr	$195,970	[1, 4]
Total DC			$327,380	
Indirect Annual Costs, IC				
Overhead	60% of Labor and Materials		$34,706	[2]
Administrative charges	2% TCI		$115,829	[2]
Property Taxes	1% TCI		$57,915	[2]
Insurance	1% TCI		$57,915	[2]
Capital Recovery Costs = CRF*TCI				
Capital Recovery (CR) = capital recovery factor (CRF)* total capital investment (TCI)				
Capital Recovery Factor = i (1+ i) ^ n / ((1+i)^ n-1) ; i= interest rate , n= years				
Capital Recovery Factor =	0.1095			
Capital Recovery = (CR) is 0.1095 *TCI (assuming a 20 yr life @ 9% interest)			$634,433	[1]
Total IC			$900,798	[2]
Total Annual Cost			**$1,228,178**	[2]

Max TRS reduction is calculated as follows based on a control efficiency of 98% TRS [5]

TRS Emission Sources to Control:

	Total TRS	H2S	
Total Uncontrolled Emissions	541	467	[6]
Emissions Reduction (tpy) =	530	458	

Cost Effectiveness is calculated using the Annual Cost.
Cost Effectiveness ($/ton TRS/H2S removed) = Annual Cost ($/yr) / TRS reduction(tons/yr)

Cost Effectiveness: $/ton TRS removed =	**$2,317**
Cost Effectiveness: $/ton H2S removed =	**$2,682**

References:

[1] 2015 Vendor quote from Robins & Morton was provided by Doug Wall on 12/21/18, scaled up by 3% annually to represent 2018 costs.
[2] EPA OAQPS Air Pollution Control Cost Manual (7th edition), November 2017, Section 3.2, Chapter 2
[3] Assumed 8760 hours per year of operation
[4] Plymouth, DOMTAR Mill Cost and Shift Data (3 shifts/day)
[5] Interest rate (9%) from previous Domtar Projects and life expectancy (20 years) provided by Tony Criscitiello, DOMTAR (9-28-15 email)
[6] Uncontrolled emission rate provided by Valmet includes a 50% safety factor. There will be additional SO2 generated, but it will be minimized of the sulfur in the fume generated above the smelt bed (Note: expected that during normal operation, SO2 removal in a recovery boiler is 95+% per Arun Someshwar, NCASI).

TABLE 6
Summary of BACT: Economic Impact Analysis for LSRP
Domtar Plymouth Mill - Lignin Project

Control Alternatives	TRS Emissions Reduction (ton/yr)	H_2S Emissions Reduction (ton/yr)	Economic Impacts					
			Total Capital Cost ($)	Annual Cost ($/yr)	TRS Cost Effectiveness ($/ton)	H_2S Cost Effectiveness ($/ton)	Incremental TRS Cost Effectiveness ($/ton)[1]	Incremental H_2S Cost Effectiveness ($/ton)[1]
Caustic Scrubber	491	444	$4,068,491	$751,604	$1,530	$1,693	N/A	N/A
TO + Caustic Scrubber	540	467	$6,187,699	$2,094,334	$3,877	$4,487	$27,340	$58,644
RTO + Scrubber	540	467	$5,892,491	$1,972,038	$3,650	$4,225	$24,850	$53,303
Incineration in Recovery Furnace	530	458	$5,791,453	$1,228,178	$2,317	$2,682	$12,197	$33,997

1. Incremental cost effectiveness of selecting the listed control scenario vs. the caustic scrubber control scenario.

TABLE 7
Economic Impact Analysis for the Other LSRP Sources
Domtar Plymouth Mill - Lignin Project

Control Alternatives	TRS Emissions Reduction (ton/yr)	H_2S Emissions Reduction (ton/yr)	Economic Impacts			
			Total Capital Cost ($)[2]	Annual Cost ($/yr)[3]	TRS Cost Effectiveness ($/ton)	H_2S Cost Effectiveness ($/ton)
Incineration in Recovery Furnace	3.00	2.33	$879,550	$96,352	$32,102	$41,429
Caustic Scrubber	2.91	2.25	$879,550	$96,352	$33,115	$42,737
TO + Caustic Scrubber	3.06	2.37	$879,550	$96,352	$31,491	$40,641
RTO + Scrubber	3.06	2.37	$879,550	$96,352	$31,491	$40,641

1. Additional Cost to control the No. 2 Filter Press Area includes press enclosure, fan, ductwork and installtion per SEI Quote May 12, 2017. Cost of electrical equipment, piping, engineering, and installation of piping and electrical provided by Domtar 12/13/2018.
2. Capital Recovery = (CR) is 0.1095 *TCI (assuming a 20 yr life @ 9% interest)

TABLE 8
Summary of BACT: Environmental and Energy Impact Analysis
Domtar Plymouth Mill - Lignin Project

Control Alternatives	Pollutant Impacts				Adverse Impacts From Other Air Pollutants?[3] (Yes/No)	Additional SO_2 Generated (ton/yr)[4]	Additional NOx Generated (ton/yr)[5]	Additional CO_2 Generated (ton/yr)[6]	Hazardous Waste Impacts? (Yes/No)	Energy Impacts	
	TRS		H_2S								
	Emission Reduction (ton/yr)[1]	Cost Effectiveness ($/ton)[2]	Emission Reduction (ton/yr)[1]	Cost Effectiveness ($/ton)[2]						Electrical (kW*hr/yr)	Fuel (MM Btu/yr)
Incineration in Recovery Furnace	530	$2,317	458	$2,682	Yes	48	0	0	No	1,960,488	0
Caustic Scrubber	491	$1,530	444	$1,693	No	0.0	0	0	No	506,459	0
TO + Caustic Scrubber	540	$3,877	467	$4,487	Yes	48	5	11760	No	873,066	201,486
RTO + Scrubber	540	$3,650	467	$4,225	Yes	48	< 5	< 11760	No	506,459	minimal

Notes:
1. Emission reductions based on maximum uncontrolled emission rates and control efficiencies for each control option.
2. Cost effectiveness based on emission reductions shown in this table divided by annual costs presented in the cost analysis for each control option.
3. Determination of whether adverse impacts are caused by control alternative evaluated. "Yes" response indicates that criteria or hazardous air pollutants are emitted.
4. Assumes 95% Control of SO_2 by Scrubbing or Recovery Boiler
5. NOx emissions estimated using US EPA AP-42, Fifth Edition, Volume 1, Chapter 1, Table1.4-1 for Low NOx Burners.
6. 40 CFR Part 98, Subpart C, Table C-1, Default Natural Gas CO2 Emission Factor

Attachment 4 – Toxics Modeling Tables

Table E-1
Buildings/Structures
Domtar Paper Company
Plymouth Mill

Description	Tier	Height (m)		Description	Tier	Height (m)
filplant	1	2.44		N00006	1	12.8
filplant	2	6.10		E00044	1	6.71
filplant	3	9.14		E00045	1	6.71
Shedarea	1	17.07		E00046	1	6.71
Shedarea	2	21.64		E00047	1	6.71
Nor1&2	1	10.67		E00048	1	6.71
secfiber	1	12.19		E00049	1	6.71
RilTur	1	19.81		E00051	1	2.5
RilBoil	1	33.53		E00052	1	2.5
6&7fiber	1	30.48		5WLCTNK	1	13.72
6&7fiber	2	48.77		E00039	1	15.24
nor-fib	1	30.48		E00040	1	15.24
6&7ODELI	1	9.08		F00014	1	15.24
6BLEACH1	1	22.90		F00015	1	12.19
NC4&5B	1	10.67		C00054	1	13.41
NC4&5B	2	15.50		C00035	1	18.29
NC4&5B	3	15.50		C00039	1	6.10
NC4&5B	4	17.48		C00053	1	16.46
NC4&5B	5	21.80		C00006	1	15.24
WAREHOUS	1	10.67		C00004	1	15.24
1&2pap	1	12.80		C00003	1	15.24
eas1&2pa	1	10.67		C00001	1	15.24
18	1	18.90		A00001	1	15.54
maint.	1	7.62		S30BLST	1	15.24
(8-2hfb)	1	35.05		RBFuel	1	17.07
53b	1	23.77		A00004	1	16.46
53a	1	18.29		A00005	1	16.46
53c	1	18.29		A00006	1	12.8
scrubhi	1	27.40		A00007	1	15.54
1hfb	1	28.96		P00014	1	7.62
1hfb	2	35.05		SLfeedTk	1	18.59
hfturb	1	23.77		slholdtk	1	6.1
64	1	57.91		TankP27G	1	15.24
64	2	65.53		TankP27F	1	7.62
65	1	27.43		TankP27E	1	7.62
66	1	27.43		TankP27D	1	10.67
67	1	21.95		TankP23D	1	7.62
68	1	21.95		TankP27H	1	7.62
69	1	21.95		TankP23E	1	7.62
70	1	21.95		TankP23G	1	7.62
KILNSB	1	9.75		TankP23F	1	7.62
Sludge1	1	13.72		NorthPCC	1	9.14
Sludge2	1	7.62		SouthPCC	1	9.14
R10	1	26.82		RecycFib	1	9.14
NC3MB	1	24.38		#7Filt	1	9.14
PowerOff	1	13.72		No1BCST	1	9.75
RileyPre	1	27.43		No2BCST	1	9.75
PandV	1	7.32		No5Clo2	1	7.42
FiberOPS	1	16.76		EastNC3	1	19.81
Carpentr	1	10.67		WestNC3	1	19.81
COOLTWR	1	10.67		NC2CWWT	1	8.53
LRPPRSBD	1	16.92		AlumTank	1	6.10
LRPPRSBY	1	9.57		N07HD	1	12.19
J00027	1	21.55		NC2Surge	1	9.14
J00026	1	21.55		TankR18	1	15.24
J00025	1	21.95		TankR19	1	15.24
K00008	1	17.37		TankW03	1	5.49
K00009	1	17.37		R40Tank	1	13.72
K00010	1	3.81		R41Tank	1	13.72
K00035	1	32		R71Tank	1	13.72
K00036	1	32		R43Tank	1	13.72
J00028	1	12.67		R42Tank	1	13.72
J00029	1	12.67		No5Soap	1	12.19
J00030	1	12.67		LiqSep	1	6.10
J00022	1	23.62		5GLCTNK	1	13.72
J00020	1	23.62		09272770	1	3.74
J00021	1	23.62		09272500	1	4.93
P00004	1	27.74		09271720	1	12.10
P00008	1	52.73		09271200	1	8.69
P00009	1	47.19		09271710	1	12.10
P00013	1	22.56		09271000	1	10.10
I00019	1	19.54		09272800	1	8.64
N00005	1	12.8		SCRUBTK	1	14.94

Table E-2
Source Parameters
Domtar Paper Company
Plymouth Mill

Point									
Source ID	**Source Description**	**Subject to MACT?**	**UTM Easting**	**UTM Northing**	**Base Elevation**	**Stack Height**	**Temperature**	**Exit Velocity**	**Stack Diameter**
			(m)	**(m)**	**(m)**	**(m)**	**(K)**	**(m/s)**	**(m)**
F09	No 6 1st stage o2 surge tank vent	y	339138.26	3970086.75	2.01	13.72	361.08	0.01	0.15
F11	White Liquor surge tank		339190.31	3970221.53	2.13	17.07	299.97	0.01	0.15
F12	2nd stage o2 blow tube vent	y	339142.15	3970101.77	2.01	14.02	363.86	0.01	0.25
F13	2a/2b filtrate tank vent	y	339165.79	3970086.75	1.96	76.50	349.97	0.01	0.26
F14	No. 6 2nd stage washer tower vent	y	339156.06	3970078.96	1.99	52.12	355.52	0.01	0.38
F15	2c washer tank		339157.63	3970238.02	1.99	45.72	299.97	12.92	0.46
F16	No. 6 Bleach plant white liquor scrubber		339160.69	3970251.93	1.96	45.72	319.41	18.29	0.46
F17	No. 28 HD Tank		339190.26	3970261.57	2.07	24.38	305.52	0.01	1.52
F18	No. 29 HD Tank		339176.58	3970264.18	1.95	24.38	305.52	0.01	1.52
F19	No. 30 HD Tank		339163.27	3970268.16	1.83	24.38	305.52	0.01	1.52
F23	1st stage o2 surge tank vent	y	339126.57	3970093.15	1.99	15.24	361.08	0.01	0.15
F24	3rd stage feed tank	y	339137.70	3970139.88	2.11	45.72	344.41	0.03	1.44
F25	1st stage o2 blow tube	y	339129.63	3970105.67	1.98	21.34	363.86	0.01	0.30
F26	1a/1b filtrate tank	y	339144.10	3970108.72	2.01	10.36	355.52	0.01	0.30
F27	1st stage washer tower vent	y	339133.25	3970124.02	1.98	52.12	355.52	0.01	0.46
F30	No. 7 bleach plant scrubber fan		339152.72	3970157.13	2.14	49.07	319.41	14.94	0.61
F34	Chloride dioxide scrubber		339210.52	3970287.60	1.81	28.96	319.41	18.59	0.24
F35	No. 32 HD Pulp Tank		339102.65	3970105.39	2.13	32.00	305.52	0.01	0.61
F41	#6 BPDigester sand separator dumpster		339138.53	3970034.72	2.10	3.05	322.19	0.01	0.76
F42	#7 BPDigester sand separator dumpster		339090.42	3970043.19	2.00	3.05	322.19	0.01	0.76
F60	No. 5 hot water tank		339200.05	3970211.24	2.16	6.10	366.63	0.01	0.30
F61	nitric acid storage tank		339087.79	3969960.36	1.83	3.96	293.30	0.01	0.10
PO01A	No. 1 Hog Fuel Boiler	y	339672.35	3970089.24	2.74	76.20	468.30	21.91	5.49
PO01C	No. 5 Recovery Boiler		339672.35	3970089.24	2.74	76.20	468.71	19.27	4.80
PO13A	No. 2 Hog Fuel Boiler	y	339732.17	3970021.69	2.46	76.20	494.26	34.53	2.74
P09A	No.21 LD Stock Tank		339316.81	3970080.70	2.13	12.19	293.30	0.01	7.32
P09B	No. 5 HD Stock Tank		339408.75	3970113.27	2.14	15.24	293.30	0.01	7.62
P09C	No. 6 HD Stock Tank		339406.80	3970103.53	2.11	12.19	293.30	0.01	7.62
P09D	No. 7 HD Stock Tank		339404.30	3970093.52	2.04	12.19	293.30	0.01	9.14
P09E	No. 16 HD Stock Tank		339296.09	3970097.13	2.17	15.24	293.30	0.01	9.14
P09F	No. 22 LD Stock Tank		339314.73	3970071.82	2.13	12.19	293.30	0.01	7.32
P27A	No. 25 HD Stock Tank		339127.02	3970226.40	2.07	15.24	293.30	0.01	0.61
P27B	No. 26 HD Stock Tank		339132.80	3970250.13	1.97	15.24	293.30	0.01	0.61
P27C	No. 27 HD Stock Tank		339137.77	3970268.03	1.87	15.24	293.30	0.01	0.61
P27D	Mill Broke Tank		339066.58	3970266.31	2.48	12.19	293.30	0.01	0.61
P27E	NC5 Broke Tank		339082.13	3970264.19	2.43	9.14	293.30	0.01	0.61

Table E-2
Source Parameters
Domtar Paper Company
Plymouth Mill

Point									
Source ID	Source Description	Subject to MACT?	UTM Easting	UTM Northing	Base Elevation	Stack Height	Temperature	Exit Velocity	Stack Diameter
			(m)	(m)	(m)	(m)	(K)	(m/s)	(m)
P27F	NC5 Hardwood LF Stock Tank		339095.06	3970260.84	2.44	8.53	293.30	0.01	0.61
P27G	NC5 Pine LD Stock Tank		339107.87	3970259.09	2.28	15.24	293.30	0.01	0.61
P27H	NC4/5 Sawdust LD Stock Tank		339094.81	3970204.38	2.36	8.53	293.30	0.01	0.61
R01A	No. 5 Lime Kiln Scrubber		339505.08	3969793.77	2.53	64.92	338.86	8.87	1.71
R03	North Smelt Tank		339624.51	3970136.61	2.87	69.34	352.74	7.89	1.68
R04	South Smelt Tank		339621.17	3970115.47	2.88	69.34	352.74	7.89	1.68
R05	No. 5 Precipitator		339659.84	3970117.14	2.80	24.38	355.52	3.96	0.15
R07	Hydrosulfide Storage Tank		339482.99	3969873.73	3.87	24.38	305.52	0.01	0.10
R09	Dregs Filter Hood Exhaust Fan		339499.61	3969968.71	3.08	3.66	306.08	0.01	0.30
R10	Dregs Filtrate Silencer Tank		339499.61	3969968.71	3.08	6.10	306.08	0.01	0.20
R12	Dregs Dumpster		339499.61	3969968.71	3.08	3.05	293.30	0.01	0.61
R13	Dregs Tank		339499.61	3969968.71	3.08	5.18	306.08	0.01	0.15
NO5GLC	No. 5 Green Liquor Clarifier		339465.03	3969929.47	2.98	13.92	355.52	0.01	0.20
R15	Lime Mud Storage Tank		339481.47	3969840.16	3.09	12.28	319.41	0.01	0.20
NO5WLC	No. 5 White Liquor Clarifier		339510.66	3969955.30	2.98	13.92	355.52	0.01	0.20
R17	No. 4 White Liquor Clarifier		339498.70	3969905.79	3.54	15.33	355.52	0.01	0.20
R22	Synthetic Liquor Mix Tank		339509.20	3969916.12	3.28	6.10	333.30	0.01	0.15
R24	East 18% Liquor Tank Vent		339510.24	3970217.38	2.30	17.07	311.08	0.01	0.30
R25	18% Liquor Mix Tank		339479.09	3970224.89	2.12	15.24	336.08	0.01	0.21
R26	West 18% Liquor Tank		339497.73	3970220.44	2.30	17.07	343.30	0.01	0.30
R27	North 48% Black Liquor Storage		339766.65	3970080.78	2.02	15.54	368.86	2.59	0.30
R28	South 48% Black Liquor Storage		339760.81	3970059.36	2.08	15.54	354.41	2.59	0.30
R29	East 65% Liquor Storage		339647.60	3970095.45	2.81	20.57	361.63	0.82	0.24
R30	West 65% Liquor Storage		339638.14	3970100.73	2.87	11.58	367.19	0.01	0.24
R31	East Emergency Save-all tank		339849.55	3970049.34	1.87	15.54	303.30	0.01	0.24
R32	West Emergency Save-all tank		339807.54	3970057.97	2.12	15.54	306.63	0.01	0.24
R33	Save all tank		339555.03	3970208.20	2.17	15.24	329.97	0.01	0.25
R34	No. 6 Evaporator Soap Skim Tank		339545.85	3970207.37	2.28	9.75	314.41	0.01	0.15
R36	E&W Liquor Heaters (A&B)		339517.20	3970178.99	2.07	0.15	361.08	0.01	0.30
R37	No. 7 Evap. Soap Skimmer Tank Standpipe		339545.29	3970166.20	1.99	6.40	317.74	0.01	0.25
R38	No. 7 Evap Boilout Tank		339572.83	3970172.87	2.02	16.76	301.63	0.01	0.24
R39	Soap Collection Tank		339772.49	3970067.98	2.07	7.62	372.19	0.01	0.18
R40	No. 1 Soap Storage Tank		339472.41	3970199.02	2.17	13.72	302.19	0.34	0.30
R41	No. 2 Soap Storage Tank		339481.32	3970199.58	2.14	14.33	302.19	0.15	0.46
R42	No. 3 Soap Storage Tank		339484.19	3970192.60	2.20	14.33	302.19	0.15	0.46
R43	No. 4 Soap Storage Tank		339479.65	3970194.29	2.16	14.33	302.19	0.15	0.46

Table E-2
Source Parameters
Domtar Paper Company
Plymouth Mill

Point									
Source ID	**Source Description**	**Subject to MACT?**	**UTM Easting**	**UTM Northing**	**Base Elevation**	**Stack Height**	**Temperature**	**Exit Velocity**	**Stack Diameter**
			(m)	**(m)**	**(m)**	**(m)**	**(K)**	**(m/s)**	**(m)**
R44	Diverter Tank		339592.94	3970134.91	2.55	9.75	377.74	0.01	0.24
R45	Weak Wash Storage Tank		339460.00	3970089.00	2.19	15.24	372.19	0.01	0.15
R46	Lime Mud Mix Tank		339493.86	3969919.66	3.40	3.51	333.30	0.01	0.15
R47	No. 2 Lime Mud Wash Tank		339444.08	3970083.43	2.02	9.30	322.19	0.01	0.08
R49	No. 3 Lime Mud Wash Tank		339489.10	3969859.34	3.86	15.33	322.19	0.01	0.20
R50	East and West Lime Mud Filter		339499.00	3969848.00	2.71	15.24	327.74	0.01	0.76
R53	East Lime Slaker and Caust. Scrubber		339536.73	3969936.59	3.04	6.10	313.30	0.55	0.49
R58	West Lime Slaker and Caust. Scrubber		339524.75	3969939.31	3.03	6.10	323.30	1.70	0.49
R65	Lime Mud Filter Vacuum System #1		339483.41	3969791.01	2.71	12.19	304.41	0.01	0.46
R66	Lime Mud Filter Vacuum System #2		339483.41	3969791.01	2.71	12.19	304.41	0.01	0.46
R70	Slaker Scrubber Water Standpipe		339497.70	3969780.42	1.93	4.88	330.52	0.01	0.15
R71	Combined Condenstate Tank		339490.95	3970194.46	2.28	12.00	344.41	3.57	0.15
R72	NE Saveall Tank		339910.24	3970064.36	1.29	15.54	306.08	0.01	0.30
R76	Scrubber Water Clarifier		339511.59	3969801.59	2.20	6.40	338.86	0.01	0.20
SWBLTANK	South Weak Black Liquor Tank		339510.52	3970164.81	2.06	18.90	366.00	0.01	0.25
6N7SPLTK	No. 6&7 Fiberline Spill Collection Tank		339142.49	3970014.90	2.10	8.23	355.00	0.01	0.10
FPDE	Fine Paper Diesel Fire Pump Engine	y	338634.68	3970281.35	1.90	2.13	727.60	18.62	0.13
LKDE	No. 5 Lime Kiln Diesel Backup Engine	y	339505.28	3969860.46	3.64	9.14	727.60	18.62	0.10
WNCEE	Warren Neck Creek, East Diesel Fire Pump Engine	y	338253.48	3970737.12	0.25	2.74	727.60	18.62	0.13
WNCWE	Warren Neck Creek, West Diesel Fire Pump Engine	y	338253.48	3970737.12	0.26	2.74	727.60	18.62	0.13
RUNEA	Runoff Collection Sewer Lift Station Diesel Backup Engine A		338707.75	3970499.95	1.57	3.05	727.60	0.01	0.10
SEWEA	Fiber Line Sewer Lift Station Diesel Backup Engine A		339122.87	3969847.98	1.87	3.05	727.60	0.01	0.10
6FEEDTNK	No. 6 BP 6th Stage Feed Tank		339136.03	3970133.76	2.06	21.34	363.71	0.01	0.30
6BLOWTBE	No. 6 BP 6th Stage Blow Tube (standpipe)		339147.99	3970130.14	2.07	34.44	363.71	10.35	0.08
6EXHAUST	No. 6 BP 6th Stage Exhaust Blower		339140.38	3970126.25	2.03	9.14	338.71	3.18	0.41
LRPSCWT	Cloth Wash Water Tank 2		339454.00	3970164.00	2.25	3.05	298.15	0.01	0.20
LRP40%	Tank - Lignin Feed Liquor		339472.00	3970167.00	2.17	6.10	378.15	0.01	0.20
LRPPRS1A	LRP Press Building Stack A		339444.00	3970163.00	2.16	19.81	0.00	18.69	0.46
LRPPRS1B	LRP Press Building Stack B		339443.00	3970160.00	2.16	19.81	0.00	18.69	0.46
EOP	EOP		339454.24	3970088.11	2.25	28.96	341.48	0.01	0.36
PEROX	Peroxide		339453.51	3970085.31	2.24	48.77	313.15	0.01	0.36
5SOAP	No 5 Soap Storage Tank		339461.54	3970124.00	2.24	6.10	0.00	0.01	0.25
LIQSEP	New Liquor Sep Tank		339458.23	3970103.25	2.26	6.10	0.00	0.01	0.25
LRPSSUMP	LRPS Fugitives (LVHC Drain Loop and No. 1 Filtrate Sump)		339457.00	3970166.00	2.16	0.91	0.00	0.01	0.10
NC1_2_A	NC Paper Machine 2		339374.93	3970150.78	2.13	12.80	314.00	0.01	1.00
NC1_2_B	NC Paper Machine 2		339367.02	3970152.31	2.13	12.80	314.00	0.01	1.00

Table E-2
Source Parameters
Domtar Paper Company
Plymouth Mill

Point									
Source ID	Source Description	Subject to MACT?	UTM Easting	UTM Northing	Base Elevation	Stack Height	Temperature	Exit Velocity	Stack Diameter
			(m)	(m)	(m)	(m)	(K)	(m/s)	(m)
NC1_2_C	NC Paper Machine 2		339358.61	3970154.32	2.13	12.80	314.00	0.01	1.00
NC1_2_D	NC Paper Machine 2		339346.94	3970155.90	2.13	12.80	314.00	0.01	1.00
NC1_2_E	NC Paper Machine 2		339340.03	3970157.58	2.13	12.80	314.00	0.01	1.00
NC1_2_F	NC Paper Machine 2		339333.34	3970158.82	2.13	12.80	314.00	0.01	1.00
NC1_2_G	NC Paper Machine 2		339326.98	3970160.45	2.13	12.80	314.00	0.01	1.00
NC1_2_H	NC Paper Machine 2		339320.15	3970161.71	2.13	12.80	314.00	0.01	1.00
NC1_2_I	NC Paper Machine 2		339313.41	3970163.65	2.13	12.80	314.00	0.01	1.00
NC1_2_J	NC Paper Machine 2		339306.47	3970165.06	2.13	12.80	314.00	0.01	1.00
NC1_2_K	NC Paper Machine 2		339300.25	3970166.67	2.13	12.80	314.00	0.01	1.00
NC1_2_L	NC Paper Machine 2		339292.77	3970168.28	2.13	12.80	314.00	0.01	1.00
NC1_2_M	NC Paper Machine 2		339321.82	3970148.15	2.13	12.80	314.00	0.01	1.00
NC5_1	PL44-92.0200 NO.2 PULP STORAGE AREAROOF FAN		339034.96	3970185.80	2.48	16.11	313.70	8.60	0.91
NC5_2	PL44-92.0220 NO.1 PULP STORAGE AREAROOF FAN		339064.75	3970178.69	2.48	16.11	313.70	8.60	0.91
NC5_3	PL44-92.0280 NO.4 PULP STORAGE AREAROOF FAN		339039.82	3970206.18	2.48	16.11	313.70	8.60	0.91
NC5_4	PL44-92.0340 NO.3 PULP STORAGE AREAROOF FAN		339069.62	3970199.07	2.48	16.11	313.70	8.60	0.91
NC5_5	44-92-1720 PULP STORAGE AREAWALL EXHAUST FAN		339073.73	3970168.61	2.48	5.29	313.70	12.80	1.37
NC5_6	44-92-2600 SOUTH BLDG ADDITION ROOF EXHAUST FAN EAST		338957.72	3970222.89	2.48	18.01	313.70	11.40	1.63
NC5_7	44-92-2620 SOUTH BLDG ADDITION ROOF EXHAUST FAN WEST		338936.57	3970227.94	2.48	18.01	313.70	11.40	1.63
NC5_8	44-92-2640 HYDRAULIC ROOM EXHAUST FAN		338940.27	3970214.94	2.48	5.29	313.70	13.20	1.07
NC5_9	NC5 VACUUM EXHAUST STACK		339039.70	3970264.35	2.48	23.73	322.00	45.10	1.22
NC5_10	46-40.8510 HOOD EXHAUST FAN #1		339015.01	3970263.14	2.48	24.64	349.80	23.00	1.52
NC5_11	46-40.8520 HOOD EXHAUST FAN #2		338998.76	3970267.07	2.48	24.64	349.80	18.30	1.52
NC5_12	46-40.8530 HOOD EXHAUST FAN #3		338992.83	3970268.49	2.48	24.64	349.80	21.70	1.52
NC5_13	46-40.8540 HOOD EXHAUST FAN #4		338975.89	3970272.53	2.48	24.64	349.80	18.10	1.52
NC5_14	FUTURE HOOD EXHAUST FAN		339016.07	3970262.67	2.48	24.64	349.80	18.20	1.37
NC5_15	46-40.8550 HOOD EXHAUST FAN #5		338968.63	3970274.27	2.48	24.64	349.80	40.10	1.22
NC5_16	FUTURE WINDER PULPER EXHAUST FAN		338920.73	3970290.58	2.48	24.64	316.50	15.50	0.76
NC5_17	46-92.0100 ROOF EXHAUST FAN #7		339072.32	3970243.95	2.48	24.64	313.70	11.40	1.63
NC5_18	46-92.0120 ROOF EXHAUST FAN #6		339075.56	3970231.27	2.48	24.57	313.70	11.40	1.63
NC5_19	46-92.0140 ROOF EXHAUST FAN #8		339045.64	3970250.32	2.48	24.54	313.70	11.40	1.63
NC5_20	46-92.0160 FORMER EXHAUST FAN #1		339036.74	3970252.44	2.48	24.54	313.70	11.40	1.63
NC5_21	46-92.0180 FORMER EXHAUST FAN #2		339021.92	3970255.98	2.48	24.21	313.70	11.40	1.63
NC5_22	46-92.0200 ROOF EXHAUST FAN #9		339013.03	3970258.10	2.48	24.21	313.70	11.40	1.63
NC5_23	46-92.0220 ROOF EXHAUST FAN #10		338971.52	3970268.01	2.48	24.11	313.70	11.40	1.63
NC5_24	46-92.0240 ROOF EXHAUST FAN #11		338950.77	3970272.97	2.48	24.11	313.70	11.40	1.63
NC5_25	46-92.0260 ROOF EXHAUST FAN #12		338915.19	3970281.46	2.48	24.11	313.70	11.40	1.63

Table E-2
Source Parameters
Domtar Paper Company
Plymouth Mill

Point									
Source ID	**Source Description**	**Subject to MACT?**	**UTM Easting**	**UTM Northing**	**Base Elevation**	**Stack Height**	**Temperature**	**Exit Velocity**	**Stack Diameter**
			(m)	**(m)**	**(m)**	**(m)**	**(K)**	**(m/s)**	**(m)**
NC5_26	46-92.0280 ROOF EXHAUST FAN #13		338892.46	3970278.11	2.48	24.11	313.70	11.40	1.63
NC5_27	46-92.0300 ROLL WRAPPERROOF EXHAUST FAN #14		338899.31	3970308.13	2.48	19.89	313.70	13.50	1.37
NC5_28	PL46-92.2750 NC5 EXHAUST FAN(NORTH WALL)		338891.88	3970322.02	2.48	12.33	313.70	4.10	1.52
NC5_29	PL46-92.2760 NC5 EXHAUST FAN(EAST WALL)		338914.15	3970300.15	2.48	10.81	313.70	4.40	2.03
THERMALOX	Thermal Oxidizer		339678.97	3970030.57	3.21	45.72	1144.26	2.50	2.29
LSRPSCRUB	LRP Press to Scrubber		339441.66	3970170.16	2.16	30.48	327.59	7.16	1.30

Table E-2
Source Parameters
Domtar Paper Company
Plymouth Mill

Area Sources									
Source ID	**Source Description**	**Subject to MACT?**	**UTM Easting**	**UTM Northing**	**Base Elevation**	**Release Height**	**Easterly Length**	**Northerly Length**	**Angle from North**
			(m)	**(m)**	**(m)**	**(m)**	**(m)**	**(m)**	**(degrees)**
FIBLIFT	Fiberline Lift Station		339129.34	3969847.59	1.22	1.00	6.10	9.14	17.00
PUCHANN	Pulp Milll Channel and Sewer		339425.00	3969945.00	2.57	1.00	1.52	12.19	17.00
NO2LIFT	#2 Lift Station		339078.43	3969514.25	2.40	1.00	7.62	7.62	17.00
2SEW1LFT	paper bleach plant sewer ditch/No. 1 lift station		339337.00	3969726.00	2.64	1.00	85.00	65.00	17.00
RIFFLER	Riffler		338016.28	3969388.18	3.41	1.00	6.10	30.48	1.00

Area Poly Sources							
Source ID	**Source Description**	**Subject to MACT?**	**Base Elevation**	**Release Height**	**Number of Vertices**	**Source Area**	**Initial Vertical Dimension**
			(m)	**(m)**		**(m^2)**	**(m)**
RETPOND2	Retention Pond #2		2.13	1.00	9	1146068.90	-
RETPOND1	Retention Pond #1		2.89	1.00	4	146915.30	-
AIRBASIN	Aeration Basin		1.77	1.00	6	294385.80	-
SETPOND2	Settling Pond 2		3.77	1.00	7	129479.00	-
SETPOND1	Settling Pond 1		2.20	1.00	7	78516.70	-

Volume Sources								
Source ID	**Source Description**	**Subject to MACT?**	**UTM Easting**	**UTM Northing**	**Base Elevation**	**Release Height**	**Initial Horizontal Dimension**	**Initial Vertical Dimension**
			(m)	**(m)**	**(m)**	**(m)**	**(m)**	**(m)**
6BLEACH	No. 6 Bleach Plant Building Fugitives		339167.74	3970228.03	2.00	11.43	10.63	10.63
7BLEACHA	No. 7 Bleach Plant Building Fugitives		339135.20	3970099.27	2.00	4.57	2.27	4.25
7BLEACHB	No. 6 & 7 Fiberline Building Fugitives		339139.09	3970118.46	2.00	4.57	2.27	4.25
7BLEACHC	No. 7 Bleach Plant Building Fugitives		339145.00	3970143.00	2.13	4.57	2.27	4.25
7BLEACHD	No. 7 Bleach Plant Building Fugitives		339151.89	3970166.30	2.14	4.57	2.27	4.25
LRPPRS2	Filter - 2 Lignin Filter		339452.06	3970157.31	2.20	11.18	4.09	5.20

Addendum to Table E-3
Potential Emission Rates
Domtar Paper Company
Plymouth Mill

Source ID	Acetaldehyde	Acrolein	Benzene	Carbon Disulfide	Carbon Tetrachloride	Chloroform	Formaldehyde	n-Hexane	Hydrogen Sulfide	Methyl Mercaptan	Phenol
	1-hour	1-hour	Annual	24-hour	Annual	Annual	1-hour	24-hour	24-hour	1-hour	1-hour
	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)
F09	7.16E-05	1.75E-05	7.70E-06	1.18E-05	2.98E-06	3.18E-05	2.00E-06	1.62E-05	-	4.53E-07	4.11E-04
F11	-	-	4.05E-05	-	-	-	3.08E-03	-	-	-	-
F12	7.16E-05	1.75E-05	7.70E-06	1.18E-05	2.98E-06	3.18E-05	2.00E-06	1.62E-05	-	4.53E-07	4.11E-04
F13	7.16E-05	1.75E-05	7.70E-06	1.18E-05	2.98E-06	3.18E-05	2.00E-06	1.62E-05	-	4.53E-07	4.11E-04
F14	7.16E-05	1.75E-05	7.70E-06	1.18E-05	2.98E-06	3.18E-05	2.00E-06	1.62E-05	-	4.53E-07	4.11E-04
F15	3.91E-03	1.49E-04	1.37E-04	2.65E-04	1.21E-05	6.33E-03	1.48E-03	6.68E-05	7.76E-02	3.91E-03	9.23E-03
F16	3.91E-03	1.49E-04	1.37E-04	2.65E-04	1.21E-05	6.33E-03	1.48E-03	6.68E-05	7.76E-02	3.91E-03	9.23E-03
F17	7.16E-05	1.75E-05	7.70E-06	1.18E-05	2.98E-06	3.18E-05	2.00E-06	1.62E-05	-	4.53E-07	4.11E-04
F18	7.16E-05	1.75E-05	7.70E-06	1.18E-05	2.98E-06	3.18E-05	2.00E-06	1.62E-05	-	4.53E-07	4.11E-04
F19	7.16E-05	1.75E-05	7.70E-06	1.18E-05	2.98E-06	3.18E-05	2.00E-06	1.62E-05	-	4.53E-07	4.11E-04
F23	5.32E-04	3.65E-05	1.60E-05	2.46E-05	6.21E-06	6.63E-05	1.54E-05	3.37E-05	-	3.40E-05	8.55E-04
F24	5.32E-04	3.65E-05	1.60E-05	2.46E-05	6.21E-06	6.63E-05	1.54E-05	3.37E-05	-	3.40E-05	8.55E-04
F25	5.32E-04	3.65E-05	1.60E-05	2.46E-05	6.21E-06	6.63E-05	1.54E-05	3.37E-05	-	3.40E-05	8.55E-04
F26	5.32E-04	3.65E-05	1.60E-05	2.46E-05	6.21E-06	6.63E-05	1.54E-05	3.37E-05	-	3.40E-05	8.55E-04
F27	5.32E-04	3.65E-05	1.60E-05	2.46E-05	6.21E-06	6.63E-05	1.54E-05	3.37E-05	-	3.40E-05	8.55E-04
F30	1.22E-02	4.64E-04	4.28E-04	8.27E-04	3.77E-05	3.73E-02	4.63E-03	2.09E-04	1.44E-01	1.22E-02	2.89E-02
F34	-	-	-	-	-	7.54E-05	-	-	-	-	-
F35	6.55E-04	-	2.20E-06	-	-	6.09E-04	-	2.13E-05	2.96E-04	3.96E-04	8.05E-03
F41	7.16E-05	1.75E-05	7.70E-06	1.18E-05	2.98E-06	3.18E-05	2.00E-06	1.62E-05	-	4.53E-07	4.11E-04
F42	5.32E-04	3.65E-05	1.60E-05	2.46E-05	6.21E-06	6.63E-05	1.54E-05	3.37E-05	-	3.40E-05	8.55E-04
F60	3.68E-03	1.16E-06	-	-	-	-	2.23E-05	-	2.59E-04	3.18E-03	-
F61	-	-	-	-	-	-	-	-	-	-	-
PO01A	2.15E-02	1.74E-02	3.22E-02	2.57E-02	4.77E-03	3.49E-04	5.17E-02	2.35E-01	-	-	2.10E-03
PO01C	6.53E-02	-	1.60E-02	1.16E-02	2.13E-04	2.50E-04	1.92E-01	2.76E-01	9.73E-01	2.19E-01	2.42E-01
PO13A	2.29E-02	1.53E-02	3.17E-02	2.24E-02	2.23E-03	3.43E-04	4.70E-02	2.05E-01	6.82E-01	1.51E-01	2.24E-03
P09A	2.75E-04	-	1.34E-05	-	2.83E-04	2.44E-04	-	-	-	-	-
P09B	2.75E-04	-	1.34E-05	-	2.83E-04	2.44E-04	-	-	-	-	-
P09C	2.75E-04	-	1.34E-05	-	2.83E-04	2.44E-04	-	-	-	-	-
P09D	2.75E-04	-	1.34E-05	-	2.83E-04	2.44E-04	-	-	-	-	-
P09E	2.75E-04	-	1.34E-05	-	2.83E-04	2.44E-04	-	-	-	-	-
P09F	2.75E-04	-	1.34E-05	-	2.83E-04	2.44E-04	-	-	-	-	-
P27A	5.30E-04	-	2.39E-05	-	5.06E-04	4.36E-04	-	-	-	-	-
P27B	5.30E-04	-	2.39E-05	-	5.06E-04	4.36E-04	-	-	-	-	-
P27C	5.30E-04	-	2.39E-05	-	5.06E-04	4.36E-04	-	-	-	-	-

Addendum to Table E-3
Potential Emission Rates
Domtar Paper Company
Plymouth Mill

Source ID	Acetaldehyde	Acrolein	Benzene	Carbon Disulfide	Carbon Tetrachloride	Chloroform	Formaldehyde	n-Hexane	Hydrogen Sulfide	Methyl Mercaptan	Phenol
	1-hour	1-hour	Annual	24-hour	Annual	Annual	1-hour	24-hour	24-hour	1-hour	1-hour
	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)
P27D	5.30E-04	-	2.39E-05	-	5.06E-04	4.36E-04	-	-	-	-	-
P27E	5.30E-04	-	2.39E-05	-	5.06E-04	4.36E-04	-	-	-	-	-
P27F	5.30E-04	-	2.39E-05	-	5.06E-04	4.36E-04	-	-	-	-	-
P27G	5.30E-04	-	2.39E-05	-	5.06E-04	4.36E-04	-	-	-	-	-
P27H	5.30E-04	-	2.39E-05	-	5.06E-04	4.36E-04	-	-	-	-	-
R01A	1.79E-02	1.54E-03	2.57E-03	8.78E-04	-	2.79E-04	1.39E-02	4.26E-02	3.57E-01	5.04E-03	2.49E-02
R03	9.68E-03	1.97E-03	2.70E-05	1.07E-01	3.40E-05	6.19E-05	2.75E-03	4.06E-04	5.21E-02	1.36E-02	5.35E-03
R04	1.15E-02	2.08E-03	3.11E-05	1.42E-01	3.40E-05	6.19E-05	2.86E-03	4.11E-04	5.21E-02	1.36E-02	5.97E-03
R05	1.89E-03	1.07E-04	4.06E-06	9.88E-05	-	-	1.13E-04	5.10E-06	-	1.27E-03	6.35E-04
R07	-	-	4.05E-05	-	-	-	3.08E-03	-	-	-	-
R09	2.10E-05	-	5.87E-06	-	-	-	-	-	1.80E-04	1.17E-04	-
R10	2.10E-05	-	5.87E-06	-	-	-	-	-	1.80E-04	1.17E-04	-
R12	2.10E-05	-	5.87E-06	-	-	-	-	-	1.80E-04	1.17E-04	-
R13	2.10E-05	-	5.87E-06	-	-	-	-	-	1.80E-04	1.17E-04	-
NO5GLC	2.80E-04	-	1.49E-04	-	-	-	-	-	1.03E-04	5.21E-03	-
R15	-	-	1.31E-05	-	-	-	-	-	-	-	-
NO5WLC	-	-	4.05E-05	-	-	-	3.08E-03	-	-	-	-
R17	-	-	4.05E-05	-	-	-	3.08E-03	-	-	-	-
R22	-	-	4.05E-05	-	-	-	3.08E-03	-	-	-	-
R24	5.97E-05	1.71E-05	5.03E-06	1.26E-03	8.57E-07	1.05E-07	2.52E-05	4.79E-07	4.88E-04	5.17E-04	-
R25	5.97E-05	1.71E-05	5.03E-06	1.26E-03	8.57E-07	1.05E-07	2.52E-05	4.79E-07	4.88E-04	5.17E-04	-
R26	5.97E-05	1.71E-05	5.03E-06	1.26E-03	8.57E-07	1.05E-07	2.52E-05	4.79E-07	4.88E-04	5.17E-04	-
R27	2.55E-03	2.26E-06	1.13E-06	2.51E-04	-	1.01E-06	6.30E-05	5.00E-06	6.16E-03	1.26E-05	1.27E-04
R28	2.55E-03	2.26E-06	1.13E-06	2.51E-04	-	1.01E-06	6.30E-05	5.00E-06	6.16E-03	1.26E-05	1.27E-04
R29	2.55E-03	2.26E-06	1.13E-06	2.51E-04	-	1.01E-06	6.30E-05	5.00E-06	6.16E-03	1.26E-05	1.27E-04
R30	2.55E-03	2.26E-06	1.13E-06	2.51E-04	-	1.01E-06	6.30E-05	5.00E-06	6.16E-03	1.26E-05	1.27E-04
R31	2.55E-03	2.26E-06	1.13E-06	2.51E-04	-	1.01E-06	6.30E-05	5.00E-06	6.16E-03	1.26E-05	1.27E-04
R32	5.97E-05	1.71E-05	5.03E-06	1.26E-03	8.57E-07	1.05E-07	2.52E-05	4.79E-07	4.88E-04	5.17E-04	-
R33	2.55E-03	2.26E-06	1.13E-06	2.51E-04	-	1.01E-06	6.30E-05	5.00E-06	6.16E-03	1.26E-05	1.27E-04
R34	2.55E-03	2.26E-06	1.13E-06	2.51E-04	-	1.01E-06	6.30E-05	5.00E-06	6.16E-03	1.26E-05	1.27E-04
R36	5.97E-05	1.71E-05	5.03E-06	1.26E-03	8.57E-07	1.05E-07	2.52E-05	4.79E-07	4.88E-04	5.17E-04	-
R37	2.55E-03	2.26E-06	1.13E-06	2.51E-04	-	1.01E-06	6.30E-05	5.00E-06	6.16E-03	1.26E-05	1.27E-04
R38	2.55E-03	2.26E-06	1.13E-06	2.51E-04	-	1.01E-06	6.30E-05	5.00E-06	6.16E-03	1.26E-05	1.27E-04
R39	5.97E-05	1.71E-05	5.03E-06	1.26E-03	8.57E-07	1.05E-07	2.52E-05	4.79E-07	4.88E-04	5.17E-04	-

Addendum to Table E-3
Potential Emission Rates
Domtar Paper Company
Plymouth Mill

Source ID	Acetaldehyde	Acrolein	Benzene	Carbon Disulfide	Carbon Tetrachloride	Chloroform	Formaldehyde	n-Hexane	Hydrogen Sulfide	Methyl Mercaptan	Phenol
	1-hour	1-hour	Annual	24-hour	Annual	Annual	1-hour	24-hour	24-hour	1-hour	1-hour
	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)
R40	5.97E-05	1.71E-05	5.03E-06	1.26E-03	8.57E-07	1.05E-07	2.52E-05	4.79E-07	4.88E-04	5.17E-04	-
R41	5.97E-05	1.71E-05	5.03E-06	1.26E-03	8.57E-07	1.05E-07	2.52E-05	4.79E-07	4.88E-04	5.17E-04	-
R42	5.97E-05	1.71E-05	5.03E-06	1.26E-03	8.57E-07	1.05E-07	2.52E-05	4.79E-07	4.88E-04	5.17E-04	-
R43	5.97E-05	1.71E-05	5.03E-06	1.26E-03	8.57E-07	1.05E-07	2.52E-05	4.79E-07	4.88E-04	5.17E-04	-
R44	2.55E-03	2.26E-06	1.13E-06	2.51E-04	-	1.01E-06	6.30E-05	5.00E-06	6.16E-03	1.26E-05	1.27E-04
R45	3.35E-03	1.10E-04	1.14E-04	-	-	-	-	-	-	-	-
R46	5.59E-04	-	1.31E-05	-	-	-	-	-	6.63E-04	2.07E-03	-
R47	-	-	3.91E-05	-	-	-	-	-	-	-	-
R49	-	-	3.91E-05	-	-	-	-	-	-	-	-
R50	4.31E-03	1.49E-04	3.35E-05	-	-	3.91E-05	4.89E-04	4.08E-05	-	7.83E-04	-
R53	2.43E-02	1.06E-04	2.60E-05	5.03E-06	-	-	6.16E-05	4.78E-06	-	-	2.08E-03
R58	2.43E-02	1.06E-04	2.60E-05	5.03E-06	-	-	6.16E-05	4.78E-06	-	-	2.08E-03
R65	3.19E-02	-	1.66E-05	1.59E-04	-	2.12E-04	-	2.81E-04	6.71E-05	6.29E-04	-
R66	3.19E-02	-	1.66E-05	1.59E-04	-	2.12E-04	-	2.81E-04	6.71E-05	6.29E-04	-
R70	3.35E-03	1.10E-04	1.14E-04	-	-	-	-	-	-	-	-
R71	6.45E-04	-	3.97E-05	-	-	-	3.50E-06	-	2.59E-04	3.18E-03	-
R72	2.55E-03	2.26E-06	1.13E-06	2.51E-04	-	1.01E-06	6.30E-05	5.00E-06	6.16E-03	1.26E-05	1.27E-04
R76	3.35E-03	1.10E-04	1.14E-04	-	-	-	-	-	-	-	-
SWBLTANK	1.03E-05	-	2.52E-06	9.85E-06	1.36E-07	7.73E-06	2.37E-06	-	-	-	-
6N7SPLTK	1.91E-03	-	9.32E-06	3.63E-05	1.83E-04	2.85E-05	-	-	-	-	-
FPDE	2.03E-04	2.45E-05	1.41E-05	-	-	-	3.12E-04	-	-	-	-
LKDE	4.90E-04	5.91E-05	3.41E-05	-	-	-	7.55E-04	-	-	-	-
WNCEE	2.03E-04	2.45E-05	1.41E-05	-	-	-	3.12E-04	-	-	-	-
WNCWE	2.64E-04	3.18E-05	1.83E-05	-	-	-	4.06E-04	-	-	-	-
RUNEA	1.35E-04	1.63E-05	9.39E-06	-	-	-	2.08E-04	-	-	-	-
SEWEA	1.35E-04	1.63E-05	9.39E-06	-	-	-	2.08E-04	-	-	-	-
6FEEDTNK	3.06E-03	-	2.73E-05	-	-	1.82E-03	-	2.80E-05	-	-	-
6BLOWTBE	1.43E-02	-	1.28E-04	-	-	8.54E-03	-	1.31E-04	-	-	-
6EXHAUST	5.07E-02	-	4.53E-04	-	-	3.02E-02	-	4.64E-04	-	-	-
LRPSCWT	-	-	-	-	-	-	-	-	-	-	-
LRP40%	2.55E-03	2.26E-06	1.13E-06	2.51E-04	-	1.01E-06	6.30E-05	5.00E-06	6.16E-03	1.26E-05	1.27E-04
LRPPRS1A	-	-	-	-	-	-	-	-	-	-	-
LRPPRS1B	-	-	-	-	-	-	-	-	-	-	-
EOP	3.28E-03	8.39E-05	2.94E-05	-	4.40E-04	1.96E-03	-	3.01E-05	-	5.80E-04	-

