Prevention of Significant Air Quality Deterioration Review

Preliminary Determination

June 2013
Facility Name: DSM Chemicals North America, Inc.
City: Augusta
County: Richmond
AIRS Number: 04-13-24500003
Application Number(PSD, Title V): 21476
Date Application Received: October 1, 2012

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 Georgia Environmental Protection Division (EPD) has reviewed the application submitted by DSM Chemicals North America, Inc. (DCNA) for plant modifications to improve the plant's reliability which may increase the plant capacity.

The existing DCNA operations in Augusta is a major source under the Prevention of Significant Deterioration (PSD) regulation. Collectively, the proposed project will result in an emissions increase in carbon monoxide (CO), nitrogen oxides (NO_x), Particulate Matter (PM), Particulate Matter with an aerodynamic diameter of ten microns or less (PM_{10}), Particulate Matter with an aerodynamic diameter of 2.5 microns or less ($PM_{2.5}$), sulfur dioxide (SO_2), Volatile Organic Compounds (VOCs), and greenhouse gases (GHGs expressed as CO_2e). A Prevention of Significant Deterioration (PSD) analysis was performed for this modification for all *regulated NSR pollutants* to determine if any emissions increase was above the applicable PSD *significant emission rate*. The NO_x and GHG emissions increases were above the applicable PSD significant emission rate threshold. Thus, the proposed modification is classified as a major PSD modification to an existing PSD major source.

DCNA anticipates emission increases of benzene and toluene (hazardous air pollutants – HAPs) from the proposed modification.

DCNA is located in Richmond County, which is classified as "attainment" or "unclassifiable" for SO_2, $PM_{2.5}$ and PM_{10}, NO_2, CO, and ozone (VOC).

The Georgia EPD review of the data submitted by DCNA related to the proposed projects indicates that the proposed modification 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 NO_x and GHGs emissions, 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 or in Class I areas located within 300 km of 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 DCNA for the projects to improve the plant's reliability. 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 as a separate document. This Preliminary Determination also acts as a narrative for the Title V Permit.

1.0 INTRODUCTION – FACILITY INFORMATION AND EMISSIONS DATA

DSM Chemicals North America, Inc. (DCNA) submitted a PSD application for a large number of projects at their facility located at 1 Columbia Nitrogen Road, Augusta, Richmond County, Georgia. The application was received on October 1, 2012. The application was found to be administratively deficient upon submittal and the applicant resolved all of the administrative deficiencies by November 29, 2012. Table 1-1 specifies the application date, application addendum dates, and associated Georgia EPD correspondence that comprise the PSD application record for this application number:

Table 1-1 Application Record

Date	Description
10/1/2012	Submittal of **Initial Version of PSD Application**
10/2/2012	EPD Acknowledgement Letter
10/3/2012	Issuance of Public Advisory. Public Advisory expires on November 2, 2012
10/8/2012	**Update to PSD Application:** Letter plus CD's from DCNA – the first two pages of Appendix D have been amended to redact certain confidential business information
10/18/2012	EPD was copied on a letter from ENVIRON to FLMs (NPS-Air in Denver; National Forests in North Carolina – Asheville; US Fish and Wildlife Service – Lakewood Colorado) Email from ENVIRON to FLMs and Georgia EPD regarding Class I Q/D screening analyses
10/18/2012	**Notice of CBI Substantiation Deficiency:** Letter from EPD to DCNA requesting clarity on CBI substantiation per Georgia EPD-Air Protection Branch Procedures. Response due to Georgia EPD on or before October 25, 2012. **Notice of Administrative Deficiency(NOD):** Letter from Georgia EPD to DCNA noting administrative deficiencies in the application. Response due to Georgia EPD on or before November 16, 2012.
10/25/2012	Email from Georgia EPD to applicable EPA Part 70 contacts for initial notification of receipt of a Title V Significant Modification
11/2/2012 11/5/2012	**NOD Response:** Receipt of response from DCNA based on Georgia EPD's letter of October 18, 2012. Missing updated portions of application as cited in letter. **NOD Response:** Updated portions of DCNA's application as referenced in their letter of November 2, 2012 *Table 2-1 *Updated PSD Modeling *Section 7 *Appendix C – process flow diagram for Anone Sections 35 & 45 *Appendix D – NOx Emission Rate Determination for existing hydrogen reformers

Table 1-1 Application Record	
Date	Description
11/21/2012	Georgia EPD submitted a hardcopy of the public version of the PSD application to EPA Region 4 for review. Georgia EPD requests a response in writing from EPA on or before January 16, 2012.
11/29/2012	**Update to PSD Application:** Georgia EPD in receipt of updated portions of DCNA's application *Table 2-1 *Section 5 in its entirety *Updated PSD Modeling Assessment *Section 7 in its entirety *Appendix C: Updated process flow diagram for Anone Sections 35 & 45
12/6/2012	**Update to PSD Application:** Georgia EPD in receipt of updated portions of DCNA's application *Updated PSD Modeling Assessment and Toxics Impact Assessment *Updated Modeling Protocol
12/12/2012	**Update to PSD Application:** Georgia EPD in receipt of updated portions of DCNA's application *Appendix C: Summary of Projected Toxic Emissions
12/14/2012	Georgia EPD submitted a hardcopy of the subsequent public versions of the updated PSD application to EPA Region 4 for review.
01/14/2013	**Notice of Technical and Regulatory Issues (NOTR):** Letter from Georgia EPD to DCNA - Information request to resolve technical and regulatory questions/comments. Response due on or before February 13, 2013.
02/12/2013	**Response to NOTR:** Georgia EPD in receipt of response from DCNA based on EPA's letter dated January 14, 2013. **Updated portions of the application include:** *PSD Modeling Analysis and Toxics Impact Assessment *Section 7 *Appendix D: Summary of Projected Toxic Emissions *Appendix D: Title V CAM Application Forms
02/22/2013	**Updated PSD Modeling:** Georgia EPD received plot files of the significant impact analysis
03/11/2013	**Notification of PSD Modeling Deficiency**: Georgia EPD's email to ENVIRON requesting submittal of the Class I area increment analysis. Application found to be deficient.
03/15/2013	**Response to Notification of PSD Modeling:** ENVIRON submitted Class I increment analysis modeling files. ENVIRON did not send an updated written portion for the application.

Table 1-1 Application Record	
Date	Description
04/05/2013	EPA Region 4 written comments on DCNA's application. EPA Region 4 reviewed the February 21, 2013 Confidential Business Information version submitted to them directly by DCNA.
04/25/2013	**Updated PSD Modeling:** *Class II Project Modeling files submitted per the need for greater grid resolution. The Modeling files were for analysis with refined receptors centered at the receptor with the 1-hour maximum concentration. *It appears that DCNA has revised the stack height of the proposed ammonia combustor without notifying Georgia EPD. This was corroborated by DCNA.
04/29/2013	DCNA's response to EPA Region 4's April 5, 2013 comments. Applicant submitted the following **Updated PSD Application:** *Figure 1 – Maximum Impact for 1-hour NOx SIL Modeling *Figure 2 – Maximum Impact for Annual NOx SIL Modeling *Revised Table 6.5.1 Project Impact compared to NO_2 SILs
05/01/2013	**Updated PSD Application – referred to as April 2013 Edition** Applicant attempted to incorporate updated project content and updated Class I and Class II PSD modeling.

Aggregation of Emissions: DCNA included the following statement on page 1 of the application (Versions: September 28, 2013, February2013): *Although, this application includes all of the planned upcoming project at the site, DCNA reserves the right to separate some of the changes into separate projects for PSD applicability and permitting purposes, if needed.*

DCNA retracted this statement in their **updated April 2013 PSD application.**

The Division is aggregating the planned upcoming projects into one permitting action for PSD purposes.

Scope of Stationary Source:
The Division analyzed the "scope of the stationary source" as illustrated in the following table (Table 1-2):

Table 1-2 Scope of Stationary Source - Information					
SIC Code	**AIRS #**	**Name and Address of Stationary Source**	**Under Common Control With?**	**Adjacent or on Contiguous Property With?**	**Shares Equipment with?**
2873	24500002	PCS Nitrogen Fertilizer L.P. – Augusta Plant ("PCS")	Air Carbonics (ACI). PCS owns 50% of ACI	Located on contiguous property with ACI. _____ Located adjacent to DCNA. PCS is in the	No known equipment shared with any of the noted stationary sources.

Table 1-2 Scope of Stationary Source - Information					
SIC Code	**AIRS #**	**Name and Address of Stationary Source**	**Under Common Control With?**	**Adjacent or on Contiguous Property With?**	**Shares Equipment with?**
		1460 Columbia Nitrogen Road Augusta, GA 30901		process of building a fenceline between PCS and DCNA.	
Unknown	24500002	Air Carbonics Industries, Inc. ("ACI") 1460 Columbia Nitrogen Road Augusta, GA 30901	PCS owns 50% of ACI	Located on contiguous property with PCS. Nitrogen. _____ Located adjacent to DCNA.	No known equipment shared with any of the noted stationary sources.
2869	24500003	DSM Chemicals North America, Inc. ("DCNA") 1 Columbia Nitrogen Road Augusta, GA 30903	DSM Powder Coating Resins. (DSM Resins)	Located on contiguous property with DSM Resins. _____ Located "next door" to General Chemical. Rail-line separates General Chemical and DCNA. General Chemical and DCNA have separate property entrances.	Shares a sulfuric acid pipeline with General Chemical. General Chemical supplies some portion of DCNA's sulfuric acid needs. Shares a steam pipeline with General Chemical where steamflow can run back and forth between the plants.
2819	24500008	General Chemical LLC – Augusta Plant ("General Chemical") 1580 Columbia Nitrogen Road Augusta, GA 30901	Not under common control with any stationary source listed in this table.	Located "next door" to DCNA. Rail-line separates General Chemical and DCNA. General Chemical and DCNA have separate property entrances..	Shares a sulfuric acid pipeline with DCNA. General Chemical supplies some portion of DCNA's sulfuric acid needs. Shares a steam pipeline with DCNA where steamflow can run back and forth between the plants.

Table 1-2 Scope of Stationary Source - Information					
SIC Code	**AIRS #**	**Name and Address of Stationary Source**	**Under Common Control With?**	**Adjacent or on Contiguous Property With?**	**Shares Equipment with?**
2821	24500128	DSM Powder Coating Resins, Inc. ("DSM Resins") 31 Columbia Nitrogen Road Augusta, GA 30903	DCNA	Located on contiguous property with DCNA.	No known equipment shared with any of the noted stationary sources.
2819	24500154	Grace Construction Products ("Grace") 23 Columbia Nitrogen Road Augusta, GA 30903	Not under common control with any stationary source listed in this table.	Located on contiguous property with PCS. PCS does not have common ownership with Grace.	No known equipment shared with any of the noted stationary sources.

Table 1-3 specifies the regulatory criteria for definition of "one site" for purposes of PSD, Title V, and Part 63:

Table 1-3 Scope of Stationary Source - Results		
Regulation	**Criteria**	**Definition of "Site"**
PSD	Includes all pollutant-emitting activities that (i) belong to the same Major Group (same first two digits of SIC Code), (ii) are located on one or more contiguous or adjacent properties, and (iii) are under common ownership or control.	DCNA and DSM Resins constitute one site for purposes of PSD.
Title V	Includes all pollutant-emitting activities that (i) belong to the same Major Group (same first two digits of SIC Code), (ii) are located on one or more contiguous or adjacent properties, and (iii) are under common ownership or control.	DCNA and DSM Resins constitute one site for purposes of Title V.
Part 63	Any stationary source or group of stationary sources that: (i) are locating within a contiguous area; and (ii) are under common control	DCNA and DSM Resins constitute one site for purposes of Part 63.

Title V Applicability

The Title V site is a major source under 40 CFR 70 because potential emissions of one or more criteria air pollutants is greater than or equal to 100 tons per year, potential emissions of an individual hazardous air pollutant is equal to or greater than 10 tons per year and 25 tpy for a combination of HAPs. Table 1-4 specifies the Title V Major source status of the facility upon installation and operation of the proposed project.

Table 1-4: Title V Major Source Status for Title V Site Composed of DCNA + DSM Resins

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	✓ 100 to 250 tpy		
PM_{10}	Yes	✓ 100 to 250 tpy		
$PM_{2.5}$	Yes	✓ 100 to 250 tpy		
SO_2	Yes	✓ 100 to 250 tpy		
VOC	Yes	✓ >250		
NO_x	Yes	✓ >250 tpy		
CO	Yes	✓ >250 tpy		
TRS	n/a			✓
H_2S	n/a			✓
Individual HAP Benzene Toluene Volatile HAPs	Yes	✓ >10 >10 >10		
Total HAPs	Yes	✓ >25		

Please note: DCNA's operations are no longer capable of emitting more than 100 tons per year of TRS and H_2S. The basis for this is noted below, as taken directly from DCNA's letter to the Division dated February 12, 2013:

The facility's natural gas provider, Atlanta Gas Light (AGL) previously had a practice of adding H_2S to the natural gas upstream of DSM. This meant that all of our natural gas, both high pressure (HP) and low pressure (LP), contained H_2S. For the hydrogen plants, DSM would route the HP natural gas (feedstock) through a desulfurizer prior to the reformer to remove all the sulfur, resulting in TRS and H_2S emissions.

