Prevention of Significant Air Quality Deterioration Review

Preliminary Determination

July 2015

Facility Name: Graphic Packaging International, Inc. – Macon Mill
City: Macon
County: Bibb
AIRS Number: 04-13-021-00001
Application Number: 23156
Date Application Received: March 11, 2015

Review Conducted by:
State of Georgia - Department of Natural Resources
Environmental Protection Division - Air Protection Branch
Stationary Source Permitting Program

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SUMMARY

The Environmental Protection Division (EPD) has reviewed the application submitted by Graphic Packaging International, Inc. – Macon Mill (hereafter GPI) for a permit to increase actual production of the No. 1 Paper Machine, the Recycle Mill, and other equipment at the Macon Mill. It is important to note that the proposed project does not alter the design capacity of the No. 1 Paper Machine, but allows the machine to meet more stringent quality standards in place for certain European customers. The proposed project will modify the No. 1 Paper Machine, Recycle Mill, and associated emission units, and install and operate a new high density (HD) pulp storage tank. GPI – Macon Mill is anticipating that the overall project will result in the additional production of 42,000 air dried tons of finished paper (ADTFP) per year from the No. 1 Paper Machine. A significant portion of the pulp required to produce the additional paperboard will be from recycled fiber.

The proposed project will result in an increase in emissions from the facility. The sources of these increases in emissions include the No. 1 Paper Machine, Recycle Mill, and associated emission units, and the installation and operation of a new high density (HD) pulp storage tank.

The modification of the Graphic Packaging International, Inc. – Macon Mill due to this project will result in an increase in emissions for Total PM_{10}, SO_2, CO, TRS, fluorides, and lead. A Prevention of Significant Deterioration (PSD) analysis was performed for the facility for all pollutants to determine if any increase was above the "significance" level. The CO emissions increase was above the PSD significant level threshold.

The Graphic Packaging International, Inc. – Macon Mill is located in Bibb County, which is classified as "attainment" or "unclassifiable" for SO_2, $PM_{2.5}$ and PM_{10}, NO_X, CO, and ozone (VOC).

The EPD review of the data submitted by Graphic Packaging International, Inc. – Macon Mill related to the proposed modifications indicates that the project will be in compliance with all applicable state and federal air quality regulations.

It is the preliminary determination of the EPD that the proposal provides for the application of Best Available Control Technology (BACT) for the control of CO, as required by federal PSD regulation 40 CFR 52.21(j).

It has been determined through approved modeling techniques that the estimated emissions will not cause or contribute to a violation of any ambient air standard or allowable PSD increment in the area surrounding the facility. It has further been determined that the proposal will not cause impairment of visibility or detrimental effects on soils or vegetation. Any air quality impacts produced by project-related growth should be inconsequential.

This Preliminary Determination concludes that an Air Quality Permit should be issued to Graphic Packaging International, Inc. – Macon Mill for the modifications necessary to increase actual production of the No. 1 Paper Machine, the Recycle Mill, and other equipment. Various conditions have been incorporated into the current Title V operating permit to ensure and confirm compliance with all applicable air quality regulations. A copy of the draft permit amendment is included in Appendix A. This Preliminary Determination also acts as a narrative for the Title V Permit.

1.0 INTRODUCTION – FACILITY INFORMATION AND EMISSIONS DATA

On March 5, 2015, Graphic Packaging International, Inc. – Macon Mill (hereafter GPI) submitted an application for an air quality permit to increase actual production of the No. 1 Paper Machine, the Recycle Mill, and other equipment. The facility is located at 100 Graphic Packaging International Way in Macon, Bibb County.

Existing PSD Classification
GPI is classified as a major source under PSD permitting program because it emits more than 100 tpy of a regulated pollutant. Pulp and paper mills are on the list of 28 industry categories subject to the 100 tpy major source thresholds. The facility has undergone a PSD review at least four times (1978, 1990, 1996, and 2011) and a PCP review once (2001). The following limits are the result of the PSD and PCP reviews.

- The Nos. 1 and 2 Lime Kilns are limited to 3.5 lb/ton of calcium oxide (CaO) produced for nitrogen oxides (NO_X) (BACT - 1996).
- The Nos. 1 and 2 Lime Kilns are limited to 0.064 gr/dscf of particulate matter (PM) corrected to 10% oxygen when gaseous fossil fuel is burned, or 0.13 gr/dscf corrected to 10% oxygen when liquid fossil fuel is burned (1996). The original PSD limit was 0.067 gr/dscf; however, it was determined that 40 CFR 60 Subpart BB incorrectly converted 0.15g/dscm to 0.067 gr/dscf. The correct conversion is 0.064 gr/dscf, as seen in 40 CFR 63 Subpart MM. Therefore, these limits did not actually change; they were simply corrected.
- The No. 3 Recovery Boiler is limited to 54.4 lb/hour (or 0.027 gr/dscf of PM corrected to 8% oxygen) of PM (BACT - 1990). This limit was originally set at 39.2 lb/hr, but was corrected in May 1992 when it was determined that the value was calculated at 3% oxygen instead of 8% oxygen.
- The No. 3 Recovery Boiler is limited to 196 lb/hour of sulfur dioxide (SO2) (PCP - 2001).
- The No. 3 Recovery Boiler is limited to 202.1 lb/hour (or 120 ppm on a dry basis corrected to 8% oxygen) of nitrogen oxides (NOX)(BACT - 1990).
- The No. 3 Recovery Boiler is limited to 205.1 lb/hour of carbon monoxide (CO) (BACT - 1990). This limit was originally set at 146.5 lb/hr, but was corrected in May 1992 when it was determined that the value was calculated at an incorrect molecular weight (20 instead of 28).
- The No. 3 Recovery Boiler is limited to 11.0 lb/hour (or 5 ppm on a dry basis corrected to 8% oxygen) of total reduced sulfur (TRS) compounds (PSD).
- The Smelt Tank is limited to 10.5 lb/hour (or 0.12 lb/ton of black liquor solids) of PM (BACT - 1996).
- The Smelt Tank is limited to 1.5 lb/hour (or 0.0168 lb/ton of black liquor solids) of TRS (PSD).
- The No. 2 Biomass Boiler is limited to 0.1 lb/MMBTU heat input PM (BACT –1978).
- The No. 2 Biomass Boiler is limited to 20% opacity through continuous monitoring of the pressure drop and scrubber flow rate through the scrubber (BACT –1978).
- The No. 3 Biomass Boiler is limited to 0.15 lb/MMBtu heat input CO on a 30-day rolling average (BACT – 2011).
- The No. 3 Biomass Boiler is limited to 407.3 tpy of CO (BACT – 2011).

The following PSD limits have been subsumed by later limits.

- The No. 2 Biomass Boiler was initially limited to 1.2 lb SO_2/MMBtu heat input for solid fossil fuels. However, as other fuels were permitted to be burned in the boiler, the limit has been changed to the prorated equation in 40 CFR 60.43(b), which effectively subsumes the PSD limit. (BACT –1978).
- The No. 2 Biomass Boiler was initially limited to 0.7 lb NO_X/MMBtu heat input for solid fossil fuels. However, as other fuels were permitted to be burned in the boiler, the limit has been changed to the prorated equation in 40 CFR 60.44(b), which effectively subsumes the PSD limit. (BACT –1978).

The following limits were taken to avoid PSD review.