Addendum to Table E-3
Potential Emission Rates
Domtar Paper Company
Plymouth Mill

Source ID	Acetaldehyde	Acrolein	Benzene	Carbon Disulfide	Carbon Tetrachloride	Chloroform	Formaldehyde	n-Hexane	Hydrogen Sulfide	Methyl Mercaptan	Phenol
	1-hour	1-hour	Annual	24-hour	Annual	Annual	1-hour	24-hour	24-hour	1-hour	1-hour
	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)
PEROX	3.28E-03	8.39E-05	2.94E-05	-	4.40E-04	1.96E-03	-	3.01E-05	-	5.80E-04	-
5SOAP	5.97E-05	1.71E-05	5.03E-06	1.26E-03	8.57E-07	1.05E-07	2.52E-05	4.79E-07	4.88E-04	5.17E-04	-
LIQSEP	5.97E-05	1.71E-05	5.03E-06	1.26E-03	8.57E-07	1.05E-07	2.52E-05	4.79E-07	4.88E-04	5.17E-04	-
LRPSSUMP	-	-	-	-	-	-	-	-	1.54E-02	3.41E-04	-
NC1_2_A	9.81E-04	4.36E-04	6.04E-05	1.98E-04	-	4.27E-05	5.57E-04	5.99E-05	-	2.40E-03	1.78E-03
NC1_2_B	9.81E-04	4.36E-04	6.04E-05	1.98E-04	-	4.27E-05	5.57E-04	5.99E-05	-	2.40E-03	1.78E-03
NC1_2_C	9.81E-04	4.36E-04	6.04E-05	1.98E-04	-	4.27E-05	5.57E-04	5.99E-05	-	2.40E-03	1.78E-03
NC1_2_D	9.81E-04	4.36E-04	6.04E-05	1.98E-04	-	4.27E-05	5.57E-04	5.99E-05	-	2.40E-03	1.78E-03
NC1_2_E	9.81E-04	4.36E-04	6.04E-05	1.98E-04	-	4.27E-05	5.57E-04	5.99E-05	-	2.40E-03	1.78E-03
NC1_2_F	9.81E-04	4.36E-04	6.04E-05	1.98E-04	-	4.27E-05	5.57E-04	5.99E-05	-	2.40E-03	1.78E-03
NC1_2_G	9.81E-04	4.36E-04	6.04E-05	1.98E-04	-	4.27E-05	5.57E-04	5.99E-05	-	2.40E-03	1.78E-03
NC1_2_H	9.81E-04	4.36E-04	6.04E-05	1.98E-04	-	4.27E-05	5.57E-04	5.99E-05	-	2.40E-03	1.78E-03
NC1_2_I	9.81E-04	4.36E-04	6.04E-05	1.98E-04	-	4.27E-05	5.57E-04	5.99E-05	-	2.40E-03	1.78E-03
NC1_2_J	9.81E-04	4.36E-04	6.04E-05	1.98E-04	-	4.27E-05	5.57E-04	5.99E-05	-	2.40E-03	1.78E-03
NC1_2_K	9.81E-04	4.36E-04	6.04E-05	1.98E-04	-	4.27E-05	5.57E-04	5.99E-05	-	2.40E-03	1.78E-03
NC1_2_L	9.81E-04	4.36E-04	6.04E-05	1.98E-04	-	4.27E-05	5.57E-04	5.99E-05	-	2.40E-03	1.78E-03
NC1_2_M	9.81E-04	4.36E-04	6.04E-05	1.98E-04	-	4.27E-05	5.57E-04	5.99E-05	-	2.40E-03	1.78E-03
NC5_1	1.22E-03	5.42E-04	6.29E-05	2.22E-04	-	4.44E-05	6.93E-04	6.72E-05	-	2.98E-03	2.21E-03
NC5_2	1.22E-03	5.42E-04	6.29E-05	2.22E-04	-	4.44E-05	6.93E-04	6.72E-05	-	2.98E-03	2.21E-03
NC5_3	1.22E-03	5.42E-04	6.29E-05	2.22E-04	-	4.44E-05	6.93E-04	6.72E-05	-	2.98E-03	2.21E-03
NC5_4	1.22E-03	5.42E-04	6.29E-05	2.22E-04	-	4.44E-05	6.93E-04	6.72E-05	-	2.98E-03	2.21E-03
NC5_5	1.22E-03	5.42E-04	6.29E-05	2.22E-04	-	4.44E-05	6.93E-04	6.72E-05	-	2.98E-03	2.21E-03
NC5_6	1.22E-03	5.42E-04	6.29E-05	2.22E-04	-	4.44E-05	6.93E-04	6.72E-05	-	2.98E-03	2.21E-03
NC5_7	1.22E-03	5.42E-04	6.29E-05	2.22E-04	-	4.44E-05	6.93E-04	6.72E-05	-	2.98E-03	2.21E-03
NC5_8	1.22E-03	5.42E-04	6.29E-05	2.22E-04	-	4.44E-05	6.93E-04	6.72E-05	-	2.98E-03	2.21E-03
NC5_9	1.22E-03	5.42E-04	6.29E-05	2.22E-04	-	4.44E-05	6.93E-04	6.72E-05	-	2.98E-03	2.21E-03
NC5_10	1.22E-03	5.42E-04	6.29E-05	2.22E-04	-	4.44E-05	6.93E-04	6.72E-05	-	2.98E-03	2.21E-03
NC5_11	1.22E-03	5.42E-04	6.29E-05	2.22E-04	-	4.44E-05	6.93E-04	6.72E-05	-	2.98E-03	2.21E-03
NC5_12	1.22E-03	5.42E-04	6.29E-05	2.22E-04	-	4.44E-05	6.93E-04	6.72E-05	-	2.98E-03	2.21E-03
NC5_13	1.22E-03	5.42E-04	6.29E-05	2.22E-04	-	4.44E-05	6.93E-04	6.72E-05	-	2.98E-03	2.21E-03
NC5_14	1.22E-03	5.42E-04	6.29E-05	2.22E-04	-	4.44E-05	6.93E-04	6.72E-05	-	2.98E-03	2.21E-03
NC5_15	1.22E-03	5.42E-04	6.29E-05	2.22E-04	-	4.44E-05	6.93E-04	6.72E-05	-	2.98E-03	2.21E-03
NC5_16	1.22E-03	5.42E-04	6.29E-05	2.22E-04	-	4.44E-05	6.93E-04	6.72E-05	-	2.98E-03	2.21E-03
NC5_17	1.22E-03	5.42E-04	6.29E-05	2.22E-04	-	4.44E-05	6.93E-04	6.72E-05	-	2.98E-03	2.21E-03

Addendum to Table E-3
Potential Emission Rates
Domtar Paper Company
Plymouth Mill

Source ID	Acetaldehyde	Acrolein	Benzene	Carbon Disulfide	Carbon Tetrachloride	Chloroform	Formaldehyde	n-Hexane	Hydrogen Sulfide	Methyl Mercaptan	Phenol
	1-hour	1-hour	Annual	24-hour	Annual	Annual	1-hour	24-hour	24-hour	1-hour	1-hour
	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)
NC5_18	1.22E-03	5.42E-04	6.29E-05	2.22E-04	-	4.44E-05	6.93E-04	6.72E-05	-	2.98E-03	2.21E-03
NC5_19	1.22E-03	5.42E-04	6.29E-05	2.22E-04	-	4.44E-05	6.93E-04	6.72E-05	-	2.98E-03	2.21E-03
NC5_20	1.22E-03	5.42E-04	6.29E-05	2.22E-04	-	4.44E-05	6.93E-04	6.72E-05	-	2.98E-03	2.21E-03
NC5_21	1.22E-03	5.42E-04	6.29E-05	2.22E-04	-	4.44E-05	6.93E-04	6.72E-05	-	2.98E-03	2.21E-03
NC5_22	1.22E-03	5.42E-04	6.29E-05	2.22E-04	-	4.44E-05	6.93E-04	6.72E-05	-	2.98E-03	2.21E-03
NC5_23	1.22E-03	5.42E-04	6.29E-05	2.22E-04	-	4.44E-05	6.93E-04	6.72E-05	-	2.98E-03	2.21E-03
NC5_24	1.22E-03	5.42E-04	6.29E-05	2.22E-04	-	4.44E-05	6.93E-04	6.72E-05	-	2.98E-03	2.21E-03
NC5_25	1.22E-03	5.42E-04	6.29E-05	2.22E-04	-	4.44E-05	6.93E-04	6.72E-05	-	2.98E-03	2.21E-03
NC5_26	1.22E-03	5.42E-04	6.29E-05	2.22E-04	-	4.44E-05	6.93E-04	6.72E-05	-	2.98E-03	2.21E-03
NC5_27	1.22E-03	5.42E-04	6.29E-05	2.22E-04	-	4.44E-05	6.93E-04	6.72E-05	-	2.98E-03	2.21E-03
NC5_28	1.22E-03	5.42E-04	6.29E-05	2.22E-04	-	4.44E-05	6.93E-04	6.72E-05	-	2.98E-03	2.21E-03
NC5_29	1.22E-03	5.42E-04	6.29E-05	2.22E-04	-	4.44E-05	6.93E-04	6.72E-05	-	2.98E-03	2.21E-03
THERMALOX	3.33E-04	1.55E-04	1.70E-03	8.71E-06	1.71E-04	3.71E-05	5.39E-04	9.74E-03	3.57E-02	1.48E-01	1.43E-04
LSRPSCRUB	9.58E-03	3.87E-03	3.06E-04	3.48E-04	4.23E-03	9.36E-04	3.39E-03	4.12E-04	6.79E-01	4.57E-01	3.64E-03

Source ID	Acetaldehyde	Acrolein	Benzene	Carbon Disulfide	Carbon Tetrachloride	Chloroform	Formaldehyde	n-Hexane	Hydrogen Sulfide	Methyl Mercaptan	Phenol
	1-hr	1-hr	Annual	24-hr	Annual	Annual	1-hr	24-hr	24-hr	1-hr	1-hr
	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)
6BLEACH	-	-	-	-	-	-	-	-	-	-	-
7BLEACHA	-	-	-	-	-	-	-	-	-	-	-
7BLEACHB	-	-	-	-	-	-	-	-	-	-	-
7BLEACHC	-	-	-	-	-	-	-	-	-	-	-
7BLEACHD	-	-	-	-	-	-	-	-	-	-	-
LRPPRS2	4.98E-07	-	1.22E-07	4.77E-07	2.41E-06	3.74E-07	1.15E-07	-	4.01E-02	-	-

Addendum to Table E-3
Potential Emission Rates
Domtar Paper Company
Plymouth Mill

Source ID	Acetaldehyde	Acrolein	Benzene	Carbon Disulfide	Carbon Tetrachloride	Chloroform	Formaldehyde	n-Hexane	Hydrogen Sulfide	Methyl Mercaptan	Phenol
	1-hr	1-hr	Annual	24-hr	Annual	Annual	1-hr	24-hr	24-hr	1-hr	1-hr
	($g/s/m^2$)	($g/s/m^2$)	($g/s/m^2$)	($g/s/m^2$)	($g/s/m^2$)	($g/s/m^2$)	($g/s/m^2$)	($g/s/m^2$)	($g/s/m^2$)	($g/s/m^2$)	($g/s/m^2$)
FIBLIFT	4.52E-06	-	-	-	-	-	-	-	6.83E-04	-	-
PUCHANN	2.96E-03	-	-	-	-	-	3.95E-06	-	-	-	1.06E-06
NO2LIFT	1.30E-05	-	-	-	-	-	-	-	-	-	-
2SEW1LFT	5.93E-07	-	-	-	-	-	-	-	-	-	-
RIFFLER	-	-	-	-	-	-	-	-	-	-	-
RETPOND2	-	-	-	-	-	-	-	-	-	-	-
RETPOND1	-	-	-	-	-	-	-	-	-	-	-
AIRBASIN	9.19E-08	-	-	-	-	-	1.14E-09	-	-	-	-
SETPOND2	1.42E-06	-	-	1.43E-13	-	2.08E-08	4.57E-09	-	-	-	4.34E-09
SETPOND1	7.55E-06	2.95E-09	-	1.42E-12	-	1.55E-07	9.38E-08	-	-	-	2.17E-08

Addendum to Table E-4
Summary of Modeling Analysis - Baseline
Domtar Paper Company
Plymouth Mill

Compound	Year	Averaging Period	Maximum Concentration ($\mu g/m^3$)	AAL ($\mu g/m^3$)	Percent of AAL (%)	Optimization Factor
Acetaldehyde	2016	1-hour	709.12	27,000	2.63	37.3
Acrolein	2014	1-hour	4.16	80	5.20	18.8
Benzene	2017	Annual	0.05	0	44.38	2.2
Carbon Disulfide	2015	24-hour	18.09	186	9.73	10.1
Carbon Tetrachloride	2015	Annual	0.18	7	2.69	36.5
Chloroform	2016	Annual	1.44	4	33.54	2.9
Formaldehyde	2018	1-hour	15.98	150	10.65	9.2
n-Hexane	2015	24-hour	0.18	1,100	0.02	5,911.7
Hydrogen Sulfide	2015	24-hour	61.54	120	51.29	1.9
Methyl Mercaptan	2017	1-hour	42.34	50	84.67	1.2
Phenol	2014	1-hour	17.24	950	1.81	54.0

Addendum to Table E-5
Optimized Emission Rates
Domtar Paper Company
Plymouth Mill

Source ID	Acetaldehyde	Acrolein	Benzene	Carbon Disulfide	Carbon Tetrachloride	Chloroform	Formaldehyde	n-Hexane	Hydrogen Sulfide	Methyl Mercaptan	Phenol
	1-hour	1-hour	Annual	24-hour	Annual	Annual	1-hour	24-hour	24-hour	1-hour	1-hour
	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)
F09	2.67E-03	3.30E-04	1.70E-05	1.19E-04	1.09E-04	9.29E-05	1.84E-05	9.55E-02	-	5.24E-07	2.22E-02
F11	-	-	8.95E-05	-	-	-	2.83E-02	-	-	-	-
F12	2.67E-03	3.30E-04	1.70E-05	1.19E-04	1.09E-04	9.29E-05	1.84E-05	9.55E-02	-	5.24E-07	2.22E-02
F13	2.67E-03	3.30E-04	1.70E-05	1.19E-04	1.09E-04	9.29E-05	1.84E-05	9.55E-02	-	5.24E-07	2.22E-02
F14	2.67E-03	3.30E-04	1.70E-05	1.19E-04	1.09E-04	9.29E-05	1.84E-05	9.55E-02	-	5.24E-07	2.22E-02
F15	1.46E-01	2.80E-03	3.02E-04	2.67E-03	4.40E-04	1.85E-02	1.36E-02	3.95E-01	1.48E-01	4.53E-03	4.99E-01
F16	1.46E-01	2.80E-03	3.02E-04	2.67E-03	4.40E-04	1.85E-02	1.36E-02	3.95E-01	1.48E-01	4.53E-03	4.99E-01
F17	2.67E-03	3.30E-04	1.70E-05	1.19E-04	1.09E-04	9.29E-05	1.84E-05	9.55E-02	-	5.24E-07	2.22E-02
F18	2.67E-03	3.30E-04	1.70E-05	1.19E-04	1.09E-04	9.29E-05	1.84E-05	9.55E-02	-	5.24E-07	2.22E-02
F19	2.67E-03	3.30E-04	1.70E-05	1.19E-04	1.09E-04	9.29E-05	1.84E-05	9.55E-02	-	5.24E-07	2.22E-02
F23	1.99E-02	6.88E-04	3.54E-05	2.48E-04	2.26E-04	1.94E-04	1.41E-04	1.99E-01	-	3.94E-05	4.62E-02
F24	1.99E-02	6.88E-04	3.54E-05	2.48E-04	2.26E-04	1.94E-04	1.41E-04	1.99E-01	-	3.94E-05	4.62E-02
F25	1.99E-02	6.88E-04	3.54E-05	2.48E-04	2.26E-04	1.94E-04	1.41E-04	1.99E-01	-	3.94E-05	4.62E-02
F26	1.99E-02	6.88E-04	3.54E-05	2.48E-04	2.26E-04	1.94E-04	1.41E-04	1.99E-01	-	3.94E-05	4.62E-02
F27	1.99E-02	6.88E-04	3.54E-05	2.48E-04	2.26E-04	1.94E-04	1.41E-04	1.99E-01	-	3.94E-05	4.62E-02
F30	4.56E-01	8.75E-03	9.45E-04	8.34E-03	1.38E-03	1.09E-01	4.26E-02	1.23E+00	2.76E-01	1.42E-02	1.56E+00
F34	-	-	-	-	-	2.20E-04	-	-	-	-	-
F35	2.44E-02	-	4.87E-06	-	-	1.78E-03	-	1.26E-01	5.66E-04	4.58E-04	4.35E-01
F41	2.67E-03	3.30E-04	1.70E-05	1.19E-04	1.09E-04	9.29E-05	1.84E-05	9.55E-02	-	5.24E-07	2.22E-02
F42	1.99E-02	6.88E-04	3.54E-05	2.48E-04	2.26E-04	1.94E-04	1.41E-04	1.99E-01	-	3.94E-05	4.62E-02
F60	1.37E-01	2.19E-05	-	-	-	-	2.05E-04	-	4.95E-04	3.67E-03	-
F61	-	-	-	-	-	-	-	-	-	-	-
PO01A	8.03E-01	3.28E-01	7.11E-02	2.59E-01	1.74E-01	1.02E-03	4.75E-01	1.39E+03	-	-	1.13E-01
PO01C	2.44E+00	-	3.53E-02	1.17E-01	7.78E-03	7.32E-04	1.77E+00	1.63E+03	1.86E+00	2.54E-01	1.31E+01
PO13A	8.54E-01	2.88E-01	7.00E-02	2.25E-01	8.13E-02	1.00E-03	4.32E-01	1.21E+03	1.30E+00	1.75E-01	1.21E-01
P09A	1.03E-02	-	2.95E-05	-	1.03E-02	7.11E-04	-	-	-	-	-
P09B	1.03E-02	-	2.95E-05	-	1.03E-02	7.11E-04	-	-	-	-	-
P09C	1.03E-02	-	2.95E-05	-	1.03E-02	7.11E-04	-	-	-	-	-
P09D	1.03E-02	-	2.95E-05	-	1.03E-02	7.11E-04	-	-	-	-	-
P09E	1.03E-02	-	2.95E-05	-	1.03E-02	7.11E-04	-	-	-	-	-
P09F	1.03E-02	-	2.95E-05	-	1.03E-02	7.11E-04	-	-	-	-	-
P27A	1.98E-02	-	5.27E-05	-	1.84E-02	1.27E-03	-	-	-	-	-
P27B	1.98E-02	-	5.27E-05	-	1.84E-02	1.27E-03	-	-	-	-	-
P27C	1.98E-02	-	5.27E-05	-	1.84E-02	1.27E-03	-	-	-	-	-

Addendum to Table E-5
Optimized Emission Rates
Domtar Paper Company
Plymouth Mill

Source ID	Acetaldehyde	Acrolein	Benzene	Carbon Disulfide	Carbon Tetrachloride	Chloroform	Formaldehyde	n-Hexane	Hydrogen Sulfide	Methyl Mercaptan	Phenol
	1-hour	1-hour	Annual	24-hour	Annual	Annual	1-hour	24-hour	24-hour	1-hour	1-hour
	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)
P27D	1.98E-02	-	5.27E-05	-	1.84E-02	1.27E-03	-	-	-	-	-
P27E	1.98E-02	-	5.27E-05	-	1.84E-02	1.27E-03	-	-	-	-	-
P27F	1.98E-02	-	5.27E-05	-	1.84E-02	1.27E-03	-	-	-	-	-
P27G	1.98E-02	-	5.27E-05	-	1.84E-02	1.27E-03	-	-	-	-	-
P27H	1.98E-02	-	5.27E-05	-	1.84E-02	1.27E-03	-	-	-	-	-
R01A	6.70E-01	2.90E-02	5.68E-03	8.84E-03	-	8.15E-04	1.28E-01	2.52E+02	6.81E-01	5.83E-03	1.34E+00
R03	3.61E-01	3.72E-02	5.97E-05	1.07E+00	1.24E-03	1.81E-04	2.53E-02	2.40E+00	9.95E-02	1.57E-02	2.89E-01
R04	4.31E-01	3.91E-02	6.86E-05	1.43E+00	1.24E-03	1.81E-04	2.63E-02	2.43E+00	9.95E-02	1.57E-02	3.23E-01
R05	7.04E-02	2.01E-03	8.96E-06	9.95E-04	-	-	1.04E-03	3.01E-02	-	1.47E-03	3.43E-02
R07	-	-	8.95E-05	-	-	-	2.83E-02	-	-	-	-
R09	7.82E-04	-	1.30E-05	-	-	-	-	-	3.45E-04	1.36E-04	-
R10	7.82E-04	-	1.30E-05	-	-	-	-	-	3.45E-04	1.36E-04	-
R12	7.82E-04	-	1.30E-05	-	-	-	-	-	3.45E-04	1.36E-04	-
R13	7.82E-04	-	1.30E-05	-	-	-	-	-	3.45E-04	1.36E-04	-
NO5GLC	1.04E-02	-	3.28E-04	-	-	-	-	-	1.96E-04	6.03E-03	-
R15	-	-	2.90E-05	-	-	-	-	-	-	-	-
NO5WLC	-	-	8.95E-05	-	-	-	2.83E-02	-	-	-	-
R17	-	-	8.95E-05	-	-	-	2.83E-02	-	-	-	-
R22	-	-	8.95E-05	-	-	-	2.83E-02	-	-	-	-
R24	2.23E-03	3.23E-04	1.11E-05	1.27E-02	3.12E-05	3.07E-07	2.32E-04	2.83E-03	9.32E-04	5.98E-04	-
R25	2.23E-03	3.23E-04	1.11E-05	1.27E-02	3.12E-05	3.07E-07	2.32E-04	2.83E-03	9.32E-04	5.98E-04	-
R26	2.23E-03	3.23E-04	1.11E-05	1.27E-02	3.12E-05	3.07E-07	2.32E-04	2.83E-03	9.32E-04	5.98E-04	-
R27	9.50E-02	4.25E-05	2.50E-06	2.53E-03	-	2.95E-06	5.80E-04	2.96E-02	1.18E-02	1.46E-05	6.87E-03
R28	9.50E-02	4.25E-05	2.50E-06	2.53E-03	-	2.95E-06	5.80E-04	2.96E-02	1.18E-02	1.46E-05	6.87E-03
R29	9.50E-02	4.25E-05	2.50E-06	2.53E-03	-	2.95E-06	5.80E-04	2.96E-02	1.18E-02	1.46E-05	6.87E-03
R30	9.50E-02	4.25E-05	2.50E-06	2.53E-03	-	2.95E-06	5.80E-04	2.96E-02	1.18E-02	1.46E-05	6.87E-03
R31	9.50E-02	4.25E-05	2.50E-06	2.53E-03	-	2.95E-06	5.80E-04	2.96E-02	1.18E-02	1.46E-05	6.87E-03
R32	2.23E-03	3.23E-04	1.11E-05	1.27E-02	3.12E-05	3.07E-07	2.32E-04	2.83E-03	9.32E-04	5.98E-04	-
R33	9.50E-02	4.25E-05	2.50E-06	2.53E-03	-	2.95E-06	5.80E-04	2.96E-02	1.18E-02	1.46E-05	6.87E-03
R34	9.50E-02	4.25E-05	2.50E-06	2.53E-03	-	2.95E-06	5.80E-04	2.96E-02	1.18E-02	1.46E-05	6.87E-03
R36	2.23E-03	3.23E-04	1.11E-05	1.27E-02	3.12E-05	3.07E-07	2.32E-04	2.83E-03	9.32E-04	5.98E-04	-
R37	9.50E-02	4.25E-05	2.50E-06	2.53E-03	-	2.95E-06	5.80E-04	2.96E-02	1.18E-02	1.46E-05	6.87E-03
R38	9.50E-02	4.25E-05	2.50E-06	2.53E-03	-	2.95E-06	5.80E-04	2.96E-02	1.18E-02	1.46E-05	6.87E-03
R39	2.23E-03	3.23E-04	1.11E-05	1.27E-02	3.12E-05	3.07E-07	2.32E-04	2.83E-03	9.32E-04	5.98E-04	-

Addendum to Table E-5
Optimized Emission Rates
Domtar Paper Company
Plymouth Mill

Source ID	Acetaldehyde	Acrolein	Benzene	Carbon Disulfide	Carbon Tetrachloride	Chloroform	Formaldehyde	n-Hexane	Hydrogen Sulfide	Methyl Mercaptan	Phenol
	1-hour	1-hour	Annual	24-hour	Annual	Annual	1-hour	24-hour	24-hour	1-hour	1-hour
	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)
R40	2.23E-03	3.23E-04	1.11E-05	1.27E-02	3.12E-05	3.07E-07	2.32E-04	2.83E-03	9.32E-04	5.98E-04	-
R41	2.23E-03	3.23E-04	1.11E-05	1.27E-02	3.12E-05	3.07E-07	2.32E-04	2.83E-03	9.32E-04	5.98E-04	-
R42	2.23E-03	3.23E-04	1.11E-05	1.27E-02	3.12E-05	3.07E-07	2.32E-04	2.83E-03	9.32E-04	5.98E-04	-
R43	2.23E-03	3.23E-04	1.11E-05	1.27E-02	3.12E-05	3.07E-07	2.32E-04	2.83E-03	9.32E-04	5.98E-04	-
R44	9.50E-02	4.25E-05	2.50E-06	2.53E-03	-	2.95E-06	5.80E-04	2.96E-02	1.18E-02	1.46E-05	6.87E-03
R45	1.25E-01	2.07E-03	2.51E-04	-	-	-	-	-	-	-	-
R46	2.09E-02	-	2.90E-05	-	-	-	-	-	1.27E-03	2.39E-03	-
R47	-	-	8.64E-05	-	-	-	-	-	-	-	-
R49	-	-	8.64E-05	-	-	-	-	-	-	-	-
R50	1.61E-01	2.81E-03	7.41E-05	-	-	1.14E-04	4.50E-03	2.41E-01	-	9.06E-04	-
R53	9.08E-01	2.00E-03	5.74E-05	5.07E-05	-	-	5.67E-04	2.83E-02	-	-	1.12E-01
R58	9.08E-01	2.00E-03	5.74E-05	5.07E-05	-	-	5.67E-04	2.83E-02	-	-	1.12E-01
R65	1.19E+00	-	3.66E-05	1.61E-03	-	6.20E-04	-	1.66E+00	1.28E-04	7.28E-04	-
R66	1.19E+00	-	3.66E-05	1.61E-03	-	6.20E-04	-	1.66E+00	1.28E-04	7.28E-04	-
R70	1.25E-01	2.07E-03	2.51E-04	-	-	-	-	-	-	-	-
R71	2.41E-02	-	8.77E-05	-	-	-	3.22E-05	-	4.95E-04	3.67E-03	-
R72	9.50E-02	4.25E-05	2.50E-06	2.53E-03	-	2.95E-06	5.80E-04	2.96E-02	1.18E-02	1.46E-05	6.87E-03
R76	1.25E-01	2.07E-03	2.51E-04	-	-	-	-	-	-	-	-
SWBLTANK	3.84E-04	-	5.57E-06	9.92E-05	4.97E-06	2.26E-05	2.18E-05	-	-	-	-
6N7SPLTK	7.14E-02	-	2.06E-05	3.66E-04	6.68E-03	8.34E-05	-	-	-	-	-
FPDE	7.57E-03	4.61E-04	3.11E-05	-	-	-	2.87E-03	-	-	-	-
LKDE	1.83E-02	1.11E-03	7.52E-05	-	-	-	6.94E-03	-	-	-	-
WNCEE	7.57E-03	4.61E-04	3.11E-05	-	-	-	2.87E-03	-	-	-	-
WNCWE	9.84E-03	6.00E-04	4.04E-05	-	-	-	3.73E-03	-	-	-	-
RUNEA	5.05E-03	3.08E-04	2.07E-05	-	-	-	1.92E-03	-	-	-	-
SEWEA	5.05E-03	3.08E-04	2.07E-05	-	-	-	1.92E-03	-	-	-	-
6FEEDTNK	1.14E-01	-	6.03E-05	-	-	5.32E-03	-	1.65E-01	-	-	-
6BLOWTBE	5.35E-01	-	2.83E-04	-	-	2.49E-02	-	7.75E-01	-	-	-
6EXHAUST	1.89E+00	-	1.00E-03	-	-	8.82E-02	-	2.74E+00	-	-	-
LRPSCWT	-	-	-	-	-	-	-	-	-	-	-
LRP40%	9.50E-02	4.25E-05	2.50E-06	2.53E-03	-	2.95E-06	5.80E-04	2.96E-02	1.18E-02	1.46E-05	6.87E-03
LRPPRS1A	-	-	-	-	-	-	-	-	-	-	-
LRPPRS1B	-	-	-	-	-	-	-	-	-	-	-
EOP	1.23E-01	1.58E-03	6.48E-05	-	1.60E-02	5.72E-03	-	1.78E-01	-	6.71E-04	-

Addendum to Table E-5
Optimized Emission Rates
Domtar Paper Company
Plymouth Mill

Source ID	Acetaldehyde	Acrolein	Benzene	Carbon Disulfide	Carbon Tetrachloride	Chloroform	Formaldehyde	n-Hexane	Hydrogen Sulfide	Methyl Mercaptan	Phenol
	1-hour	1-hour	Annual	24-hour	Annual	Annual	1-hour	24-hour	24-hour	1-hour	1-hour
	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)
PEROX	1.23E-01	1.58E-03	6.48E-05	-	1.60E-02	5.72E-03	-	1.78E-01	-	6.71E-04	-
5SOAP	2.23E-03	3.23E-04	1.11E-05	1.27E-02	3.12E-05	3.07E-07	2.32E-04	2.83E-03	9.32E-04	5.98E-04	-
LIQSEP	2.23E-03	3.23E-04	1.11E-05	1.27E-02	3.12E-05	3.07E-07	2.32E-04	2.83E-03	9.32E-04	5.98E-04	-
LRPSSUMP	-	-	-	-	-	-	-	-	2.94E-02	3.94E-04	-
NC1_2_A	3.66E-02	8.22E-03	1.33E-04	1.99E-03	-	1.25E-04	5.13E-03	3.54E-01	-	2.78E-03	9.62E-02
NC1_2_B	3.66E-02	8.22E-03	1.33E-04	1.99E-03	-	1.25E-04	5.13E-03	3.54E-01	-	2.78E-03	9.62E-02
NC1_2_C	3.66E-02	8.22E-03	1.33E-04	1.99E-03	-	1.25E-04	5.13E-03	3.54E-01	-	2.78E-03	9.62E-02
NC1_2_D	3.66E-02	8.22E-03	1.33E-04	1.99E-03	-	1.25E-04	5.13E-03	3.54E-01	-	2.78E-03	9.62E-02
NC1_2_E	3.66E-02	8.22E-03	1.33E-04	1.99E-03	-	1.25E-04	5.13E-03	3.54E-01	-	2.78E-03	9.62E-02
NC1_2_F	3.66E-02	8.22E-03	1.33E-04	1.99E-03	-	1.25E-04	5.13E-03	3.54E-01	-	2.78E-03	9.62E-02
NC1_2_G	3.66E-02	8.22E-03	1.33E-04	1.99E-03	-	1.25E-04	5.13E-03	3.54E-01	-	2.78E-03	9.62E-02
NC1_2_H	3.66E-02	8.22E-03	1.33E-04	1.99E-03	-	1.25E-04	5.13E-03	3.54E-01	-	2.78E-03	9.62E-02
NC1_2_I	3.66E-02	8.22E-03	1.33E-04	1.99E-03	-	1.25E-04	5.13E-03	3.54E-01	-	2.78E-03	9.62E-02
NC1_2_J	3.66E-02	8.22E-03	1.33E-04	1.99E-03	-	1.25E-04	5.13E-03	3.54E-01	-	2.78E-03	9.62E-02
NC1_2_K	3.66E-02	8.22E-03	1.33E-04	1.99E-03	-	1.25E-04	5.13E-03	3.54E-01	-	2.78E-03	9.62E-02
NC1_2_L	3.66E-02	8.22E-03	1.33E-04	1.99E-03	-	1.25E-04	5.13E-03	3.54E-01	-	2.78E-03	9.62E-02
NC1_2_M	3.66E-02	8.22E-03	1.33E-04	1.99E-03	-	1.25E-04	5.13E-03	3.54E-01	-	2.78E-03	9.62E-02
NC5_1	4.55E-02	1.02E-02	1.39E-04	2.24E-03	-	1.30E-04	6.38E-03	3.97E-01	-	3.45E-03	1.20E-01
NC5_2	4.55E-02	1.02E-02	1.39E-04	2.24E-03	-	1.30E-04	6.38E-03	3.97E-01	-	3.45E-03	1.20E-01
NC5_3	4.55E-02	1.02E-02	1.39E-04	2.24E-03	-	1.30E-04	6.38E-03	3.97E-01	-	3.45E-03	1.20E-01
NC5_4	4.55E-02	1.02E-02	1.39E-04	2.24E-03	-	1.30E-04	6.38E-03	3.97E-01	-	3.45E-03	1.20E-01
NC5_5	4.55E-02	1.02E-02	1.39E-04	2.24E-03	-	1.30E-04	6.38E-03	3.97E-01	-	3.45E-03	1.20E-01
NC5_6	4.55E-02	1.02E-02	1.39E-04	2.24E-03	-	1.30E-04	6.38E-03	3.97E-01	-	3.45E-03	1.20E-01
NC5_7	4.55E-02	1.02E-02	1.39E-04	2.24E-03	-	1.30E-04	6.38E-03	3.97E-01	-	3.45E-03	1.20E-01
NC5_8	4.55E-02	1.02E-02	1.39E-04	2.24E-03	-	1.30E-04	6.38E-03	3.97E-01	-	3.45E-03	1.20E-01
NC5_9	4.55E-02	1.02E-02	1.39E-04	2.24E-03	-	1.30E-04	6.38E-03	3.97E-01	-	3.45E-03	1.20E-01
NC5_10	4.55E-02	1.02E-02	1.39E-04	2.24E-03	-	1.30E-04	6.38E-03	3.97E-01	-	3.45E-03	1.20E-01
NC5_11	4.55E-02	1.02E-02	1.39E-04	2.24E-03	-	1.30E-04	6.38E-03	3.97E-01	-	3.45E-03	1.20E-01
NC5_12	4.55E-02	1.02E-02	1.39E-04	2.24E-03	-	1.30E-04	6.38E-03	3.97E-01	-	3.45E-03	1.20E-01
NC5_13	4.55E-02	1.02E-02	1.39E-04	2.24E-03	-	1.30E-04	6.38E-03	3.97E-01	-	3.45E-03	1.20E-01
NC5_14	4.55E-02	1.02E-02	1.39E-04	2.24E-03	-	1.30E-04	6.38E-03	3.97E-01	-	3.45E-03	1.20E-01
NC5_15	4.55E-02	1.02E-02	1.39E-04	2.24E-03	-	1.30E-04	6.38E-03	3.97E-01	-	3.45E-03	1.20E-01
NC5_16	4.55E-02	1.02E-02	1.39E-04	2.24E-03	-	1.30E-04	6.38E-03	3.97E-01	-	3.45E-03	1.20E-01
NC5_17	4.55E-02	1.02E-02	1.39E-04	2.24E-03	-	1.30E-04	6.38E-03	3.97E-01	-	3.45E-03	1.20E-01

Addendum to Table E-5
Optimized Emission Rates
Domtar Paper Company
Plymouth Mill

Source ID	Acetaldehyde	Acrolein	Benzene	Carbon Disulfide	Carbon Tetrachloride	Chloroform	Formaldehyde	n-Hexane	Hydrogen Sulfide	Methyl Mercaptan	Phenol
	1-hour	1-hour	Annual	24-hour	Annual	Annual	1-hour	24-hour	24-hour	1-hour	1-hour
	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)
NC5_18	4.55E-02	1.02E-02	1.39E-04	2.24E-03	-	1.30E-04	6.38E-03	3.97E-01	-	3.45E-03	1.20E-01
NC5_19	4.55E-02	1.02E-02	1.39E-04	2.24E-03	-	1.30E-04	6.38E-03	3.97E-01	-	3.45E-03	1.20E-01
NC5_20	4.55E-02	1.02E-02	1.39E-04	2.24E-03	-	1.30E-04	6.38E-03	3.97E-01	-	3.45E-03	1.20E-01
NC5_21	4.55E-02	1.02E-02	1.39E-04	2.24E-03	-	1.30E-04	6.38E-03	3.97E-01	-	3.45E-03	1.20E-01
NC5_22	4.55E-02	1.02E-02	1.39E-04	2.24E-03	-	1.30E-04	6.38E-03	3.97E-01	-	3.45E-03	1.20E-01
NC5_23	4.55E-02	1.02E-02	1.39E-04	2.24E-03	-	1.30E-04	6.38E-03	3.97E-01	-	3.45E-03	1.20E-01
NC5_24	4.55E-02	1.02E-02	1.39E-04	2.24E-03	-	1.30E-04	6.38E-03	3.97E-01	-	3.45E-03	1.20E-01
NC5_25	4.55E-02	1.02E-02	1.39E-04	2.24E-03	-	1.30E-04	6.38E-03	3.97E-01	-	3.45E-03	1.20E-01
NC5_26	4.55E-02	1.02E-02	1.39E-04	2.24E-03	-	1.30E-04	6.38E-03	3.97E-01	-	3.45E-03	1.20E-01
NC5_27	4.55E-02	1.02E-02	1.39E-04	2.24E-03	-	1.30E-04	6.38E-03	3.97E-01	-	3.45E-03	1.20E-01
NC5_28	4.55E-02	1.02E-02	1.39E-04	2.24E-03	-	1.30E-04	6.38E-03	3.97E-01	-	3.45E-03	1.20E-01
NC5_29	4.55E-02	1.02E-02	1.39E-04	2.24E-03	-	1.30E-04	6.38E-03	3.97E-01	-	3.45E-03	1.20E-01
THERMALOX	1.24E-02	2.92E-03	3.76E-03	8.78E-05	6.24E-03	1.08E-04	4.96E-03	5.76E+01	6.83E-02	1.71E-01	7.73E-03
LSRPSCRUB	3.57E-01	7.29E-02	6.75E-04	3.51E-03	1.54E-01	2.73E-03	3.12E-02	2.44E+00	1.30E+00	5.29E-01	1.97E-01

Source ID	Acetaldehyde	Acrolein	Benzene	Carbon Disulfide	Carbon Tetrachloride	Chloroform	Formaldehyde	n-Hexane	Hydrogen Sulfide	Methyl Mercaptan	Phenol
	1-hr	1-hr	Annual	24-hr	Annual	Annual	1-hr	24-hr	24-hr	1-hr	1-hr
	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)
6BLEACH	-	-	-	-	-	-	-	-	-	-	-
7BLEACHA	-	-	-	-	-	-	-	-	-	-	-
7BLEACHB	-	-	-	-	-	-	-	-	-	-	-
7BLEACHC	-	-	-	-	-	-	-	-	-	-	-
7BLEACHD	-	-	-	-	-	-	-	-	-	-	-
LRPPRS2	1.86E-05	-	2.70E-07	4.80E-06	8.78E-05	1.09E-06	1.06E-06	-	7.67E-02	-	-

Addendum to Table E-5
Optimized Emission Rates
Domtar Paper Company
Plymouth Mill

Source ID	Acetaldehyde	Acrolein	Benzene	Carbon Disulfide	Carbon Tetrachloride	Chloroform	Formaldehyde	n-Hexane	Hydrogen Sulfide	Methyl Mercaptan	Phenol
	1-hr	1-hr	Annual	24-hr	Annual	Annual	1-hr	24-hr	24-hr	1-hr	1-hr
	($g/s/m^2$)	($g/s/m^2$)	($g/s/m^2$)	($g/s/m^2$)	($g/s/m^2$)	($g/s/m^2$)	($g/s/m^2$)	($g/s/m^2$)	($g/s/m^2$)	($g/s/m^2$)	($g/s/m^2$)
FIBLIFT	1.69E-04	-	-	-	-	-	-	-	1.31E-03	-	-
PUCHANN	1.10E-01	-	-	-	-	-	3.63E-05	-	-	-	5.70E-05
NO2LIFT	4.86E-04	-	-	-	-	-	-	-	-	-	-
2SEW1LFT	2.21E-05	-	-	-	-	-	-	-	-	-	-
RIFFLER	-	-	-	-	-	-	-	-	-	-	-
RETPOND2	-	-	-	-	-	-	-	-	-	-	-
RETPOND1	-	-	-	-	-	-	-	-	-	-	-
AIRBASIN	3.43E-06	-	-	-	-	-	1.05E-08	-	-	-	-
SETPOND2	5.31E-05	-	-	1.45E-12	-	6.08E-08	4.20E-08	-	-	-	2.34E-07
SETPOND1	2.82E-04	5.56E-08	-	1.43E-11	-	4.53E-07	8.63E-07	-	-	-	1.17E-06

Addendum to Table E-6
Summary of Modeling Analysis - Optimized
Domtar Paper Company
Plymouth Mill

Compound	Year	Averaging Period	Maximum Concentration ($\mu g/m^3$)	AAL ($\mu g/m^3$)	Percent of AAL (%)
Acetaldehyde	2016	1-hour	26460.11	27,000	98
Acrolein	2014	1-hour	78.40	80	98
Benzene	2017	Annual	0.12	0	98
Carbon Disulfide	2015	24-hour	182.28	186	98
Carbon Tetrachloride	2015	Annual	6.57	7	98
Chloroform	2016	Annual	4.21	4	98
Formaldehyde	2018	1-hour	147.00	150	98
n-Hexane	2015	24-hour	1078.01	1,100	98
Hydrogen Sulfide	2015	24-hour	117.60	120	98
Methyl Mercaptan	2017	1-hour	49.00	50	98
Phenol	2014	1-hour	931.00	950	98

Replacement Table E-7
Proposed Facility Wide TAPS Emissions Limits
Domtar Paper Company
Plymouth Mill

Toxic Air Pollutant	(lb/yr)	(lb/day)	(lb/hr)
Acetaldehyde			397.97
Acrolein			9.94
Arsenic & compounds	6,030.33		
Beryllium	22,251.04		
1,3 Butadiene	8,006.69		
Cadmium	20,036.43		
Carbon Disulfide		650.75	
Carbon Tetrachloride	47,201.99		
Chromium (VI)		395.66	
1,2-Dichloroethane (Ethylene dichloride)	50,767.38		
Fluoride		16,537.39	1,720.79
n-Hexane		871,205.84	
Hydrogen chloride			765.93
Manganese & compounds		35,010.50	
Mercury, aryl & inorganic compounds		382.05	
Methylene chloride	163,819.56		29.01
Nickel, metal		5,370.54	
Phenol			191.09
Sulfuric acid		11,143.09	718.11
Vinyl chloride	634,409.47		

These pollutants' potential modeled concentrations were less than 9.8% of the AAL.

