County of Forsyth

PUBLIC NOTICE

December 19. 2019

PROPOSED APPROVAL FOR A PERMIT MODIFICATION PURSUANT TO FORSYTH COUNTY AIR QUALITY TECHNICAL CODE SECTION 3D-0530 PREVENTION OF SIGNIFICANT DETERIORATION

Ingredion Incorporated, Winston-Salem Plant, Winston-Salem, NC has applied to the Forsyth County Office of Environmental Assistance and Protection (FCEAP) to revise the Best Available Control Technology emissions limit for carbon monoxide from the Steam and Control Systems Hybrid Suspension Grate Boiler (ID No. ES-62F). The FCEAP has reviewed the application and has made a preliminary determination that the proposed modification meets the requirements as specified in FCAQTC Section 3Q-0500 and Section 3D-0530 - Prevention of Significant Deterioration.

The EAP will issue a Final Determination and a final Air Quality Permit, in accordance with the conditions of the Draft/Proposed Air Quality Permit, unless there is a response, which results in a different decision or significant change in the permit.

A copy of the draft permit and the Preliminary Determination is available at the EAP's website:

http://www.forsyth.cc/EAP/public_notices.aspx

Additional information regarding the draft permit may be obtained from the Office of Environmental Assistance and Protection, Forsyth County Government Center, 201 N. Chestnut Street, Winston-Salem, NC 27101-4120; telephone (336) 703-2440. The public may submit written comments on these proceedings to the address above or by e-mail to lloydpb@forsyth.cc on or before January 19, 2020, the close of the public comment period.

Peter B. Lloyd, Ph.D., P.E., Manager
Compliance Assistance & Permitting Division

Preliminary Determination Summary for Prevention of Significant Determination Application Submitted by Ingredion Incorporated, Winston-Salem Plant Steam and Control Systems, Inc. (SCS) Hybrid Suspension Grate Boiler 4501 Overdale Road Winston-Salem, NC

Prepared by

The Forsyth County Office of Environmental Assistance and Protection

December 19, 2019

Technical Contacts:

Jeffrey A. Ebbitt - Project Coordinator and Compliance Review/Permit

Paul C. Martin - Air Quality Analysis

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I. SUMMARY

The Forsyth County Office of Environmental Assistance and Protection (Office) has completed the preliminary review of a prevention of significant deterioration (PSD) permit application submitted by Ingredion Incorporated, Winston-Salem Plant (Ingredion). The permit application was submitted as the result of Ingredion entering into a Special Order by Consent with this Office to reanalyze the best achievable control technology (BACT) for carbon monoxide (CO) from the Steam and Control Systems, Inc. Hybrid Suspension Grate (SCS) boiler and cogeneration system at the existing Ingredion facility in Winston-Salem, NC. The CO BACT is being re-visited because of several failed stack tests over the past years. The boiler is an existing emission source (identified as ES-62F) currently operating under air quality permit number 00732-TV-12 issued by this Office.

In March 14, 1997, Ingredion (then known as Corn Products, Inc.) submitted a PSD permit application for the construction of the above boiler. This Office issued Permit to Construct/Operate #00732R4 on July 15, 1997, which set forth, among other things, BACT and emission limits for CO, particulate matter (PM), and nitrogen oxides (NO_x). This Office issued Air Quality Permit #00732-TV-4 on December 11, 2000 increasing the BACT limit for $N0_x$ pursuant to a Special Order by Consent with this Office to reanalyze the BACT determination for NO_x. The applicant has demonstrated compliance with the BACT limits for PM and NO_x as required by the original and revised BACT determinations.

The design specifications for the boiler allowed for staged combustion of the wood fuel. Fuel is introduced onto a vibrating grate with insufficient air (sub-stoichiometric) to complete combustion for all carbon present in the fuel at the grate. Uncombusted fuel in the form of high CO concentrations rising from the grate was to be combusted using three layers of overfire air. This firing configuration was designed to minimize NO_x formation with the layers of staging while still maintaining low CO emission levels.

Based on recent testing at typical operating loads, this design did not adequately reduce CO emissions while operating at loads significantly lower than the maximum design. The typical operating load for the SCS boiler is less than 50 percent of the maximum design capacity. Compliance with the CO emissions limit (0.3 lb/MMBtu) has been intermittent over the past several years despite numerous adjustments to the boiler with the help of a combustion consulting firm to reduce CO emissions.

Ingredion is requesting the BACT limit be increased to an achievable level derived from actual best performance practices. The applicant proposes low excess air/staged combustion and good combustion practices as BACT for CO. This is the same proposal that was approved by this Office in 1997. However, Ingredion has proposed a new CO emissions rate from this strategy of 0.43 pounds per million Btu (lb/MMBtu).

Based on the information included in the application and on staff research of the U.S. EPA BACT/LAER Clearinghouse the Director of this Office has determined BACT for CO, to be as proposed by Ingredion.

In order to confirm that the new BACT limit is sufficiently protective of ambient air, the facility had their consultant perform updated AERMOD (EPA version 18081) modeling for CO. The protocol was approved by this Office on August 1, 2018, with the final modeling report submitted as part of the modification application on September 19, 2018. The result of the AERMOD dispersion modeling analysis shows that Ingredion will continue to comply with the National Ambient Air Quality Standards (NAAQS) for CO operating at or below the revised BACT limit.

As there are no PSD increments established for CO, this analysis satisfies the applicable ambient air requirements for the modification of the PSD permit. The model clearly showed the Class II Area Significant Impact Levels (SIL) and the NAAQS to be protected. Therefore, neither pre-application nor post-construction ambient air quality monitoring was required of the applicant.

The additional impacts analysis was addressed in the applicant's original permit application in 1997 and is not necessary for this review because the proposed CO emissions are still below the SIL. This Office concurs with the applicant's original analysis which determined that the impacts will be negligible.

Based on its review of the Ingredion PSD application and independent research, this Office has determined that the SCS boiler can be operated in compliance with all applicable regulations and intends to issue a permit to operate with conditions to be met by the applicant for the operation of the facility. The permit conditions associated with this BACT limit are included in Section VI.

II. APPLICANT

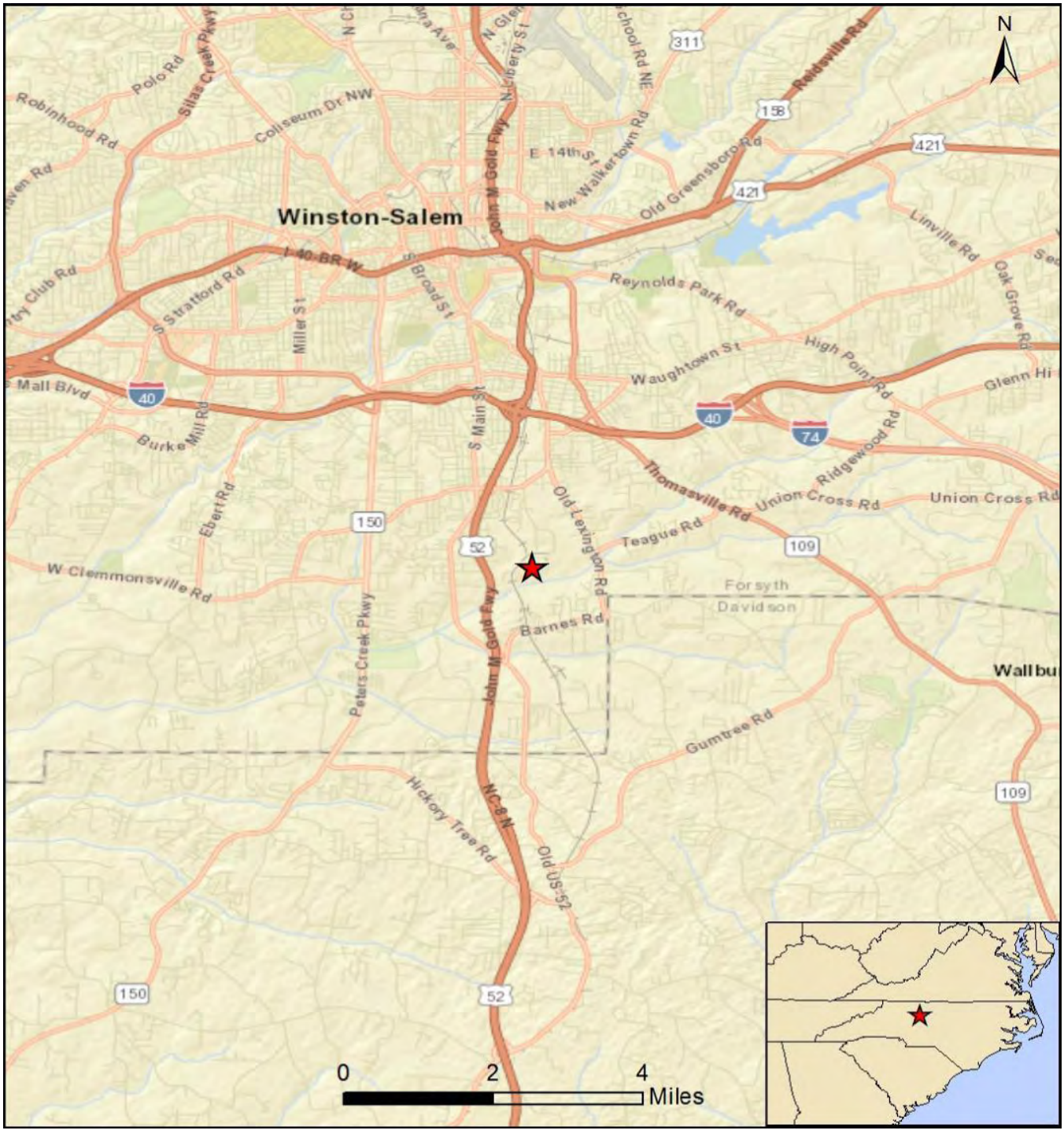
The applicant's name and mailing address are as follows:

Ingredion Incorporated
4501 Overdale Road
Winston-Salem, NC 27107-6145

III. PROJECT LOCATION

The Ingredion facility is located at 4501 Overdale Road, Winston-Salem, North Carolina, at coordinates 36°00' latitude and 80°07' longitude. The property is bounded on the south by the South Fork Muddy Creek, on the north by Overdale Road, on the west by the Winston-Salem Southbound railroad, and on the east by Ardagh Beverage USA, Inc. See Figure 1.

Figure 1



Map provided by AECOM, 1600 Perimeter Park Drive, Suite 400, Morrisville, North Carolina 27560

IV. PROJECT DESCRIPTION

The re-analysis of the CO BACT is being done for Ingredion's existing SCS boiler, which has a maximum permitted heat input of 324.5 million Btu per hour (MMBtu/hour). A permit to construct/operate was issued in 1997 for this boiler at their facility located in Winston-Salem, NC. The design capacity of the boiler is 282 MMBtu/hour and the typical firing rate is in the 225 to 250 MMBtu/hour range. The applicant requested the boiler be permitted at 324.5 MMBtu/hour to provide for occasional periods of peak demand. The current BACT for CO is low excess air/staged combustion and good combustion practices for the SCS boiler, and the current CO BACT emissions limit is 0.3 pounds per million Btu (lb/MMBtu).

This boiler provides steam for the wet milling processes at the facility and to generate electricity for use by the facility. The boiler is a field-erected two drum watertube, vibrating grate stoker-type unit. It has a design 1,050 psig operating steam pressure with superheaters to provide 165,000 pounds per hour of continuous 960 psig/760°F supeheated steam. The boiler has an air preheater, forced draft fan, overfire air fan, and induced draft air fan. It has a maximum heat input rating of 324.5 MMBtu/hour when firing wood and 245 MMBtu/hr when firing natural gas. The boiler may also combust corn cleanings, corn germ, and wet and dry corn feed. The SCS boiler is classified as a hybrid suspension grate boiler designed to burn wet biomass/bio-based solid fuel with regard to the Boiler MACT regulations.

Particulate emissions are controlled by a multiclone-type dust collector, followed by an induced draft fan and electrostatic precipitator, all installed downstream of the air preheater.

Exhaust gases from existing feed dryers may also comprise a portion of the secondary combustion overfire air. The dryer gases contain moisture and odorous compounds that are combusted in the boiler. The dryer gases also contain SO_2 emissions liberated from the feed product during the drying process.

Summary of Projected Emissions

The maximum projected CO emissions as a result of the proposed revised BACT are 611 tons per year based on the combustion of wood in the boiler @ 100% load (324.5 MMBtu/hr heat input). These projected CO emissions are estimated based on a revised BACT emissions limit of 0.43 lb/MMBtu and represents a 184.6 ton per year increase in CO emissions.

V. SOURCE IMPACT ANALYSIS

Due to Ingredion's classification as a major source for PSD at the time the boiler was constructed and the expected emissions of regulated pollutants above the PSD threshold values, a PSD review was required. One aspect of a PSD review requires a separate BACT analysis be done for each pollutant that exceeds the significance thresholds. Under the provisions of PSD, the applicant is required to find the BACT that will provide the maximum degree of emissions reduction for each pollutant subject to the regulation considering costs, environmental, and energy impacts. The BACT analysis is a top down analysis. The applicant must review all available technology and rank them in descending order. The highest ranking technology is considered the control of choice as BACT for the applicant's equipment conditioned on technical, economic, energy, or environmental considerations that the top choice is neither available nor achievable. This determination must be approved by this permitting authority after an informed review of the applicant's choices. In no case may BACT allow the emissions of any pollutant above any applicable standard found in 40 CFR Parts 60 and 61.

This modification requests an increase to the BACT limit originally established during the PSD review conducted in 1997. The increase of CO emissions resulting from increasing the BACT limit is above PSD significant emission level for CO and a PSD review is required to change the previously established BACT limit. All of the BACT determinations are based solely on the combustion of wood. The emissions do not exceed the PSD significance levels while combusting natural gas due to the restriction on the use of natural gas to avoid the NSPS requirements. Following is this Office's review of the applicant's research into the choices for BACT for CO.

BACT FOR CO

Ingredion proposed their BACT based on data found in EPA's RACT/BACT/LAER Clearinghouse (RBLC) database. This Office's search of the current RBLC database (from 2008 to 2018) did not find any more stringent options for BACT than the applicant found in their search. The options presented in Ingredion's analysis included the following:

- *Low Excess Air/Staged Combustion and Good Operating Combustion Practices*
- *Catalytic reduction Technology (regenerative catalytic oxidation)*
- *Fluidized Bubbling Bed*

This Office conducted a search of this database and found the above control technologies approved as BACT for various facilities during that time period. The applicant discussed an additional possible option that was not identified in the RBLC database. All of these options are discussed below:

- Low excess air/staged combustion and good operating combustion practices are the current BACT for emissions of CO from the SCS boiler. This option is the most commonly chosen option for control of CO emissions from wood boilers as BACT in the RBLC database.

- Catalytic reduction technology is listed as BACT for three projects in the RBLC database. One of the projects, the Abengoa Bioenergy Biomass in Kansas, has filed for Chapter 11 Bankruptcy proceedings, and according to the Kansas Department of Health and Environment, the facility is no longer in operation and the owners are looking for a buyer of the facility.

  The second project, Beaver Wood Energy facility, in Fair Haven, Vermont was issued a permit in 2012 that required the use of a multi pollutant catalytic reactor (oxidation catalyst) and good combustion control for the reduction of CO emissions. According to the Vermont Department of Environmental Conservation website, the facility has not commenced construction yet and the permit expired on August 2, 2016.

  The third project is the Montville Power LLC facility located in Connecticut. A review of the current permit lists the fuel for the two boilers identified in the RBLC database as No. 2 fuel oil and natural gas. They are listed in the RBLC database as wood boilers. I spoke with the Connecticut Dept. of Energy & Environmental Protection and was told that the project was to switch the boiler fuel to wood biomass but the permit lapsed without any construction so the modification never took place. Since they aren't permitted to combust wood, this project has no bearing on this BACT determination.

  The applicant noted that there are commercially available catalytic oxidation systems that allow treatment of exhausts at lower temperatures (between 400 °F and 1000 °F), which would mitigate the adverse cost and energy impacts of having to re-heat the exhaust. However, according to Megtec, which owns a patent for several types of catalytic oxidation systems including one originally developed by Babcock & Wilcox that operates at approximately 400 °F, use of any catalytic technology is prone to catalyst poisoning in applications involving exhausts containing wood fly ash. This is the case with the SCS biomass boiler. Therefore, because this technology isn't operable on any of the projects listed in the RBLC database, this Office does not consider an oxidation catalyst a viable option for BACT for the SCS boiler.

- The Bubbling fluidized bed boiler design for CO BACT in the RBLC database is not a relevant option, as it is a different type of boiler design than the vibrating grate stoker

design of the SCS boiler. This option is not considered a viable option for BACT at the Ingredion location.

- The applicant also listed thermal oxidation as being potentially applicable to the SCS boiler for the reduction of CO emissions. This control option does not appear in the RBLC database as a method approved for CO BACT. Thermal oxidizers react CO with oxygen to form carbon dioxide and water. This control method is typically utilized in cases where volatile organic compounds are present in relatively high concentrations. Volatile organic compounds are the target emission for this control strategy. The applicant stated that there are no known instances in the United States in which thermal oxidation has been installed on a conventional boiler for the purposes of controlling CO emissions. Thermal oxidizers typically run at a temperature of 1600 °F. The exhaust temperature of the SCS boiler is approximately 400 °F, and this would need to be increased by another fuel source to meet the typical destruction temperature of a thermal oxidizer. The combustion of fuel to reheat the SCS boiler exhaust would result in emissions of additional pollutants all in an effort to reduce CO emissions. Therefore, the use of a thermal oxidizer as BACT is not warranted in this situation.

OFFICE DECISION FOR CO BACT

Because of the lack of active, operable control technologies, this Office does not find that catalytic oxidation, bubbling fluidized bed boiler design, or thermal oxidation to be BACT for the SCS boiler. This leaves low excess air and staged combustion and good operating combustion practices as the remaining choice for BACT.

OFFICE DECISION SUMMARY

This Office has determined that the applicant has provided an acceptable argument for the use of Low Excess Air/Staged Combustion and Good Operating Combustion Practices as BACT for the SCS boiler. This is the same conclusion reached after the initial BACT analysis determination in 1997. The modeling analysis showed this impact to be below the NAAQS, and therefore no threat to the health and safety of the community.

The base case CO emissions from the boiler are 0.43 lb/MMBtu. The maximum heat input of the boiler is 324.5 MMBtu/hr. The potential emissions of CO from the base case are 611 tons/year. This is 184.6 tons per year more from the SCS boiler based on the current CO BACT limit of 0.3 lb/MMBtu.