- The Nos. 1 and 2 Lime Kilns are limited to 41.6 lb/hour of SO_2.
- The No. 3 Biomass Boiler is limited to 404.6 tpy of NOx (PSD Avoidance limit established in Amendment No. 2631-021-0001-V-03-2).
- The No. 3 Biomass Boiler is limited to 13.2 tpy of sulfuric acid mist (PSD Avoidance limit established in Amendment No. 2631-021-0001-V-03-2).
- The No. 3 Biomass Boiler is limited to 0.030 lb/MMBtu heat input PM (PSD Avoidance limit established in Amendment No. 2631-021-0001-V-03-2).
- The No. 3 Biomass Boiler is limited to 0.040 lb/MMBtu heat input PM 2.5 (PSD Avoidance limit established in Amendment No. 2631-021-0001-V-03-2).
- The No. 3 Biomass Boiler is limited to 0.049 lb/MMBtu heat input PM10 (PSD Avoidance limit established in Amendment No. 2631-021-0001-V-03-2).

The following Case-by-Case MACT Avoidance limits have been removed by later permits:

- The No. 3 Biomass Boiler is limited to 9.9 tpy of HCl (112(g) Case-by-Case MACT Avoidance limit established in Amendment No. 2631-021-0001-V-03-2).
- The No. 3 Biomass Boiler is limited to 10/25 tpy of HAPs (112(g) Case-by-Case MACT Avoidance limit established in Amendment No. 2631-021-0001-V-03-2).

Table 1-1: Title V Major Source Status

Pollutant	Is the Pollutant Emitted?	If emitted, what is the facility's Title V status for the Pollutant?		
		Major Source Status	Major Source Requesting SM Status	Non-Major Source Status
PM	Yes	✓		
PM_{10}	Yes	✓		
$PM_{2.5}$	Yes	✓		
SO_2	Yes	✓		
VOC	Yes	✓		
NO_x	Yes	✓		
CO	Yes	✓		
TRS	Yes	✓		
H_2S	Yes	✓		
Individual HAP	Yes	✓		
Total HAPs	Yes	✓		
Total GHGs	Yes	✓		

Table 1-2 below lists all current Title V permits, all amendments, 502(b)(10) changes, and off-permit changes, issued to the facility, based on a review of the "Permit" file(s) on the facility found in the Air Branch office.

Table 1-2: List of Current Permits, Amendments, and Off-Permit Changes

Permit Number and/or Off-Permit Change	Date of Issuance/ Effectiveness	Purpose of Issuance
2631-021-0001-V-04-0	September 11, 2014	Title V Renewal
2631-021-0001-V-04-1	March 6, 2015	Modifications to the No. 2 Power Boiler

Based on the proposed project description and data provided in the permit application, the estimated incremental increases of regulated pollutants from the facility are listed in Table 1-3 below:

Table 1-3: Emissions Increases from the Project

Pollutant	Baseline Years	Projected Actuals Emissions Increase (tpy)	PSD Significant Emission Rate (tpy)	Subject to PSD Review
PM	Jan 2007 – Dec 2008	-7.27	25	No
PM_{10}	Jan 2007 – Dec 2008	-3.28	15	No
VOC	Jan 2013 – Dec 2014	-23.4	40	No
NO_X	Jan 2013 – Dec 2014	-150.2	40	No
CO	Jan 2007 – Dec 2008	153.7	100	Yes
SO_2	Jan 2007 – Dec 2008	0.88	40	No
TRS	Jan 2013 – Dec 2014	0.98	10	No
Pb	Jan 2007 – Dec 2008	0.00285	0.6	No
Fluorides	Jan 2007 – Dec 2008	0.00327	3	No
H_2S	Jan 2013 – Dec 2014	-1.77	10	No
SAM	Jan 2013 – Dec 2014	-0.67	7	No

The definition of baseline actual emissions is the average emission rate, in tons per year, at which the emission unit actually emitted the pollutant during any consecutive 24-month period selected by the facility within the 10-year period immediately proceeding the date a complete permit application was received by EPD. The net increases were calculated by subtracting the past actual emissions (based upon the annual average emissions from January 2007 – December 2008 and January 2013 – December 2014) from the future projected actual emissions of the No. 1 Paper Machine and other key associated mill equipment. Table 1-4 details this emissions summary.

For the estimation of the baseline to projected actual emissions increase for existing units, the calculation exclude emissions that Could Have Been Accommodated (CHA) prior to the project, as detailed in Section 3.1.6 of the application. For each emission unit, GPI determined the maximum monthly emissions of each pollutant within the 24-month pollutant specific baseline period. This maximum monthly emissions rate was then presumed to have occurred continuously for a 12-month period to establish the CHA emissions rate to be excluded from the projected actual emissions estimate for the modified and larger associated units. Please note that for a given pollutant, the month in which the maximum monthly emissions occurs may differ between emission units. A summary of the baseline and CHA emissions is provided in Table 3-3 of Application No. 23156.

The projected actual emissions are calculated as the sum of the baseline actual emissions and the estimated emissions increases. In most cases, the emissions increases are calculated by multiplying the projected production increase for a given emission unit by a derived projected actual emission factor. The projected production increase for the No. 1 Paper Machine is 42,000 ADTFP/yr. For all other emission units, GPI derived the projected production increase by utilizing production ratios derived from historic mill operating data. GPI estimated the project emissions increase and projected actual emissions using two different production scenarios: (1) assuming that 90% of the additional pulp required to produce the additional paperboard is derived from recycled fiber and 10% of the additional pulp is derived from virgin fiber and (2) assuming that 50% of the additional pulp required is derived from recycled fiber and 50% of the additional pulp is derived from virgin fiber.

GPI selected the same emission factors for the calculation of baseline emissions and the project emissions increase for emission factors derived from literature data or from mill specific engineering assumptions such as the No. 1 Paper Machine coating emission factors or the No 2 Biomass Boiler CO, HCl, and Hg emission factors derived from limited engineering stack tests. If annual emission factor data such as stack test data or fuel sulfur data was used to estimate baseline emissions, GPI derived a projected actual emission factor based on the average annual emission factor plus one standard deviation. If CEMS data was used for baseline emissions, GPI calculated the emissions increase by multiplying the maximum rolling 12-month emissions from the 10-year review period by the percent increase in production for the emission unit. The percent increase in production was calculated by dividing the projected actual production derived from production ratios by the maximum annual average production from 2005-2014.

Table 3-4 from Application No. 23156 summarizes the calculation of the projected actual emissions and the project emissions increases for the modified and key associated emission units assuming that 90% of the additional pulp required to produce the additional paperboard is derived from recycled fiber and 10% of the additional pulp is derived from virgin fiber. The percent increase in production was calculated by dividing the projected actual production derived from production ratios by the maximum annual average production from 2005-2014. Table 3-5 from Application No. 23156 summarizes the calculation of the projected actual emissions and the project emissions increases for the modified and key associated emission assuming that 50% of the additional pulp required is derived from recycled fiber and 50% of the additional pulp is derived from virgin fiber. Table 3-6 from Application No. 23156 summarizes the maximum emissions increase over the baseline actual emissions, maximum projected actual emissions, and maximum project emissions increase for the two scenarios.

Table 1-4 below summarizes the maximum emissions increase of the No. 1 Paper Machine and Key Associated Equipment for the two scenarios (90/10 or 50/50 of Recycled Fiber/Virgin Fiber).

Table 1-4: Net Change in Emissions – Modified and Key Associated Units (Maximum of the Two Scenarios)

Pollutant	Increase from No. 1 Paper Machine and Key Associated Equipment (modified and key associated mill equipment)			Total Increase (tpy)
	Baseline Emissions (tpy)	Emissions that Could Have Been Accommodated (tpy)	Projected Future Actual (tpy)	
PM/PM_{10}	359.3	385.2	383.4**	-1.73
VOC	399.5	466.5	440.1**	-26.4
NO_X	958.9	1,163	1,021**	-142
CO	3,678	3,929	4,082*	153.7
SO_2	57.0	57.5	59.8**	2.25
TRS	19.2	22.7	20.3**	-2.39
Pb	0.0818	0.0897	0.0896*	-0.0000406
Fluorides	0.0348	0.0371	0.0404*	0.00327
H_2S	10.1	12.1	10.6**	-1.53
SAM	3.58	4.28	3.72**	-0.56

*90%Recycled Fiber/10% Virgin Fiber
**50%Recycled Fiber/50% Virgin Fiber

For the new HD Pulp Storage Tank, the project emissions increases are equivalent to the potential emissions of the tank since the baseline actual emissions for new units are zero. GPI utilized emission factors from the 2013 NCASI Emission Factor database in terms of pound per hour (lb/hr) for the new HD Pulp Storage Tank to calculate the potential emissions. The VOC, TRS, and Total HAP emission factors are calculated as the sum of individual VOC, TRS, and Total HAP emission factors, respectively. The potential emissions are estimated assuming the tank is operated 8,760 hours per year (hr/yr). Table 1-5 summarizes the potential emissions from the new HD pulp storage tank.