Some years ago, the AGL piping was replaced and therefore they no longer added H_2S. A portion of the gas is let down for LP gas within the DCNA plant boundary where H_2S is added by DSM. This LP gas is used mainly in burner type applications, which produces minimal TRS and H_2S. The HP feedstock gas does not contain any added H_2S. However, DCNA continues the use of the desulfurizer to remove whatever residual H_2S may be in the natural gas.

Table 1-5 below lists all current Title V permits, all amendments, 502(b)(10) changes, and off-permit changes, issued to DCNA, based on a review of the "Permit" file(s) on the facility found in the Air Branch office.

Table 1-5: List of Current Permits, Amendments, and Off-Permit Changes for DCNA

Permit Number and/or Off-Permit Change	Date of Issuance/ Effectiveness	Purpose of Issuance
4911-245-0003-V-04-0	August 5, 2011	Title V Renewal
4911-245-0003V-04-1	January 17, 2012	Minor Modification for the revision of the periodic reporting deadlines in Condition Nos. 6.1.3, 6.1.4, and 8.14.1., the correction of typos, and the addition of 20 laboratory fume hoods and vents to the Insignificant Activities List
4911-245-0003-V-04-2	February 6, 2012	502(b)(10) change for the construction and operation of the re-commissioning of C-537 (Source Code: D10A) as a BCE Distillation column in Section 5/25 and for the modification of hydrogen introduction to the Hyam reactors.

PSD Applicability Analysis

DCNA is planning a large number of projects at the facility in order to improve its reliability and which may increase the plant's production capacity. Collectively, these modifications could result in an increase in the capacity of the plant. DCNA is treating these projects as collectively as "one project" under the PSD "aggregation of emissions" concept. The specifics of each project is contained in a **confidential version of the PSD and Title V applications.** The modification of the plant consists of (1) addition of new emission units; (2) debottlenecking existing emission units; (3) utilization increase for certain existing emission units; (4) replacement of components of existing units; (5) physical changes to non-emission units.

The Title I site major source threshold for any *regulated NSR* pollutant is 100 tons per year because DCNA is a chemical plant which is one of the 28 listed source categories in the PSD regulation. The Title I Site in question includes operations at DCNA plus DSM Resins. This Title I site classified as an existing major Title I site for emissions of volatile organic compounds (VOC), nitrogen oxides (NOx), sulfur dioxide (SO_2), and carbon monoxide (CO). Greenhouse gas emissions (GHG, expressed as CO_2e) is a *regulated NSR pollutant*, in this case, because potential emissions exceed 100,000 tons per year. The Title I site is classified as a major source for greenhouse gases (GHG, expressed as CO_2e) because potential emissions exceed 100 tons per year.

The applicant determined if the proposed modification would trigger the PSD major modification provisions of Georgia Rule 391-3-1-.02(7).

Per this Rule 391-3-1-.02(7) a ***major modification*** is defined as follows:
means any physical change in or change in the method of operation of a major stationary source that would result in: a significant emissions increase (as defined in paragraph 40 CFR 52.21(b)(40)- [Referred to as Step 1]) of a regulated NSR pollutant (as defined in paragraph 40 CFR 52.21(b)(50)); and a significant net emissions increase [Referred to as Step 2] of that pollutant from the major stationary source.

PSD Applicability Step 1: The applicant computed a ***significant emissions increase*** using (1) ***potential to emit*** for the new units, (2) ***net emissions increase*** for existing emission units which are debottlenecked or for there is an expected increase in utilization, and (3) ***net emissions increase*** for existing units which will undergo a physical change in or change in the method of operation. Georgia EPD estimated the project emissions based on data provided in Appendix D of the application. Georgia EPD's estimates are provided in Tables 1-6A and 1-6B.

Emission Unit	Table 1-6A Method of Computing Emissions Increase							
	NOx	**PM**	**PM10**	**PM2.5**	**SO2**	**CO**	**VOC**	**GHG**
Boilers	PFA-BAE using CY 2010-2011 two year period	PFA-BAE using 11/2006 through 10/2007 two year period	PFA-BAE using 11/2006 through 10/2007 two year period	PFA-BAE using 11/2006 through 10/2007 two year period	PFA-BAE using 05/2006 through 04/2007 two year period	PFA-BAE using CY 2010-2011 two year period	PFA-BAE using 12/2007 through 11/2008 two year period	PFA-BAE using CY 2010-2011 two year period
Existing Reformers	PFA-BAE using CY 2010-2011 two year period	PFA-BAE using 11/2006 through 10/2007 two year period	PFA-BAE using 11/2006 through 10/2007 two year period	PFA-BAE using 11/2006 through 10/2007 two year period	PFA-BAE using 05/2006 through 04/2007 two year period	PFA-BAE using CY 2010-2011 two year period	PFA-BAE using 12/2007 through 11/2008 two year period	PFA-BAE using CY 2010-2011 two year period
Anol Conversion Furnaces	PFA-BAE using CY 2010-2011 two year period	PFA-BAE using 11/2006 through 10/2007 two year period	PFA-BAE using 11/2006 through 10/2007 two year period	PFA-BAE using 11/2006 through 10/2007 two year period	PFA-BAE using 05/2006 through 04/2007 two year period	PFA-BAE using CY 2010-2011 two year period	PFA-BAE using 12/2007 through 11/2008 two year period	PFA-BAE using CY 2010-2011 two year period
Existing Ammonia Combustors	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
New Ammonia Combustor	PTE	PTE	PTE	PTE	PTE	PTE	PTE	PTE
Existing Chip Oil Heaters	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
New Hot Oil Heater	PTE	PTE	PTE	PTE	PTE	PTE	PTE	PTE
Existing Flares	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Existing RTO Pilot	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Existing Catalytic Oxidizer	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Existing Sulfate Scrubber	N/A	PFA-BAE using 11/2006 through 10/2007 two year period	PFA-BAE using 11/2006 through 10/2007 two year period	PFA-BAE using 11/2006 through 10/2007 two year period	PFA-BAE using 05/2006 through 04/2007 two year period	PFA-BAE using CY 2010-2011 two year period	PFA-BAE using 12/2007 through 11/2008 two year period	PFA-BAE using CY 2010-2011 two year period

Emission Unit	Table 1-6A Method of Computing Emissions Increase							
	NOx	**PM**	**PM10**	**PM2.5**	**SO2**	**CO**	**VOC**	**GHG**
Existing Sulfate Dust Recovery Baghouse	N/A	PFA-BAE using 11/2006 through 10/2007 two year period	PFA-BAE using 11/2006 through 10/2007 two year period	PFA-BAE using 11/2006 through 10/2007 two year period	PFA-BAE using 05/2006 through 04/2007 two year period	N/A	PFA-BAE using 12/2007 through 11/2008 two year period	PFA-BAE using CY 2010-2011 two year period
Existing Lactam Scrubber	N/A	PFA-BAE using 11/2006 through 10/2007 two year period	PFA-BAE using 11/2006 through 10/2007 two year period	PFA-BAE using 11/2006 through 10/2007 two year period	PFA-BAE using 05/2006 through 04/2007 two year period	N/A	PFA-BAE using 12/2007 through 11/2008 two year period	PFA-BAE using CY 2010-2011 two year period
New Chip Plant	N/A	PTE	PTE	PTE	PTE	PTE	PTE	PTE

Note: PFA -= "projected future actual" emissions
Note: BAE = "baseline actual" emissions
Note: PTE = Potential to emit

Emission Unit	Table 1-6B Emissions Increase for the Proposed Project (tpy)							
	NOx	**PM**	**PM10**	**PM2.5**	**SO2**	**CO**	**VOC**	**GHG**
Boilers	75.9	1.2	2.1	2.0	6.8	35.6	1.7	55,444.9
Existing Reformers	6.5	0.9	0.70	0.7	0.2	10.0	0.7	14,396.9
Anol Conversion Furnaces	0.8	0.0	0.0	0.0	0.0	0.7	0.0	959.8
Existing Ammonia Combustors	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New Ammonia Combustor	18.52	0.0	0.0	0.0	0.0	0.0	0.0	25,726.2
Existing Chip Oil Heaters	1.52	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New Hot Oil Heater	0.0	0.39	0.29	0.29	0.03	4.27	0.28	6,134.07
Existing Flares	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Existing RTO Pilot	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Existing Catalytic Oxidizer	0.0	0.0	0.0	0.0	0.0	0.0	5.77	0.0

Emission Unit	Table 1-6B Emissions Increase for the Proposed Project (tpy)							
	NOx	**PM**	**PM10**	**PM2.5**	**SO2**	**CO**	**VOC**	**GHG**
Existing Sulfate Scrubber	0.0	7.60	7.60	2.71	0.0	0.0	0.0	0.0
Existing Sulfate Dust Recovery Baghouse	0.0	0.37	0.26	0.24	0.0	0.0	0.0	0.0
Existing Lactam Scrubber	0.0	0.1617	0.1617	0.1617	0.0	0.0	0.0	0.0
New Chip Plant	0.0	0.563	0.563	0.563	0.0	0.0	0.0	0.0
Totals	103.24	11.18	11.67	6.66	7.03	50.57	8.45	102,661.87

Note: Emissions increase numerical value for VOC emissions does not match the numerical value provided by the applicant in Table 1-1.
Note: Emissions increase numerical value for GHG emissions does not match the numerical value provided by the applicant in Table 1-1.
Note: Emissions increase numerical value for NOx emissions does not match the numerical value provided by the applicant in Table 1-1.

Total emissions increase for sulfuric acid emissions (SAM) from the project was computed to be approximately 2.25×10^{-5} tpy. This estimated net emissions increase value is the estimated increase specified in Table 1-1. The SAM emissions shown in the summary of toxic emissions in Appendix D is 0.04 tpy and this numerical value is based on an existing permit limit and this numerical value was used in the Georgia Air Toxics Assessment.

PSD Applicability – Step 2 – Calculate Net Emissions Increase: The applicant did not provide data for Step 2 of the PSD Applicability Analysis. The Division determined that there were no other increases and decreases in actual emissions at the major stationary source that are contemporaneous with the particular change and that are otherwise creditable.

Note About Computation of *Baseline Actual Emissions:* Consent Order EPD-AQC-6224 was executed on April 15, 2010 for infractions going back almost 20 years for excess emissions and retroactive rule applicability. DCNA reviewed actual emissions going back almost 10 years to establish the baseline actual emissions for this project. DCNA adjusted downward the baseline actual emissions to exclude any non-compliant emissions that occurred while the source was operating above an emission limitation that was legally enforceable during the applicable consecutive 24-month period. DCNA adjusted downward the baseline VOC emissions from the Cyclohexanone production areas in order to comply with Georgia Rule 391-3-1-.02(2)(7)(i) [i.e., baseline actual emissions].

Conclusion of Review of PSD Applicability: Of the estimated net NOx emissions increase, approximately 72% is from the increased utilization of the Boiler Plant and 19% is from the proposed new ammonia combustor. Based on the information presented in Table 1-4 above, DCNA's proposal, as specified per Application No. 21476, is classified as a major modification under PSD because the net emissions increase of NO_x and GHGs exceed the PSD significant emissions rate thresholds.

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

2.0 PROCESS DESCRIPTION

DCNA manufactures several organic and inorganic chemicals. The main product is caprolactam, the monomer used to produce Nylon 6. The following process description is taken from Chapter 2 of Application No. 21476.

The primary major raw materials in the caprolactam process are ammonia, sulfuric acid, natural gas, and cyclohexane. Cyclohexane is oxidized with air to form cyclohexanone; natural gas is reformed to hydrogen, and ammonia is burned to produce nitric acid, which is in turn reacted with the hydrogen catalytically to form hydroxylamine. This hydroxylamine is then reacted with cyclohexanone to form cyclohexanone oxime. The oxime molecule is chemically rearranged in the presence of sulfuric acid to form crude caprolactam. The sulfuric acid is neutralized with ammonia to form by-product ammonium sulfate. Crude caprolactam is purified in a series of steps including extraction in benzene and water solutions, followed by ion exchange, hydrogenation and drying to form the pure caprolactam product.

As stated earlier in this narrative, DCNA is planning a large number of projects to the facility that will be completed over the course of the next few years. These projects are being proposed for a variety of reasons including enhanced reliability, improved mechanical integrity, and increased profitability. Although many of the changes are not designed to increase capacity, and most do not meet the definition of "modifications" as defined in the PSD regulations, collectively they could debottleneck the existing process to the extent that the plant's overall production capacity could increase. Additionally, the increased production may require additional utilization of the plant's boilers.

The following new emission units will be added as part of this modification (information taken from Public Version of SIP Application **dated April 2013**):

New Emission Unit ID Nos.	New Emission Unit Name	New Unit Description	Air Pollution Control Devices –	Regulated NSR Pollutants Emitted
C316	Chip Plant Storage & Product Handling – Inline Batch HV blending bagdump	Blending Powder Bagdump	PC16 – Ambient Temperature Baghouse	PM, PM10, PM2.5
B030	Hot Oil Furnace	11.6 MMBtu/hr Natural gas	None	NOx, CO, VOC, SO2, PM, PM10, PM2.5, GHG
G18Y	HPO IPL Polishing Column		NA DCNA does not know at this time whether this unit will vent to the atmosphere.	NA
R33	Ammonia Combustion Converter	Ammonia Combustor	P33 – Non-Selective Catalytic Reduction	NOx, GHG

Note: DCNA may upgrade the existing flaker system with Source Group No. G023. This Source Group is controlled by Flaker Scrubber ID No. P023. No information is available on anticipated design changes or changes in emissions associated with this modification. This narrative and associated draft permit will not address any potential modifications to Source Group No. G023 at this time because no specific information is available. DCNA will be required to file a permit application for any modification to Source Group No. G023 in the future.