Replacement Table E-8
Proposed Permitted Rates
Domtar Paper Company
Plymouth Mill

Permit ID (Model ID)	Emissions Source	Toxic Air Pollutant	(lb/yr)	(lb/day	(lb/hr)
ES-08-70-0900	White liquor surge tank	ammonia (7664-41-7)			
(F11)		benzene (71-43-2)	6.22E+00		
		chloroform (67-66-3)			
		formaldehyde (50-00-0)			2.25E-01
		hydrogen sulfide (7783-06-4)			
		methyl mercaptan (74-93-1)			
ES-06-32-2460	2C washer	ammonia (7664-41-7)			
(F15)		benzene (71-43-2)	2.10E+01		
		chloroform (67-66-3)	1.29E+03		
		formaldehyde (50-00-0)			1.08E-01
		hydrogen sulfide (7783-06-4)		2.82E+01	
		methyl mercaptan (74-93-1)			3.59E-02
ES-06-32-2300	No. 28 high density tank	ammonia (7664-41-7)			
(F17)		benzene (71-43-2)	1.18E+00		
		chloroform (67-66-3)	6.46E+00		
		formaldehyde (50-00-0)			1.46E-04
		hydrogen sulfide (7783-06-4)			
		methyl mercaptan (74-93-1)			4.16E-06
ES-06-32-2340	No. 29 high density tank	ammonia (7664-41-7)			
(F18)		benzene (71-43-2)	1.18E+00		
		chloroform (67-66-3)	6.46E+00		
		formaldehyde (50-00-0)			1.46E-04
		hydrogen sulfide (7783-06-4)			
		methyl mercaptan (74-93-1)			4.16E-06
ES-06-32-2380	No. 30 high density tank	ammonia (7664-41-7)			
(F19)		benzene (71-43-2)	1.18E+00		
		chloroform (67-66-3)	6.46E+00		
		formaldehyde (50-00-0)			1.46E-04
		hydrogen sulfide (7783-06-4)			
		methyl mercaptan (74-93-1)			4.16E-06
ES-08-52-1060	R8/10 chlorine dioxide generator	ammonia (7664-41-7)			
(F34)		benzene (71-43-2)			
		chloroform (67-66-3)	1.53E+01		
		formaldehyde (50-00-0)			
		hydrogen sulfide (7783-06-4)			
		methyl mercaptan (74-93-1)			
ES-08-40-1000	No. 32 high density pulp tank	ammonia (7664-41-7)			
(F35)		benzene (71-43-2)	3.38E-01		
		chloroform (67-66-3)	1.24E+02		
		formaldehyde (50-00-0)			
		hydrogen sulfide (7783-06-4)		1.08E-01	
		methyl mercaptan (74-93-1)			3.63E-03

Replacement Table E-8
Proposed Permitted Rates
Domtar Paper Company
Plymouth Mill

Permit ID (Model ID)	Emissions Source	Toxic Air Pollutant	(lb/yr)	(lb/day	(lb/hr)
IES-06-10-1200	No. 6 digester sand separator dumpster	ammonia (7664-41-7)			
(F41)		benzene (71-43-2)	1.18E+00		
		chloroform (67-66-3)	6.46E+00		
		formaldehyde (50-00-0)			1.46E-04
		hydrogen sulfide (7783-06-4)			
		methyl mercaptan (74-93-1)			4.16E-06
IES-07-10-1200	No. 7 digester sand separator dumpster	ammonia (7664-41-7)			
(F42)		benzene (71-43-2)	2.46E+00		
		chloroform (67-66-3)	1.35E+01		
		formaldehyde (50-00-0)			1.12E-03
		hydrogen sulfide (7783-06-4)			
		methyl mercaptan (74-93-1)			3.12E-04
ES-05-30-1300	No. 5 hot water tank/evaporator condensate	ammonia (7664-41-7)			
(F60)		benzene (71-43-2)			
		chloroform (67-66-3)			
		formaldehyde (50-00-0)			1.63E-03
		hydrogen sulfide (7783-06-4)		9.42E-02	
		methyl mercaptan (74-93-1)			2.92E-02
ES-32-STOCKTANKS	NC-2 HD and LD Stock Tanks	ammonia (7664-41-7)			
(P09 A-F)		benzene (71-43-2)	1.23E+01		
		chloroform (67-66-3)	2.97E+02		
		formaldehyde (50-00-0)			
		hydrogen sulfide (7783-06-4)			
		methyl mercaptan (74-93-1)			
ES-FP-STOCKTANKS	NC-5 HD and LD Stock Tanks	ammonia (7664-41-7)			
(P27 A-H)		benzene (71-43-2)	2.93E+01		
		chloroform (67-66-3)	7.08E+02		
		formaldehyde (50-00-0)			
		hydrogen sulfide (7783-06-4)			
		methyl mercaptan (74-93-1)			
ES-10-45-0450	No. 5 precipitator mix tank	ammonia (7664-41-7)			
(R05)		benzene (71-43-2)	6.23E-01		
		chloroform (67-66-3)			
		formaldehyde (50-00-0)			8.24E-03
		hydrogen sulfide (7783-06-4)			
		methyl mercaptan (74-93-1)			1.17E-02
ES-14-25-0050	Hydrosulfide storage tank	ammonia (7664-41-7)			
(R07)		benzene (71-43-2)	6.22E+00		
		chloroform (67-66-3)			
		formaldehyde (50-00-0)			2.25E-01
		hydrogen sulfide (7783-06-4)			
		methyl mercaptan (74-93-1)			

Replacement Table E-8
Proposed Permitted Rates
Domtar Paper Company
Plymouth Mill

Permit ID (Model ID)	Emissions Source	Toxic Air Pollutant	(lb/yr)	(lb/day	(lb/hr)
ES-14-15-0800 (R09)	Dregs filter	ammonia (7664-41-7) benzene (71-43-2) chloroform (67-66-3) formaldehyde (50-00-0) hydrogen sulfide (7783-06-4) methyl mercaptan (74-93-1)	9.01E-01	6.56E-02	1.08E-03
ES-14-15-0900 (R10)	Dregs filter vacuum system	ammonia (7664-41-7) benzene (71-43-2) chloroform (67-66-3) formaldehyde (50-00-0) hydrogen sulfide (7783-06-4) methyl mercaptan (74-93-1)	9.01E-01	6.56E-02	1.08E-03
ES-14-15-DREGS (R12)	Dregs dumpster	ammonia (7664-41-7) benzene (71-43-2) chloroform (67-66-3) formaldehyde (50-00-0) hydrogen sulfide (7783-06-4) methyl mercaptan (74-93-1)	9.01E-01	6.56E-02	1.08E-03
ES-14-15-0600 (R13)	Dregs surge tank	ammonia (7664-41-7) benzene (71-43-2) chloroform (67-66-3) formaldehyde (50-00-0) hydrogen sulfide (7783-06-4) methyl mercaptan (74-93-1)	9.01E-01	6.56E-02	1.08E-03
ES-14-10-0050 (NO5GLC)	New No. 5 green liquor clarifier	ammonia (7664-41-7) benzene (71-43-2) chloroform (67-66-3) formaldehyde (50-00-0) hydrogen sulfide (7783-06-4) methyl mercaptan (74-93-1)	2.28E+01	3.73E-02	4.78E-02
ES-14-30-1450 (R15)	Lime mud storage tank	ammonia (7664-41-7) benzene (71-43-2) chloroform (67-66-3) formaldehyde (50-00-0) hydrogen sulfide (7783-06-4) methyl mercaptan (74-93-1)	2.02E+00		
ES-14-25-0450 (NO5WLC)	New No. 5 white liquor clarifier	ammonia (7664-41-7) benzene (71-43-2) chloroform (67-66-3) formaldehyde (50-00-0) hydrogen sulfide (7783-06-4) methyl mercaptan (74-93-1)	6.22E+00		2.25E-01

Replacement Table E-8
Proposed Permitted Rates
Domtar Paper Company
Plymouth Mill

Permit ID (Model ID)	Emissions Source	Toxic Air Pollutant	(lb/yr)	(lb/day	(lb/hr)
ES-14-25-0800	No. 4 white liquor clarifier	ammonia (7664-41-7)			
(R17)		benzene (71-43-2)	6.22E+00		
		chloroform (67-66-3)			
		formaldehyde (50-00-0)			2.25E-01
		hydrogen sulfide (7783-06-4)			
		methyl mercaptan (74-93-1)			
ES-14-25-0150	Synthetic liquor mix tank	ammonia (7664-41-7)			
(R22)		benzene (71-43-2)	6.22E+00		
		chloroform (67-66-3)			
		formaldehyde (50-00-0)			2.25E-01
		hydrogen sulfide (7783-06-4)			
		methyl mercaptan (74-93-1)			
ES-09-05-0200	East 18% liquor tank	ammonia (7664-41-7)			
(R24)		benzene (71-43-2)	7.72E-01		
		chloroform (67-66-3)	2.13E-02		
		formaldehyde (50-00-0)			1.84E-03
		hydrogen sulfide (7783-06-4)		1.77E-01	
		methyl mercaptan (74-93-1)			4.75E-03
ES-09-05-0150	18% liquor mix tank (west)	ammonia (7664-41-7)			
(R25)		benzene (71-43-2)	7.72E-01		
		chloroform (67-66-3)	2.13E-02		
		formaldehyde (50-00-0)			1.84E-03
		hydrogen sulfide (7783-06-4)		1.77E-01	
		methyl mercaptan (74-93-1)			4.75E-03
ES-09-05-0100	West 18% liquor tank	ammonia (7664-41-7)			
(R26)		benzene (71-43-2)	7.72E-01		
		chloroform (67-66-3)	2.13E-02		
		formaldehyde (50-00-0)			1.84E-03
		hydrogen sulfide (7783-06-4)		1.77E-01	
		methyl mercaptan (74-93-1)			4.75E-03
ES-09-30-0010	North 48% black liquor storage tank	ammonia (7664-41-7)			
(R27)		benzene (71-43-2)	1.74E-01		
		chloroform (67-66-3)	2.05E-01		
		formaldehyde (50-00-0)			4.60E-03
		hydrogen sulfide (7783-06-4)		2.24E+00	
		methyl mercaptan (74-93-1)			1.16E-04
ES-09-30-0020	South 48% black liquor storage tank	ammonia (7664-41-7)			
(R28)		benzene (71-43-2)	1.74E-01		
		chloroform (67-66-3)	2.05E-01		
		formaldehyde (50-00-0)			4.60E-03
		hydrogen sulfide (7783-06-4)		2.24E+00	
		methyl mercaptan (74-93-1)			1.16E-04

Replacement Table E-8
Proposed Permitted Rates
Domtar Paper Company
Plymouth Mill

Permit ID (Model ID)	Emissions Source	Toxic Air Pollutant	(lb/yr)	(lb/day	(lb/hr)
ES-09-40-0010	East 65% liquor storage tank	ammonia (7664-41-7)			
(R29)		benzene (71-43-2)	1.74E-01		
		chloroform (67-66-3)	2.05E-01		
		formaldehyde (50-00-0)			4.60E-03
		hydrogen sulfide (7783-06-4)		2.24E+00	
		methyl mercaptan (74-93-1)			1.16E-04
ES-09-40-0020	West 65% liquor storage tank	ammonia (7664-41-7)			
(R30)		benzene (71-43-2)	1.74E-01		
		chloroform (67-66-3)	2.05E-01		
		formaldehyde (50-00-0)			4.60E-03
		hydrogen sulfide (7783-06-4)		2.24E+00	
		methyl mercaptan (74-93-1)			1.16E-04
ES-09-95	Four saveall tanks	ammonia (7664-41-7)			
(R31,R32,R33,R72)		benzene (71-43-2)	1.29E+00		
		chloroform (67-66-3)	6.36E-01		
		formaldehyde (50-00-0)			1.56E-02
		hydrogen sulfide (7783-06-4)		6.91E+00	
		methyl mercaptan (74-93-1)			5.09E-03
ES-09-20-0070	No. 6 evaporator soap skim tank	ammonia (7664-41-7)			
(R34)		benzene (71-43-2)	1.74E-01		
		chloroform (67-66-3)	2.05E-01		
		formaldehyde (50-00-0)			4.60E-03
		hydrogen sulfide (7783-06-4)		2.24E+00	
		methyl mercaptan (74-93-1)			1.16E-04
ES-09-19-0020	East liquor heater	ammonia (7664-41-7)			
(R36)		benzene (71-43-2)	7.72E-01		
		chloroform (67-66-3)	2.13E-02		
		formaldehyde (50-00-0)			1.84E-03
		hydrogen sulfide (7783-06-4)		1.77E-01	
		methyl mercaptan (74-93-1)			4.75E-03
ES-09-25-0140	No. 7 evaporator soap skimmer tank	ammonia (7664-41-7)			
(R37)		benzene (71-43-2)	1.74E-01		
		chloroform (67-66-3)	2.05E-01		
		formaldehyde (50-00-0)			4.60E-03
		hydrogen sulfide (7783-06-4)		2.24E+00	
		methyl mercaptan (74-93-1)			1.16E-04
ES-09-25-0540	No. 7 evaporator boilout tank	ammonia (7664-41-7)			
(R38)		benzene (71-43-2)	1.74E-01		
		chloroform (67-66-3)	2.05E-01		
		formaldehyde (50-00-0)			4.60E-03
		hydrogen sulfide (7783-06-4)		2.24E+00	
		methyl mercaptan (74-93-1)			1.16E-04

Replacement Table E-8
Proposed Permitted Rates
Domtar Paper Company
Plymouth Mill

Permit ID (Model ID)	Emissions Source	Toxic Air Pollutant	(lb/yr)	(lb/day	(lb/hr)
ES-09-30-0030	Soap Collection tank	ammonia (7664-41-7)			
(R39)		benzene (71-43-2)	7.72E-01		
		chloroform (67-66-3)	2.13E-02		
		formaldehyde (50-00-0)			1.84E-03
		hydrogen sulfide (7783-06-4)		1.77E-01	
		methyl mercaptan (74-93-1)			4.75E-03
ES-09-10	Four soap storage tanks	ammonia (7664-41-7)			
(R40,R41,R42,R43)		benzene (71-43-2)	3.09E+00		
		chloroform (67-66-3)	8.54E-02		
		formaldehyde (50-00-0)			7.36E-03
		hydrogen sulfide (7783-06-4)		7.10E-01	
		methyl mercaptan (74-93-1)			1.90E-02
ES-09-25-0340	Diverter tank	ammonia (7664-41-7)			
(R44)		benzene (71-43-2)	1.74E-01		
		chloroform (67-66-3)	2.05E-01		
		formaldehyde (50-00-0)			4.60E-03
		hydrogen sulfide (7783-06-4)		2.24E+00	
		methyl mercaptan (74-93-1)			1.16E-04
ES-14-30-0310	Lime mud mix tank	ammonia (7664-41-7)			
(R46)		benzene (71-43-2)	2.02E+00		
		chloroform (67-66-3)			
		formaldehyde (50-00-0)			
		hydrogen sulfide (7783-06-4)		2.41E-01	
		methyl mercaptan (74-93-1)			1.90E-02
ES-14-30-0700	No. 2 lime mud wash tank	ammonia (7664-41-7)			
(R47)		benzene (71-43-2)	6.01E+00		
		chloroform (67-66-3)			
		formaldehyde (50-00-0)			
		hydrogen sulfide (7783-06-4)			
		methyl mercaptan (74-93-1)			
ES-14-30-350	No. 3 lime mud wash tank	ammonia (7664-41-7)			
(R49)		benzene (71-43-2)	6.01E+00		
		chloroform (67-66-3)			
		formaldehyde (50-00-0)			
		hydrogen sulfide (7783-06-4)			
		methyl mercaptan (74-93-1)			
ES-14-30-5000/6000	East and West lime mud filter - hood exhaust	ammonia (7664-41-7)			
(R50)		benzene (71-43-2)	5.15E+00		
		chloroform (67-66-3)	7.95E+00		
		formaldehyde (50-00-0)			3.57E-02
		hydrogen sulfide (7783-06-4)			
		methyl mercaptan (74-93-1)			7.19E-03

Replacement Table E-8
Proposed Permitted Rates
Domtar Paper Company
Plymouth Mill

Permit ID (Model ID)	Emissions Source	Toxic Air Pollutant	(lb/yr)	(lb/day	(lb/hr)
ES-14-20-2020	East lime slaker	ammonia (7664-41-7)			6.36E+00
(R53)		benzene (71-43-2)	3.99E+00		
		chloroform (67-66-3)			
		formaldehyde (50-00-0)			4.50E-03
		hydrogen sulfide (7783-06-4)			
		methyl mercaptan (74-93-1)			
ES-14-20-2085	West lime slaker	ammonia (7664-41-7)			6.36E+00
(R58)		benzene (71-43-2)	3.99E+00		
		chloroform (67-66-3)			
		formaldehyde (50-00-0)			4.50E-03
		hydrogen sulfide (7783-06-4)			
		methyl mercaptan (74-93-1)			
ES-14-30-5040 and ES-14-30-6040	Two lime mud filter vacuum systems	ammonia (7664-41-7)			
(R65,R66)		benzene (71-43-2)	5.09E+00		
		chloroform (67-66-3)	8.62E+01		
		formaldehyde (50-00-0)			
		hydrogen sulfide (7783-06-4)		4.88E-02	
		methyl mercaptan (74-93-1)			1.16E-02
ES-14-70-2045	Lime kiln scrubber water standpipe	ammonia (7664-41-7)			
(R45)		benzene (71-43-2)	1.75E+01		
		chloroform (67-66-3)			
		formaldehyde (50-00-0)			
		hydrogen sulfide (7783-06-4)			
		methyl mercaptan (74-93-1)			
ES-09-20-0250	Combined condensate tank	ammonia (7664-41-7)			
(R71)		benzene (71-43-2)	6.09E+00		
		chloroform (67-66-3)			
		formaldehyde (50-00-0)			2.56E-04
		hydrogen sulfide (7783-06-4)		9.42E-02	
		methyl mercaptan (74-93-1)			2.92E-02
ES-14-70-2020	Scrubber water clarifier	ammonia (7664-41-7)			
(R76)		benzene (71-43-2)	1.75E+01		
		chloroform (67-66-3)			
		formaldehyde (50-00-0)			
		hydrogen sulfide (7783-06-4)			
		methyl mercaptan (74-93-1)			
ES-09-05-0210	South weak black liquor storage tank	ammonia (7664-41-7)			3.45E-03
(SWBLTANK)		benzene (71-43-2)	3.87E-01		
		chloroform (67-66-3)	1.57E+00		
		formaldehyde (50-00-0)			1.73E-04
		hydrogen sulfide (7783-06-4)			
		methyl mercaptan (74-93-1)			

Replacement Table E-8
Proposed Permitted Rates
Domtar Paper Company
Plymouth Mill

Permit ID (Model ID)	Emissions Source	Toxic Air Pollutant	(lb/yr)	(lb/day	(lb/hr)
ES-08-65-1060	Spill collection tank	ammonia (7664-41-7)			1.92E-01
(6N7SPLTK)		benzene (71-43-2)	1.43E+00		
		chloroform (67-66-3)	5.80E+00		
		formaldehyde (50-00-0)			
		hydrogen sulfide (7783-06-4)			
		methyl mercaptan (74-93-1)			
IES-06-P1	No. 6 Bleach Plant, 6th stage hydrogen peroxide tank	ammonia (7664-41-7)			
(6FEEDTNK)		benzene (71-43-2)	4.19E+00		
		chloroform (67-66-3)	3.70E+02		
		formaldehyde (50-00-0)			
		hydrogen sulfide (7783-06-4)			
		methyl mercaptan (74-93-1)			
ES-06-P2	6th stage peroxide reactor blow tube	ammonia (7664-41-7)			
(6BLOWTBE)		benzene (71-43-2)	1.97E+01		
		chloroform (67-66-3)	1.73E+03		
		formaldehyde (50-00-0)			
		hydrogen sulfide (7783-06-4)			
		methyl mercaptan (74-93-1)			
ES-06-P3	6th stage peroxide stage washer	ammonia (7664-41-7)			
(6EXHAUST)		benzene (71-43-2)	6.95E+01		
		chloroform (67-66-3)	6.13E+03		
		formaldehyde (50-00-0)			
		hydrogen sulfide (7783-06-4)			
		methyl mercaptan (74-93-1)			
ES-09-27-1000	LRP 40% Black Liquor Tank	ammonia (7664-41-7)			
(LRP40%)		benzene (71-43-2)	1.74E-01		
		chloroform (67-66-3)	2.05E-01		
		formaldehyde (50-00-0)			4.60E-03
		hydrogen sulfide (7783-06-4)		2.24E+00	
		methyl mercaptan (74-93-1)			1.16E-04
ES-07-34-4080/4100	4th stage extraction tower and filtrate tank	ammonia (7664-41-7)			
(EOP)		benzene (71-43-2)	4.51E+00		
		chloroform (67-66-3)	3.98E+02		
		formaldehyde (50-00-0)			
		hydrogen sulfide (7783-06-4)			
		methyl mercaptan (74-93-1)			5.33E-03
ES-07-36-6040/6060	Peroxide stage 6th stage extraction tower and filtrate tank	ammonia (7664-41-7)			
(PEROX)		benzene (71-43-2)	4.51E+00		
		chloroform (67-66-3)	3.98E+02		
		formaldehyde (50-00-0)			
		hydrogen sulfide (7783-06-4)			
		methyl mercaptan (74-93-1)			5.33E-03

Replacement Table E-8
Proposed Permitted Rates
Domtar Paper Company
Plymouth Mill

Permit ID (Model ID)	Emissions Source	Toxic Air Pollutant	(lb/yr)	(lb/day	(lb/hr)
ES-09-12-0250	No. 5 Soap Storage Tank	ammonia (7664-41-7)			
(5SOAP)		benzene (71-43-2)	7.72E-01		
		chloroform (67-66-3)	2.13E-02		
		formaldehyde (50-00-0)			1.84E-03
		hydrogen sulfide (7783-06-4)		1.77E-01	
		methyl mercaptan (74-93-1)			4.75E-03
ES-09-12-0050	Black Liquor Separator Tank	ammonia (7664-41-7)			
(LIQSEP)		benzene (71-43-2)	7.72E-01		
		chloroform (67-66-3)	2.13E-02		
		formaldehyde (50-00-0)			1.84E-03
		hydrogen sulfide (7783-06-4)		1.77E-01	
		methyl mercaptan (74-93-1)			4.75E-03
ES-09-27-2700	Agitated Acidification Tank	ammonia (7664-41-7)			
ES-09-27-2770	Acidification Overflow/Foam Tank	benzene (71-43-2)			
ES-09-27-2800	Acitated Acid Conditioning Tank	chloroform (67-66-3)			
IES-09-27-3700	Acid Sump Pit	formaldehyde (50-00-0)			
IES-09-27-3600	Alkaline Sump Pit	hydrogen sulfide (7783-06-4)		5.59E+00	
(LRPSSUMP)		methyl mercaptan (74-93-1)			3.13E-03
ES-32-93-0100	NC-2 line Building roof vents	ammonia (7664-41-7)			
(NC1_2A-M)		benzene (71-43-2)	1.21E+02		
		chloroform (67-66-3)	1.13E+02		
		formaldehyde (50-00-0)			5.29E-01
		hydrogen sulfide (7783-06-4)			
		methyl mercaptan (74-93-1)			2.86E-01
ES-45-93-0100	NC-5 Building fugitives	ammonia (7664-41-7)			
(NC5_1-29)		benzene (71-43-2)	2.80E+02		
		chloroform (67-66-3)	2.62E+02		
		formaldehyde (50-00-0)			1.47E+00
		hydrogen sulfide (7783-06-4)			
		methyl mercaptan (74-93-1)			7.95E-01
CD-65-60-1010	Thermal Oxidizer	ammonia (7664-41-7)			
(THERMALOX)		benzene (71-43-2)	2.62E+02		
		chloroform (67-66-3)	7.54E+00		
		formaldehyde (50-00-0)			3.94E-02
		hydrogen sulfide (7783-06-4)		1.30E+01	
		methyl mercaptan (74-93-1)			1.36E+00
ES-09-27-3000	LRP Press Building Fugitives (Filter Press 2)	ammonia (7664-41-7)			1.67E-04
(LRPPRS2)		benzene (71-43-2)	1.87E-02		
		chloroform (67-66-3)	7.60E-02		
		formaldehyde (50-00-0)			8.39E-06
		hydrogen sulfide (7783-06-4)		1.46E+01	
		methyl mercaptan (74-93-1)			

Replacement Table E-8
Proposed Permitted Rates
Domtar Paper Company
Plymouth Mill

Permit ID (Model ID)	Emissions Source	Toxic Air Pollutant	(lb/yr)	(lb/day	(lb/hr)
ES-09-27-3800	Two-Phase Packed-Bed Caustic Scrubber	ammonia (7664-41-7)			1.84E-03
(LSRPSCRUB)		benzene (71-43-2)	4.69E+01		
		chloroform (67-66-3)	1.90E+02		
		formaldehyde (50-00-0)			2.48E-01
		hydrogen sulfide (7783-06-4)		2.47E+02	
		methyl mercaptan (74-93-1)			4.20E+00
ES-73-05-2000	WWTP operations	ammonia (7664-41-7)			5.04E+01
(WWTP Operations Summary)		benzene (71-43-2)			
		chloroform (67-66-3)	3.22E+03		
		formaldehyde (50-00-0)			6.57E-01
		hydrogen sulfide (7783-06-4)			
		methyl mercaptan (74-93-1)			

Attachment 5 – Potential Emissions Calculations

TABLE 2
ACETALDEHYDE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
TROMSCR	TROMSCR	Trommel Screen	5.37E-06	lb/hp-hr	AP-42 Section 3.3, Table 3.3-2. Converted to lb/hp-hr	74	hp-hr/hr	3.97E-04	5.01E-05
06-31-0180, 06-31-1000, 06-32-2060, 06-32-2120, 06-32-2100, 06-32-2300, 06-32-2340, 06-32-2380	F09, F12, F13, F14, F17, F18, F19, F41	No. 6 O2 Delig	1.28E-04	lb/ODTUBP	1995 Stack Test	35.5	ODTUBP/hr	4.54E-03	5.73E-04
06-40-8000	F15, F16	No. 6 Bleach Plant Scrubber	1.64E-03	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber)	37.9	ADTBP/hr	6.21E-02	7.82E-03
06-P1	6FEEDTNK	No. 6 Bleach Plant 6th Stage Feed Tank	6.84E-04	lb/ODTUBP	Estimation using compound to methanol ratio of NCASI TB No. 679, Table V.O.1, Mill N, October 1994 and 1995/2004 methanol testing on similar existing bleach plant sources. TB No. 679 doesn't specify bleached or unbleached so we assume unbleached.	35.5	ODTUBP/hr	2.43E-02	3.06E-03
06-P2	6BLOWTBE	No. 6 Bleach Plant 6th Stage Blow Tube (standpipe)	3.20E-03	lb/ODTUBP	Estimation using compound to methanol ratio of NCASI TB No. 679, Table V.O.1, Mill N, October 1994 and 1995/2004 methanol testing on similar existing bleach plant sources. TB No. 679 doesn't specify bleached or unbleached so we assume unbleached.	35.5	ODTUBP/hr	1.14E-01	1.43E-02
06-P3	6EXHAUST	No. 6 BP 6th Stage Washer And Filtrate Tank	1.13E-02	lb/ODTUBP	Estimation using compound to methanol ratio of NCASI TB No. 679, Table V.O.1, Mill N, October 1994 and 1995/2004 methanol testing on similar existing bleach plant sources. TB No. 679 doesn't specify bleached or unbleached so we assume unbleached.	35.5	ODTUBP/hr	4.02E-01	5.07E-02
07-31-1000, 07-31-1100, 07-33-3000, 07-31-1140, 07-31-1200, 07-31-1180	F23-27, F42	No. 7 O2 Delig	4.57E-04	lb/ODTUBP	1995 Stack Test	55.5	ODTUBP/hr	2.53E-02	3.19E-03
07-31-1180	F30	No. 7 Bleach Plant Scrubber	1.64E-03	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber)	59.2	ADTBP/hr	9.70E-02	1.22E-02
07-34-4080, 07-34-4100, 07-36-6040, 07-36-6060	EOP, PEROX	EOP and Peroxide Stage	9.40E-04	lb/ODTUBP	NCASI Technical Bulletin 679, Table V.O.1, Mill N, October 1994	55.5	ODTUBP/hr	5.21E-02	6.57E-03
08-40-1000	F35	No. 32 High Density Pulp Tank	5.20E-03	lb/hr/tank	NCASI Technical Bulletin No. 973, October 2014, Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update. Table 4.19 HD Unbleached Pulp Storage Tanks	1.0	tank	5.20E-03	6.55E-04
05-30-1300	F60	Hot Water Tank	2.92E-02	lb/hr	Sep 1998 Stack Testing	1.0	hr/hr	2.92E-02	3.68E-03
08-65-1060	6N7SPLTK	No. 6 and 7 spill collection tank	1.67E-04	lb/ODTUBP	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing	91	ODTUBP/hr	1.52E-02	1.91E-03

TABLE 2
ACETALDEHYDE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
09-05-0210	SWBLTANK	South WBL Storage Tank	8.97E-07	lb/ODTUBP	ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000.	91.0	ODTUBP/hr	8.16E-05	1.03E-05
09-12-0250	5SOAP	No. 5 Soap Storage Tank	4.74E-04	lb/hr	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids	1	tank	4.74E-04	5.97E-05
09-12-0050	LIQSEP	New Liquor Separator Tank	4.74E-04	lb/hr	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids	1	tank	4.74E-04	5.97E-05
09-05-0200, 09-05-0150, 09-05-0100, 09-95-0015, 09-19-0020, 09-19-0030, 09-30-0030, 09-10-0150, 09-10-0300, 09-10-0350, 09-10-0400	R24-26, R32, R36, R39-R43	18% Liquor Mix Tanks	4.74E-04	lb/hr/tank	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids, 10.0 multiplier for tank movements	10	tank	4.74E-03	5.97E-04
09-30-0010, 09-30-0020, 09-95-0010, 09-95-0009, 09-20-0070, 09-25-0140, 09-25-0540, 09-25-0340, 09-20-0310	R27-R28, R31, R33, R34, R37, R38, R44, R72	48% Liquor Storage Tanks, Soap Tanks	2.02E-02	lb/hr/tank	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. 9.0 multiplier for tank movements	9	tank	1.82E-01	2.29E-02
09-40-0010, 09-40-0020	R29, R30	65% Liquor Storage Tanks	2.02E-02	lb/hr/tank	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. 2.0 multiplier for tank movements	2	tank	4.04E-02	5.09E-03
09-27-1000	LRP 40%	Tank - Lignin Feed Liquor	2.02E-02	lb/hr/tank	NCASI Pulp and Paper Database - March 2013 - Recovery Black Liquor Tank >20% Solids - Median	1	tank	2.02E-02	2.55E-03
09-27-3000	LRPPRS2	Filter - 2 Lignin Filter	8.97E-07	lb/ODTL	ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000. Because emissions factors are production based, they are conservatively not time weighted based on actual venting only 15% of the time.	4.4	ODTL/hr	3.95E-06	4.98E-07
10-25-0110	PO01C	No. 5 Recovery Boiler BLS	3.70E-03	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.23 - Summary of Non-metal Air Toxic Emissions from NDCE Kraft Recovery Furnace p. 100	140	TBLS/hr	5.18E-01	6.53E-02
10-45-0450	R05	No. 5 Precipitator Mix Tank	1.07E-04	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.35 - Miscellaneous Kraft Mill Sources - Salt Cake Mix Tank Vents p. 143	140.0	TBLS/hr	1.50E-02	1.89E-03
14-05-0050	R03	North Smelt Tank	1.11E-03	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010 - Table 4.28 Kraft Smelt Dissolving Tanks p. 118	69.2	TBLS/hr	7.68E-02	9.68E-03
14-05-0300	R04-1	South Smelt Tank	1.11E-03	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010 - Table 4.28 Kraft Smelt Dissolving Tanks p. 118	69.2	TBLS/hr	7.68E-02	9.68E-03
10-08-0010	R04-2	Salt Cake Mix Tank	1.07E-04	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.35 - Miscellaneous Kraft Mill Sources - Salt Cake Mix Tank Vents p. 143	138	TBLS/hr	1.48E-02	1.87E-03

TABLE 2
ACETALDEHYDE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
14-05-0300, 10-08-0010	R04	Total South Smelt Tank and Salt Cake Mix Tank						9.17E-02	1.15E-02
14-10-05	R14	No. 5 Green Liquor Clarifier	1.00E-04	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Additional Causticizing Area Sources Table 4.32 - Green Liquor Clarifier Mill D.	22.2	T CaO/hr	2.22E-03	2.80E-04
14-15-0450, 14-70-2045, 14-70-2020	R45,R70,R76	Scrubber Water Standpipe, Scrubber Water Clarifier	1.80E-03	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Additional Causticizing Area Sources Table 4.32 - White Liquor and Weak Wash Pressure Filter Vent Mill J. A 2.0 factor is applied.	22.2	T CaO/hr	7.99E-02	1.01E-02
14-15-0600, 14-15-0800, 14-15-0900, 14-15-DREGS	R09,R13,R10, R12	Dregs Sources	1.00E-04	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources -Green Liquor Clarifier Vent Mill D. A 0.3 factor is applied.	22.2	T CaO/hr	6.66E-04	8.39E-05
14-20-2020, 14-20-2085	R53, R58	East/West Slaker Area	1.16E-02	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.31 - Causticizing Sources p. 128, Causticizer/Slaker Combination Emissions. A 1.5 factor is applied.	22.2	T CaO/hr	3.86E-01	4.86E-02
14-30-0310	R46	Lime Mud Mix Tank	2.00E-04	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Additional Causticizing Area Sources, Table 4.32 p.136, Lime Mud Dilution Tank Vent.	22.2	T CaO/hr	4.44E-03	5.59E-04
14-30-5000, 14-30-6000	R50	East and West Lime Mud Filters	1.54E-03	lb/T CaO	NCASI Pulp and Paper Database TB 973 Table 4.31 - Lime Mud Precoat Filters	22.2	T CaO/hr	3.42E-02	4.31E-03
14-30-5040, 14-30-6040	R65, R66	East and West Lime Mud Vacuum System	7.60E-03	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.31 - Precoat Filter Vacuum Pump Exhaust p. 133. A 3.0 factor is applied to account for Lime Mud Filter Vacuum System, East and West Lime Filter Vacuum Pump Silencers, and the Lime Mud Filtrate Tank.	22.2	T CaO/hr	5.06E-01	6.37E-02
14-60-3000	R01A	No. 5 Lime Kiln - TCaO	6.42E-03	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.25 - Summary of Non-metal Air Toxic Emissions from Kraft Lime Kilns p. 110	22.2	T CaO/hr	1.42E-01	1.79E-02
09-20-0250	R71	Combined Condensate Tank	5.12E-03	lb/hr	Stack Testing 1998, 1.7% increase due to sewering of condensates from C3 and No. 6 Evaps 5th effect (2013 Project)	1.0	hr/hr	5.12E-03	6.45E-04
		Cooler -1 Feed Liquor	2.02E-02	lb/hr	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor	1.0	hr/hr	2.02E-02	2.55E-03
		Filter - 1 Lignin	8.97E-07	lb/ODTL	Conservatively assume emissions from filters equate to weak black liquor tank. ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000. Emission factors are production based and thus are conservatively not time weighted based on actual venting only 15% of the time.	4.4	ODTL/hr	3.95E-06	4.98E-07

TABLE 2
ACETALDEHYDE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
		Tank - 2 Lignin Filter Cloth Wash	8.97E-07	lb/ODTL	ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000 . Because emissions factors are production based, they are conservatively not time weighted based on actual venting only 15% of the time.	4.4	ODTL/hr	3.95E-06	4.98E-07
		Conveyors - #1 Lignin Filter & #1 Lignin Filter Incline	1.79E-06	lb/ODTL	Conservatively assume emissions from filters equate to weak black liquor tank. Multiply emissions by 2 for two conveyors. ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000.	4.40	ODTL/hr	7.90E-06	9.96E-07
		LRP Dilute Tanks	6.28E-06	lb/ODTL	ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000. Emission factor displayed is for 7 tanks total. Emission factors used for the primary cloth wash and filtrate tanks are production based and thus are conservatively not time weighted based onactual venting periods of only 15% of the time.	4.40	ODTL/hr	2.77E-05	3.48E-06
		LRP Acidification Tank (2800)	1.27E-02	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 1 tank.	4.40	ODTL/hr	5.58E-02	7.03E-03
09-27-3800	LSRPSCRUB	Total from Caustic Scrubber						7.60E-02	9.58E-03
64-25-0290	PO01A	No. 1 HFB - Hog Fuel	1.57E-04	lb/MMBtu	Table 4.1, 4.5 and 4.6 of NCASI TB 1013	1087.4	MMBtu/hr	1.71E-01	2.15E-02
	PO13A	No. 2 HFB - Hog Fuel	1.57E-04	lb/MMBtu	Table 4.1, 4.5 and 4.6 of NCASI TB 1013; adds the LVHC and HVLC combustion gases	946.8	MMBtu/hr	1.49E-01	1.87E-02
	PO13A	LVHC Combustion	3.01E-04	lb/ADTUBP	NCASI TB 973 Table 4.18 - Kraft Mill NCG Thermal Oxidizer. LVHC gases are burned through No. 2 HFB. The White Liquor Scrubber then No. 5 Lime Kiln are used as backups	101.1	ADTUBP/hr	3.04E-02	3.83E-03
	PO13A	HVLC Combustion	5.71E-06	lb/hr	Data generated by the 1996 compliance testing was run at 68% of the total fiberline capacity, 2050 BDTP per day. The tested lb/hr loadings were adjusted by a ratio of actual production to testing production. HVLC gases are burned through the No. 2 HFB and the White Liquor Scrubber is used as backup	1.0	hr/hr	5.71E-06	7.20E-07
	PO13A	Carbonator - Feed Liquor	4.04E-04	lb/hr	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor Median, 98% control, 1 tank. Controlled by HVLC System	1.00	hr/hr	4.04E-04	5.09E-05

TABLE 2
ACETALDEHYDE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
	PO13A	LRP Acidification Tanks (2700 & 2770)	5.07E-04	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 98% control, 2 tanks. Controlled by HVLC System	4.40	ODTL/hr	2.23E-03	2.81E-04
65-25-0310	Total from No. 2 Hog Fuel Boiler							1.82E-01	2.29E-02
CD-65-60-1010	Total from Thermal Oxidizer and HVLC							2.64E-03	3.33E-04

TABLE 2
ACETALDEHYDE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
32-40-1560	NC1&2	NC-2 Paper Machine	4.05E-03	lb/ADTFP	NCASI Technical Bulletin No. 973, February 2010 Table 4.34 pg. 140, Summary of Air Toxic Emissions form Bleached Kraft Pulp and Paper Machines	25	ADTFP/hr	1.01E-01	1.28E-02
32-10-0140	P09A-F	NC-2 HD and LD Stock Tanks	3.50E-04	lb/ODTUBP	NCASI Technical Bulletin No. 679, October 1994, VOC Emissions from Pulp and Paper Mill Sources, Part V - Kraft Mill Bleach Plants, pg. 104 Table V.B.1, Mill A, D Washer Vent. A 1.5 factor is applied.	24.9	ODTUBP/hr	1.31E-02	1.65E-03
45-93-0100	NC5	NC-5 Paper Machine	4.05E-03	lb/ADTFP	NCASI Technical Bulletin No. 973, February 2010 Table 4.34 pg. 140, Summary of Air Toxic Emissions form Bleached Kraft Pulp and Paper Machines	69	ADTFP/hr	2.81E-01	3.54E-02
45-10-0005	P27A-H	NC-5 HD and LD Stock Tanks	3.50E-04	lb/ODTUBP	NCASI Technical Bulletin No. 679, October 1994, VOC Emissions from Pulp and Paper Mill Sources, Part V - Kraft Mill Bleach Plants, pg. 104 Table V.B.1, Mill A, D Washer Vent. A 1.5 factor is applied.	64.2	ODTUBP/hr	3.37E-02	4.24E-03
53-40-0130	FPDE	Fine Paper Diesel Engine	7.67E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	2.1	MMBtu/hr	1.61E-03	2.03E-04
14-60-3000-1	LKDE	Lime Kiln Diesel Backup Engine	7.67E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	5.1	MMBtu/hr	3.89E-03	4.90E-04
53-40-0140	WNCEE	W.N. Cr., East Diesel Fire Pump Engine	7.67E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	2.1	MMBtu/hr	1.61E-03	2.03E-04
53-40-0145	WNCWE	W.N. Cr., West Diesel Fire Pump Engine	7.67E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	2.7	MMBtu/hr	2.09E-03	2.64E-04
73-05-4570	RUNEA	Runoff Coll Sewer Lift Station Diesel Backup Engine	7.67E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	1.4	MMBtu/hr	1.07E-03	1.35E-04
73-05-4580	SEWEA	Fiber Line Sewer Lift Station Diesel Backup Engine	7.67E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	1.4	MMBtu/hr	1.07E-03	1.35E-04
71-95-0500	COMMEA	Communications Back up Engine	7.67E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	5.8	MMBtu/hr	4.42E-03	5.57E-04
TEMPSEW	TEMPSEW	Temporary Sewer Pump Engine	7.67E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	2.4	MMBtu/hr	1.81E-03	2.28E-04
TEMPGEN	TEMPGEN	Temporary Generator	7.67E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	0.006	MMBtu/hr	4.59E-06	5.78E-07
TEMP-CHIP	TEMPCHIP	Temporary Log Chipper	1.76E-07	lb/hp-hr	AP-42 Section 3.4, Table 3.4-3	1000	hp-hr/hr	1.76E-04	2.22E-05
73-10-2000	SETPOND2	Primary Clarifier	4.00E-03	lb/ADTP	NCASI TRI Guidance	101	ADTP/hr	4.04E-01	5.09E-02

TABLE 2
ACETALDEHYDE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
73-10-1000	SETPOND1	Secondary Clarifier	1.41E-02	lb/ADTP	NCASI TRI Guidance	101	ADTP/hr	1.42E+00	1.79E-01
73-05-2000-A		C3 Stream Sewering	3.19E+00	lb/hr	Water 9 Results for Base Case with Addition of C3 Stream	1	hr/hr	3.19E+00	4.02E-01
73-05-2000-B		5th eff 6 evap Sewering	2.25E+00	lb/hr	Water 9 Results for Base Case with Addition of 5th eff 6 evap	1	hr/hr	2.25E+00	2.83E-01

TABLE 3
ACROLEIN POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
06-31-0180, 06-31-1000, 06-32-2060, 06-32-2120, 06-32-2100, 06-32-2300, 06-32-2340, 06-32-2380	F09, F12, F13, F14, F17, F18, F19, F41	No. 6 O2 Delig	2.82E-05	lb/ADTUBP	NCASI Technical Bulletin 973, "Compilation of Air Toxic and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update" February 2010, Table 4.4, Median emission factors using ND=0.	39.4	ADTUBP/hr	1.11E-03	1.40E-04
06-40-8000	F15, F16	No. 6 Bleach Plant Scrubber	6.23E-05	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber).	37.9	ADTBP/hr	2.36E-03	2.97E-04
07-31-1000, 07-31-1100, 07-33-3000, 07-31-1140, 07-31-1200, 07-31-1180	F23-27, F42	No. 7 O2 Delig	2.82E-05	lb/ADTUBP	NCASI Technical Bulletin 973, "Compilation of Air Toxic and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update" February 2014, Table 4.4, Median emission factors using ND=0.	61.6	ADTUBP/hr	1.74E-03	2.19E-04
07-31-1180	F30	No. 7 Bleach Plant Scrubber	6.23E-05	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber).	59.2	ADTBP/hr	3.69E-03	4.64E-04
07-34-4080, 07-34-4100, 07-36-6040, 07-36-6060	EOP, PEROX	EOP and Peroxide Stage	2.40E-05	lb/ODTUBP	NCASI Technical Bulletin 679, Table V.O.1, Mill N, October 1994	55.5	ODTUBP/hr	1.33E-03	1.68E-04
05-30-1300	F60	Hot Water Tank	9.24E-06	lb/hr	Sep 1998 Stack Testing	1.0	hr/hr	9.24E-06	1.16E-06
09-27-1000	LRP 40%	Tank - Lignin Feed Liquor	1.79E-05	lb/hr/tank	NCASI Pulp and Paper Database 2013 - March 2013 - Recovery Black Liquor Tank >20% Solids - Median	1	hr/hr	1.79E-05	2.26E-06
09-12-0250	5SOAP	No. 5 Soap Storage Tank	1.36E-04	lb/hr	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids	1	tank	1.36E-04	1.71E-05
09-12-0050	LIQSEP	New Liquor Separator Tank	1.36E-04	lb/hr	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids	1	tank	1.36E-04	1.71E-05
09-05-0200, 09-05-0150, 09-05-0100, 09-95-0015, 09-19-0020, 09-19-0030, 09-30-0030, 09-10-0150, 09-10-0300, 09-10-0350, 09-10-0400	R24-26, R32, R36, R39-R43	18% Liquor Mix Tanks	1.36E-04	lb/hr/tank	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids, 10.0 multiplier for tank movements	10.0	tank	1.36E-03	1.71E-04
09-30-0010, 09-30-0020, 09-95-0010, 09-95-0009, 09-20-0070, 09-25-0140, 09-25-0540, 09-25-0340, 09-20-0310	R27-R28, R31, R33, R34, R37, R38, R44, R72	48% Liquor Storage Tanks, Soap Tanks	1.79E-05	lb/hr/tank	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. 9.0 multiplier for tank movements	9.0	tank	1.61E-04	2.03E-05
09-40-0010, 09-40-0020	R29, R30	65% Liquor Storage Tanks	1.79E-05	lb/hr/tank	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. 2.0 multiplier for tank movements	2.0	tank	3.58E-05	4.51E-06

TABLE 3
ACROLEIN POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
10-45-0450	R05	No. 5 Precipitator Mix Tank	6.04E-06	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.35 - Miscellaneous Kraft Mill Sources - Salt Cake Mix Tank Vents p. 143	140.0	TBLS/hr	8.46E-04	1.07E-04
14-05-0050	R03	North Smelt Tank	2.26E-04	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.28 - Kraft Smelt Dissolving Tanks p. 118	69.2	TBLS/hr	1.56E-02	1.97E-03
14-05-0300	R04-1	South Smelt Tank	2.26E-04	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.28 - Kraft Smelt Dissolving Tanks p. 118	69.2	TBLS/hr	1.56E-02	1.97E-03
10-08-0010	R04-2	Salt Cake Mix Tank	6.04E-06	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.35 - Miscellaneous Kraft Mill Sources - Salt Cake Mix Tank Vents p. 143	138	TBLS/hr	8.36E-04	1.05E-04
14-05-0300, 10-08-0010	R04	Total South Smelt Tank and Salt Cake Mix Tank						1.65E-02	2.08E-03
14-30-5000, 14-30-6000	R50	East and West Lime Mud Filters	5.33E-05	lb/T CaO	NCASI Pulp and Paper Database TB 973 Table 4.31 - Lime Mud Precoat Filters	22.2	T CaO/hr	1.18E-03	1.49E-04
		Cooler -1 Feed Liquor	1.79E-05	lb/hr	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor	1.0	hr/hr	1.79E-05	2.26E-06
		LRP Acidification Tank (2800)	6.97E-03	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 1 tank.	4.4	ODTL/hr	3.07E-02	3.87E-03
09-27-3800	LSRPSCRUB	Total from Caustic Scrubber						3.07E-02	3.87E-03
14-15-0450, 14-70-2045, 14-70-2020	R45,R70,R76	Scrubber Water Standpipe, Scrubber Water Clarifier	5.90E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources p. 136, White Liquor and Weak Wash Pressure Filter Vent Mill J. A 2.0 Factor is applied.	22.2	T CaO/hr	2.62E-03	3.30E-04
14-20-2020, 14-20-2085	R53, R58	East/West Slaker Area	5.06E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.31 - Causticizing Sources p. 128, Causticizer/Slaker Combination Emissions. A 1.5 factor is applied.	22.2	T CaO/hr	1.68E-03	2.12E-04
64-25-0290	PO01A-1	No. 1 HFB - Hog Fuel	1.27E-04	lb/MMBtu	Table 4.1, 4.5 and 4.6 of NCASI TB 1013	1087.4	MMBtu/hr	1.38E-01	1.74E-02
	PO13A	Carbonator - Feed Liquor	3.58E-07	lb/hr	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor Median, 98% control, 1 tank.	1.0	hr/hr	3.58E-07	4.51E-08
	PO13A	LRP Acidification Tanks (2700 &2770)	2.79E-04	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 98% control, 2 tanks. Controlled by HVLC System	4.4	ODTL/hr	1.23E-03	1.55E-04

TABLE 3
ACROLEIN POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
	PO13A	No. 2 HFB - Hog Fuel	1.27E-04	lb/MMBtu	Table 4.1, 4.5 and 4.6 of NCASI TB 1013	946.8	MMBtu/hr	1.20E-01	1.52E-02
65-25-0310	Total from No. 2 Hog Fuel Boiler							1.21E-01	1.53E-02
CD-65-60-1010	Total from Thermal Oxidizer and HVLC							1.23E-03	1.55E-04

TABLE 3
ACROLEIN POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
53-40-0130	FPDE	Fine Paper Diesel Engine	9.25E-05	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	2.1	MMBtu/hr	1.94E-04	2.45E-05
14-60-3000-1	LKDE	Lime Kiln Diesel Backup Engine	9.25E-05	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	5.1	MMBtu/hr	4.69E-04	5.91E-05
14-60-3000	R01A	No. 5 Lime Kiln - TCaO	5.50E-04	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.25 - Summary of Non-metal Air Toxic Emissions from Kraft Lime Kilns p. 110	22.2	T CaO/hr	1.22E-02	1.54E-03
53-40-0140	WNCEE	W.N. Cr., East Diesel Fire Pump Engine	9.25E-05	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	2.1	MMBtu/hr	1.94E-04	2.45E-05
53-40-0145	WNCWE	W.N. Cr., West Diesel Fire Pump Engine	9.25E-05	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	2.7	MMBtu/hr	2.53E-04	3.18E-05
73-05-4570	RUNEA	Runoff Coll Sewer Lift Station Diesel Backup Engine	9.25E-05	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	1.4	MMBtu/hr	1.30E-04	1.63E-05
73-05-4580	SEWEA	Fiber Line Sewer Lift Station Diesel Backup Engine	9.25E-05	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	1.4	MMBtu/hr	1.30E-04	1.63E-05
71-95-0500	COMMEA	Communications Back up Engine	9.25E-05	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	5.8	MMBtu/hr	5.34E-04	6.72E-05
TEMPSEW	TEMPSEW	Temporary Sewer Pump Engine	9.25E-05	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	2.4	MMBtu/hr	2.18E-04	2.75E-05
TEMPGEN	TEMPGEN	Temporary Generator	9.25E-05	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	0.006	MMBtu/hr	5.54E-07	6.97E-08
TEMP-CHIP	TEMPCHIP	Temporary Log Chipper	5.52E-08	lb/hp-hr	AP-42 Section 3.4, Table 3.4-3	1000	hp-hr/hr	5.52E-05	6.96E-06
73-05-2000-A		C3 Stream Sewering	1.00E-03	lb/hr	Water 9 Results for Base Case with Addition of C3 Stream	1	hr/hr	1.00E-03	1.26E-04
73-05-2000-B		5th eff 6 evap Sewering	1.00E-03	lb/hr	Water 9 Results for Base Case with Addition of 5th eff 6 evap	1	hr/hr	1.00E-03	1.26E-04
32-40-1560	NC1&2	NC-2 Paper Machine	1.80E-03	lb/ADTFP	NCASI Technical Bulletin No. 973, February 2010 Table 4.34 pg. 140, Summary of Air Toxic Emissions form Bleached Kraft Pulp and Paper Machines	25	ADTFP/hr	4.50E-02	5.67E-03
45-93-0100	NC5	NC-5 Paper Machine	1.80E-03	lb/ADTFP	NCASI Technical Bulletin No. 973, February 2010 Table 4.34 pg. 140, Summary of Air Toxic Emissions form Bleached Kraft Pulp and Paper Machines	69	ADTFP/hr	1.25E-01	1.57E-02

TABLE 6
BENZENE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/yr)	Emission Rate (g/s)
TROMSCR	TROMSCR	Trommel Screen	6.53E-06	lb/hp-hr	AP-42 Section 3.3, Table 3.3-2. Converted to lb/hp-hr	216,080	hp-hr/yr	1.41E+00	2.03E-05
06-31-0180, 06-31-1000, 06-32-2060, 06-32-2120, 06-32-2100, 06-32-2300, 06-32-2340, 06-32-2380	F09, F12, F13, F14, F17, F18, F19, F41	No. 6 O2 Delig	1.24E-05	lb/ADTUBP	NCASI Technical Bulletin 973, "Compilation of Air Toxic and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update" February 2010, Table 4.4, Median emission factors using ND=0.	345,533	ADTUBP/yr	4.28E+00	6.16E-05
06-40-8000	F15, F16	No. 6 Bleach Plant Scrubber	5.74E-05	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber).	331,712	ADTBP/yr	1.90E+01	2.74E-04
06-P1	6FEEDTNK	No. 6 Bleach Plant 6th Stage Feed Tank	6.11E-06	lb/ODTUBP	Estimation using compound to methanol ratio of NCASI TB No. 679, Table V.O.1, Mill N, October 1994 and 1995/2004 methanol testing on similar existing bleach plant sources. TB No. 679 doesn't specify bleached or unbleached so we assume unbleached.	310,980	ODTUBP/yr	1.90E+00	2.73E-05
06-P2	6BLOWTBE	No. 6 Bleach Plant 6th Stage Blow Tube (standpipe)	2.86E-05	lb/ODTUBP	Estimation using compound to methanol ratio of NCASI TB No. 679, Table V.O.1, Mill N, October 1994 and 1995/2004 methanol testing on similar existing bleach plant sources. TB No. 679 doesn't specify bleached or unbleached so we assume unbleached.	310,980	ODTUBP/yr	8.91E+00	1.28E-04
06-P3	6EXHAUST	No. 6 BP 6th Stage Washer And Filtrate Tank	1.01E-04	lb/ODTUBP	Estimation using compound to methanol ratio of NCASI TB No. 679, Table V.O.1, Mill N, October 1994 and 1995/2004 methanol testing on similar existing bleach plant sources. TB No. 679 doesn't specify bleached or unbleached so we assume unbleached.	310,980	ODTUBP/yr	3.15E+01	4.53E-04
07-31-1000, 07-31-1100, 07-33-3000, 07-31-1140, 07-31-1200, 07-31-1180	F23-27, F42	No. 7 O2 Delig	1.24E-05	lb/ADTUBP	NCASI Technical Bulletin 973, "Compilation of Air Toxic and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update" February 2014, Table 4.4, Median emission factors using ND=0.	539,896	ADTUBP/yr	6.69E+00	9.63E-05
07-31-1180	F30	No. 7 Bleach Plant Scrubber	5.74E-05	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber).	518,300	ADTBP/yr	2.98E+01	4.28E-04
07-34-4080, 07-34-4100, 07-36-6040, 07-36-6060	EOP, PEROX	EOP and Peroxide Stage	8.40E-06	lb/ODTUBP	NCASI Technical Bulletin 679, Table V.O.1, Mill N, October 1994	485,906	ODTUBP/yr	4.08E+00	5.87E-05
08-40-1000	F35	No. 32 High Density Pulp Tank	1.75E-05	lb/hr/tank	NCASI Technical Bulletin No. 973, October 2014, Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update. Table 4.19 HD Unbleached Pulp Storage Tanks	8,760	tank*hr/yr	1.53E-01	2.20E-06
08-65-1060	6N7SPLTK	No. 6 and 7 spill collection tank	8.13E-07	lb/ODTUBP	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing	796,886	ODTUBP/yr	6.48E-01	9.32E-06
09-05-0210	SWBLTANK	South WBL Storage Tank	2.20E-07	lb/ODTUBP	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing	796,886	ODTUBP/yr	1.75E-01	2.52E-06
09-12-0250	5SOAP	No. 5 Soap Storage Tank	3.99E-05	lb/hr	NCASI 973 Database 2013 - Recovery Black Liquor Tank Weak </=20% Soilds	8,760	tanks*hr/yr	3.50E-01	5.03E-06
09-12-0050	LIQSEP	New Liquor Separator Tank	3.99E-05	lb/hr	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids	8,760	tanks*hr/yr	3.50E-01	5.03E-06