Table 1-5: New HD Pulp Storage Tank Potential Emissions

Pollutant	Potential Emissions (tpy)
VOC	2.83
TRS	2.59
H_2S	0.0165
Total HAP	0.20

In most cases, the emissions increases for the other smaller associated emission units are calculated by multiplying the projected production increase for a given emission unit by an emission factor in terms of lb/ton of production. GPI derived the projected production increase by utilizing production ratios derived from historic mill operating data. GPI estimated the project emissions increase and projected actual emissions using two different production scenarios: (1) assuming that 90% of the additional pulp required to produce the additional paperboard is derived from recycled fiber and 10% of the additional pulp is derived from virgin fiber and (2) assuming that 50% of the additional pulp required is derived from recycled fiber and 50% of the additional pulp is derived from virgin fiber.

If emission factors for a given emission unit are in units of lb/hr, GPI calculated the emissions increase by multiplying the potential annual emissions by the percent increase in production for the emission unit. The percent increase in production was calculated by dividing the projected actual production derived from production ratios by the maximum annual average production from 2005-2014.

The individual emissions increases from all other smaller associated units were combined by pollutant to produce a summary of emissions increases for the proposed project. Table 1-6 below summarizes the emissions increases from the smaller associated units.

Table 1-6: Other Associated Emission Unit Increases

Pollutant	Emissions Increase (90% R/10% V) (tpy)	Emissions Increase (50% R/50% V) (tpy)	Maximum Emissions Increase (tpy)
PM/PM_{10}	1.39	2.57	2.57
$PM_{2.5}$	1.35	2.53	2.53
VOC	1.20	4.68	4.68
TRS	1.27	6.12	6.12
H_2S	0.09	0.19	0.19
Total HAP	0.38	0.67	0.67
CO_2e	24.7	123.5	123.5

Table 1-7 below summarizes the project net emissions increase from the No. 1 Paper Machine and Associated Equipment (modified and key associated units), other associated emission units, and the new HD Pump Storage Tank potential emissions. The maximum emissions from the two scenarios (50/50 or 90/10 Recycled Fiber/Virgin Fiber) were used.

Table 1-7: Net Change in Emissions Due to the Major PSD Modification

Pollutant	Increase from the No. 1 Paper Machine and Key Associated Equipment (tpy)			Other Associated Units Increase (tpy)	Increase from New HD Pump Storage Tank (tpy)	Total Increase (tpy)
	Baseline Emissions (tpy)	Emissions that Could Have Been Accommodated (tpy)	Projected Future Actual (tpy)			
PM/PM_{10}	359.3	385.2	383.4	2.57	--	0.77
VOC	399.5	466.5	440.1	4.68	2.83	-18.9
NO_X	958.9	1,163	1,021	--	--	-142
CO	3,678	3,929	4,082	--	--	153.7
SO_2	57.0	57.5	59.8	--	--	2.3
TRS	19.2	22.7	20.3	6.12	2.59	6.29
Pb	0.0818	0.0897	0.0896	--	--	-0.0001
Fluorides	0.0348	0.0371	0.0404	--	--	0.0029
H_2S	10.1	12.1	10.6	0.19	0.0165	-1.29
SAM	3.58	4.28	3.72	--	--	-0.56

The emissions calculations for Tables 1-1 through 1-7 can be found in detail in the facility's PSD application (see Appendix B – Detailed Emission Calculations and Section 3 – Emissions Calculations Methodology of Application No. 23156). These calculations have been reviewed and approved by the Division.

Based on the information presented Tables 1-1 through 1-7 above, GPI's proposed modification, as specified per Georgia Air Quality Application No. 23156, is classified as a major modification under PSD because the potential emissions of CO is 153.7 tpy, which exceeds the PSD Significant Emission Rate of 100 tpy.

Through its new source review procedure, EPD has evaluated GPI's proposal for compliance with State and Federal requirements. The findings of EPD have been assembled in this Preliminary Determination

2.0 PROCESS DESCRIPTION

According to Application No. 23156, Graphic Packaging International, Inc. – Macon Mill has proposed for a series of proposed modifications to the No. 1 Paper Machine and other associated mill equipment to increase actual production in order to improve the overall paperboard quality and productivity. It is important to note that the proposed project does not alter the design capacity of the No. 1 Paper Machine, but allows the machine to meet more stringent quality standards in place for certain European customers. The proposed modifications will be implemented during annual mill outages over the next four years. GPI currently conducts mill outages in September of each year.

The proposed project will modify existing equipment at the Macon Mill including the No. 1 Paper Machine, the Recycle Mill, blow heat recovery system for the Batch (chip) Digesters, and the stock preparation and coatings and additives equipment associated with the operation of the No. 1 Paper Machine. GPI is also planning to install an additional HD pulp storage tank with a capacity of 500 tons to allow for additional storage of pulp.

The changes to the No. 1 Paper Machine, the Recycle Mill, and the stock preparation and coatings and additives area will be implemented as a series of small projects over multiple mill outages. The specific projects are not anticipated to affect the emissions profile of this equipment on a pound of emissions per ton (lb/ton) of production basis.

GPI is anticipating that the overall project will result in the additional production of 42,000 ADTFP/year from the No. 1 Paper Machine. GPI's objective is to produce 90% of the additional pulp required to produce the paperboard from recycled fiber generated by the Recycle Mill. GPI plans to produce the remainder of the additional pulp required from virgin fiber. In the pulp mill, efficiency improvements to the Batch Digesters will improve performance during warmer months.

No. 1 Paper Machine
The modifications to the No. 1 Paper Machine may include changes that improve the utilization of steam, the processing and refining of pulp, the removal of water from the sheet, and/or the efficiency in the application and drying of coatings. Any changes to the natural gas-fired coater dryers will improve the efficiency of the dryers and not result in an increase in gas usage per ton of production.

Recycle Mill
GPI plans to undertake significant improvements to the Recycle Mill as a majority of the pulp required to produce the additional paperboard will be generated by the Recycle Mill. These changes will also improve stock fractionation and allow GPI to produce short fibers from the Recycle Mill. The short fibers will be utilized to improve the smoothness of the sheet.

Chip Digester Blow Heat System
Wood chips at the Macon Mill are conveyed to the Batch Digesters for pulping where cooking chemicals and steam are added. Once pulping is complete, the content of the digesters is blown into blow tanks. NCG emitted from the Batch Digesters are combusted in either the No. 3 Recovery Boiler, No. 1 Lime Kiln, or No. 2 Lime Kiln. Residual steam from the blow tanks is recovered using a blow heat recovery system. Heat exchangers are used to recover heat from the blow heat accumulator, which absorbs a significant amount of heat during digester blows. As pulp production increases, the amount of heat that must be transferred from the accumulator also increases. GPI plans to upgrade, replace, and/or realign the current heat exchangers in the blow heat recovery system to improve heat transfer.

The changes to the Batch Digester blow heat recovery system that may be implemented would improve the performance of the Batch Digesters during warmer summer months. The changes will not result in an increase in the short term potential production, but may improve the potential annual production of the equipment.