DCNA's permit application and supporting documentation are maintained as a separate document from this narrative and the application and supporting documents can be found online at www.georgiaair.org/airpermit.

3.0 REVIEW OF APPLICABLE RULES AND REGULATIONS

State Rules

No new state rules will apply to the proposed modification except for several PSD Avoidance conditions for PM, PM10, and PM2.5. DCNA's Title V Permits contain the applicable state rules which will continue to be applicable including the following:

Georgia Rule for Air Quality Control (Georgia Rule) 391-3-1-.03(1), Construction Permit, 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 there under. 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).

Georgia Rule 391-3-1-.02(2)(b)Visible Emissions, limits the opacity of visible emissions from any air contaminant source, which is subject to some other emission limitation under 391-3-1-.02(2). The opacity of visible emissions from regulated sources may not exceed 40 percent under this general visible emission standard. The proposed modification involves confidential changes to confidential

existing units that are subject to Georgia Rule (b). The proposed modification will be required to comply with Georgia Rule (b) as before the modification. The new AP plant (Emission Unit ID No. C316) will be subject to Georgia Rule (b).

Georgia Rule 391-3-1-.02(2)(d) Fuel-burning Equipment limits emission of fly ash and/or particulate matter as well as opacity. Georgia Rule (d) is an applicable requirement for the new hot oil furnace (emission unit ID No. B030) and this proposed furnace will be limited to burning natural gas. Georgia Rule (d) limits the particulate matter emissions and opacity from the proposed new heater. The applicant computed a potential to emit (PTE) of particulate matter emissions of 0.39 tons per year. The allowable particulate matter emissions, per Georgia Rule (d) was computed to be approximately 0.4642 lb/MMBtu using the following formula:

$$E\ (lb/MMBtu) = 0.5*(10/11.6)^{0.5}$$

Using an allowable particulate matter emission rate of approximately 0.4642 lb/MMBtu yields a potential to emit of approximately 23.58 tons per year. The project would mathematically be a major source of particulate matter (i.e., PTE $\geq$ 25 tons per year) if the permit only limited particulate matter emissions to that allowed by Georgia Rule (d).

PSD Avoidance – Hot Oil Furnace: Note that the potential to emit of PM using Georgia Rule (d) along with other increases in PM from the project would put the project over 25 tons per year. Georgia Rule (d) only provides an allowable PM emission rate. The applicant assumes that PM10 and PM2.5 emissions on an annual basis would be the same as that for PM. Mathematically speaking, the project would be a PSD major source for PM (PTE over 25 tpy), PM10 (PTE over 15 tpy), and PM2.5 (PTE over 10 tpy) if the PM emissions from the hot oil furnace were simply limited to that allowed under Georgia Rule (d). The Division is limiting the fuel use in the new hot oil furnace to natural gas in order for the project to remain a PSD synthetic minor for emissions of particulate matter (PM), PM10, and PM2.5.

Georgia Rule 391-3-1-.02(2)(e) Particulate Matter Emission from Manufacturing Processes applies to certain emission units at the facility. The proposed modification involves confidential changes to confidential emission units that are subject to Georgia Rule (e). The proposed modification will be required to comply with Georgia Rule (e) as before the modification. The AP plant (Emission Unit ID Nos. C316) will be subject to Georgia Rule (e).

PSD Avoidance – New AP Plant: The allowable particulate matter (PM only) is specified by Georgia Rule 391-3-1-.02(2)(e). The allowable PM limit specified by Georgia Rule (e) is approximately 16 lb/hr which yields a potential to emit of approximately 70 tons per year. The potential to emit of PM is greater than 25 tons per year which would mathematically exceed 25 tons per year, the PSD significant emission rate. The anticipated PM, PM10, and PM2.5 emission rates specified in Appendix D of the application is 0.01 grains per dry standard cubic feet for baghouse on proposed new emission unit C316, and this emission rate is listed in the draft permit as PSD Avoidance.

Georgia Rule 391-3-1-.02(2)(g) Sulfur Dioxide limits the fuel sulfur content of fuel combusted in the new hot oil heater (emission unit ID No. B030). The proposed heat input of the heater is approximately 11.6 MMBtu/hr and it will be capable of accommodating natural gas. Georgia Rule (g) limits the fuel sulfur content to 2.5 percent sulfur by weight. As the proposed heater will only burn natural gas, the fuel combusted in the heater should easily comply with this state rule.

Federal Rules

New Source Performance Standards

40 CFR 60 Subpart Dc – Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units applies to a steam generating unit for which construction, modification, or reconstruction is commenced after June 9, 1989 and that has a maximum design heat input capacity of 20 megawatts (MW) (100 MMBtu/hr) or less, but greater than or equal to 2.9 MW (10 MMBtu/hr). The new hot oil furnace (rated at 11.6 MMBtu/hr) is to be fired with natural gas and this new furnace is subject to this regulation. NSPS Dc specifies no emissions standards for the proposed hot oil furnace because of its proposed rated design capacity and the fuel type to be burned.

40 CFR 60 Subpart PP – Standards of Performance for Ammonium Sulfate Dryers applies to ammonium sulfate dryers within the caprolactam by-product ammonium sulfate manufacturing plant that commenced construction or modification after February 4, 1980. Part 60 Subpart PP applies to DCNA's ammonium sulfate dryers. No new Part 60 Subpart PP requirements will be triggered by the proposed modification. The existing Part 60 Subpart PP permit conditions will apply to the proposed modification.

40 CFR 60 Subpart VV – Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for which Construction, Reconstruction, or Modification Commenced after January 5, 1981, on or Before November 7, 2006 applies to certain connectors, valves, compressors, pumps, pressure relief devices, and agitators at DCNA. No new Part 60 Subpart VV requirements will be triggered by the proposed modification. The existing Part 60 Subpart VV permit conditions will apply to the proposed modification.

40 CFR 60 Subpart III – Standards of Performance for Volatile Organic Compounds (VOC) Emissions from the Synthetic Organic Chemical Manufacturing Industry (SOCMI) – Air Oxidation Unit Process: Air oxidation reactors and the recovery system into which their vent streams are discharged for which construction, modification or reconstruction commenced after October 21, 1983 are subject to this rule. The requirements of Part 60 Subpart III apply to certain reactors and recovery systems at DCNA. No new Part 60 Subpart III will be triggered by the proposed modification. The existing Part 60 Subpart III permit conditions will apply to the proposed modification.

40 CFR 60 Subpart NNN – Standards of Performance for Volatile Organic Compound (VOC) Emissions from Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Columns apply to distillation units and the recovery system into which their vent streams are discharged for which construction, modification or reconstruction commenced after December 30, 1983 to this rule. No new Subpart NNN requirements are triggered by this modification. The existing Part 60 Subpart NNN permit conditions will apply to the proposed modification.

40 CFR 60 Subpart RRR – Standards of Performance for Volatile Organic Compounds (VOC) Emissions from the Synthetic Organic Chemical Manufacturing Industry (SOCMI) – Reactor Processes apply to certain reactor processes and recovery systems at DCNA for which construction, modification or reconstruction commenced after June 29, 1990. The requirements of Part 60 Subpart RRR apply to certain portions of the modification being proposed. No new Subpart RRR required are triggered by this modification. The existing Subpart RRR requirements in DCNA's permit are subject to the proposed modification.

National Emissions Standards for Hazardous Air Pollutants

40 CFR 63 Subpart FFFF – National Emission Standard for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing (MON) applies for three separate miscellaneous organic chemical manufacturing processes (MCPUs) that are part of the proposed modification– Cyclohexanone, Oxime, and Caprolactam. The MCPU can include reactors (and similar process vessels), storage tank, transfer racks, wastewater handling systems, and components such as pumps, compressors, agitators, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, and instrumentation systems. No new MON requirements will be triggered by the proposed modification. The existing Part 63 Subpart FFFF permit conditions will apply to the proposed modification.

40 CFR 63 Subpart DDDDD – National Emission Standard for Major Sources: Industrial, Commercial, and Institutional Boilers. This regulation applies to existing boilers with emission unit ID Nos. B014 and B022, the existing chip oil heaters with emission unit ID Nos. B029 and B31B, steam superheater with emission unit ID No. B31A, and the proposed hot oil furnace with emission unit ID No. B030. Table 3-1 provides a description and Boiler MACT notes for operations at DCNA.

Table 3-1 DCNA and Boiler MACT Applicability

Boiler ID No.	Boiler Description	Boiler MACT Notes
B005 or Boiler H-002	169 MMBtu/hr Fires natural gas, light organic residues – Haz, heavy organic residue, waste gas-H2, #2 fuel oil, #6 fuel oil, mixture of #2 and #6 fuel oil Date Manufactured or Reconstructed = 3/26/65 Installation Date = 3/26/65	**Not subject per 40 CFR 63.7491(m) because boiler is subject to the requirements of 40 CFR 63 Subpart EEE.**
B006 or Boiler H-2002	370 MMBtu/hr Fires natural gas, light organic residue-Haz, heavy organic residue, waste gas-H2, #2 fuel oil, #6 fuel oil, mixture of #2 and #6 fuel oil Date Manufactured or Reconstructed = 8/17/71 Installation Date = 8/17/71	**Not subject per 40 CFR 63.7491(m) because boiler is subject to the requirements of 40 CFR 63 Subpart EEE.**
B014 or Boiler H-3002	538 MMBtu/hr Fires natural gas, waste gas-H2, #2 fuel oil, #6 fuel oil, mixture of #2 and #6 fuel oil Date Manufactured or Reconstructed = 7/9/76 Modified 1981 to present rated capacity from 249 MMBtu/hr	Existing Unit per 40 CFR 63.7490 Compliance Date: 1/31/2016

Table 3-1 DCNA and Boiler MACT Applicability		
Boiler ID No.	**Boiler Description**	**Boiler MACT Notes**
	Installation Date = 7/9/76	
B022 or Boiler H-3003	246 MMBtu/hr Fires natural gas, heavy organic residue, waste gas-H2, #2 fuel oil Date Manufactured or Reconstructed = 10/3/79 Installation Date = January 1980	Existing Unit per 40 CFR 63.7490 Compliance Date: 1/31/2016
B029 or H-5030, Hot Oil Furnace at NPC	11 MMBtu/hr Fires natural gas and #2 fuel oil. Date Manufactured or Reconstructed = 1998 Installation Date = 1998	Existing Unit per 40 CFR 63.7490 Compliance Date: 1/31/2016
B31A or H-8001, Steam Superheater at ENR	30 MMBtu/hr Fires natural gas and #2 fuel oil Date Manufactured or Reconstructed = 1999 Installation Date = 1999	Existing Unit per 40 CFR 63.7490 Compliance Date: 1/31/2016
B31B or H-8002, Hot Oil Heater at ENR	11 MMBtu/hr Fires natural gas and #2 fuel oil Date Manufactured or Reconstructed = 1999 Installation Date = 1999	Existing Unit per 40 CFR 63.7490 Compliance Date: 1/31/2016
Proposed B030, Hot Oil Furnace	11.6 MMBtu/hr Fires natural gas	New Unit per 40 CFR 63.7490 Compliance Date: Upon startup

This draft permit will only include the specific requirements for proposed hot oil heater with emission unit ID No. B030, and the applicable Boiler MACT requirements for this emission unit are specified in Table 3-2.