TABLE 6
BENZENE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/yr)	Emission Rate (g/s)
09-05-0200, 09-05-0150, 09-05-0100, 09-95-0015, 09-19-0020, 09-19-0030, 09-30-0030, 09-10-0150, 09-10-0300, 09-10-0350, 09-10-0400	R24-26, R32, R36, R39-R43	18% Liquor Mix Tanks	3.99E-05	lb/hr/tank	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids, 10.0 multiplier for tank movements	87,600	tank*hr/yr	3.50E+00	5.03E-05
09-30-0010, 09-30-0020, 09-95-0010, 09-95-0009, 09-20-0070, 09-25-0140, 09-25-0540, 09-25-0340, 09-20-0310	R27-R28, R31, R33, R34, R37, R38, R44, R72	48% Liquor Storage Tanks, Soap Tanks	9.00E-06	lb/hr/tank	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. 9.0 multiplier for tank movements	78,840	tank*hr/yr	7.10E-01	1.02E-05
09-40-0010, 09-40-0020	R29, R30	65% Liquor Storage Tanks	9.00E-06	lb/hr/tank	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. 2.0 multiplier for tank movements	17,520	tank*hr/yr	1.58E-01	2.27E-06
09-27-1000	LRP 40%	Tank - Lignin Feed Liquor	9.00E-06	lb/hr/tank	NCASI Pulp and Paper Database 2013 - March 2013 - Recovery Black Liquor Tank >20% Solids - Median	8,760	hr/yr	7.88E-02	1.13E-06
09-27-3000	LRPPRS2	Filter - 2 Lignin Filter	2.20E-07	lb/ODTL	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing on WBL Tanks. Because emissions factors are production based, they are conservatively not time weighted based on actual venting only 15% of the time	38,581	ODTL/yr	8.49E-03	1.22E-07
10-45-0450	R05	No. 5 Precipitator Mix Tank	2.30E-07	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.35 - Miscellaneous Kraft Mill Sources - Salt Cake Mix Tank p. 143	1,226,400	TBLS/yr	2.82E-01	4.06E-06
14-05-0050	R03	North Smelt Tank	3.10E-06	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.28 - Kraft Smelt Dissolving Tanks	606,411	TBLS/yr	1.88E+00	2.70E-05
14-05-0300	R04-1	South Smelt Tank	3.10E-06	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.28 - Kraft Smelt Dissolving Tanks	606,411	TBLS/yr	1.88E+00	2.70E-05
10-08-0010	R04-2	Salt Cake Mix Tank	2.30E-07	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.35 - Miscellaneous Kraft Mill Sources - Salt Cake Mix Tank p. 143	1,212,822	TBLS/yr	2.79E-01	4.01E-06
14-05-0300, 10-08-0010	R04	Total South Smelt Tank and Salt Cake Mix Tank						2.16E+00	3.11E-05
14-10-05	R14	No. 5 Green Liquor Clarifier	2.80E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources - Green Liquor Clarifier Mill D. P. 136. A factor of 1.9 is applied to account for all sources.	194,363	T CaO/yr	1.03E+01	1.49E-04
14-15-0450, 14-70-2045, 14-70-2020	R45,R70,R76	Scrubber Water Standpipe, Scrubber Water Clarifier	6.10E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources - White Liquor and Weak Wash Pressure Filters Vent Mill J. A 2.0 factor is applied.	194,363	T CaO/yr	2.37E+01	3.41E-04
14-15-0600, 14-15-0800, 14-15-0900, 14-15-DREGS	R09,R13,R10, R12	Dregs Sources	2.80E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources -Green Liquor Clarifier Vent Mill D. A 0.3 factor is applied.	194,363	T CaO/yr	1.63E+00	2.35E-05

TABLE 6
BENZENE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/yr)	Emission Rate (g/s)
14-20-2020, 14-20-2085	R53, R58	East/West Slaker Area	1.24E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.31 Causticizing Area Sources - Causticizer/Salker Combination Emissions. A 1.5 factor is applied to account for all emissions.	194,363	T CaO/yr	3.62E+00	5.20E-05

TABLE 6
BENZENE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/yr)	Emission Rate (g/s)
08-70-0900, 14-25-0450, 14-25-0800, 14-25-0050, 14-25-0150	R16, R17, R07, R22, F11	No. 3 and 4 WL Clarifiers and Tanks	2.90E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Sources - White Liquor Pressure Filter Vent Mill F (ND=0). A 2.5 factor is applied.	194,363	T CaO/yr	1.41E+01	2.03E-04
14-60-3000	R01A	No. 5 Lime Kiln - TCaO	9.20E-04	lb/TCaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.25 - Summary of Non-metal Air Toxic Emissions from Kraft Lime Kilns p. 110	194,363	T CaO/yr	1.79E+02	2.57E-03
	PO01C	No. 5 Recovery Boiler - BLS	7.28E-04	lb/TBLS	National Council for Air and Stream Improvement (NCASI) Technical Bulletin No. 973, February 2010, Compilation of 'Air Toxic' and Total Emissions Data for Pulp and Paper Mill Sources - A Second Update, Table 4.23.	1,226,400	TBLS/yr	8.93E+02	1.28E-02
	PO01C	No. 5 Recovery Boiler - No. 2	1.96E-05	lb/MMBtu	AP-42, Fifth edition, Chapter 1, Section 3, Supplement E. Factor units are lb/10^3 gal	11,072,132	MMBtu/yr	2.17E+02	3.13E-03
10-25-0110	Total from No. 5 Recovery Boiler							1.11E+03	1.60E-02
14-30-0310	R46	Lime Mud Mix Tank	4.70E-06	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Additional Causticizing Area Sources, Table 4.32 p.136, Lime Mud Dilution Tank Vent Mill D p. 136.	194,363	T CaO/yr	9.14E-01	1.31E-05
14-30-1450	R15	Lime Mud Storage Tank	4.70E-06	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Sources - Lime Mud Mix Tank Vent Mill D, p. 136.	194,363	T CaO/yr	9.14E-01	1.31E-05
14-30-350	R47, R49	No. 2 and 3 Lime Mud Wash Tank	2.80E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources - Lime Mud Pressure Filter Vent Mill D p. 136.	194,363	T CaO/yr	5.44E+00	7.83E-05
14-30-5000, 14-30-6000	R50	East and West Lime Mud Filters	1.20E-05	lb/T CaO	NCASI Pulp and Paper Database TB 973 Table 4.31 - Lime Mud Precoat Filters	194,363	T CaO/yr	2.33E+00	3.35E-05
14-30-5040, 14-30-6040	R65, R66	East and West Lime Mud Vacuum System	3.95E-06	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.31 - Precoat Filter Vacuum Pump Exhaust p. 133. A 3.0 factor is applied to account for Lime Mud Filter Vacuum System, East and West Lime Filter Vacuum Pump Silencers, and the Lime Mud Filtrate Tank.	194,363	T CaO/yr	2.30E+00	3.31E-05
		Cooler -1 Feed Liquor	9.00E-06	lb/hr	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor	8,760	hr/yr	7.88E-02	1.13E-06
		Filter - 1 Lignin	2.20E-07	lb/ODTL	Conservatively assume emissions from filters equate to weak black liquor tank. ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000. Emission factors are production based and thus are conservatively not time weighted based on actual venting only 15% of the time.	38,581	ODTL/yr	8.49E-03	1.22E-07
		Tank - 2 Lignin Filter Cloth Wash	2.20E-07	lb/ODTL	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing on WBL Tanks. Because emissions factors are production based, they are conservatively not time weighted based on actual venting only 15% of the time	38,581	ODTL/yr	8.49E-03	1.22E-07

TABLE 6
BENZENE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/yr)	Emission Rate (g/s)
		Conveyors - #1 Lignin Filter & #1 Lignin Filter Incline	4.40E-07	lb/ODTL	Conservatively assume emissions from filters equate to weak black liquor tank. Multiply emissions by 2 for two conveyors. ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000.	38,581	ODTL/yr	1.70E-02	2.44E-07
		LRP Dilute Tanks	1.54E-06	lb/ODTL	ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000. Emission factor displayed is for 7 tanks total. Emission factors used for the primary cloth wash and filtrate tanks are production based and thus are conservatively not time weighted based onactual venting periods of only 15% of the time.	38,581	ODTL/yr	5.94E-02	8.55E-07
		LRP Acidification Tank (2800)	5.47E-04	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 1 tank.	38,581	ODTL/yr	2.11E+01	3.03E-04
09-27-3800	LSRPSCRUB	Total from Caustic Scrubber						21.26	3.06E-04
09-20-0250	R71	Combined Condensate Tank	2.76E+00	lb/yr	Pollutants loading test results from Radian Corp "Wastewater Characteriziation and Emissions" study for Weyerhaeuser Company, Dec. 1991. Two scenarios were evaluated and the SIMS model was used to give estimated air emissions for both.	1	tank	2.76E+00	3.97E-05
64-25-0290	PO01A-1	No. 1 HFB - Hog Fuel	2.35E-04	lb/MMBtu	Table 4.1, 4.5 and 4.6 of NCASI TB 1013	9,525,317	MMBtu/yr	2.24E+03	3.22E-02
	PO13A	No. 2 HFB - Hog Fuel	2.35E-04	lb/MMBtu	Table 4.1, 4.5 and 4.6 of NCASI TB 1013	8,293,837	MMBtu/yr	1.95E+03	2.80E-02
	PO13A	LVHC Combustion	1.55E-04	lb/ADTUBP	NCASI TB 973 Table 4.18 - Kraft Mill NCG Thermal Oxidizer. LVHC gases are burned through No. 2 HFB. The White Liquor Scrubber then No. 5 Lime Kiln are used as backups	885,429	ADTUBP/yr	1.37E+02	1.97E-03
	PO13A	HVLC Combustion	1.33E-02	lb/hr	NCASI TRI Guidance 2013 converted to lb/hr basis using annual production and hours of operation with 98% control.	8,760	hr/yr	1.17E+02	1.68E-03
	PO13A	Carbonator - Feed Liquor	1.80E-07	lb/hr	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor Median, 98% control, 1 tank.	8,760	hr/yr	1.58E-03	2.27E-08
	PO13A	LRP Acidification Tanks (2700 &2770)	2.19E-05	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 98% control, 2 tanks. Controlled by HVLC System	38,581	ODTL/yr	8.44E-01	1.21E-05
65-25-0310	Total from No. 2 Hog Fuel Boiler							2.20E+03	3.17E-02

TABLE 6
BENZENE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/yr)	Emission Rate (g/s)
	THERMALOX	Thermal Oxidizer	2.00E-06	lb/MMBTU	Emission Factors are based on AP-42, Chapter 1.4 (revised 7/98) except acetaldehyde, acrolein and ammonia. Acetaldehyde, acrolein, and ammonia factors are from WebFIRE database. , converted from MMSCF to MMBTU; this is the backup for HVLC comustion behind the No. 2 Hog Fuel Boiler	394,200	MMBtu/yr	7.88E-01	1.13E-05
CD-65-60-1010	THERMALOX	Total from Thermal Oxidizer and HVLC combustion						1.18E+02	1.70E-03

TABLE 6
BENZENE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/yr)	Emission Rate (g/s)
53-40-0130	FPDE	Fine Paper Diesel Engine	9.33E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	1,050	MMBtu/yr	9.80E-01	1.41E-05
14-60-3000-1	LKDE	Lime Kiln Diesel Backup Engine	9.33E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	2,538	MMBtu/yr	2.37E+00	3.41E-05
53-40-0140	WNCEE	W.N. Cr., East Diesel Fire Pump Engine	9.33E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	1,050	MMBtu/yr	9.80E-01	1.41E-05
53-40-0145	WNCWE	W.N. Cr., West Diesel Fire Pump Engine	9.33E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	1,365	MMBtu/yr	1.27E+00	1.83E-05
73-05-4570	RUNEA	Runoff Coll Sewer Lift Station Diesel Backup Engine	9.33E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	700	MMBtu/yr	6.53E-01	9.39E-06
73-05-4580	SEWEA	Fiber Line Sewer Lift Station Diesel Backup Engine	9.33E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	700	MMBtu/yr	6.53E-01	9.39E-06
71-95-0500	COMMEA	Communications Back up Engine	9.33E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	2,884	MMBtu/yr	2.69E+00	3.87E-05
TEMPSEW	TEMPSEW	Temporary Sewer Pump Engine	9.33E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	20,677	MMBtu/yr	1.93E+01	2.77E-04
TEMPGEN	TEMPGEN	Temporary Generator	9.33E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	52	MMBtu/yr	4.89E-02	7.04E-07
TEMP-CHIP	TEMPCHIP	Temporary Log Chipper	5.43E-06	lb/hp-hr	AP-42 Section 3.4, Table 3.4-3	910,000	hp-hr/yr	4.94E+00	7.11E-05
32-10-0140	P09A-F	NC-2 HD and LD Stock Tanks	1.70E-05	lb/ODTUBP	NCASI Technical Bulletin No. 679, October 1994, VOC Emissions from Pulp and Paper Mill Sources, Part V - Kraft Mill Bleach Plants, pg. 104 Table V.B.1, Mill A, D Washer Vent. A 1.5 factor is applied.	218,453	ODTUBP/yr	5.57E+00	8.01E-05
32-40-1560	NC1&2	NC-2 Paper Machine	2.25E-04	lb/ADTFP	Table 4.34 of NCASI TB 973; PM Bleached Kraft	242,725	ADTFP/yr	5.46E+01	7.86E-04
45-93-0100	NC5	NC-5 Paper Machine	2.25E-04	lb/ADTFP	NCASI TB 884 Database 2013 - PM Pulp Dryers Non-Tissue	563,281	ADTFP/yr	1.27E+02	1.82E-03
45-10-0005	P27A-H	NC-5 HD and LD Stock Tanks	1.70E-05	lb/ODTUBP	NCASI Technical Bulletin No. 679, October 1994, VOC Emissions from Pulp and Paper Mill Sources, Part V - Kraft Mill Bleach Plants, pg. 104 Table V.B.1, Mill A, D Washer Vent. A 1.5 factor is applied.	521,035	ODTUBP/yr	1.33E+01	1.91E-04

TABLE 10
CARBON DISULFIDE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/day)	Emission Rate (g/s)
06-31-0180, 06-31-1000, 06-32-2060, 06-32-2120, 06-32-2100, 06-32-2300, 06-32-2340, 06-32-2380	F09, F12, F13, F14, F17, F18, F19, F41	No. 6 O2 Delig	1.90E-05	lb/ADTUBP	NCASI Technical Bulletin 973, "Compilation of Air Toxic and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update" February 2010, Table 4.4, Median emission factors using ND=0.	947	ADTUBP/day	1.80E-02	9.44E-05
06-40-8000	F15, F16	No. 6 Bleach Plant Scrubber	1.11E-04	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber).	909	ADTBP/day	1.01E-01	5.30E-04
07-31-1000, 07-31-1100, 07-33-3000, 07-31-1140, 07-31-1200, 07-31-1180	F23-27, F42	No. 7 O2 Delig	1.90E-05	lb/ADTUBP	NCASI Technical Bulletin 973, "Compilation of Air Toxic and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update" February 2014, Table 4.4, Median emission factors using ND=0.	1,479	ADTUBP/day	2.81E-02	1.48E-04
07-31-1180	F30	No. 7 Bleach Plant Scrubber	1.11E-04	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber).	1,420	ADTBP/day	1.58E-01	8.27E-04
14-60-3000	R01A	No. 5 Lime Kiln - TCaO	3.14E-04	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.25 - Summary of Non-metal Air Toxic Emissions from Kraft Lime Kilns p. 110	533	T CaO/day	1.67E-01	8.78E-04
08-65-1060	6N7SPLTK	No. 6 and 7 spill collection tank	3.17E-06	lb/ODTUBP	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing	2,183	ODTUBP/day	6.92E-03	3.63E-05
09-05-0210	SWBLTANK	South WBL Storage Tank	8.59E-07	lb/ODTUBP	ETG No. 0783, Dec 1999-Jan 2000 Stack Testing	2,183	ODTUBP/day	1.88E-03	9.85E-06
14-05-0050	R03	North Smelt Tank	3.35E-05	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010 - Table 4.28 Kraft Smelt Dissolving Tanks p. 118	606,411	TBLS/day	2.03E+01	1.07E-01
14-05-0300	R04-1	South Smelt Tank	3.35E-05	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010 - Table 4.28 Kraft Smelt Dissolving Tanks p. 118	606,411	TBLS/day	2.03E+01	1.07E-01
10-08-0010	R04-2	Salt Cake Mix Tank	5.60E-06	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010 - Table 4.35 - Miscellaneous Kraft Mill Sources - Salt Cake Mix Tank p. 143	1,212,822	TBLS/day	6.79E+00	3.57E-02
14-05-0300, 10-08-0010	R04	Total South Smelt Tank and Salt Cake Mix Tank						2.71E+01	1.42E-01
32-40-1560	NC1&2	NC-2 Paper Machine	7.37E-04	lb/ADTFP	NCASI Technical Bulletin No. 973, February 2010, Table 4.34 - Bleached Kraft Pulp and Paper Machines p. 140	665	ADTFP/day	4.90E-01	2.57E-03

TABLE 10
CARBON DISULFIDE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/day)	Emission Rate (g/s)
45-93-0100	NC5	NC-5 Paper Machine	7.37E-04	lb/ADTFP	NCASI Technical Bulletin No. 973, February 2010, Table 4.34 - Bleached Kraft Pulp and Paper Machines p. 140	1664	ADTFP/day	1.23E+00	6.44E-03
14-30-5040, 14-30-6040	R65, R66	East and West Lime Mud Vacuum System	3.80E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.31 - Precoat Filter Vacuum Pump Exhaust p. 133. A 3.0 factor is applied to account for Lime Mud Filter Vacuum System, East and West Lime Filter Vacuum Pump Silencers, and the Lime Mud Filtrate Tank.	532.5	T CaO/day	6.07E-02	3.19E-04
14-20-2020, 14-20-2085	R53, R58	East/West Slaker Area	2.40E-06	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.31 - Causticizing Sources p. 128, Causticizer/Slaker Combination Emissions. A 1.5 factor is applied.	532.5	T CaO/day	1.92E-03	1.01E-05
10-25-0110	PO01C	No. 5 Recovery Boiler - BLS	6.60E-04	lb/TBLS	National Council for Air and Stream Improvement (NCASI) Technical Bulletin No. 973, February 2010, Compilation of 'Air Toxic' and Total Emissions Data for Pulp and Paper Mil Sources - A Second Update, Table 4.23.	3360	TBLS/day	2.22E+00	1.16E-02
10-45-0450	R05	No. 5 Precipitator Mix Tank	5.60E-06	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.35 - Miscellaneous Kraft Mill Sources - Salt Cake Mix Tank Vents p. 143	3360	TBLS/day	1.88E-02	9.88E-05
64-25-0290	PO01A-1	No. 1 HFB - Hog Fuel	1.25E-04	lb/MMBtu	Table 4.1, 4.5 and 4.6 of NCASI TB 1013	26096.8	MMBtu/day	4.89E+00	2.57E-02
09-27-1000	LRP 40%	Tank - Lignin Feed Liquor	1.99E-03	lb/hr	NCASI Pulp and Paper Database - March 2013 - Recovery Black Liquor Tank > 20% Solids - Median	24.0	hr/day	4.78E-02	2.51E-04
		Cooler -1 Feed Liquor	1.99E-03	lb/hr	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor	24.0	hr/day	4.78E-02	2.51E-04
		Filter - 1 Lignin	8.59E-07	lb/ODTL	Conservatively assume emissions from filters equate to weak black liquor tank. ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000. Emission factors are production based and thus are conservatively not time weighted based on actual venting only 15% of the time.	105.7	ODTL/day	9.08E-05	4.77E-07

TABLE 10
CARBON DISULFIDE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/day)	Emission Rate (g/s)
		Tank - 2 Lignin Filter Cloth Wash	8.59E-07	lb/ODTL	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing on WBL Tanks. Because emissions factors are production based, they are conservatively not time weighted based on actual venting only 15% of the time	105.7	ODTL/day	9.08E-05	4.77E-07
		Conveyors - #1 Lignin Filter & #1 Lignin Filter Incline	1.72E-06	lb/ODTL	Conservatively assume emissions from filters equate to weak black liquor tank. Multiply emissions by 2 for two conveyors. ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000.	105.7	ODTL/day	1.82E-04	9.53E-07
		LRP Dilute Tanks	6.01E-06	lb/ODTL	ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000. Emission factor displayed is for 7 tanks total. Emission factors used for the primary cloth wash and filtrate tanks are production based and thus are conservatively not time weighted based onactual venting periods of only 15% of the time.	105.7	ODTL/day	6.36E-04	3.34E-06
		LRP Acidification Tank (2800)	1.67E-04	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 1 tank.	105.7	ODTL/day	1.76E-02	9.25E-05
09-27-3800	LSRPSCRUB	Total from Caustic Scrubber						6.64E-02	3.48E-04
09-27-3000	LRPPRS2	Filter - 2 Lignin Filter	8.59E-07	lb/ODTL	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing on WBL Tanks. Because emissions factors are production based, they are conservatively not time weighted based on actual venting only 15% of the time	105.7	ODTL/day	9.08E-05	4.77E-07
	PO13A	Carbonator - Feed Liquor	3.98E-05	lb/hr	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor Median, 98% control, 1 tank.	24.0	hr/day	9.55E-04	5.01E-06
	PO13A	LRP Acidification Tanks (2700 & 2770)	6.67E-06	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 98% control, 2 tanks. Controlled by HVLC System	105.7	ODTL/day	7.05E-04	3.70E-06
	PO13A	No. 2 HFB - Hog Fuel	1.25E-04	lb/MMBtu	Table 4.1, 4.5 and 4.6 of NCASI TB 1013	22722.8	MMBtu/day	4.26E+00	2.24E-02

TABLE 10
CARBON DISULFIDE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/day)	Emission Rate (g/s)
65-25-0310	Total from No. 2 Hog Fuel Boiler							4.26E+00	2.24E-02
CD-65-60-1010	Total from Thermal Oxidizer and HVLC							1.66E-03	8.71E-06
09-12-0250	5SOAP	No. 5 Soap Storage Tank	9.99E-03	lb/hr	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids	24	tank*hr/day	2.40E-01	1.26E-03
09-12-0050	LIQSEP	New Liquor Separator Tank	9.99E-03	lb/hr	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids	24	tank*hr/day	2.40E-01	1.26E-03
09-05-0200, 09-05-0150, 09-05-0100, 09-95-0015, 09-19-0020, 09-19-0030, 09-30-0030, 09-10-0150, 09-10-0300, 09-10-0350, 09-10-0400	R24-26, R32, R36, R39-R43	18% Liquor Mix Tanks	9.99E-03	lb/hr/tank	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids, 10.0 multiplier for tank movements	240	tank*hr/day	2.40E+00	1.26E-02
09-30-0010, 09-30-0020, 09-95-0010, 09-95-0009, 09-20-0070, 09-25-0140, 09-25-0540, 09-25-0340, 09-20-0310	R27-R28, R31, R33, R34, R37, R38, R44, R72	48% Liquor Storage Tanks, Soap Tanks	1.99E-03	lb/hr/tank	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. 9.0 multiplier for tank movements	216	tank*hr/day	4.30E-01	2.26E-03
09-40-0010, 09-40-0020	R29, R30	65% Liquor Storage Tanks	1.99E-03	lb/hr/tank	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. 2.0 multiplier for tank movements	48.0	tank*hr/day	9.55E-02	5.01E-04
SETPOND2	SETPOND2	Primary Clarifier	1.46E-09	lb/ADTUBP	NCASI TRI Guidance	2425.8	ADTUBP/day	3.54E-06	1.86E-08
SETPOND1	SETPOND1	Secondary Clarifier	9.50E-09	lb/ADTUBP	NCASI TRI Guidance	2425.8	ADTUBP/day	2.30E-05	1.21E-07

TABLE 11
CARBON TETRACHLORIDE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/yr)	Emission Rate (g/s)
06-31-0180, 06-31-1000, 06-32-2060, 06-32-2120, 06-32-2100, 06-32-2300, 06-32-2340, 06-32-2380	F09, F12, F13, F14, F17, F18, F19, F41	No. 6 O2 Delig	4.80E-06	lb/ADTUBP	NCASI Technical Bulletin 973, "Compilation of Air Toxic and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update" February 2010, Table 4.4, Median emission factors using ND=0.	345,533	ADTUBP/yr	1.66E+00	2.39E-05
06-40-8000	F15, F16	No. 6 Bleach Plant Scrubber	5.06E-06	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber).	331,712	ADTBP/yr	1.68E+00	2.41E-05
07-31-1000, 07-31-1100, 07-33-3000, 07-31-1140, 07-31-1200, 07-31-1180	F23-27, F42	No. 7 O2 Delig	4.80E-06	lb/ADTUBP	NCASI Technical Bulletin 973, "Compilation of Air Toxic and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update" February 2014, Table 4.4, Median emission factors using ND=0.	539,896	ADTUBP/yr	2.59E+00	3.73E-05
07-31-1180	F30	No. 7 Bleach Plant Scrubber	5.06E-06	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber).	518,300	ADTBP/yr	2.62E+00	3.77E-05
07-34-4080, 07-34-4100, 07-36-6040, 07-36-6060	EOP, PEROX	EOP and Peroxide Stage	1.26E-04	lb/ODTUBP	NCASI Technical Bulletin 679, Table V.O.1, Mill N, October 1994	485,906	ODTUBP/yr	6.12E+01	8.81E-04
08-65-1060	6N7SPLTK	No. 6 and 7 spill collection tank	1.60E-05	lb/ODTUBP	ETG No. 0783, Dec 1999-Jan 2000	796,886	ODTUBP/yr	1.28E+01	1.83E-04
09-05-0210	SWBLTANK	South WBL Storage Tank	4.34E-06	lb/ODTUBP	ETG No. 0783, Dec 1999-Jan 2000	2,183	ODTUBP/yr	9.48E-03	1.36E-07
09-12-0250	5SOAP	No. 5 Soap Storage Tank	6.80E-06	lb/hr	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids	8,760	tanks*hr/yr	5.96E-02	8.57E-07
09-12-0050	LIQSEP	New Liquor Separator Tank	6.80E-06	lb/hr	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids	8,760	tanks*hr/yr	5.96E-02	8.57E-07
09-05-0200, 09-05-0150, 09-05-0100, 09-95-0015, 09-19-0020, 09-19-0030, 09-30-0030, 09-10-0150, 09-10-0300, 09-10-0350, 09-10-0400	R24-26, R32, R36, R39-R43	18% Liquor Mix Tanks	6.80E-06	lb/hr/tank	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids, 10.0 multiplier for tank movements	87,600	tanks*hr/yr	5.96E-01	8.57E-06
09-27-3000	LRPPRS2	Filter - 2 Lignin Filter	4.34E-06	lb/ODTL	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing on WBL Tanks. Because emissions factors are production based, they are conservatively not time weighted based on actual venting only 15% of the time.	38,581	ODTL/yr	1.67E-01	2.41E-06
10-25-0110	PO01C	No. 5 Recovery Boiler - BLS	1.21E-05	lb/TBLS	National Council for Air and Stream Improvement (NCASI) Technical Bulletin No. 973, February 2010, Compilation of 'Air Toxic' and Total Emissions Data for Pulp and Paper Mil Sources - A Second Update, Table 4.23.	1,226,400	TBLS/yr	1.48E+01	2.13E-04
14-05-0050	R03	North Smelt Tank	3.90E-06	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.28 - Kraft Smelt Dissolving Tanks, p. 118	606,411	TBLS/yr	2.37E+00	3.40E-05
14-05-0300	R04-1	South Smelt Tank	3.90E-06	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.28 - Kraft Smelt Dissolving Tanks, p. 118	606,411	TBLS/yr	2.37E+00	3.40E-05
14-05-0300, 10-08-0010	R04	Total South Smelt Tank and Salt Cake Mix Tank						2.37E+00	3.40E-05

TABLE 11
CARBON TETRACHLORIDE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/yr)	Emission Rate (g/s)
64-25-0290	PO01A-1	No. 1 HFB - Hog Fuel	1.16E-05	lb/MMBtu	Table 4.1, 4.5 and 4.6 of NCASI TB 1013	9,525,317	MMBtu/yr	3.31E+02	4.77E-03
		LRP Dilute Tanks	3.04E-05	lb/ODTL	ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000. Emission factor displayed is for 7 tanks total. Emission factors used for the primary cloth wash and filtrate tanks are production based and thus are conservatively not time weighted based onactual venting periods of only 15% of the time.	38,581	ODTL/yr	1.17E+00	1.69E-05
		Conveyors - #1 Lignin Filter & #1 Lignin Filter Incline	8.68E-06	lb/ODTL	Conservatively assume emissions from filters equate to weak black liquor tank. Multiply emissions by 2 for two conveyors. ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000.	38,581	ODTL/yr	3.35E-01	4.82E-06
		Tank - 2 Lignin Filter Cloth Wash	4.34E-06	lb/ODTL	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing on WBL Tanks. Because emissions factors are production based, they are conservatively not time weighted based on actual venting only 15% of the time.	38,581	ODTL/yr	1.67E-01	2.41E-06
		Filter - 1 Lignin	4.34E-06	lb/ODTL	Conservatively assume emissions from filters equate to weak black liquor tank. ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000. Emission factors are production based and thus are conservatively not time weighted based on actual venting only 15% of the time.	38,581	ODTL/yr	1.67E-01	2.41E-06
		LRP Acidification Tank (2800)	7.58E-03	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 1 tank.	38,581	ODTL/yr	2.92E+02	4.21E-03
09-27-3800	LSRPSCRUB	Total from Caustic Scrubber						2.94E+02	4.23E-03
	PO13A	No. 2 HFB - Hog Fuel	1.16E-05	lb/MMBtu	Table 4.1, 4.5 and 4.6 of NCASI TB 1013	8,293,837	MMBtu/yr	9.62E+01	1.38E-03
	PO13A	LVHC Combustion	5.30E-05	lb/ADTUBP	NCASI TB 973 Table 4.18 - Kraft Mill NCG Thermal Oxidizer. LVHC gases are burned through No. 2 HFB. The White Liquor Scrubber then No. 5 Lime Kiln are used as backups	885,429	ADTUBP/yr	4.69E+01	6.75E-04
	PO13A	HVLC Combustion	2.16E-05	lb/hr	Data generated by the 1996 compliance testing was run at 68% of the total fiberline capacity, 2050 BDTP per day. The tested lb/hr loadings were adjusted by a ratio of actual production to testing production.	8,760	hr/yr	1.89E-01	2.72E-06
	PO13A	LRP Dilute Tanks	5.21E-07	lb/ODTL	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing on WBL Tanks (6 Tanks) assuming 98% control by HVLC combustion system	38,581	ODTL/yr	2.01E-02	2.89E-07
	PO13A	LRP Acidification Tanks (2700 & 2770)	3.03E-04	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 98% control, 2 tanks. Controlled by HVLC System	38,581	ODTL/yr	1.17E+01	1.68E-04
65-25-0310	Total from No. 2 Hog Fuel Boiler							1.55E+02	2.23E-03
CD-65-60-1010	Total from Thermal Oxidizer and HVLC							1.19E+01	1.71E-04

TABLE 11
CARBON TETRACHLORIDE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/yr)	Emission Rate (g/s)
32-10-0140	P09A-F	NC-2 HD and LD Stock Tanks	3.60E-04	lb/ODTUBP	NCASI Technical Bulletin No. 679, October 1994, VOC Emissions from Pulp and Paper Mill Sources, Part V - Kraft Mill Bleach Plants, pg. 104 Table V.B.1, Mill A, D Washer Vent. A 1.5 factor is applied.	218,453	ODTUBP/yr	1.18E+02	1.70E-03
45-10-0005	P27A-H	NC-5 HD and LD Stock Tanks	3.60E-04	lb/ODTUBP	NCASI Technical Bulletin No. 679, October 1994, VOC Emissions from Pulp and Paper Mill Sources, Part V - Kraft Mill Bleach Plants, pg. 104 Table V.B.1, Mill A, D Washer Vent. A 1.5 factor is applied.	521,035	ODTUBP/yr	2.81E+02	4.05E-03

TABLE 12
CHLOROBENZENE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/day)	Emission Rate (g/s)
06-31-0180, 06-31-1000, 06-32-2060, 06-32-2120, 06-32-2100, 06-32-2300, 06-32-2340, 06-32-2380	F09, F12, F13, F14, F17, F18, F19, F41	No. 6 O2 Delig	1.26E-05	lb/ADTUBP	NCASI Technical Bulletin 973, "Compilation of Air Toxic and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update" February 2010, Table 4.4, Median emission factors using ND=0.	947	ADTUBP/day	1.19E-02	6.26E-05
06-40-8000	F15, F16	No. 6 Bleach Plant Scrubber	1.07E-05	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber).	909	ADTBP/day	9.72E-03	5.11E-05
07-31-1000, 07-31-1100, 07-33-3000, 07-31-1140, 07-31-1200, 07-31-1180	F23-27, F42	No. 7 O2 Delig	1.26E-05	lb/ADTUBP	NCASI Technical Bulletin 973, "Compilation of Air Toxic and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update"February 2014, Table 4.4, Oxygen Delignification System Vents.(Emission Factor given in lb/ADTUBP - converted to lb/ODTP by dividing by 0.9)	1,479	ADTUBP/day	1.86E-02	9.78E-05
07-31-1180	F30	No. 7 Bleach Plant Scrubber	1.07E-05	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber).	1,420	ADTBP/day	1.52E-02	7.98E-05
14-60-3000	R01A	No. 5 Lime Kiln - TCaO	3.32E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.25 - Summary of Non-metal Air Toxic Emissions from Kraft Lime Kilns p. 110	533	T CaO/day	1.77E-02	9.28E-05
07-34-4080, 07-34-4100, 07-36-6040, 07-36-6060	EOP, PEROX	EOP and Peroxide Stage	7.80E-06	lb/ODTUBP	NCASI Technical Bulletin 679, Table V.O.1, Mill N, October 1994	1,331	ODTUBP/day	1.04E-02	5.45E-05
08-40-1000	F35	No. 32 High Density Pulp Tank	1.53E-05	lb/hr/tank	NCASI Technical Bulletin No. 973, October 2014, Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update. Table 4.19 HD Unbleached Pulp Storage Tanks	24	tank*hr/day	3.67E-04	1.93E-06
08-65-1060	6N7SPLTK	No. 6 and 7 spill collection tank	2.34E-06	lb/ODTUBP	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing	2,183	ODTUBP/day	5.11E-03	2.68E-05
09-05-0210	SWBLTANK	South WBL Storage Tank	6.35E-07	lb/ODTUBP	ETG No. 0783, Dec 1999-Jan 2000 Stack Testing	2,183	ODTUBP/day	1.39E-03	7.28E-06
09-12-0250	5SOAP	No. 5 Soap Storage Tank	3.75E-06	lb/hr	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids	24	tank*hr/day	9.00E-05	4.72E-07
09-12-0050	LIQSEP	New Liquor Separator Tank	3.75E-06	lb/hr	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids	24	tank*hr/day	9.00E-05	4.72E-07
09-05-0200, 09-05-0150, 09-05-0100, 09-95-0015, 09-19-0020, 09-19-0030, 09-30-0030, 09-10-0150, 09-10-0300, 09-10-0350, 09-10-0400	R24-26, R32, R36, R39-R43	18% Liquor Mix Tanks	3.75E-06	lb/hr/tank	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids, 10.0 multiplier for tank movements	240	tank*hr/day	9.00E-04	4.72E-06

TABLE 12
CHLOROBENZENE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/day)	Emission Rate (g/s)
09-30-0010, 09-30-0020, 09-95-0010, 09-95-0009, 09-20-0070, 09-25-0140, 09-25-0540, 09-25-0340, 09-20-0310	R27-R28, R31, R33, R34, R37, R38, R44, R72	48% Liquor Storage Tanks, Soap Tanks	7.00E-07	lb/hr/tank	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. 9.0 multiplier for tank movements	216	tank*hr/day	1.51E-04	7.94E-07
09-40-0010, 09-40-0020	R29, R30	65% Liquor Storage Tanks	7.00E-07	lb/hr/tank	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. 2.0 multiplier for tank movements	48	tank*hr/day	3.36E-05	1.76E-07
09-27-1000	LRP 40%	Tank - Lignin Feed Liquor	7.00E-07	lb/hr	NCASI Pulp and Paper Database - March 2013 - Recovery Black Liquor Tank > 20% Solids - Median	24.0	hr/day	1.68E-05	8.82E-08
09-27-3000	LRPPRS2	Filter - 2 Lignin Filter	6.35E-07	lb/ODTL	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing on WBL Tanks. Because emissions factors are production based, they are conservatively not time weighted based on actual venting only 15% of the time.	105.7	ODTL/day	6.71E-05	3.52E-07
10-45-0450	R05	No. 5 Precipitator Mix Tank	4.60E-07	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.35 - Miscellaneous Kraft Mill Sources - Salt Cake Mix Tank Vents, p. 143	3,360	TBLS/day	1.55E-03	8.11E-06
10-25-0110	PO01C	No. 5 Recovery Boiler - BLS	1.46E-05	lb/TBLS	National Council for Air and Stream Improvement (NCASI) Technical Bulletin No. 973, February 2010, Compilation of 'Air Toxic' and Total Emissions Data for Pulp and Paper Mil Sources - A Second Update, Table 4.23.	3,360	TBLS/day	4.91E-02	2.58E-04
14-05-0050	R03	North Smelt Tank	4.50E-06	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.28 - Kraft Smelt Dissolving Tanks, p. 118	1,661	TBLS/day	7.48E-03	3.92E-05
14-05-0300	R04-1	South Smelt Tank	4.50E-06	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.28 - Kraft Smelt Dissolving Tanks, p. 118	1,661	TBLS/day	7.48E-03	3.92E-05
10-08-0010	R04-2	Salt Cake Mix Tank	4.60E-07	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.35 - Miscellaneous Kraft Mill Sources - Salt Cake Mix Tank Vents, p. 143	3,323	TBLS/day	1.53E-03	8.02E-06
14-05-0300, 10-08-0010	R04	Total South Smelt Tank and Salt Cake Mix Tank						9.00E-03	4.73E-05
14-30-0310	R46	Lime Mud Mix Tank	5.90E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Additional Causticizing Area Sources, Table 4.32 p.136, Lime Mud Dilution Tank Vent Mill D p. 136.	533	T CaO/day	3.14E-02	1.65E-04
		Cooler -1 Feed Liquor	7.00E-07	lb/hr	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor	24.0	hr/day	1.68E-05	8.82E-08

TABLE 12
CHLOROBENZENE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/day)	Emission Rate (g/s)
		Filter - 1 Lignin	6.35E-07	lb/ODTL	Conservatively assume emissions from filters equate to weak black liquor tank. ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000. Emission factors are production based and thus are conservatively not time weighted based on actual venting only 15% of the time.	106	ODTL/day	6.71E-05	3.52E-07
		Tank - 2 Lignin Filter Cloth Wash	6.35E-07	lb/ODTL	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing on WBL Tanks. Because emissions factors are production based, they are conservatively not time weighted based on actual venting only 15% of the time.	105.7	ODTL/day	6.71E-05	3.52E-07
		Conveyors - #1 Lignin Filter & #1 Lignin Filter Incline	1.27E-06	lb/ODTL	Conservatively assume emissions from filters equate to weak black liquor tank. Multiply emissions by 2 for two conveyors. ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000.	106	ODTL/day	1.34E-04	7.05E-07
		LRP Dilute Tanks	4.45E-06	lb/ODTL	ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000. Emission factor displayed is for 7 tanks total. Emission factors used for the primary cloth wash and filtrate tanks are production based and thus are conservatively not time weighted based onactual venting periods of only 15% of the time.	106	ODTL/day	4.70E-04	2.47E-06
		LRP Acidification Tank (2800)	5.78E-04	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 1 tank.	105.7	ODTL/day	6.11E-02	3.21E-04
09-27-3800	LSRPSCRUB	Total from Caustic Scrubber						6.18E-02	3.25E-04
14-30-5000, 14-30-6000	R50	East and West Lime Mud Filters	1.50E-04	lb/T CaO	NCASI Pulp and Paper Database TB 973 Table 4.31 - Lime Mud Precoat Filters	533	T CaO/day	7.99E-02	4.19E-04
64-25-0290	PO01A-1	No. 1 HFB - Hog Fuel	1.66E-05	lb/MMBtu	Table 4.1, 4.5 and 4.6 of NCASI TB 1013	26,096.76	MMBtu/day	4.33E-01	2.27E-03
	PO13A	LVHC Combustion	5.00E-07	lb/ADTUBP	NCASI TB 973 Table 4.18 - Kraft Mill NCG Thermal Oxidizer. LVHC gases are burned through No. 2 HFB. The White Liquor Scrubber then No. 5 Lime Kiln are used as backups	2,426	ADTUBP/day	1.21E-03	6.37E-06
	PO13A	No. 2 HFB - Hog Fuel	1.66E-05	lb/MMBtu	Table 4.1, 4.5 and 4.6 of NCASI TB 1013	22,723	MMBtu/day	3.77E-01	1.98E-03
	PO13A	Carbonator - Feed Liquor	1.40E-08	lb/hr/tank	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor Median, 98% control, 1 tank.	24.0	hr/day	3.36E-07	1.76E-09
	PO13A	LRP Acidification Tanks (2700 & 2770)	2.31E-05	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 98% control, 2 tanks. Controlled by HVLC System	105.7	ODTL/day	2.44E-03	1.28E-05
65-25-0310		Total from No. 2 Hog Fuel Boiler						3.81E-01	2.00E-03

TABLE 12
CHLOROBENZENE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/day)	Emission Rate (g/s)
CD-65-60-1010	Total from Thermal Oxidizer and HVLC							2.44E-03	1.28E-05

TABLE 12
CHLOROBENZENE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/day)	Emission Rate (g/s)
32-10-0140	P09A-F	NC-2 HD and LD Stock Tanks	2.20E-05	lb/ODTUBP	NCASI Technical Bulletin No. 679, October 1994, VOC Emissions from Pulp and Paper Mill Sources, Part V - Kraft Mill Bleach Plants, pg. 104 Table V.B.1, Mill A, D Washer Vent. A 1.5 factor is applied.	599	ODTUBP/day	1.98E-02	1.04E-04
32-40-1560	NC1&2	NC-2 Paper Machine	1.16E-04	lb/ADTFP	Table 4.34 of NCASI TB 973; PM Bleached Kraft	665	ADTFP/day	7.71E-02	4.05E-04
45-93-0100	NC5	NC-5 Paper Machine	1.16E-04	lb/ADTFP	Table 4.34 of NCASI TB 973; PM Bleached Kraft	1,664	ADTFP/day	1.93E-01	1.01E-03
45-10-0005	P27A-H	NC-5 HD and LD Stock Tanks	2.20E-05	lb/ODTUBP	NCASI Technical Bulletin No. 679, October 1994, VOC Emissions from Pulp and Paper Mill Sources, Part V - Kraft Mill Bleach Plants, pg. 104 Table V.B.1, Mill A, D Washer Vent. A 1.5 factor is applied.	1,540	ODTUBP/day	5.08E-02	2.67E-04

TABLE 13
CHLOROFORM POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/yr)	Emission Rate (g/s)
06-31-0180, 06-31-1000, 06-32-2060, 06-32-2120, 06-32-2100, 06-32-2300, 06-32-2340, 06-32-2380	F09, F12, F13, F14, F17, F18, F19, F41	No. 6 O2 Delig	5.12E-05	lb/ADTUBP	NCASI Technical Bulletin 973, "Compilation of Air Toxic and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update" February 2010, Table 4.4, Median emission factors using ND=0.	345,533	ADTUBP/yr	1.77E+01	2.54E-04
06-40-8000	F15, F16	No. 6 Bleach Plant Scrubber	2.83E-03	lb/ODTUBP	Emissions are based on the results of testing conducted in July 1995. Testing results are based upon Fiberline production.	310,980	ODTUBP/yr	8.80E+02	1.27E-02
06-P1	6FEEDTNK	No. 6 Bleach Plant 6th Stage Feed Tank	4.07E-04	lb/ODTUBP	Estimation using compound to methanol ratio of NCASI TB No. 679, Table V.O.1, Mill N, October 1994 and 1995/2004 methanol testing on similar existing bleach plant sources. TB No. 679 doesn't specify bleached or unbleached so we assume unbleached.	310,980	ODTUBP/yr	1.27E+02	1.82E-03
06-P2	6BLOWTBE	No. 6 Bleach Plant 6th Stage Blow Tube (standpipe)	1.91E-03	lb/ODTUBP	Estimation using compound to methanol ratio of NCASI TB No. 679, Table V.O.1, Mill N, October 1994 and 1995/2004 methanol testing on similar existing bleach plant sources. TB No. 679 doesn't specify bleached or unbleached so we assume unbleached.	310,980	ODTUBP/yr	5.94E+02	8.54E-03
06-P3	6EXHAUST	No. 6 BP 6th Stage Washer And Filtrate Tank	6.75E-03	lb/ODTUBP	Estimation using compound to methanol ratio of NCASI TB No. 679, Table V.O.1, Mill N, October 1994 and 1995/2004 methanol testing on similar existing bleach plant sources. TB No. 679 doesn't specify bleached or unbleached so we assume unbleached.	310,980	ODTUBP/yr	2.10E+03	3.02E-02
07-31-1000, 07-31-1100, 07-33-3000, 07-31-1140, 07-31-1200, 07-31-1180	F23-27, F42	No. 7 O2 Delig	5.12E-05	lb/ADTUBP	NCASI Technical Bulletin 973, "Compilation of Air Toxic and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update" February 2014, Table 4.4, Median emission factors using ND=0.	539,896	ADTUBP/yr	2.76E+01	3.98E-04
07-31-1180	F30	No. 7 Bleach Plant Scrubber	5.00E-03	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber).	518,300	ADTBP/yr	2.59E+03	3.73E-02
14-60-3000	R01A	No. 5 Lime Kiln - TCaO	9.98E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.25 - Summary of Non-metal Air Toxic Emissions from Kraft Lime Kilns p. 110	194,363	T CaO/yr	1.94E+01	2.79E-04
07-34-4080, 07-34-4100, 07-36-6040, 07-36-6060	EOP, PEROX	EOP and Peroxide Stage	5.60E-04	lb/ODTUBP	NCASI Technical Bulletin 679, Table V.O.1, Mill N, October 1994	485,906	ODTUBP/yr	2.72E+02	3.91E-03
08-40-1000	F35	No. 32 High Density Pulp Tank	4.83E-03	lb/hr/tank	NCASI Technical Bulletin No. 973, October 2014, Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update. Table 4.19 HD Unbleached Pulp Storage Tanks	8,760	tank*hr/yr	4.23E+01	6.09E-04
08-52-1060	F34	ClO2 Scrubber	2.61E-04	lb/Ton ClO2	ETG, Sep 1998, Stack Testing	20,075	Ton ClO2/yr	5.24E+00	7.54E-05
08-65-1060	6N7SPLTK	No. 6 and 7 spill collection tank	2.49E-06	lb/ODTUBP	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing	796,886	ODTUBP/yr	1.98E+00	2.85E-05
09-05-0210	SWBLTANK	South WBL Storage Tank	6.74E-07	lb/ODTUBP	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing	796,886	ODTUBP/yr	5.37E-01	7.73E-06

TABLE 13
CHLOROFORM POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/yr)	Emission Rate (g/s)
09-12-0250	5SOAP	No. 5 Soap Storage Tank	8.34E-07	lb/hr	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids	8,760	tank*hr/yr	7.31E-03	1.05E-07
09-12-0050	LIQSEP	New Liquor Separator Tank	8.34E-07	lb/hr	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids	8,760	tank*hr/yr	7.31E-03	1.05E-07
09-05-0200, 09-05-0150, 09-05-0100, 09-95-0015, 09-19-0020, 09-19-0030, 09-30-0030, 09-10-0150, 09-10-0300, 09-10-0350, 09-10-0400	R24-26, R32, R36, R39-R43	18% Liquor Mix Tanks	8.34E-07	lb/hr/tank	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids, 10.0 multiplier for tank movements	87600.0	tank*hr/yr	7.31E-02	1.05E-06
09-30-0010, 09-30-0020, 09-95-0010, 09-95-0009, 09-20-0070, 09-25-0140, 09-25-0540, 09-25-0340, 09-20-0310	R27-R28, R31, R33, R34, R37, R38, R44, R72	48% Liquor Storage Tanks, Soap Tanks	8.00E-06	lb/hr/tank	Chloroform is the median value from NCASI Table A8a. Summary of 'Air Toxic' Emissions from Kraft Liquor and Unbleached Pulp Storage Tanks, Contd. as referenced in TB973 Section 4.2.8 for Kraft Liquor Storage Tanks. NCASI discusses rejection of specific test data in TB 973 Section 4.2.8.2 and provides test detail in Table A8a. 9.0 multiplier for tank movements	78840	tank*hr/yr	6.31E-01	9.07E-06
09-40-0010, 09-40-0020	R29, R30	65% Liquor Storage Tanks	8.00E-06	lb/hr/tank	Chloroform is the median value from NCASI Table A8a. Summary of 'Air Toxic' Emissions from Kraft Liquor and Unbleached Pulp Storage Tanks, Contd. as referenced in TB973 Section 4.2.8 for Kraft Liquor Storage Tanks. NCASI discusses rejection of specific test data in TB 973 Section 4.2.8.2 and provides test detail in Table A8a. 2.0 multiplier for tank movements	17520.0	tank*hr/yr	1.40E-01	2.02E-06
09-27-1000	LRP 40%	Tank - Lignin Feed Liquor	8.00E-06	lb/hr	Chloroform is the median value from NCASI Table A8a. Summary of 'Air Toxic' Emissions from Kraft Liquor and Unbleached Pulp Storage Tanks, Contd. as referenced in TB973 Section 4.2.8 for Kraft Liquor Storage Tanks. NCASI discusses rejection of specific test data in TB 973 Section 4.2.8.2 and provides test detail in Table A8a.	8,760	hr/yr	7.01E-02	1.01E-06
09-27-3000	LRPPRS2	Filter - 2 Lignin Filter	6.74E-07	lb/ODTL	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing on WBL Tanks. Because emissions factors are production based, they are conservatively not time weighted based on actual venting only 15% of the time.	38,581	ODTL/yr	2.60E-02	3.74E-07
10-25-0110	PO01C	No. 5 Recovery Boiler - BLS	1.42E-05	lb/TBLS	National Council for Air and Stream Improvement (NCASI) Technical Bulletin No. 973, February 2010, Compilation of 'Air Toxic' and Total Emissions Data for Pulp and Paper Mil Sources - A Second Update, Table 4.23.	1,226,400	TBLS/yr	1.74E+01	2.50E-04
14-05-0050	R03	North Smelt Tank	7.10E-06	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.28 - Kraft Smelt Dissolving Tanks, p. 118	606,411	TBLS/yr	4.31E+00	6.19E-05
14-05-0300	R04-1	South Smelt Tank	7.10E-06	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.28 - Kraft Smelt Dissolving Tanks, p. 118	606,411	TBLS/yr	4.31E+00	6.19E-05