Coatings and Additives Storage
GPI plans to install additional small, indoor raw material storage for coatings and additives at the Macon Mill to support the new coater and associated production increases.

New Pulp Storage Tank
GPI is proposing to install a new 500 ton HD pulp storage tank as part of the project. The additional pulp storage will allow the Macon Mill to reduce overall downtime of the No. 1 Paper Machine that can occur after mill upsets due to stock variability issues.

The Graphic Packaging International, Inc. – Macon Mill permit application and supporting documentation are included in Appendix A of this Preliminary Determination and can be found online at www.georgiaair.org/airpermit.

3.0 REVIEW OF APPLICABLE RULES AND REGULATIONS

State Rules

Georgia Rule for Air Quality Control (Georgia Rule) 391-3-1-.03(1) requires that any person prior to beginning the construction or modification of any facility which may result in an increase in air pollution shall obtain a permit for the construction or modification of such facility from the Director upon a determination by the Director that the facility can reasonably be expected to comply with all the provisions of the Act and the rules and regulations promulgated thereunder. Georgia Rule 391-3-1-.03(8)(b) continues that no permit to construct a new stationary source or modify an existing stationary source shall be issued unless such proposed source meets all the requirements for review and for obtaining a permit prescribed in Title I, Part C of the Federal Act [i.e., Prevention of Significant Deterioration of Air Quality (PSD)], and Section 391-3-1-.02(7) of the Georgia Rules (i.e., PSD).

Federal Rule - PSD

The regulations for PSD in 40 CFR 52.21 require that any new major source or modification of an existing major source be reviewed to determine the potential emissions of all pollutants subject to regulations under the Clean Air Act. The PSD review requirements apply to any new or modified source which belongs to one of 28 specific source categories having potential emissions of 100 tons per year or more of any regulated pollutant, or to all other sources having potential emissions of 250 tons per year or more of any regulated pollutant. They also apply to any modification of a major stationary source which results in a significant net emission increase of any regulated pollutant.

Georgia has adopted a regulatory program for PSD permits, which the United States Environmental Protection Agency (EPA) has approved as part of Georgia's State Implementation Plan (SIP). This regulatory program is located in the Georgia Rules at 391-3-1-.02(7). This means that Georgia EPD issues PSD permits for new major sources pursuant to the requirements of Georgia's regulations. It also means that Georgia EPD considers, but is not legally bound to accept, EPA comments or guidance. A commonly used source of EPA guidance on PSD permitting is EPA's Draft October 1990 New Source Review Workshop Manual for Prevention of Significant Deterioration and Nonattainment Area Permitting (NSR Workshop Manual). The NSR Workshop Manual is a comprehensive guidance document on the entire PSD permitting process.

The PSD regulations require that any major stationary source or major modification subject to the regulations meet the following requirements:

- Application of BACT for each regulated pollutant that would be emitted in significant amounts;
- Analysis of the ambient air impact;
- Analysis of the impact on soils, vegetation, and visibility;
- Analysis of the impact on Class I areas; and
- Public notification of the proposed plant in a newspaper of general circulation

Definition of BACT

The PSD regulation requires that BACT be applied to all regulated air pollutants emitted in significant amounts. Section 169 of the Clean Air Act defines BACT as an emission limitation reflecting the maximum degree of reduction that the permitting authority (in this case, EPD), on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such a facility through application of production processes and available methods, systems, and techniques. In all cases BACT must establish emission limitations or specific design characteristics at least as stringent as applicable New Source Performance Standards (NSPS). In addition, if EPD determines that there is no economically reasonable or technologically feasible way to measure the emissions, and hence to impose and enforceable emissions standard, it may require the source to use a design, equipment, work practice or operations standard or combination thereof, to reduce emissions of the pollutant to the maximum extent practicable.

EPA's NSR Workshop Manual includes guidance on the 5-step top-down process for determining BACT. In general, Georgia EPD requires PSD permit applicants to use the top-down process in the BACT analysis, which EPA reviews. The five steps of a top-down BACT review procedure identified by EPA per BACT guidelines are listed below:

Step 1: Identification of all control technologies;
Step 2: Elimination of technically infeasible options;
Step 3: Ranking of remaining control technologies by control effectiveness;
Step 4: Evaluation of the most effective controls and documentation of results; and
Step 5: Selection of BACT.

The following is a discussion of the applicable federal rules and regulations pertaining to the equipment that is the subject of this preliminary determination, which is then followed by the top-down BACT analysis.

New Source Performance Standards

NSPS require new, modified, or reconstructed sources to control emissions to the level achievable by the best-demonstrated technology as specified in the applicable provisions.

40 CFR 60 Subpart A, General Provisions
All affected sources are subject to the general provisions of NSPS Subpart A unless specifically excluded by the source-specific NSPS. Subpart A requires initial notification and performance testing, recordkeeping, monitoring, provides reference methods, and mandates general control device requirements for all other subparts as applicable.

40 CFR 60 Subpart Kb
NSPS Subpart Kb, Standards of Performance for Volatile Organic Liquid Storage Vessels For Which Construction, Reconstruction, or Modification is Commenced After July 23, 1984, regulates storage vessels with a capacity greater than 75 m^3 (19,813 gallons) that are used to store volatile organic liquids for which construction, reconstruction, or modification is commenced after July 23, 1984. Subpart Kb specifies that process tanks are not considered storage tanks and defines a process tank as:

> *… a tank that is used within a process (including a solvent or raw material recovery process) to collect material discharged from a feedstock storage vessel or equipment within the process before the material is transferred to other equipment within the process, to a product or by-product storage vessel, or to a vessel used to store recovered solvent or raw materials."*

The new HD pulp storage tank qualifies as a process tank under the NSPS Subpart Kb definition. Therefore, the new HD pulp storage tank is not subject to NSPS Subpart Kb.

40 CFR 60 Subpart BB and BBa, Kraft Pulp Mills

NSPS Subpart BB and NSPS Subpart BBa, Standards of Performance for Kraft Pulp Mills, provide performance standards for emission units at Kraft pulp mills, including the digester system, brownstock washer system, multiple-effect evaporator system, recovery boiler, smelt dissolving tank, lime kiln, and condensate stripper system (including the stripper condenser, feed tank, column, and condensate tanks). Applicability of NSPS Subpart BB is limited to emission units constructed, modified, or reconstructed after September 24, 1976, and on or before May 23, 2013. Units that are constructed, modified, or reconstructed after May 23, 2013 are subject to NSPS Subpart BBa.

At the Macon Mill, the Batch Digesters are presently subject to NSPS Subpart BB since they were constructed after 1976. Per 40 CFR 60.281(d), the digester system regulated by NSPS Subpart BB includes the associated blow tank(s) and flash tank(s). Therefore, the blow heat recovery system is an element of the digester system. Accordingly, to ascertain if the digester system will remain subject to NSPS Subpart BB, or become subject to the more recently promulgated NSPS Subpart BBa, it must be determined if a modification, as defined by the NSPS, or reconstruction has occurred.

Pursuant to the General Provisions of NSPS Subpart A, a modification is defined as follows:

> *(a)…any physical or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which a standard applies …*
> *(b) emission rate shall be expressed as kg/hr of any pollutant discharged into the atmosphere for which a standard is applicable.*

The changes to the blow heat recovery system for the Batch Digesters will improve performance of the digesters in the warmer summer months, but will not result in an increase in the hourly TRS emission rate; therefore, the Batch Digesters will not undergo an NSPS modification.