In order to establish the new CO BACT limit, the applicant evaluated boiler stack test results from 2012 through 2018 using a statistical methodology used by the EPA to establish “Maximum Achievable Control Technology (MACT) floors” for numerous National Emission Standards for Hazardous Air Pollutants (NSEHAP) regulations. The methodology calculates the average of all test

results and incorporates a statistical approach involving standard deviation and the student's "t test" to extrapolate an upper bound emission limit that should theoretically be achieved with a 99% confidence interval. A detailed discussion of the methodology can be found in the document entitled "NESHAP MACT Floor Analysis for Coal- and Oil-fired Electric Utility Steam Generating Units for Final Rule, RTI International, December 16, 2011." This same methodology was used to develop the Upper Prediction Limits for the various boiler subcategories under the Boiler MACT.

The calculated Upper Prediction Limit of 0.43 lb CO/MMBtu derived from this method is located in Table 3-2 of Ingredion's Application to Modify Emission Limit in Appendix A of this report. This calculation used all of the test results from stack tests performed at typical operating loads from 2012 through 2017.

Therefore, this Office determines that the use of Low Excess Air/Staged Combustion and Good Operating Combustion Practices as BACT for the SCS boiler. The CO emission level associated with this BACT determination is 0.43 lb/million Btu.

Air Quality Analysis

CO

The result of the AERMOD dispersion modeling analysis shows that Ingredion will continue to comply with the NAAQS for CO operating at or below the revised BACT limit. As there are no PSD increments established for CO, this analysis satisfies the applicable ambient air requirements for the modification of the PSD permit. The complete air compliance analysis summary sheet is in Appendix B.

Table 1

NATIONAL AMBIENT AIR QUALITY STANDARDS ANALYSIS								
Pollutant	**Averaging Time**	**Date Modeled**	**Model Used**	**Maximum Concentration ($\mu g/m^3$)(1)**	**Background Concentration ($\mu g/m^3$)**	**Total ($\mu g/m^3$)**	**Standard ($\mu g/m^3$)**	**% of Std**
PM_{10}	24 Hour	4/2/1997	ISCST3	1.8	57	58.8	150	39
	Annual	4/2/1997	ISCST3	0.1	23	23.1	75	31
NO_2	Annual	4/2/1997	ISCST3	0.8	17	17.8	100	18
CO	**1 Hour**	**10/12/2018**	**AERMOD**	**32.4**	**2175**	**2207**	**40,000**	**6**
	8 Hour	**10/12/2018**	**AERMOD**	**29.9**	**1488**	**1518**	**10,000**	**15**

1) PM10 and NO2 were not re-evaluated as part of this dispersion modeling analysis. Modeled concentrations have been forward as originally modeled using 1987-1991 RAMMET-based meteorology for continuity.

2) Background concentrations for NO2 and PM10 were recalculated for 1996, as it was the most recent monitoring year for the original modeling. CO backgrounds are design values for the 3 most recent years available at the now decommissioned Peters Creek monitor (2013-2015).

Additional Impact Analysis

The PSD regulations require the applicant to provide an additional impact analysis, assessing the potential for impairment to soils, vegetation, and visibility that may occur as a result of emissions from the new facility or from emissions resulting from area growth and development stimulated by the operation of the facility. In addition, the potential impacts on Class I areas are examined.

This Office concurs with the applicant's conclusion that no significant impact on economic growth, soils, vegetation, or visibility will occur in the source area or in any Class I area as a result of the reanalysis of the CO BACT limit. The following information was provided by the applicant to address these issues as part of this project:

Growth

The purpose of the growth analysis is to project the industrial, commercial, and residential growth which will develop in support of the operation of the new facility/source and to estimate the impact of the air pollution emissions generated by this growth. Temporary economic growth due to construction is not a permanent change and is not considered in the analysis. Mobile sources are also excluded from the analysis.

The reanalysis of the CO BACT limit will not result in any additional employees at the facility. Therefore, secondary growth from this change to CO emissions is not expected, and an analysis of such growth is not required.

Soils and Vegetation

An analysis of the potential impact on soils and vegetation in the vicinity of the facility was performed in accordance with the procedures recommended in the U.S> EPA document, *A Screening Procedure for Impacts of Air Pollution Sources on Plants, Soils and Animals* (EPA-450/2-81-078). The highest predicted CO impacts from the reanalysis of the CO BACT limit used in the SIL analysis were compared to the screening concentrations listed in the above-referenced document. The modeled CO impacts are well below the screening concentrations, and therefore, no significant impacts on local vegetation from CO are expected.

Class II Area Visibility

A visibility analysis is typically conducted for the pollutants which trigger PSD review (PM, SO_2, and NO_x). As there is not a significant increase in the emissions from these pollutants as a result of the reanalysis of the CO BACT limit, a visibility analysis is not required.

Class I Areas

There are two Class I areas within 150 to 200 km of the facility. These areas are the Linville Gorge Wilderness and the James River Face Wilderness. However, the proposed reanalysis of the CO BACT limit does not result in a significant increase in any pollutant impacting air quality related values (NO_x, SO_2, PM, and H_2SO_4). Therefore, a Class I analysis is not required.

VI. COMPLIANCE CERTIFICATION

The PSD permit application for the reanalysis of BACT for CO has been reviewed by this Office. Based on this review, it has been determined that the SCS boiler and associated control equipment will meet all applicable air quality regulations.

Engineering review, for compliance, was performed only for the CO emissions from the SCS boiler as a result of the new BACT limit. The new BACT emissions limit will be added into Ingredion's Title V Operating Permit.

In its review, this Office used information provided by Ingredion's environmental consultant (AECOM Technical Services of North Carolina, Inc.) and the permit modification application to determine compliance.

In summary, the SCS boiler will comply with Section 0500 of the Forsyth County Air Quality Technical Code entitled *Emission Control Standards,* which includes the Prevention of Significant Deterioration provisions.

Following are the draft Title V Operating Permit conditions for the operation of the SCS boiler incorporating the proposed BACT and the new emissions limit for CO. The complete draft Title V Operating Permit, which includes the conditions below, as well as all the conditions for the existing equipment at the Ingredion facility, can be found in Appendix C.

Draft Permit Conditions (as they will appear in Draft Title V Operating Permit #00732-TV-13)

3.6 ES-62F Steam and Control Systems, Inc. (SCS) Hybrid Suspension Grate designed to burn wet biomass/bio-based solid Gasified-wood Boiler, controlled by Multicyclone 62F1 and ESP 62F2

The following provides a summary of the limits and/or standards for the emission source(s) described above.

Regulated Pollutant	Applicable Standard	Applicable Regulation
Particulate Matter	0.03 lb/MMBtu	40 CFR 51.166 and 3D .0530
Nitrogen Oxides	0.30 lb NO_x/MMBtu	40 CFR 51.166 and 3D .0530
Sulfur Dioxide	2.3 lb SO_2 /MMBtu	3D .0516
Carbon Monoxide	0.43 lb CO/MMBtu	40 CFR 51.166 and 3D .0530
HCL	0.022 lb/MMBtu	40 CFR 63.7500(a)(1), Table 2, and 3D .1111
Mercury	5.7E-06 lb/MMBtu	40 CFR 63.7500(a)(1), Table 2, and 3D .1111
Carbon Monoxide (or demonstrate compliance with a continuous emissions monitor (CEM))	3,500 ppm by volume on a dry basis corrected to 3 percent oxygen, 3-run average; (or 900 ppm by volume on a dry basis corrected to 3 percent oxygen, 30-day rolling average)	40 CFR 63.7500(a)(1), Table 2, and 3D .1111
Filterable Particulate Matter (or Total Selected Metals (TSM))	0.44 lb/MMBtu (or 4.5E-04 lb/MMBtu)	40 CFR 63.7500(a)(1), Table 2, and 3D .1111
N/A	Natural gas usage shall be limited to an annual capacity factor of 10 percent or less	40 CFR 60.44b(k) and 3D .0524
Visible Emissions	20 percent opacity	40 CFR 60.43b(f) and 3D .0524

Regulated Pollutant	Applicable Standard	Applicable Regulation
Visible Emissions	10 percent opacity (daily block average)	40 CFR 63.7525(c), Table 8, and 3D .1111

D. **Prevention of Significant Deterioration [Sec. 3D-0530]**

1. **Standard for Carbon Monoxide** [Sec. 3D-0530] - Total carbon monoxide emissions shall not exceed 0.43 pounds per million Btu heat input as determined by U.S. EPA Reference Method 10 (40 CFR 60 - Appendix A, amended November 14, 1990, or the most recent approved version of the method at the time of testing). This limit shall be met by the boiler design of low excess air and staged combustion and good operating combustion practices as Best Available Control Technology.

2. **Testing** [Sec. 3D-2602(i) and Sec. 3Q-0508(b) and (n)(2)] - The permittee shall demonstrate compliance with the carbon monoxide emission limit by conducting an annual performance test. The permittee shall follow the testing requirements specified in conditions **2.22, 2.23, and 3.1(C)(2)**.

3. **Monitoring, recordkeeping, and reporting requirements** - No monitoring, recordkeeping, or reporting is required for carbon monoxide emissions from the combustion of wood, natural gas, corn cleanings, corn germ, and dry and wet feed for this source. However, the permittee shall maintain the appropriate records for raw material usage and/or production rates in order to calculate the emissions data needed to fulfill the requirements for condition **2.13** entitled *Annual Emission Inventory Requirements*.

Appendix A

INGREDION INCORPORATED, WINSTON-SALEM PLANT
PSD AIR PERMIT APPLICATION

Ingredion Incorporated
4501 Overdale Road
Winston-Salem, NC 27107
United States
t: +1 336 785 0850
w: ingredion.com

September 19, 2018

Mr. Peter Lloyd, Ph.D., PE
Manager, Compliance Assistance & Permitting Division
Forsyth County Government Center
Winston-Salem, NC 27101-4120

Subject: **Application to Modify Emission Limit**
Ingredion Incorporated
Winston-Salem, NC
Air Permit No. 00732-TV-12

Dear Mr. Lloyd:

Please find enclosed six (6) copies of a permit application to modify the current emission limit for carbon monoxide for the Ingredion Incorporated (Ingredion) facility's SCS Boiler. This application is being submitted to fulfill Condition II.A.1 of the Special Order on Consent (SOC) between the Forsyth County Environmental Assistance and Protection and Ingredion.

If you have any questions or comments regarding this submittal, please feel free to contact Mr. Chris Lynch at (336) 785-8805.

Sincerely,

Dave Cluskey
Plant Manager

Cc: Chris Lynch, Ingredion
Joe Sullivan, AECOM Technical Services, Inc.
Sandy Warwick, Ingredion

AIR PERMIT APPLICATION FOR BOILER EMISSION RATE MODIFICATION

INGREDION INCORPORATED

SEPTEMBER 2018

Prepared for:

Ingredion Incorporated

4501 Overdale Road

Winston-Salem, North Carolina 27107

Prepared by:

AECOM

AECOM Technical Services of North Carolina, Inc.
1600 Perimeter Park Drive, Suite 400
Morrisville, NC 27560

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Acronyms	
BACT	Best Available Control Technology
CAA	Clean Air Act
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CTG	Control Techniques Guideline
EAP	Environmental Assistance and Protection
GAQM	Guideline on Air Quality Models
GEP	Good Engineering Practice
GHG	Greenhouse Gas
MACT	Maximum Achievable Control Technology
NAAQS	National Ambient Air Quality Standards
NC DAQ	North Carolina Division of Air Quality
NED	National Elevation Database
NLCD	National Land Cover Database
NO_x	Nitrogen Dioxides
PM	Particulate Matter
PSD	Prevention of Signification Deterioration
PTE	Potential to Emit
RBLC	RACT/BACT/LAER Clearinghouse
RCO	Regenerative Catalytic Oxidizer
RTO	Regenerative Thermal Oxidizer
SIL	Significant Impact Level
SMC	Significant Monitoring Concentration
SO_2	Sulfur Dioxide
upl	Upper Prediction Limit
US EPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UTM	Universal Transverse Mercator

1.0 INTRODUCTION

Ingredion Incorporated (Ingredion) owns and operates a facility that processes corn for glucose, starch and other corn products. In 1997 the facility applied for and was subsequently issued a Prevention of Significant Deterioration (PSD) preconstruction permit for installation and operation of a 324.5 MMBtu/hr biomass-fired boiler to provide process heat to the facility's production processes. The PSD permit imposed a best available control technology (BACT) limit on carbon monoxide (CO) of 0.3 pounds per million Btu (lb/MMBtu) of heat input. During normal operating conditions, combustion of fuel in the boiler does not occur in a manner consistent with the original design used to establish the 0.3 lb/MMBtu BACT limit, which has periodically resulted in stack test values exceeding the current BACT limit. Attempts to improve combustion in the boiler to reduce CO emissions to levels consistently below the BACT limit have been unsuccessful. Accordingly, Ingredion is submitting this permit application to increase the BACT emission limit to a level that is consistently achievable.

Revision of the BACT emission limit originally issued in accordance with the PSD regulations essentially re-triggers PSD review for CO. Accordingly, this application includes a BACT evaluation, an air quality impacts evaluation, and an additional impacts analysis.

Organization of this report is as follows:

- Section 2: Technical Considerations Associated with SCS Boiler;
- Section 3: Best Available Control Technology Evaluation;
- Section 4: Air Dispersion Modeling; and
- Section 5: Additional Impacts Analysis.

The table of contents contains a detailed listing of tables, figures, and appendices.

2.0 TECHNICAL CONSIDERATIONS ASSOCIATED WITH SCS BOILER

The SCS boiler was designed to provide staged combustion of wood fuel, whereby fuel is introduced onto a vibrating grate with insufficient air (sub-stoichiometric) to complete combustion of all carbon present in the fuel at the grate. Uncombusted fuel in the form of high CO concentrations rising from the grate was to be combusted using three layers of overfire air, with one layer slightly above the grate, the second approximately 6' above the grate, and the third layer at the combustor exit, 12' above the grate. In theory, compliance with the CO limit would be achieved using this design when operating at near maximum design capacity of the boiler. This firing configuration was intended to minimize NO_x formation with the layers of staging and still maintain low CO emission levels.

The design of the SCS boiler did not adequately reduce CO emissions while operating at loads significantly lower than maximum design and the typical operating load for the boiler is only about 50 percent of the maximum design capacity. At these lower loads, the overfire air systems lacked sufficient nozzle velocity to sufficiently penetrate the high concentration CO gases above the grate. In addition, at lower fuel feed rates, the fuel bed does not completely cover the entire grate area. Openings in the fuel bed on the grate allow undergrate air to bypass the fuel, resulting in areas of the fuel on the grate producing much higher levels of CO that cannot be reduced sufficiently by the overfire air systems.

Ingredion has worked closely with a combustion consulting firm over the past few years to attempt to reduce CO emissions. A number of modifications and operational improvements including the following have been implemented:

1. Balancing of undergrate air front to rear and side to side.
2. Vapors biased toward rear slope to support over-bed CO destruction.
3. Rear lower overfire air above the grate balanced side to side.
4. Installed and tuned a front lower overfire system – specific for lower load operation when the lower furnace is not "full".
5. Significant amount of controls tuning – balancing wood feed delivery based on actual flow rates per feeder, O_2 trim, shake duration and frequency.
6. Rearrangement of upper overfire slots for improved CO reduction at higher loads.

Although significant improvements in CO emissions (at lower loads) resulted from the above efforts, the SCS boiler has been unable to consistently achieve compliance with the BACT limit for CO. Accordingly, Ingredion is requesting that the BACT limit be increased to an achievable level derived from actual best performance practices. A revised BACT evaluation is provided in the following section.

3.0 BACT ANALYSIS

The PSD regulations (40 CFR 51.166) as referenced in Forsyth County Code Chapter 3, Section 3D-0530 require a Best Available Control Technology (BACT) analysis for each pollutant subject to PSD review. As requested by Forsyth County EAP, revision of an existing BACT limit requires a complete re-evaluation using EPA's established procedures. The following subsections present the revised analysis.

3.1 Top Down BACT Approach

Forsyth County air regulations (Chapter 3, Section 3D-0530) incorporate the federal PSD regulatory requirement to conduct a BACT analysis, which is set forth as follows in the PSD regulations [40 CFR 51.166 (j)(2)]:

> *(j) Control Technology Review.*
>
> *(2)* A new major stationary source shall apply best available control technology for each a regulated NSR pollutant that it would have the potential to emit in significant amounts.

BACT is defined as:

> *... an emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under the Clean Air Act which would be emitted from any proposed major stationary source or major modification which the Department, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant. In no event shall application of BACT result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 CFR 60 and 61. If the Department determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of BACT. Such standard shall, to the degree possible, set forth the emissions reduction achievable by implementation of such design, equipment, work practice or operation, and shall provide for compliance by means which achieve equivalent results.*

Guidelines for the evaluation of BACT can be found in EPA's Guidelines for Determining Best Available Control Technology (BACT) (US EPA, 1978) and in the draft PSD Workshop Manual (US EPA, 1990). These guidelines were drafted by the EPA to provide a consistent approach to BACT and to ensure that the impacts of alternative emission control systems are measured by the same set of parameters. Unlike many of the Clean Air Act programs, the PSD program's BACT evaluation is determined on a case-by-case basis. To assist applicants and regulators with the case-by-case process, in 1987 U.S. EPA issued a memorandum that implemented certain program initiatives to improve the effectiveness of the PSD program within the

confines of existing regulations and state implementation plans.[1] Among the initiatives was a "top-down" approach for determining BACT. In brief, the top-down process suggests that all available control technologies be ranked in descending order of control effectiveness. The most stringent or "top" control option is the default BACT emission limit unless the applicant demonstrates, and the permitting authority in its informed opinion agrees, that energy, environmental, and/or economic impacts justify the conclusion that the most stringent control option is not achievable in that case. Upon elimination of the most stringent control option based upon energy, environmental, and/or economic considerations, the next most stringent alternative is evaluated in the same manner. This process continues until BACT is selected.

A control technology must be "available" to be considered in a BACT determination. This means that the technology has progressed beyond the conceptual stage and pilot testing phase and must have been demonstrated successfully on full-scale operations for a sufficient period. Theoretical, experimental, or developing technologies are not "available" under BACT. A control technology must also be "commercially available." This means that the technology must be offered for sale through commercial channels with commercial terms.

The source must consider production processes or available methods, systems or techniques, as long as those considerations do not redefine the source. EPA does not consider the BACT requirement as a means to redefine the basic design of the source or change the fundamental scope of the project when considering available control alternatives.[2]

3.2 Top-Down BACT Assessment Methodology

The following sections provide detail on the BACT assessment methodology utilized in preparing the BACT analysis.