Table 3-2 Boiler MACT Requirements for B030	
New Unit Requirements Citation	**Requirements for Emission Unit ID No. B030**
40 CFR 63.7490 – What is the affected source of this subpart?	Hot oil furnace B030 rated at 11/6 MMBtu/hr, fired exclusively with natural gas. To be constructed after January 13, 2013.
40 CFR 63.7495 – When do I have to comply with this subpart?	63.7495(a) – Upon Startup
40 CFR 63.7499 – Subcategory	63.7499(l) – Unit is designed to burn a gas 1 fuel. *Natural Gas is a "gas 1" fuel per definition of "Unit designed to burn gas 1 subcategory" in 63.7575.*

Table 3-2 Boiler MACT Requirements for B030	
New Unit Requirements Citation	**Requirements for Emission Unit ID No. B030**
40 CFR 63.7500 – Applicable emission limitations, work practice standards, and operating limits	Table 1 – No applicable limitations **Table 3 – Applicable** Table 11 – Not Applicable Tables 2, 12, and 13 are not applicable. Table 4: No applicable requirements.
40 CFR 63.7505 – General Requirements for Compliance	No applicable requirements for Emission Unit ID No. B030
40 CFR 63.7510 – Initial Compliance Requirements	63.7510(g) – Demonstrate initial compliance with the applicable work practice standards in Table 3 within the applicable annual schedule as specified in 40 CFR 63.7540(a)(10) following the initial compliance date specified in 40 CFR 63.7495(a). Thereafter, the Permittee is required to complete the applicable annual tune-up as specified in 40 CFR 63.7540(a).
40 CFR 63.7515 – Subsequent Performance Tests, Fuel Analyses, or Tune-Ups	Permittee shall comply with 63.7515(d) Each annual tune-up specified in 63.7540(a)(10) must be no more than 13 months after the previous tune-up. The first annual tune-up must be no later than 13 months after the initial startup of the new boiler with emission unit ID No. B030.
40 CFR 63.7520 – Stack Test Requirements	None Applicable for Emission Unit ID No. B030
40 CFR 63.7521 – Defining Fuel Analyses, Fuel Specifications, and Procedures	Not Applicable 63.7521(f)(1) – Permittee is not required to conduct the fuel specification analyses in paragraphs 63.7521(g) through (i) for natural gas combustion.
40 CFR 63.7522-Use of Emissions Averaging	Not Applicable for Emission Unit ID No. B030
40 CFR 63.7525 – Monitoring, Installation, Operation, and Maintenance Requirements	Not Applicable for Emission Unit ID No. B030
40 CFR 63.7530 – How to demonstrate initial compliance?	63.7530(e) - Must include with the Notification of Compliance Status a signed certification that the energy assessment was completed according to Table 3 to this subpart and is an accurate depiction of your facility at the time of the assessment.
40 CFR 63.7533 – Energy Credits and Energy Conservation Measures	Not Applicable for Emission Unit ID No. B030
40 CFR 63.7535 – Minimum Data Collection for Continuous Compliance Requirements	Not Applicable for Emission Unit ID No. B030
40 CFR 63.7540 – How To Demonstrate Continuous Compliance with Emission Limitations, Fuel Specifications and Work Practice Standards.	63.7540(a)(10) Conduct an Annual tune-up to demonstrate continuous compliance as specified in (a)(10)(i) through (vi). 63.7540(a)(13) – If the unit is not operating on the required date for a tune-up, the tune-up must be conducted within 30 calendar days of startup. 63.7540(b) – Report each instance in which you did not meet requirement in Table 3 that apply to you. These instances are deviations to be reported in accordance with 63.7550. 63.7540(d) – For Startup and Shutdown, the Permittee must meet the

Table 3-2 Boiler MACT Requirements for B030	
New Unit Requirements Citation	**Requirements for Emission Unit ID No. B030**
	work practice standards according to item 5 of Table 3 of this subpart.
40 CFR 63.7541 – Demonstrating Continuous Compliance Under the Emissions Averaging Provision	Not Applicable for Emission Unit ID No. B030.
40 CFR 63.7545(a) – Identification of Applicable Notifications.	Per 63.7545(a) - Submit to the Administrator all of the notifications, as applicable, in: 40 CFR 63.7(b) – Notification of Performance Testing – Not Applicable. 40 CFR 63.7(c) – Performance Testing – Quality Assurance program – Not Applicable. 40 CFR 63.8(e) – Monitoring Requirements – Performance Evaluation of Continuous Monitoring Systems – Not Applicable. 40 CFR 63.8(f)(4) – Monitoring Requirements – Request to use Alternative Monitoring Procedures – Not Applicable. 40 CFR 63.8(f)(6) – Monitoring Requirements – Alternative to the Relative Accuracy Test – Not Applicable. 40 CFR 63.9(b) – Initial Notification Requirements (b)(5)– Is Applicable 40 CFR 63.9(c) - Request for Extension of Compliance Not Applicable. 40 CFR 63.9(d) – Notification that Source is Subject to Special Compliance Requirements Not Applicable. 40 CFR 63.9(e) - Notification of Performance Testing Not Applicable. 40 CFR 63.9(f) – Notification of Opacity and Visible Emission Observations – Not Applicable 40 CFR 63.9(g) – Additional Notification Requirements for Sources with Continuous Monitoring Systems – Not Applicable 40 CFR 63.9(h)-Notification of Compliance Status 63.7545(c) – Per 63.9(b)(4) and (5) – Submit an Initial Notification not later than 15 days after the actual date of startup of the affected source. 63.7545(e) - Submit a Notification of Compliance Status per 63.9(h)(2)(ii). Content of Notification of Compliance is stated in 63.7545(e).

Table 3-2 Boiler MACT Requirements for B030	
New Unit Requirements Citation	**Requirements for Emission Unit ID No. B030**
40 CFR 63.7550 – Identification of Applicable Reports	63.7550(a) – Submit each report in Table 9 that applies to Boiler with ID No. B030. 63.7550(b) As Boiler with ID No. B030 is subject only to a requirement to conduct an annual tune-up according to 63.7540(10) and not subject to emission limits or operating limits, the Permittee may submit only an annual compliance report, as applicable, as specified in paragraphs (b)(1) through (4) of this section, instead of a semi-annual compliance report. 63.7550(c) – Defines the contents of the compliance report for Boiler with ID No. B030.
40 CFR 63.7555 – Identification of Applicable Recordkeeping	63.7555(a)
40 CFR 63.7560 – Format of Recordkeeping and Length of Time to Keep Records	63.7560(a) 63.7560(b) 63.7560(c)

Prevention of Significant Deterioration (40 CFR 52.21)

Applicability: 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 *regulated NSR pollutants.* 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 NSR pollutant*, excluding greenhouse gas (GHG) emissions (expressed as CO_2e). The PSD threshold for any new or modification source for GHG emissions is 100,000 tpy of CO2e[1]. They also apply to any modification of a major stationary source which results in a significant net emission increase of any *regulated NSR pollutant*.

Georgia EPD 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 or major modifications 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 "Best Available Control Technology" (BACT) for each "regulated NSR pollutant" (including GHG emissions) that would be emitted in significant amounts;
- Analysis of the ambient air impact for *regulated NSR pollutants* excluding GHG emissions;

[1] The term GHG emissions includes: (1) Carbon dioxide, (2) Methane, (3) Nitrous oxide, (4) hydrofluorocarbons, (5) perfluorocarbons, and (6) sulfur hexafluoride. The term CO_2e is a function of the particular GHG global warming potential.

- Analysis of the impact on soils, vegetation, and visibility for *regulated NSR pollutants* excluding GHG emissions;
- Analysis of the impact on Class I areas for *regulated NSR pollutants* excluding GHG emissions; 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 the Division 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, the Division 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.

State and Federal – Startup and Shutdown and Excess Emissions

The applicant provided the following information concerning startup and shutdown emissions.

Table 3-3 Project Startup and Shutdown Associated with Proposed Ammonia Combustor

Application Date	Anticipated # of Startups and Shutdowns	Emissions of NOx during Startup and Shutdown (lb/hr)	Notes
September 28, 2012 page 32	15 to 20 times Each lasting 2 to 3 hours	Not provided	Requested Information on January 14, 2013
February 12, 2013 Page 9	6 to 10 times Each lasting 1 to 3 hours	Uncontrolled emissions 84.65 lb/hr	Requested BACT limit of 150 ppm at 3% oxygen equivalent to 4.23 lb/hr, excluding periods of startup and shutdown Modeled emission rate is 4.72 lb/hr

Table 3-3 Project Startup and Shutdown Associated with Proposed Ammonia Combustor			
Application Date	**Anticipated # of Startups and Shutdowns**	**Emissions of NOx during Startup and Shutdown (lb/hr)**	**Notes**
April 2013 Page 32 and Appendix E EPD verified with the applicant their decision to revise their February 2013 conclusion noted in the row above.	15 to 20 times Each lasting 2 to 3 hours	Uncontrolled emissions 84.65 lb/hr	Requested BACT limit of 150 ppm at 3% oxygen equivalent to 4.23 lb/hr, excluding periods of startup and shutdown Modeled emission rate is 4.32 lb/hr rather than 4.70 lb/hr

4.0 CONTROL TECHNOLOGY REVIEW

The Division analyzed the proposed modification discussed in the **confidential version of the application** to determine what portions of the proposed project were subject to BACT. The result of the Division's analysis is specified in the following table:

Equipment	**Physical Change or Change in the Method of Operation?**	**Subject to BACT?**	**Net Emissions Increase for NOx (tpy)**	**% of Total Net Emissions Increase for NOx (tpy)**
Boilers	**Confidential Business Information**	No – *See note below*	75.9	~73.5
Hydrogen Reformers	**Confidential Business Information**	No because net emissions increases for applicable pollutants are less than PSD significant emission rate.	6.5	~6.30
Anol Conversion Furnaces	**Confidential Business Information**	No	0.8	~0.77
New Ammonia Combustor	**New Unit**	Yes for NOx and GHG emissions	18.52	~18.00
New Hot Oil Furnace	**New Unit**	Yes for NOx and GHG emissions	1.52	~2.43
		Total	103.24	100.0

Note: Georgia EPD investigated whether the **project confidential business information** related to the boilers would trigger BACT requirements as there is an overall net emissions increase of NOx emissions from the boilers due to the plant upgrade as a whole. Georgia EPD determined that the **project confidential business information** related to the boilers would not make the boilers subject to BACT because of the origin of the net emissions increase from the boilers.

4.1 Ammonia Combustor

The ammonia combustor (Emission Unit ID No. R033) is subject to BACT review for NOx and GHG emissions.

Oxides of Nitrogen

Top-Down BACT Alternatives: The applicant identified and performed detailed discussion of the following NOx control technology for the ammonia combustor following the process theory for reducing NOx emissions from weak nitric acid production facilities.

- Non-selective catalytic reduction (NSCR, often referred to as a three-way catalyst)
- Molecular sieves,
- Hydrogen peroxide (H_2O_2) injection,
- Wet scrubbers, and
- Selective catalytic reduction (SCR).

Please refer pages 28-29 of the application for a further review of the applicant's step 1 (Top-Down BACT Alternatives). The Division supports the applicant's findings.

Technical Feasibility Analysis: Table 4-1 summarizes Application No. 21476 discussion on eliminating technically infeasible options. For a detailed discussion, please see pages 29 through 31 of Application No. 21476. The Division concurs with the facility's findings.

Table 4-1 Technical Feasibility Analysis

Control Technology	Considered Technically Feasible	Reason for Decision
NSCR	Yes	
Molecular Sieves	No	Not considered technically demonstrated for use in controlling emissions from ammonia combustors
Hydrogen Peroxide Injection	No	No - See Note 1
Wet Scrubber	No	Not considered technically demonstrated for use in controlling emissions from ammonia combustors.
SCR	Yes	

Note 1: The applicant notes on page 30 of the application that hydrogen peroxide injection is used to control emissions of NOx at Agrium U.S., Inc. – Kennewick Fertilizer Operations (WA) for Plant 9. The Division contacted the applicable permitting agency, namely the Benton Clean Air Agency in Kennewick, WA to learn about Plant 9 at Agrium U.S.. There were no permitting agency personnel who were able to discuss the project due to lack of information at permitting offices. The Division tried unsuccessfully to contact Agrium U.S., Inc. – Kennewick Fertilizer Operations to learn whether Plant 9 was built and if Agrium is using hydrogen peroxide to control NOx emissions.

Ranking the Technically Feasible Alternatives: Application No. 21476 presents this analysis on page 31. The applicant ranked NSCR as the more effective control technology over SCR. The Division concurs with the applicant's findings.

Energy, Environmental and Economic Analysis: The applicant provided this analysis on page 31 of the application under *Step 3 – Rank Remaining Control Technologies*. The applicant selected NSCR over SCR based on the ability of NSCR and SCR to control NOx and GHG emissions.

NOx BACT Emission Standard Analysis: The applicant proposed a NOx BACT limit of 150 ppm @ 3% oxygen on page 31 of the application.

EPD NOx BACT Selection: The following data is taken from page 7 of the applicant's February 12, 2013 letter to Georgia EPD.

Equipment	Controlled NOx (lb/hr)	Controlled NOx (ppm @ 3% oxygen)
Existing Ammonia Combustor Unit R2604	0.46 (min) 11.44 (max)	8 (min) 200 (max)
Existing Ammonia Combustor Unit R3604	1.03 (min) 25.70 (max)	8 (min) 200 (max)
Proposed Ammonia Combustor Unit R4604	4.23 (max) – February 2013 4.71 (max)- Initial Application	150 (max)

There are no comparable RBLC matches for which to assess the proposed numerical BACT limit. The Division assessed the viability of the applicant's proposal based on the actual NOx emissions from the existing ammonia combustors exhausting through an NSCR.

The Division concurs with the applicant's request and sets the NOx BACT limit from the proposed ammonia combustor at 150 ppm @3% oxygen on a 3-hour average, excluding periods of startup and shutdown. The Division is also establishing an annual BACT limit of 20 tons per rolling twelve months and this limit includes periods of startup and shutdown.

Greenhouse Gases (GHG) Emissions

Emissions of all GHGs from the proposed ammonia combustor are negligible except for N_2O. Therefore, this BACT analysis will only consider N_2O as the GHG emitted from the proposed ammonia combustor.

Top-Down BACT Alternatives: The applicant identified and performed detailed discussion of the following GHG control technology for the ammonia combustor on page 32 of the application.

- Primary Control: Suppression of N_2O formation, primarily through the use of improved oxidation catalysts in the ammonia oxidation reactor.
- Secondary Control: Catalytic N_2O decomposition in the ammonia oxidation reactor.
- Tertiary Control: Non-selective catalytic reduction (NSCR).
- Tertiary Control: Catalytic decomposition.