Pursuant to the General Provisions of NSPS Subpart A:

> *"Reconstruction" means the replacement of components of an existing facility to such an extent that:*
> *(1) The fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility, and*
> *(2) It is technologically and economically feasible to meet the applicable standards set forth in this part.*

The blow heat recovery system is a small component of the overall digester system, which is comprised of nine batch digesters in addition to the blow tank and blow heat recovery system components at the Macon Mill. Costs associated with the proposed work to the blow heat recovery system are not sufficient to trigger the reconstruction definition. Therefore, the Batch Digesters will not undergo reconstruction under NSPS Subpart BB as part of this project. Accordingly, the definition of an NSPS modification and reconstruction is not met; the Batch Digesters remain subject to the requirements of NSPS Subpart BB and the more recent requirements of NSPS Subpart BBa will not apply.

NSPS Subpart BB establishes a TRS emission limit of 5 parts per million by volume, dry (ppmvd) at 10% oxygen (O_2) for gases emitted from digester systems unless the gases are combusted in a subject lime kiln, recovery boiler, or other incinerator. As the gases from the Batch Digesters are combusted in either the No. 3 Recovery Boiler or the Nos. 1 or 2 Lime Kilns, the TRS emission standard is not applicable. The gases from the Batch Digester will continue to be controlled in a subject recovery boiler or lime kiln and the Batch Digesters are not undergoing a modification as defined under the NSPS General Provisions. Therefore, the Batch Digesters will continue to be subject to the requirements of NSPS Subpart BB.

National Emissions Standards For Hazardous Air Pollutants

NESHAP, federal regulations found in Title 40 Parts 61 and 63 of the CFR, are emission standards for HAP and are generally only applicable to major sources of HAP (facilities that exceed the major source thresholds of 10 tpy of a single HAP and 25 tpy of any combination of HAP) or specifically designated area sources. The Macon Mill is a major source of HAP. NESHAP apply to sources in specifically regulated industrial source classifications (Clean Air Act Section 112(d)) or on a case-by-case basis (Clean Air Act Section 112(g)) for facilities not regulated as a specific industrial source type. Pollutant specific NESHAP may also be applicable.

40 CFR 61 Subpart A, General Provisions

40 CFR 61 Subpart A provides the general provisions for which each source subject to another Part 61 subpart must comply unless specifically excluded by the applicable subpart. These provisions include initial notification and performance testing, recordkeeping, and monitoring requirements for all other subparts as applicable.

40 CFR 61 Subpart M, Asbestos

40 CFR 61 NESHAP Subpart M, National Emission Standards for Asbestos, applies to various industrial facilities that handle, process, or manufacture asbestos. 40 CFR 61.145, the only Subpart M provision potentially applicable to the Mill, applies to the owner or operator of a demolition or renovation activity where asbestos may be disturbed. When the Macon Mill engages in demolition or renovation activities involving asbestos, activities must be completed in full compliance with the provisions of 40 CFR 61.145. GPI does not anticipate any activities involving asbestos as part of the proposed construction activities.

40 CFR 63 Subpart A, General Provisions

All affected sources are subject to the general provisions of Part 63 NESHAP Subpart A unless specifically excluded by the source-specific NESHAP. Subpart A requires initial notification and performance testing, recordkeeping, monitoring, provides reference methods, and mandates general control device requirements for all other subparts as applicable.

40 CFR 63 Subpart S, Pulp and Paper Industry

40 CFR 63 Subpart S, NESHAP from the Pulp and Paper Industry, requires that various pulping process air emissions and process condensate emissions at pulp mills that are major HAP sources be collected and treated. The Macon Mill is a major source of HAP emissions, and therefore, is subject to the NESHAP Subpart S regulations. The Paper Machine, new HD storage tank, and Recycle Mill are not affected sources per Subpart S. GPI evaluated whether any changes in applicability of Subpart S would occur following the completion of changes to the blow heat recovery system on the Batch Digesters.

Pursuant to 40 CFR 63 Subpart S:

> *Digester system means each continuous digester or each batch digester used for the chemical treatment of wood or non-wood fibers. The digester system equipment includes associated flash tank(s), blow tank(s), chip steamer(s) not using fresh steam,* ***blow heat recovery accumulator(s)****, relief gas condenser(s), prehydrolysis unit(s) preceding the pulp washing system, and any other equipment serving the same function as those previously listed. The digester system includes any of the liquid streams or condensates associated with batch or continuous digester relief, blow, or flash steam processes.*

Digester systems are subject to standards for the pulping process condensates according to Subpart S. The pulping process condensates must be conveyed in a closed collection system designed and operated according to 40 CFR 63.446(d). The digester system will have no change in status as a new or existing unit; therefore, there will be no changes to currently applicable requirements.

40 CFR 63 Subpart MM, Pulp Mill Recovery Combustion Sources

40 CFR 63 Subpart MM, NESHAP for Chemical Recovery Combustion Sources at Kraft, Soda, Sulfite, and Stand-Alone Semichemical Pulp Mills, requires the reduction of HAP emissions from the chemical recovery combustion sources at pulp mills that are major HAP sources. There are no changes to the affected units under this subpart. Compliance of units subject to Subpart MM or any applicable regulations will not be altered as a part of this project.

State and Federal – Startup and Shutdown and Excess Emissions

Excess emission provisions for startup, shutdown, and malfunction are provided in Georgia Rule 391-3-1-.02(2)(a)7. Excess emissions from the No. 1 Paper Machine and other associated mill equipment associated with the proposed project would most likely result from a malfunction of the associated control equipment. The facility cannot anticipate or predict malfunctions. However, the facility is required to minimize emissions during periods of startup, shutdown, and malfunction.

Federal Rule – 40 CFR 64 – Compliance Assurance Monitoring

Under 40 CFR 64, the *Compliance Assurance Monitoring* Regulations (CAM), facilities are required to prepare and submit monitoring plans for certain emission units with the Title V application. The CAM Plans provide an on-going and reasonable assurance of compliance with emission limits. Under the general applicability criteria, this regulation applies to units that use a control device to achieve compliance with an emission limit and whose pre-controlled emissions levels exceed the major source thresholds under the Title V permitting program. Although other units may potentially be subject to CAM upon renewal of the Title V operating permit, such units are not being modified under the proposed project and need not be considered for CAM applicability at this time.

Therefore, this applicability evaluation only addresses the No. 1 Paper Machine, the Recycle Mill, and the new HD Pulp Storage, which do not employ any air pollution control devices. Gases from the Batch Digesters are controlled in either the No. 3 Recovery Boiler or the Nos. 1 or 2 Lime Kiln; however, no specific emission limits apply to the Batch Digesters. CAM is not applicable to any units that will be constructed or undergo physical changes as a result of this project, therefore, the CAM requirements are not triggered by the proposed modification.

4.0 CONTROL TECHNOLOGY REVIEW

The BACT requirement applies to each new or modified emission unit from which there are emissions increases of pollutants subject to PSD review. The proposed project is subject to PSD permitting for CO, and thus, subject to BACT for this pollutant. GPI plans to make modifications to existing equipment at the Macon Mill including the No. 1 Paper Machine, the Recycle Mill, blow heat recovery system for the Batch Digesters, and the stock preparation and coatings and additives equipment associated with the operation of the No. 1 Paper Machine. GPI is also planning to install an additional HD pulp storage tank with a capacity of 500 tons to allow for additional storage of pulp.

The new storage tank is not subject to BACT review as it is not an emission source of CO. Of the modified emission units, the only direct emission source of CO is the No. 1 Paper Machine, specifically the natural gas burners located in downstream of the coating section of the machine. While CO emissions are anticipated from multiple associated emission units within the Macon Mill, U.S. EPA has set a clear precedent that associated emission units are not subject to BACT review as part of the PSD permitting process. Therefore, the BACT analysis only considers the No. 1 Paper Machine.

The proposed project will result in emissions that are significant enough to trigger PSD review for the following pollutant: CO.