TABLE 13
CHLOROFORM POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/yr)	Emission Rate (g/s)
14-05-0300, 10-08-0010	R04	Total South Smelt Tank and Salt Cake Mix Tank						4.31E+00	6.19E-05
		Cooler -1 Feed Liquor	5.44E-05	lb/hr	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor	8,760	hr/yr	4.77E-01	6.85E-06
		Filter - 1 Lignin	6.74E-07	lb/ODTL	Conservatively assume emissions from filters equate to weak black liquor tank. ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000. Emission factors are production based and thus are conservatively not time weighted based on actual venting only 15% of the time.	38,581	ODTL/yr	2.60E-02	3.74E-07
		Tank - 2 Lignin Filter Cloth Wash	6.74E-07	lb/ODTL	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing on WBL Tanks. Because emissions factors are production based, they are conservatively not time weighted based on actual venting only 15% of the time.	38,581	ODTL/yr	2.60E-02	3.74E-07
		Conveyors - #1 Lignin Filter & #1 Lignin Filter Incline	1.35E-06	lb/ODTL	Conservatively assume emissions from filters equate to weak black liquor tank. Multiply emissions by 2 for two conveyors. ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000.	38,581	ODTL/yr	5.20E-02	7.48E-07
		LRP Dilute Tanks	4.72E-06	lb/ODTL	ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000. Emission factor displayed is for 7 tanks total. Emission factors used for the primary cloth wash and filtrate tanks are production based and thus are conservatively not time weighted based onactual venting periods of only 15% of the time.	38,581	ODTL/yr	1.82E-01	2.62E-06
		LRP Acidification Tanks (2800)	1.67E-03	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 1 tank.	38,581	ODTL/yr	6.43E+01	9.25E-04
09-27-3800	LSRPSCRUB	Total from Caustic Scrubber						6.51E+01	9.36E-04
14-30-5000, 14-30-6000	R50	East and West Lime Mud Filters	1.40E-05	lb/T CaO	NCASI Pulp and Paper Database TB 973 Table 4.31 - Lime Mud Precoat Filters	194,363	T CaO/yr	2.72E+00	3.91E-05
14-30-5040, 14-30-6040	R65, R66	East and West Lime Mud Vacuum	5.06E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.31 - Causticizing Area Sources - Precoat Filter Vacuum Pump Exhaust p. 133. A 3.0 factor is applied.	194,363	T CaO/yr	2.95E+01	4.24E-04
64-25-0290	PO01A-1	No. 1 HFB - Hog Fuel	2.55E-06	lb/MMBtu	Table 4.1, 4.5 and 4.6 of NCASI TB 1013	9,525,317	MMBtu/yr	2.43E+01	3.49E-04
	PO13A	No. 2 HFB - Hog Fuel	2.55E-06	lb/MMBtu	Table 4.1, 4.5 and 4.6 of NCASI TB 1013	8,293,837	MMBtu/yr	2.11E+01	3.04E-04

TABLE 13
CHLOROFORM POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/yr)	Emission Rate (g/s)
	PO13A	LVHC Combustion	1.00E-07	lb/ADTUBP	NCASI TB 973 Table 4.18 - Kraft Mill NCG Thermal Oxidizer. LVHC gases are burned through No. 2 HFB. The White Liquor Scrubber then No. 5 Lime Kiln are used as backups	885,429	ADTUBP/yr	8.85E-02	1.27E-06
	PO13A	Carbonator - Feed Liquor	1.09E-06	lb/hr	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor Median, 98% control, 1 tank.	8,760	hr/yr	9.53E-03	1.37E-07
	PO13A	LRP Acidification Tanks (2700 &2770)	6.67E-05	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 98% control, 2 tanks. Controlled by HVLC System	38,581	ODTL/yr	2.57E+00	3.70E-05
65-25-0310	Total from No. 2 Hog Fuel Boiler							2.38E+01	3.43E-04
CD-65-60-1010	Total from Thermal Oxidizer and HVLC							2.58E+00	3.71E-05
32-40-1560	NC1&2	NC-2 Paper Machine	1.59E-04	lb/ADTFP	NCASI Technical Bulletin No. 973, February 2010, Table 4.34 - Bleached Kraft Pulp and Paper Machines p. 140	242,725	ADTFP/yr	3.86E+01	5.55E-04
32-10-0140	P09A-F	NC-2 HD and LD Stock Tanks	3.10E-04	lb/ODTUBP	NCASI Technical Bulletin No. 679, October 1994, VOC Emissions from Pulp and Paper Mill Sources, Part V - Kraft Mill Bleach Plants, pg. 104 Table V.B.1, Mill A, D Washer Vent. A 1.5 factor is applied.	218,453	ODTUBP/yr	1.02E+02	1.46E-03
45-93-0100	NC5	NC-5 Paper Machine	1.59E-04	lb/ADTFP	NCASI Technical Bulletin No. 973, February 2010, Table 4.34 - Bleached Kraft Pulp and Paper Machines p. 140	563,281	ADTFP/yr	8.96E+01	1.29E-03
45-10-0005	P27A-H	NC-5 HD and LD Stock Tanks	3.10E-04	lb/ODTUBP	NCASI Technical Bulletin No. 679, October 1994, VOC Emissions from Pulp and Paper Mill Sources, Part V - Kraft Mill Bleach Plants, pg. 104 Table V.B.1, Mill A, D Washer Vent. A 1.5 factor is applied.	521,035	ODTUBP/yr	2.42E+02	3.48E-03
SETPOND2	SETPOND2	Primary Clarifier	2.35E-04	lb/ODTUBP	NCASI TRI Guidance	796,886	ODTUBP/yr	1.87E+02	2.70E-03
SETPOND1	SETPOND1	Secondary Clarifier	1.16E-03	lb/ODTUBP	NCASI TRI Guidance	796,886	ODTUBP/yr	9.21E+02	1.32E-02
73-05-2000-A		C3 Stream	1.35E-21	lb/hr	Water 9 Results for Base Case with Addition of C3 Stream	5,500	hr/yr	7.43E-18	1.07E-22

TABLE 18
FORMALDEHYDE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
TROMSCR	TROMSCR	Trommel Screen	8.26E-06	lb/hp-hr	AP-42 Section 3.3, Table 3.3-2. Converted to lb/hp-hr	74	hp-hr/hr	6.11E-04	7.70E-05
06-31-0180, 06-31-1000, 06-32-2060, 06-32-2120, 06-32-2100, 06-32-2300, 06-32-2340, 06-32-2380	F09, F12, F13, F14, F17, F18, F19, F41	No. 6 O2 Delig	3.57E-06	lb/ODTUBP	1995 test data	35.5	ODTUBP/hr	1.27E-04	1.60E-05
06-40-8000	F15, F16	No. 6 Bleach Plant Scrubber	6.21E-04	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber).	37.9	ADTBP/hr	2.35E-02	2.96E-03
07-31-1000, 07-31-1100, 07-33-3000, 07-31-1140, 07-31-1200, 07-31-1180	F23-27, F42	No. 7 O2 Delig	1.32E-05	lb/ODTUBP	1995 test data	55.5	ODTUBP/hr	7.32E-04	9.23E-05
07-31-1180	F30	No. 7 Bleach Plant Scrubber	6.21E-04	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber).	59.2	ADTBP/hr	3.67E-02	4.63E-03
05-30-1300	F60	Hot Water Tank	1.77E-04	lb/hr	Sep 1998 Stack Testing	1.0	hr/hr	1.77E-04	2.23E-05
09-05-0210	SWBLTANK	South WBL Storage Tank	2.07E-07	lb/ODTUBP	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing	91.0	ODTUBP/hr	1.88E-05	2.37E-06
09-12-0250	5SOAP	No. 5 Soap Storage Tank	2.00E-04	lb/hr/tank	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids	1	tank	2.00E-04	2.52E-05
09-12-0050	LIQSEP	New Liquor Separator Tank	2.00E-04	lb/hr/tank	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids	1	tank	2.00E-04	2.52E-05
09-05-0200, 09-05-0150, 09-05-0100, 09-95-0015, 09-19-0020, 09-19-0030, 09-30-0030, 09-10-0150, 09-10-0300, 09-10-0350, 09-10-0400	R24-26, R32, R36, R39-R43	18% Liquor Mix Tanks	2.00E-04	lb/hr/tank	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids, 10.0 multiplier for tank movements	10.0	tank	2.00E-03	2.52E-04
09-30-0010, 09-30-0020, 09-95-0010, 09-95-0009, 09-20-0070, 09-25-0140, 09-25-0540, 09-25-0340, 09-20-0310	R27-R28, R31, R33, R34, R37, R38, R44, R72	48% Liquor Storage Tanks, Soap Tanks	5.00E-04	lb/hr/tank	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. 9.0 multiplier for tank movements	9.0	tank	4.50E-03	5.67E-04
09-40-0010, 09-40-0020	R29, R30	65% Liquor Storage Tanks	5.00E-04	lb/hr/tank	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. 2.0 multiplier for tank movements	2.0	tank	1.00E-03	1.26E-04
09-27-1000	LRP 40%	Tank - Lignin Feed Liquor	5.00E-04	lb/hr	NCASI Pulp and Paper Database - March 2013 - Recovery Black Liquor Tank > 20% Solids - Median	1.0	hr/hr	5.00E-04	6.30E-05
09-27-3000	LRPPRS2	Filter - 2 Lignin Filter	2.07E-07	lb/ODTL	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing on WBL Tanks. Because emissions factors are production based, they are conservatively not time weighted based on actual venting only 15% of the time.	4.4	ODTL/hr	9.12E-07	1.15E-07
	PO01C	No. 5 Recovery Boiler BLS	7.79E-03	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.23 - Summary of Non-metal Air Toxic Emissions from NDCE Kraft Recovery Furnace p. 100	140.0	TBLS/hr	1.09E+00	1.37E-01

TABLE 18
FORMALDEHYDE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
	PO01C	No. 5 Recovery Boiler - No. 2	3.43E-04	lb/MMBtu	AP-42, Fifth edition, Chapter 1, Section 3, Supplement E. Factor units are lb/10^3 gal	1263.9	MMBtu/hr	4.33E-01	5.46E-02
10-25-0110	Total from No. 5 Recovery Boiler							1.52E+00	1.92E-01
10-45-0450	R05	No. 5 Precipitator Mix Tank	6.40E-06	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.35 - Miscellaneous Kraft Mill Sources - Salt Cake Mix Tank Vents, p. 143	140	TBLS/hr	8.96E-04	1.13E-04
14-05-0050	R03	North Smelt Tank	3.15E-04	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.28 - Kraft Smelt Dissolving Tanks, p. 118	69.2	TBLS/hr	2.18E-02	2.75E-03
14-05-0300	R04-1	South Smelt Tank	3.15E-04	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.28 - Kraft Smelt Dissolving Tanks, p. 118	69.2	TBLS/hr	2.18E-02	2.75E-03
10-08-0010	R04-2	Salt Cake Mix Tank	6.40E-06	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.35 - Miscellaneous Kraft Mill Sources - Salt Cake Mix Tank Vents, p. 143	138	TBLS/hr	8.86E-04	1.12E-04
14-05-0300, 10-08-0010	R04	Total South Smelt Tank and Salt Cake Mix Tank						2.27E-02	2.86E-03
14-20-2020, 14-20-2085	R53, R58	East/West Slaker Area	2.94E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.31 Causticizing Area Sources - Causticizer/Salker Combination Emissions. A 1.5 factor is applied.	22.2	T CaO/hr	9.78E-04	1.23E-04
08-70-0900, 14-25-0450, 14-25-0800, 14-25-0050, 14-25-0150	R16, R17, R07, R22, F11	No. 3 and 4 WL Clarifiers and Tanks	2.20E-03	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Sources - White Liquor Pressure Filter Vent Mill F (ND=0). A 2.5 factor is applied.	22.2	T CaO/hr	1.22E-01	1.54E-02
14-60-3000	R01A	No. 5 Lime Kiln - TCaO	4.99E-03	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.25 - Summary of Non-metal Air Toxic Emissions from Kraft Lime Kilns p. 110	22.2	T CaO/hr	1.11E-01	1.39E-02
09-20-0250	R71	Combined Condensate Tank	2.78E-05	lb/hr	Stack Testing 1998; 12.58% increase due to sewering of condensates from C3 and No. 6 Evaps 5th effect (2013 Project)	1.0	hr/hr	2.78E-05	3.50E-06
		Cooler -1 Feed Liquor	5.00E-04	lb/hr	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor	1.0	hr/hr	5.00E-04	6.30E-05
		Filter - 1 Lignin	2.07E-07	lb/ODTL	Conservatively assume emissions from filters equate to weak black liquor tank. ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000. Emission factors are production based and thus are conservatively not time weighted based on actual venting only 15% of the time.	4.4	ODTL/hr	9.12E-07	1.15E-07
		Tank - 2 Lignin Filter Cloth Wash	2.07E-07	lb/ODTL	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing on WBL Tanks. Because emissions factors are production based, they are conservatively not time weighted based on actual venting only 15% of the time.	4.4	ODTL/hr	9.12E-07	1.15E-07
		Conveyors - #1 Lignin Filter & #1 Lignin Filter Incline	4.14E-07	lb/ODTL	Conservatively assume emissions from filters equate to weak black liquor tank. Multiply emissions by 2 for two conveyors. ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000.	4.4	ODTL/hr	1.82E-06	2.30E-07

TABLE 18
FORMALDEHYDE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
		LRP Dilute Tanks	1.45E-06	lb/ODTL	ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000. Emission factor displayed is for 7 tanks total. Emission factors used for the primary cloth wash and filtrate tanks are production based and thus are conservatively not time weighted based onactual venting periods of only 15% of the time.	4.4	ODTL/hr	6.38E-06	8.04E-07
		LRP Acidification Tank (2800)	6.00E-03	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 1 tank.	4.4	ODTL/hr	2.64E-02	3.33E-03
09-27-3800	LSRPSCRUB	Total from Caustic Scrubber						2.69E-02	3.39E-03
64-25-0290	PO01A-1	No. 1 HFB - Hog Fuel	3.77E-04	lb/MMBtu	Table 4.1, 4.5 and 4.6 of NCASI TB 1013	1087.4	MMBtu/hr	4.10E-01	5.17E-02
	PO13A	No. 2 HFB - Hog Fuel	3.77E-04	lb/MMBtu	Table 4.1, 4.5 and 4.6 of NCASI TB 1013	946.8	MMBtu/hr	3.57E-01	4.50E-02
	PO13A	LVHC Combustion	1.46E-04	lb/ADTUBP	NCASI TB 973 Table 4.18 - Kraft Mill NCG Thermal Oxidizer. LVHC gases are burned through No. 2 HFB. The White Liquor Scrubber then No. 5 Lime Kiln are used as backups	101.1	ADTUBP/hr	1.48E-02	1.86E-03
	PO13A	Carbonator - Feed Liquor	1.00E-05	lb/hr	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor Median, 98% control, 1 tank.	1.0	hr/hr	1.00E-05	1.26E-06
	PO13A	LRP Acidification Tanks (2700 &2770)	2.40E-04	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 98% control, 2 tanks. Controlled by HVLC System	4.4	ODTL/hr	1.06E-03	1.33E-04
65-25-0310		Total from No. 2 Hog Fuel Boiler						3.73E-01	4.70E-02
	THERMALOX	Thermal Oxidizer	7.14E-05	lb/MMBTU	Emission Factors are based on AP-42, Chapter 1.4 (revised 7/98) except acetaldehyde, acrolein and ammonia. Acetaldehyde, acrolein, and ammonia factors are from WebFIRE database. , converted from MMSCF to MMBTU; this is the backup for HVLC comustion behind the No. 2 Hog Fuel Boiler	45	MMBtu/hr	3.21E-03	4.05E-04
CD-65-60-1010	THERMALOX	Total from Thermal Oxidizer and HVLC combustion						4.28E-03	5.39E-04

TABLE 18
FORMALDEHYDE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
32-40-1560	NC1&2	NC-2 Paper Machine	2.30E-03	lb/ADTFP	NCASI Technical Bulletin No. 973, February 2010, Table 4.34 pg. 140, Summary of Air Toxic Emission from Bleached Kraft Pulp and Paper Machines	25	ADTFP/hr	5.75E-02	7.24E-03
45-93-0100	NC5	NC-5 Paper Machine	2.30E-03	lb/ADTFP	NCASI Technical Bulletin No. 973, February 2010, Table 4.34 pg. 140, Summary of Air Toxic Emission from Bleached Kraft Pulp and Paper Machines	69	ADTFP/hr	1.60E-01	2.01E-02
14-30-5000, 14-30-6000	R50	East and West Lime Mud Filters	1.75E-04	lb/T CaO	NCASI Pulp and Paper Database TB 973 Table 4.31 - Lime Mud Precoat Filters	22	T CaO/hr	3.88E-03	4.89E-04
53-40-0130	FPDE	Fine Paper Diesel Engine	1.18E-03	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	2.1	MMBtu/hr	2.48E-03	3.12E-04
14-60-3000-1	LKDE	Lime Kiln Diesel Backup Engine	1.18E-03	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	5.1	MMBtu/hr	5.99E-03	7.55E-04
53-40-0140	WNCEE	W.N. Cr., East Diesel Fire Pump Engine	1.18E-03	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	2.1	MMBtu/hr	2.48E-03	3.12E-04
53-40-0145	WNCWE	W.N. Cr., West Diesel Fire Pump Engine	1.18E-03	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	2.7	MMBtu/hr	3.22E-03	4.06E-04
73-05-4570	RUNEA	Runoff Coll Sewer Lift Station Diesel Backup Engine	1.18E-03	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	1.4	MMBtu/hr	1.65E-03	2.08E-04
73-05-4580	SEWEA	Fiber Line Sewer Lift Station Diesel Backup Engine	1.18E-03	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	1.4	MMBtu/hr	1.65E-03	2.08E-04
71-95-0500	COMMEA	Communications Back up Engine	1.18E-03	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	5.8	MMBtu/hr	6.81E-03	8.58E-04
TEMPSEW	TEMPSEW	Temporary Sewer Pump Engine	1.18E-03	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	2.4	MMBtu/hr	2.79E-03	3.51E-04
TEMPGEN	TEMPGEN	Temporary Generator	1.18E-03	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	0.006	MMBtu/hr	7.06E-06	8.90E-07
TEMP-CHIP	TEMPCHIP	Temporary Log Chipper	5.52E-07	lb/hp-hr	AP-42 Section 3.4, Table 3.4-3	1000	hp-hr/hr	5.52E-04	6.96E-05
73-10-2000	SETPOND2	Primary Clarifier	1.50E-09	lb/gallon	NCASI TRI Guidance	3125000	gal/hr	4.69E-03	5.91E-04
73-10-1000	SETPOND1	Secondary Clarifier	3.00E-09	lb/gallon	NCASI TRI Guidance	3125000	gal/hr	9.37E-03	1.18E-03
73-05-2000-A		C3 Stream Sewering	3.24E-02	lb/hr	Water 9 Results for Base Case with Addition of C3 Stream	1.0	hr/hr	3.24E-02	4.08E-03
73-05-2000-B		5th eff 6 evap Sewering	2.50E-02	lb/hr	Water 9 Results for Base Case with Addition of 5th eff 6 evap	1.0	hr/hr	2.50E-02	3.15E-03

TABLE 20
HYDROGEN SULFIDE POTENTIAL EMISSION RATES (50% Safety Factor on Lignin Sources)
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor	Units	Reference	Activity Factor	Units	Potential Emission Rate	
								(lb/day)	(g/s)
06-40-8000	F15, F16	No. 6 Bleach Plant Scrubber	3.61E-02	lb/ODTP	July 1995 Stack Testing (Increased by 7.58% due to additional condensate sewering March 2013)	818	ODTP/day	2.96E+01	1.55E-01
07-31-1180	F30	No. 7 Bleach Plant Scrubber	2.15E-02	lb/ODTP	Sep 1995 Stack Testing (Increased by 7.58% due to additional condensate sewering March 2013)	1,278	ODTP/day	2.75E+01	1.44E-01
05-30-1300	F60	No. 5 Hot Water Tank	2.05E-03	lb/hr	Sep 1998 Stack Testing (Same as Combined Condensate Tank)	24	hr/day	4.93E-02	2.59E-04
08-40-1000	F35	No. 32 High Density Pulp Tank	2.35E-03	lb/hr	NCASI SR 14-01 Table 3-6- Addendum to TB 973	24	hr/day	5.64E-02	2.96E-04
14-05-0050	R03	North Smelt Tank	5.97E-03	lb/TBLS	NCASI TB 973 Table 4.28 - Emissions from Kraft Smelt Dissolving Tanks	1,661	TBLS/day	9.92E+00	5.21E-02
14-05-0300	R04-1	South Smelt Tank	5.97E-03	lb/TBLS	NCASI TB 973 Table 4.28 - Emissions from Kraft Smelt Dissolving Tanks	1,661	TBLS/day	9.92E+00	5.21E-02
14-05-0300, 10-08-0010	R04	Total South Smelt Tank and Salt Cake Mix Tank						9.92E+00	5.21E-02
14-10-05	R14	No. 5 Green Liquor Clarifier	1.93E-05	lb/T CaO	1991 Stack Testing. A factor of 1.9 is applied.	533	T CaO/day	1.95E-02	1.03E-04
14-15-0600, 14-15-0800, 14-15-0900, 14-15-DREGS	R09,R13,R10, R12	Dregs Sources	2.58E-04	lb/T CaO	1991 Stack Testing.	533	T CaO/day	1.37E-01	7.21E-04
14-30-0310	R46	Lime Mud Mix Tank	2.37E-04	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 Causticizing Area Sources - Causticizer/Slaker Combination Emissions. A multiplier of 2 is applied. Based on 1991 test data, an H2S to MMC ratio of 0.32 was applied to the NCASI MMC factor. Data points reported as non-detect treated as zero.	533	T CaO/day	1.26E-01	6.63E-04
14-30-5040, 14-30-6040	R65, R66	East and West Lime Mud Vacuum	4.80E-05	lb/T CaO	NCASI Technical Bulletin No. 858, February 2003, Table A-17 Precoat Filter Vacuum Pump Exhausts Based on 1991 test data, an H2S to MMC ratio of 0.32 was applied to the NCASI MMC factor.	533	T CaO/day	2.56E-02	1.34E-04
10-25-0110	PO01C	No. 5 Recovery Boiler	7.72E+00	lb/hr	Emission Rate estimated using permit limit of 5 TRS as H2S ppm @ 8%O2 and 2014 test flow scaled up to max production. Ratio applied from NCASI TB 973 Table 4.23 to speciate TRS compounds. See supporting file: "Limits ppm calcs 2016.xlsx"	24	hr/day	1.85E+02	9.73E-01

TABLE 20
HYDROGEN SULFIDE POTENTIAL EMISSION RATES (50% Safety Factor on Lignin Sources)
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor	Units	Reference	Activity Factor	Units	Potential Emission Rate	
								(lb/day)	(g/s)
14-60-3000	R01A	No. 5 Lime Kiln	2.83E+00	lb/hr	Emission Rate estimated using permit limit of 8 TRS as H2S ppm @ 10%O2 and 2014 test flow scaled up to max production. Ratio applied from NCASI TB 973 Table 4.25 to speciate TRS compounds. See supporting file: "Limits ppm calcs 2016.xlsx"	24	hr/day	6.79E+01	3.57E-01
	PO13A	LVHC Combustion	5.13E+00	lb/hr	Energy Savings and Sustainability Project Report, February, 2006.	24	hr/day	1.23E+02	6.46E-01
	PO13A	LSRP Contribution to Main HVLC Header	2.18E-01	lb/hr	Emisson rate is derived from projected exhaust concentration and flow rate data from a preliminary design of the future LSRP emissions routed to the HVLC header. Includes a 35% Safety Factor.	24	hr/day	5.24E+00	2.75E-02
	PO01A	Main HVLC Combined Header (No LSRP Contribution)	6.54E-02	lb/hr	Emissions are estimated based on pollutant loading in the HVLC gases from December 2008 testing and 98% destruction efficiency.	24	hr/day	1.57E+00	8.24E-03
65-25-0310	Total from No. 2 Hog Fuel Boiler							1.30E+02	6.82E-01
CD-65-60-1010	Total from Thermal Oxidizer and HVLC							6.81E+00	3.57E-02
09-12-0250	5SOAP	No. 5 Soap Storage Tank	3.87E-03	lb/hr	NCASI 973 Database 2013 - Recovery Black Liquor Tank Weak </=20% Soilds	24	tank*hr/day	9.29E-02	4.88E-04
09-12-0050	LIQSEP	New Liquor Separator Tank	3.87E-03	lb/hr	NCASI 973 Database 2013 - Recovery Black Liquor Tank Weak </=20% Soilds	24	tank*hr/day	9.29E-02	4.88E-04
09-05-0200, 09-05-0150, 09-05-0100, 09-95-0015, 09-19-0020, 09-19-0030, 09-30-0030, 09-10-0150, 09-10-0300, 09-10-0350, 09-10-0400	R24-26, R32, R36, R39-R43	18% Liquor Mix Tanks	3.87E-03	lb/hr/tank	NCASI 973 Database 2013 - Recovery Black Liquor Tank Weak </=20% Solids, 10.0 multiplier for tank movements	240.0	tank*hr/day	9.29E-01	4.88E-03
09-30-0010, 09-30-0020, 09-95-0010, 09-95-0009, 09-20-0070, 09-25-0140, 09-25-0540, 09-25-0340, 09-20-0310	R27-R28, R31, R33, R34, R37, R38, R44, R72	48% Liquor Storage Tanks, Soap Tanks	4.89E-02	lb/hr/tank	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. 9.0 multiplier for tank movements	216.0	tank*hr/day	1.06E+01	5.55E-02
09-40-0010, 09-40-0020	R29, R30	65% Liquor Storage Tanks	4.89E-02	lb/hr/tank	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. 2.0 multiplier for tank movements	48.0	tank*hr/day	2.35E+00	1.23E-02

TABLE 20
HYDROGEN SULFIDE POTENTIAL EMISSION RATES (50% Safety Factor on Lignin Sources)
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor	Units	Reference	Activity Factor	Units	Potential Emission Rate	
								(lb/day)	(g/s)
09-27-1000	LRP 40%	Tank - Lignin Feed Liquor	4.89E-02	lb/hr/tank	NCASI Technical Bulletin No. 973, February 2010, Table 4.19 - Strong or Heavy Black Liquor Storage Tanks p. 81.	24	hr/day	1.17E+00	6.16E-03
09-27-3800	LSRPSCRUB	LSRP Emissions Post Control By Scrubber	5.39E+00	lb/hr	Emisson rate is derived from projected exhaust concentration and flow rate data from a preliminary design of LSRP emissions routed to the scrubber. Includes a 50% Safety Factor.	24	hr/day	1.29E+02	6.79E-01
09-27-3000	LRPPRS2	LRP Press Building Fugitives	3.19E-01	lb/hr	Emissions rate is derived from projected exhaust concentration and flow rate data from a filter press 2 fugitive emissions vented to atmosphere.	24	hr/day	7.65E+00	4.01E-02
FIBLIFT	FIBLIFT	Open Sewer	7.26E+00	lb/day	NCASI 2006 H2S Study - Converted to lb/day	1	unity	7.26E+00	3.81E-02
SETPOND1	SETPOND1	No. 1 Settling Pond	1.32E+04	lb/yr	2012 NCASI Emission Estimation Model and NCASI 2006 H2S study. Total Settling Pond emissions ratioed by the total flow to each pond.	365	days/yr	3.60E+01	1.89E-01
SETPOND2	SETPOND2	No. 2 Settling Pond	3.90E+03	lb/yr	2012 NCASI Emission Estimation Model and NCASI 2006 H2S study. Total Settling Pond emissions ratioed by the total flow to each pond.	365	days/yr	1.07E+01	5.61E-02
AIRBASIN	AIRBASIN	Aerated Stabilization Basin	1.82E+04	lb/yr	2012 NCASI Emission Estimation Model and NCASI 2006 H2S study.	365	days/yr	4.98E+01	2.61E-01
09-20-0250	R71	Combined Condensate Tank	2.05E-03	lb/hr	1998 Stack Testing; 3.76% increase due to sewering of condensates from C3 and No. 6 Evaps 5th effect (2013 Project)	24	hr/day	4.93E-02	2.59E-04
LRPSSUMP	LRPSSUMP	LSRP Fugitives (LVHC Drain Loop and No. 1 Filtrate Sump)	1.22E-01	lb/hr	Emission factors from test data 2016 are the sum of the Drain Loop and Filtrate Sump	24	hr/day	2.93E+00	1.54E-02

TABLE 21
METHYL MERCAPTAN POTENTIAL EMISSION RATES (50% Safety Factor on Lignin Sources)
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor	Units	Reference	Activity Factor	Units	Potential Emission Rate	
								(lb/hr)	(g/s)
06-31-0180, 06-31-1000, 06-32-2060, 06-32-2120, 06-32-2100, 06-32-2300, 06-32-2340, 06-32-2380	F09, F12, F13, F14, F17, F18, F19, F41	No. 6 O2 Delig	8.10E-07	lb/ODTUBP	July 1995 Stack Test	35.5	ODTUBP/hr	2.88E-05	3.62E-06
06-40-8000	F15, F16	No. 6 Bleach Plant Scrubber	1.64E-03	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber).	37.9	ADTBP/hr	6.21E-02	7.82E-03
07-31-1000, 07-31-1100, 07-33-3000, 07-31-1140, 07-31-1200, 07-31-1180	F23-27, F42	No. 7 O2 Delig	2.92E-05	lb/ODTUBP	1995 Stack Test	55.5	ODTUBP/hr	1.62E-03	2.04E-04
07-31-1180	F30	No. 7 Bleach Plant Scrubber	1.64E-03	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber).	59.2	ADTBP/hr	9.70E-02	1.22E-02
10-25-0110	PO01C	No. 5 Recovery Boiler	1.74E+00	lb/hr	Emission Rate estimated using permit limit of 5 ppm TRS as H2S @ 8%O2 and 2014 test flow scaled up to max production. Ratio applied from NCASI TB 973 Table 4.23 to speciate TRS compounds. See supporting file: "Limits ppm calcs 2016.xlsx"	1.0	hr/hr	1.74E+00	2.19E-01
07-34-4080, 07-34-4100, 07-36-6040, 07-36-6060	EOP, PEROX	EOP and Peroxide Stage	1.66E-04	lb/ODTUBP	NCASI Technical Bulletin 679, Table V.O.1, Mill N, October 1994, emission factor multiplied by 2	55	ODTUBP/hr	9.21E-03	1.16E-03
05-30-1300	F60	No. 5 Hot Water Tank	2.52E-02	lb/hr	Condensate sampling results from 2013 using NCASI Methodology for 24% emitted as MeSH	1	hr/hr	2.52E-02	3.18E-03
08-40-1000	F35	No. 32 High Density Pulp Tank	3.14E-03	lb/hr/tank	DMDS, H2S, MMC, DMS from NCASI SR 14-01 Table 3-6- Addendum to TB 973	1	tanks	3.14E-03	3.96E-04
09-12-0250	5SOAP	No. 5 Soap Storage Tank	4.10E-03	lb/hr	NCASI 973 Database 2013 - Recovery Black Liquor Tank Weak </=20% Soilds	1	tank	4.10E-03	5.17E-04
09-12-0050	LIQSEP	New Liquor Separator Tank	4.10E-03	lb/hr	NCASI 973 Database 2013 - Recovery Black Liquor Tank Weak </=20% Soilds	1	tank	4.10E-03	5.17E-04
09-05-0200, 09-05-0150, 09-05-0100, 09-95-0015, 09-19-0020, 09-19-0030, 09-30-0030, 09-10-0150, 09-10-0300, 09-10-0350, 09-10-0400	R24-26, R32, R36, R39-R43	18% Liquor Mix Tanks	4.10E-03	lb/hr/tank	NCASI 973 Database 2013 - Recovery Black Liquor Tank Weak </=20% Solids, 10.0 multiplier for tank movements	10.0	tanks	4.10E-02	5.17E-03
09-30-0010, 09-30-0020, 09-95-0010, 09-95-0009, 09-20-0070, 09-25-0140, 09-25-0540, 09-25-0340, 09-20-0310	R27-R28, R31, R33, R34, R37, R38, R44, R72	48% Liquor Storage Tanks	1.00E-04	lb/hr/tank	NCASI Technical Bulletin No. 849, August 2002, Table A-11, Unit Code SBLTY1 – Mill Y 50% Black Liq. Storage Tank Vent. The selected factor is most representative of the mill HBL tank emissions based on the site specific test data performed in 1999 on the south weak black liquor storage tank that showed MMC was ND. 9.0 multiplier for tank movements.	9.0	tanks	9.00E-04	1.13E-04
09-40-0010, 09-40-0020	R29, R30	65% Liquor Storage Tanks	1.00E-04	lb/hr/tank	MMC from NCASI Technical Bulletin No. 849, August 2002, Table A-11, Unit Code SBLTY1 – Mill Y 50% Black Liq. Storage Tank Vent. The selected factor is most representative of the mill HBL tank emissions based on the site specific test data performed in 1999 on the south weak black liquor storage tank that showed MMC was ND. 2.0 multiplier for tank movements.	2	tanks	2.00E-04	2.52E-05

TABLE 21
METHYL MERCAPTAN POTENTIAL EMISSION RATES (50% Safety Factor on Lignin Sources)
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor	Units	Reference	Activity Factor	Units	Potential Emission Rate	
								(lb/hr)	(g/s)
09-27-1000	LRP 40%	Tank - Lignin Feed Liquor	1.00E-04	lb/hr/tank	NCASI Technical Bulletin No. 849, August 2002, Table A-11, Unit Code SBLTY1 – Mill Y 50% Black Liq. Storage Tank Vent. The selected factor is most representative of the mill HBL tank emissions based on the site specific test data performed in 1999 on the south weak black liquor storage tank that showed MMC was ND.	1.0	tanks	1.00E-04	1.26E-05
09-27-3800	LSRPSCRUB	LSRP Emissions Post Control By Scrubber	3.63E+00	lb/hr	Emisson rate is derived from projected exhaust concentration and flow rate data from a preliminary design of LSRP emissions routed to the scrubber. Includes a 50% Safety Factor.	1.0	hr/hr	3.63E+00	4.57E-01
09-27-3000	LRPPRS2	LRP Press Building Fugitives	0.00E+00	lb/hr	Testing Conducted in May 2016. 42% through stacks, 58% as fugitives. Emissions increased 50% for compliance margin. (consistent with 2016 LSRP PSD Calcs)	1.0	hr/hr	0.00E+00	0.00E+00
10-45-0450	R05	No. 5 Precipitator Mix Tank	7.20E-05	lb/TBLS	NCASI Technical Bulletin No. 849, August 2002, Table A-6 TRS Data Summary - Kraft Recovery Furnaces - Salt Cake Mix Tank Results Table A-6 p. 178	140	TBLS/hr	1.01E-02	1.27E-03
14-05-0050	R03	North Smelt Tank	1.56E-03	lb/TBLS	NCASI TB 973 Table 4.28 - Emissions from Kraft Smelt Dissolving Tanks	69.2	TBLS/hr	1.08E-01	1.36E-02
14-05-0300	R04-1	South Smelt Tank	1.56E-03	lb/TBLS	NCASI TB 973 Table 4.28 - Emissions from Kraft Smelt Dissolving Tanks	69.2	TBLS/hr	1.08E-01	1.36E-02
14-05-0300, 10-08-0010	R04	Total South Smelt Tank and Salt Cake Mix Tank						1.08E-01	1.36E-02
14-10-05	R14	No. 5 Green Liquor Clarifier	4.20E-04	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources - Green Liquor Clarifier Mill D. P. 136 + 2 * Green Liquor Storage Tank Factor located in NCASI TB 973 Table 4.19 Green Liquor Storage Tanks(This is added in the Lb/hr Calculation)	22.2	T CaO/hr	4.13E-02	5.21E-03
14-15-0600, 14-15-0800, 14-15-0900, 14-15-DREGS	R09,R13,R10, R12	Dregs Sources	4.20E-04	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources -Green Liquor Clarifier Vent Mill D. A 0.4 factor is applied.	22.2	T CaO/hr	3.73E-03	4.70E-04
14-30-0310	R46	Lime Mud Mix Tank	7.40E-04	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Additional Causticizing Area Sources, Table 4.32 p.136, Lime Mud Dilution Tank Vent Mill D p. 136.	22.2	T CaO/hr	1.64E-02	2.07E-03
14-30-5000, 14-30-6000	R50	East and West Lime Mud Filters	2.80E-04	lb/T CaO	(NCASI) Technical Bulletin No. 858, February 2003, Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Sources at Kraft, Sulfated and Non-Chemical Pulp Mills - An Update, Table A-17 Lime Mud Precoat Filter Vents	22.2	T CaO/hr	6.21E-03	7.83E-04
14-30-5040, 14-30-6040	R65, R66	East and West Lime Mud Vacuum System	1.50E-04	lb/T CaO	(NCASI) Technical Bulletin No. 858, February 2003, Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Sources at Kraft, Sulfated and Non-Chemical Pulp Mills - An Update, Table A-17 Precoat Filter Vacuum Pump Exhausts. A factor of 3 is applied.	22.2	T CaO/hr	9.98E-03	1.26E-03

TABLE 21
METHYL MERCAPTAN POTENTIAL EMISSION RATES (50% Safety Factor on Lignin Sources)
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor	Units	Reference	Activity Factor	Units	Potential Emission Rate	
								(lb/hr)	(g/s)
14-60-3000	R01A	No. 5 Lime Kiln	4.00E-02	lb/hr	Emission Rate estimated using permit limit of 8 TRS as H2S ppm @ 10%O2 and 2014 test flow scaled up to max production. Ratio applied from NCASI TB 973 Table 4.25 to speciate TRS compounds. See supporting file: "Limits ppm calcs 2016.xlsx"	1	hr/hr	4.00E-02	5.04E-03
	PO013A	No. 2 HFB LVHC Combustion	2.58E-04	lb/ADTUBP	NCASI Technical Bulletin No. 973, February 2010, Table 4.18 - Kraft NCG Thermal Oxidizers p. 77	101	ADTUBP/hr	2.61E-02	3.29E-03
	PO13A	LSRP Contribution to Main HVLC Header	2.26E-02	lb/hr	Emission rate is derived from projected exhaust concentration and flow rate data from a preliminary design of the future LSRP emissions routed to the HVLC header. Includes a 35% Safety Factor.	1	hr/hr	2.26E-02	2.84E-03
	PO01A	Main HVLC Combined Header (No LSRP Contribution)	1.15E+00	lb/hr	Emissions are estimated based on pollutant loading in the HVLC gases from December 2008 testing and 98% destruction efficiency.	1	hr/hr	1.15E+00	1.45E-01
65-25-0310	Total from No. 2 Hog Fuel Boiler							1.20E+00	1.51E-01
CD-65-60-1010	Total from Thermal Oxidizer and HVLC							1.18E+00	1.48E-01
09-20-0250	R71	Combined Condensate Tank	2.52E-02	lb/hr	Condensate sampling results from 2013 using NCASI Methodology for 24% emitted as MeSH	1	hr/hr	2.52E-02	3.18E-03
LRPSSUMP	LRPSSUMP	LSRP Fugitives (LVHC Drain Loop and No. 1 Filtrate Sump)	2.70E-03	lb/hr	Emission factors from test data 2016 are the sum of the Drain Loop and Filtrate Sump	1	hr/hr	2.70E-03	3.41E-04
32-40-1560	NC1&2	NC-2 Paper Machine	9.90E-03	lb/ADTFP	NCASI Technical Bulletin No. 973, February 2010, Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update, Table 4.34 - Bleached Kraft Pulp and Paper Machines p. 140	25	ADTFP/hr	2.48E-01	3.12E-02
45-93-0100	NC5	NC-5 Paper Machine	9.90E-03	lb/ADTFP	NCASI Technical Bulletin No. 973, February 2010, Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update, Table 4.34 - Bleached Kraft Pulp and Paper Machines p. 140	69	ADTFP/hr	6.87E-01	8.65E-02

TABLE 24
METHYL ETHYL KETONE 24-HOUR POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/day)	Emission Rate (g/s)
06-31-0180, 06-31-1000, 06-32-2060, 06-32-2120, 06-32-2100, 06-32-2300, 06-32-2340, 06-32-2380	F09, F12, F13, F14, F17, F18, F19, F41	No. 6 O2 Delig	1.79E-05	lb/ODTUBP	1995 Stack Test	852	ODTUBP/day	1.53E-02	8.01E-05
06-40-8000	F15, F16	No. 6 Bleach Plant Scrubber	6.90E-04	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber).	909	ADTBP/day	6.27E-01	3.29E-03
07-31-1000, 07-31-1100, 07-33-3000, 07-31-1140, 07-31-1200, 07-31-1180	F23-27, F42	No. 7 O2 Delig	4.04E-05	lb/ODTUBP	1995 Stack Test	1,331	ODTUBP/day	5.38E-02	2.82E-04
07-31-1180	F30	No. 7 Bleach Plant Scrubber	6.90E-04	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber).	1,420	ADTBP/day	9.80E-01	5.14E-03
14-05-0050	R03	North Smelt Tank	2.06E-04	lb/TBLS	NCASI TB 973 Table 4.28 - Emissions from Kraft Smelt Dissolving Tanks	1661	TBLS/day	3.42E-01	1.80E-03
14-05-0300	R04-1	South Smelt Tank	2.06E-04	lb/TBLS	NCASI TB 973 Table 4.28 - Emissions from Kraft Smelt Dissolving Tanks	1661	TBLS/day	3.42E-01	1.80E-03
10-08-0010	R04-2	Salt Cake Mix Tank	1.20E-05	lb/TBLS	NCASI TB 973, Table 4.35, February 2010, Summary of Air Toxic Emissions from Miscellaneous Kraft Mill Sources	3,323	TBLS/day	3.99E-02	2.09E-04
14-05-0300, 10-08-0010	R04	Total South Smelt Tank and Salt Cake Mix Tank						3.82E-01	2.01E-03
07-34-4080, 07-34-4100, 07-36-6040, 07-36-6060	EOP, PEROX	EOP and Peroxide Stage	2.20E-05	lb/ODTUBP	NCASI Technical Bulletin 679, Table V.O.1, Mill N, October 1994	1,331	ODTUBP/day	2.93E-02	1.54E-04
08-40-1000	F35	No. 32 High Density Pulp Tank	5.90E-03	lb/hr/tank	NCASI Technical Bulletin No. 973, October 2014, Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update. Table 4.19 HD Unbleached Pulp Storage Tanks	24	tank*hr/day	1.42E-01	7.43E-04
05-30-1300	F60	Hot Water Tank	4.38E-03	lb/hr	Sep 1998 Stack Testing	24	hr/day	1.05E-01	5.52E-04
08-65-1060	6N7SPLTK	No. 6 and 7 spill collection tank	7.20E-05	lb/ODTUBP	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing	2,183	ODTUBP/day	1.57E-01	8.25E-04
09-05-0210	SWBLTANK	South WBL Storage Tank	2.03E-05	lb/ODTUBP	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing	2,183	ODTUBP/day	4.43E-02	2.33E-04
09-12-0250	5SOAP	No. 5 Soap Storage Tank	2.13E-03	lb/hr	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids	24	tank*hr/day	5.11E-02	2.68E-04
09-12-0050	LIQSEP	New Liquor Separator Tank	2.13E-03	lb/hr	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids	24	tank*hr/day	5.11E-02	2.68E-04
09-05-0200, 09-05-0150, 09-05-0100, 09-95-0015, 09-19-0020, 09-19-0030, 09-30-0030, 09-10-0150, 09-10-0300, 09-10-0350, 09-10-0400	R24-26, R32, R36, R39-R43	18% Liquor Mix Tanks	2.13E-03	lb/hr/tank	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids, 10.0 multiplier for tank movements	240.0	hr*tank/day	5.11E-01	2.68E-03

TABLE 24
METHYL ETHYL KETONE 24-HOUR POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/day)	Emission Rate (g/s)
09-30-0010, 09-30-0020, 09-95-0010, 09-95-0009, 09-20-0070, 09-25-0140, 09-25-0540, 09-25-0340, 09-20-0310	R27-R28, R31, R33, R34, R37, R38, R44, R72	48% Liquor Storage Tanks, Soap Tanks	1.10E-02	lb/hr/tank	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. 9.0 multiplier for tank movements	216.0	hr*tank/day	2.38E+00	1.25E-02
09-40-0010, 09-40-0020	R29, R30	65% Liquor Storage Tanks	1.10E-02	lb/hr/tank	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. 2.0 multiplier for tank movements	48.0	hr*tank/day	5.28E-01	2.77E-03
09-27-1000	LRP 40%	Tank - Lignin Feed Liquor	1.10E-02	lb/hr	NCASI Pulp and Paper Database - March 2013 - Recovery Black Liquor Tank >20% Solids - Median	24.0	hr/day	2.64E-01	1.39E-03
09-27-3000	LRPPRS2	Filter - 2 Lignin Filter	2.03E-05	lb/ODTL	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing on WBL Tanks. Because emissions factors are production based, they are conservatively not time weighted based on actual venting only 15% of the time.	105.7	ODTL/day	2.15E-03	1.13E-05
10-25-0110	PO01C	No. 5 Recovery Boiler BLS	3.80E-03	lb/TBLS	National Council for Air and Stream Improvement (NCASI) Technical Bulletin No. 973, February 2010, Compilation of 'Air Toxic' and Total Emissions Data for Pulp and Paper Mil Sources - A Second Update, Table 4.23. Data points reported as non-detect treated as zero.	3,360	TBLS/day	1.28E+01	6.70E-02
10-45-0450	R05	No. 5 Precipitator Mix Tank	1.20E-05	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.35 - Miscellaneous Kraft Mill Sources - Salt Cake Mix Tank Vents p. 143	3,360	TBLS/day	4.03E-02	2.12E-04
14-10-05	R14	No. 5 Green Liquor Clarifier	2.00E-04	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources - Green Liquor Clarifier Mill D. P. 136. A factor of 1.9 is applied to account for all sources.	533	T CaO/day	2.02E-01	1.06E-03
14-15-0450, 14-70-2045, 14-70-2020	R45,R70,R76	Scrubber Water Standpipe, Scrubber Water Clarifier	1.90E-04	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources - White Liquor and Weak Wash Pressure Filters Vent Mill J. A 2.0 factor is applied.	533	T CaO/day	2.02E-01	1.06E-03
14-15-0600, 14-15-0800, 14-15-0900, 14-15-DREGS	R09,R13,R10, R12	Dregs Sources	2.00E-04	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources -Green Liquor Clarifier Vent Mill D. A 0.3 factor is applied.	533	T CaO/day	3.20E-02	1.68E-04
14-20-2020, 14-20-2085	R53, R58	East/West Slaker Area	1.30E-03	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.31 Causticizing Area Sources - Causticizer/Salker Combination Emissions. A 1.5 factor is applied.	533	T CaO/day	1.04E+00	5.45E-03
08-70-0900, 14-25-0450, 14-25-0800, 14-25-0050, 14-25-0150	R16, R17, R07, R22, F11	No. 3 and 4 WL Clarifiers and Tanks	1.60E-04	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Sources - White Liquor Pressure Filter Vent Mill F (ND=0). A 2.5 factor is applied.	533	T CaO/day	2.13E-01	1.12E-03
14-30-0310	R46	Lime Mud Mix Tank	2.60E-04	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Additional Causticizing Area Sources, Table 4.32 p.136, Lime Mud Dilution Tank Vent Mill D p. 136.	533	T CaO/day	1.38E-01	7.27E-04
14-30-1450	R15	Lime Mud Storage Tank	1.70E-06	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Sources - Lime Mud Mix Tank Vent Mill D, p. 136.	533	T CaO/day	9.05E-04	4.75E-06