3.2.1 Step 1

The first step is to define the spectrum of process and/or add-on control alternatives potentially applicable to the subject emission units. The following categories of technologies are addressed in identifying candidate control alternatives:

- Demonstrated add-on control technologies applied to the same emission unit at other similar source types;
- Add-on controls not demonstrated for the source category in question but transferred from other source categories with similar emission stream characteristics; and
- Work practices and pollution prevention techniques, especially for fugitive or area emission sources where add-on controls are not feasible.

3.2.2 Step 2

The second step in the top-down approach is to evaluate the technical feasibility of the alternatives identified in the first step and to reject those that can be demonstrated as technically infeasible based on an

[1] Memo dated December 1, 1987, from J. Craig Potter (EPA Headquarters) to EPA Regional Administrators, titled "Improving New Source Review Implementation."

[2] https://www.epa.gov/sites/production/files/2015-01/documents/bact_source_definition_questions.pdf

engineering evaluation or on chemical or physical principles. Technical judgment is to be exercised in determining whether a control alternative is applicable to the source type under consideration. In general, a commercially available control option is presumed applicable if it has been or is soon to be deployed on the same or a similar source type. Absent a showing of this type, technical feasibility would be based on examination of the physical and chemical characteristics of the pollutant-bearing stream and comparison to the gas stream characteristics of the pollutant-bearing gas stream and comparison to the gas stream characteristics of the source types to which the technology had been applied previously. [3]

3.2.3 Step 3

The third step is an assessment, or ranking, of each technically feasible alternative considering the specific operating constraints of the emission units undergoing review.

3.2.4 Step 4

In the fourth step, a cost effectiveness and environmental and energy impact analysis is performed if the top level of BACT control is not selected, starting with the most stringent control alternative. As discussed later in this evaluation, only one control alternative (good combustion practices) is feasible to reduce emissions from the SCS boiler.

3.2.5 Step 5

The final step is to summarize the selection of BACT and propose the associated emission limits or work practices to be incorporated into the permit plus any recommended recordkeeping and monitoring conditions that should be incorporated into the final permit.

3.3 BACT Analysis for CO Emissions

This BACT analysis covers CO emissions from the SCS Boiler.

3.3.1 Step 1 – Identification of Control Technologies – Typical Technologies in Use

A search of EPA's RBLC was performed for determinations made for wood-fired boilers from 2008 to 2018, as summarized in Table 3-1. Determinations were based on the application of the following emission reduction technologies:

1. Good combustion practices (including overfire air)
2. Catalytic reduction technology (i.e., regenerative catalytic oxidation)
3. Fluidized bubbling bed

There are several projects listed in Table 3-1 with BACT determinations involving installation of catalytic reduction technology. Each of these determinations was investigated and findings are summarized below:

1. The Abengoa Bioenergy project listed in Table 3-1 was never built and the owners are currently undergoing Chapter 11 bankruptcy proceedings.

[3] New Source Review Workshop Manual (Draft), U.S. EPA, 1990, B.18.

2. Following the original BACT determination, Montville Power's permits have been revised to not require catalytic reduction technology on the facility's biomass utility boilers and the BACT determination for CO is based on good combustion practices.
3. The Beaver Wood Energy project was first issued a permit in 2012 and the facility's construction permit lapsed in 2016.
4. Based on AECOM's knowledge of biomass projects being proposed in Connecticut and Vermont at the time of permitting of the Montville Power and Beaver Wood Energy projects, it was AECOM's understanding that these projects were being developed by smaller entrepreneurial companies and these projects were strongly opposed by environmental intervenors during the air quality permitting processes. Due to the intense opposition that such projects faced, developers were proposing either costly boiler technologies such as fluidized bed boilers or undemonstrated pollution control technologies such as oxidation catalyst.

The two RBLC determinations that identified use of fluidized bed combustion technology are not pertinent to this application. Fluidized bed combustion refers to a different type of boiler design than the SCS boiler, which is a vibrating grate stoker boiler.

The only technology other than good combustion practices that is potentially applicable to the boiler exhaust stream is thermal oxidation. Thermal oxidizers react CO with oxygen in the air to form carbon dioxide and water vapor as follows:

$$CO + Oxygen + heat \rightarrow H_2O + CO_2$$

3.3.2 Step 2 – Technical Feasibility Analysis

As discussed earlier, the only technology other than good combustion practices that is potentially applicable to a boiler to reduce CO is thermal oxidation. Thermal oxidation is typically utilized in situations in which volatile organic compounds are present in exhausts in relatively high concentrations and the target pollutant for destruction is VOC. In general, thermal oxidation is utilized as a control device on manufacturing processes that evolve significant amounts of VOC from raw materials being processed. There are no known instances in the United States in which thermal oxidation has been installed on a conventional boiler for purpose of controlling CO. Operation of any of the thermal oxidation technologies is impractical due to the adverse cost and environmental impacts of re-heating boilers such as the SCS boiler that has an exhaust temperature of approximately 400 ^{o}F to a temperature in which further oxidation of CO occurs, which is typically 1600 ^{o}F. Not only is such reheating very expensive because it requires relatively large quantities of fuel to be combusted, combustion of fuel for reheating creates additional emissions of pollutants such as nitrogen oxides and particulate matter.

There are commercially available catalytic oxidation systems that allow treatment of exhausts at lower temperatures of 400 ^{o}F to 1000 ^{o}F, which mitigates the adverse cost and energy impacts of re-heating. However, according to Megtec, which owns a patent for several types of catalytic oxidation systems including one originally developed by B&W that operates at approximately 400 ^{o}F, use of <u>any</u> catalytic technology is prone to catalyst poisoning in applications involving exhausts containing wood flyash, like the SCS biomass boiler.

The only applicable control alternative applicable for the SCS boiler is good combustion practices, including use of overfire air systems already installed on the boiler.

3.3.3 Step 3 - Ranking of Control Technologies

The only control alternative being evaluated is good combustion practices, which are already used on the SCS boiler, including use of overfire air systems and several other combustion improvements previously discussed in Section 2. In Step 3 of the Top-Down BACT process, specific emission levels considered in the evaluation are typically addressed. Accordingly, a discussion of the emission level considered feasible is provided below.

In order to establish a revised BACT emission level that is achievable under normal operating conditions associated with the boiler, Ingredion has evaluated boiler stack test results from 2012 through 2018 using a statistical methodology used by the EPA to establish "Maximum Achievable Control Technology (MACT) floors" for numerous National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations. In short, the methodology calculates the average of all test results and incorporates a statistical approach involving standard deviation and the student's "t test" to extrapolate an upper bound emission limit that should theoretically be achieved with a 99% confidence interval. A detailed discussion of the methodology used is provided in the referenced footnote and it should be noted that the same methodology was used to develop the upls for the various boiler subcategories under the major source NESHAP for industrial boilers (40 CFR Part 63 Subpart DDDDD).[4]

Table 3-2 presents the evaluation of test data and a calculated upper prediction limit (upl) of 0.43 lb CO/MMBtu. It should be noted that the distribution of the test data was evaluated for skewness and kurtosis. The results of these evaluations indicate that the data is normally distributed and the corresponding EPA approach for normally distributed data was used in the analysis.

3.3.4 Step 4 – Impacts Assessment

There are no adverse economic, environmental, or energy impacts associated with use of good combustion practices.

3.3.5 Step 5 – Conclusion and Proposed BACT

The proposed BACT emission limit for the SCS boiler is 0.43 lb CO/MMBtu based on use of good combustion practices including use of overfire air. Ingredion proposes to retain the same testing, monitoring, recordkeeping and reporting requirements specified in Conditions 3.6.D.2 and 3.6.D.3 of the facility's Title V operating permit.

[4] National Emission Standards for Hazardous Air Pollutants (NESHAP) Maximum Achievable Control Technology (MACT) Floor Analysis for Coal- and Oil-fired Electric Utility Steam Generating Units for Final Rule, RTI International, December 16, 2011. https://www3.epa.gov/airtoxics/utility/a1_egu_mact_floor_memo_121611.pdf

4.0 AIR DISPERSION MODELING

4.1 Introduction

The Ingredion facility is located in the southern part of Forsyth County at 4501 Overdale Road in Winston-Salem, NC (Figure 4-1).

Revision of the BACT emission limit originally issued in accordance with the PSD regulations essentially re-triggers PSD review for CO. Therefore, an air dispersion impacts analysis was performed.

As will be discussed in the following sections of this report, the dispersion modeling for this Project was conducted following guidance from Forsyth County Environmental Assistance and Protection, the North Carolina Division of Air Quality's (NC DAQ) *North Carolina PSD Modeling Guidance* (2012)[5], and the modeling guidance contained in the revised US EPA *Guideline on Air Quality Models* (GAQM, Appendix W)[6]. Maximum predicted impacts were compared to the CO Significant Impact Levels (SILs). Predicted impacts were below the applicable SILs; therefore, no additional analyses were necessary.

4.2 Air Dispersion Model Selection

AERMOD Modeling System (version 18081)

The modeling analysis was performed using the most current version of the EPA AERMOD model (version 18081). Currently, AERMOD is the preferred computer air dispersion model for conducting refined near-field (i.e., within 50 kilometers) modeling analyses. The AERMOD model was used in regulatory default mode.

The AERMOD preprocessors, AERMAP (version 18081) and BPIP-Prime (version 04274) were also used. BPIP-Prime was used to calculate direction-specific building dimensions for input to AERMOD. These building dimensions were used by AERMOD to account for building downwash in the model. AERMAP was used to characterize the terrain and calculate receptor elevations and corresponding critical hill heights for each modeled receptor point.

4.3 Dispersion Environment

Selection of rural or urban dispersion coefficients is dependent on the results of an Auer land-use analysis, which requires an area encompassing a 3-km radius of the proposed project to be classified using the Auer land-use typing scheme. If more than 50% of the total area is comprised of I1, I2, C1, R2, and R3 types, then the area is considered urban.

Following USEPA's guidance in Section 7.2.1.1 of the GAQM, the 2011 land cover was obtained from the United States Geological Survey (USGS)[7]. Land cover data within a 3-km radius around the project area was downloaded from USGS. Table 4-1 shows the 2011 National Land Cover Database (NLCD) and corresponding Auer land-use categories. Figure 4-2 displays a map of 2011 land-use categories within the 3-km radius of the project. The I1, I2, C1, R2, and R3 types total approximately 7.5% of the total area; consequently the

[5] https://files.nc.gov/ncdeq/Air%20Quality/permits/mets/psd_guidance.pdf
[6] https://www3.epa.gov/ttn/scram/guidance/guide/appw_17.pdf
[7] https://www.mrlc.gov/finddata.php

area would be classified as "rural" under the Auer technique. Accordingly, the AERMOD urban model option was not used in the modeling analysis.

4.4 Meteorological Data

The meteorological dataset used for the analysis was downloaded from the NC DAQ website for the years 2013-2017. The facility is located in Forsyth County and therefore, the meteorological dataset created from surface data from the Smith Reynolds Airport in Winston-Salem (WBAN 93807) and upper air data from the Piedmont Triad International Airport in Greensboro (WBAN 13723) were used. NC DAQ processed the meteorological data using the AERMET meteorological processor, version 18081.

4.5 Good Engineering Practice (GEP) Stack Height Analysis

A GEP analysis was performed for the wood-fired boiler in order to determine if wake effects and downwash options need to be selected in the computer model. The GEP analysis was performed following the procedures outlined in the EPA documents, *Guideline For Determination of Good Engineering Practice Stack Height (Technical Support Document For the Stack Height Regulations)* Revised (EPA-450/4-80-023R)[8], and the *User's Guide to the Building Profile Input Program* (October 1993)[9].

The GEP analysis was performed using the latest version of the Building Profile Input Program (BPIP) with PRIME algorithms (version 04274) to demonstrate compliance with stack height regulations (40 CFR Part 51) and to develop direction-specific building dimensions for use in AERMOD. See Figure 4-3 for a layout of the facility as modeled. Table 4-2 contains a list of structures included in the modeling, along with their base elevations and heights.

4.6 Receptors

The receptor grid shown in Figure 4-4 was developed following guidance found in the *North Carolina PSD Modeling Guidance* and the NC DAQ's *Guidelines for Evaluating the Air Quality Impacts of Toxic Pollutants in North Carolina* (2018)[10]. Since the boiler is within 100 meters of the fenceline, 25 meter spacing of receptors was used along the facility's fenceline. The grid then extends out to 1 kilometer from the fenceline at 100 meter spacing, from 1 to 5 kilometers at 500 meter spacing, and from 5 to 10 kilometers at 1000 meter spacing. The NC DAQ guidance mentioned above recommends domains of 5 to 10 kilometers for stack heights less than 50 meters.

4.7 Terrain

The area surrounding the facility is gently rolling terrain, with terrain heights just reaching 100% of the boiler stack height within 3 miles of the facility (Figure 4-5). Base elevations of all buildings and the boiler were provided by the facility. The latest version of the terrain processor AERMAP (version 18081), was used to

[8] https://www3.epa.gov/ttn/scram/guidance/guide/gep.pdf
[9] https://www3.epa.gov/ttn/scram/userg/relat/bpipd.pdf
[10] https://files.nc.gov/ncdeq/Air%20Quality/permits/mets/NC_Toxics_Guidance_rev_24May2018.pdf

apply base elevations and hill heights to the receptors using 1/3 arc second (10 meter) National Elevation Data (NED)[11].

4.8 Emission Source Parameters

The biomass-fired boiler was modeled using stack parameters found in Table 4-3 and were provided by the facility. The modeled emission rate was the expected new BACT limit for the boiler in pounds per hour (lb/hr).

4.9 Class II Area SIL Analysis

The Class II Area SIL analysis was conducted using the five years of meteorological data described in Section 4.4. This modeling analysis was used to make a determination of modeled significance for CO (1-hour and 8-hour averaging periods). The determination of significance was made using the highest short-term modeled concentration over each of the five years modeled. Table 4-4 shows that the maximum modeled CO values are less than the SILs; therefore, no further modeling is required.

4.10 Preconstruction Ambient Monitoring Data

The PSD regulations require that a PSD permit application contain an analysis of existing air quality for all regulated pollutants that the source has the potential to emit in significant amounts. For this Project, that potential pollutant is CO. The definition of existing air quality can be satisfied by air measurements from either a state-operated or private network, or by a pre-construction monitoring program that is specifically designed to collect data in the vicinity of the proposed source. To fulfill the pre-construction monitoring requirement for PSD without conducting on-site monitoring a source may either:

1. Justify that data collected from existing monitoring sites are conservatively representative of the air quality in the vicinity of the proposed Project site.
2. Demonstrate through modeling the ambient impacts from the proposed Project are less than the de minimis levels established by the EPA (40 CFR 51.166(i)(5)(i)).

As shown in Table 4-4, the modeled impacts from the proposed Project are less than the Significant Monitoring Concentration (SMC) for CO. Therefore existing air quality does not have to be established for this Project.

4.11 Class I Area Impact Analysis

A Class I area impacts analysis is not required for this Project because the Project is not subject to PSD review for any pollutants that have Class I SILs or PSD increments.

[11] https://www.mrlc.gov/finddata.php

5.0 ADDITIONAL IMPACTS ANALYSIS

Under the PSD requirements at 40 CFR 51.166(o), an additional impact analysis is required to evaluate the effects of economic growth and the effect on soils, vegetation and visibility from regulated pollutants emitted in significant quantities from a new or modified major stationary source. The following section presents the PSD additional impact analysis associated with the emission increases of CO from the proposed project.

5.1 Class I Analysis

There are two Class I areas within 150 to 200 km of the plant, Linville Gorge Wilderness and James River Face Wilderness. However, the proposed project will not result in a significant increase in any pollutant impacting air quality related values (NO_x, SO_2, PM, and H_2SO_4). Therefore, a Class I Area Analysis is not required.

5.2 Growth Analysis

The Project will not result in any additional employees at the facility. Therefore, secondary growth from this Project is not expected, and thus an analysis of such growth is not required.

5.3 Class II Area Visibility Analysis

For a PSD analysis, a visibility assessment is typically conducted for the pollutants which trigger PSD review. The visibility impacting pollutants are PM, SO_2, and NO_x. As there is not a significant increase in emissions of these pollutants due to the project, a visibility analysis is not required.

5.4 Soils and Vegetation Analysis

An analysis of the Project's potential impact on soils and vegetation in the vicinity of the facility was performed in accordance with the procedures recommended in the US EPA document, *A Screening Procedure for Impacts of Air Pollution Sources on Plants, Soils and Animals* (EPA-450/2-81-078). The highest predicted CO impacts from the Project used in the SIL analysis were compared to the screening concentrations listed in the above referenced document. The modeled CO impacts of 37.8 µg/m3 (1-hour) and 29.9 µg/m3 (8-hour) are well below the screening concentrations of 1,800,000 µg/m3 (1-week); therefore, no significant impacts on local vegetation from CO are expected as a result of the Project.