No. 1 Paper Machine (Source Code P00A) – Background

The papermaking operations at the Macon Mill consist of paper machines, coatings and additives systems, and storage silos. The first step is stock preparation, which involves pulp blending, diluting, refining, chemical addition and metering. Different combinations of pulp, chemicals, and additives are used to produce various grades of paper products. All pulp consumed in the paper machines is generated on-site in either the pulp mill or recycle plant.

Pulp is fed to the paper machines where it is dewatered to form a paper sheet. In-line coaters are used to produce coated paperboard. The coating that is applied to the paper sheet is prepared in a separate building. The coatings are applied to the substrate using rod and air knife coaters. The coating is dried by natural gas dryers.

The No. 1 Paper Machine is a complex source comprised of several distinct process areas along the overall length of the paper machine. These processes can be divided into the following general classes:

1. The “wet” end of the paper machine encompasses multiple processes involving mechanical manipulations of the wet pulp and forming the final shape of the product.
2. The “dry” end of the paper machine includes the steam drying cans/drums. Most paper machines are steam limited as this section removes the remaining moisture content through steam heat application.
3. The coating section of the machine then applies the required chemicals for production of the coated board. Following the coating application, direct-fired natural gas burners provide the heat necessary to promote drying of the applied coatings. This section is the source of CO emissions from the paper machine due to the natural gas combustion.

The No. 1 Paper Machine has 16 wet end exhaust stacks and 6 dry end exhaust stacks. As the source of CO emissions from the paper machine is related to combustion and drying, only the 6 dry end exhaust stacks are utilized in the significance analysis. In addition to the No. 1 Paper Machine, multiple additional point sources will realize an increase in emissions from the proposed project.

The modifications to the No. 1 Paper Machine may include changes that improve the utilization of steam, the processing and refining of pulp, the removal of water from the sheet, and/or the efficiency in the application and drying of coatings. Any changes to the natural gas-fired coater dryers will improve the efficiency of the dryers and not result in an increase in gas usage per ton of production.

The proposed project will result in an increase in actual emissions from the facility. The sources of these increases in emissions include the No. 1 Paper Machine, Recycle Mill, and associated emission units, and install and operate a new high density (HD) pulp storage tank. It is important to note that the proposed project does not alter the design capacity of the No. 1 Paper Machine, but allows the machine to meet more stringent quality standards in place for certain European customers. The proposed project will modify the No. 1 Paper Machine, Recycle Mill, and associated emission units, and the installation and operation of a new high density (HD) pulp storage tank. GPI – Macon Mill is anticipating that the overall project will result in the additional production of 42,000 air dried tons of finished paper (ADTFP) per year from the No. 1 Paper Machine. A significant portion of the pulp required to produce the additional paperboard will be from recycled fiber.

No. 1 Paper Machine – CO Emissions

Applicant's Proposal

The minimum control efficiency to be considered in a BACT assessment must result in an emission rate less than or equal to any applicable NSPS or NESHAP emission rate for the source. However, no NSPS or NESHAP currently establish CO emission limits for Paper Machines.

Step 1 - Identification of Potential Control Technologies

Using the RBLC search and permit review results, as well as general industry process knowledge and a review of technical literature, potentially applicable CO control technologies for emission sources comparable to the No. 1 Paper Machine were identified based on the principles of control technology and engineering experience for the following process types:

- Kraft Paper Machines (RBLC Code 30.241)
- Other Kraft Paper Making Processes (RBLC Code 30.249)
- Other Kraft Processes (RBLC Code 30.290)

The RBLC review supports general industry process knowledge and literature studies: installation of CO control strategies on paper machines is atypical. However, as Step 1 of the BACT process involves the identification of potential control strategies, the following candidate CO control options, utilized in other industries for different emission source types, include:

- Oxidation Catalyst
- Good Design and Operating Practices

The applicant identified and performed detailed discussion of the search for CO control technologies for the Paper Machine. Please refer to pages 5-5 through 5-8 of Volume I of the facility permit application for details.

Oxidation Catalyst

A catalytic oxidation system is designed such that the combustion gas passes over a catalyst bed (usually a noble metal such as palladium or platinum) where CO is converted into CO_2. This process requires temperatures above 500°F to achieve conversion of CO. To prevent fouling of the catalyst, catalytic oxidation units are typically installed downstream of any particulate control device, requiring significant auxiliary fuel input (such as natural gas) to raise the temperature of the flue gas to the required operational temperature.

Good Design and Operating Practices

A properly designed and operated combustion source acts as an oxidizer. Ensuring that the temperature and oxygen availability are adequate for complete combustion minimizes CO formation. This technique includes continued operation of the natural gas burners in their traditional fashion.

Step 2: Elimination of technically infeasible control option

The applicant evaluated technical feasibility of all control technologies that are stated in step 1 and determined that the following control technology was not technically feasible:

- Oxidation Catalyst

A control option is eliminated from consideration if there are process-specific conditions that would prohibit the implementation of the control or if the highest control efficiency of the option would result in an emission level that is higher than any applicable regulatory limits. A review of natural gas combustion processes in the RBLC utilizing catalytic oxidation indicates the employment of this control strategy for larger boilers and turbines. There are no cases identified where catalytic oxidation has been employed on natural gas burners employed in a larger manufacturing process unit such as a paper machine. One primary reason catalytic oxidation cannot be successfully employed on a unit such as the No. 1 Paper Machine is the resulting temperature of the exhaust points from the coating area of approximately 150°F; catalytic oxidation required temperatures above 500°F to achieve conversion of CO. Therefore, catalytic oxidation is deemed a technically infeasible control option.

Step 3: Rank of Remaining Control Technologies

The third of the five steps in the top-down BACT assessment procedure is to rank technically feasible control technologies by control effectiveness. The remaining option is the base-case scenario of good design and work practices.

Step 4: Evaluation of Most Stringent Controls

The fourth of the five steps in the top-down BACT assessment procedure is to evaluate the most effective control and document the results. Typically Step 4 is necessary when multiple control scenarios remain in Step 3. As only the base-case scenario of good design and work practices remain, no additional review per Step 4 is warranted as this serves as the proposed BACT.

Step 5: Selection of BACT

In the final step, the BACT emission limit is determined for each emission unit under review based on evaluations from the previous step. Although the first four steps of the top-down BACT process involve technical and economic evaluations of potential control options (i.e., defining the appropriate technology), the selection of BACT in the fifth step involves an evaluation of emission rates achievable with the selected control technology.

The CO emissions from the No. 1 Paper Machine stem from the use of natural gas burners for drying coatings applied to the paper roll in the dry end of the paper machine. Potential CO emissions from the No. 1 Paper Machine are only 21.5 tpy. These emissions are generated from natural gas combustion from 26 individual IR dryers and 6 air cap dryers of varying sizes, with a total potential natural gas usage of 972 standard cubic feet per minute, or the equivalent of 59.7 MMBtu/hr heat input. If the coater burners operated at the maximum capacity, CO emissions are approximately 0.082 lb/MMBtu heat input.

GPI proposes that good design and operating practices be sufficient as BACT for the No. 1 Paper Machine CO emissions. As a relatively small source of CO (i.e., 21.5 tpy; 0.082 lb/MMBtu) with a large physical footprint, emissions testing for compliance purposes with an emissions limitation would be overly burdensome with little environmental benefit. Testing of paper machines are challenging given the physical size of the emission unit, the number of potential exhaust points, the high volume of airflow, and the low concentration of emissions. For these reasons, emissions testing of paper machines is not typically required. GPI will continue their practice of adjusting/tuning the burners during annual outages.

EPD Review – CO Control

In addition to reviewing the permit application and supporting documentation, the Division has performed independent research of the CO BACT analysis and used the following resources and information:

- USEPA RACT/BACT/LEAR/Clearinghouse.[1]
- Final/Draft Permits and Final/Preliminary Determinations for similar sources.[2]

Based on the research performed by the Division and review of the applicant's proposal, the use of good design and operating practices and natural gas is the BACT control technology for CO emissions. CO emissions of 0.082 lb/MMBtu heat input is the BACT CO emissions limit. The CO emission limit selected is lower than the average of the most recent (past 10 years) BACT determination levels published in the RBLC database for a similar machine.