TABLE 24
METHYL ETHYL KETONE 24-HOUR POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/day)	Emission Rate (g/s)
14-30-350	R47, R49	No. 2 and 3 Lime Mud Wash Tank	6.10E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources - Lime Mud Pressure Filter Vent Mill D p. 136.	533	T CaO/day	3.25E-02	1.71E-04
14-30-5000, 14-30-6000	R50	East and West Lime Mud Filters	1.50E-04	lb/T CaO	NCASI Pulp and Paper Database TB 973 Table 4.31 - Lime Mud Precoat Filters	533	T CaO/day	7.99E-02	4.19E-04
14-30-5040, 14-30-6040	R65, R66	East and West Lime Mud Vacuum	9.80E-04	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.31 - Causticizing Area Sources - Precoat Filter Vacuum Pump Exhaust p. 133. A 3.0 factor is applied.	533	T CaO/day	1.57E+00	8.22E-03
14-60-3000	R01A	No. 5 Lime Kiln - TCaO	2.24E-03	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.25 - Summary of Non-metal Air Toxic Emissions from Kraft Lime Kilns p. 110	533	T CaO/day	1.19E+00	6.26E-03
09-20-0250	R71	Combined Condensate Tank	2.04E-03	lb/hr	Stack Testing 1998; 1.47% increase due to sewering of condensates from C3 and No. 6 Evaps 5th effect (2013 Project)	24	hr/day	4.89E-02	2.57E-04
		Cooler -1 Feed Liquor	1.10E-02	lb/hr	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor	24	hr/day	2.64E-01	1.39E-03
		Filter - 1 Lignin	2.03E-05	lb/ODTL	Conservatively assume emissions from filters equate to weak black liquor tank. ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000. Emission factors are production based and thus are conservatively not time weighted based on actual venting only 15% of the time.	105.7	ODTL/day	2.15E-03	1.13E-05
		Tank - 2 Lignin Filter Cloth Wash	2.03E-05	lb/ODTL	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing on WBL Tanks. Because emissions factors are production based, they are conservatively not time weighted based on actual venting only 15% of the time.	105.7	ODTL/day	2.15E-03	1.13E-05
		Conveyors - #1 Lignin Filter & #1 Lignin Filter Incline	4.06E-05	lb/ODTL	Conservatively assume emissions from filters equate to weak black liquor tank. Multiply emissions by 2 for two conveyors. ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000.	105.7	ODTL/day	4.29E-03	2.25E-05
		LRP Dilute Tanks	1.42E-04	lb/ODTL	ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000. Emission factor displayed is for 7 tanks total. Emission factors used for the primary cloth wash and filtrate tanks are production based and thus are conservatively not time weighted based onactual venting periods of only 15% of the time.	105.7	ODTL/day	1.50E-02	7.89E-05
		LRP Acidification Tank (2800)	1.11E-02	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 1 tank.	105.7	ODTL/day	1.17E+00	6.17E-03
09-27-3800	LSRPSCRUB				Total from Caustic Scrubber			1.46E+00	7.68E-03
64-25-0290	PO01A-1	No. 1 HFB - Hog Fuel	5.39E-06	lb/MMBtu	Table 4.1, 4.5 and 4.6 of NCASI TB 1013	26,097	MMBtu/day	1.41E-01	7.38E-04
	PO13A	No. 2 HFB - Hog Fuel	5.39E-06	lb/MMBtu	Table 4.1, 4.5 and 4.6 of NCASI TB 1013	22,723	MMBtu/day	1.22E-01	6.43E-04

TABLE 24
METHYL ETHYL KETONE 24-HOUR POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/day)	Emission Rate (g/s)
	PO13A	No. 2 HFB LVHC Combustion	7.73E-05	lb/ADTUBP	NCASI TB 973 Table 4.18 - Kraft Mill NCG Thermal Oxidizer. LVHC gases are burned through No. 2 HFB. The White Liquor Scrubber then No. 5 Lime Kiln are used as backups	2425.8	ADTUBP/day	1.88E-01	9.84E-04
	PO13A	No. 2 HFB HVLC Combustion	1.42E-02	lb/hr	Data generated by the 1996 compliance testing was run at 68% of the total fiberline capacity, 2050 BDTP per day. The tested lb/hr loadings were adjusted by a ratio of actual production to testing production.	24	hr/day	3.41E-01	1.79E-03
	PO13A	Carbonator - Feed Liquor	2.20E-04	lb/hr	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor Median, 98% control, 1 tank.	24	hr/day	5.28E-03	2.77E-05
	PO13A	LRP Acidification Tanks (2700 &2770)	4.44E-04	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 98% control, 2 tanks. Controlled by HVLC System	105.7	ODTL/day	4.70E-02	2.47E-04
65-25-0310					Total from No. 2 Hog Fuel Boiler			7.03E-01	3.69E-03
CD-65-60-1010					Total from Thermal Oxidizer and HVLC			3.93E-01	2.06E-03
32-10-0140	P09A-F	NC-2 HD and LD Stock Tanks	6.30E-05	lb/ODTUBP	NCASI Technical Bulletin No. 679, October 1994, VOC Emissions from Pulp and Paper Mill Sources, Part V - Kraft Mill Bleach Plants, pg. 104 Table V.B.1, Mill A, D Washer Vent. A 1.5 factor is applied.	599	ODTUBP/day	5.66E-02	2.97E-04
32-40-1560	NC1&2	NC-2 Paper Machine	1.80E-03	lb/ADTFP	Table 4.34 of NCASI TB 973; PM Bleached Kraft	665	ADTFP/day	1.20E+00	6.28E-03
45-93-0100	NC5	NC-5 Paper Machine	1.80E-03	lb/ADTFP	Table 4.34 of NCASI TB 973; PM Bleached Kraft	1,664	ADTFP/day	3.00E+00	1.57E-02
45-10-0005	P27A-H	NC-5 HD and LD Stock Tanks	6.30E-05	lb/ODTUBP	NCASI Technical Bulletin No. 679, October 1994, VOC Emissions from Pulp and Paper Mill Sources, Part V - Kraft Mill Bleach Plants, pg. 104 Table V.B.1, Mill A, D Washer Vent. A 1.5 factor is applied.	1,540	ODTUBP/day	1.45E-01	7.64E-04
73-10-2000	SETPOND2	Primary Clarifier	1.06E-03	lb/ADTUBP	NCASI TRI Guidance	2,426	ADTUBP/day	2.58E+00	1.36E-02
73-10-1000	SETPOND1	Secondary Clarifier	3.55E-03	lb/ADTUBP	NCASI TRI Guidance	2,426	ADTUBP/day	8.61E+00	4.52E-02
73-05-2000-A		C3 Stream Sewering	1.78E-01	lb/hr	Water 9 Results for Base Case with Addition of C3 Stream-No Setpond	24	hr/day	4.27E+00	2.24E-02
73-05-2000-B		5th eff 6 evap Sewering	1.70E-02	lb/hr	Water 9 Results for Base Case with Addition of 5th eff 6 evap- No Setpond	24	hr/day	4.08E-01	2.14E-03

TABLE 25
METHYL ETHYL KETONE 1-HOUR POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
06-31-0180, 06-31-1000, 06-32-2060, 06-32-2120, 06-32-2100, 06-32-2300, 06-32-2340, 06-32-2380	F09, F12, F13, F14, F17, F18, F19, F41	No. 6 O2 Delig	1.79E-05	lb/ODTUBP	1995 Stack Test	35.5	ODTUBP/hr	6.35E-04	8.01E-05
06-40-8000	F15, F16	No. 6 Bleach Plant Scrubber	6.90E-04	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber).	37.9	ADTBP/hr	2.61E-02	3.29E-03
07-31-1000, 07-31-1100, 07-33-3000, 07-31-1140, 07-31-1200, 07-31-1180	F23-27, F42	No. 7 O2 Delig	4.04E-05	lb/ODTUBP	1995 Stack Test	55.5	ODTUBP/hr	2.24E-03	2.82E-04
07-31-1180	F30	No. 7 Bleach Plant Scrubber	6.90E-04	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber).	59.2	ADTBP/hr	4.08E-02	5.14E-03
14-05-0050	R03	North Smelt Tank	2.06E-04	lb/TBLS	NCASI TB 973 Table 4.28 - Emissions from Kraft Smelt Dissolving Tanks	69	TBLS/hr	1.43E-02	1.80E-03
14-05-0300	R04-1	South Smelt Tank	2.06E-04	lb/TBLS	NCASI TB 973 Table 4.28 - Emissions from Kraft Smelt Dissolving Tanks	69	TBLS/hr	1.43E-02	1.80E-03
10-08-0010	R04-2	Salt Cake Mix Tank	1.20E-05	lb/TBLS	NCASI TB 973, Table 4.35, February 2010, Summary of Air Toxic Emissions from Miscellaneous Kraft Mill Sources	138	TBLS/hr	1.66E-03	2.09E-04
14-05-0300, 10-08-0010	R04	Total South Smelt Tank and Salt Cake Mix Tank						1.59E-02	2.01E-03
07-34-4080, 07-34-4100, 07-36-6040, 07-36-6060	EOP, PEROX	EOP and Peroxide Stage	2.20E-05	lb/ODTUBP	NCASI Technical Bulletin 679, Table V.O.1, Mill N, October 1994	55.5	ODTUBP/hr	1.22E-03	1.54E-04
08-40-1000	F35	No. 32 High Density Pulp Tank	5.90E-03	lb/hr/tank	NCASI Technical Bulletin No. 973, October 2014, Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update. Table 4.19 HD Unbleached Pulp Storage Tanks	1.0	tank	5.90E-03	7.43E-04
05-30-1300	F60	Hot Water Tank	4.38E-03	lb/hr	Sep 1998 Stack Testing	1.0	hr/hr	4.38E-03	5.52E-04
08-65-1060	6N7SPLTK	No. 6 and 7 spill collection tank	7.20E-05	lb/ODTUBP	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing	91.0	ODTUBP/hr	6.55E-03	8.25E-04
09-05-0210	SWBLTANK	South WBL Storage Tank	2.03E-05	lb/ODTUBP	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing	91.0	ODTUBP/hr	1.85E-03	2.33E-04
09-12-0250	5SOAP	No. 5 Soap Storage Tank	2.13E-03	lb/hr	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids	1	tank	2.13E-03	2.68E-04
09-12-0050	LIQSEP	New Liquor Separator Tank	2.13E-03	lb/hr	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids	1	tank	2.13E-03	2.68E-04
09-05-0200, 09-05-0150, 09-05-0100, 09-95-0015, 09-19-0020, 09-19-0030, 09-30-0030, 09-10-0150, 09-10-0300, 09-10-0350, 09-10-0400	R24-26, R32, R36, R39-R43	18% Liquor Mix Tanks	2.13E-03	lb/hr/tank	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids, 10.0 multiplier for tank movements	10.0	hr*tank/hr	2.13E-02	2.68E-03

TABLE 25
METHYL ETHYL KETONE 1-HOUR POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
09-30-0010, 09-30-0020, 09-95-0010, 09-95-0009, 09-20-0070, 09-25-0140, 09-25-0540, 09-25-0340, 09-20-0310	R27-R28, R31, R33, R34, R37, R38, R44, R72	48% Liquor Storage Tanks, Soap Tanks	1.10E-02	lb/hr/tank	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. 9.0 multiplier for tank movements	9.0	hr*tank/hr	9.90E-02	1.25E-02
09-40-0010, 09-40-0020	R29, R30	65% Liquor Storage Tanks	1.10E-02	lb/hr/tank	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. 2.0 multiplier for tank movements	2.0	hr*tank/hr	2.20E-02	2.77E-03
09-27-1000	LRP 40%	Tank - Lignin Feed Liquor	1.10E-02	lb/hr	NCASI Pulp and Paper Database - March 2013 - Recovery Black Liquor Tank >20% Solids - Median	1.0	hr/hr	1.10E-02	1.39E-03
09-27-3000	LRPPRS2	Filter - 2 Lignin Filter	2.03E-05	lb/ODTL	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing on WBL Tanks. Because emissions factors are production based, they are conservatively not time weighted based on actual venting only 15% of the time.	4.4	ODTL/hr	8.94E-05	1.13E-05
10-25-0110	PO01C	No. 5 Recovery Boiler BLS	3.80E-03	lb/TBLS	National Council for Air and Stream Improvement (NCASI) Technical Bulletin No. 973, February 2010, Compilation of 'Air Toxic' and Total Emissions Data for Pulp and Paper Mil Sources - A Second Update, Table 4.23. Data points reported as non-detect treated as zero.	140	TBLS/hr	5.32E-01	6.70E-02
10-45-0450	R05	No. 5 Precipitator Mix Tank	1.20E-05	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.35 - Miscellaneous Kraft Mill Sources - Salt Cake Mix Tank Vents p. 143	140	TBLS/hr	1.68E-03	2.12E-04
14-10-05	R14	No. 5 Green Liquor Clarifier	2.00E-04	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources - Green Liquor Clarifier Mill D. P. 136. A factor of 1.9 is applied to account for all sources.	22.2	T CaO/hr	8.43E-03	1.06E-03
14-15-0450, 14-70-2045, 14-70-2020	R45,R70,R76	Scrubber Water Standpipe, Scrubber Water Clarifier	1.90E-04	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources - White Liquor and Weak Wash Pressure Filters Vent Mill J. A 2.0 factor is applied.	22.2	T CaO/hr	8.43E-03	1.06E-03
14-15-0600, 14-15-0800, 14-15-0900, 14-15-DREGS	R09,R13,R10, R12	Dregs Sources	2.00E-04	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources -Green Liquor Clarifier Vent Mill D. A 0.3 factor is applied.	22.2	T CaO/hr	1.33E-03	1.68E-04
14-20-2020, 14-20-2085	R53, R58	East/West Slaker Area	1.30E-03	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.31 Causticizing Area Sources - Causticizer/Salker Combination Emissions. A 1.5 factor is applied.	22.2	T CaO/hr	4.33E-02	5.45E-03
08-70-0900, 14-25-0450, 14-25-0800, 14-25-0050, 14-25-0150	R16, R17, R07, R22, F11	No. 3 and 4 WL Clarifiers and Tanks	1.60E-04	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Sources - White Liquor Pressure Filter Vent Mill F (ND=0). A 2.5 factor is applied.	22.2	T CaO/hr	8.88E-03	1.12E-03
14-30-0310	R46	Lime Mud Mix Tank	2.60E-04	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Additional Causticizing Area Sources, Table 4.32 p.136, Lime Mud Dilution Tank Vent Mill D p. 136.	22.2	T CaO/hr	5.77E-03	7.27E-04
14-30-1450	R15	Lime Mud Storage Tank	1.70E-06	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Sources - Lime Mud Mix Tank Vent Mill D, p. 136.	22.2	T CaO/hr	3.77E-05	4.75E-06

TABLE 25
METHYL ETHYL KETONE 1-HOUR POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
14-30-350	R47, R49	No. 2 and 3 Lime Mud Wash Tank	6.10E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources - Lime Mud Pressure Filter Vent Mill D p. 136.	22.2	T CaO/hr	1.35E-03	1.71E-04
14-30-5000, 14-30-6000	R50	East and West Lime Mud Filters	1.50E-04	lb/T CaO	NCASI Pulp and Paper Database TB 973 Table 4.31 - Lime Mud Precoat Filters	22.2	T CaO/hr	3.33E-03	4.19E-04
14-30-5040, 14-30-6040	R65, R66	East and West Lime Mud Vacuum	9.80E-04	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.31 - Causticizing Area Sources - Precoat Filter Vacuum Pump Exhaust p. 133. A 3.0 factor is applied.	22.2	T CaO/hr	6.52E-02	8.22E-03
14-60-3000	R01A	No. 5 Lime Kiln - TCaO	2.24E-03	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.25 - Summary of Non-metal Air Toxic Emissions from Kraft Lime Kilns p. 110	22.2	T CaO/hr	4.97E-02	6.26E-03
09-20-0250	R71	Combined Condensate Tank	2.04E-03	lb/hr	Stack Testing 1998; 1.47% increase due to sewering of condensates from C3 and No. 6 Evaps 5th effect (2013 Project)	1	hr/hr	2.04E-03	2.57E-04
		Cooler -1 Feed Liquor	1.10E-02	lb/hr	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor	1.0	hr/hr	1.10E-02	1.39E-03
		Filter - 1 Lignin	2.03E-05	lb/ODTL	Conservatively assume emissions from filters equate to weak black liquor tank. ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000. Emission factors are production based and thus are conservatively not time weighted based on actual venting only 15% of the time.	4.4	ODTL/hr	8.94E-05	1.13E-05
		Tank - 2 Lignin Filter Cloth Wash	2.03E-05	lb/ODTL	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing on WBL Tanks. Because emissions factors are production based, they are conservatively not time weighted based on actual venting only 15% of the time.	4.4	ODTL/hr	8.94E-05	1.13E-05
		Conveyors - #1 Lignin Filter & #1 Lignin Filter Incline	4.06E-05	lb/ODTL	Conservatively assume emissions from filters equate to weak black liquor tank. Multiply emissions by 2 for two conveyors. ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000.	4.4	ODTL/hr	1.79E-04	2.25E-05
		LRP Dilute Tanks	1.42E-04	lb/ODTL	ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000. Emission factor displayed is for 7 tanks total. Emission factors used for the primary cloth wash and filtrate tanks are production based and thus are conservatively not time weighted based onactual venting periods of only 15% of the time.	4.4	ODTL/hr	6.26E-04	7.89E-05
		LRP Acidification Tank (2800)	1.11E-02	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 1 tank.	4.4	ODTL/hr	4.89E-02	6.17E-03
09-27-3800	LSRPSCRUB	Total from Caustic Scrubber						6.09E-02	7.68E-03
64-25-0290	PO01A-1	No. 1 HFB - Hog Fuel	5.39E-06	lb/MMBtu	Table 4.1, 4.5 and 4.6 of NCASI TB 1013	1,087	MMBtu/hr	5.86E-03	7.38E-04

TABLE 25
METHYL ETHYL KETONE 1-HOUR POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
	PO13A	No. 2 HFB - Hog Fuel	5.39E-06	lb/MMBtu	Table 4.1, 4.5 and 4.6 of NCASI TB 1013	947	MMBtu/hr	5.10E-03	6.43E-04
	PO13A	No. 2 HFB LVHC Combustion	7.73E-05	lb/ADTUBP	NCASI TB 973 Table 4.18 - Kraft Mill NCG Thermal Oxidizer. LVHC gases are burned through No. 2 HFB. The White Liquor Scrubber then No. 5 Lime Kiln are used as backups	101	ADTUBP/hr	7.81E-03	9.84E-04
	PO13A	No. 2 HFB HVLC Combustion	1.42E-02	lb/hr	Data generated by the 1996 compliance testing was run at 68% of the total fiberline capacity, 2050 BDTP per day. The tested lb/hr loadings were adjusted by a ratio of actual production to testing production.	1.0	hr/hr	1.42E-02	1.79E-03
	PO13A	Carbonator - Feed Liquor	2.20E-04	lb/hr	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor Median, 98% control, 1 tank.	1.0	hr/hr	2.20E-04	2.77E-05
	PO13A	LRP Acidification Tanks (2700 &2770)	4.44E-04	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 98% control, 2 tanks. Controlled by HVLC System	4.4	ODTL/hr	1.96E-03	2.47E-04
65-25-0310					Total from No. 2 Hog Fuel Boiler			2.93E-02	3.69E-03
CD-65-60-1010					Total from Thermal Oxidizer and HVLC			1.64E-02	2.06E-03
32-10-0140	P09A-F	NC-2 HD and LD Stock Tanks	6.30E-05	lb/ODTUBP	NCASI Technical Bulletin No. 679, October 1994, VOC Emissions from Pulp and Paper Mill Sources, Part V - Kraft Mill Bleach Plants, pg. 104 Table V.B.1, Mill A, D Washer Vent. A 1.5 factor is applied.	24.9	ODTUBP/hr	2.36E-03	2.97E-04
32-40-1560	NC1&2	NC-2 Paper Machine	1.80E-03	lb/ADTFP	Table 4.34 of NCASI TB 973; PM Bleached Kraft	25	ADTFP/hr	4.50E-02	5.67E-03
45-93-0100	NC5	NC-5 Paper Machine	1.80E-03	lb/ADTFP	Table 4.34 of NCASI TB 973; PM Bleached Kraft	69	ADTFP/hr	1.25E-01	1.57E-02
45-10-0005	P27A-H	NC-5 HD and LD Stock Tanks	6.30E-05	lb/ODTUBP	NCASI Technical Bulletin No. 679, October 1994, VOC Emissions from Pulp and Paper Mill Sources, Part V - Kraft Mill Bleach Plants, pg. 104 Table V.B.1, Mill A, D Washer Vent. A 1.5 factor is applied.	64.2	ODTUBP/hr	6.06E-03	7.64E-04
73-10-2000	SETPOND2	Primary Clarifier	1.06E-03	lb/ADTUBP	NCASI TRI Guidance	101.1	ADTUBP/hr	1.08E-01	1.36E-02
73-10-1000	SETPOND1	Secondary Clarifier	3.55E-03	lb/ADTUBP	NCASI TRI Guidance	101.1	ADTUBP/hr	3.59E-01	4.52E-02
73-05-2000-A		C3 Stream Sewering	1.78E-01	lb/hr	Water 9 Results for Base Case with Addition of C3 Stream	1.0	hr/hr	1.78E-01	2.24E-02
73-05-2000-B		5th eff 6 evap Sewering	1.70E-02	lb/hr	Water 9 Results for Base Case with Addition of 5th eff 6 evap	1.0	hr/hr	1.70E-02	2.14E-03

TABLE 26
POTENTIAL EMISSIONS RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/day)	Emission Rate (g/s)
06-31-0180, 06-31-1000, 06-32-2060, 06-32-2120, 06-32-2100, 06-32-2300, 06-32-2340, 06-32-2380	F09, F12, F13, F14, F17, F18, F19, F41	No. 6 O2 Delig	6.71E-05	lb/ODTUBP	1995 Stack Test	852	ODTUBP/day	5.72E-02	3.00E-04
06-40-8000	F15, F16	No. 6 Bleach Plant Scrubber	2.10E-04	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber).	909	ADTBP/day	1.91E-01	1.00E-03
07-31-1000, 07-31-1100, 07-33-3000, 07-31-1140, 07-31-1200, 07-31-1180	F23-27, F42	No. 7 O2 Delig	2.44E-04	lb/ODTUBP	1995 Stack Test	1,331	ODTUBP/day	3.25E-01	1.71E-03
07-31-1180	F30	No. 7 Bleach Plant Scrubber	2.10E-04	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber).	1,420	ADTBP/day	2.98E-01	1.57E-03
14-05-0050	R03	North Smelt Tank	1.92E-04	lb/TBLS	NCASI TB 973 Table 4.28 - Emissions from Kraft Smelt Dissolving Tanks	1661	TBLS/day	3.19E-01	1.67E-03
14-05-0300	R04-1	South Smelt Tank	1.92E-04	lb/TBLS	NCASI TB 973 Table 4.28 - Emissions from Kraft Smelt Dissolving Tanks	1661	TBLS/day	3.19E-01	1.67E-03
10-08-0010	R04-2	Salt Cake Mix Tank	1.40E-06	lb/TBLS	NCASI TB 973, Table 4.35, February 2010, Summary of Air Toxic Emissions from Miscellaneous Kraft Mill Sources	3,323	TBLS/day	4.65E-03	2.44E-05
14-05-0300, 10-08-0010	R04	Total South Smelt Tank and Salt Cake Mix Tank						3.24E-01	1.70E-03
14-60-3000	R01A	No. 5 Lime Kiln - TCaO	2.60E-04	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.25 - Summary of Non-metal Air Toxic Emissions from Kraft Lime Kilns p. 110	533	T CaO/day	1.38E-01	7.27E-04
64-25-0290	PO01A-1	No. 1 HFB - Hog Fuel	4.45E-04	lb/MMBtu	Table 4.1, 4.5 and 4.6 of NCASI TB 1013	26,097	MMBtu/day	1.16E+01	6.10E-02
07-34-4080, 07-34-4100, 07-36-6040, 07-36-6060	EOP, PEROX	EOP and Peroxide Stage	7.80E-06	lb/ODTUBP	NCASI Technical Bulletin 679, Table V.O.1, Mill N, October 1994	1,331	ODTUBP/day	1.04E-02	5.45E-05
08-40-1000	F35	No. 32 High Density Pulp Tank	6.19E-04	lb/hr/tank	NCASI Technical Bulletin No. 973, October 2014, Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update. Table 4.19 HD Unbleached Pulp Storage Tanks	24	tank*hr/day	1.49E-02	7.80E-05
08-65-1060	6N7SPLTK	No. 6 and 7 spill collection tank	1.04E-04	lb/ODTUBP	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing	2,183	ODTUBP/day	2.27E-01	1.19E-03
09-05-0210	SWBLTANK	South WBL Storage Tank	2.83E-05	lb/ODTUBP	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing	2,183	ODTUBP/day	6.18E-02	3.24E-04
09-12-0250	5SOAP	No. 5 Soap Storage Tank	2.90E-04	lb/hr	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids	24	hr*tank/day	6.96E-03	3.65E-05
09-12-0050	LIQSEP	New Liquor Separator Tank	2.90E-04	lb/hr	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids	24	hr*tank/day	6.96E-03	3.65E-05

TABLE 26
POTENTIAL EMISSIONS RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/day)	Emission Rate (g/s)
09-05-0100, 09-95-0015, 09-19-0020, 09-19-0030, 09-30-0030, 09-10-0150, 09-10-0300, 09-10-0350, 09-10-0400	R24-26, R32, R36, R39-R43	18% Liquor Mix Tanks	2.90E-04	lb/hr/tank	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids, 10.0 multiplier for tank movements	240	hr*tank/day	6.96E-02	3.65E-04
09-30-0010, 09-30-0020, 09-95-0010, 09-95-0009, 09-20-0070, 09-25-0140, 09-25-0540, 09-25-0340, 09-20-0310	R27-R28, R31, R33, R34, R37, R38, R44, R72	48% Liquor Storage Tanks, Soap Tanks	8.57E-04	lb/hr/tank	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. 9.0 multiplier for tank movements	216	hr*tank/day	1.85E-01	9.72E-04
09-40-0010, 09-40-0020	R29, R30	65% Liquor Storage Tanks	8.57E-04	lb/hr/tank	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. 2.0 multiplier for tank movements	48	hr*tank/day	4.11E-02	2.16E-04
09-27-1000	LRP 40%	Tank - Lignin Feed Liquor	8.57E-04	lb/hr	NCASI Pulp and Paper Database - March 2013 - Recovery Black Liquor Tank >20% Solids - Median	24.0	hr/day	2.06E-02	1.08E-04
		Cooler -1 Feed Liquor	8.57E-04	lb/hr	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor	24.0	hr/day	2.06E-02	1.08E-04
		Filter - 1 Lignin	2.83E-05	lb/ODTL	Conservatively assume emissions from filters equate to weak black liquor tank. ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000. Emission factors are production based and thus are conservatively not time weighted based on actual venting only 15% of the time.	105.7	ODTL/day	2.99E-03	1.57E-05
		Tank - 2 Lignin Filter Cloth Wash	2.83E-05	lb/ODTL	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing on WBL Tanks. Because emissions factors are production based, they are conservatively not time weighted based on actual venting only 15% of the time.	105.7	ODTL/day	2.99E-03	1.57E-05
		Conveyors - #1 Lignin Filter & #1 Lignin Filter Incline	5.66E-05	lb/ODTL	Conservatively assume emissions from filters equate to weak black liquor tank. Multiply emissions by 2 for two conveyors. ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000.	105.7	ODTL/day	5.98E-03	3.14E-05
		LRP Dilute Tanks	1.98E-04	lb/ODTL	ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000. Emission factor displayed is for 7 tanks total. Emission factors used for the primary cloth wash and filtrate tanks are production based and thus are conservatively not time weighted based onactual venting periods of only 15% of the time.	105.7	ODTL/day	2.09E-02	1.10E-04
		LRP Acidification Tank (2800)	3.89E-03	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 1 tank.	105.7	ODTL/day	4.11E-01	2.16E-03

TABLE 26
POTENTIAL EMISSIONS RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/day)	Emission Rate (g/s)
09-27-3800	LSRPSCRUB	Total from Caustic Scrubber						4.65E-01	2.44E-03
09-27-3000	LRPPRS2	Filter - 2 Lignin Filter	2.83E-05	lb/ODTL	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing on WBL Tanks. Because emissions factors are production based, they are conservatively not time weighted based on actual venting only 15% of the time.	105.7	ODTL/day	2.99E-03	1.57E-05
	PO13A	Carbonator - Feed Liquor	1.71E-05	lb/hr	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor Median, 98% control, 1 tank.	24.0	hr/day	4.11E-04	2.16E-06
	PO13A	LRP Acidification Tanks (2700 & 2770)	1.56E-04	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 98% control, 2 tanks. Controlled by HVLC System	105.7	ODTL/day	1.64E-02	8.63E-05
	PO13A	No. 2 HFB - Hog Fuel	4.45E-04	lb/MMBtu	Table 4.1, 4.5 and 4.6 of NCASI TB 1013	22,723	MMBtu/day	1.01E+01	5.31E-02
	PO13A	No. 2 HFB HVLC Combustion	3.53E-01	lb/hr	NCASI TRI Guidance 2013 converted to lb/hr basis using annual production and hours of operation with 98% control.	24.0	hr/day	8.47E+00	4.44E-02
65-25-0310	Total from No. 2 Hog Fuel Boiler							1.86E+01	9.76E-02
CD-65-60-1010	Total from Thermal Oxidizer and HVLC							8.48E+00	4.45E-02
10-25-0110	PO01C	No. 5 Recovery Boiler - BLS	4.70E-04	lb/TBLS	National Council for Air and Stream Improvement (NCASI) Technical Bulletin No. 973, February 2010, Compilation of 'Air Toxic' and Total Emissions Data for Pulp and Paper Mil Sources - A Second Update, Table 4.23.	3360	TBLs/day	1.58E+00	8.29E-03
10-45-0450	R05	No. 5 Precipitator Mix Tanks	1.40E-06	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.35 - Miscellaneous Kraft Mill Sources - Salt Cake Mix Tank Vents p. 143	3,360	TBLS/day	4.70E-03	2.47E-05
14-10-05	R14	No. 5 Green Liquor Clarifier	1.10E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources - Green Liquor Clarifier Mill D. P. 136. A factor of 1.9 is applied to account for all sources.	533	T CaO/day	1.11E-02	5.84E-05
14-15-0450, 14-70-2045, 14-70-2020	R45,R70,R76	Scrubber Water Standpipe, Scrubber Water Clarifier	3.90E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources - White Liquor and Weak Wash Pressure Filters Vent Mill J. A 2.0 factor is applied.	533	T CaO/day	4.15E-02	2.18E-04
14-15-0600, 14-15-0800, 14-15-0900, 14-15-DREGS	R09,R13,R10, R12	Dregs Sources	1.10E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources -Green Liquor Clarifier Vent Mill D. A 0.3 factor is applied.	533	T CaO/day	1.76E-03	9.23E-06

TABLE 26
POTENTIAL EMISSIONS RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/day)	Emission Rate (g/s)
14-20-2020, 14-20-2085	R53, R58	East/West Slaker Area	1.32E-04	lb/T CaO	NCASI Technical Bulletin No. 973, October 2014, Table 4.31 Causticizing Area Sources - Causticizer/Salker Combination Emissions. A 1.5 factor is applied.	533	T CaO/day	1.05E-01	5.54E-04
14-30-0310	R46	Lime Mud Mix Tank	1.20E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Additional Causticizing Area Sources, Table 4.32 p.136, Lime Mud Dilution Tank Vent Mill D p. 136.	533	T CaO/day	6.39E-03	3.35E-05
14-30-1450	R15	Lime Mud Storage Tank	4.80E-07	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Sources - Lime Mud Mix Tank Vent Mill D, p. 136.	533	T CaO/day	2.56E-04	1.34E-06
14-30-5000, 14-30-6000	R50	East and West Lime Mud Filters	5.70E-05	lb/T CaO	NCASI Pulp and Paper Database TB 973 Table 4.31 - Lime Mud Precoat Filters	533	T CaO/day	3.04E-02	1.59E-04
14-30-5040, 14-30-6040	R65, R66	East and West Lime Mud Vacuum	1.40E-04	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.31 - Causticizing Area Sources - Precoat Filter Vacuum Pump Exhaust p. 134. A 3.0 factor is applied.	533	T CaO/day	2.24E-01	1.17E-03
32-10-0140	P09A-F	NC-2 HD and LD Stock Tanks	2.20E-05	lb/ODTUBP	NCASI Technical Bulletin No. 679, October 1994, VOC Emissions from Pulp and Paper Mill Sources, Part V - Kraft Mill Bleach Plants, pg. 104 Table V.B.1, Mill A, D Washer Vent. A 1.5 factor is applied.	599	ODTUBP/day	1.98E-02	1.04E-04
32-40-1560	NC1&2	NC-2 Paper Machine	3.60E-04	lb/ADTFP	Table 4.34 of NCASI TB 973; PM Bleached Kraft	665	ADTFP/day	2.39E-01	1.26E-03
45-93-0100	NC5	NC-5 Paper Machine	3.60E-04	lb/ADFTP	Table 4.34 of NCASI TB 973; PM Bleached Kraft	1,664	ADTFP/day	5.99E-01	3.15E-03
45-10-0005	P27A-H	NC-5 HD and LD Stock Tanks	2.20E-05	lb/ODTUBP	NCASI Technical Bulletin No. 679, October 1994, VOC Emissions from Pulp and Paper Mill Sources, Part V - Kraft Mill Bleach Plants, pg. 104 Table V.B.1, Mill A, D Washer Vent. A 1.5 factor is applied.	1,540	ODTUBP/day	5.08E-02	2.67E-04

TABLE 27
METHYL ISOBUTYL KETONE 1-HOUR POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
06-31-0180, 06-31-1000, 06-32-2060, 06-32-2120, 06-32-2100, 06-32-2300, 06-32-2340, 06-32-2380	F09, F12, F13, F14, F17, F18, F19, F41	No. 6 O2 Delig	6.71E-05	lb/ODTUBP	1995 Stack Test	35.5	ODTUBP/hr	2.38E-03	3.00E-04
06-40-8000	F15, F16	No. 6 Bleach Plant Scrubber	2.10E-04	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber).	37.9	ADTBP/hr	7.95E-03	1.00E-03
07-31-1000, 07-31-1100, 07-33-3000, 07-31-1140, 07-31-1200, 07-31-1180	F23-27, F42	No. 7 O2 Delig	2.44E-04	lb/ODTUBP	1995 Stack Test	55.5	ODTUBP/hr	1.35E-02	1.71E-03
07-31-1180	F30	No. 7 Bleach Plant Scrubber	2.10E-04	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber).	59.2	ADTBP/hr	1.24E-02	1.57E-03
14-05-0050	R03	North Smelt Tank	1.92E-04	lb/TBLS	NCASI TB 973 Table 4.28 - Emissions from Kraft Smelt Dissolving Tanks	69	TBLS/hr	1.33E-02	1.67E-03
14-05-0300	R04-1	South Smelt Tank	1.92E-04	lb/TBLS	NCASI TB 973 Table 4.28 - Emissions from Kraft Smelt Dissolving Tanks	69	TBLS/hr	1.33E-02	1.67E-03
10-08-0010	R04-2	Salt Cake Mix Tank	1.40E-06	lb/TBLS	NCASI TB 973, Table 4.35, February 2010, Summary of Air Toxic Emissions from Miscellaneous Kraft Mill Sources	138.5	TBLS/hr	1.94E-04	2.44E-05
14-05-0300, 10-08-0010	R04	Total South Smelt Tank and Salt Cake Mix Tank						1.35E-02	1.70E-03
14-60-3000	R01A	No. 5 Lime Kiln - TCaO	2.60E-04	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.25 - Summary of Non-metal Air Toxic Emissions from Kraft Lime Kilns p. 110	22	T CaO/hr	5.77E-03	7.27E-04
64-25-0290	PO01A-1	No. 1 HFB - Hog Fuel	4.45E-04	lb/MMBtu	Table 4.1, 4.5 and 4.6 of NCASI TB 1013	1087	MMBtu/hr	4.84E-01	6.10E-02
07-34-4080, 07-34-4100, 07-36-6040, 07-36-6060	EOP, PEROX	EOP and Peroxide Stage	7.80E-06	lb/ODTUBP	NCASI Technical Bulletin 679, Table V.O.1, Mill N, October 1994	55	ODTUBP/hr	4.33E-04	5.45E-05
08-40-1000	F35	No. 32 High Density Pulp Tank	6.19E-04	lb/hr/tank	NCASI Technical Bulletin No. 973, October 2014, Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update. Table 4.19 HD Unbleached Pulp Storage Tanks	1.0	tank	6.19E-04	7.80E-05
08-65-1060	6N7SPLTK	No. 6 and 7 spill collection tank	1.04E-04	lb/ODTUBP	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing	91.0	ODTUBP/hr	9.46E-03	1.19E-03
09-05-0210	SWBLTANK	South WBL Storage Tank	2.83E-05	lb/ODTUBP	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing	91.0	ODTUBP/hr	2.57E-03	3.24E-04
09-12-0250	5SOAP	No. 5 Soap Storage Tank	2.90E-04	lb/hr	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids	1	tank	2.90E-04	3.65E-05
09-12-0050	LIQSEP	New Liquor Separator Tank	2.90E-04	lb/hr	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids	1	tank	2.90E-04	3.65E-05

TABLE 27
METHYL ISOBUTYL KETONE 1-HOUR POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
09-05-0200, 09-05-0150, 09-05-0100, 09-95-0015, 09-19-0020, 09-19-0030, 09-30-0030, 09-10-0150, 09-10-0300, 09-10-0350, 09-10-0400	R24-26, R32, R36, R39-R43	18% Liquor Mix Tanks	2.90E-04	lb/hr/tank	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids, 10.0 multiplier for tank movements	10.0	hr*tank/hr	2.90E-03	3.65E-04
09-30-0010, 09-30-0020, 09-95-0010, 09-95-0009, 09-20-0070, 09-25-0140, 09-25-0540, 09-25-0340, 09-20-0310	R27-R28, R31, R33, R34, R37, R38, R44, R72	48% Liquor Storage Tanks, Soap Tanks	8.57E-04	lb/hr/tank	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. 9.0 multiplier for tank movements	9.0	hr*tank/hr	7.71E-03	9.72E-04
09-40-0010, 09-40-0020	R29, R30	65% Liquor Storage Tanks	8.57E-04	lb/hr/tank	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. 2.0 multiplier for tank movements	2.0	hr*tank/hr	1.71E-03	2.16E-04
09-27-1000	LRP 40%	Tank - Lignin Feed Liquor	8.57E-04	lb/hr	NCASI Pulp and Paper Database - March 2013 - Recovery Black Liquor Tank >20% Solids - Median	1.0	hr/hr	8.57E-04	1.08E-04
		Cooler -1 Feed Liquor	8.57E-04	lb/hr	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor	1.0	hr/hr	8.57E-04	1.08E-04
		Filter - 1 Lignin	2.83E-05	lb/ODTL	Conservatively assume emissions from filters equate to weak black liquor tank. ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000. Emission factors are production based and thus are conservatively not time weighted based on actual venting only 15% of the time.	4.4	ODTL/hr	1.25E-04	1.57E-05
		Tank - 2 Lignin Filter Cloth Wash	2.83E-05	lb/ODTL	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing on WBL Tanks. Because emissions factors are production based, they are conservatively not time weighted based on actual venting only 15% of the time.	4.4	ODTL/hr	1.25E-04	1.57E-05
		Conveyors - #1 Lignin Filter & #1 Lignin Filter Incline	5.66E-05	lb/ODTL	Conservatively assume emissions from filters equate to weak black liquor tank. Multiply emissions by 2 for two conveyors. ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000.	4.4	ODTL/hr	2.49E-04	3.14E-05
		LRP Dilute Tanks	1.98E-04	lb/ODTL	ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000. Emission factor displayed is for 7 tanks total. Emission factors used for the primary cloth wash and filtrate tanks are production based and thus are conservatively not time weighted based onactual venting periods of only 15% of the time.	4.4	ODTL/hr	8.72E-04	1.10E-04

TABLE 27
METHYL ISOBUTYL KETONE 1-HOUR POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
		LRP Acidification Tank (2800)	3.89E-03	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 1 tank.	4.4	ODTL/hr	1.71E-02	2.16E-03
09-27-3800	LSRPSCRUB	Total from Caustic Scrubber						1.94E-02	2.44E-03
09-27-3000	LRPPRS2	Filter - 2 Lignin Filter	2.83E-05	lb/ODTL	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing on WBL Tanks. Because emissions factors are production based, they are conservatively not time weighted based on actual venting only 15% of the time.	4.4	ODTL/hr	1.25E-04	1.57E-05
	PO13A	Carbonator - Feed Liquor	1.71E-05	lb/hr	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor Median, 98% control, 1 tank.	1.0	hr/hr	1.71E-05	2.16E-06
	PO13A	LRP Acidification Tanks (2700 & 2770)	1.56E-04	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 98% control, 2 tanks. Controlled by HVLC System	4.4	ODTL/hr	6.85E-04	8.63E-05
	PO13A	No. 2 HFB - Hog Fuel	4.45E-04	lb/MMBtu	Table 4.1, 4.5 and 4.6 of NCASI TB 1013	947	MMBtu/hr	4.21E-01	5.31E-02
	PO13A	No. 2 HFB HVLC Combustion	3.53E-01	lb/hr	NCASI TRI Guidance 2013 converted to lb/hr basis using annual production and hours of operation with 98% control.	1.0	hr/hr	3.53E-01	4.44E-02
65-25-0310	Total from No. 2 Hog Fuel Boiler							7.75E-01	9.76E-02
CD-65-60-1010	Total from Thermal Oxidizer and HVLC							3.53E-01	4.45E-02
10-25-0110	PO01C	No. 5 Recovery Boiler - BLS	4.70E-04	lb/TBLS	National Council for Air and Stream Improvement (NCASI) Technical Bulletin No. 973, February 2010, Compilation of 'Air Toxic' and Total Emissions Data for Pulp and Paper Mil Sources - A Second Update, Table 4.23.	140	TBLS/hr	6.58E-02	8.29E-03
10-45-0450	R05	No. 5 Precipitator Mix Tanks	1.40E-06	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.35 - Miscellaneous Kraft Mill Sources - Salt Cake Mix Tank Vents p. 143	140	TBLS/hr	1.96E-04	2.47E-05
14-10-05	R14	No. 5 Green Liquor Clarifier	1.10E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources - Green Liquor Clarifier Mill D. P. 136. A factor of 1.9 is applied to account for all sources.	22.2	T CaO/hr	4.64E-04	5.84E-05
14-15-0450, 14-70-2045, 14-70-2020	R45,R70,R76	Scrubber Water Standpipe, Scrubber Water Clarifier	3.90E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources - White Liquor and Weak Wash Pressure Filters Vent Mill J. A 2.0 factor is applied.	22.2	T CaO/hr	1.73E-03	2.18E-04

TABLE 27
METHYL ISOBUTYL KETONE 1-HOUR POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
14-15-0600, 14-15-0800, 14-15-0900, 14-15-DREGS	R09,R13,R10, R12	Dregs Sources	1.10E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources -Green Liquor Clarifier Vent Mill D. A 0.3 factor is applied.	22.2	T CaO/hr	7.32E-05	9.23E-06
14-20-2020, 14-20-2085	R53, R58	East/West Slaker Area	1.32E-04	lb/T CaO	NCASI Technical Bulletin No. 973, October 2014, Table 4.31 Causticizing Area Sources - Causticizer/Salker Combination Emissions. A 1.5 factor is applied.	22.2	T CaO/hr	4.39E-03	5.54E-04
08-70-0900, 14-25-0450, 14-25-0800, 14-25-0050, 14-25-0150	R16, R17, R07, R22, F11	No. 3 and 4 WL Clarifiers and Tanks	0.00E+00	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Sources - White Liquor Pressure Filter Vent Mill F (ND=0). A 2.5 factor is applied. Data points reported as non-detect treated as zero.	22.2	T CaO/hr	0.00E+00	0.00E+00
14-30-0310	R46	Lime Mud Mix Tank	1.20E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Additional Causticizing Area Sources, Table 4.32 p.136, Lime Mud Dilution Tank Vent Mill D p. 136.	22.2	T CaO/hr	2.66E-04	3.35E-05
14-30-1450	R15	Lime Mud Storage Tank	4.80E-07	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Sources - Lime Mud Mix Tank Vent Mill D, p. 136.	22.2	T CaO/hr	1.07E-05	1.34E-06
14-30-5000, 14-30-6000	R50	East and West Lime Mud Filters	5.70E-05	lb/T CaO	NCASI Pulp and Paper Database TB 973 Table 4.31 - Lime Mud Precoat Filters	22.2	T CaO/hr	1.26E-03	1.59E-04
14-30-5040, 14-30-6040	R65, R66	East and West Lime Mud Vacuum	1.40E-04	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.31 - Causticizing Area Sources - Precoat Filter Vacuum Pump Exhaust p. 134. A 3.0 factor is applied.	22.2	T CaO/hr	9.32E-03	1.17E-03
32-10-0140	P09A-F	NC-2 HD and LD Stock Tanks	2.20E-05	lb/ODTUBP	NCASI Technical Bulletin No. 679, October 1994, VOC Emissions from Pulp and Paper Mill Sources, Part V - Kraft Mill Bleach Plants, pg. 104 Table V.B.1, Mill A, D Washer Vent. A 1.5 factor is applied.	24.9	ODTUBP/hr	8.23E-04	1.04E-04
32-40-1560	NC1&2	NC-2 Paper Machine	3.60E-04	lb/ADTFP	Table 4.34 of NCASI TB 973; PM Bleached Kraft	25	ADTFP/hr	9.00E-03	1.13E-03
45-93-0100	NC5	NC-5 Paper Machine	3.60E-04	lb/ADFTP	Table 4.34 of NCASI TB 973; PM Bleached Kraft	69	ADTFP/hr	2.50E-02	3.15E-03
45-10-0005	P27A-H	NC-5 HD and LD Stock Tanks	2.20E-05	lb/ODTUBP	NCASI Technical Bulletin No. 679, October 1994, VOC Emissions from Pulp and Paper Mill Sources, Part V - Kraft Mill Bleach Plants, pg. 104 Table V.B.1, Mill A, D Washer Vent. A 1.5 factor is applied.	64.2	ODTUBP/hr	2.12E-03	2.67E-04

TABLE 32
n-HEXANE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/day)	Emission Rate (g/s)
06-31-0180, 06-31-1000, 06-32-2060, 06-32-2120, 06-32-2100, 06-32-2300, 06-32-2340, 06-32-2380	F09, F12, F13, F14, F17, F18, F19, F41	No. 6 O2 Delig	2.60E-05	lb/ADTUBP	NCASI Technical Bulletin 973, "Compilation of Air Toxic and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update" February 2010, Table 4.4, Median emission factors using ND=0.	947	ADTUBP/day	2.46E-02	1.29E-04
06-40-8000	F15, F16	No. 6 Bleach Plant Scrubber	2.80E-05	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber).	909	ADTBP/day	2.54E-02	1.34E-04
06-P1	6FEEDTNK	No. 6 Bleach Plant 6th Stage Feed Tank	6.25E-06	lb/ODTUBP	Estimation using compound to methanol ratio of NCASI TB No. 679, Table V.O.1, Mill N, October 1994 and 1995/2004 methanol testing on similar existing bleach plant sources.	852	ODTUBP/day	5.33E-03	2.80E-05
06-P2	6BLOWTBE	No. 6 Bleach Plant 6th Stage Blow Tube (standpipe)	2.93E-05	lb/ODTUBP	Estimation using compound to methanol ratio of NCASI TB No. 679, Table V.O.1, Mill N, October 1994 and 1995/2004 methanol testing on similar existing bleach plant sources.	852	ODTUBP/day	2.50E-02	1.31E-04
06-P3	6EXHAUST	No. 6 BP 6th Stage Washer And Filtrate Tank	1.04E-04	lb/ODTUBP	Estimation using compound to methanol ratio of NCASI TB No. 679, Table V.O.1, Mill N, October 1994 and 1995/2004 methanol testing on similar existing bleach plant sources.	852	ODTUBP/day	8.83E-02	4.64E-04
07-31-1000, 07-31-1100, 07-33-3000, 07-31-1140, 07-31-1200, 07-31-1180	F23-27, F42	No. 7 O2 Delig	2.60E-05	lb/ADTUBP	NCASI Technical Bulletin 973, "Compilation of Air Toxic and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update" February 2014, Table 4.4, Median emission factors using ND=0.	1,479	ADTUBP/day	3.85E-02	2.02E-04
07-31-1180	F30	No. 7 Bleach Plant Scrubber	2.80E-05	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber).	1,420	ADTBP/day	3.98E-02	2.09E-04
07-34-4080, 07-34-4100, 07-36-6040, 07-36-6060	EOP, PEROX	EOP and Peroxide Stage	8.60E-06	lb/ODTUBP	NCASI Technical Bulletin 679, Table V.O.1, Mill N, October 1994	1,331	ODTUBP/day	1.14E-02	6.01E-05
08-40-1000	F35	No. 32 High Density Pulp Tank	1.69E-04	lb/hr/tank	NCASI Technical Bulletin No. 973, October 2014, Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update. Table 4.19 HD Unbleached Pulp Storage Tanks	24	tank*hr/day	4.06E-03	2.13E-05
09-12-0250	5SOAP	No. 5 Soap Storage Tank	3.80E-06	lb/hr	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids	24	hr/day	9.12E-05	4.79E-07
64-25-0290	PO01A-1	No. 1 HFB - Natural Gas	1.71E-03	lb/MMBtu	Emission Factors are based on AP-42, Chapter 1.4 (revised 7/98) except acetaldehyde, acrolein and ammonia. Acetaldehyde, acrolein, and ammonia factors are from WebFIRE database.	26,097	MMBtu/day	4.47E+01	2.35E-01
09-12-0050	LIQSEP	New Liquor Separator Tank	3.80E-06	lb/hr	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids	24	hr/day	9.12E-05	4.79E-07
09-05-0200, 09-05-0150, 09-05-0100, 09-95-0015, 09-19-0020, 09-19-0030, 09-30-0030, 09-10-0150, 09-10-0300, 09-10-0350, 09-10-0400	R24-26, R32, R36, R39-R43	18% Liquor Mix Tanks	3.80E-06	lb/hr/tank	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids, 10.0 multiplier for tank movements	240.0	tank*hr/day	9.12E-04	4.79E-06