Tables

TABLE 3-1
RACT/BACT/LAER CLEARINGHOUSE SUMMARY (2008 - 2018)
INGREDION WINSTON-SALEM, NC FACILITY

RBLCID	FACILITY_NAME	STATE	PERMIT ISSUANCE	PROCESS NAME	PRIMARY_FUEL	POLLUTANT	CONTROL_METHOD_DESCRIPTION
CA-1203	SIERRA PACIFIC INDUSTRIES-LOYALTON	CA	8/30/2010	RILEY SPREADER STOKER BOILER	WOOD	Carbon Monoxide	Over Fire Air
CA-1225	SIERRA PACIFIC INDUSTRIES-ANDERSON DIVISION	CA	4/25/2014	STOKER BOILER (NORMAL OPERATION)	BIOMASS	Carbon Monoxide	Good combustion practices
CT-0156	MONTVILLE POWER LLC	CT	4/6/2010	42 MW Biomass utility boiler	Clean wood	Carbon Monoxide	Oxidation Catalyst
CT-0156	MONTVILLE POWER LLC	CT	4/6/2010	82 Utility boiler		Carbon Monoxide	Oxidation Catalyst
CT-0162	PLAINFIELD RENEWABLE ENERGY, LLC	CT	12/29/2010	Fluidized Bed Gasification	Wood	Carbon Monoxide	Good Combustion
GA-0132	YELLOW PINE ENERGY COMPANY, LLC	GA	12/3/2008	BUBBLING FLUIDIZED BOILER	BIOMASS	Carbon Monoxide	
GA-0140	MITCHELL STEAM-GENERATING PLANT	GA	12/3/2010	Boiler, Wood-Fired	Wood, Biomass	Carbon Monoxide	Good Combustion Practices
GA-0141	WARREN COUNTY BIOMASS ENERGY FACILITY	GA	12/17/2010	Boiler, Biomass Wood	Biomass wood	Carbon Monoxide	Good design and operating practices.
KS-0034	ABENGOA BIOENERGY BIOMASS OF KANSAS (ABBK)	KS	5/27/2014	biomass to energy cogeneration bioler	biomass	Carbon Monoxide	Oxidation catalyst
ME-0037	VERSO BUCKSPORT LLC	ME	11/29/2010	Biomass Boiler 8	Biomass	Carbon Monoxide	
SC-0117	SPRINGS GLOBAL US, INC. - GRACE COMPLEX	SC	11/6/2010	UTILITY- AND LARGE INDUSTRIAL-SIZE BOILERS/FURNACES	WOOD BIOMASS	Carbon Monoxide	OVERFIRE AIR AND GOOD COMBUSTION PRACTICES
TX-0553	LINDALE RENEWABLE ENERGY	TX	1/8/2010	Wood fired boiler	biomass	Carbon Monoxide	Good combustion practices
TX-0555	LUFKIN GENERATING PLANT	TX	10/26/2009	Wood-fired Boiler	wood	Carbon Monoxide	Good combustion practices
VA-0316	ALTAVISTA POWER STATION	VA	5/23/2012	BIOMASS-FIRED, SPREADER STOKER BOILERS, (2)	Woody Biomass	Carbon Monoxide	Good combustion practices (GCP).
VA-0317	HOPEWELL POWER STATION	VA	5/23/2012	BIOMASS-FIRED, SPREADER STOKER BOILERS, (2)	Woody Biomass	Carbon Monoxide	Good combustion practices (GCP).
VA-0318	SOUTHAMPTON POWER STATION	VA	5/23/2012	BIOMASS-FIRED, SPREADER STOKER BOILERS, (2)	Woody Biomass	Carbon Monoxide	Good combustion practices (GCP).
VT-0037	BEAVER WOOD ENERGY FAIR HAVEN	VT	2/10/2012	Main Boiler	wood	Carbon Monoxide	Good combustion control and a Multi Pollutant Catalytic Reactor (oxidation catalyst)
VT-0039	NORTH SPRINGFIELD SUSTAINABLE ENERGY PROJECT	VT	4/19/2013	Wood Fired Boiler	wood	Carbon Monoxide	Bubbling fluidized bed boiler design

TABLE 3-2
CALCULATION OF REVISED BACT EMISSION LIMIT
INGREDION WINSTON-SALEM FACILITY

Ingredion Carbon Monoxide Stack Test Results from SCS Boiler

Test Year	Date	Test Result (lb/MMBtu)
2017	September 6, 2017	0.308
		0.390
2016	November 15, 2016	0.270
2015	March 1, 2016	0.264
	November 24, 2015	0.387
2014	September 2, 2015	0.261
	November 20, 2014	0.352
2013	November 26, 2013	0.258
2012	March 19, 2013	0.299
	February 21, 2013	0.399

Calculation of 99% confidence interval:

X (mean) =	0.319	lb/MM Btu
Standard Deviation (S^2) =	0.0579	
T statistic @ 99% confidence and degrees of freedom =	2.82	
99% confidence value =	0.020	
Number of tests =	10	
Degrees of freedom =	9	
sqrt ((1/tests) + (1/number of future test runs in compliance average)) =	0.658	
Proposed BACT limit =	0.43	lb/MM Btu

The following algorithms were used to calculate the revised BACT using EPA 99% upl : methodology for EPA MACT floors:

Specifically, in the case of normal distributed data, the MACT floor limit is an UPL calculated as:

$$UPL = \bar{x} + t_{df,99}\sqrt{s^2\left(\frac{1}{n}+\frac{1}{m}\right)}$$

Where:

$\bar{x}$ = mean of the top performing sources calculated as $\bar{x} = \frac{1}{n}\sum_{i=1}^{N}\sum_{j=1}^{n_i} x_{ij}$

n = Number of test runs = $\sum_{i=1}^{N} n_i$

m = Number of future test runs in the compliance average

N = Number of sources

s^2 = pooled variance calculated as $s^2 = \frac{1}{n-1}\sum_{i=1}^{n}\left(x_i - \bar{X}\right)^2$

$t_{df,99}$ = 99th – quantile of t-distribution with *df* degrees of freedom

df = degrees of freedom calculated as $df = \left(\sum_{i=1}^{N} n_i\right) - 1$

TABLE 4-1
LAND COVER CLASSIFICATION
INGREDION WINSTON-SALEM FACILITY

2011 NLCD Classification		Percentage of Total Area	Auer Land-Use Classification		Urban or Rural
11	Open Water	0.1%	A5	Water surfaces	Rural
21	Developed, Open Space	28.8%	A1	Metropolitan Natural	Rural
22	Developed, Low Intensity	16.8%	R1	Common Residential	Rural
23	Developed, Medium Intensity	4.9%	I1,I2,C1,R2,R3	Industrial/Commercial/Compact Residential	Urban
24	Developed, High Intensity	2.5%	I1,I2,C1,R2,R3	Industrial/Commercial/Compact Residential	Urban
41	Deciduous Forest	24.1%	A4	Undeveloped (Wooded)	Rural
42	Evergreen Forest	4.2%	A4	Undeveloped (Wooded)	Rural
43	Mixed Forest	0.5%	A4	Undeveloped (Wooded)	Rural
52	Shrub/Scrub	1.1%	A3	Undeveloped (Grasses/Shrub)	Rural
71	Grassland/Herbaceous	5.1%	A3	Undeveloped (Grasses/Shrub)	Rural
81	Pasture/Hay	11.3%	A2	Agricultural	Rural
90	Woody Wetlands	0.4%	A4	Undeveloped (Wooded)	Rural

TABLE 4-2
BUILDING/TANK PARAMETERS
INGREDION WINSTON-SALEM FACILITY

Building/Tank Name	Base Elevation (m)	Tier Height (m)
u0ncub	250.0	18.0
ENZYME	250.0	4.6
OFFICE	250.0	16.2
DRYER-EN	250.0	14.0
BOILER	250.0	22.3
MAIN	250.0	16.2
PENTH-1	250.0	21.0
D1	250.0	18.9
D2	250.0	30.2
B-ADDTN1	250.0	25.3
B-ADDTN	250.0	15.6
STEEPS	250.0	18.0
Newbldg	250.0	22.3
Electric	250.0	3.7
CORN1	250.0	19.4
CORN2	250.0	19.4
CORN3	250.0	26.0
COAL	250.0	22.3
ASH	250.0	17.1
GERM	250.0	31.4
GLUTEN	250.0	27.6
STARCH	250.0	27.6
FEED1	250.0	31.4
FEED2	250.0	31.4
RETEC	250.0	16.9
CARBON	250.0	15.0
FILTERA	250.0	25.8
TA	250.0	11.4
TB	250.0	11.4
TC	250.0	11.4
TD	250.0	11.4
TE	250.0	11.4
TF	250.0	11.4
TG	250.0	11.4
TH	250.0	11.4
TI	250.0	11.4
TJ	250.0	11.4
TK	250.0	11.4
HFCSA	250.0	12.6
HFCSB	250.0	12.6
HFCSC	250.0	12.6
HFCSD	250.0	12.6
HFCSE	250.0	12.6
HFCSF	250.0	12.6

TABLE 4-2
BUILDING/TANK PARAMETERS
INGREDION WINSTON-SALEM FACILITY

Building/Tank Name	Base Elevation (m)	Tier Height (m)
HFCSG	250.0	12.6
HFCSH	250.0	12.6
Incb	250.0	12.0
TL	250.0	11.4
TM	250.0	11.4
TN	250.0	11.4
TO	250.0	11.4
TP	250.0	11.4

TABLE 4-3
SOURCE PARAMETERS
INGREDION WINSTON-SALEM FACILITY

Source ID	Description	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Stack Height (m)	Temperature (K)	Exit Velocity (m/s)	Stack Diameter (m)
BOILER	Biomass-fired Boiler	569382.54	3987807.80	250.00	41.15	477.60	22.78	2.29

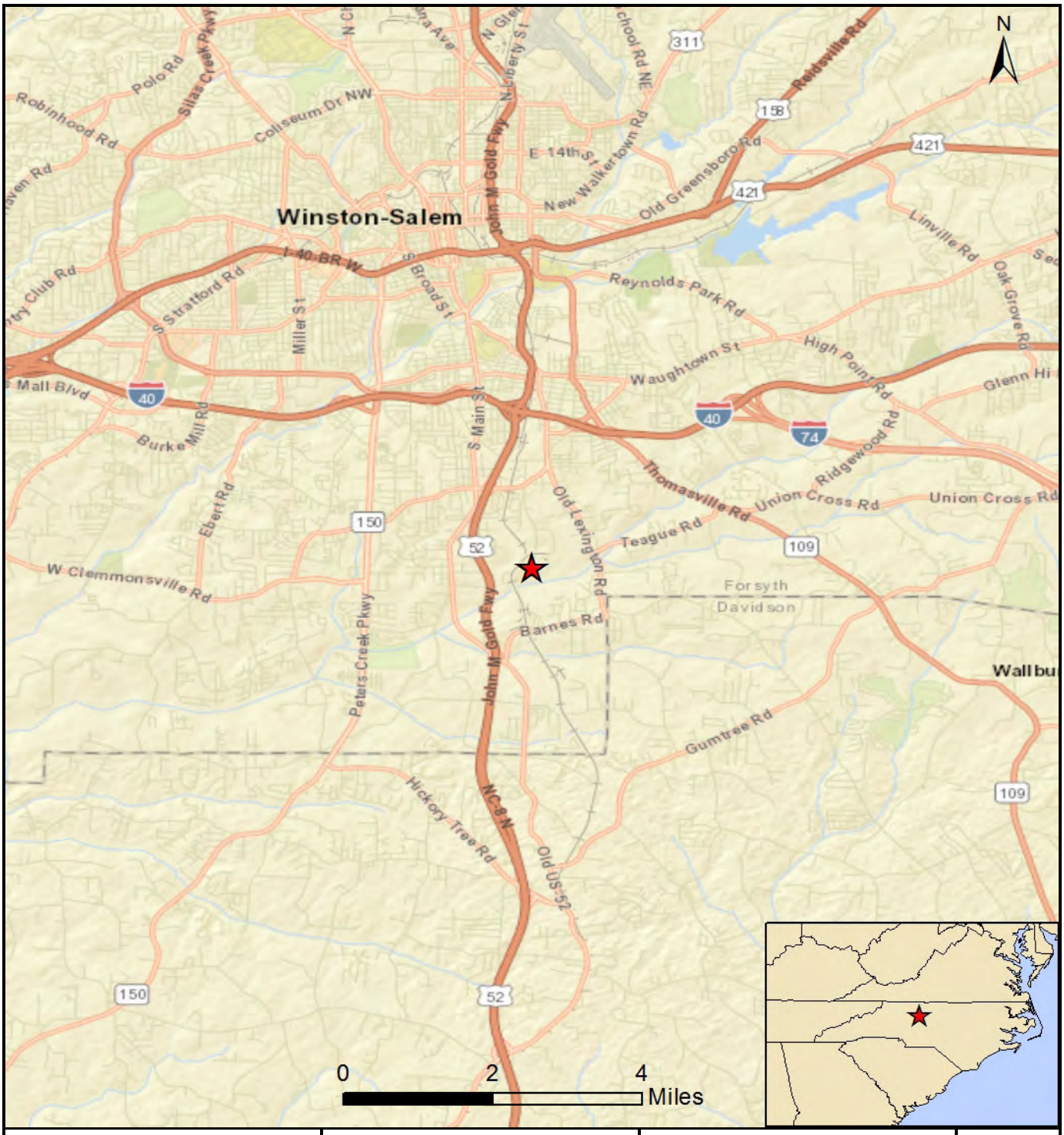
TABLE 4-4

SUMMARY OF CARBON MONOXIDE SIL MODELING ANALYSIS
INGREDION WINSTON-SALEM FACILITY

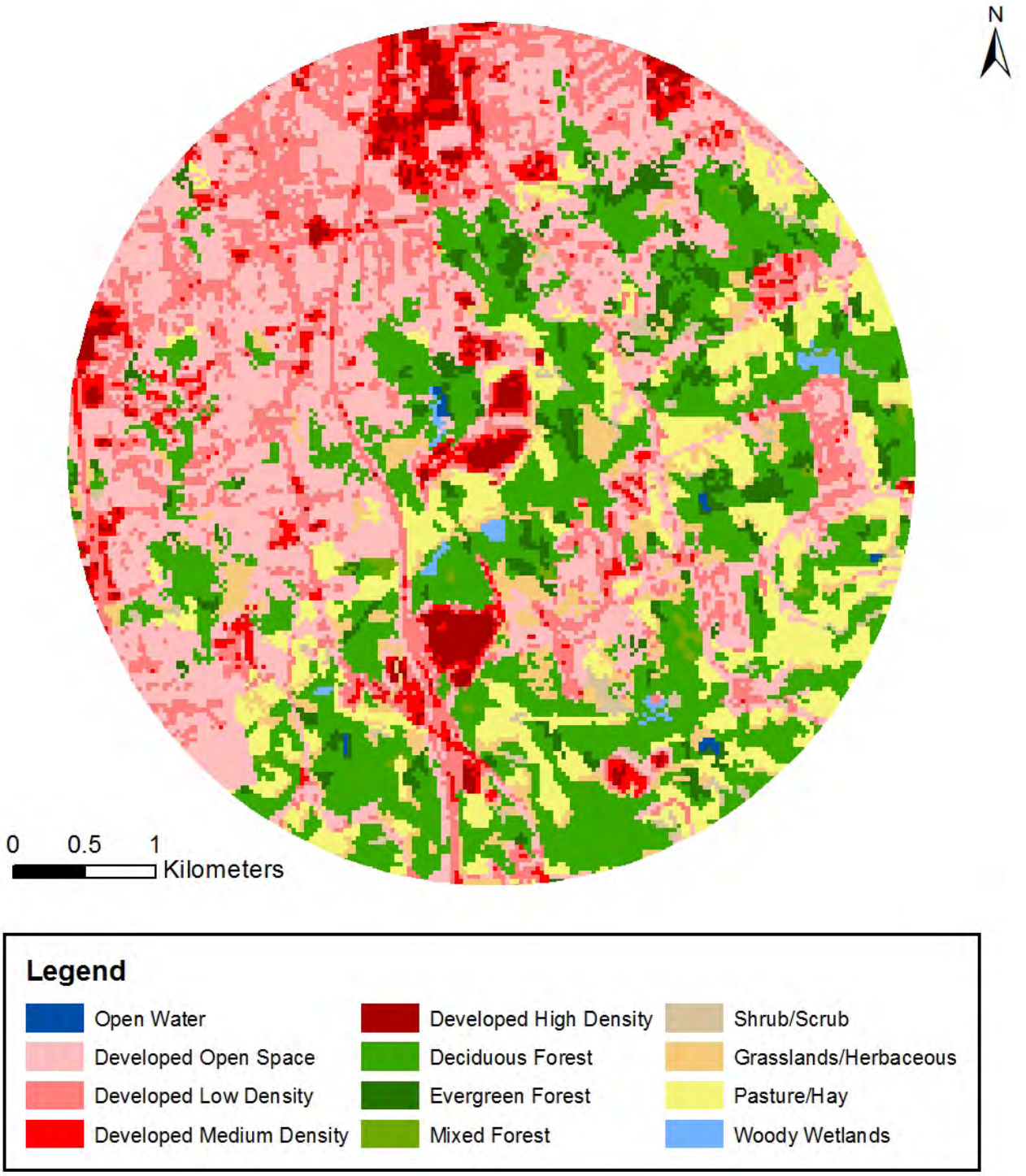
Year	Averaging Period	Modeled Concentration ($\mu g/m^3$)[1]	SIL[2] ($\mu g/m^3$)	Percent of SIL (%)	SMC[3] ($\mu g/m^3$)	Percent of SMC (%)
2013	1-Hour	37.8	2,000	2%	NA	--
	8-Hour	28.6	500	6%	575	5%
2014	1-Hour	30.3	2,000	2%	NA	--
	8-Hour	20.2	500	4%	575	4%
2015	1-Hour	37.5	2,000	2%	NA	--
	8-Hour	27.6	500	6%	575	5%
2016	1-Hour	29.4	2,000	1%	NA	--
	8-Hour	23.4	500	5%	575	4%
2017	1-Hour	32.4	2,000	2%	NA	--
	8-Hour	29.9	500	6%	575	5%

1. Highest value for each year.
2. Significant Impact Levels found in 40 CFR 51.165(b)(2).
3. Significant Monitoring Concentrations found in 40 CFR 52.166(i)(5)(i).