The Division concurs with the applicant's conclusion based on its review of the US EPA GHG Permitting Document for the Nitric Acid Industry.[2]

[2] USEPA, Available and Emerging Technologies for Reducing Greenhouse Gas Emissions from the Nitric Acid Production Industry, December 2010, Office of Air and Radiation.

Technical Feasibility Analysis: The applicant's technical feasibility analysis is found on page 32 of the application. The Division concurs with the applicant's findings that all identified control approaches are considered technically feasible.

Ranking the Technically Feasible Alternatives: The applicant's ranking of the technical feasible alternatives is found on pages 33-34 of the application. The Division concurs with the applicant's findings.

Energy, Environmental and Economic Analysis: The applicant provided this analysis on page 31 of the application under *Step 3 – Rank Remaining Control Technologies*. The applicant selected NSCR over SCR based on the ability of NSCR and SCR to control NOx and GHG emissions.

GHG BACT Emission Standard Analysis: The applicant proposed the following GHG BACT emission limits:

Date of Application Location in Application	**GHG BACT Emission Limit**
Page 33 – October 1, 2012	186,000 ppmv, excluding periods of startup and shutdown
Page 8 of Letter to EPD dated February 12, 2013	22,425 tons during any twelve consecutive months, includes periods of startup and shutdown.

EPD GHG BACT Selection: The following data is taken from page 7 of the applicant's February 12, 2013 letter to the Division.

Equipment	**Un-Controlled N_2O (lb/hr)**	**Un-Controlled N_2O (ppm @ 3% oxygen)**	**Un-Controlled GHG expressed as CO_2e (ppm @ 3% oxygen)**
Existing Ammonia Combustor Unit R2604	82.08 (min) 191.53 (max)	1,500 (min) 3,500 (max)	465,000 (min) 1,085,000 (max)
Existing Ammonia Combustor Unit R3604	184.35 (min) 430.16 (max)	1,500 (min) 3,500 (max)	465,000 (min) 1,085,000 (max)

The control of N_2O from the existing combustors is not required by any regulatory requirement; however, the applicant noted in the applicant that the use of an NSCR would result in an 80% N_2O control efficiency. Table 4-2 specifies the controlled N_2O emissions for purposes of this analysis:

Table 4-2 Controlled GHG Emission Estimates from the Ammonia Combustor				
Equipment	**Controlled N_2O (lb/hr)**	**Controlled GHG (tpy)**	**Controlled N_2O (ppm @ 3% oxygen)**	**Controlled GHG expressed as CO_2e (ppm @ 3% oxygen) Note 1:**
Existing Ammonia Combustor Unit R2604	16.42 (min) 38.31 (max)	22,295 52,017	300 (min) 700 (max)	93,000 (min) 217,000 (max)
Existing Ammonia Combustor Unit R3604	36.87 (min) 86.03 (max)	50,062 116,812	300 (min) 700 (max)	93,000 (min) 217,000 (max)

Table 4-2 Controlled GHG Emission Estimates from the Ammonia Combustor				
Equipment	**Controlled N_2O (lb/hr)**	**Controlled GHG (tpy)**	**Controlled N_2O (ppm @ 3% oxygen)**	**Controlled GHG expressed as CO_2e (ppm @ 3% oxygen) Note 1:**
Proposed Ammonia Combustor Unit R4604	16.19 (max)	21,982	600 (max)	186,000 (max)

Note 1: Excludes periods of startup and shutdown.

There are no comparable RBLC matches for which to assess the proposed numerical BACT limit. The Division assessed the viability of the applicant's proposal based on the actual uncontrolled N_2O emissions from the existing ammonia combustors taking into account an 80% control efficiency for N_2O via the use of NSCR.

The Division agrees with the applicant's updated proposal for GHG BACT. The Division sets the GHG BACT limit from the proposed new ammonia combustor at 22,425 tons during any twelve consecutive months, including periods of startup and shutdown.

4.2 Hot Oil Furnace

The new hot oil heater (Emission Unit ID No. B030) is subject to BACT review for NOx and GHG emissions.

Oxides of Nitrogen

Top-Down BACT Alternatives: The applicant identified and performed detailed discussion of the following NOx control technology for the hot oil furnace:

- Low NOx burners (LNB),
- Flue gas recirculation (FGR),
- LNB with FGR,
- Ultra low NOx burners (ULNB),
- Selective non-catalytic reduction (SNCR),
- LNB with SCR, and
- NOx wet scrubbers.

Please refer pages 33-34 of the application for a further review of the applicant's step 1 (Top-Down BACT Alternatives). The Division supports the applicant's findings.

Technical Feasibility Analysis: The applicant noted that all of the technologies identified in Step 2 have been demonstrated in practice for the control of NOx emissions from natural gas combustion sources. The applicant's conclusion is found on page 34 of the application. The Division concurs with the facility's findings.

Ranking the Technically Feasible Alternatives: Application No. 21476 presents this analysis on page 34. The applicant did not note whether the anticipated NOx outlet concentrations are for a hot oil furnace(i.e., boiler) that is around 11.6 MMBtu/hr and so the Division is not sure about the validity of the ranking for the proposed oil heater. Nonetheless, the Division concurs with the applicant's findings based on knowledge of combustion and control of NOx emissions from combustion.

Energy, Environmental and Economic Analysis: The applicant provided this analysis on pages 34 through 38 of the application. The uncontrolled emissions data provided in the application on page 37 does not match exactly with the NOx emission data provided in Appendix D of the application, namely the NOx emissions in tons per year. The applicant noted on page 37 of the application that the assumed annual uncontrolled NOx emissions is approximately 1.31 tons per year while in Appendix D the applicant assumed an annual uncontrolled NOx emission rate of approximately 1.52 tons per year.

Overall, the Division agrees with the applicant's qualitative conclusion on page 38 of the application that controlling NOx emissions from such a small hot oil furnace is not cost effective.

NOx BACT Emission Standard Analysis: The applicant proposed a NOx BACT limit of 0.03 pounds per million Btu (lb/MMBtu) on page 31 of the application using some sort of low NOx burner control technology.

EPD NOx BACT Selection: The applicant's proposal is consistent with what would be required by Georgia Rule 391-3-1-.02(2)(lll) if applicable. The Division sets the NOx BACT limit from the hot oil furnace at 0.03 lb/MMBtu on a 3 hour average including periods of startup and shutdown. The averaging period is based on the applicable reference test method for NOx emissions which is a 3 hour average.

Greenhouse Gases (GHG) Emissions

The applicant noted on page 38 of the application that the primary GHG emitted from the hot oil heater is CO_2 and that the remaining GHG compounds are negligible.

Top-Down BACT Alternatives: The applicant identified and performed detailed discussion of the following GHG control technology for the hot oil furnace on page 38 of the application citing as the source of the information the US EPA White Paper for Control of GHGs from boilers.[3]

- Energy efficiency improvements (14 specific measures),
- Carbon capture and storage,
- Use of alternative fuels, and
- Combined heat and power.

The Division concurs with the applicant's conclusion based on its review of the referenced US EPA GHG Permitting Document.

Technical Feasibility Analysis: The applicant's technical feasibility analysis is found on pages 38 through 39 of the application. The applicant excluded carbon capture and storage as technically feasible. The Division concurs with the applicant's findings.

Ranking the Technically Feasible Alternatives: The applicant's ranking of the technical feasible alternatives is found on page 39 of the application. The Division concurs with the applicant's findings.

Energy, Environmental and Economic Analysis: The applicant provided this analysis on page 39 of the application under *Step 3 – Rank Remaining Control Technologies*.

[3] US EPA, Available and Emerging Technologies for Reducing Greenhouse Gas Emissions from Industrial, Commercial and Institutional Boilers, October 2010, Office of Air and Radiation.

GHG BACT Emission Standard Analysis: The applicant proposed the following GHG BACT emission limits:

Date of Application Location in Application	GHG BACT Emission Limit
Page 39 – October 1, 2012	120.73 lb CO_2e/MMBtu heat input, excluding periods of startup and shutdown.

The applicant provided the potential GHG emissions from the hot oil heater on page 39 of the October 1, 2012 application as 6,134 tons per year, including periods of startup and shutdown.

EPD GHG BACT Selection: There are no comparable RBLC matches for which to assess the proposed numerical BACT limit.

As the applicant proposes to only burn natural gas in the oil heater, the Division sets the GHG BACT emission limit from the proposed 11.6 MMBtu/hr hot oil furnace at 6,134 tons during any twelve consecutive months, including periods of startup and shutdown.

Miscellaneous Emission Limits – Boiler Plant

Establishment of a NO_2 Modeling Limit for 1-hour NO_2 Significant Impact Level: DCNA is projecting an increased utilization of the boiler plant, and the boiler plant in this case consists of units emitting through common stack S014 which include boilers with emission unit ID Nos. B005, B006, B014, and B022. The project in question will result in a net emissions increase of approximately 103.24 tons per year and the boilers noted above account for 73% of this net emissions increase. The boilers will not undergo a physical change or change in the method of operation and therefore are not subject to the requirements of BACT.

Georgia EPD evaluated the need for a NO_2 emission limit from stack S014 for purposes of the NO_2 ambient impact analysis. Georgia EPD determined, through modeling, that a one-hour average NO_2 emissions greater than 145 pounds per hour would yield a maximum ground-level concentration which is greater than the applicable SIL, which in turn would invalidate the application results. Therefore, Georgia EPD will impose an NO_2 modeling limit of 145 pounds per hour, one-hour average on stack S014, to protect the 1-hour NO_2 SIL modeling results.

Georgia EPD evaluated the compliance date for this NO_2 modeling limit. The following compliance dates were considered: (1) initial; (2) upon completion of construction of entire "project" as defined in Application No. 21476 (which is an unknown date); (3) an intermediate date to maintain the integrity of the modeling results. Based on this analysis, Georgia EPD sets a compliance date of 12 months upon issuance of final permit for the 1-hour NO_2 modeling limit on the boiler plant stack S014.

5.0 TESTING AND MONITORING REQUIREMENTS

Revisions to Existing Permit Condition No. 4.1.3: This existing permit condition is revised as follows:

- Existing Condition No. 4.1.3.o is modified to only require the use of Method 202 to measure condensable particulate matter as required by applicable regulation. Note that the condensable portion of particulate matter is no longer regulated as a "regulated NSR pollutant" per 77 *Federal Register* 65107-65119 (October 25, 2012).

- Addition of Condition No. 4.1.3.y to add Method 201A in conjunction with Method 202 to be used to determine concentrations of PM10 and PM2.5 to demonstrate compliance with emission limits in Condition Nos. 3.2.A.14b, 3.2.A14c, 3.2.A16b, 3.2.A16c.

- Addition of Condition No. 4.1.3.z to add Method 7 or 7E to be used to determine NOx emissions from the proposed ammonia combustor, the proposed hot oil furnace, and the boiler plant stack.

- Addition of Condition No. 4.1.3aa to add Method 320 to be used to determine specific GHG emissions from the proposed ammonia combustor.

Ammonia Combustor

The proposed ammonia combustor is subject to the requirements of PSD BACT for emissions of NOx and GHGs (expressed as CO_2e).

Requirements for NOx - BACT: Compliance with the short-term BACT NOx emission limitation must be demonstrated by an initial performance test using Method 7 or 7E, the method for compliance determination. The NOx emissions from the proposed ammonia combustor are subject to the requirements of 40 CFR 64 (Continuous Assurance Monitoring (CAM)) because:

(1) The ammonia combustor is subject to a NOx emission standard (PSD-BACT) that is not exempt under paragraph 40 CFR 64.2(b)(1),

(2) The ammonia combustor will exhaust through a NOx control device (non-selective catalytic reduction) to achieve compliance with the NOx emission standard, and

(3) The unit has potential pre-control NOx emissions greater than 100 tons per year.

The applicant proposed the installation and operation of a NOx continuous emissions monitoring system (CEMS) to comply with 40 CFR 64. To reasonably assure compliance with the PSD-BACT NOx emission limitation of 150 ppmd at 3% oxygen, the draft permit requires a NOx CEMS for the periodic monitoring of the discharge from the controlled ammonia combustor. The NOx CEMS is also used to determine the mass emissions on an annual basis from the ammonia combustor. The NOx CEMS must be installed and certified according to Performance Specification 2 of 40 CFR 60, Appendix B, except that the 7-day calibration drift is to be based on unit operating days, not calendar days.

Requirements for GHG Emissions: No testing requirements are imposed to verify compliance with the GHG BACT emission standard. The GHG emissions from the proposed ammonia combustor are subject to the requirements of 40 CFR 64 (Continuous Assurance Monitoring (CAM)) because:

(1) The ammonia combustor is subject to a GHG emission standard (PSD-BACT) that is not exempt under paragraph 40 CFR 64.2(b)(1),

(2) The ammonia combustor will exhaust through a GHG control device (non-selective catalytic reduction) to achieve compliance with the GHG emission standard, and

(3) The unit has potential pre-control GHG emissions greater than 100 tons per year.

The applicant proposed the installation and operation of a N_2O continuous emissions monitoring system (CEMS) to comply with 40 CFR 64. To reasonably assure compliance with the PSD-BACT GHG emission limitation, the Permittee must install and operate an N_2O CEMS for the periodic monitoring of the discharge from the controlled ammonia combustor. The N_2O CEMS must be installed and certified according to Performance Specification 15 of 40 CFR 60, Appendix B, except that the 7-day calibration drift is to be based on unit operating days, not calendar days. The N_2O CEMS must be programmed to generate GHG emissions data as CO_2e.