Conclusion – CO Control

The BACT selection for the No. 1 Paper Machine is summarized below in Table 4-1:

Table 4-1: BACT Summary for the No. 1 Paper Machine

Pollutant	Control Technology	Proposed BACT Limit
CO	Good design and operating practices; natural gas	0.082 lb/MMBtu heat input

[1] http://cfpub.epa.gov/rblc/

[2] http://www.georgiaair.org/airpermit/html/permits/psd/main.html

5.0 TESTING AND MONITORING REQUIREMENTS

Testing Requirements:

There are no applicable testing requirements being imposed. Testing of paper machines are challenging given the physical size of the emission unit, the number of potential exhaust points, the high volume of airflow, and the low concentration of emissions. For these reasons, emissions testing of paper machines is not typically required. GPI will conduct tune ups on the dryers and continue their practice of adjusting/tuning the burners during annual outages.

Monitoring Requirements:

The facility will be required to monitor and record fuel usage for all fuel burning sources on the No. 1 Paper Machine dryers. The records are necessary to provide a reasonable assurance that natural gas is the only fuel fired in the paper machine dryers as required by the BACT analysis. The fuel monitoring will also provide a reasonable assurance that the facility is in compliance with BACT limits for CO for the dryers in Paper Machine No. 1.

CAM Applicability:

Because the No. 1 Paper Machine, the Recycle Mill, and the new HD Pulp Storage do not employ any air pollution control devices and gases from the Batch Digesters are controlled in either the No. 3 Recovery Boiler or the Nos. 1 or 2 Lime Kiln and no specific emission limits apply to the Batch Digesters, CAM is not applicable and is not being triggered by the proposed modification. Therefore, no CAM provisions are being incorporated into the facility's permit.

6.0 AMBIENT AIR QUALITY REVIEW

An air quality analysis is required to determine the ambient impacts associated with the construction and operation of the proposed modifications. The main purpose of the air quality analysis is to demonstrate that emissions emitted from the proposed modifications, in conjunction with other applicable emissions from existing sources (including secondary emissions from growth associated with the new project), will not cause or contribute to a violation of any applicable National Ambient Air Quality Standard (NAAQS) or PSD increment in a Class I or Class II area. NAAQS exist for NO_2, CO, $PM_{2.5}$, PM_{10}, SO_2, Ozone (O_3), and lead. PSD increments exist for SO_2, NO_2, and PM_{10}.

The proposed project at Graphic Packaging International, Inc. – Macon Mill triggers PSD review for carbon monoxide (CO). An air quality analysis was conducted to demonstrate the facility's compliance with the NAAQS and PSD Increment standards for CO. An additional analysis was conducted to demonstrate compliance with the Georgia air toxics program. This section of the application discusses the air quality analysis requirements, methodologies, and results. Supporting documentation may be found in the Air Quality Dispersion Report of the application and in the additional information packages.

Modeling Requirements

The air quality modeling analysis was conducted in accordance with Appendix W of Title 40 of the Code of Federal Regulations (CFR) §51, *Guideline on Air Quality Models*, and Georgia EPD's *Guideline for Ambient Impact Assessment of Toxic Air Pollutant Emissions (Revised).*

The proposed project will cause net emission increases of CO that are greater than the applicable PSD Significant Emission Rates. Therefore, air dispersion modeling analyses are required to demonstrate compliance with the NAAQS and PSD Increment.

General Information

Graphic Packaging International (GPI), Inc., is proposing to implement a series of modifications on the No. 1 Paper Machine to facilitate actual production increases. GPI is also planning to install an additional high density pulp storage tank with a capacity of 500 tons to allow for additional storage of pulp. Air dispersion modeling for the application was conducted by GPI's consultant, Trinity Consultants, to assess conformance of proposed emission limits for the subject emission sources on site with the Georgia Air Toxics Guideline and applicable federal Prevention of Significant Deterioration (PSD) air quality standards.

This section discusses the procedures used to review the supporting dispersion modeling. CO is the only criteria pollutant with projected emissions by the applicant in excess of respective Significant Emission Rates (SERs). The maximum-modeled concentrations of CO were found to be lower than their respective Significant Impact Levels (SILs). Further modeling of these emissions on air quality impacts was not required. The proposed project will result in the additional emission of ten potentially Toxic Air Pollutants (TAPs). However, the additional TAPs emitted will be minimal relative to the facility-wide emissions. The air toxic impacts of the TAPs from the proposed project are not expected to exceed their applicable Acceptable Ambient Concentrations (AACs) as demonstrated in GPI's previous PSD application (dated March 2011).

Input Data

1. **Meteorological Data** - Hourly meteorological observations from the Middle Georgia Regional Airport at Macon, GA NWS surface station (ID: 3813) and the Atlanta Regional Airport (Formerly known as the Peachtree City Airport or Peachtree City - Falcon Field Airport) at Peachtree City, GA NWS upper air station (ID: 53819) for the period 2007-2011 were downloaded from http://www.georgiaair.org/airpermit/html/sspp/modeling/aermetdata.htm. The meteorological files were processed using AERMET (v12345), AERSURFACE (v13016), and AERMINUTE (v11325). The Middle Georgia Regional Airport surface station is located approximately 9 km to the south of the facility. The surface characteristics of this station and the project site were found to be generally similar. Therefore, the applicant concluded that the meteorological data at the Middle Georgia Regional Airport, Macon, was representative of the project location.

2. **Source Data** – Source emission parameters and criteria pollutant emission rates were provided by the applicant and have been subjected to GA EPD engineering review. The detailed information can be found in Table 4-2 and Table 4-6 of the application (dated March 2015).

3. **Terrain Elevation** - Topography was found to be generally flat in the site vicinity with no terrain elevations above the height of the main stack (91.44 meters of stack height plus 94.2 meters of the base elevation) within 20 km of the surrounding area. Terrain data from USGS National Elevation Dataset (NED) were extracted to obtain the elevations of all sources and receptors by AERMAP terrain processor (version 11103). The resulting elevation data were verified by comparing contoured receptor elevations with USGS 7.5-minute topographic map contours.

4. **Building Downwash** - GEP building downwash analysis files were provided by the Company and were verified by GA EPD. The analysis was based on the scaled site plan included in the application using the BPIPPRM program (version 04274), which was designed to derive building dimensions for the downwash assessment and the assessment of cavity-region concentrations appropriate for the AERMOD model.

Class I Significant Impact and AQRV Analysis

Seven Class I areas exist within a 300 km range from the Macon site. These are: Okefenokee Wilderness Area, GA; Wolf Island Wilderness Area, GA; Cohutta Wilderness Area, GA; Joyce Kilmer-Slickrock Wilderness Area, NC; Great Smoky Mountains National Park, NC; Shining Rock Wilderness Area, NC; and St. Marks Wilderness Area, FL. Among these, Okefenokee Wilderness Area is the closest, located approximately 227 km south of the facility. Since none of the visibility-affecting pollutants exceeds their applicable SERs, Class I area significant impact and AQRV analysis were not required.

Class II Significant Impact Analysis

The Class II area significant impact analysis was conducted using AERMOD model (version 14134) for CO. Receptors along the proposed project fence line were spaced 25 meters apart. Beyond the fence line, receptors were spaced 100 meters apart in a Cartesian grid extending out to a distance of 3.5 km. Two coarser grids were included with receptors placed 250 meters apart out to 7 km and 500 meters apart out to 11 km. Table I contains the maximum projected concentration of CO compared to its SILs. All projected maximum concentrations are below their respective SILs.