Figures



INGREDION INC. WINSTON-SALEM, NORTH CAROLINA	AECOM *1600 Perimeter Park Drive, Suite 400* *Morrisville, North Carolina 27560* *Telephone 919-461-1100*	**SITE LOCATION**	PROJECT NO. 60577776 FIG. NO. 4-1



INGREDION INC.
WINSTON-SALEM, NORTH CAROLINA

AECOM

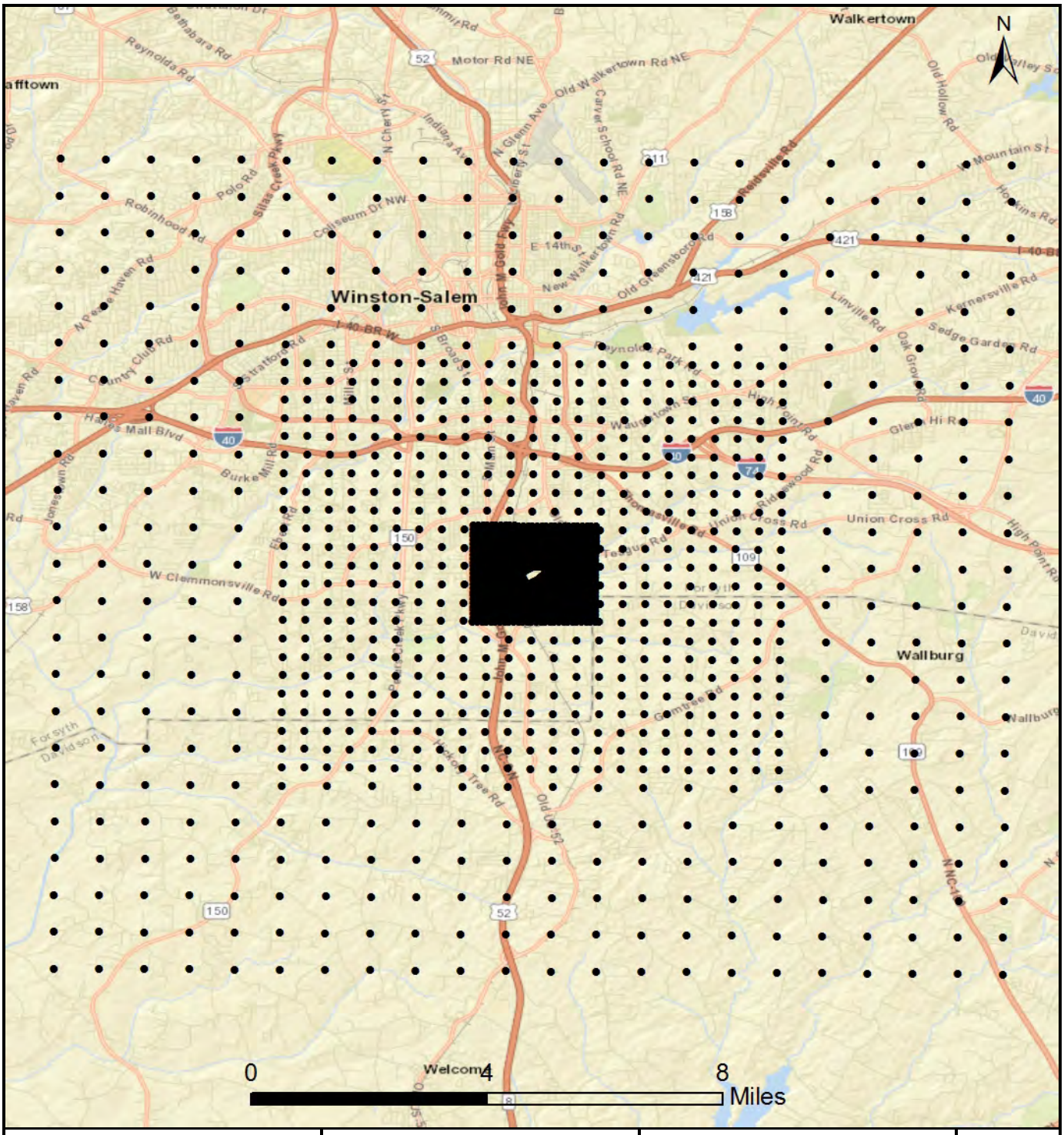
1600 Perimeter Park Drive, Suite 400
Morrisville, North Carolina 27560
Telephone 919-461-1100

LAND COVER WITHIN 3KM

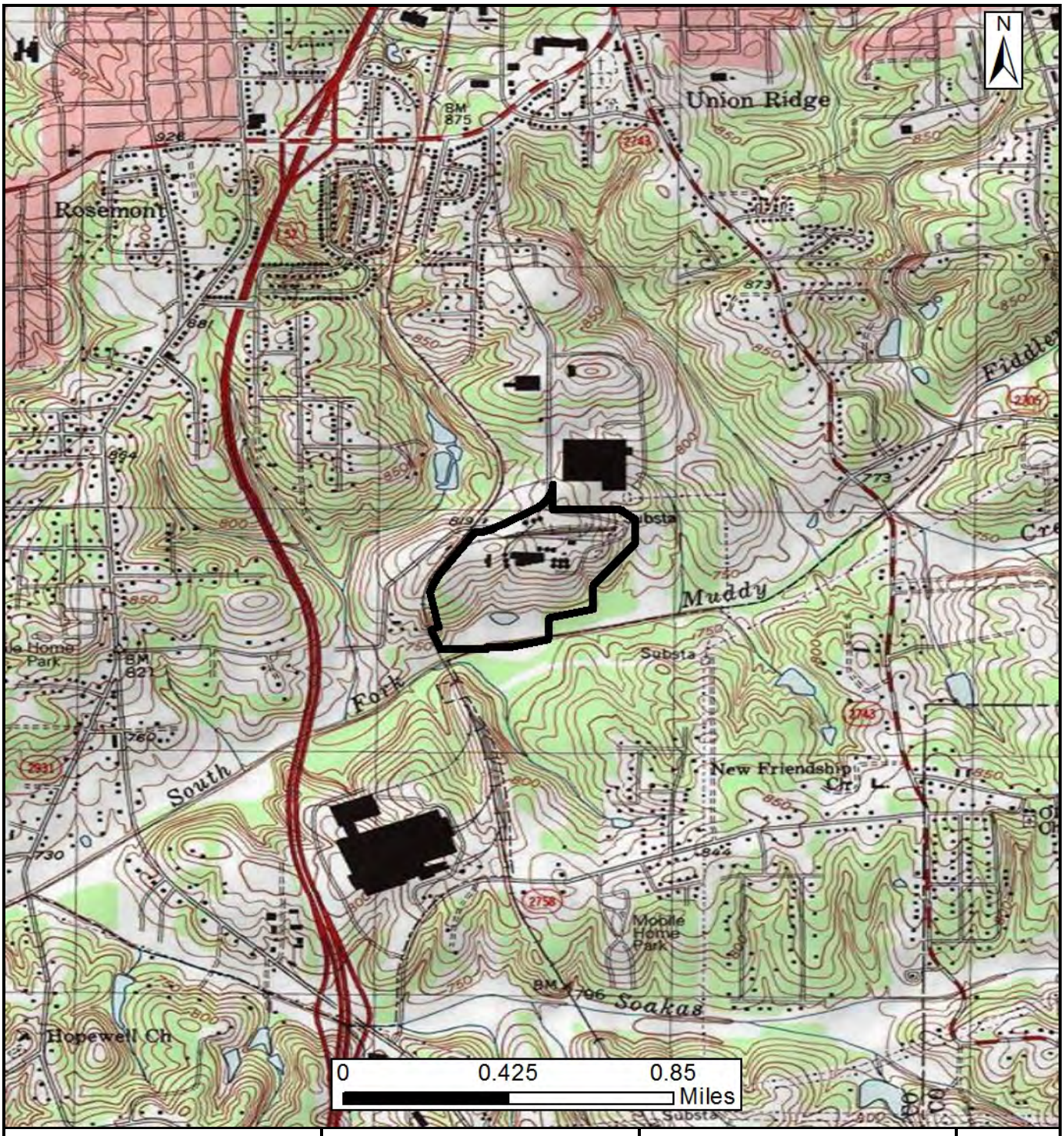
PROJECT NO. 60577776

FIG. NO. 4-2

INGREDION INC. WINSTON-SALEM, NORTH CAROLINA	AECOM *1600 Perimeter Park Drive, Suite 400* *Morrisville, North Carolina 27560* *Telephone 919-461-1100*	**MODEL LAYOUT**	PROJECT NO. 60577776 FIG. NO. 4-3



INGREDION INC. WINSTON-SALEM, NORTH CAROLINA	AECOM *1600 Perimeter Park Drive, Suite 400* *Morrisville, North Carolina 27560* *Telephone 919-461-1100*	**MODEL RECEPTORS**	PROJECT NO. 60577776 FIG. NO. 4-4



INGREDION INC. WINSTON-SALEM, NORTH CAROLINA	AECOM *1600 Perimeter Park Drive, Suite 400* *Morrisville, North Carolina 27560* *Telephone 919-461-1100*	**SURROUNDING TERRAIN**	PROJECT NO. 60577776 FIG. NO. 4-5

Appendix A

Permit Application Forms

SECTION A

A1 FACILITY (General Information)

REVISED: 6/26/2012 FORSYTH COUNTY - APPLICATION FOR AIR PERMIT TO CONSTRUCT/OPERATE

FACILITY NAME: Ingredion Incorporated
SITE ADDRESS: 4501 Overdale Road
CITY: Winston-Salem

MAILING ADDRESS: 4501 Overdale Road
CITY: Winston-Salem
STATE: NC ZIP CODE 27107

FACILITY LATITUDE: 36°-02'-45" FACILITY LONGITUDE: 80°-13'-50"
HORIZONTAL COLLECTION METHOD CODE: HORIZONTAL REFERENCE DATUM CODE: GEOGRAPHIC REFERENCE POINT CODE:

ON-SITE CONTACT PERSON: Christopher Lynch TITLE: EHS Manager
PHONE: 336-785-8805 FAX: 336-785-8820 EMAIL: christopher.lynch@Ingredion.com

LEGAL CORPORATE OWNER: Ingredion Incorporated

TECHNICAL CONTACT: Christopher Lynch TITLE: EHS Manager
ADDRESS: 4501 Overdale Road CITY: Winston-Salem
STATE: NC ZIP CODE: 27107
PHONE: 336-785-8805 FAX: 336-785-8820 EMAIL: christopher.lynch@Ingredion.com

RESPONSIBLE OFFICIAL: Dave Cluskey TITLE: Plant Manager
ADDRESS: 4501 Overdale Road CITY: Winston-Salem
STATE: NC ZIP CODE: 27107
PHONE: 336-785-8827 FAX: 336-785-8820 EMAIL: dave.cluskey@ingredion.com

CURRENT PERMIT NO: 00732-TV-12 EXPIRATION DATE: 9/13/2018

TYPE OF OPERATION: Facility processes corn for glucose, starch, and other corn products.
PRIMARY 6 DIGIT NAICS CODE: PRIMARY NAICS DESCRIPTION:
PRIMARY SIC CODE: 2046 PRIMARY SIC CODE DESCRIPTION: Corn Wet Milling

FACILITY CLASSIFICATION ☑ TITLE V ☐ SYNTHETIC MINOR ☐ EXCLUSIONARY SMALL ☐ SMALL

TITLE V APPLICABILITY: ☐ CAP EMISSIONS ☐ HAP EMISSIONS ☐ OTHER EMISSIONS ☐ CATEGORY:

APPLICATION IS BEING MADE FOR (CHECK ALL THAT APPLY, NOTE: (TV) INDICATES APPLICABILITY TO TITLE V FACILITIES ONLY):

☐ NEW FACILITY	☐ MODIFICATION	☐ DISPERSION MODELING
☐ INITIAL TITLE V PERMIT (TV)	☑ SIGNIFICANT MODIFICATION (TV)	☐ MINOR MODIFICATION (TV)
☑ NEW SOURCE REVIEW PSD/NAA	☐ CASE-BY-CASE MACT	☐ TAX CERTIFICATION
☐ ADMINISTRATIVE AMENDMENT	☐ RELOCATION (WITHIN FACILITY)	☐ LIKE-FOR-LIKE REPLACEMENT
☐ RENEWAL	☐ OWNERSHIP CHANGE	☐ OFF PERMIT NOTIFICATION (TV)

HAVE YOU INCLUDED: ☑ SOURCE REDUCTION & RECYCLING FORM D3-3 ☑ APPLICATION FEE ☑ PLANT LAYOUT
☐ FLOW CHART(S) ☐ ROOF DIAGRAM ☐ PLOT PLAN ☑ AREA DIAGRAM

PROPOSED SCHEDULE
BEGIN CONSTRUCTION: NA COMPLETE CONSTRUCTION: STARTUP BEGIN OPERATION:

DO YOU CLAIM CONFIDENTIALITY OF DATA? ☑ NO ☐ YES *(SEE INSTRUCTIONS)*

Dave Cluskey — Plant Manager — 09/19/2018
SIGNATURE OF RESPONSIBLE OFFICIAL — TITLE — DATE

Dave Cluskey
PRINTED NAME

A3

SECTION A
EMISSION SOURCE LISTING (EXISTING FACILITY)

(New, Modified, Previously Unpermitted, Replaced, Deleted)

REVISED: 10/24/2000

EMISSION SOURCE ID NO.	EMISSION SOURCE DESCRIPTION	CONTROL DEVICE ID NO.	CONTROL DEVICE DESCRIPTION	EMISSION POINT ID NO. or "FUGITIVE"
EQUIPMENT TO BE MODIFIED BY THIS APPLICATION				
ES-62F	Wood-Natural Gas Fired Boiler	CD-(62F1-62F2)	Multiclone and ESP in Series	EP-62F
EQUIPMENT TO BE ADDED BY THIS APPLICATION (New, Previously Unpermitted, or Replacement)				
EQUIPMENT TO BE DELETED BY THIS APPLICATION				
EQUIPMENT BEING REPLACED BY THIS APPLICATION				

SECTION A

A5

EMISSION SOURCE/CONTROL DEVICE ALTERNATIVE OPERATING SCENARIOS

REVISED: 10/24/2000 **FORSYTH COUNTY - APPLICATION FOR AIR PERMIT TO CONSTRUCT/OPERATE**

EMISSION SOURCE ID NO: **ES-62F**	*ATTACH TO APPROPRIATE FORM B*
CONTROL DEVICE ID NO: **CD-(62F1&62F2)**	

PRIMARY OPERATING SCENARIO (DESCRIBE):

Not applicable.

DESCRIBE ALTERNATIVE OPERATING SCENARIO (AOS) NO. AOS-62F , (specify no.):

DESCRIBE ALTERNATIVE OPERATING SCENARIO (AOS) NO. _____ , (specify no.):

NA

DESCRIBE ALTERNATIVE OPERATING SCENARIO (AOS) NO. _____ , (specify no.):

NA

COMMENTS:

None

SECTION B

B2 | **EMISSION SOURCE (WOOD FIRED BURNER)**

REVISED: 10/24/2000

FORSYTH COUNTY - APPLICATION FOR AIR PERMIT TO CONSTRUCT/OPERATE

EMISSION SOURCE DESCRIPTION:	**Wood-Gas Fired Stoker Boiler**	EMISSION SOURCE ID NO:	**ES-62F**
CONTROL DEVICE ID NO(S):	**CD-62F-(1&2)**	EMISSION POINT ID NO(S):	**EP-62F**

INDICATE WHETHER THIS SOURCE IS SUBJECT TO ☑ NSPS OR ☐ NESHAP REGULATIONS

ALTERNATIVE OPERATING SCENARIO (AOS) NO: **AOS-62F**

DESCRIBE USE: ☑ PROCESS HEAT ☐ SPACE HEAT ☑ ELECTRICAL GENERATION

☑ CONTINUOUS USE ☐ STAND BY/EMERGENCY ☐ OTHER:

MANUFACTURER (include model #):	**Steam and Control Systems, Inc.**	DATE MANUFACTURED:	**1997**
MAX. FIRING RATE (MMBTU/HOUR): **324.5 for Wood and Natural Gas Combination**		OPERATION DATE:	**1998**

OPERATING SCHEDULE	HR/DAY: **24**	DAY/WK: **7**	WEEK/YR: **52**	
SEASONAL VARIATION (%)	JAN-MAR: **25**	APR-JUN: **25**	JUL-SEP: **25**	OCT-DEC: **25**

WOOD TYPE ☐ BARK ☑ WOOD/BARK ☑ WOOD ☐ OTHER

☐ UNCONTROL ☐ UNCONTROLLED ☐ FLYASH REINJECTION ☑ NO FLYASH REINJECTION

FUEL FEED METHOD: **Pneumatic Vibrating Stoker** HEAT TRANSFER MEDIA: ☑ STEAM ☐ AIR

FUEL CHARACTERISTICS (COMPLETE ALL THAT ARE APPLICABLE)

FUEL TYPE	BTU CONTENT	UNITS
Wood	**4,500**	**Pound**
Natural Gas	**1,030**	**CF**
Corn Material	**6,000**	**Pound**

METHOD OF TUBE CLEANING: **Soot Blower**

CLEANING SCHEDULE: **Approximately 8 to 12 hours**

FUEL USAGE (INCLUDE STARTUP/BACKUP FUELS)

FUEL TYPE	UNITS	MAX. DESIGN CAPACITY (UNIT/HR)	REQUESTED CAPACITY LIMITATION (UNIT/HR)
Wood Only	**Tons**	**36.1**	-
Natural Gas Only	**MCF**	**31.5***	-
Corn Material	**Tons**	**3**	-

DESCRIBE ANY MONITORING DEVICES, GAUGES, OR TEST PORTS:

The boiler has a continuous emissions monitoring system (CEMS) for opacity. Test ports are available.

INDICATE ALL REQUESTED STATE AND FEDERALLY ENFORCEABLE PERMIT LIMITS (e.g., hours of operation, material input rates, emission rates, etc.) AND DESCRIBE HOW THESE LIMITS ARE MONITORED AND WITH WHAT FREQUENCY.

See attached D3-2 forms.

COMMENTS:

***Input rate based on annual heat input capacity factor limit of 10%.**

SCS Boiler Emission Estimates

Heat Input Capacity = 324.5 MMBtu/hr

Polluant	Factor (lb/MMBtu)	Factor Basis	Emissions (lb/hr)	(lb/yr)	(tpy)
CO	0.43	Proposed BACT	139.5	1,222,327	611.2
NOx	0.3	Permit limit	97.4	852,786	426.4
PM/PM-10/PM-2.5	0.047	NESHAP (filterable)/AP-42	15.3	133,603	66.8
SO2	0.025	AP-42	8.1	71,066	35.5
Lead	1.82E-05	Fuel analysis, 97% control efficiency	5.92E-03	51.85	0.026
VOC	0.00388	Stack test	1.3	11,029	5.5

SECTION D
SPECIFIC EMISSION SOURCE (EMISSION INFORMATION)

D3-1

(*see note in instructions concerning local air toxics regulations)

REVISED: 10/24/2000 **FORSYTH COUNTY - APPLICATION FOR AIR PERMIT TO CONSTRUCT/OPERATE**

EMISSION SOURCE DESCRIPTION: **Wood-Gas Fired Stoker Boiler**

EMISSION SOURCE ID NO: **ES-62F** ☐ YES ☑ NO

ALTERNATIVE OPERATING SCENARIO (AOS) NO:

POLLUTANT	EMISSION FACTOR TYPE	EMISSION RATE IN LBS/HR		EMISSION RATE IN LBS/YR	
		POTENTIAL	ACTUAL	POTENTIAL	ACTUAL
*Particulate Matter	BACT limit	15.3	-	133,603	-
Sulfur Dioxide	AP-42	8.1	-	71,066	-
Nitrogen Oxides	BACT limit	97.4	-	852,786	-
Carbon Monoxide	BACT limit	139.5	-	1,222,327	-
Lead	Fuel analysis and 97% control effiency	5.9E-03	-	51.85	-
VOC	AP-42	1.26		11,029	

COMMENTS:

***Conservative assumption that emitted Particulate Matter is PM-10 and PM-2.5.**

SECTION D

D3-2

SPECIFIC EMISSION SOURCE (REGULATORY ANALYSIS)

REVISED: 10/24/2000 **FORSTYH COUNTY - APPLICATION FOR AIR PERMIT TO CONSTRUCT/OPEARATE**

EMISSION SOURCE DESCRIPTION: **Wood-Gas Fired Stoker Boiler**

EMISSION SOURCE ID NO: **ES-62F**

REGULATED POLLUTANT	EMISSION AND OPERATING LIMITS [1]	APPLICABLE REGULATION
Carbon Monoxide	**0.43 lb CO/MMBtu**	**40 CFR 51.166 and 3D .0530**

COMMENTS:

1) All other regulatory requirements specified in condition 3.6 of permit are not impacted.