TABLE 32
n-HEXANE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

09-30-0010, 09-30-0020, 09-95-0010, 09-95-0009, 09-20-0070, 09-25-0140, 09-25-0540, 09-25-0340, 09-20-0310	R27-R28, R31, R33, R34, R37, R38, R44, R72	48% Liquor Storage Tanks, Soap Tanks	3.97E-05	lb/hr/tank	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. 9.0 multiplier for tank movements	216.0	tank*hr/day	8.58E-03	4.50E-05
09-40-0010, 09-40-0020	R29, R30	65% Liquor Storage Tanks	3.97E-05	lb/hr/tank	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. 2.0 multiplier for tank movements	48.0	tank*hr/day	1.91E-03	1.00E-05
		Cooler -1 Feed Liquor	3.97E-05	lb/hr	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor	24	hr/day	9.53E-04	5.00E-06
		LRP Acidification Tank (2800)	7.33E-04	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 1 tank.	105.7	ODTL/day	7.75E-02	4.07E-04
09-27-3800	LSRPSCRUB	Total from Caustic Scrubber						7.85E-02	4.12E-04
09-27-1000	LRP 40%	Tank - Lignin Feed Liquor	3.97E-05	lb/hr	NCASI Pulp and Paper Database - March 2013 - Recovery Black Liquor Tank >20% Solids - Median	24	hr/day	9.53E-04	5.00E-06
	PO13A	Carbonator - Feed Liquor	7.94E-07	lb/hr	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor Median, 98% control, 1 tank.	24	hr/day	1.91E-05	1.00E-07
	PO13A	LRP Acidification Tanks (2700 & 2770)	2.93E-05	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 98% control, 2 tanks. Controlled by HVLC System	105.7	ODTL/day	3.10E-03	1.63E-05
	PO13A	LVHC Combustion	2.50E-06	lb/ADTUBP	NCASI TB 973 Table 4.18 - Kraft Mill NCG Thermal Oxidizer. LVHC gases are burned through No. 2 HFB. The White Liquor Scrubber then No. 5 Lime Kiln are used as backups	2425.8	ADTUBP/day	6.06E-03	3.18E-05
	PO13A	No. 2 HFB - Natural Gas	1.71E-03	lb/MMBtu	Emission Factors are based on AP-42, Chapter 1.4 (revised 7/98) except acetaldehyde, acrolein and ammonia. Acetaldehyde, acrolein, and ammonia factors are from WebFIRE database.	22,723	MMBtu/day	3.90E+01	2.05E-01
65-25-0310	Total from No. 2 Hog Fuel Boiler							3.90E+01	2.05E-01
		Thermal Oxidizer	1.71E-03	lb/MMBTU	Emission Factors are based on AP-42, Chapter 1.4 (revised 7/98) except acetaldehyde, acrolein and ammonia. Acetaldehyde, acrolein, and ammonia factors are from WebFIRE database. , converted from MMSCF to MMBTU; this is the backup for HVLC comustion behind the No. 2 Hog Fuel Boiler	1,080	MMBtu/day	1.85E+00	9.72E-03
CD-65-60-1010	THERMALOX	Total from Thermal Oxidizer and HVLC combustion						1.85E+00	9.74E-03
14-30-5000, 14-30-6000	R50	East and West Lime Mud Filters	1.46E-05	lb/TCaO	NCASI Pulp and Paper Database TB 973 Table 4.31 - Lime Mud Precoat Filters	532.5	TCaO/day	7.77E-03	4.08E-05
14-30-5040, 14-30-6040	R65, R66	East and West Lime Mud Vacuum System	6.70E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.31 - Causticizing Area Sources - Precoat Filter Vacuum Pump Exhaust p. 133. A 3.0 factor is applied.	532.5	T CaO/day	1.07E-01	5.62E-04

TABLE 32
n-HEXANE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

	PO01C	No. 5 Recovery Boiler - Natural Gas	1.71E-03	lb/MMBtu	Emission Factors are based on AP-42, Chapter 1.4 (revised 7/98) except acetaldehyde, acrolein and ammonia. Acetaldehyde, acrolein, and ammonia factors are from WebFIRE database.	30335	MMBtu/day	5.20E+01	2.73E-01
	PO01C	No. 5 Recovery Boiler - BLS	1.67E-04	lb/TBLS	National Council for Air and Stream Improvement (NCASI) Technical Bulletin No. 973, February 2010, Compilation of 'Air Toxic' and Total Emissions Data for Pulp and Paper Mil Sources - A Second Update, Table 4.23	3360	TBLS/day	5.61E-01	2.95E-03
10-25-0110	Total from No. 5 Recovery Boiler							5.26E+01	2.76E-01
10-45-0450	R05	No. 5 Precipitator Mix Tanks	2.89E-07	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.35 - Miscellaneous Kraft Mill Sources - Salt Cake Mix Tank Vents p. 144	3,360	TBLS/day	9.71E-04	5.10E-06
14-05-0050	R03	North Smelt Tank	4.66E-05	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.28 - Kraft Smelt Dissolving Tanks, p. 118	1,661	TBLS/day	7.74E-02	4.06E-04
14-05-0300	R04-1	South Smelt Tank	4.66E-05	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.28 - Kraft Smelt Dissolving Tanks, p. 118	1,661	TBLS/day	7.74E-02	4.06E-04
10-08-0010	R04-2	Salt Cake Mix Tank	2.89E-07	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.35 - Miscellaneous Kraft Mill Sources - Salt Cake Mix Tank Vents p. 144	3,323	TBLS/day	9.60E-04	5.04E-06
14-05-0300, 10-08-0010	R04	Total South Smelt Tank and Salt Cake Mix Tank						7.84E-02	4.11E-04
14-20-2020, 14-20-2085	R53, R58	East/West Slaker Area	2.28E-06	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.31 Causticizing Area Sources - Causticizer/Salker Combination Emissions. A 1.5 factor is applied.	533	T CaO/day	1.82E-03	9.56E-06
14-60-3000	R01A	No. 5 Lime Kiln - Natural Gas	1.71E-03	lb/MMBtu	Emission Factors are based on AP-42, Chapter 1.4 (revised 7/98) except acetaldehyde, acrolein and ammonia. Acetaldehyde, acrolein, and ammonia factors are from WebFIRE database.	4,729	MMBtu/day	8.11E+00	4.26E-02
32-40-1560	NC1&2	NC-2 Paper Machine	2.23E-04	lb/ADTFP	NCASI Technical Bulletin No. 973, February 2010, Table 4.34 - Bleached Kraft Pulp and Paper Machines p. 140	665	ADTFP/day	1.48E-01	7.79E-04
45-93-0100	NC5	NC-5 Paper Machine	2.23E-04	lb/ADTFP	NCASI Technical Bulletin No. 973, February 2010, Table 4.34 - Bleached Kraft Pulp and Paper Machines p. 140	1,664	ADTFP/day	3.71E-01	1.95E-03

TABLE 34
PHENOL POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
06-31-0180, 06-31-1000, 06-32-2060, 06-32-2120, 06-32-2100, 06-32-2300, 06-32-2340, 06-32-2380	F09, F12, F13, F14, F17, F18, F19, F41	No. 6 O2 Delig	6.61E-04	lb/ADTUBP	NCASI Technical Bulletin 973, "Compilation of Air Toxic and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update" February 2010, Table 4.4, Median emission factors using ND=0.	39.4	ADTUBP/hr	2.61E-02	3.29E-03
06-40-8000	F15, F16	No. 6 Bleach Plant Scrubber	3.87E-03	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber).	37.9	ADTBP/hr	1.47E-01	1.85E-02
07-31-1000, 07-31-1100, 07-33-3000, 07-31-1140, 07-31-1200, 07-31-1180	F23-27, F42	No. 7 O2 Delig	6.61E-04	lb/ADTUBP	NCASI Technical Bulletin 973, "Compilation of Air Toxic and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update" February 2014, Table 4.4, Median emission factors using ND=0.	61.6	ADTUBP/hr	4.07E-02	5.13E-03
07-31-1180	F30	No. 7 Bleach Plant Scrubber	3.87E-03	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber).	59.2	ADTBP/hr	2.29E-01	2.89E-02
08-40-1000	F35	No. 32 High Density Pulp Tank	6.39E-02	lb/hr/tank	NCASI Technical Bulletin No. 973, October 2014, Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update. Table 4.19 HD Unbleached Pulp Storage Tanks	1	tank	6.39E-02	8.05E-03
10-25-0110	PO01C	No. 5 Recovery Boiler - BLS	1.37E-02	lb/TBLS	National Council for Air and Stream Improvement (NCASI) Technical Bulletin No. 973, February 2010, Compilation of 'Air Toxic' and Total Emissions Data for Pulp and Paper Mil Sources - A Second Update, Table 4.23. Data points reported as non-detect treated as zero.	140	TBLS/hr	1.92E+00	2.42E-01
14-60-3000	R01A	No. 5 Lime Kiln - TCaO	8.90E-03	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.25 - Summary of Non-metal Air Toxic Emissions from Kraft Lime Kilns p. 110	22	T CaO/hr	1.97E-01	2.49E-02
64-25-0290	PO01A-1	No. 1 HFB - Hog Fuel	1.53E-05	lb/MMBtu	Table 4.1, 4.5 and 4.6 of NCASI TB 1013	1,087	MMBtu/hr	1.66E-02	2.10E-03
		Cooler -1 Feed Liquor	1.01E-03	lb/hr	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor	1	hr/hr	1.01E-03	1.27E-04
		LRP Acidification Tanks (2800)	6.33E-03	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 1 tank.	4.4	ODTL/hr	2.79E-02	3.51E-03
09-27-3800	LSRPSCRUB	Total from Caustic Scrubber						2.89E-02	3.64E-03
09-27-1000	LRP 40%	Tank - Lignin Feed Liquor	1.01E-03	lb/hr	NCASI Pulp and Paper Database - March 2013 - Recovery Black Liquor Tank >20% Solids - Median	1	hr/hr	1.01E-03	1.27E-04

TABLE 34
PHENOL POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
	PO13A	Carbonator - Feed Liquor	2.02E-05	lb/hr	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor Median, 98% control, 1 tank.	1	hr/hr	2.02E-05	2.55E-06
	PO13A	No. 2 HFB - Hog Fuel	1.53E-05	lb/MMBtu	Table 4.1, 4.5 and 4.6 of NCASI TB 1013	1,087	MMBtu/hr	1.66E-02	2.10E-03
	PO13A	LRP Acidification Tanks (2700 & 2770)	2.53E-04	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 98% control, 2 tanks. Controlled by HVLC System	4.4	ODTL/hr	1.12E-03	1.41E-04
65-25-0310	Total from No.2 Hog Fuel Boiler							1.78E-02	2.24E-03
CD-65-60-1010	Total from Thermal Oxidizer and HVLC							1.14E-03	1.43E-04
32-40-1560	NC1&2	NC-2 Paper Machine	7.35E-03	lb/ADTFP	NCASI Technical Bulletin No. 973, February 2010, Table 4.34 - Bleached Kraft Pulp and Paper Machines p. 140	25	ADTFP/hr	1.84E-01	2.32E-02
45-93-0100	NC5	NC-5 Paper Machine	7.35E-03	lb/ADTFP	NCASI Technical Bulletin No. 973, February 2010, Table 4.34 - Bleached Kraft Pulp and Paper Machines p. 140	69	ADTFP/hr	5.10E-01	6.42E-02
14-20-2020, 14-20-2085	R53, R58	East/West Slaker Area	9.90E-04	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.31 Causticizing Area Sources - Causticizer/Salker Combination Emissions. A 1.5 factor is applied.	22.2	T CaO/hr	3.29E-02	4.15E-03
09-30-0010, 09-30-0020, 09-95-0010, 09-95-0009, 09-20-0070, 09-25-0140, 09-25-0540, 09-25-0340, 09-20-0310	R27-R28, R31, R33, R34, R37, R38, R44, R72	48% Liquor Storage Tanks, Soap Tanks	1.01E-03	lb/hr/tank	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. 9.0 multiplier for tank movements	9.0	tank	9.09E-03	1.15E-03
09-40-0010, 09-40-0020	R29, R30	65% Liquor Storage Tanks	1.01E-03	lb/hr/tank	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. 2.0 multiplier for tank movements	2.0	tank	2.02E-03	2.55E-04
10-45-0450	R05	No. 5 Precipitator Mix Tank	3.60E-05	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.35 - Miscellaneous Kraft Mill Sources - Salt Cake Mix Tank Vents p. 143	140	TBLS/hr	5.04E-03	6.35E-04
14-05-0050	R03	North Smelt Tank	6.13E-04	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.28 - Kraft Smelt Dissolving Tanks, p. 118	69	TBLS/hr	4.24E-02	5.35E-03
14-05-0300	R04-1	South Smelt Tank	6.13E-04	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.28 - Kraft Smelt Dissolving Tanks, p. 118	69	TBLS/hr	4.24E-02	5.35E-03

TABLE 34
PHENOL POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
10-08-0010	R04-2	Salt Cake Mix Tank	3.60E-05	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.35 - Miscellaneous Kraft Mill Sources - Salt Cake Mix Tank Vents p. 144	138.5	TBLS/hr	4.98E-03	6.28E-04
14-05-0300, 10-08-0010	R04	Total South Smelt Tank and Salt Cake Mix Tank						4.74E-02	5.97E-03
73-10-2000	SETPOND2	Primary Clarifier	3.82E-10	lb/gallon	NCASI TRI Guidance	3,125,000	gallons/hr	1.19E-03	1.50E-04
73-10-1000	SETPOND1	Secondary Clarifier	3.82E-10	lb/gallon	NCASI TRI Guidance	3,125,000	gallons/hr	1.19E-03	1.50E-04
73-05-2000-A		C3	8.94E-03	lb/hr	Water 9 Results for Base Case with Addition of C3 Stream	1.0	hr/hr	8.94E-03	1.13E-03
73-05-2000-B		5th eff 6 evap	8.00E-03	lb/hr	Water 9 Results for Base Case with Addition of 5th eff 6 evap	1.0	hr/hr	8.00E-03	1.01E-03

TABLE 35
STYRENE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
06-31-0180, 06-31-1000, 06-32-2060, 06-32-2120, 06-32-2100, 06-32-2300, 06-32-2340, 06-32-2380	F09, F12, F13, F14, F17, F18, F19, F41	No. 6 O2 Delig	6.64E-05	lb/ADTUBP	NCASI Technical Bulletin 973, "Compilation of Air Toxic and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update" February 2010, Table 4.4, Median emission factors using ND=0. Terpenes is the sum of alpha-pinenes, beta-pinenes, 3-carene, p-cymene and limonene	39.4	ADTUBP/hr	2.62E-03	3.30E-04
06-40-8000	F15, F16	No. 6 Bleach Plant Scrubber	7.50E-05	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber).	37.9	ADTBP/hr	2.84E-03	3.58E-04
06-P1	6FEEDTNK	No. 6 Bleach Plant 6th Stage Feed Tank	5.82E-06	lb/ODTUBP	Estimation using compound to methanol ratio of NCASI TB No. 679, Table V.O.1, Mill N, October 1994 and 1995/2004 methanol testing on similar existing bleach plant sources.	35.5	ODTUBP/hr	2.07E-04	2.60E-05
06-P2	6BLOWTBE	No. 6 Bleach Plant 6th Stage Blow Tube (standpipe)	2.73E-05	lb/ODTUBP	Estimation using compound to methanol ratio of NCASI TB No. 679, Table V.O.1, Mill N, October 1994 and 1995/2004 methanol testing on similar existing bleach plant sources.	35.5	ODTUBP/hr	9.68E-04	1.22E-04
06-P3	6EXHAUST	No. 6 BP 6th Stage Washer And Filtrate Tank	9.64E-05	lb/ODTUBP	Estimation using compound to methanol ratio of NCASI TB No. 679, Table V.O.1, Mill N, October 1994 and 1995/2004 methanol testing on similar existing bleach plant sources.	35.5	ODTUBP/hr	3.42E-03	4.31E-04
07-31-1000, 07-31-1100, 07-33-3000, 07-31-1140, 07-31-1200, 07-31-1180	F23-27, F42	No. 7 O2 Delig	6.64E-05	lb/ADTUBP	NCASI Technical Bulletin 973, "Compilation of Air Toxic and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update" February 2014, Table 4.4, Median emission factors using ND=0. Terpenes is the sum of alpha-pinenes, beta-pinenes, 3-carene, p-cymene and limonene	61.6	ADTUBP/hr	4.09E-03	5.16E-04
07-31-1180	F30	No. 7 Bleach Plant Scrubber	7.50E-05	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber).	59.2	ADTBP/hr	4.44E-03	5.59E-04
14-05-0050	R03	North Smelt Tank	5.59E-06	lb/TBLS	NCASI TB 973 Table 4.28 - Emissions from Kraft Smelt Dissolving Tanks	69.2	TBLS/hr	3.87E-04	4.88E-05
14-05-0300	R04-1	South Smelt Tank	5.59E-06	lb/TBLS	NCASI TB 973 Table 4.28 - Emissions from Kraft Smelt Dissolving Tanks	69.2	TBLS/hr	3.87E-04	4.88E-05
10-08-0010	R04-2	Salt Cake Mix Tank	1.15E-06	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.35 - Miscellaneous Kraft Mill Sources - Salt Cake Mix Tank Vents p. 144	138	TBLS/hr	1.59E-04	2.01E-05
14-05-0300, 10-08-0010	R04	Total South Smelt Tank and Salt Cake Mix Tank						5.46E-04	6.88E-05
07-34-4080, 07-34-4100, 07-36-6040, 07-36-6060	EOP, PEROX	EOP and Peroxide Stage	8.00E-06	lb/ODTUBP	NCASI Technical Bulletin 679, Table V.O.1, Mill N, October 1994	55.5	ODTUBP/hr	4.44E-04	5.59E-05
08-40-1000	F35	No. 32 High Density Pulp Tank	2.67E-04	lb/hr/tank	NCASI Technical Bulletin No. 973, October 2014, Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update. Table 4.19 HD Unbleached Pulp Storage Tanks	1	tank	2.67E-04	3.36E-05

TABLE 35
STYRENE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
08-65-1060	6N7SPLTK	No. 6 and 7 spill collection tank	2.17E-06	lb/ODTUBP	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing	91.0	ODTUBP/hr	1.97E-04	2.49E-05
09-05-0210	SWBLTANK	South WBL Storage Tank	5.88E-07	lb/ODTUBP	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing	91.0	ODTUBP/hr	5.35E-05	6.74E-06
09-12-0250	5SOAP	No. 5 Soap Storage Tank	7.89E-05	lb/hr	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids	1	tank	7.89E-05	9.94E-06
09-12-0050	LIQSEP	New Liquor Separator Tank	7.89E-05	lb/hr	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids	1	tank	7.89E-05	9.94E-06
09-05-0200, 09-05-0150, 09-05-0100, 09-95-0015, 09-19-0020, 09-19-0030, 09-30-0030, 09-10-0150, 09-10-0300, 09-10-0350, 09-10-0400	R24-26, R32, R36, R39-R43	18% Liquor Mix Tanks	7.89E-05	lb/hr/tank	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids, 10.0 multiplier for tank movements	10.0	hr*tank/hr	7.89E-04	9.94E-05
09-30-0010, 09-30-0020, 09-95-0010, 09-95-0009, 09-20-0070, 09-25-0140, 09-25-0540, 09-25-0340, 09-20-0310	R27-R28, R31, R33, R34, R37, R38, R44, R72	48% Liquor Storage Tanks, Soap Tanks	1.40E-04	lb/hr/tank	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. 9.0 multiplier for tank movements	9.0	hr*tank/hr	1.26E-03	1.59E-04
09-40-0010, 09-40-0020	R29, R30	65% Liquor Storage Tanks	1.40E-04	lb/hr/tank	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. 2.0 multiplier for tank movements	2.0	hr*tank/hr	2.80E-04	3.53E-05
09-27-1000	LRP 40%	Tank - Lignin Feed Liquor	1.40E-04	lb/hr	NCASI Pulp and Paper Database - March 2013 - Recovery Black Liquor Tank >20% Solids - Median	1	hr/hr	1.40E-04	1.76E-05
09-27-3000	LRPPRS2	Filter - 2 Lignin Filter	5.88E-07	lb/ODTL	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing on WBL Tanks. Because emissions factors are production based, they are conservatively not time weighted based on actual venting only 15% of the time.	4.4	ODTL/hr	2.59E-06	3.26E-07
10-25-0110	PO01C	No. 5 Recovery Boiler BLS	9.07E-05	lb/TBLS	National Council for Air and Stream Improvement (NCASI) Technical Bulletin No. 973, February 2010, Compilation of 'Air Toxic' and Total Emissions Data for Pulp and Paper Mil Sources - A Second Update, Table 4.23. Data points reported as non-detect treated as zero.	140	TBLS/hr	1.27E-02	1.60E-03
10-45-0450	R05	No. 5 Precipitator Mix Tank	1.15E-06	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.35 - Miscellaneous Kraft Mill Sources - Salt Cake Mix Tank Vents p. 144	140	TBLS/hr	1.61E-04	2.03E-05

TABLE 35
STYRENE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
14-10-05	R14	No. 5 Green Liquor Clarifier	1.10E-04	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources - Green Liquor Clarifier Mill D. P. 136. A factor of 1.9 is applied to account for all sources.	22.2	T CaO/hr	4.64E-03	5.84E-04
14-15-0450, 14-70-2045, 14-70-2020	R45,R70,R76	Scrubber Water Standpipe, Scrubber Water Clarifier	4.20E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources - White Liquor and Weak Wash Pressure Filters Vent Mill J. A 2.0 factor is applied.	22.2	T CaO/hr	1.86E-03	2.35E-04
14-20-2020, 14-20-2085	R53, R58	East/West Slaker Area	1.03E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources -Green Liquor Clarifier Vent Mill D. A 1.5 factor is applied.	22.2	T CaO/hr	3.43E-04	4.32E-05
14-15-0600, 14-15-0800, 14-15-0900, 14-15-DREGS	R09,R13,R10, R12	Dregs Sources	1.10E-04	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.31 Causticizing Area Sources - Causticizer/Salker Combination Emissions. A 0.3 factor is applied.	22.2	T CaO/hr	7.32E-04	9.23E-05
08-70-0900, 14-25-0450, 14-25-0800, 14-25-0050, 14-25-0150	R16, R17, R07, R22, F11	No. 3 and 4 WL Clarifiers and Tanks	4.90E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Sources - White Liquor Pressure Filter Vent Mill F (ND=0). A 2.5 factor is applied.	22.2	T CaO/hr	2.72E-03	3.42E-04
14-30-0310	R46	Lime Mud Mix Tank	9.90E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Additional Causticizing Area Sources, Table 4.32 p.136, Lime Mud Dilution Tank Vent Mill D p. 136.	22.2	T CaO/hr	2.20E-03	2.77E-04
14-30-1450	R15	Lime Mud Storage Tank	4.60E-07	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Sources - Lime Mud Mix Tank Vent Mill D, p. 136.	22.2	T CaO/hr	1.02E-05	1.29E-06
14-30-350	R47, R49	No. 2 and 3 Lime Mud Wash Tank	2.50E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources - Lime Mud Pressure Filter Vent Mill D p. 136.	22.2	T CaO/hr	5.55E-04	6.99E-05
14-30-5000, 14-30-6000	R50	East and West Lime Mud Filters	8.20E-06	lb/T CaO	NCASI Pulp and Paper Database TB 973 Table 4.31 - Lime Mud Precoat Filters	22.2	T CaO/hr	1.82E-04	2.29E-05
14-30-5040, 14-30-6040	R65, R66	East and West Lime Mud Vacuum System	1.38E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.31 - Causticizing Area Sources - Precoat Filter Vacuum Pump Exhaust p. 133. A 3.0 factor is applied.	22.2	T CaO/hr	9.19E-04	1.16E-04
14-60-3000	R01A	No. 5 Lime Kiln - TCaO	6.34E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.25 - Summary of Non-metal Air Toxic Emissions from Kraft Lime Kilns p. 110	22.2	T CaO/hr	1.41E-03	1.77E-04
		Cooler -1 Feed Liquor	1.40E-04	lb/hr	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor	1	hr/hr	1.40E-04	1.76E-05

TABLE 35
STYRENE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
		Filter - 1 Lignin	5.88E-07	lb/ODTL	Conservatively assume emissions from filters equate to weak black liquor tank. ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000. Emission factors are production based and thus are conservatively not time weighted based on actual venting only 15% of the time.	4.4	ODTL/hr	2.59E-06	3.26E-07
		Tank - 2 Lignin Filter Cloth Wash	5.88E-07	lb/ODTL	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing on WBL Tanks. Because emissions factors are production based, they are conservatively not time weighted based on actual venting only 15% of the time.	4.4	ODTL/hr	2.59E-06	3.26E-07
		Conveyors - #1 Lignin Filter & #1 Lignin Filter Incline	1.18E-06	lb/ODTL	Conservatively assume emissions from filters equate to weak black liquor tank. Multiply emissions by 2 for two conveyors. ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000.	4.4	ODTL/hr	5.18E-06	6.53E-07
		LRP Dilute Tanks	4.12E-06	lb/ODTL	ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000. Emission factor displayed is for 7 tanks total. Emission factors used for the primary cloth wash and filtrate tanks are production based and thus are conservatively not time weighted based onactual venting periods of only 15% of the time.	4.4	ODTL/hr	1.81E-05	2.28E-06
		LRP Acidification Tank (2800)	5.56E-03	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 1 tank.	4.4	ODTL/hr	2.45E-02	3.08E-03
09-27-3800	LSRPSCRUB				Total from Caustic Scrubber			2.46E-02	3.10E-03
64-25-0290	PO01A-1	No. 1 HFB - Hog Fuel	1.54E-05	lb/MMBtu	Table 4.1, 4.5 and 4.6 of NCASI TB 1013	1,087	MMBtu/hr	1.67E-02	2.11E-03
	PO13A	Carbonator - Feed Liquor	2.80E-06	lb/hr	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor Median, 98% control, 1 tank.	1	hr/hr	2.80E-06	3.53E-07
	PO13A	LRP Acidification Tanks (2700 & 2770)	2.22E-04	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 98% control, 2 tanks. Controlled by HVLC System	4.4	ODTL/hr	9.79E-04	1.23E-04
	PO13A	No. 2 HFB - Hog Fuel	1.54E-05	lb/MMBtu	Table 4.1, 4.5 and 4.6 of NCASI TB 1013	947	MMBtu/hr	1.46E-02	1.84E-03
	PO13A	No. 2 HFB LVHC Combustion	2.20E-05	lb/ADTUBP	NCASI TB 973 Table 4.18 - Kraft Mill NCG Thermal Oxidizer. LVHC gases are burned through No. 2 HFB. The White Liquor Scrubber then No. 5 Lime Kiln are used as backups	101	ADTUBP/hr	2.22E-03	2.80E-04

TABLE 35
STYRENE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
	PO13A	No. 2 HFB HVLC Combustion	1.45E+00	lb/hr	NCASI TRI Guidance 2013 converted to lb/hr basis using annual production and hours of operation with 98% control.	1	hr/hr	1.45E+00	1.83E-01
65-25-0310	Total from No. 2 Hog Fuel Boiler							1.47E+00	1.85E-01
CD-65-60-1010	Total from Thermal Oxidizer and HVLC							1.45E+00	1.83E-01

TABLE 35
STYRENE POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
32-10-0140	P09A-F	NC-2 HD and LD Stock Tanks	2.00E-05	lb/ODTUBP	NCASI Technical Bulletin No. 679, October 1994, VOC Emissions from Pulp and Paper Mill Sources, Part V - Kraft Mill Bleach Plants, pg. 104 Table V.B.1, Mill A, D Washer Vent. A 1.5 factor is applied.	24.9	ODTUBP/hr	7.48E-04	9.43E-05
32-40-1560	NC1&2	NC-2 Paper Machine	3.28E-04	lb/ADTFP	Table 4.34 of NCASI TB 973; PM Bleached Kraft	25	ADTFP/hr	8.20E-03	1.03E-03
45-93-0100	NC5	NC-5 Paper Machine	3.28E-04	lb/ADTFP	Table 4.34 of NCASI TB 973; PM Bleached Kraft	69	ADTFP/hr	2.27E-02	2.87E-03
45-10-0005	P27A-H	NC-5 HD and LD Stock Tanks	2.00E-05	lb/ODTUBP	NCASI Technical Bulletin No. 679, October 1994, VOC Emissions from Pulp and Paper Mill Sources, Part V - Kraft Mill Bleach Plants, pg. 104 Table V.B.1, Mill A, D Washer Vent. A 1.5 factor is applied.	64.2	ODTUBP/hr	1.92E-03	2.42E-04

TABLE 40
TOLUENE 24-HOUR POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/day)	Emission Rate (g/s)
TROMSCR	TROMSCR	Trommel Screen	2.86E-06	lb/hp-hr	AP-42 Section 3.3, Table 3.3-2. Converted to lb/hp-hr	1776	hp-hr/day	5.08E-03	2.67E-05
06-31-0180, 06-31-1000, 06-32-2060, 06-32-2120, 06-32-2100, 06-32-2300, 06-32-2340, 06-32-2380	F09, F12, F13, F14, F17, F18, F19, F41	No. 6 O2 Delig	6.09E-05	lb/ADTUBP	NCASI Technical Bulletin 973, "Compilation of Air Toxic and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update" February 2010, Table 4.4, Median emission factors using ND=0.	947	ADTUBP/day	5.77E-02	3.03E-04
06-40-8000	F15, F16	No. 6 Bleach Plant Scrubber	9.60E-05	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber).	909	ADTBP/day	8.72E-02	4.58E-04
07-31-1000, 07-31-1100, 07-33-3000, 07-31-1140, 07-31-1200, 07-31-1180	F23-27, F42	No. 7 O2 Delig	6.09E-05	lb/ADTUBP	NCASI Technical Bulletin 973, "Compilation of Air Toxic and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update" February 2014, Table 4.4, Median emission factors using ND=0.	1,479	ADTUBP/day	9.01E-02	4.73E-04
07-31-1180	F30	No. 7 Bleach Plant Scrubber	9.60E-05	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber).	1,420	ADTBP/day	1.36E-01	7.16E-04
14-05-0050	R03	North Smelt Tank	3.79E-05	lb/TBLS	NCASI TB 973 Table 4.28 - Emissions from Kraft Smelt Dissolving Tanks	1,661	TBLS/day	6.30E-02	3.31E-04
14-05-0300	R04-1	South Smelt Tank	3.79E-05	lb/TBLS	NCASI TB 973 Table 4.28 - Emissions from Kraft Smelt Dissolving Tanks	1,661	TBLS/day	6.30E-02	3.31E-04
10-08-0010	R04-2	Salt Cake Mix Tank	4.77E-06	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.35 - Miscellaneous Kraft Mill Sources - Salt Cake Mix Tank Vents p. 144	3,323	TBLS/day	1.58E-02	8.32E-05
14-05-0300, 10-08-0010	R04	Total South Smelt Tank and Salt Cake Mix Tank						7.88E-02	4.14E-04
10-45-0450	R05	No. 5 Precipitator Mix Tank	4.77E-06	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.35 - Miscellaneous Kraft Mill Sources - Salt Cake Mix Tank Vents p. 144	3,360	TBLS/day	1.60E-02	8.41E-05
07-34-4080, 07-34-4100, 07-36-6040, 07-36-6060	EOP, PEROX	EOP and Peroxide Stage	6.40E-06	lb/ODTUBP	NCASI Technical Bulletin 679, Table V.O.1, Mill N, October 1994	1,331	ODTUBP/day	8.52E-03	4.47E-05
08-40-1000	F35	No. 32 High Density Pulp Tank	2.04E-04	lb/hr/tank	NCASI Technical Bulletin No. 973, October 2014, Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update. Table 4.19 HD Unbleached Pulp Storage Tanks	24	tank*hr/day	4.90E-03	2.57E-05
08-65-1060	6N7SPLTK	No. 6 and 7 spill collection tank	9.59E-07	lb/ODTUBP	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing	2,183	ODTUBP/day	2.09E-03	1.10E-05
09-05-0210	SWBLTANK	South WBL Storage Tank	2.60E-07	lb/ODTUBP	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing	2,183	ODTUBP/day	5.68E-04	2.98E-06

TABLE 40
TOLUENE 24-HOUR POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/day)	Emission Rate (g/s)
09-12-0250	5SOAP	No. 5 Soap Storage Tank	1.60E-04	lb/hr	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids	24	hr/day	3.84E-03	2.02E-05
09-12-0050	LIQSEP	New Liquor Separator Tank	1.60E-04	lb/hr	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids	24	hr/day	3.84E-03	2.02E-05
09-05-0200, 09-05-0150, 09-05-0100, 09-95-0015, 09-19-0020, 09-19-0030, 09-30-0030, 09-10-0150, 09-10-0300, 09-10-0350, 09-10-0400	R24-26, R32, R36, R39-R43	18% Liquor Mix Tanks	1.60E-04	lb/hr/tank	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids, 10.0 multiplier for tank movements	240	tank*hr/day	3.84E-02	2.02E-04
09-30-0010, 09-30-0020, 09-95-0010, 09-95-0009, 09-20-0070, 09-25-0140, 09-25-0540, 09-25-0340, 09-20-0310	R27-R28, R31, R33, R34, R37, R38, R44, R72	48% Liquor Storage Tanks, Soap Tanks	9.28E-04	lb/hr/tank	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. 9.0 multiplier for tank movements	216	tank*hr/day	2.00E-01	1.05E-03
09-40-0010, 09-40-0020	R29, R30	65% Liquor Storage Tanks	9.28E-04	lb/hr/tank	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. 2.0 multiplier for tank movements	48	tank*hr/day	4.45E-02	2.34E-04
09-27-1000	LRP 40%	Tank - Lignin Feed Liquor	9.28E-04	lb/hr	NCASI Pulp and Paper Database - March 2013 - Recovery Black Liquor Tank >20% Solids - Median	24	hr/day	2.23E-02	1.17E-04
09-27-3000	LRPPRS2	Filter - 2 Lignin Filter	2.60E-07	lb/ODTL	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing on WBL Tanks. Because emissions factors are production based, they are conservatively not time weighted based on actual venting only 15% of the time.	106	ODTL/day	2.75E-05	1.44E-07
	PO01C	No. 5 Recovery Boiler - BLS	2.96E-04	lb/TBLS	National Council for Air and Stream Improvement (NCASI) Technical Bulletin No. 973, February 2010, Compilation of 'Air Toxic' and Total Emissions Data for Pulp and Paper Mil Sources - A Second Update, Table 4.23. Data points reported as non-detect treated as zero.	3,360	TLBS/day	9.95E-01	5.22E-03
	PO01C	No. 5 Recovery Boiler - No. 2	5.69E-04	lb/MMBtu	AP-42, Fifth edition, Chapter 1, Section 3, Supplement E. Factor units are lb/10^3 gal	30,335	MMBtu/day	1.73E+01	9.07E-02
10-25-0110	Total from No. 5 Recovery Boiler							1.83E+01	9.59E-02
14-10-05	R14	No. 5 Green Liquor Clarifier	1.00E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources - Green Liquor Clarifier Mill D. P. 136. A factor of 1.9 is applied to account for all sources.	533	T CaO/day	1.01E-02	5.31E-05

TABLE 40
TOLUENE 24-HOUR POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/day)	Emission Rate (g/s)
14-15-0450, 14-70-2045, 14-70-2020	R45,R70,R76	Scrubber Water Standpipe, Scrubber Water Clarifier	1.50E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources - White Liquor and Weak Wash Pressure Filters Vent Mill J. A 2.0 factor is applied.	533	T CaO/day	1.60E-02	8.39E-05
14-15-0600, 14-15-0800, 14-15-0900, 14-15-DREGS	R09,R13,R10, R12	Dregs Sources	1.00E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources -Green Liquor Clarifier Vent Mill D. A 0.3 factor is applied.	533	T CaO/day	1.60E-03	8.39E-06
14-20-2020, 14-20-2085	R53, R58	East/West Slaker Area	1.80E-04	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.31 Causticizing Area Sources - Causticizer/Salker Combination Emissions. A 1.5 factor is applied.	533	T CaO/day	1.44E-01	7.55E-04
14-60-3000	R01A	No. 5 Lime Kiln - No. 2	5.69E-04	lb/MMBtu	AP-42 Section 1.3, 5th Edition Supplement E, September 1998.	4,729	MMBtu/day	2.69E+00	1.41E-02
14-30-0310	R46	Lime Mud Mix Tank	3.50E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Additional Causticizing Area Sources, Table 4.32 p.136, Lime Mud Dilution Tank Vent Mill D p. 136.	533	T CaO/day	1.86E-02	9.78E-05
14-30-1450	R15	Lime Mud Storage Tank	5.70E-07	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Sources - Lime Mud Mix Tank Vent Mill D, p. 136.	533	T CaO/day	3.04E-04	1.59E-06
14-30-350	R47, R49	No. 2 and 3 Lime Mud Wash Tank	3.60E-06	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources - Lime Mud Pressure Filter Vent Mill D p. 136.	533	T CaO/day	1.92E-03	1.01E-05
14-30-5000, 14-30-6000	R50	East and West Lime Mud Filters	1.30E-04	lb/T CaO	NCASI Pulp and Paper Database TB 973 Table 4.31 - Lime Mud Precoat Filters	533	T CaO/day	6.92E-02	3.63E-04
14-30-5040, 14-30-6040	R65, R66	East and West Lime Mud Vacuum System	1.00E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.31 - Causticizing Area Sources - Precoat Filter Vacuum Pump Exhaust p. 134. A 3.0 factor is applied.	533	T CaO/day	1.60E-02	8.39E-05
32-10-0140	P09A-F	NC-2 HD and LD Stock Tanks	1.80E-05	lb/ODTUBP	NCASI Technical Bulletin No. 679, October 1994, VOC Emissions from Pulp and Paper Mill Sources, Part V - Kraft Mill Bleach Plants, pg. 104 Table V.B.1, Mill A, D Washer Vent. A 1.5 factor is applied.	599	ODTUBP/day	1.62E-02	8.48E-05
32-40-1560	NC1&2	NC-2 Paper Machine	1.59E-04	lb/ADTFP	Table 4.34 of NCASI TB 973; PM Bleached Kraft	665	ADTFP/day	1.06E-01	5.55E-04
45-93-0100	NC5	NC-5 Paper Machine	1.59E-04	lb/ADTFP	Table 4.34 of NCASI TB 973; PM Bleached Kraft	1,664	ADTFP/day	2.65E-01	1.39E-03

TABLE 40
TOLUENE 24-HOUR POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/day)	Emission Rate (g/s)
45-10-0005	P27A-H	NC-5 HD and LD Stock Tanks	1.80E-05	lb/ODTUBP	NCASI Technical Bulletin No. 679, October 1994, VOC Emissions from Pulp and Paper Mill Sources, Part V - Kraft Mill Bleach Plants, pg. 104 Table V.B.1, Mill A, D Washer Vent. A 1.5 factor is applied.	1,540	ODTUBP/day	4.16E-02	2.18E-04

TABLE 40
TOLUENE 24-HOUR POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/day)	Emission Rate (g/s)
53-40-0130	FPDE	Fine Paper Diesel Engine	4.09E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	50.4	MMBtu/day	2.06E-02	1.08E-04
14-60-3000-1	LKDE	Lime Kiln Diesel Backup Engine	4.09E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	121.8	MMBtu/day	4.98E-02	2.62E-04
53-40-0140	WNCEE	W.N. Cr., East Diesel Fire Pump Engine	4.09E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	50.4	MMBtu/day	2.06E-02	1.08E-04
53-40-0145	WNCWE	W.N. Cr., West Diesel Fire Pump Engine	4.09E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	65.5	MMBtu/day	2.68E-02	1.41E-04
73-05-4570	RUNEA	Runoff Coll Sewer Lift Station Diesel Backup Engine	4.09E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	33.6	MMBtu/day	1.37E-02	7.21E-05
73-05-4580	SEWEA	Fiber Line Sewer Lift Station Diesel Backup Engine	4.09E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	33.6	MMBtu/day	1.37E-02	7.21E-05
71-95-0500	COMMEA	Communications Back up Engine	4.09E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	138.4	MMBtu/day	5.66E-02	2.97E-04
TEMPSEW	TEMPSEW	Temporary Sewer Pump Engine	4.09E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	56.6	MMBtu/day	2.32E-02	1.22E-04
TEMPGEN	TEMPGEN	Temporary Generator	4.09E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	0.144	MMBtu/day	5.87E-05	3.08E-07
TEMP-CHIP	TEMPCHIP	Temporary Log Chipper	1.97E-06	lb/hp-hr	AP-42 Section 3.4, Table 3.4-3	24000	hp-hr/day	4.73E-02	2.48E-04
		Cooler -1 Feed Liquor	9.28E-04	lb/hr	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor	24	hr/day	2.23E-02	1.17E-04
		Filter - 1 Lignin	2.60E-07	lb/ODTL	Conservatively assume emissions from filters equate to weak black liquor tank. ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000. Emission factors are production based and thus are conservatively not time weighted based on actual venting only 15% of the time.	106	ODTL/day	2.75E-05	1.44E-07
		Tank - 2 Lignin Filter Cloth Wash	2.60E-07	lb/ODTL	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing on WBL Tanks. Because emissions factors are production based, they are conservatively not time weighted based on actual venting only 15% of the time.	106	ODTL/day	2.75E-05	1.44E-07
		Conveyors - #1 Lignin Filter & #1 Lignin Filter Incline	5.20E-07	lb/ODTL	Conservatively assume emissions from filters equate to weak black liquor tank. Multiply emissions by 2 for two conveyors. ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000.	105.7	ODTL/day	5.50E-05	2.89E-07

TABLE 40
TOLUENE 24-HOUR POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/day)	Emission Rate (g/s)
		LRP Dilute Tanks	1.82E-06	lb/ODTL	ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000. Emission factor displayed is for 7 tanks total. Emission factors used for the primary cloth wash and filtrate tanks are production based and thus are conservatively not time weighted based onactual venting periods of only 15% of the time.	105.7	ODTL/day	1.92E-04	1.01E-06
		LRP Acidification Tank (2800)	1.67E-03	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 1 tank.	105.7	ODTL/day	1.76E-01	9.25E-04
09-27-3800	LSRPSCRUB	Total from Caustic Scrubber						1.99E-01	1.04E-03
64-25-0290	PO01A-1	No. 1 HFB - No. 2	5.69E-04	lb/MMBtu	AP-42, Fifth edition, Chapter 1, Section 3, Supplement E. Factor units are lb/10^3 gal	26097	MMBtu/day	1.49E+01	7.80E-02
	PO13A	Carbonator - Feed Liquor	1.86E-05	lb/hr	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor Median, 98% control, 1 tank.	24	hr/day	4.45E-04	2.34E-06
	PO13A	LVHC Combustion	1.52E-06	lb/ADTUBP	NCASI TB 973 Table 4.18 - Kraft Mill NCG Thermal Oxidizer. LVHC gases are burned through No. 2 HFB. The White Liquor Scrubber then No. 5 Lime Kiln are used as backups	2426	ADTUBP/day	3.69E-03	1.94E-05
	PO13A	No. 2 HFB - No. 2	5.69E-04	lb/MMBtu	AP-42, Fifth edition, Chapter 1, Section 3, Supplement E. Factor units are lb/10^3 gal	22,723	MMBtu/day	1.29E+01	6.79E-02
	PO13A	LRP Acidification Tanks (2700 & 2770)	6.67E-05	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 98% control, 2 tanks. Controlled by HVLC System	105.7	ODTL/day	7.05E-03	3.70E-05
65-25-0310		Total from No. 2 Hog Fuel Boiler						1.29E+01	6.80E-02
CD-65-60-1010	THERMALOX	Thermal Oxidizer	3.24E-06	lb/MMBtu	Emission Factors are based on AP-42, Chapter 1.4 (revised 7/98) except acetaldehyde, acrolein and ammonia. Acetaldehyde, acrolein, and ammonia factors are from WebFIRE database. , converted from MMSCF to MMBTU; this is the backup for HVLC comustion behind the No. 2 Hog Fuel Boiler	1,080	MMBtu/day	3.50E-03	1.84E-05
		Total from Thermal Oxidizer and HVLC combustion						1.10E-02	5.77E-05

TABLE 41
TOLUENE 1-HOUR POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
TROMSCR	TROMSCR	Trommel Screen	2.86E-06	lb/hp-hr	AP-42 Section 3.3, Table 3.3-2. Converted to lb/hp-hr	74	hp-hr/hr	2.12E-04	2.67E-05
06-31-0180, 06-31-1000, 06-32-2060, 06-32-2120, 06-32-2100, 06-32-2300, 06-32-2340, 06-32-2380	F09, F12, F13, F14, F17, F18, F19, F41	No. 6 O2 Delig	6.09E-05	lb/ADTUBP	NCASI Technical Bulletin 973, "Compilation of Air Toxic and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update" February 2010, Table 4.4, Median emission factors using ND=0.	39.4	ADTUBP/hr	2.40E-03	3.03E-04
06-40-8000	F15, F16	No. 6 Bleach Plant Scrubber	9.60E-05	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber).	37.9	ADTBP/hr	3.64E-03	4.58E-04
07-31-1000, 07-31-1100, 07-33-3000, 07-31-1140, 07-31-1200, 07-31-1180	F23-27, F42	No. 7 O2 Delig	6.09E-05	lb/ADTUBP	NCASI Technical Bulletin 973, "Compilation of Air Toxic and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update" February 2014, Table 4.4, Median emission factors using ND=0.	61.6	ADTUBP/hr	3.75E-03	4.73E-04
07-31-1180	F30	No. 7 Bleach Plant Scrubber	9.60E-05	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber).	59.2	ADTBP/hr	5.68E-03	7.16E-04
14-05-0050	R03	North Smelt Tank	3.79E-05	lb/TBLS	NCASI TB 973 Table 4.28 - Emissions from Kraft Smelt Dissolving Tanks	69.2	TBLS/hr	2.62E-03	3.31E-04
14-05-0300	R04-1	South Smelt Tank	3.79E-05	lb/TBLS	NCASI TB 973 Table 4.28 - Emissions from Kraft Smelt Dissolving Tanks	69.2	TBLS/hr	2.62E-03	3.31E-04
10-08-0010	R04-2	Salt Cake Mix Tank	4.77E-06	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.35 - Miscellaneous Kraft Mill Sources - Salt Cake Mix Tank Vents p. 144	138.5	TBLS/hr	6.60E-04	8.32E-05
14-05-0300, 10-08-0010	R04	Total South Smelt Tank and Salt Cake Mix Tank						3.28E-03	4.14E-04
10-45-0450	R05	No. 5 Precipitator Mix Tank	4.77E-06	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.35 - Miscellaneous Kraft Mill Sources - Salt Cake Mix Tank Vents p. 144	140	TBLS/hr	6.68E-04	8.41E-05
07-34-4080, 07-34-4100, 07-36-6040, 07-36-6060	EOP, PEROX	EOP and Peroxide Stage	6.40E-06	lb/ODTUBP	NCASI Technical Bulletin 679, Table V.O.1, Mill N, October 1994	55.5	ODTUBP/hr	3.55E-04	4.47E-05
08-40-1000	F35	No. 32 High Density Pulp Tank	2.04E-04	lb/hr/tank	NCASI Technical Bulletin No. 973, October 2014, Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update. Table 4.19 HD Unbleached Pulp Storage Tanks	1.0	tank*hr/hr	2.04E-04	2.57E-05
08-65-1060	6N7SPLTK	No. 6 and 7 spill collection tank	9.59E-07	lb/ODTUBP	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing	91.0	ODTUBP/hr	8.72E-05	1.10E-05
09-05-0210	SWBLTANK	South WBL Storage Tank	2.60E-07	lb/ODTUBP	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing	91.0	ODTUBP/hr	2.37E-05	2.98E-06
09-12-0250	5SOAP	No. 5 Soap Storage Tank	1.60E-04	lb/hr	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids	1	hr/hr	1.60E-04	2.02E-05
09-12-0050	LIQSEP	New Liquor Separator Tank	1.60E-04	lb/hr	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids	1	hr/hr	1.60E-04	2.02E-05