TABLE I. PROJECT IMPACTS VS. SIGNIFICANCE LEVEL (CLASS II AREAS)

Criteria Pollutant	Averaging Period	Significance Level	Maximum Projected Concentration*	Receptor UTM Zone: 17		Model Met Data Period	Radius of the SIA
		(µg/m^3)	(µg/m^3)	(meter East)	(meter North)	[yymmddhh]	(km)
CO	8-Hour	500	17.69	253096.50	3628572.30	07092016	N/A
	1-Hour	2000	33.04	253309.00	3628104.80	07081808	N/A

* Highest concentration over all averaging periods.

Preconstruction Monitoring Evaluation

Monitoring *De Minimis* Concentration

The applicant compared the maximum-modeled concentrations with the monitoring *de Minimis* concentrations to determine whether the proposed facility is required to conduct preconstruction monitoring. Table II shows that the maximum projected concentration of CO at 8-hour averaging period is below its *de minimis* level. Therefore the facility is exempted from preconstruction monitoring requirements.

TABLE II. PROJECT POLLUTANTS MONITORING DE MINIMIS IMPACTS

Criteria Pollutant	Averaging Period	*De Minimis* Concentration	Maximum Projected Concentration*	Receptor UTM Zone: 17		Model Met Data Period	Exceeds *De Minimis*?
		(µg/m^3)	(µg/m^3)	(meter East)	(meter North)	[yymmddhh]	
CO	8-Hour	575	17.69	253096.50	3628572.30	07092016	No

* Highest concentration over all averaging periods.

Ozone Impact Analysis

Ozone impact analysis is not required since neither NO_x nor VOC has a proposed net emission increase of 100 tpy or more.

Air Toxics Assessment

Though the No.1 Paper Machine modifications will result in an additional production of 42,000 tons per year, the overall production, when accounting for baseline production values, remains under the potential production capacity of the No. 1 Paper Machine. The addition of the new high density pulp storage tank will result in the additional emission of ten potentially Toxic Air Pollutants (TAPs) including: 1,2,4-Trichlorobenzene, Acetaldehyde, Acrolein, Carbon tetrachloride, Chloroform, Formaldehyde, Methanol, Methyl ethyl ketone, Methylene chloride, and o-Xylene. The company estimated that the additional TAPs emitted will be minimal relative to the facility-wide emissions. For example, compared to the facility potential emissions (Table 4-3 in the application), the maximum percentage of facility emission increase was 1.3% from Carbon tetrachloride. The corresponding annual and 15-min Acceptable Ambient Concentrations (AAC) for Carbon tetrachloride are 1.7 $\mu g/m^3$ and 15700.0 $\mu g/m^3$, respectively. In the previous PSD application submitted by the Company (dated March 2011), the modeled annual and 15-min maximum ground-level concentrations (MGLCs) for this pollutant were 0.072 $\mu g/m^3$ and 23.0 $\mu g/m^3$ calculated using the ISCST3 model, which were well below their corresponding AACs. Therefore, the air toxic impacts of the TAPs from the proposed project are not expected to exceed their applicable AACs using GPI's previous PSD application as a reference.

However, EPD has found that two TAPs: 1,2,4-Trichlorobenzene and Methyl ethyl ketone, were not modeled in the previous application. The company replied by comparing them with two other pollutants (Acrolein and Formaldehyde) that were emitted from similar sources/stacks and had similar emission rates. In details, the emission rate for 1,2,4-Trichlorobenzene and Acrolein were 3.69 and 3.19 tpy, respectively. The emission rate for Methyl ethyl ketone and Formaldehyde were 10.4 and 16.5 tpy, respectively. The MGLCs from both Acrolein and Formaldehyde were well below their corresponding AACs as shown in the previous application. The short-term/long-term AACs for Acrolein and Formaldehyde are all lower than those for 1,2,4-Trichlorobenzene and Methyl ethyl ketone. Therefore, the Company concluded that the emission from 1,2,4-Trichlorobenzene and Methyl ethyl ketone will not exceed their corresponding AACs. This method has been approved by the EPD permitting engineer. No further TAP modeling analysis was required.

Conclusion

The air quality analysis reviewed and described in all sections above showed the modeled CO concentrations were below their respective SILs for Class II areas. The air toxics analysis shows conformance with GA EPD's Guideline for Ambient Impact Assessment of Toxic Air Pollutant Emissions. The additional impacts analysis indicates that air quality impact on visibility, soil, and vegetation is expected to be minimal.

For this reason, it is recommended a permit to be issued based on the project design and operating hours described in the application.

7.0 ADDITIONAL IMPACT ANALYSES

The Class II area significant impact analysis demonstrated that the SILs for CO were not exceeded by the proposed project. Therefore, the potential soil and vegetation impacts analysis are not required. Since no visibility-affecting pollutants exceed their applicable SERs, Class II visibility analysis is not required.

8.0 EXPLANATION OF DRAFT PERMIT CONDITIONS

The permit requirements for this proposed facility are included in draft Permit Amendment No. 2631-021-0001-V-04-0.

Section 1.0: Facility Description

Graphic Packaging International, Inc. – Macon Mill proposed to make modifications to existing equipment at the Macon Mill facility including the No. 1 Paper Machine, the Recycle Mill, blow heat recovery system for the Batch (chip) Digesters, and the stock preparation and coatings and additives equipment associated with the operation of the No. 1 Paper Machine. GPI is also planning to install an additional HD pulp storage tank with a capacity of 500 tons to allow for additional storage of pulp.

Section 2.0: Requirements Pertaining to the Entire Facility

No conditions in Section 2.0 are being added, deleted or modified as part of this permit action.

Section 3.0: Requirements for Emission Units

Condition 3.3.38 has been added to the permit. The condition limits carbon monoxide (CO) emissions from the No. 1 Paper Machine to 0.082 lb/MMBtu based on the PSD BACT analysis.

Condition 3.3.39 has been added to the permit. The condition states that the facility is allowed to burn only natural gas in the paper machine dryer burners. This requirement is to ensure compliance with the CO BACT limit.

Condition 3.3.40 has been added to the permit. The condition requires the facility to conduct tune-ups every 24 months to the dryer burners in the No. 1 Paper Machine to demonstrate compliance with the BACT PSD limit.

Section 4.0: Requirements for Testing

Condition 4.1.4 has been modified. It is a standard Title V permit condition that has been updated.

Condition 4.2.17 has been added to the permit. The condition requires the facility to conduct tune-ups every 24 months to the dryer burners in the No. 1 Paper Machine to demonstrate compliance with the BACT PSD limit.

Section 5.0: Requirements for Monitoring

Condition 5.2.13 has been added to the permit. The condition was added to provide tune-up procedures for the dryer burners in the No. 1 Paper Machine to demonstrate compliance with the BACT PSD limit.

Section 6.0: Other Recordkeeping and Reporting Requirements

Condition 6.1.7d.x. has been added to the permit. The condition requires the facility to report if the No. 1 Paper Machine dryer burners are fired with a fuel other than natural gas.

Condition 6.1.7d.xi. has been added to the permit. The condition requires the facility to report if the tune-up procedures were not followed.

Condition 6.2.52 has been added to the permit. The condition requires the facility to maintain records of work performed on the No. 1 Paper Machine during the tune-ups.

Section 7.0: Other Specific Requirements

No conditions in Section 7.0 are being added, deleted or modified as part of this permit action

APPENDIX A

Draft Revised Title V Operating Permit Amendment
Graphic Packaging International, Inc. – Macon Mill
Macon (Bibb County), Georgia

APPENDIX B

Graphic Packaging International, Inc. – Macon Mill
PSD Permit Application and Supporting Data

Contents Include:

1. PSD Permit Application No. 23156 Volumes I and II, dated March 5, 2015

APPENDIX C

EPD'S PSD Dispersion Modeling and Air Toxics Assessment Review