D3-3

EMISSION SOURCE (REDUCTION AND RECYCLING ACTIVITIES)

REVISED: 7/20/2001

FORSYTH COUNTY - APPLICATION FOR AIR PERMIT TO CONSTRUCT/OPERATE

FACILITY NAME: Ingredion Incorporated

CURRENT FACILITY PERMIT NUMBER (if applicable): 00732-TV-12

REPORTING REDUCTIONS FOR CALENDAR YEAR: NA

FACILITY-WIDE OR SPECIFIC EMISSION SOURCE? Specific Emission Source

IF SPECIFIC EMISSISON SOURCE, SOURCE I.D. NUMBER and DESCRIPTION:

Wood-Gas Fired Stoker Boiler (ES-62F)

POLLUTANT EMITTED	SOURCE REDUCTION ACTIVITIES (ENTER CODES*)	QUANTITY EMITTED LAST CALENDAR YEAR (LBS/YR)	QUANTITY EMITTED LAST CALENDAR YEAR (TONS/YR)	QUANTITY EMITTED THIS CALENDAR YEAR (LBS/YR)	QUANTITY EMITTED THIS CALENDAR YEAR (TONS/YR)	AMOUNT REDUCED (IF APPLICABLE) (LBS/YR)	AMOUNT REDUCED (IF APPLICABLE) (TONS/YR)	PLANNED REDUCTION ACTIVITIES CY: (ENTER CODES*)
Criteria Pollutants	NA	NA	NA	NA	NA	NA	NA	NA
HAPs	NA	NA	NA	NA	NA	NA	NA	NA
TAPs	NA	NA	NA	NA	NA	NA	NA	NA

COMMENTS:

Signature: **Date:**

* Refer to list of "Source Reduction and Recycling Activity Codes" included in instructions.

D4

SECTION D
EMISSION POINT SUMMARY

REVISED: 10/24/2000

FORSYTH COUNTY - APPLICATION FOR AIR PERMIT TO CONSTRUCT/OPERATE

LIST ALL INFORMATION ASSOCIATED WITH EACH EMISSION POINT							
EMISSION POINT ID NO.	EMISSION POINT HIGHT (FT)	EQUIV. DIAM (FT)	TEMP. (F)	VELOCITY (FT/SEC)	FLOW RATE (ACFM)	EMISSION POINT DIRECTION	RAIN CAP? (Y OR N)
EP-62F	135	7.5	400	74.7	198,140	V	N

COMMENTS:

SECTION D

D5

FACILITY EMISSIONS SUMMARY

REVISED: 6/26/2012

FORSYTH COUNTY - APPLICATION FOR AIR PERMIT TO CONSTRUCT/OPERATE

POLLUTANT	CAS #	H/T/O	ANNUAL EMISSIONS IN LBS/YR ACTUAL	ANNUAL EMISSIONS IN LBS/YR POTENTIAL
PM				**503,769**
PM10				**410,314**
PM2.5				**410,314**
SO2				**2,949,434**
NOx				**2,544,351**
CO				**3,149,043**
VOC				**424,590**
LEAD				**102**

Source	PM	PM-10/PM-2.5	SO_2	NO_x	CO	VOC	Lead
ES-11A	**466.03**	**115.28**					
ES-11B	**1,496.21**	**833.95**					
ES-14			**10,440.00**			**15,290.18**	
ES-15			**105,123.98**			**65,869.68**	
ES-21	**6,090.92**		**6,976.15**			**158,731.20**	
ES-22						**350.00**	
ES-23	**12,648.71**		**11,435.78**			**73,188.20**	
ES-24	**603.68**					**16,866.85**	
ES-25	**985.71**		**407.34**			**trace**	
ES-31	**65,994.69**	**17.39**	**21,199.20**	**5,485.63**	**15,359.77**	**14,629.20**	**0.09**
ES-32	**204.72**					**trace**	
ES-62	**6,224.53**	**1,556.13**	**491.41**	**40,950.87**	**68,797.47**	**4,504.60**	**0.41**
ES-62C	**274,188.00**	**274,188.00**	**2,715,600.00**	**1,645,128.00**	**1,842,559.65**	**52,511.00**	**50.01**
ES-62E							
ES-62F	**133,603.14**	**133,603.14**	**71,065.50**	**852,786.00**	**1,222,326.60**	**11,029.37**	**51.85**
ES-62D	**140.30**						
ES-81			**614.95**				
ES-83	**183.46**						
ES-84							
ES-85	**394.56**						
ES-WHS	**144.00**						
Transload	**400.00**						
C-steeps			**6,000.00**			**5,200.00**	
Waste H_2O						**5,451.00**	
Refinery			**80.00**				
	503,769	**410,314**	**2,949,434**	**2,544,351**	**3,149,043**	**424,590**	**102**

TOTAL FACILITY FIRING RATE FOR FOSSIL FUEL AND WOOD-FIRED BURNERS: **See Below** MILLION BTU/HR:

COMMENTS:

Total Facility Firing Rate (Wood only): 637.5 MMBtu/hr

Total Facility Firing Rate (Coal and Gas): 597.8 MMBtu/hr

Keeler Spreader Stoker Boiler:

(Wood or Wood/Coal) 313 MMBtu/hr

(Coal Only) 245 MMBtu/hr

PCC Air Heater 11.5 MMBtu/hr

SCS Gasified Wood Boiler

(Wood) 324.5 MMBtu/hr

(Gas only) 245 MMBtu/hr

Deltak Boiler 96.3 MM Btu/hr

Temporary Rental Boiler (NG) 100 MMBtu/hr

(exclude Temporary Rental Boiler, 99.9 MMBtu/hr NG)

SECTION D
D6 TECHNICAL ANALYSIS TO SUPPORT PERMIT APPLICATION

PROVIDE DETAILED TECHNICAL CALCULATIONS TO SUPPORT ALL EMISSION, CONTROL, AND REGULATORY DEMONSTRATIONS MADE IN THIS APPLICATION. INCLUDE A COMPREHENSIVE PROCESS FLOW DIAGRAM AS NECESSARY TO SUPPORT AND CLARIFY CALCULATIONS AND ASSUMPTIONS. ADDRESS THE FOLLOWING SPECIFIC ISSUES ON SEPARATE PAGES:

A. **SPECIFIC EMISSION SOURCE (EMISSION INFORMATION) (FORM D3-1) -** SHOW CALCULATIONS USED, INCLUDING EMISSION FACTORS, MATERIAL BALANCES, AND/OR OTHER METHODS FROM WHICH THE POLLUTANT EMISSION RATES IN THIS APPLICATION WERE DERIVED. INCLUDE CALCULATIONS OF POTENTIAL BEFORE AND, WHERE APPLICABLE, AFTER CONTROL. CLEARLY STATE ANY ASSUMPTIONS MADE AND PROVIDE ANY REFERENCES AS NEEDED TO SUPPORT MATERIAL BALANCE CALCULATIONS.

B. **SPECIFIC EMISSION SOURCE (REGULATORY INFORMATION)(FORM D3-2) -** PROVIDE AN ANALYSIS OF ANY REGULATIONS APPLICABLE TO INDIVIDUAL SOURCES AND THE FACILITY AS A WHOLE. INCLUDE A DISCUSSION OUTLINING METHODS (e.g. FOR TESTING AND/OR MONITORING REQUIREMENTS) FOR COMPLYING WITH APPLICABLE REGULATIONS, PARTICULARLY THOSE REGULATIONS LIMITING EMISSIONS BASED ON PROCESS RATES OR OTHER OPERATIONAL PARAMETERS. PROVIDE JUSTIFICATION FOR AVOIDANCE OF ANY FEDERAL REGULATIONS (PREVENTION OF SIGNIFICANT DETERIORATION [PSD], NEW SOURCE PERFORMANCE STANDARDS [NSPS], NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS [NESHAPS], TITLE V), INCLUDING EXEMPTIONS FROM THE FEDERAL REGULATIONS WHICH WOULD OTHERWISE BE APPLICABLE TO THIS FACILITY. SUBMIT ANY ANALYSES REQUIRED TO DOCUMENT COMPLIANCE WITH ANY REGULATIONS. INCLUDE EMISSION RATES CALCULATED IN ITEM "A" ABOVE, DATES OF MANUFACTURE, CONTROL EQUIPMENT, ETC. TO SUPPORT THESE CONCLUSIONS.

C. **CONTROL DEVICE ANALYSIS (SECTION C) -** PROVIDE A TECHNICAL EVALUATION WITH SUPPORTING REFERENCES FOR ANY CONTROL EFFICIENCIES LISTED ON SECTION C FORMS, OR USED TO REDUCE EMISSION RATES IN CALCULATIONS UNDER ITEM "A" ABOVE. INCLUDE PERTINENT OPERATING PARAMETERS (E.G. OPERATING CONDITIONS, MANUFACTURER RECOMMENDATIONS, AND PARAMETERS AS APPLIED FOR IN THIS APPLICATION) CRITICAL TO ENSURING PROPER PERFORMANCE OF THE CONTROL DEVICE(S). INCLUDE ANY LIMITATIONS OR MALFUNCTION POTENTIAL FOR THE PARTICULAR CONTROL DEVICES AS EMPLOYED AT THIS FACILITY. DETAIL PROCEDURES FOR ASSURING PROPER OPERATION OF THE CONTROL DEVICE INCLUDING MONITORING SYSTEMS AND MAINTAINENCE TO BE PERFORMED.

D. **PROCESS AND OPERATIONAL COMPLIANCE ANALYSIS -** SHOWING HOW COMPLIANCE WILL BE ACHIEVED WHEN USING PROCESS, OPERATIONAL, OR OTHER DATA TO DEMONSTRATE COMPLIANCE. REFER TO COMPLIANCE REQUIREMENTS IN THE REGULATORY ANALYSIS IN ITEM "B" WHERE APPROPRIATE. LIST ANY CONDITIONS OR PARAMETERS THAT CAN BE MONITORED AND REPORTED TO DEMONSTRATE COMPLIANCE WITH THE APPLICABLE REGULATIONS.

COMMENTS:

See attached pages for Item A. Item B is addressed by the existing regulatory requirements of the permit. The only impact of this application is revise the BACT limit for CO for the SCS boiler (Section 3 of the application report). Item C is not applicable. Item D is addressed by the compliance requirements of Condition 3.6.D of the existing permit.

SECTION E

E1

TITLE V INFORMATION

REVISED: 10/24/2000 **FORSTYH COUNTY - APPLICATION FOR AIR PERMIT TO CONSTRUCT/OPERATE**

IF YOUR FACILITY IS CLASSIFIED AS "MAJOR" FOR TITLE V YOU MUST COMPLETE THIS FORM AND ALL OTHER REQUIRED "E" FORMS (E2 THROUGH E8 AS APPLICABLE).

INDICATE HERE IF YOUR FACILITY IS SUBJECT TO TITLE V BY ☐ CATEGORY OR ☑ EMISSIONS

IF SUBJECT BY CATEGORY, INDICATE THE CATEGORY:

IF SUBJECT BY EMISSION LEVEL, COMPLETE THE FOLLOWING:

POLLUTANT(S) FOR WHICH THE FACILITY IS MAJOR	*EMISSION RATE (tpy)*
Sulfur Dioxide	***1475***
Nitrogen Oxides	***1272***
Carbon Monoxide	***1575***
VOC	***212***

IF YOUR FACILITY IS SUBJECT TO SECTION 112(r) "PREVENTION OF ACCIDENTAL RELEASE" OF THE CLEAN AIR ACT, HAVE YOU PREPARED, RETAINED ON SITE, AND SUBMITTED TO EPA A RISK MANAGEMENT PLAN? ☐ YES ☑ NO

ARE YOU OR WILL YOU BE SUBJECT TO ANY MAXIMUM ACHIEVABLE CONTROL TECHNOLOGY STANDARDS (MACTS) ISSUED PURSUANT TO SECTION 112 (d) OF THE CLEAN AIR ACT?
IF SO, SPECIFY:
NESHAP for Industrial Boilers, 40 CFR Part 63 Subpart DDDDD

LIST ANY ADDITIONAL REGULATIONS WHICH ARE REQUESTED TO BE INCLUDED IN THE PERMIT SHIELD AND PROVIDE AN EXPLANATION FOR THE REQUESTED SHIELD:

REGULATION	
NA	***NA***

SECTION E

E2

TITLE V INSIGNIFICANT ACTIVITIES SUMMARY

REVISED: 10/24/2000 **FORSYTH COUNTY - APPLICATION FOR AIR PERMIT TO CONSTRUCT/OPERATE**

INSIGNIFICANT ACTIVITIES PER FCAQTC 3Q .0503(8)		
DESCRIPTION OF EMISSION SOURCE	**UNITS**	**BASIS FOR EXEMPTION**
1. No new insignificant activities being added.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		

SECTION E

E4

COMPLIANCE PLAN (METHOD OF COMPLIANCE)

REVISED: 6/21/2010 **FORSYTH COUNTY - APPLICATION FOR AIR PERMIT TO CONSTRUCT/OPERATE**

REGULATED POLLUTANT **Carbon Monoxide**

EMISSION SOURCE ID NO. **ES-62F** APPLICABLE REGULATION **3D .0530**

ALTERNATIVE OPERATING SCENARIO (AOS) NO: **AOS-62F**

ATTACH A SEPARATE PAGE TO EXPAND ON ANY OF THE BELOW COMMENTS

MONITORING REQUIREMENTS

IS COMPLIANCE ASSURANCE MONITORING (CAM) APPLICABL ☐ YES ☑ NO

IS CAM MONITORING PLAN ATTACHED? ☐ YES ☑ NO

MONITORING DEVICE TYPE:

MONITORING LOCATION:

OTHER MONITORING METHODS (DESCRIBE IN DETAIL):

NA

DESCRIBE THE FREQUENCY AND DURATION OF MONITORING AND HOW THE DATA WILL BE RECORDED (i.e., every 15 minutes, 1 minute instantaneous readings taken to produce an hourly average):

No monitoring is required for carbon monoxide emissions from the combustion of wood, natural gas, corn cleanings, corn germ, and dry and wet feed for this source.

TEST METHODS

REFERENCE TEST METHOD DESCRIPTION:

Compliance with the carbon monoxide emission limit demonstrated by an annual performance test following testing requirements specified in Condition 3.6.D.2 of current permit (00732-TV-12).

REFERENCE TEST METHOD CITATION: **3D .2602(i) and (n)(2)**

RECORDKEEPING REQUIREMENTS

DATA (PARAMETER) BEING RECORDED: **NA**

FREQUENCY OF RECORDKEEPING (HOW OFTEN IS DATA RECORDED): **No recordkeeping is required.**

REPORTING REQUIREMENTS

GENERALLY DESCRIBE WHAT IS REPORTED: **No reporting is required. However, appropriate records for raw material usage and/or production rates must be maintained in order to calculate emissions data of permit (Air Emission Inventory Requirements).**

FREQUENCY: ☐ MONTHLY ☐ QUARTERLY ☐ ONCE EVERY 6 MONTHS

☑ OTHER (DESCRIBE): **See description**

SECTION E

E5

TITLE V COMPLIANCE CERTIFICATION

REVISED: 10/24/2000 **FORSYTH COUNTY - APPLICATION FOR AIR PERMIT TO CONSTRUCT/OPERATE**

In accordance with the provisions of FCAQTC 3Q .0520 the responsible company official of:

COMPANY NAME: Ingredion Incorporated

COMPANY ADDRESS: 4501 Overdale Road

CITY, NC : Winston-Salem, NC

COUNTY: Forsyth

PERMIT NUMBER : #00732-TV-12

CERTIFIES THAT:

1. *For applicable requirements with which the facility is in compliance, the facility shall continue to comply with such requirements;*

2. *For applicable requirements that will become effective during the permit term, the facility shall comply with such requirements;*

3. *Or applicable requirements for which the facility is not in compliance at the time of permit issuance, a narrative description of how the equipment will achieve compliance with the applicable requirements has been submitted to the Forsyth County Office of Environmental Assistance and Protection; and*

4. *The facility shall fulfill applicable compliance assurance monitoring requirements and submit a compliance certification as required by the EPA and 40 CFR Part 64.*

Schedule for Submission of Compliance Certifications During the Term of The Permit:

Frequency of Submittal Once per year Beginning Due March 1 of each year

The undersigned certifies under the penalty of law that all information and statements provided in the application, based on information and belief formed after reasonable inquiry, are true, accurate, and complete.

Dave Clarke Date 09/19/2018

Signature of responsible company official

Plant Manager

Name, Title of responsible company official (Type or print)

SECTION E
COMPLIANCE SCHEDULE

COMPLIANCE STATUS WITH RESPECT TO ALL APPLICABLE REQUIREMENTS

Will each emission source at your facility be in compliance with all applicable requirements at the time of permit issuance and continue to comply with these requirements?

☑ YES ☐ NO **If NO**, complete **A** through **F** below for each requirement for which compliance is not achieved.

Will your facility be in compliance with all applicable requirements taking effect during the term of the permit and meet such requirements on a timely basis?

☑ YES ☐ NO **If NO**, complete **A** through **F** below for each requirement for which compliance is not achieved.

A. Identify emission source ID No.: _____

B. Identify applicable requirement for which compliance is not achieved:

_____
_____
_____
_____
_____
_____

C. Narrative description of how compliance will be achieved with this applicable requirements:

_____
_____
_____
_____
_____
_____

D. Detailed Schedule of Compliance:

Step(s)	Date Expected

E. Frequency for submittal of progress reports (6 month minimum):

_____

F. Starting date of submittal of progress reports: _____

Appendix B

FCOEAP AIR COMPLIANCE ANALYSIS SUMMARY SHEET

Forsyth County Office of Environmental Protection and Assistance
AIR COMPLIANCE ANALYSIS SUMMARY SHEET

FACILITY:	**INGREDION**	**DATE:**	**10-17-2018**
PREMISE NUMBER:	**00732**	**CASE MGR:**	**JAE**
LOCATION:	**Winston-Salem**	**REVIEWED BY:**	**PCM**

Permit Type (Check all that apply):			**New**	**Renewal**	**Modification**
		SMALL "B" OPERATING PERMIT			
		SYNTHETIC MINOR PERMIT			
		TITLE V PERMIT			
	X	**PSD MAJOR PERMIT**			**X**
		AIR TOXIC DEMO / OTHER	**N**	**COLOCATED (Y/N)**	
Modeling Analysis:	**X**	**CRITERIA / AAQS**		**PSD INCREMENT**	
		TAPS		**TAPR (DE MINIMIS)**	

EXECUTIVE SUMMARY:
The Ingredion Facility (formerly "Corn Products") is located at 4501 Overdale Road, Winston-Salem, North Carolina, in the extreme south-central portion of Forsyth County near the Davidson County line. It is currently permitted as a Title V and a PSD major facility in Forsyth County under premise #00732-TV-12, and is currently in compliance for all criteria, HAPs and TAPs emissions.