TABLE 41
TOLUENE 1-HOUR POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
09-05-0200, 09-05-0150, 09-05-0100, 09-95-0015, 09-19-0020, 09-19-0030, 09-30-0030, 09-10-0150, 09-10-0300, 09-10-0350, 09-10-0400	R24-26, R32, R36, R39-R43	18% Liquor Mix Tanks	1.60E-04	lb/hr/tank	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids, 10.0 multiplier for tank movements	10.0	tank	1.60E-03	2.02E-04
09-30-0010, 09-30-0020, 09-95-0010, 09-95-0009, 09-20-0070, 09-25-0140, 09-25-0540, 09-25-0340, 09-20-0310	R27-R28, R31, R33, R34, R37, R38, R44, R72	48% Liquor Storage Tanks, Soap Tanks	9.28E-04	lb/hr/tank	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. 9.0 multiplier for tank movements	9.0	tank	8.35E-03	1.05E-03
09-40-0010, 09-40-0020	R29, R30	65% Liquor Storage Tanks	9.28E-04	lb/hr/tank	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. 2.0 multiplier for tank movements	2.0	tank	1.86E-03	2.34E-04
09-27-1000	LRP 40%	Tank - Lignin Feed Liquor	9.28E-04	lb/hr	NCASI Pulp and Paper Database - March 2013 - Recovery Black Liquor Tank >20% Solids - Median	1	hr/hr	9.28E-04	1.17E-04
09-27-3000	LRPPRS2	Filter - 2 Lignin Filter	2.60E-07	lb/ODTL	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing on WBL Tanks. Because emissions factors are production based, they are conservatively not time weighted based on actual venting only 15% of the time.	4.4	ODTL/hr	1.15E-06	1.44E-07
	PO01C	No. 5 Recovery Boiler - BLS	2.96E-04	lb/TBLS	National Council for Air and Stream Improvement (NCASI) Technical Bulletin No. 973, February 2010, Compilation of 'Air Toxic' and Total Emissions Data for Pulp and Paper Mil Sources - A Second Update, Table 4.23. Data points reported as non-detect treated as zero.	140	TBLS/hr	4.14E-02	5.22E-03
	PO01C	No. 5 Recovery Boiler - No. 2	5.69E-04	lb/MMBtu	AP-42, Fifth edition, Chapter 1, Section 3, Supplement E. Factor units are lb/10^3 gal	1,263.9	MMBtu/hr	7.20E-01	9.07E-02
10-25-0110	Total from No. 5 Recovery Boiler							7.61E-01	9.59E-02
14-10-05	R14	No. 5 Green Liquor Clarifier	1.00E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources - Green Liquor Clarifier Mill D. P. 136. A factor of 1.9 is applied to account for all sources.	22.2	T CaO/hr	4.22E-04	5.31E-05
14-15-0450, 14-70-2045, 14-70-2020	R45,R70,R76	Scrubber Water Standpipe, Scrubber Water Clarifier	1.50E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources - White Liquor and Weak Wash Pressure Filters Vent Mill J. A 2.0 factor is applied.	22.2	T CaO/hr	6.66E-04	8.39E-05
14-15-0600, 14-15-0800, 14-15-0900, 14-15-DREGS	R09,R13,R10, R12	Dregs Sources	1.00E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources -Green Liquor Clarifier Vent Mill D. A 0.3 factor is applied.	22.2	T CaO/hr	6.66E-05	8.39E-06
14-20-2020, 14-20-2085	R53, R58	East/West Slaker Area	1.80E-04	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.31 Causticizing Area Sources - Causticizer/Salker Combination Emissions. A 1.5 factor is applied.	22.2	T CaO/hr	5.99E-03	7.55E-04
14-60-3000	R01A	No. 5 Lime Kiln - No. 2	5.69E-04	lb/MMBtu	AP-42, Fifth edition, Chapter 1, Section 3, Supplement E. Factor units are lb/10^3 gal	197.0	MMBtu/hr	1.12E-01	1.41E-02
14-30-0310	R46	Lime Mud Mix Tank	3.50E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Additional Causticizing Area Sources, Table 4.32 p.136, Lime Mud Dilution Tank Vent Mill D p. 136.	22.2	T CaO/hr	7.77E-04	9.78E-05

TABLE 41
TOLUENE 1-HOUR POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
14-30-1450	R15	Lime Mud Storage Tank	5.70E-07	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Sources - Lime Mud Mix Tank Vent Mill D, p. 136.	22.2	T CaO/hr	1.26E-05	1.59E-06
14-30-350	R47, R49	No. 2 and 3 Lime Mud Wash Tank	3.60E-06	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources - Lime Mud Pressure Filter Vent Mill D p. 136.	22.2	T CaO/hr	7.99E-05	1.01E-05
14-30-5000, 14-30-6000	R50	East and West Lime Mud Filters	1.30E-04	lb/T CaO	NCASI Pulp and Paper Database TB 973 Table 4.31 - Lime Mud Precoat Filters	22.2	T CaO/hr	2.88E-03	3.63E-04
14-30-5040, 14-30-6040	R65, R66	East and West Lime Mud Vacuum System	1.00E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.31 - Causticizing Area Sources - Precoat Filter Vacuum Pump Exhaust p. 134. A 3.0 factor is applied.	22.2	T CaO/hr	6.66E-04	8.39E-05
32-10-0140	P09A-F	NC-2 HD and LD Stock Tanks	1.80E-05	lb/ODTUBP	NCASI Technical Bulletin No. 679, October 1994, VOC Emissions from Pulp and Paper Mill Sources, Part V - Kraft Mill Bleach Plants, pg. 104 Table V.B.1, Mill A, D Washer Vent. A 1.5 factor is applied.	24.9	ODTUBP/hr	6.73E-04	8.48E-05
32-40-1560	NC1&2	NC-2 Paper Machine	1.59E-04	lb/ADTFP	Table 4.34 of NCASI TB 973; PM Bleached Kraft	25	ADTFP/hr	3.98E-03	5.01E-04
45-93-0100	NC5	NC-5 Paper Machine	1.59E-04	lb/ADTFP	Table 4.34 of NCASI TB 973; PM Bleached Kraft	69	ADTFP/hr	1.10E-02	1.39E-03
45-10-0005	P27A-H	NC-5 HD and LD Stock Tanks	1.80E-05	lb/ODTUBP	NCASI Technical Bulletin No. 679, October 1994, VOC Emissions from Pulp and Paper Mill Sources, Part V - Kraft Mill Bleach Plants, pg. 104 Table V.B.1, Mill A, D Washer Vent. A 1.5 factor is applied.	64.2	ODTUBP/hr	1.73E-03	2.18E-04
53-40-0130	FPDE	Fine Paper Diesel Engine	4.09E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	2.1	MMBtu/hr	8.59E-04	1.08E-04
14-60-3000-1	LKDE	Lime Kiln Diesel Backup Engine	4.09E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	5.1	MMBtu/hr	2.08E-03	2.62E-04
53-40-0140	WNCEE	W.N. Cr., East Diesel Fire Pump Engine	4.09E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	2.1	MMBtu/hr	8.59E-04	1.08E-04
53-40-0145	WNCWE	W.N. Cr., West Diesel Fire Pump Engine	4.09E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	2.7	MMBtu/hr	1.12E-03	1.41E-04
73-05-4570	RUNEA	Runoff Coll Sewer Lift Station Diesel Backup Engine	4.09E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	1.4	MMBtu/hr	5.73E-04	7.21E-05
73-05-4580	SEWEA	Fiber Line Sewer Lift Station Diesel Backup Engine	4.09E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	1.4	MMBtu/hr	5.73E-04	7.21E-05
71-95-0500	COMMEA	Communications Back up Engine	4.09E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	5.8	MMBtu/hr	2.36E-03	2.97E-04
TEMPSEW	TEMPSEW	Temporary Sewer Pump Engine	4.09E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	2.4	MMBtu/hr	9.65E-04	1.22E-04
TEMPGEN	TEMPGEN	Temporary Generator	4.09E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	0.006	MMBtu/hr	2.45E-06	3.08E-07
TEMP-CHIP	TEMPCHIP	Temporary Log Chipper	1.97E-06	lb/hp-hr	AP-42 Section 3.4, Table 3.4-3	1000	hp-hr/hr	1.97E-03	2.48E-04

TABLE 41
TOLUENE 1-HOUR POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
		Cooler -1 Feed Liquor	9.28E-04	lb/hr	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor	1	hr/hr	9.28E-04	1.17E-04
		Filter - 1 Lignin	2.60E-07	lb/ODTL	Conservatively assume emissions from filters equate to weak black liquor tank. ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000. Emission factors are production based and thus are conservatively not time weighted based on actual venting only 15% of the time.	4.4	ODTL/hr	1.15E-06	1.44E-07
		Tank - 2 Lignin Filter Cloth Wash	2.60E-07	lb/ODTL	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing on WBL Tanks. Because emissions factors are production based, they are conservatively not time weighted based on actual venting only 15% of the time.	4.4	ODTL/hr	1.15E-06	1.44E-07
		Conveyors - #1 Lignin Filter & #1 Lignin Filter Incline	5.20E-07	lb/ODTL	Conservatively assume emissions from filters equate to weak black liquor tank. Multiply emissions by 2 for two conveyors. ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000.	4.4	ODTL/hr	2.29E-06	2.89E-07
		LRP Dilute Tanks	1.82E-06	lb/ODTL	ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000. Emission factor displayed is for 7 tanks total. Emission factors used for the primary cloth wash and filtrate tanks are production based and thus are conservatively not time weighted based onactual venting periods of only 15% of the time.	4.4	ODTL/hr	8.02E-06	1.01E-06
		LRP Acidification Tank (2800)	1.67E-03	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 1 tank.	4.4	ODTL/hr	7.34E-03	9.25E-04
09-27-3800	LSRPSCRUB	Total from Caustic Scrubber						8.28E-03	1.04E-03
64-25-0290	PO01A-1	No. 1 HFB - No. 2	5.69E-04	lb/MMBtu	AP-42, Fifth edition, Chapter 1, Section 3, Supplement E. Factor units are lb/10^3 gal	1087	MMBtu/hr	6.19E-01	7.80E-02
	PO13A	Carbonator - Feed Liquor	1.86E-05	lb/hr	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor Median, 98% control, 1 tank.	1	hr/hr	1.86E-05	2.34E-06
	PO13A	LVHC Combustion	1.52E-06	lb/ADTUBP	NCASI TB 973 Table 4.18 - Kraft Mill NCG Thermal Oxidizer. LVHC gases are burned through No. 2 HFB. The White Liquor Scrubber then No. 5 Lime Kiln are used as backups	101	ADTUBP/hr	1.54E-04	1.94E-05
	PO13A	No. 2 HFB - Hog Fuel	5.69E-04	lb/MMBtu	AP-42, Fifth edition, Chapter 1, Section 3, Supplement E. Factor units are lb/10^3 gal	947	MMBtu/hr	5.39E-01	6.79E-02
	PO13A	LRP Acidification Tanks (2700 & 2770)	6.67E-05	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 98% control, 2 tanks. Controlled by HVLC System	4.4	ODTL/hr	2.94E-04	3.70E-05
65-25-0310	Total from No. 2 Hog Fuel Boiler							5.39E-01	6.80E-02
CD-65-60-1010	THERMALOX	Thermal Oxidizer	3.24E-06	lb/MMBtu	Emission Factors are based on AP-42, Chapter 1.4 (revised 7/98) except acetaldehyde, acrolein and ammonia. Acetaldehyde, acrolein, and ammonia factors are from WebFIRE database. , converted from MMSCF to MMBTU; this is the backup for HVLC comustion behind the No. 2 Hog Fuel Boiler	45	MMBtu/hr	1.46E-04	1.84E-05
	Total from Thermal Oxidizer and HVLC combustion							4.58E-04	5.77E-05

TABLE 45
XYLENE 24-HOUR POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/day)	Emission Rate (g/s)
TROMSCR	TROMSCR	Trommel Screen	2.00E-06	lb/hp-hr	AP-42 Section 3.3, Table 3.3-2. Converted to lb/hp-hr	1776	hp-hr/day	3.54E-03	1.86E-05
06-31-0180, 06-31-1000, 06-32-2060, 06-32-2120, 06-32-2100, 06-32-2300, 06-32-2340, 06-32-2380	F09, F12, F13, F14, F17, F18, F19, F41	No. 6 O2 Delig	7.61E-05	lb/ADTUBP	NCASI Technical Bulletin 973, "Compilation of Air Toxic and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update" February 2010, Table 4.4, Median emission factors using ND=0. Xylenes are sum of o,m & p-xylenes	947	ADTUBP/day	7.20E-02	3.78E-04
06-40-8000	F15, F16	No. 6 Bleach Plant Scrubber	4.98E-05	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber).	909	ADTBP/day	4.53E-02	2.38E-04
07-31-1000, 07-31-1100, 07-33-3000, 07-31-1140, 07-31-1200, 07-31-1180	F23-27, F42	No. 7 O2 Delig	7.61E-05	lb/ADTUBP	NCASI Technical Bulletin 973, "Compilation of Air Toxic and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update" February 2014, Table 4.4, Median emission factors using ND=0. Xylenes are sum of o,m & p-xylenes	1,479	ADTUBP/day	1.13E-01	5.91E-04
07-31-1180	F30	No. 7 Bleach Plant Scrubber	4.98E-05	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber).	1,420	ADTBP/day	7.07E-02	3.71E-04
07-34-4080, 07-34-4100, 07-36-6040, 07-36-6060	EOP, PEROX	EOP and Peroxide Stage	1.32E-05	lb/ODTUBP	NCASI Technical Bulletin 679, Table V.O.1, Mill N, October 1994	1,331	ODTUBP/day	1.76E-02	9.23E-05
08-40-1000	F35	No. 32 High Density Pulp Tank	2.38E-04	lb/hr/tank	NCASI Technical Bulletin No. 973, October 2014, Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update. Table 4.19 HD Unbleached Pulp Storage Tanks	24	tank*hr/day	5.71E-03	3.00E-05
08-65-1060	6N7SPLTK	No. 6 and 7 spill collection tank	2.21E-06	lb/ODTUBP	Dec 1999-Jan 2000, Stack Testing	2,183	ODTUBP/day	4.82E-03	2.53E-05
09-05-0210	SWBLTANK	South WBL Storage Tank	5.99E-07	lb/ODTUBP	Dec 1999-Jan 2000, Stack Testing	2,183	ODTUBP/day	1.31E-03	6.87E-06
09-12-0250	5SOAP	No. 5 Soap Storage Tank	6.80E-04	lb/hr	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids	24	hr/day	1.63E-02	8.57E-05
09-12-0050	LIQSEP	New Liquor Separator Tank	6.80E-04	lb/hr	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids	24	hr/day	1.63E-02	8.57E-05
09-05-0200, 09-05-0150, 09-05-0100, 09-95-0015, 09-19-0020, 09-19-0030, 09-30-0030, 09-10-0150, 09-10-0300, 09-10-0350, 09-10-0400	R24-26, R32, R36, R39-R43	18% Liquor Mix Tanks	6.80E-04	lb/hr/tank	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids, 10.0 multiplier for tank movements	240	tank*hr/day	1.63E-01	8.57E-04
09-30-0010, 09-30-0020, 09-95-0010, 09-95-0009, 09-20-0070, 09-25-0140, 09-25-0540, 09-25-0340, 09-20-0310	R27-R28, R31, R33, R34, R37, R38, R44, R72	48% Liquor Storage Tanks, Soap Tanks	1.01E-04	lb/hr/tank	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. 9.0 multiplier for tank movements	216	tank*hr/day	2.18E-02	1.15E-04

TABLE 45
XYLENE 24-HOUR POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/day)	Emission Rate (g/s)
09-40-0010, 09-40-0020	R29, R30	65% Liquor Storage Tanks	1.01E-04	lb/hr/tank	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. 2.0 multiplier for tank movements	48	tank*hr/day	4.85E-03	2.55E-05
09-27-1000	LRP 40%	Tank - Lignin Feed Liquor	1.01E-04	lb/hr	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. Xylenes (mixed isomers) emission factor is the sum of o-Xylenes plus m,p-Xylenes emission factors.	24	hr/day	2.41E-03	1.27E-05
09-27-3000	LRPPRS2	Filter - 2 Lignin Filter	5.99E-07	lb/ODTL	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing on WBL Tanks. Because emissions factors are production based, they are conservatively not time weighted based on actual venting only 15% of the time.	106	ODTL/day	6.33E-05	3.32E-07
	PO01C	No. 5 Recovery Boiler - BLS	9.40E-04	lb/TBLS	National Council for Air and Stream Improvement (NCASI) Technical Bulletin No. 973, February 2010, Compilation of 'Air Toxic' and Total Emissions Data for Pulp and Paper Mil Sources - A Second Update, Table 4.23. Data points reported as non-detect treated as zero.	3,360.0	TBLS/day	3.16E+00	1.66E-02
	PO01C	No. 5 Recovery Boiler - No. 2	1.00E-05	lb/MMBtu	AP-42, Fifth edition, Chapter 1, Section 3, Supplement E. Factor units are lb/10^3 gal	30,334.61	MMBtu/day	3.03E-01	1.59E-03
10-25-0110	Total from No. 5 Recovery Boiler							3.46E+00	1.82E-02
10-45-0450	R05	No. 5 Precipitator Mix Tank	7.00E-07	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.35 - Miscellaneous Kraft Mill Sources - Salt Cake Mix Tank Vents p. 144	3,360	TBLS/day	2.35E-03	1.23E-05
14-05-0050	R03	North Smelt Tank	1.70E-04	lb/TBLS	NCASI TB 973 Table 4.28 - Emissions from Kraft Smelt Dissolving Tanks, Xylenes (mixed isomers) emission factor is the sum of o-Xylenes plus m,p-Xylenes emission factors.	1,661	TBLS/day	2.82E-01	1.48E-03
14-05-0300	R04-1	South Smelt Tank	1.70E-04	lb/TBLS	NCASI TB 973 Table 4.28 - Emissions from Kraft Smelt Dissolving Tanks, Xylenes (mixed isomers) emission factor is the sum of o-Xylenes plus m,p-Xylenes emission factors.	1,661	TBLS/day	2.82E-01	1.48E-03
10-08-0010	R04-2	Salt Cake Mix Tank	7.00E-07	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.35 - Miscellaneous Kraft Mill Sources - Salt Cake Mix Tank Vents p. 144	3,323	TBLS/day	2.33E-03	1.22E-05
14-05-0300, 10-08-0010	R04	Total South Smelt Tank and Salt Cake Mix Tank						2.84E-01	1.49E-03
14-10-05	R14	No. 5 Green Liquor Clarifier	2.00E-04	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources - Green Liquor Clarifier Mill D. P. 136. A factor of 1.9 is applied to account for all sources. Emission factor is the sum of o-Xylenes plus m,p-Xylenes emission factors.	533	T CaO/day	2.02E-01	1.06E-03
14-15-0450, 14-70-2045, 14-70-2020	R45,R70,R76	Scrubber Water Standpipe, Scrubber Water Clarifier	8.50E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources - White Liquor and Weak Wash Pressure Filters Vent Mill J. A 2.0 factor is applied. Emission factor is the sum of o-Xylenes plus m,p-Xylenes emission factors	533	T CaO/day	9.05E-02	4.75E-04

TABLE 45
XYLENE 24-HOUR POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/day)	Emission Rate (g/s)
14-15-0600, 14-15-0800, 14-15-0900, 14-15-DREGS	R09,R13,R10, R12	Dregs Sources	2.00E-04	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources -Green Liquor Clarifier Vent Mill D. Emission factor is the sum of o-Xylenes plus m,p-Xylenes emission factors. A 0.3 factor is applied.	533	T CaO/day	3.20E-02	1.68E-04
14-20-2020, 14-20-2085	R53, R58	East/West Slaker Area	6.20E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.31 Causticizing Area Sources - Causticizer/Salker Combination Emissions. A 1.5 factor is applied. Xylenes (mixed isomers) emission factor is the sum of o-Xylenes plus m,p-Xylenes emission factors.	533	T CaO/day	4.95E-02	2.60E-04
08-70-0900, 14-25-0450, 14-25-0800, 14-25-0050, 14-25-0150	R16, R17, R07, R22, F11	No. 3 and 4 WL Clarifiers and Tanks	6.20E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Sources - White Liquor Pressure Filter Vent Mill F (ND=0). A 2.5 factor is applied. Xylenes (mixed isomers) emission factor is the sum of o-Xylenes plus m,p-Xylenes emission factors.	533	T CaO/day	8.25E-02	4.33E-04
14-30-0310	R46	Lime Mud Mix Tank	3.00E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Additional Causticizing Area Sources, Table 4.32 p.136, Lime Mud Dilution Tank Vent Mill D p. 136. Xylenes (mixed isomers) emission factor is the sum of o-Xylenes plus m,p-Xylenes emission factors.	533	T CaO/day	1.60E-02	8.39E-05
14-30-1450	R15	Lime Mud Storage Tank	7.10E-06	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Sources - Lime Mud Mix Tank Vent Mill D, p. 136. Xylenes (mixed isomers) emission factor is the sum of o-Xylenes plus m,p-Xylenes emission factors.	533	T CaO/day	3.78E-03	1.98E-05
14-30-350	R47, R49	No. 2 and 3 Lime Mud Wash Tank	2.94E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources - Lime Mud Pressure Filter Vent Mill D p. 136.	533	T CaO/day	1.57E-02	8.22E-05
14-30-5000, 14-30-6000	R50	East and West Lime Mud Filters	3.40E-05	lb/T CaO	NCASI Pulp and Paper Database TB 973 Table 4.31 - Lime Mud Precoat Filters	533	T CaO/day	1.81E-02	9.50E-05
14-60-3000	R01A	No. 5 Lime Kiln - TCaO	2.14E-03	lb/T CaO	NCASI TB 973 Table 4.25, Table 8.1, or Table 9.9 - Emissions from Kraft Lime Kilns, p. 110. AP-42 used where NCASI factors are not available. Xylenes (mixed isomers) emission factor is the sum of o-Xylenes plus m,p-Xylenes emission factors.	533	T CaO/day	1.14E+00	5.98E-03
		Cooler -1 Feed Liquor	1.01E-04	lb/hr	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor	24	hr/day	2.41E-03	1.27E-05
		Filter - 1 Lignin	5.99E-07	lb/ODTL	Conservatively assume emissions from filters equate to weak black liquor tank. ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000. Emission factors are production based and thus are conservatively not time weighted based on actual venting only 15% of the time.	106	ODTL/day	6.33E-05	3.32E-07
		Tank - 2 Lignin Filter Cloth Wash	5.99E-07	lb/ODTL	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing on WBL Tanks. Because emissions factors are production based, they are conservatively not time weighted based on actual venting only 15% of the time.	106	ODTL/day	6.33E-05	3.32E-07

TABLE 45
XYLENE 24-HOUR POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/day)	Emission Rate (g/s)
		Conveyors - #1 Lignin Filter & #1 Lignin Filter Incline	1.20E-06	lb/ODTL	Conservatively assume emissions from filters equate to weak black liquor tank. Multiply emissions by 2 for two conveyors. ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000.	106	ODTL/day	1.27E-04	6.65E-07
		LRP Dilute Tanks	4.19E-06	lb/ODTL	ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000. Emission factor displayed is for 7 tanks total. Emission factors used for the primary cloth wash and filtrate tanks are production based and thus are conservatively not time weighted based onactual venting periods of only 15% of the time.	106	ODTL/day	4.43E-04	2.33E-06
		LRP Acidification Tank (2800)	2.18E-03	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 1 tank.	105.70	ODTL/day	2.30E-01	1.21E-03
09-27-3800	LSRPSCRUB	Total from Caustic Scrubber						2.33E-01	1.22E-03
64-25-0290	PO01A-1	No. 1 HFB - No. 2	1.00E-05	lb/MMBtu	AP-42, Fifth edition, Chapter 1, Section 3, Supplement E. Factor units are lb/10^3 gal	26,097	MMBtu/day	2.61E-01	1.37E-03
	PO13A	Carbonator - Feed Liquor	2.01E-06	lb/hr	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor Median, 98% control, 1 tank. Xylenes (mixed isomers) emission factor is the sum of o-Xylenes plus m,p-Xylenes emission factors.	24.00	hr/day	4.82E-05	2.53E-07
	PO13A	LRP Acidification Tanks (2700 & 2770)	8.71E-05	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 98% control, 2 tanks. Controlled by HVLC System	105.70	ODTL/day	9.21E-03	4.83E-05
	PO13A	LVHC Combustion	6.20E-06	lb/ADTUBP	NCASI TB 973 Table 4.18 - Kraft Mill NCG Thermal Oxidizer. LVHC gases are burned through No. 2 HFB. The White Liquor Scrubber then No. 5 Lime Kiln are used as backups. This is the sum of o-xylene and m,p-xylenes.	2426	ADTUBP/day	1.50E-02	7.90E-05
	PO13A	HVLC Combustion	1.45E+00	lb/hr	NCASI TRI Guidance 2013 converted to lb/hr basis using annual production and hours of operation with 98% control.	24.0	hr/day	3.49E+01	1.83E-01
	PO13A	No. 2 HFB - No. 2	1.00E-05	lb/MMBtu	AP-42, Fifth edition, Chapter 1, Section 3, Supplement E. Factor units are lb/10^3 gal	22,723	MMBtu/day	2.27E-01	1.19E-03
65-25-0310	Total from No. 2 Hog Fuel Boiler							3.51E+01	1.84E-01
CD-65-60-1010	Total from Thermal Oxidizer and HVLC							3.49E+01	1.83E-01
14-30-5040, 14-30-6040	R65, R66	East and West Lime Mud Vacuum System	2.48E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.31 - Causticizing Area Sources - Precoat Filter Vacuum Pump Exhaust p. 134. A 3.0 factor is applied.	533	T CaO/day	3.96E-02	2.08E-04

TABLE 45
XYLENE 24-HOUR POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/day)	Emission Rate (g/s)
53-40-0130	FPDE	Fine Paper Diesel Engine	2.85E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	50.4	MMBtu/day	1.44E-02	7.54E-05
14-60-3000-1	LKDE	Lime Kiln Diesel Backup Engine	2.85E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	121.8	MMBtu/day	3.47E-02	1.82E-04
53-40-0140	WNCEE	W.N. Cr., East Diesel Fire Pump Engine	2.85E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	50.4	MMBtu/day	1.44E-02	7.54E-05
53-40-0145	WNCWE	W.N. Cr., West Diesel Fire Pump Engine	2.85E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	65.5	MMBtu/day	1.87E-02	9.80E-05
73-05-4570	RUNEA	Runoff Coll Sewer Lift Station Diesel Backup Engine	2.85E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	33.6	MMBtu/day	9.58E-03	5.03E-05
73-05-4580	SEWEA	Fiber Line Sewer Lift Station Diesel Backup Engine	2.85E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	33.6	MMBtu/day	9.58E-03	5.03E-05
71-95-0500	COMMEA	Communications Back up Engine	2.85E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	138.4	MMBtu/day	3.95E-02	2.07E-04
TEMPSEW	TEMPSEW	Temporary Sewer Pump Engine	2.85E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	56.6	MMBtu/day	1.61E-02	8.48E-05
TEMPGEN	TEMPGEN	Temporary Generator	2.85E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	0.144	MMBtu/day	4.09E-05	2.15E-07
TEMP-CHIP	TEMPCHIP	Temporary Log Chipper	1.35E-06	lb/hp-hr	AP-42 Section 3.4, Table 3.4-3	24000	hp-hr/day	3.24E-02	1.70E-04
32-10-0140	P09A-F	NC-2 HD and LD Stock Tanks	2.00E-05	lb/ODTUBP	NCASI Technical Bulletin No. 679, October 1994, VOC Emissions from Pulp and Paper Mill Sources, Part V - Kraft Mill Bleach Plants, pg. 104 Table V.B.1, Mill A, D Washer Vent. A 1.5 factor is applied.	599	ODTUBP/day	1.80E-02	9.43E-05
32-40-1560	NC1&2	NC-2 Paper Machine	2.29E-03	lb/ADTFP	Table 4.34 of NCASI TB 973; PM Bleached Kraft	665	ADTFP/day	1.52E+00	7.99E-03
45-93-0100	NC5	NC-5 Paper Machine	2.29E-03	lb/ADTFP	Table 4.34 of NCASI TB 973; PM Bleached Kraft	1,664	ADTFP/day	3.81E+00	2.00E-02
45-10-0005	P27A-H	NC-5 HD and LD Stock Tanks	2.00E-05	lb/ODTUBP	NCASI Technical Bulletin No. 679, October 1994, VOC Emissions from Pulp and Paper Mill Sources, Part V - Kraft Mill Bleach Plants, pg. 104 Table V.B.1, Mill A, D Washer Vent. A 1.5 factor is applied.	1,540	ODTUBP/day	4.62E-02	2.42E-04

TABLE 46
XYLENE 1-HOUR POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
TROMSCR	TROMSCR	Trommel Screen	2.00E-06	lb/hp-hr	AP-42 Section 3.3, Table 3.3-2. Converted to lb/hp-hr	74	hp-hr/hr	1.48E-04	1.86E-05
06-31-0180, 06-31-1000, 06-32-2060, 06-32-2120, 06-32-2100, 06-32-2300, 06-32-2340, 06-32-2380	F09, F12, F13, F14, F17, F18, F19, F41	No. 6 O2 Delig	7.61E-05	lb/ADTUBP	NCASI Technical Bulletin 973, "Compilation of Air Toxic and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update" February 2010, Table 4.4, Median emission factors using ND=0. Xylenes are sum of o,m & p-xylenes	39	ADTUBP/hr	3.00E-03	3.78E-04
06-40-8000	F15, F16	No. 6 Bleach Plant Scrubber	4.98E-05	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber).	38	ADTBP/hr	1.89E-03	2.38E-04
07-31-1000, 07-31-1100, 07-33-3000, 07-31-1140, 07-31-1200, 07-31-1180	F23-27, F42	No. 7 O2 Delig	7.61E-05	lb/ADTUBP	NCASI Technical Bulletin 973, "Compilation of Air Toxic and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update" February 2014, Table 4.4, Median emission factors using ND=0. Xylenes are sum of o,m & p-xylenes	61.6	ADTUBP/hr	4.69E-03	5.91E-04
07-31-1180	F30	No. 7 Bleach Plant Scrubber	4.98E-05	lb/ADTBP	NCASI 2013 Pulp & Paper Database (Median Values for ECF Bleach Plant Scrubber).	59.2	ADTBP/hr	2.95E-03	3.71E-04
07-34-4080, 07-34-4100, 07-36-6040, 07-36-6060	EOP, PEROX	EOP and Peroxide Stage	1.32E-05	lb/ODTUBP	NCASI Technical Bulletin 679, Table V.O.1, Mill N, October 1994	55.5	ODTUBP/hr	7.32E-04	9.23E-05
08-40-1000	F35	No. 32 High Density Pulp Tank	2.38E-04	lb/hr/tank	NCASI Technical Bulletin No. 973, October 2014, Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources - A Second Update. Table 4.19 HD Unbleached Pulp Storage Tanks	1.0	tank	2.38E-04	3.00E-05
08-65-1060	6N7SPLTK	No. 6 and 7 spill collection tank	2.21E-06	lb/ODTUBP	Dec 1999-Jan 2000, Stack Testing	91.0	ODTUBP/hr	2.01E-04	2.53E-05
09-05-0210	SWBLTANK	South WBL Storage Tank	5.99E-07	lb/ODTUBP	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing	91.0	ODTUBP/hr	5.45E-05	6.87E-06
09-12-0250	5SOAP	No. 5 Soap Storage Tank	6.80E-04	lb/hr	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids	1	tank	6.80E-04	8.57E-05
09-12-0050	LIQSEP	New Liquor Separator Tank	6.80E-04	lb/hr	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids	1	tank	6.80E-04	8.57E-05
09-05-0200, 09-05-0150, 09-05-0100, 09-95-0015, 09-19-0020, 09-19-0030, 09-30-0030, 09-10-0150, 09-10-0300, 09-10-0350, 09-10-0400	R24-26, R32, R36, R39-R43	18% Liquor Mix Tanks	6.80E-04	lb/hr/tank	NCASI 973 Database 2014 - Recovery Black Liquor Tank Weak </=20% Solids, 10.0 multiplier for tank movements	10.0	tank	6.80E-03	8.57E-04

TABLE 46
XYLENE 1-HOUR POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
09-30-0010, 09-30-0020, 09-95-0010, 09-95-0009, 09-20-0070, 09-25-0140, 09-25-0540, 09-25-0340, 09-20-0310	R27-R28, R31, R33, R34, R37, R38, R44, R72	48% Liquor Storage Tanks, Soap Tanks	1.01E-04	lb/hr/tank	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. 9.0 multiplier for tank movements	9.0	tank	9.09E-04	1.15E-04
09-40-0010, 09-40-0020	R29, R30	65% Liquor Storage Tanks	1.01E-04	lb/hr/tank	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. 2.0 multiplier for tank movements	2.0	tank	2.02E-04	2.55E-05
09-27-1000	LRP 40%	Tank - Lignin Feed Liquor	1.01E-04	lb/hr	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor. Xylenes (mixed isomers) emission factor is the sum of o-Xylenes plus m,p-Xylenes emission factors.	1	hr/hr	1.01E-04	1.27E-05
09-27-3000	LRPPRS2	Filter - 2 Lignin Filter	5.99E-07	lb/ODTL	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing on WBL Tanks. Because emissions factors are production based, they are conservatively not time weighted based on actual venting only 15% of the time.	4.40	ODTL/hr	2.64E-06	3.32E-07
10-45-0450	R05	No. 5 Precipitator Mix Tank	7.00E-07	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.35 - Miscellaneous Kraft Mill Sources - Salt Cake Mix Tank Vents p. 144	140	TBLS/hr	9.80E-05	1.23E-05
	PO01C	No. 5 Recovery Boiler - BLS	9.40E-04	lb/TBLS	National Council for Air and Stream Improvement (NCASI) Technical Bulletin No. 973, February 2010, Compilation of 'Air Toxic' and Total Emissions Data for Pulp and Paper Mil Sources - A Second Update, Table 4.23. Data points reported as non-detect treated as zero.	140	TBLS/hr	1.32E-01	1.66E-02
	PO01C	No. 5 Recovery Boiler - No. 2	1.00E-05	lb/MMBtu	AP-42, Fifth edition, Chapter 1, Section 3, Supplement E. Factor units are lb/10^3 gal	1263.9	MMBtu/hr	1.26E-02	1.59E-03
10-25-0110	Total from No. 5 Recovery Boiler							1.44E-01	1.82E-02
14-05-0050	R03	North Smelt Tank	1.70E-04	lb/TBLS	NCASI TB 973 Table 4.28 - Emissions from Kraft Smelt Dissolving Tanks, Xylenes (mixed isomers) emission factor is the sum of o-Xylenes plus m,p-Xylenes emission factor.	69.2	TBLS/hr	1.17E-02	1.48E-03
14-05-0300	R04-1	South Smelt Tank	1.70E-04	lb/TBLS	NCASI TB 973 Table 4.28 - Emissions from Kraft Smelt Dissolving Tanks, Xylenes (mixed isomers) emission factor is the sum of o-Xylenes plus m,p-Xylenes emission factor.	69.2	TBLS/hr	1.17E-02	1.48E-03
10-08-0010	R04-2	Salt Cake Mix Tank	7.00E-07	lb/TBLS	NCASI Technical Bulletin No. 973, February 2010, Table 4.35 - Miscellaneous Kraft Mill Sources - Salt Cake Mix Tank Vents p. 144	138.5	TBLS/hr	9.69E-05	1.22E-05

TABLE 46
XYLENE 1-HOUR POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
14-05-0300, 10-08-0010	R04	Total South Smelt Tank and Salt Cake Mix Tank						1.18E-02	1.49E-03
14-10-05	R14	No. 5 Green Liquor Clarifier	2.00E-04	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources - Green Liquor Clarifier Mill D. P. 136. A factor of 1.9 is applied to account for all sources. Emission factor is the sum of o-Xylenes plus m,p-Xylenes emission factors.	22.2	T CaO/hr	8.43E-03	1.06E-03
14-15-0450, 14-70-2045, 14-70-2020	R45,R70,R76	Scrubber Water Standpipe, Scrubber Water Clarifier	8.50E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources - White Liquor and Weak Wash Pressure Filters Vent Mill J. A 2.0 factor is applied. Emission factor is the sum of o-Xylenes plus m,p-Xylenes emission factors	22.2	T CaO/hr	3.77E-03	4.75E-04
14-15-0600, 14-15-0800, 14-15-0900, 14-15-DREGS	R09,R13,R10, R12	Dregs Sources	2.00E-04	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources -Green Liquor Clarifier Vent Mill D. Emission factor is the sum of o-Xylenes plus m,p-Xylenes emission factors. A 0.3 factor is applied.	22.2	T CaO/hr	1.33E-03	1.68E-04
14-20-2020, 14-20-2085	R53, R58	East/West Slaker Area	6.20E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.31 Causticizing Area Sources - Causticizer/Salker Combination Emissions. A 1.5 factor is applied. Xylenes (mixed isomers) emission factor is the sum of o-Xylenes plus m,p-Xylenes emission factors.	22.2	T CaO/hr	2.06E-03	2.60E-04
08-70-0900, 14-25-0450, 14-25-0800, 14-25-0050, 14-25-0150	R16, R17, R07, R22, F11	No. 3 and 4 WL Clarifiers and Tanks	6.20E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Sources - White Liquor Pressure Filter Vent Mill F (ND=0). A 2.5 factor is applied. Xylenes (mixed isomers) emission factor is the sum of o-Xylenes plus m,p-Xylenes emission factors.	22.2	T CaO/hr	3.44E-03	4.33E-04
14-30-0310	R46	Lime Mud Mix Tank	3.00E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Additional Causticizing Area Sources, Table 4.32 p.136, Lime Mud Dilution Tank Vent Mill D p. 136. Xylenes (mixed isomers) emission factor is the sum of o-Xylenes plus m,p-Xylenes emission factors.	22.2	T CaO/hr	6.66E-04	8.39E-05
14-30-1450	R15	Lime Mud Storage Tank	7.10E-06	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Sources - Lime Mud Mix Tank Vent Mill D, p. 136. Xylenes (mixed isomers) emission factor is the sum of o-Xylenes plus m,p-Xylenes emission factors.	22.2	T CaO/hr	1.58E-04	1.98E-05
14-30-350	R47, R49	No. 2 and 3 Lime Mud Wash Tank	2.94E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.32 - Additional Causticizing Area Sources - Lime Mud Pressure Filter Vent Mill D p. 136.	22.2	T CaO/hr	6.52E-04	8.22E-05
14-30-5000, 14-30-6000	R50	East and West Lime Mud Filters	3.40E-05	lb/T CaO	NCASI Pulp and Paper Database TB 973 Table 4.31 - Lime Mud Precoat Filters	22.2	T CaO/hr	7.54E-04	9.50E-05

TABLE 46
XYLENE 1-HOUR POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
14-60-3000	R01A	No. 5 Lime Kiln - TCaO	2.14E-03	lb/T CaO	NCASI TB 973 Table 4.25, Table 8.1, or Table 9.9 - Emissions from Kraft Lime Kilns, p. 110. AP-42 used where NCASI factors are not available. Xylenes (mixed isomers) emission factor is the sum of o-Xylenes plus m,p-Xylenes emission factors.	22.2	T CaO/hr	4.75E-02	5.98E-03
		Cooler -1 Feed Liquor	1.01E-04	lb/hr	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor	1.00	hr/hr	1.01E-04	1.27E-05
		Filter - 1 Lignin	5.99E-07	lb/ODTL	Conservatively assume emissions from filters equate to weak black liquor tank. ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000. Emission factors are production based and thus are conservatively not time weighted based on actual venting only 15% of the time.	4.40	ODTL/hr	2.64E-06	3.32E-07
		Tank - 2 Lignin Filter Cloth Wash	5.99E-07	lb/ODTL	ETG No. 0783, Dec 1999-Jan 2000, Stack Testing on WBL Tanks. Because emissions factors are production based, they are conservatively not time weighted based on actual venting only 15% of the time.	4.40	ODTL/hr	2.64E-06	3.32E-07
		Conveyors - #1 Lignin Filter & #1 Lignin Filter Incline	1.20E-06	lb/ODTL	Conservatively assume emissions from filters equate to weak black liquor tank. Multiply emissions by 2 for two conveyors. ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000.	4.40	ODTL/hr	5.28E-06	6.65E-07
		LRP Dilute Tanks	4.19E-06	lb/ODTL	ETG Stationary Source Sampling Report No. 0783, December 1999-January 2000. Emission factor displayed is for 7 tanks total. Emission factors used for the primary cloth wash and filtrate tanks are production based and thus are conservatively not time weighted based onactual venting periods of only 15% of the time.	4.40	ODTL/hr	1.85E-05	2.33E-06
		LRP Acidification Tank (2800)	2.18E-03	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 1 tank.	4.40	ODTL/hr	9.59E-03	1.21E-03
09-27-3800	LSRPSCRUB				Total from Caustic Scrubber			9.72E-03	1.22E-03
64-25-0290	PO01A-1	No. 1 HFB - No. 2	1.00E-05	lb/MMBtu	AP-42, Fifth edition, Chapter 1, Section 3, Supplement E. Factor units are lb/10^3 gal	1087.4	MMBtu/hr	1.09E-02	1.37E-03
	PO13A	Carbonator - Feed Liquor	2.01E-06	lb/hr	NCASI TB 973 "A Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data For Pulp and Paper Mill Sources - A Second Update" 2/2010. Table 4.19 - Strong or Heavy Black Liquor Median, 98% control, 1 tank. Xylenes (mixed isomers) emission factor is the sum of o-Xylenes plus m,p-Xylenes emission factors.	1.00	hr/hr	2.01E-06	2.53E-07

TABLE 46
XYLENE 1-HOUR POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
	PO13A	No. 2 HFB - No. 2	1.00E-05	lb/MMBtu	AP-42, Fifth edition, Chapter 1, Section 3, Supplement E. Factor units are lb/10^3 gal	947	MMBtu/hr	9.47E-03	1.19E-03
	PO13A	LRP Acidification Tanks (2700 &2770)	8.71E-05	lb/ODTL	NCASI TB973 Table 4.15 Median Values for Pulp Mill LVHC Sources. Assumes ODT=ADT/0.9, 98% control, 2 tanks. Controlled by HVLC System	4.40	ODTL/hr	3.84E-04	4.83E-05
	PO13A	No. 2 HFB LVHC Combustion	6.20E-06	lb/ADTUBP	NCASI TB 973 Table 4.18 - Kraft Mill NCG Thermal Oxidizer. LVHC gases are burned through No. 2 HFB. The White Liquor Scrubber then No. 5 Lime Kiln are used as backups. This is the sum of o-xylene and m,p-xylenes.	101	ADTUBP/hr	6.27E-04	7.90E-05
	PO13A	No. 2 HFB HVLC Combustion	1.45E+00	lb/hr	NCASI TRI Guidance 2013 converted to lb/hr basis using annual production and hours of operation with 98% control.	1.0	hr/hr	1.45E+00	1.83E-01
65-25-0310	Total from No. 2 Hog Fuel Boiler							1.46E+00	1.84E-01
CD-65-60-1010	Total from Thermal Oxidizer and HVLC							1.45E+00	1.83E-01
14-30-5040, 14-30-6040	R65, R66	East and West Lime Mud Vacuum System	2.48E-05	lb/T CaO	NCASI Technical Bulletin No. 973, February 2010, Table 4.31 - Causticizing Area Sources - Precoat Filter Vacuum Pump Exhaust p. 134. A 3.0 factor is applied.	22.2	T CaO/hr	1.65E-03	2.08E-04
53-40-0130	FPDE	Fine Paper Diesel Engine	2.85E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	2.1	MMBtu/hr	5.99E-04	7.54E-05
14-60-3000-1	LKDE	Lime Kiln Diesel Backup Engine	2.85E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	5.1	MMBtu/hr	1.45E-03	1.82E-04
53-40-0140	WNCEE	W.N. Cr., East Diesel Fire Pump Engine	2.85E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	2.1	MMBtu/hr	5.99E-04	7.54E-05
53-40-0145	WNCWE	W.N. Cr., West Diesel Fire Pump Engine	2.85E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	2.7	MMBtu/hr	7.78E-04	9.80E-05
73-05-4570	RUNEA	Runoff Coll Sewer Lift Station Diesel Backup Engine	2.85E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	1.4	MMBtu/hr	3.99E-04	5.03E-05
73-05-4580	SEWEA	Fiber Line Sewer Lift Station Diesel Backup Engine	2.85E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	1.4	MMBtu/hr	3.99E-04	5.03E-05
71-95-0500	COMMEA	Communications Back up Engine	2.85E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	5.8	MMBtu/hr	1.64E-03	2.07E-04
TEMPSEW	TEMPSEW	Temporary Sewer Pump Engine	2.85E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	2.4	MMBtu/hr	6.73E-04	8.48E-05
TEMPGEN	TEMPGEN	Temporary Generator	2.85E-04	lb/MMBtu	AP-42 Section 3.3, Table 3.3-2.	0.006	MMBtu/hr	1.71E-06	2.15E-07

TABLE 46
XYLENE 1-HOUR POTENTIAL EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

Emission Source ID	Model ID	Source Description	Emission Factor (lb/unit)	Units	EF Basis	Activity Factor	Units	Emission Rate (lb/hr)	Emission Rate (g/s)
TEMP-CHIP	TEMPCHIP	Temporary Log Chipper	1.35E-06	lb/hp-hr	AP-42 Section 3.4, Table 3.4-3	1000	hp-hr/hr	1.35E-03	1.70E-04
32-10-0140	P09A-F	NC-2 HD and LD Stock Tanks	2.00E-05	lb/ODTUBP	NCASI Technical Bulletin No. 679, October 1994, VOC Emissions from Pulp and Paper Mill Sources, Part V - Kraft Mill Bleach Plants, pg. 104 Table V.B.1, Mill A, D Washer Vent. A 1.5 factor is applied.	24.9	ODTUBP/hr	7.48E-04	9.43E-05
32-40-1560	NC1&2	NC-2 Paper Machine	2.29E-03	lb/ADTFP	Table 4.34 of NCASI TB 973; PM Bleached Kraft	25	ADTFP/hr	5.73E-02	7.21E-03
45-93-0100	NC5	NC-5 Paper Machine	2.29E-03	lb/ADTFP	Table 4.34 of NCASI TB 973; PM Bleached Kraft	69	ADTFP/hr	1.59E-01	2.00E-02
45-10-0005	P27A-H	NC-5 HD and LD Stock Tanks	2.00E-05	lb/ODTUBP	NCASI Technical Bulletin No. 679, October 1994, VOC Emissions from Pulp and Paper Mill Sources, Part V - Kraft Mill Bleach Plants, pg. 104 Table V.B.1, Mill A, D Washer Vent. A 1.5 factor is applied.	64.2	ODTUBP/hr	1.92E-03	2.42E-04

TABLE 47
POTENTIAL FACILITY-WIDE TOXIC AIR POLLUTANT EMISSION RATES
DOMTAR PAPER COMPANY, PLYMOUTH, NC

TAP	Averaging Period	Total Potential Emissions (lb/averaging period)	TPER (lb/averaging period)	Modeling Required (Y/N)?
Acetaldehyde	1-Hour	11.08	6.8	Y
Acrolein	1-Hour	0.53	0.02	Y
Ammonia	1-Hour	24.23	0.68	Y
Arsenic (& Cmpds)	Annual	67.35	0.053	Y
Benzene	Annual	6174	8.1	Y
Benzo(a)pyrene	Annual	0.73	2.2	N
Beryllium	Annual	62.28	0.28	Y
Butadiene, 1,3-	Annual	264.40	11	Y
Cadmium	Annual	92.18	0.37	Y
Carbon disulfide	24-Hour	64.59	3.90	Y
Carbon tetrachloride	Annual	1,283	460	Y
Chlorine	1-Hour	0.05	0.23	N
	24-Hour	1	0.79	Y
Chlorobenzene	24-Hour	1.49	46	N
Chloroform	Annual	8,430	290	Y
Chromium VI (soluble chromate compounds)	24-Hour	0.39	0.013	Y
Cresol	1-Hour	6.254	0.56	Y
Di(2-ethylhexyl)phthalate	24-Hour	0.04	0.63	N
1,2 Dichloroethane (Ethylene Dichloride)	Annual	637	260	Y
1,4 Dichlorobenzene	1-Hour	0.004	16.8	N
Fluoride	24-Hour	22.3	0.34	Y
	1-Hour	0.93	0.064	Y
Formaldehyde	1-Hour	3.01	0.04	Y
n-Hexane	24-Hour	147.37	23	Y
Hexachlorodebenzo-p-dioxin	Annual	1.94E-05	5.10E-03	N
Hydrogen Chloride	1-Hour	11.45	0.18	Y
Hydrogen Fluoride	24-Hour	3.65	0.63	Y
	1-Hour	0.15	0.064	Y
Hydrogen Sulfide	24-Hour	719.4	1.7	Y
Manganese (& Cmpds)	24-Hour	10.33	0.63	Y
Mercury	24-Hour	0.21	0.013	Y
Methyl Ethyl Ketone	24-Hour	47	78	N
	1-Hour	1.9	22.4	N
Methyl Isobutyl Ketone	24-Hour	35.89	52.00	N
	1-Hour	1.49	7.6	N
Methyl Chloroform	24-Hour	2.13	250.0	N
	1-Hour	0.09	64.0	N
Methyl Mercaptan	1-Hour	8.13	0.013	Y
Methylene Chloride	Annual	4,167	1600	Y
	1-Hour	0.48	0.39	Y
Nickel (metal)	24-Hour	0.41	0.13	Y
Nitric Acid	1-Hour	0.25	0.256	N
Phenol	1-Hour	3.54	0.24	Y
Styrene	1-Hour	1.60	2.7	N
Sulfuric Acid	24-Hour	67	0.25	Y
	1-Hour	2.81	0.025	Y
1,1,2,2-Tetrachloroethane	Annual	3.97	430	N
Tetrachloroethylene (Perchloroethylene)	Annual	1437.64	13000	N
Toluene	24-Hour	50.79	98.0	N
	1-Hour	2.12	14.4	N
Trichloroethylene	Annual	1,660	4000	N
Trichlorofluoromethane	1-Hour	3.86E-02	140	N
Vinyl Chloride	Annual	333.46	26	Y
Vinylidene Chloride	24-Hour	2.09E-01	2.5	N
Xylene	24-Hour	47.47	57	N
	1-Hour	1.97	16.4	N

NOTE:
TPER = TAP Permitting Emission Rate
*These compounds have not had changes to emissions that exceed requested optimized permit limits from prior modeling analyses, therefore will not require modeling.