Hot Oil Furnace

The hot oil furnace (Emission Unit ID No. B030) is subject to PSD BACT for NOx and GHG emissions; 40 CFR 60 Subpart Dc (which imposes no requirements); Georgia Rule 391-3-1-.02(2)(d) for PM emissions and opacity; Georgia Rule 391-3-1-.02(2)(g) for fuel sulfur content; PSD Avoidance for PM, PM10, and PM2.5 emissions; and the Boiler MACT Part 63 Subpart DDDDD for HAPs.

Requirements for NOx: The hot oil furnace is subject to a short term PSD NOx BACT limit of 0.03 pounds per million Btu (lb/MMBtu). An initial performance test will be required to verify compliance with this emission limitation. The requirements of 40 CFR 60 Subpart Dc do not impose any testing requirements on the proposed hot oil furnace.

The hot oil furnace will be limited to the combustion of natural gas to reasonably assure compliance with the short-term PSD NOx BACT limit.

Requirements for GHG: No testing requirements are imposed to verify compliance with the PSD BACT GHG emissions limitation.

The hot oil furnace is subject to an annual PSD GHG BACT limit expressed as CO_2e in tons per year. The applicant will be required to monitor fuel usage and compute the rolling annual CO_2e emissions using the GHG emission factors and global warming potentials found in Application No. 21476. The requirements of 40 CFR 64 are not subject to the proposed oil heater because the unit operates on an uncontrolled basis.

Requirements for PM, PM10, PM2.5 and Opacity: The hot oil furnace will only be able to fire natural gas which is a low-ash fuel. Because the magnitude of those emissions are expected to be below their allowable emission levels with no end of pipe control, performance testing or monitoring for PM, PM10, PM2.5 and/or visible emissions will not be required for natural gas combustion.

Requirements for Fuel Sulfur Content: The hot oil furnace will only be able to fire natural gas which typically has a fuel sulfur content of much less than 2.5 weight percent. No monitoring of the fuel sulfur content of the natural gas to be burned in the hot oil furnace will be required.

Part 63 Subpart DDDDD: The Boiler MACT requirements impose an annual tune-up in accordance with the requirements of 40 CFR 63.7540(a)(10). Frequency of annual tune-ups is specified per 40 CFR 63.7515.

Existing Ammonium Sulfate Plant

The existing ammonium sulfate plant is subject to the requirements of 40 CFR 64 (CAM) per existing permit condition numbers 5.2.4 and 5.2.5 for PM emissions. The applicant anticipated an increase in emissions from ammonium sulfate plant from the proposed project due to increased utilization. The applicant did not address the requirements of CAM for PM10 and PM2.5 for this plant due to this increased utilization. Georgia EPD is not recommending an update to existing permit condition

numbers 5.2.4 and 5.2.5 to account for CAM requirements for PM10 and PM2.5 because the plant will not be modified.

New AP Plant

The new plant will be similar to the existing plant utilizing a close-loop nitrogen system with no emission point, other than the batch blending bagdump baghouse (Emission Unit ID No. C316).

The new AP plant is subject to Georgia Rule 391-3-1-.02(2)(e) for particulate matter emissions; Georgia Rule 391-3-1-.02(2)(b) for visible emissions; and PSD Avoidance for emissions of PM, PM10, and PM2.5. The requirements of PSD Avoidance for emissions of PM, PM10, and PM2.5 subsume the emission limitation imposed by Georgia Rule (e).

Requirements for PM, PM10, PM2.5 and Opacity: An initial performance test for each of the noted emission units will be required for emissions of PM, PM10, PM2.5 and visible emissions. The condensable portion of the PM10 and PM2.5 must be measured along with the filterable portion in order to verify compliance with the applicable PSD Avoidance limits of the permit. The condensable portion of the PM emissions does not have to be measured via source test.

The operation of the proposed baghouses (treated as process equipment for 40 CFR 64 applicability) will be monitored to reasonably assure compliance with the PM, PM10, PM2.5 and visible emissions limitations imposed by the permit. The baghouse monitoring requirements will consist of the gas phase pressure drop across the baghouses associated with the new AP plant and the data should be recorded in the process log at least once per eight hours of facility operation. In addition, draft Condition No. 5.2K.3 requires a daily visual inspection of the new baghouse as well as visible emissions checks.

Applicability Analysis for 40 CFR 64 – Compliance Assurance Monitoring*:* The applicant provided a CAM analysis of the new AP plant in their letter to the Division dated February 12, 2013 and that table is provided below: Note: DCNA revised the new AP Plant design in April 2013.

Source ID	Description	Emission Limitation for Pollutant	Unit Controlled? Un-Controlled Emissions (tpy)	Notes by the Division	Division's Conclusion: Subject to CAM?
C316	In-line blending bagdump	PM, PM10, PM2.5 *See Note 1*	Baghouse used as process equipment as collected baghouse material is re-used in process. Not controlled *See Note 2*	Note 1: Applicant only assumed that PM would be limited. The Division is imposing a PSD Avoidance limit for PM, PM10, and PM2.5 Note 2: Applicant assumed that process equipment is control equipment. The	No – not controlled

Source ID	Description	Emission Limitation for Pollutant	Unit Controlled? Un-Controlled Emissions (tpy)	Notes by the Division	Division's Conclusion: Subject to CAM?
				Division is assuming that process equipment is not control equipment.	

Boiler Plant

The proposed boiler plant (emission unit ID Nos. B005, B006, B014, and B022) which exhausts through stack ID No. S014 is subject to a 1-hour NO_2 modeling limit of 145 lb/hr on a 1-hour average. The compliance date for this modeling limit is fourteen months from date of issuance of permit.

Requirements for NOx: Compliance with the short-term NOx emission limitation must be demonstrated by an initial performance test using Method 7 or 7E, the method for compliance determination. Either of these reference test methods will be used to identify the maximum 1-hour NO_2 emission rate. NO_2 emissions will be set at 80% of the NOx emissions. The performance test must be performed at a heat input that is consistent with the "projected future actual" emissions found in Application No. 21476. The performance test must be conducted within twelve months of permit issuance.

Georgia EPD will require the applicant to install and operate a NOx continuous emissions monitoring system (CEMS) on stack ID No. S014 of the boiler plant in order for Georgia EPD to reasonably assure compliance with the NO_2 modeling limit. To reasonably assure compliance with the PSD-NO_2 modeling limit of 145 pounds per hour, one-hour average, the draft permit requires a NOx CEMS for the periodic monitoring of the discharge from the boiler plant stack ID No. S014.. The NOx CEMS must be installed and certified according to Performance Specification 2 of 40 CFR 60, Appendix B, except that the 7-day calibration drift is to be based on unit operating days, not calendar days, within twelve months of permit issuance.

6.0 OTHER RECORD KEEPING AND REPORTING REQUIREMENTS

The Permit contains general requirements for the maintenance of all records for a period of five years following the date of entry and requires the prompt reporting of all information related to deviations from the applicable requirement. Records, including identification of any excess emissions, exceedances, or excursions from the applicable monitoring triggers, the cause of such occurrence, and the corrective action taken, are required to be kept by the Permittee and reporting is required on a semiannual basis.

Exceedances are defined as follows:

- Exceedance of any of the following emission limits for purposes of PSD –Condition No. 6.1K.1:
  (1) 150 ppmvd @3% oxygen on a 3-hour average basis for NOx emissions from ammonia combustor with emission unit ID No. R033, excluding periods of startup and shutdown.

  (2) 20 tons of NOx emissions during any twelve consecutive months from ammonia combustor with emission unit ID No. R033, including periods of startup and shutdown;

(3) 22,425 tons of CO_{2e} emissions during any twelve consecutive months from ammonia combustor with emission unit ID No. R033, including periods of startup and shutdown;

(4) 6,134 tons of CO_{2e} emissions during any twelve consecutive months from hot oil heater with emission unit ID No. B030, including periods of startup and shutdown;

(5) 145 pounds per hour on a 1-hour average for NOx emissions from the boiler plant with stack ID No. S014 – this condition applies twelve months from the date of permit issuance. The reason for a later effective date for this condition is discussed in "Section 7 – Class II Significant Impact."

Excursions are defined as follows:

- Excursion as defined by Condition No. 6.1A.7 for New Baghouses:
  (1) Any 2 consecutive readings of the pressure drop of baghouse with ID No. PC16 lower than 0.5 inches water column.

  (2) Any visible emissions as determined by the checks required by Condition 5.2K.3

  (3) Any failure to check for leaks as required by Condition No. 5.2K.3.

The following section provides a brief description of the method for verifying compliance with the various mass emission limits in the permit.

Verification of Compliance with the NOx Mass Emission Limit

Compliance with the twelve month rolling total NOx emission rate from the ammonia combustor with emission unit ID No. R033 is tracked using the NOx CEMS data to compute the NOx mass emission rate. The Permittee is required to maintain monthly records which specify the twelve consecutive month total NOx emissions (in tons) from the ammonia combustor with emission unit ID No. R033. Failure to maintain NOx emissions from the ammonia combustor below 20 tons during any twelve consecutive must be reported as an exceedance.

Verification of Compliance with GHG Emission Limit

Hot Oil Furnace: Compliance with the twelve month rolling total GHG emission rates (expressed as CO_{2e}) from the applicable equipment is to be tracked using fuel usage data and emission factors and global warming potentials found in Application No. 21476. The Permittee is required to retain monthly records (including calculations). Failure to maintain GHG emissions from the hot oil furnace below 6,134 tons during any twelve consecutive months must be reported as an exceedance.

Ammonia Combustor: Compliance with the twelve month rolling total GHG emission rate (expressed as CO_2e) from the ammonia combustor with emission unit ID No. R033 is tracked using the N_2O CEMS data, converted to CO_2e basis, to compute the GHG mass emission rate. The Permittee is required to maintain monthly records which specify the twelve consecutive month total GHG emissions (in tons) from the ammonia combustor. Failure to maintain GHG emissions from the ammonia combustor below 22,425 tons during any twelve consecutive must be reported as an exceedance.

7.0 AMBIENT AIR QUALITY REVIEW

An air quality analysis is required to determine the ambient impacts associated with the construction and operation of the proposed project. The main purpose of the air quality analysis is to demonstrate that emissions emitted from the proposed project, 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, PM_{10} and $PM_{2.5}$.

The proposed project at DCNA triggers PSD review for NO_x and GHG emissions. An air quality analysis was conducted to verify the facility's compliance with the NAAQS and PSD Increment standards for NO_2. An additional analysis was conducted to demonstrate compliance with the Georgia air toxics program.

Date	Application Version Dates for PSD Modeling and/or Georgia Air Toxics Assessment	Nature of Modeling Update
10/1/2012	Submittal of **Initial Version of PSD Application**	Initial submittal is missing inclusion of all NOx emission increases in the Class II Project Modeling.
11/2/2012	**NOD Response:** Receipt of response from DCNA based on Georgia EPD's letter of October 18, 2012. Missing updated portions of application as cited in letter.	
11/5/2012	**NOD Response:** Updated portions of DCNA's application as referenced in their letter of November 2, 2012 *Table 2-1 ***Updated PSD Modeling** *Section 7 *Appendix C – process flow diagram for Anone Sections 35 & 45 *Appendix D – NOx Emission Rate Determination for existing hydrogen reformers	**PSD Modeling Update:** Includes all NOx emission increases.
11/29/2012	**Update to PSD Application:** Georgia EPD in receipt of updated portions of DCNA's application *Table 2-1 *Section 5 in its entirety ***Updated PSD Modeling Assessment** *Section 7 in its entirety *Appendix C: Updated process flow diagram for Anone Sections 35 & 45	**Appears to contain no substantive PSD Modeling updates. Appears to be an exact duplicate of November 5, 2012 submittal.**
12/6/2012	**Update to PSD Application:** Georgia EPD in receipt of updated portions of DCNA's application ***Updated Toxics Impact Assessment Modeling Results** *Updated Modeling Protocol	DCNA submitted an updated Toxics Impact Assessment (TIA) for benzene using the necessary steps discussed in the *Georgia Air Toxics Guideline*. This action was necessary because DCNA's TIA resulted in a predicted benzene concentration which exceeds the benzene AAC.