PROJECT DESCRIPTION:
Ingredion has experienced a number of failed stack tests on their wood-fired boiler (EP62F) over the past few years. As a result, Ingredion and the FCEAP have entered into a Special Order for Consent (SOC-2018-002) designed to bring the facility back into compliance with all regulations. As part of this SOC, Ingredion has decided to modify their current operating permit, accepting a revised BACT limit for CO. In order to confirm that the new BACT limit is sufficiently protective of ambient air, the facility contracted AECOM to perform updated Aermod modeling for CO. The protocol was approved by this Office on August 1, 2018, with the final modeling report submitted as part of the modification application on September 19, 2018.

SUMMARY OF ANALYSIS & RESULTS:
The result of the Aermod dispersion modeling analysis shows that Ingredion will continue to comply with the NAAQS for CO operating at or below the revised BACT limit. As there are no PSD increments established for CO, this analysis satisfies the applicable ambient air requirements for the modification of the PSD permit.

NATIONAL AMBIENT AIR QUALITY STANDARDS ANALYSIS

Pollutant	Averaging Time	Date Modeled	Model Used	Maximum Concentration ($\mu g/m^3$)(1)	Background Concentration ($\mu g/m^3$)	Total ($\mu g/m^3$)	Standard ($\mu g/m^3$)	% of Std
PM_{10}	24 Hour	4/2/1997	ISCST3	1.8	57	58.8	150	39
	Annual	4/2/1997	ISCST3	0.1	23	23.1	75	31
NO_2	Annual	4/2/1997	ISCST3	0.8	17	17.8	100	18
CO	**1 Hour**	**10/12/2018**	**AERMOD**	**32.4**	**2175**	**2207**	**40,000**	**6**
	8 Hour	**10/12/2018**	**AERMOD**	**29.9**	**1488**	**1518**	**10,000**	**15**

1) PM10 and NO2 were not re-evaluated as part of this dispersion modeling analysis. Modeled concentrations have been forward as originally modeled using 1987-1991 RAMMET-based meteorology for continuity.
2) Background concentrations for NO2 and PM10 were recalculated for 1996, as it was the most recent monitoring year for the original modeling. CO backgrounds are design values for the 3 most recent years available at the now decommissioned Peters Creek monitor (2013-2015).

BACKGROUND MONITORING DATA (μg/m³)							
Pollutant	**Site Name**	**County**	**Year**	**1-Hr(1)**	**8-Hr(1)**	**24-Hr(2)**	**Annual(3)**
PM_{10}	Peters Creek	Forsyth	1996			57	23
NO_2	Hattie Ave	Forsyth	1996				17
CO	**Peters Creek**	**Forsyth**	**2015**	**2175**	**1488**		

(1) Values for CO use the current methodology averaging the 3 most current years available, which at Peters Creek was 2013-2015.
(2) PM10 24-hr reflects the highest 2nd-high value for a single monitoring year of 1996, as per methodology from that time period.
(3) Annual PM10 and NO2 reflect the highest 1st annual averages of all hourly readings for 1996 at the monitor.

CLASS I PREVENTION OF SIGNIFICANT DETERIORATION ANALYSIS						
Pollutant	**Averaging Time**	**Date Modeled**	**Model Used**	**Maximum Concentration (μg/m³)(1)**	**Significant Impact Level (SIL) (μg/m³)**	**% of SIL**
NO_2	Annual	4/17/1997	ISCST3	0.004	1	0.4
PM_{10}	24 Hour	3/4/1997	ISCST3	0.004	- - -	n/a
	Annual	3/4/1997	ISCST3	0.001	- - -	n/a

1) The highest-first-high modeled concentration was used for all averaging periods.

CLASS II PREVENTION OF SIGNIFICANT DETERIORATION ANALYSIS						
Pollutant	**Averaging Time**	**Date Modeled**	**Model Used**	**Maximum Concentration (μg/m³)(1)**	**Significant Impact Level (SIL) (μg/m³)**	**% of SIL**
PM_{10}	24 Hour	3/4/1997	ISCST3	1.80	5	36
	Annual	3/4/1997	ISCST3	0.12	1	12
NO_2	Annual	4/17/1997	ISCST3	0.81	1	81

1) The highest-first-high modeled concentration was used for all averaging periods.

CRITERIA (AAQS) EMISSION RATES (LBS/HR)			
EMISSION POINT ID	**PM_{10}**	**NO_2**	**CO**
EP62F	9.7	64.9	**139.54**

PSD INCREMENT EMISSION RATES (LBS/HR)		
EMISSION POINT ID	**Minor Source Baseline Date(s)**	
	5/16/2018	**3/14/1997**
	PM_{10}	**NO_2**
EP62F	9.7	64.9

AERMOD MODEL SETTINGS	
AERMOD EPA Version:	18081
Processing Options:	Default (no deposition)
Dispersion Scheme:	Rural
Projection:	UTM Zone 17N
Datum:	NAD83 (GRS-80 ellipsoid)
Domain Anchor (X,Y):	569500 E / 3988000 N
Domain SW Corner:	559000 E / 3977000 N
Doman Extents (X,Y):	21km x 22 km
Receptor Grid Type(s):	Discrete Cartesian
Grid Spacing(s):	Fenceline: 25m
	Near Field (up to 2km): 100m
	Medium Field (2-5km): 500m
	Wide Field (>5km): 1000m
Total Receptors:	1706
AERMAP EPA Version:	11103
Elevation Input Type:	USGS 1/3” (1:24,000) Digital Elevation Model (DEM)
USGS QUAD ID:	Winston-Salem West, Winston Salem East, Welcome, Eller
DEM Format:	GeoTIFF World File
Processing Default:	Elevated Terrain, Inverse Distance Interpolation
AERMET EPA Version:	18081
Met Years:	2013-2017
Surface Station:	KINT - Winston-Salem, Smith Reynolds Airport
WMO ID:	93807
Tower Base:	296m MSL
UA Station:	KGSO - Greensboro/High Point/Winston-Salem Airport
WBAN ID:	13723
Levels Reported:	Mandatory & Significant
Aersurface:	Yes (NCDEQ)
Aerminute:	Yes

MODELED POINT SOURCE PARAMETERS										
STACK ID	DATE LAST MODELED	LOCATION (UTM)		BASE ELEVATION (M)	STACK HEIGHT (M)	STACK DIAMETER (M)	EXIT VELOCITY (M/S)	EXIT TEMP (K)	DISCHARGE ORIENTATION	RAIN CAP? (Y/N)
		EAST (M)	NORTH (M)							
EP62F	10/12/2018	569382.5	3987807.8	250.0	41.15	2.29	22.78	477.6	VERTICAL	N

EMISSION POINT DESCRIPTIVE INFORMATION				
EMISSION POINT ID	SOURCE IDENTIFICATION & DESCRIPTION	DATE INSTALLED (MODIFIED)	STATUS	Other
EP62F	SCS Hybrid Suspension Grate Bolier (wood)	7/15/1997	Operating	New CO BACT Limit

AERMOD / AERMAP SPECIFICATIONS TABLE				
MET DATA	KINT - KGSO 2017 [Surface Air = Winston-Salem, NC; 969 ft MSL; Upper Air = Greensboro, NC]			
NED TERRAIN FILES	Winston-Salem East, Winston-Salem West, Eller, Welcome (1/3 Arc Sec USGS DEM)			
PROJECTION DATUM	NAD27 [ ]	NAD83 [X]	WGS-84 [ ]	NWS-84 [ ]
RURAL or URBAN?	Rural [X]	Urban [ ]		
ELEVATIONS EXTRACTED	Buildings [X]	Sources [X]	Tanks [ ]	Receptors [X]

MODELING HISTORY			
DATE	MODELER	REASON	DESCRIPTION
4/2/1997	PAR	PSD O/P	ISCST2 Class I & II impact analysis with NAAQS and TAP (ammonia).
9/3/2008	VKS	PSD MOD	TAPs Modeling for HCl, Hg, and Cr(IV) (omitted).
10/12/2018	PCM	PSD MOD	NAAQS modeling for revised CO BACT limit (SOC-2018-002)

Appendix C

DRAFT TITLE V OPERATIING PERMIT

OFFICE OF ENVIRONMENTAL ASSISTANCE AND PROTECTION

FORSYTH COUNTY GOVERNMENT CENTER
201 NORTH CHESTNUT STREET
WINSTON-SALEM, NC 27101-4120

PERMIT TO CONSTRUCT/OPERATE
AIR QUALITY CONTROL
CLASS: Title V (TV)

PERMIT NUMBER	EFFECTIVE DATE	EXPIRATION DATE	RENEWAL DUE
00732-TV-12	DATE, 2020	September 13, 2018	December 17, 2017

Facility Name: Ingedion Incorporated, Winston-Salem Plant
Mailing Address: P.O. Box 12939
City, State, ZIP Code: Winston-Salem, NC 27117-2939

Facility Location: 4501 Overdale Road
City: Winston-Salem

In accordance with the provisions set forth in the Forsyth County Air Quality Technical Code and Chapter 3 of the Forsyth County Code, “Air Quality Control”, the facility identified above is authorized to operate, as outlined in Part I, “Air Quality Title V Operation Permit”, the emission source(s) and associated air pollution control device(s) specified herein, in accordance with the terms, conditions, and limitations contained within this permit.

The permittee shall not construct, operate, or modify any emission source(s) or air pollution control device(s) without having first submitted a complete air quality permit application to the Forsyth County Office of Environmental Assistance and Protection and received an Air Quality Permit, except as provided in this permit or in accordance with applicable provisions of the Forsyth County Air Quality Technical Code.

This permit supersedes all previous permits issued to the permittee by the Forsyth County Office of Environmental Assistance and Protection.

Peter B. Lloyd, Ph.D., P.E., Manager
Compliance Assistance & Permitting Division

DATE:

Ingredion Incorporated, Winston-Salem Plant
DRAFT Air Quality Permit # 00732-TV-12
DATE, 2020
Table of Contents

PART I
AIR QUALITY OPERATING PERMIT

PART I
AIR QUALITY OPERATING PERMIT

SECTION 1:
FACILITY-WIDE PERMITTED EQUIPMENT AND ASSOCIATED AIR POLLUTION CONTROL DEVICE(S)

Emission Source ID #	Emission Source Description	Control Device ID #	Control Device Description	Emission Point ID #
ES-11A	**CORN RECEIVING**			
	Corn Unloading	W115891	Carter Day Fabric Filter	EP-C
	Corn Storage Silo #1	W115894	Carter Day Fabric Filter	EP-A
	Corn Storage Silo #2	W115895	Carter Day Fabric Filter	EP-B
	Corn Storage Silo #3	W115803	Rolfes Fabric Filter	EP-S
ES-11B	**CORN CLEANING**			
	Corn Transport	W115896	Carter Day Fabric Filter	EP-D
	Corn Cleaner	W115824	Carter Day Fabric Filter	EP-E
	Corn Cleaning Silo #1	W115825	Carter Day Fabric Filter	EP-F
	Corn Cleaning Silo #2	W115832	Rolfes Fabric Filter	EP-T
ES-14	**STEEPING**			
	Steeps SA1-SA8	None	None	SA1-8
	Steeps SB1-SB8	None	None	SB1-8
	Incubation Tank #1	None	None	EP-SI1
	Incubation Tank #2	None	None	EP-SI2
	Incubation Tank #3	None	None	EP-SI3

Emission Source ID #	Emission Source Description	Control Device ID #	Control Device Description	Emission Point ID #
ES-15	**WET MILLING**			
	Gluten Filter Vacuum Pumps	None	None	EP-AA
	Germ Separation	W628893	Advanced Industries Technology Wet Cyclonic Scrubber	EP-R
	Fiber Dewatering	None	None	EP-AC
	Gluten Dewatering	None	None	AF, AG, and AH
	Ventilation Fans	None	None	AK and AL
ES-21	**GLUTEN DRYING AND COOLING**			
	Gluten Dryer with a Fisher-Klosterman, Inc. High Efficiency Process Transfer Cyclone W215891 and a Donaldson Torit product recovery dust collector (W218808) (Gluten Cooler)	W215893	Fisher-Klosterman, Inc. High Efficiency Transfer Cyclone (Gluten Dryer)	Routed to EP-R
		W628893	Advanced Industries Technology Wet Cyclonic Scrubber	EP-R
ES-22	**STEEPWATER EVAPORATION**			
	#1 Steepwater Evaporator	None	Keeler, Deltak, or SCS Boiler (odor control)	Routed to EP-Y, M, or 62F
	#1 Steepwater Evaporative Condenser	None	Keeler, Deltak, or SCS Boiler (odor control)	
	#2 Steepwater Evaporator	None	Keeler, Deltak, or SCS Boiler (odor control)	

Emission Source ID #	Emission Source Description	Control Device ID #	Control Device Description	Emission Point ID #
	#2 Steepwater Evaporative Condenser	None	Keeler, Deltak, or SCS Boiler (odor control)	
ES-23	**FEED DRYING AND COOLING**			
	#1 Feed Dryer	W235893	Carborundum Co. High Efficiency Cyclone	Routed to EP-Y, M, 62F
		W628891	No. 1 Feed Scrubber	
		W628851	DC Scrubber	**OR**
		W235893	Carborundum Co. High Efficiency Cyclone	EP-AP
	#2 Feed Dryer	W235892	Carborundum Co. High Efficiency Cyclone	Routed to EP-Y, M, 62F
		W628891	No. 1 Feed Scrubber	
		W628851	DC Scrubber	**OR**
		W235892	Carborundum Co. High Efficiency Cyclone	EP-AQ
	#3 Feed Dryer	W235813	Fisher-Klosterman, Inc. High Efficiency Transfer Cyclone	Routed to EP-Y, M, 62F
		W628892	No. 2 Feed Scrubber	
		W628851	DC Scrubber	**OR**
		W235813	Fisher-Klosterman, Inc. High Efficiency Transfer Cyclone	
		W628892	No. 2 Feed Scrubber	EP-AR
	#1 Feed Cooler with two Carborundum Co. High Efficiency Process Transfer Cyclones	W628893	Advanced Industries Technology Wet Cyclonic Scrubber	Routed to EP-R

Emission Source ID #	Emission Source Description	Control Device ID #	Control Device Description	Emission Point ID #
	W235811 and W235812 in parallel			
ES-23 (cont.)	#2 Feed Cooler with a Fisher-Klosterman, Inc. High Efficiency Process Transfer Cyclone W235815	W628893	Advanced Industries Technology Wet Cyclonic Scrubber	Routed to EP-R
ES-24	**GERM DRYING AND COOLING**			
	#1 Germ Dryer	W245892 W245893	Two Mueller High Efficiency Cyclones in parallel then routed to DC Scrubber	Routed to EP-Y, M, or 62F
	#2 Germ Dryer	W245895 W245898	Two Fisher-Klosterman, Inc. High Efficiency Cyclones in parallel then routed to Feed Dryers as inlet air	
ES-25	**MILL PRODUCTS LOADING**			
	MPL Dust Collector	W255897	Carter Day Fabric Filter	EP-X
	Gluten Silo	W258891	Carter Day Fabric Filter	EP-O
	#1 Feed Silo	W258896	Carter Day Fabric Filter	EP-P
	Inline Feed Silo	W258895	Carter Day Fabric Filter	EP-U
	#2 Feed Silo	W258897	Alanco Environmental Fabric Filter	EP-Q
	#1 Germ Silo	W248893	Carter Day Fabric Filter	EP-H
	Inline Germ Silo	W258894	Carter Day Fabric Filter	EP-V
	Railcar Transport Blower	W258898	Material System Eng. Fabric Filter	EP-AO

Emission Source ID #	Emission Source Description	Control Device ID #	Control Device Description	Emission Point ID #
ES-31	**STARCH DRYING**			
	Starch Dryer fired with Natural Gas (21.5 MMBtu/hr maximum heat input) with two Mueller High Efficiency Process Transfer Cyclones W315891 and W315892 in parallel	W318894	Ducon Wet multi-vane Scrubber	EP-I
		W318896	Ducon Wet multi-vane Scrubber	EP-J
ES-32	**STARCH STORAGE AND LOADING**			
	Starch Silo	W328891	Carter Day Fabric Filter	EP-K
	Starch Loading Dust System	W325892	Carter Day Fabric Filter	EP-L
	BOILERS			
ES-62	Deltak PCC/Urquhart "LONOX" No. 12 Boiler fired with Natural Gas (96.3 MMBtu/hr maximum heat input)	None	None	EP-M
ES-62C	Keeler Hybrid Suspension Grate Boiler designed to burn wet biomass/bio-based solid fired with Coal/ Wood/ Corn cleanings/ Corn germ/ Dry and Wet feed/ Corn derived gluten meal (313 MMBtu/hr maximum heat input when fired with wood and coal combination and 245 MMBtu/hr when fired only with coal) and	62SFB1 62SFB2	Zurn Industries Multicyclone PPC Model 24R-1230-2711 Electrostatic Precipitator	EP-Y

Emission Source ID #	Emission Source Description	Control Device ID #	Control Device Description	Emission Point ID #
	PCC Air Heater fired with Natural Gas (11.5 MMBtu/hr maximum heat input)			
ES-62F	Steam and Control Systems, Inc. (SCS) Hybrid Suspension Grate designed to burn wet biomass/bio-based solid Gasified-wood Boiler fired with Wood/ Natural Gas/ Corn cleanings/ Corn germ/ Dry and Wet feed/ Corn derived gluten meal (324.5 MMBtu/hr maximum heat input when fired with wood and natural gas combination and 245.0 MMBtu/hr when fired only with natural gas) and PCC Air Heater fired with Natural Gas	62F1 62F2	Zurn Air Systems Multicyclone PPC Industries Model 34R-1330-37125 Electrostatic Precipitator	EP-62F
ES-62D	**ASH HANDLING**			
	Ash Handling System	62D-PC 62D-SC 62D-FF 62D-WS	National Conveyors Company, Inc. Primary Cyclone, Secondary Cyclone, Fabric Filter, and Wet Scrubber	EP-Z
ES-81	**SULFUR BURNER SYSTEM**			
	Sulfur Burner	W818806	A.H. Lundberg Wet Scrubber	EP-AI
ES-83	**CARBON STORAGE**			
	Carbon Silo	W838891	Carter Day Fabric Filter	EP-N

Emission Source ID #	Emission Source Description	Control Device ID #	Control Device Description	Emission Point ID #
ES-85	**FILTER AID STORAGE**			
	Filter Aid Silo	W858893	Carter Day Fabric Filter	EP-G
ES-WHS	**WOOD HANDLING SYSTEM**			
	Wood Handling System	None	None	Fugitive

1.1 OPERATING CONDITIONS NOT COVERED UNDER THE PERMIT SHIELD

The following specific conditions have been revised or added to this permit following procedures other than the Significant Modification procedures in Section 3Q .0500 of the Forsyth County Air Quality Control Ordinance and Technical Code. As required under Sec. 3Q-0512 *Permit Shield and Application Shield*, a permit shield is not provided for these new or revised permit requirements. During the next Significant Modification as defined in Sec. 3Q-0516 or renewal of this permit, the Title V permit applications for the new and revised permit requirements listed below will also be processed according to the Significant Modification procedures and the a permit shield will be extended at that time.