Date	Application Version Dates for PSD Modeling and/or Georgia Air Toxics Assessment	Nature of Modeling Update
02/12/2013	**Response to NOTR:** EPD in receipt of response from DCNA based on EPA's letter dated January 14, 2013. **Updated portions of the application include:** ***PSD Modeling Analysis and Toxics Impact Assessment** *Section 7 *Appendix D: Summary of Projected Toxic Emissions *Appendix D: Title V CAM Application Forms	DCNA added offsite buildings which meet the definition of "nearby" in 40 CFR 51.100(jj) in the BPIP file. DCNA updated the Class II Project modeling based on the new BPIP file. Toxics Impact Assessment (TIA) modeling files have been corrected per EPD's comments. DCNA rerun the TIA modeling.
03/11/2013	**Notification of PSD Modeling Deficiency**: Georgia EPD's email to ENVIRON requesting submittal of the Class I area increment analysis. Application found to be deficient.	**Notification of PSD Modeling Deficiency**
03/15/2013	**Response to Notification of PSD Modeling:** ENVIRON submitted Class I increment analysis modeling files. ENVIRON did not send an updated written portion for the application.	**PSD Class I Increment Modeling submitted.**
04/25/2013	**Updated PSD Modeling:** *Class II Project Modeling files submitted per the need for greater grid resolution. * It appears that DCNA has revised the stack height of the proposed ammonia combustor without notifying Georgia EPD. This was corroborated by DCNA.	PSD Class II SIL Modeling update. Updated modeling files submitted
04/29/2013	DCNA's response to EPA Region 4's April 5, 2013 comments. Applicant submitted the following **Updated PSD Application – PSD Modeling:** *Figure 1 – Maximum Impact for 1-hour NOx SIL Modeling *Figure 2 – Maximum Impact for Annual NOx SIL Modeling *Revised Table 6.5.1 Project Impact compared to NO2 SILs	No updated modeling files necessary
05/01/2013	**Updated PSD Modeling:** Class II project modeling narrative in April 2013 application edition.	No updated modeling files necessary.

Sections 6.1.1 through 6.1.3 (pages 40-41) of the April 2013 version of the application provides the applicant's general modeling foundation for this project.

Model Input Data – Source Data:

NO_2 Modeling: The applicant provided the point source release parameters in Table 6.1.1 on page 42 of the application. Note that the applicant's most recent version of the PSD Application (April 2013) contains the final design stack parameters. Point source release information is also provided in Table 6.4.2 on page 53 of the updated April 2013 application.

The applicant assumed a Tier 2 ambient modeling ratio (AMR) of 80% for the Class II PSD modeling for the 1-hour NO_2 modeling and 75% for the annual NO2 modeling as noted on page 53 of the application. The Division concurs with the applicant's use of these AMR's. Note: The applicant decreased the potential to emit and raised the stack height design of the proposed ammonia combustor in order for the project's maximum ground-level 1-hour NO2 modeling to remain below the significant impact level. The applicant utilized the following NO_2 emission rates as part of the annual and 1-hour NO_2 project analysis:

Stack ID	UTMx (Zone 17) (m)	UTMy (Zone 17) (m)	NOx (lb/hr)	Annual Std	1-Hour Standard
				NO_2 (lb/hr) & % of total	NO_2 (lb/hr) & % of total
S002	413074	3700057	0.85	0.6375 (3.5%)	0.68 (3.5%)
S012	413326	3700186	0.08	0.060 (0.33%)	0.064 (0.33%)
S014	413164	3700052	17.83 Note 1	13.3725 (73.77%)	14.264 (73.77)
S017	413306	3700205	0.11	0.0825 (0.46%)	0.088 (0.46%)
S020	413085	3700118	0.72	0.54 (2.98%)	0.576 (2.98%)
S030 (new)	413046	3699958	0.35	0.2625 (1.46%)	0.28 (1.46%)
S033 (new)	413178	3700243	4.23	3.1725 (17.5%)	3.384 (17.5%)
			Total	18.1275	19.336

Note 1: The PFA is approximately 136 lb/hr.

NO_2 Modeling of Startup and Shutdown:

Application Date	Anticipated # of Startups and Shutdowns	Emissions of NOx during Startup and Shutdown (lb/hr)	Notes
September 28, 2012 page 32	15 to 20 times Each lasting 2 to 3 hours	Not provided	Georgia EPD Requested Information on January 14, 2013
February 12, 2013 Page 9 (letter to Georgia EPD)	6 to 10 times Each lasting 1 to 3 hours	Uncontrolled emissions 84.65 lb/hr	Requested BACT limit of 150 ppm at 3% oxygen equivalent to 4.23 lb/hr, excluding periods of startup and shutdown Modeled emission rate is 4.72 lb/hr
April 2013 page 32.	15 to 20 times Each lasting 2 to 3 hours	Not provided	Requested BACT limit of 150 ppm at 3% oxygen equivalent to 4.23 lb/hr, excluding periods of startup and shutdown Modeled emission rate is 4.32 lb/hr rather than 4.70 lb/hr as earlier proposed.

DCNA noted in Appendix E item #10 of the April 2013 Application Update that thy accounted for startup emissions of the proposed ammonia combustor in the modeling. It is important to note that

DCNA did not model NO_2 emissions occurring during the uncontrolled startup the ammonia combustor because they consider these emissions as "intermittent"[4]. The applicant provided a rationale supporting this approach in their letter to Georgia EPD dated February 12, 2013. Note that the applicant did not update this portion of the April 2013 application. The applicable excerpt from the February 12, 2013 letter is provided below:

As . . . , the uncontrolled NOx emission rate from the new ammonia combustor is estimated to be 84.65 lb/hr. During startup, there is very little control provided by the NSCR unit. Therefore, this rate approximate the emission rate during startup. These uncontrolled NOx emissions have not been included in the dispersion model per the EPA memorandum on Intermittent Sources dated May 1, 2011.[5] This memo states that the most appropriate data that should be used for compliance demonstrations of the 1-hour NO_2 NAAQS are those based on emission scenarios that are contiguous enough or frequent enough to contribute significantly to the annual distribution of daily maximum 1-hour concentrations. The rationale regarding the treatment of intermittent sources applies for both project emissions and any nearby or background sources included in the modeling analysis. In consideration of the frequency of startups (6-10 per year) and the duration of uncontrolled emissions during startup (1-3 hours per startup), DCNA's technical consultant, ENVIRON, is of the opinion that, based on EPA guidance, it is appropriate to exclude emissions during startup from the 1-hour NO_2 impacts analysis.

Compliance with the 1-hour NO_2 NAAQS is based on the multi-year average of the 98th percentile of the annual distribution of daily maximum 1-hour values not exceeding 100 ppb. The 8th highest of the daily maximum 1-hour values across a year is an unbiased surrogate for the 98th percentile. The applicant's proposal (February 2013) of 6 to 10 startups per year can be assumed to represent relatively non-continuous (do not occur frequently) enough to contribute significantly to the daily maximum 1-hour concentrations based on existing modeling guidelines. The applicant will be required to maintain records of each occasion of startup. Georgia EPD may require DCNA to model the annual and 1-hour NO_2 startup emissions if the number of startups of the ammonia combustor exceeds 10 per year.

Air Toxics Modeling: The applicant provided the point source release parameters in Table 6.1.1 on page 42 of the application. Note that the applicant's most recent version of the PSD Application (April 2013) contains the final design stack parameters. The applicant modeled fugitive toxic air pollutant emissions (TAPS) as area sources and the area source parameter information may be found in Table 6.1.2. TAP emissions from storage tanks were modeled as volume sources and the volume source release parameters are specified in Table 6.1.3 of the application.

The applicant provided in table 6.6.1 TAP emissions included in the toxics impact modeling assessment.

Modeling Input Date – Good Engineering Practice (GEP) Stack Heights: DCNA raised the design stack height of stack S033 (ammonia combustor) to 65 meters as part of the updated April 2013 PSD application. GEP is discussed in Georgia Rule 391-3-1-.02(2)(a)4. This state rule references 40 CFR 51.100(ii) for the definition of GEP. This federal rule states that for stacks in existence after

[4] USEPA. Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard. Tyler Fox. March 2011.

[5] USEPA. Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard. Tyler Fox. March 2011.

January 12, 1979, GEP is 65 meters. Therefore, DCNA cannot raise the stack height of the proposed ammonia combustor (emission unit ID No. R033) beyond 65 meters.

Modeling Input Data – Building Downwash: GEP building downwash analysis files were provided by the applicant and were based on the scaled site plan included in the application using BPIPPRM program (version 04274). The BPIPPRM model was used to derive building dimensions for downwash assessment and the assessment of cavity-region concentrations appropriate for the AERMOD model. Data used to build the BPIP file are found on page 52 of the application (Table 6.4.1) and Figure 6.5.1 provides an overview of the structures included in the PSD modeling exercise.

Downwash calculations were not used for air toxics dispersion modeling procedures as noted by the applicant on page 44 of the application.

Georgia EPD concurs with the applicant's findings.

Model Input Data - Meteorological Data: Hourly meteorological observations from the Daniel Field, Augusta, GA NWS surface station (ID: 13837) and the daily Peachtree City, GA NWS upper air station (ID: 53819) for the period 2006-2010 were processed using the recently promulgated AERMINUTE and AERMET (version 11059). The data were processed using AERSURFACE at the Daniel Field airport and compiled by Georgia EPD staff. This data was provided to the applicant for use in the PSD modeling exercise. The applicant's representative analysis of the meteorological data used in the analysis is provided in Section 6.3 (pages 45-50). The applicant concluded that the meteorological data for Daniel Field with the medium surface roughness length is the most consistent representation of meteorological and land use conditions centered around the DCNA facility.

Georgia EPD concurs with the applicant's findings.

Model Input Data – Terrain Elevation: Topography was found to be generally flat to the west and slightly elevated to the east of the site vicinity, with no terrain elevations above the height of the main stack (67 meters of stack height plus 37.8 meters of the base elevation) within 20 km of the surrounding area. Terrain data from USGA 1/3 Arc Second National Elevation Dataset (NED) CONUS were extracted to obtain the elevations of all sources and receptors by AERMAP terrain processor (version 09040). The resulting elevation data were verified by comparing contoured receptor elevations with USGS 7.5-minute topographic map contours.

Modeled Input Data: Receptor Grids Analysis: The applicant's proposal is found on page 44 of the April 2013 version of the application. Modeling receptors were placed on the boundary of the Title I site and outside of the Title I site. This includes modeling receptors on top of PCS Nitrogen (AIRS#: 24500002) and General Chemical (AIRS #: 24500008).

Georgia EPD concurs with the applicant's findings.

Class I Significant Impact and AQRV Analysis

The applicant's Class I Area AQRV Analysis is located in Section 6.7 of the application.

To determine whether the proposed project is subject to the Class I AQRV analysis, a Q/D screening analysis was performed, where Q is the sum of all visibility-affecting pollutants in tons per year emitted from the proposed modification project, calculated on a worse-case 24-hour period basis (FLAG 2010 Approach), and D is the distance in kilometers, from the proposed facility to the corresponding Class I area boundary. The sum of the pollutants – NOx, PM10, and SO2 from the plant modification is 125.1 tons per year. The distance to the nearest Class I area (Cape Romain

Wilderness Area, SC) is 220 km from DCNA. This yields a Q/D ratio of 0.57, well below the value of 10 currently used by the Federal Land Management (FLM) to screen a proposed project.

DCNA provided the three FLM agencies (the Fish and Wildlife Service, the Forest Service, and the National Park Service) the qualitative Q/D evaluation of its impact on Class I areas within 300 km distance from the facility, and requested their opinions on the findings of no adverse impact to any Air Quality Related Values (AQRVs) at the nearby Class I areas. No comments or guidance has been received from the FLMs.

DCNA submitted a Class I area significant impact analysis (also referred to as a Class I PSD increment analysis) as part of Section 6.7 of their updated April 2013 PSD application. The Class I PSD increment analysis was performed by the applicant using AERMOD (version 12345) to conservatively assess the maximum concentration of NO_2 emitted from the DCNA facility without building downwash at a distance of 50km from the project site since all Class I areas are located further than 50km. The 360 receptors are about 1-km evenly spaced on a 50km circle from the facility. The applicant reported a maximum predicted ground-level concentration of approximately 0.00644 $\mu g/m^3$. The Georgia EPD does not support this modeled concentration. The Georgia EPD re-ran the Class I model input files and derived a maximum predicted ground-level concentration of approximately 0.0086 $\mu g/m^3$.

Table 6-1 shows that the modeled maximum impacts of NO_2 was below its Class I area Significance Impact Level (SIL).

Table 6-1 Project Impacts vs. Significance Level (Class I Areas)

Criteria Pollutant	Averaging Period	Significance Level	Maximum Projected Concentration*	Receptor UTM Zone: 17		Model Met Data Period	Exceeds SIL?
		($\mu g/m^3$)	($\mu g/m^3$)	(meter East)	(meter North)	[yymmddhh]	(Yes/No)
NO_2	Annual	0.1	0.0086	413574.93	3700440.66	2010	No

*Highest concentration over 5-year modeling period.

Class II Significant Impact

The applicant presented their Class II significance modeling in Chapter 6.5 and in Appendix E of the April 2013 application edition. Georgia EPD is not requiring, at this time, a Class II modeling analysis (qualitative or quantitative) to take into account secondary PM2.5 formation as the net emissions increase of NOx from the project exceeds 40 tons per year.

The Class II area significant impact analysis for NO_2 was conducted using AERMOD model (version 12345). Receptors along the facility fence line were spaced 10 meters apart. Beyond the fence line, receptors were spaced, 25-meter, 5-meter, 200-meter, and 500-meter apart in a Cartesian grid extending out 1im, 1.5km, 2.5km, and 5km. The modeled maximum concentration at 1-hour averaging period was found located at the 500m receptor grid region. DCNA updated this modeling in April 2013 as noted in Appendix E of the April 2013 version of the PSD Application:

Additional receptors have been added to the significant impact level (SIL) modeling assessment for the 1-hour NO_2 standard in order to ensure that all concentrations equal to or greater than 90% of the maximum concentration were modeled at a resolution of 100m. [The maximum modeled 1-hour NO_2 concentration was approximately 7.44 $\mu g/m^3$. Ninety (90)percent of the maximum modeled concentration is approximately 6.69 $\mu g/m^3$. There were 6 receptors with concentrations above 6.69 $\mu g/m^3$, located approximately 5 km to the northeast of the DSM Plant (see Figure 1). The resulting revised model revealed that the stack for the proposed new ammonia combustor would have to be

raised from 60 meters (196.9 ft.) to 65 meters (213.3 ft.) in order for the new maximum receptor to remain below the SIL. [The applicant conducted additional modeling at the 100m resolution over the 1km by 1km square area centered at the receptor with the maximum concentration.]

Table 6-2 illustrates the results of the NO_2 significance modeling.

Table 6-2 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
		($\mu g/m^3$)	($\mu g/m^3$)	(meter East)	(meter North)	[yymmddhh]	(km)
NO_2	Annual	1	0.27	413574.93	3700440.66	2006	N/A
	1-Hour+	7.5	7.22	417595.00	3702732.00	5-yr average	N/A

*Highest concentration over all averaging period, except 1-hour NO_2.
+Highest of the average individual year's highest 1-hour concentration across all receptors over 5-years modeling. Tier 2 ambient ratio method (ARM) of 0.8 was applied.

As illustrated in the table above, the SILs have not been exceeded. Note: Georgia EPD did not require the applicant to conduct the additional step to check whether the difference between the NAAQS standard (in this case the NO_2 NAAQS) and background NO_2 concentrations are less than the SILs or not as this project did not trigger PSD review for direct PM2.5. Therefore, no further analysis is required.

Georgia EPD conducted additional NO_2 significance modeling to identify the maximum NO_2 emission rate from the boiler plant stack (stack ID No. S014) which would yield exceedance of the 1-hour NO_2 SIL. Georgia EPD's modeling results specify a boiler plant stack S014 NO_2 emission rate of approximately 145 lb/hr would yield a predicted concentration at or very close to the 1-hour NO_2 SIL. This emissions limit applies because the Permittee anticipates that the plant modifications will result in an increase utilization of the boiler plant. The effective date of this permit limit is set at twelve months from the issuance date of the permit. This effective date was chosen so that the Permittee will have time to make some or all of the plant modifications which will require an increase utilization of the boiler plant.

Preconstruction Monitoring Evaluation

Significant Monitoring Concentrations: On January 22, 2013, the United States Court of Appeals for the District of Columbia Circuit Court (D.C. Circuit) vacated the parts of 40 CFR 51.166 and 40 CFR 52.21 establishing a $PM_{2.5}$ significant monitoring concentration. Georgia EPD assessed compliance with the requirements of Georgia Rule 391-3-1-.02(7)(b)10. as it relates to the requirement for preconstruction monitoring in 40 CFR 52.21(m)(1) for emissions of NO_2 and ozone. The applicant did not provide a written analysis addressing the requirements of 40 CFR 52.21(m)(1).

Georgia EPD compared the maximum-modeled concentration with the monitoring *De Minimis* concentration to determine whether the proposed facility is required to conduct preconstruction monitoring. The following table provides a comparison of the results:

Project Pollutants Monitoring De Minimis Impacts

Criteria Pollutant	Averaging Period	Significance Level	Maximum Projected Concentration*	Receptor UTM Zone: 17		Model Met Data Period	Exceeds *De Minimis?*
		($\mu g/m^3$)	($\mu g/m^3$)	(meter East)	(meter North)	[yymmddhh]	(Yes/No)
NO_2	Annual	14	0.27	413574.93	3700440.66	2006	No

*Highest concentration over all averaging period.

The projected maximum concentration is less than the significant monitoring concentration and so no preconstruction monitoring requirements are being imposed for NO_2.

Ozone Impact Analysis: Since the proposed project will result in a net NOx emissions increase greater than 100 tons per year, the PSD rule requires an evaluation to determine whether pre-construction monitoring is warranted for ground level ozone. The applicant did not provide a written analysis addressing this requirement.

The proposed DCNA modification is expected to emit 103.24 tons per year of NOx, and Georgia EPD performed this analysis on behalf of the applicant. Georgia EPD examined the 3-year rolling average ozone concentration at the Augusta monitoring site (13-245-0091), Richmond County, where DCNA is located. The latest three-year design value (2009-2011) average of 4th high annual values is 69 part per billion volume (ppbv) which is less than the 1-hour ozone NAAQS of 75 ppb. Georgia EPD concludes that no pre-construction monitoring is warranted for ground level ozone for this project.

Georgia Air Toxics Assessment

The proposed project would emit the following nine air toxic pollutants (TAPs): Ammonia, Benzene, Cyclohexane, Cyclohexanol, Cyclohexanone, Nitric Acid, Phenol, Sulfuric Acid, and Toluene. The applicant presented the TAP emission rates in Table 6.6.1 of the April 2013 edition of the application.

The annual, 24-hour, and 15-minute AACs of the above nine TAPs were reviewed based on U.S. EPA IRIS reference concentration (RfC), and OSHA Permissible Exposure (PEL) according to the Georgia Air Toxics Guideline. The modeled maximum ground-level concentrations (MGLCs) were calculated using the AERMOD dispersion model (version 12345) for 1-hour, 24-hour, and annual averaging periods. The receptor grid developed for the NO_2 Significant Analysis was utilized for this assessment except that the fenceline is significantly stretched out. Table 6-3 summarizes the AAC levels and MGLCs of the TAPs at the above three averaging periods.

Table 6-3: Modeled MGLCs and the Respective AACs

Pollutant	CAS	Averaging Period	MGLC ($\mu g/m^3$)	AAC ($\mu g/m^3$)	Exceed AAC?	Averaging Period	MGLC ($\mu g/m^3$)	AAC ($\mu g/m^3$))	Exceed AAC?
Ammonia	7664417	Annual	2.7	100	No	15-min	840	2400	No
Benzene	71432	Annual	1.73	0.13~0.45	**Yes**	15-min	381.5	1600	No
Cyclohexane	110827	Annual	5.8	6000	No	N/A	N/A	N/A	No
Cyclohexanol	108930	24-hour	20.3	476	No	N/A	N/A	N/A	No
Cyclohexanone	108941	24-hour	107.7	476	No	15-min	2365	20000	No
Nitric Acid	7697372	24-hour	0.185	11.9	No	15-min	1.02	1000	No
Phenol	108952	24-hour	0.008	45.2	No	15-min	0.025	6000	No
Sulfuric Acid	7664939	24-hour	1.94	2.38	No	15-min	7.38	300	No
Toluene	108883	Annual	2.54	5000	No	15-min	600	113000	No

Note: The maximum 15-min impact is based on the maximum 1-hour modeled impact multiplied by a factor of 1.32.

As noted above, the modeled MGLCs for all TAPs evaluated by the applicant are below their respective AAC levels except for Benzene.

DCNA performed additional modeling of the impact of the Benzene emissions to the nearest residences, which are located to the north and northeast of the site. Specific receptors located at those residences were included in the model. Such modeling analysis resulted in a maximum concentration of 0.297 $\mu g/m^3$ at a residential receptor (UTM coordinates 414735.7m E and 3700724.8m N). This

concentration is within the range of AAC values that IRIS associated with 1 in 1,000,000 risk. Therefore, the applicant's proposal complies with the Georgia Air Toxics Guideline.

8.0 ADDITIONAL IMPACT ANALYSES

PSD requires an analysis of impairment to visibility, soils, and vegetation that will occur as a result of a modification to the facility and an analysis of the air quality impact projected for the area as a result of the general commercial, residential, and other growth associated with the proposed project.

Soils and Vegetation Analysis
The applicant provided this analysis on page 61 of the application. The Division concurs with the applicant's conclusions.

Growth Analysis (Demographics)

The applicant provided this analysis on page 61 of the application. The Division concurs with the applicant's conclusions.

Construction Impacts
The applicant provided this analysis on page 61 of the application. The Division concurs with the applicant's conclusions.

Class II Visibility Analysis
The applicant provided this analysis on page 61 of the application. The Division concurs with the applicant's conclusions.

9.0 EXPLANATION OF DRAFT PERMIT CONDITIONS

The permit requirements for this proposed facility are included in draft Permit Amendment No. 2869-245-0003-V-04-3.

Condition 1.3: Provides a brief description of the proposed modification.

Condition 3.1.1: Provides a regulatory description of the proposed new emission units.

Condition No. 3.2A.14: Specify PSD Avoidance limits for PM, PM10, and PM2.5 for emission units that comprise the new AP plant.

Condition 3.3E.6: Specifies NSPS Dc as an applicable requirement for the proposed hot oil furnace.

Condition Nos. 3.3K.1 and 3.3K.2: Specify the requirements of 40 CFR 52.21(r).

Condition Nos. 3.3K.3, 3.3K4, 3.3K.5, and 3.3K.6: Specify the BACT requirements for NOx and GHG (expressed as CO_2e) emissions requirements for the proposed ammonia combustor.

Condition Nos. 3.3K.7, 3.3K.8, and 3.3K.9: Specify the BACT requirements for NOx and GHG (expressed as CO_2e) emissions requirements for the proposed hot oil furnace.

Condition No. 3.3K.10: Specifies the NO_2 Modeling limit for the boiler plant stack S014. The effective date of this condition is twelve months upon final permit issuance. This condition has a

future effective date because the proposed increase in utilization of the boiler plant will only be necessary upon completion of certain other projects at the plant.

Condition Nos. 3.3L.1, 3.3L.2, 3.3L.3, and 3.3L.4: Specifies the applicability of 40 CFR 63 Subpart DDDDD (i.e., Boiler MACT for major stationary sources).

Condition 3.4J.9: Specify the Georgia Rule 391-3-1-.02(2)(b) requirements for the new emission units at the caprolactam flaking system and the new AP plant.

Condition 3.4J.10: Specify the visible emissions limit of Georgia Rule 391-3-1-.02(2)(d) requirement for the hot oil furnace with emission unit ID No. B030.

Condition 4.1.3.o: This existing condition is modified to only require Method 202 testing if required by an applicable requirement.

Condition 4.1.3.y: A new testing condition which specifies the reference test methods for PM10 and PM2.5 (filterable plus condensable) for the new PSD Avoidance limits for PM10 and PM2.5.

Condition 4.1.3.z: A new testing condition which specifies the reference test method for determining the NOx concentration from the proposed ammonia combustor, hot oil furnace, and boiler plant stack.

Condition 4.1.3.aa: A new testing condition which specifies the reference test method for determining the GHG concentration.

Condition 4.1.6: A new template condition for existing Title V permit.

Condition 4.2A.1: Specifies the testing requirements for the new AP plant for PM, PM10, and PM2.5 PSD Avoidance limits and for visible emissions.

Condition 4.2K.1: Specifies the testing requirements for NOx emissions from the proposed ammonia combustor.

Condition 4.2K.2: Specifies the testing requirements for NOx emissions from the proposed hot oil furnace.

Condition No. 4.2K.3: Specifies the testing requirements for NO_2 emissions from the boiler plant stack. This condition applies fourteen months after the date of final issuance of the permit.

Condition Nos. 5.2A.3 and 5.2A.4: Specify monitoring requirements for new AP plant baghouse which is subject to PSD avoidance requirements for PM, PM10, and PM2.5.

Condition Nos. 5.2K.1, 5.2K.3, 5.2K.4, 5.2K.5, and 5.2K.6: Specifies the monitoring requirements for NOx and GHG emissions from the proposed ammonia combustor. This condition also specifies monitoring requirements for the boiler plant stack S014 for NOx emissions.

Condition 5.2K.2: Specifies the monitoring requirements for natural gas usage for the proposed hot oil furnace. This data will be used to compute GHG emissions from the hot oil furnace.

Condition Nos. 5.2K.7, 5.2K.8, and 5.2K.9: Specify the requirements of 40 CFR 64 for emissions of NOx and GHGs from the ammonia combustion.

Condition No. 5.2L.1: Specifies the Boiler MACT monitoring requirements for new hot oil furnace with emission unit ID No. B030.

Condition 6.1A.7: This existing condition is modified to account for PM, PM10, and PM2.5 emissions from the new AP plant.

Condition No. 6.1K.1: Specifies the excess emissions, exceedances, excursions, and other specified parameters to be reported as part of Condition No. 6.1.4.

Condition Nos. 6.2K.1, 6.2K.9, and 6.2K.10: These new conditions specify the record keeping requirements to verify compliance with the PSD requirements for the new hot oil furnace.

Condition Nos. 6.2K.3, 6.2K.4, and 6.2K.5: These new conditions specify the record keeping requirements to verify compliance with the PSD requirements as they relate to NOx emissions from the ammonia combustor.

Condition Nos. 6.2K.6, 6.2K.7, and 6.2K.8: These new conditions specify the record keeping requirements to verify compliance with the PSD requirements as they relate to GHG emissions from the ammonia combustor.

Condition 6.2K.11: This condition specifies reporting requirements to aid in verifying compliance with the project timing requirements specified by 40 CFR 52.21(r).

Condition No. 6.2L.1: Specifies the recordkeeping requirements for the new hot oil furnace per the Boiler MACT.

Condition Nos. 6.2.L.2 and 6.2L.3, 6.2L.4, and 6.2L.5: Specify the reporting requirements per the Boiler MACT for the new hot oil furnace.