Emission Source ID #	Emission Source Description	Unshielded Operating Condition(s)	Date of Modification
ES-62F	Steam and Control Systems, Inc. (SCS) Hybrid Suspension Grate designed to burn wet biomass/bio-based solid Gasified-wood Boiler fired with Wood/ Natural Gas/ Corn cleanings/ Corn germ/ Dry and Wet feed/ Corn derived gluten meal (324.5 MMBtu/hr maximum heat input when fired with wood and natural gas combination and 245.0 MMBtu/hr when fired only with natural gas) and PCC Air Heater fired with Natural Gas	3.6(D)(1) - Carbon monoxides emission rate of 0.43 lb/MMBtu	DATE, 2020

SECTION 2
FACILITY GENERAL ADMINISTRATIVE CONDITIONS

2.1 **General Provisions** [Subchapter 3A and Rule 3Q .0508(i)(16)]

A. Terms not otherwise defined in this permit shall have the meaning assigned to such terms as defined in Subchapters 3D and 3Q of the Forsyth County Air Quality Technical Code (FCAQTC).

B. The terms, conditions, requirements, limitations and restrictions set forth in this permit are binding and enforceable pursuant to Subchapter 3A of the Forsyth County Air Quality Ordinance (FCAQO), including assessment of civil and/or criminal penalties. This permit is valid only for the specific processes and operations applied for and indicated in the air quality permit application. Any unauthorized deviation from the conditions of this permit may constitute grounds for revocation and enforcement action by this Office.

C. This permit is not a waiver of or approval of any other permits that may be required for other aspects of the facility which are not addressed in this permit.

D. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal or plant life, or property caused by the construction or operation of this permitted facility, or from penalties therefore. This permit does not allow the permittee to cause pollution in contravention of local laws or rules, unless specifically authorized by an order from the Director, or to cause pollution in contravention of state laws or rules.

E. Terms and conditions contained herein shall be enforceable by this Office, the U.S. EPA and citizens of the United States as defined in the federal Clean Air Act, except those identified as ***Locally Enforceable Only*** requirements which are enforceable by this Office.

F. Any stationary installation which will reasonably be expected to be a source of pollution shall not be operated, maintained or modified without the appropriate and valid permits issued by this Office, unless the source is exempted by rule. This Office may issue a permit only after it receives reasonable assurance that the installation will not cause pollution in violation of any of the applicable requirements.

G. In addition to the authority found in Rules 3D. 0501 and 3Q .0508(i)(16), any deviation from the monitoring provisions of this permit may result in a request by this Office to submit data on rates of emissions in order to demonstrate compliance with any applicable regulation.

2.2 **Permit Availability** [Rules 3Q .0507(k), .0508(i)(16), .0508(i)(9) and .0110]

The permittee shall have available at the facility a copy of this permit and shall retain for the duration of the permit term one complete copy of the application and any information

submitted in support of the application package. The permit and application shall be made available to an authorized representative of this Office or the U.S. EPA upon request.

2.3 **Submissions** [Rules 3Q .0507(c), .0508(i)(16) and .0104]

All documents, reports, test data, monitoring data, notifications, request for renewal, and any other information required to be sent to this Office by this permit shall be submitted to the Forsyth County Office of Environmental Assistance and Protection, 201 N. Chestnut Street, Winston-Salem, NC 27101-4120.

2.4 **Severability Clause** [Rule 3Q .0508(i)(2)]

The provisions of this permit are severable. If any provision of this permit, or the application of any provision of this permit to any specific circumstance, is challenged, the application of the provision in question to other circumstances, as well as the remainder of this permit's provisions, shall not be affected.

2.5 **Duty to Comply** [Rule 3Q .0508(i)(3)]

The permittee shall comply with all terms, conditions, requirements, limitations and restrictions set forth in this permit. Noncompliance with any permit condition is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

2.6 **Need to Halt or Reduce Activity Not a Defense** [Rule 3Q .0508(i)(4)]

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

2.7 **Permit Shield** [Rule 3Q .0512(a)]

A. Compliance with the terms and conditions of this permit shall be deemed compliance with applicable requirements, where such applicable requirements are included and specifically identified in the permit as of the date of permit issuance.

B. A permit shield shall not alter or affect:

1. the power of the Forsyth County Board of Commissioners, Director, or Governor under NCGS 143-215.3(a)(12) or the U.S. EPA under Section 303 of the federal Clean Air Act;
2. the liability of an owner or operator of a facility for any violation of applicable requirements prior to the effective date of the permit or at the time of permit issuance;
3. the applicable requirements under Title IV of the Clean Air Act; or
4. the ability of the Director or the U.S. EPA under Section 114 of the federal Clean

Air Act to obtain information to determine compliance of the facility with its permit.

C. A permit shield shall not apply to any change made at a facility that does not require a permit or to any permit revision made under Rule 3Q .0523.

D. A permit shield shall not extend to minor permit modifications made under Rule 3Q .0515.

2.8 **Circumvention** [Rules 3D .0502 and 3Q .0508(i)(16)]

No person shall circumvent any permitted air pollution control device, or allow the emissions of regulated air pollutants without the applicable air pollution control device operating properly. Unless otherwise specified by this permit, no permitted emission source may be operated without the concurrent operation of its associated air pollution control device(s) and appurtenances.

2.9 **Good Air Pollution Control Practice** [Rules 3D .0502 and 3Q .0508(i)(16)]

At all times, the equipment listed in *Section 1* shall be operated and maintained in a manner consistent with the design and emissions control as applied for in the application.

2.10 **Reporting Requirements for Excess Emissions and Permit Deviations** [Rules 3D .0535(f) and 3Q .0508(f)(2), 3Q .0508(i)(16) and 3Q .0508(g)]

"Excess Emissions" - means an emission rate that exceeds any applicable emission limitation or standard allowed by any rule in Sections 3D .0500, .0900, .1200 or .1400; or by a permit condition; or that exceeds a ***Locally Enforceable Only*** emission limit established in a permit issued under Section 3Q .0700. (*Note: This definition applies where the NSPS does not further define excess emissions for an affected NSPS emissions source.*)
"Deviation" - means any action or condition not in accordance with the terms and conditions of this permit including those attributable to upset conditions.

A. Sources subject to Rules 3D .0524, .1110 or .1111
<u>Excess Emissions and Permit Deviations</u>

1. If the source specific NSPS (3D .0524) or NESHAP (3D .1110 or .1111) defines "excess emissions", these shall be reported as prescribed in 3D .0524, .1110 or .1111.

2. If the source specific NSPS (3D .0524) or NESHAP (3D .1110 or .1111) does NOT define "excess emissions", the permittee shall report excess emissions as deviations from permit requirements as prescribed in paragraph 3, below.

3. In addition to any specific NSPS or NESHAP reporting requirements the permittee shall upon becoming aware:

a. report to this Office any deviations from permit requirements by the next business day, unless an alternative reporting schedule is specifically provided in the permit, and

b. report in writing to this Office all deviations from permit requirements or any excess emissions within two business days, unless an alternative reporting schedule is specifically provided in the permit. The written report shall include the probable cause of such deviations and any corrective actions or preventative actions taken. Reports of all deviations from permit requirements shall be certified by a responsible official.

B. Sources NOT subject to Rules 3D .0524, 1110 or .1111

1. Excess Emissions Greater that Four Hours in Duration [3D .0535(f)]
The permittee shall report excess emissions greater than four hours in duration as prescribed in Rule 3D .0535(f) including, but not limited to the following:

a. Notify this Office of any such occurrence by 9:00 a.m. Eastern time of this Office's next business day of becoming aware of the occurrence as described in Rule 3D .0535(f)(1);

b. Notify this Office immediately when corrective measures have been accomplished; and

c. Submit, if requested, to this Office within 15 days after the request, a written report as described in Rule 3D .0535(f)(3).

2. Excess Emissions Less than Four Hours in Duration and Deviations [3Q .0508(f)]
The permittee shall report excess emissions less than four hours in duration and deviations from permit requirements as follows:

a. Report to this Office any excess emissions less than four hours in duration and any deviations from permit requirements quarterly, unless an alternative reporting schedule is specifically provided in the permit; and

b. Report in writing to this Office any excess emission less than four hours in duration or any deviations from permit requirements quarterly, unless an alternative reporting schedule is specifically provided in the permit. The written report shall include the probable cause of such excess emissions and deviations and any corrective actions or preventative actions taken. All reports of excess emissions and deviations from permit requirements shall be certified by a responsible official.

C. Other Requirements under Rule 3D .0535 (Rule 3D .0535(g) is ***Locally Enforceable Only***.)

The permittee shall comply with all other requirements contained in Rule 3D .0535.

2.11 **Emergency Provisions** <40 CFR 70.6(g)>

The permittee shall be subject to the following provision with regard to emergencies:

A. An "emergency" means any situation arising from sudden and reasonably unforeseeable events beyond the control of the facility, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes the facility to exceed a technology-based emission limitation under the permit due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventive maintenance, careless or improper operation, or operator error.

B. An emergency constitutes an affirmative defense to an action brought for noncompliance with such technology-based emission limitations if the conditions specified in paragraph C below are met.

C. The affirmative defense of emergency shall be demonstrated through properly signed contemporaneous operating logs, or other relevant evidence that include information as follows:

1. an emergency occurred and that the permittee can identify the cause(s) of the emergency;
2. the permitted facility was at the time being properly operated;
3. during the period of the emergency the permittee took all reasonable steps to minimize levels of emissions that exceeded the standards, or other requirements in the permit; and
4. the permittee submitted notice of the emergency to this Office within two working days of the time when emission limitations were exceeded due to the emergency. This notice must contain a description of the emergency, and steps taken to mitigate emissions, and corrective actions taken.

D. In any enforcement proceeding, the permittee seeking to establish the occurrence of an emergency has the burden of proof.

E. This provision is in addition to any emergency or upset provision contained in any applicable requirement specified elsewhere herein.

2.12 **Permit Fees** [Rules 3Q .0206(b), .0508(i)(10)) and .0519(a)(4)]

If, within 30 days after being billed, the permittee fails to pay an annual permit fee required under Subchapter 3Q .0200 of the FCAQTC, the Director may initiate action to terminate this permit under Rule 3Q .0519 of the FCAQTC.

2.13 **Annual Emission Inventory Requirements** [Rule 3Q .0207]

The permittee shall report to the Director by June 30th of each year the actual emissions

of each air pollutant listed in Rule 3Q .0207(a) from each emission source within the facility during the previous calendar year. The report shall be in or on such form(s) as may be established by the Director. The accuracy of the report shall be certified by a responsible official of the facility.

2.14 **Compliance Certification** <40 CFR 70.6(c)> [Rules 3Q .0508(n) and .0508((i)(16))]

By March 1st unless another date is established by the Director, the permittee shall submit to this Office and the U.S. EPA **(U.S. EPA Region 4, Air Enforcement Section, Mail Code: 4APT-AEEB, 61 Forsyth Street, S.W., Atlanta, GA 30303)** a compliance certification by a responsible official with all terms and conditions in the permit, including emissions limitations, standards, or work practices. The compliance certification shall comply with additional requirements as may be specified under Sections 114(a)(3) or 504(b) of the federal Clean Air Act. The compliance certification shall include all of the following (provided that the identification of applicable information may cross-reference the permit or previous reports as applicable):

A. the identification of each term or condition of the permit that is the basis of the certification;

B. the identification of the method(s) or other means used by the permittee for determining the compliance status with each term and condition during the certification period, and whether such methods or other means provide continuous or intermittent data. Such methods and other means shall include at a minimum, the methods and means required under 40 CFR 70.6(a)(3). If necessary, the permittee also shall identify any other material information that must be included in the certification to comply with Section 113(c)(2) of the federal Clean Air Act, which prohibits knowingly making a false certification or omitting material information;

C. the status of compliance with the terms and conditions of the permit for the period covered by the certification, based on the method or means designated in paragraph B above. The certification shall identify each deviation and take it into account in the compliance certification. The certification shall also identify as possible exceptions to compliance any periods during which compliance is required and in which an excursion or exceedance as defined under 40 CFR Part 64 occurred; and

D. such other facts as the permitting authority may require to determine the compliance status of the source.

2.15 **Retention of Records** [Rule 3Q .0508(f)]

The permittee shall retain records of all required monitoring data and supporting information for a period of at least five years from the date of the monitoring sample, measurement, report, or application. Supporting information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring information, and copies of all reports required by the permit.

2.16 **NESHAP - Recordkeeping Requirement for Applicability Determinations** <40 CFR 63.10(b)(3)> [Rule 3D .1111]

If the permittee determines that his or her stationary source that emits (or has the potential to emit, without considering controls) one or more hazardous air pollutants is not subject to a relevant standard or other requirement established under 40 CFR Part 63, the permittee shall keep a record of the applicability determination on site at the source for a period of 5 years after the determination, or until the source changes its operations to become an affected source. This record shall include all of the information required under 40 CFR 63.10(b)(3).

2.17 **Duty to Provide Information** [Rule 3Q .0508(i)(9))]

A. The permittee shall furnish to this Office, in a timely manner, any reasonable information that the Director may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit or to determine compliance with the permit.

B. The permittee shall furnish this Office copies of records required to be kept by the permit when such copies are requested by the Director.

2.18 **Duty to Supplement or Correct Application** [Rule 3Q .0507(f)]

The permittee, upon becoming aware that any relevant facts were omitted from the application or that incorrect information was submitted with the application, shall promptly submit such supplementary facts or corrected information to this Office. The permittee shall also provide additional information necessary to address any requirements that become applicable to the source after the date a complete application was submitted but prior to release of the draft permit.

2.19 **Certification by Responsible Official** [Rule 3Q .0520]

A responsible official (as defined in 40 CFR 70.2) shall certify the truth, accuracy, and completeness of any application form, report, or compliance certification required by this permit. All certifications shall state that, based on information and belief formed after reasonable inquiry, the statement and information in the document are true, accurate, and complete.

2.20 **Inspection and Entry** [Rule 3Q .0508(l)]

A. Upon presentation of credentials and other documents as may be required by law, the permittee shall allow authorized representatives of this Office to perform the following:

1. enter upon the permittee's premises where the permitted facility is located or emissions-related activity is conducted, or where records are kept under the conditions of the permit;

2. have access to and copy, at reasonable times, any records that must be kept under conditions of the permit;

3. inspect, at reasonable times and using reasonable safety practices any source, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit; and

4. sample or monitor substances or parameters, at reasonable times and using reasonable safety practices, for the purpose of assuring compliance with the permit or applicable requirements.

Nothing in this condition shall limit the ability of the U.S. EPA to inspect or enter the premises of the permittee under Section 114 or other provisions of the Clean Air Act.

B. No person shall obstruct, hamper or interfere with any such authorized representative while in the process of carrying out his official duties.

2.21 **Averaging Times** <40 CFR 70.6(a)(3)> [Rule 3Q .0508(f)]

Unless otherwise specified in *Section 3* of this permit for a specific emission standard or limitation, the applicable averaging period for determining compliance with an emission standard or limitation during compliance testing shall be based on the applicable U.S. EPA reference test method.

2.22 **Compliance Testing** [Rule 3D .0501(b)]

When requested by this Office for determining compliance with emission control standards, the permittee shall provide sampling ports, pipes, lines, or appurtenances for the collection of samples and data required by the test procedure; scaffolding and safe access to the sample and data collection locations; and light, electricity, and other utilities required for sample and data.

2.23 **General Emissions Testing and Reporting Requirements** [Rule 3Q .0508(i)(16)]

Testing shall be conducted in accordance with FCAQTC Section 3D .2600 except as may be otherwise required in FCAQTC Rules 3D .0524, 3D .0912, 3D .1110, 3D .1111, 3D .1415 or a permit condition specific to the emissions source. Requests to use an alternative test method or procedure must be made in writing at least 45 days prior to the test and approved by this Office. Alternatives to test methods or procedures specified for emissions sources subject to test requirements under 40 CFR 60, 40 CFR 61 or 40 CFR 63, may require approval by the U.S. EPA. When required to conduct emissions testing under the terms of the permit:

A. The permittee shall arrange for air emission testing protocols to be provided to the Director prior to air pollution testing. Testing protocols are not required to be pre-approved prior to air pollution testing. Emission testing protocols must be submitted

at least 45 days before conducting the test for pre-approval prior to testing if requested by the permittee.

B. The permittee shall notify this Office of the specific test dates at least 15 days prior to the scheduled test date in order to afford this Office the opportunity to have an observer on-site during the sampling program.

C. During all sampling periods, the permittee shall operate the emission source(s) under operating conditions that best fulfills the purpose of the test and are approved by the Director or his delegate.

D. The permittee shall submit one copy of the test report to this Office not later than 30 days after sample collection. The permittee may request an extension to submit the final test report if the extension request is a result of actions beyond the control of the permittee. The test report shall contain at a minimum the following information:

1. a certification of the test results by sampling team leader and facility representative;
2. a summary of emissions results expressed in the same units as the emission limits given in the rule for which compliance is being determined and text detailing the objectives of the testing program, the applicable state and federal regulations, and conclusions about the testing and compliance status of the emission source(s) as appropriate;
3. a detailed description of the tested emission source(s) and sampling location(s) process flow diagrams, engineering drawings, and sampling location schematics as necessary;
4. all field, analytical and calibration data necessary to verify that the testing was performed as specified in the applicable test methods;
5. example calculations for at least one test run using equations in the applicable test methods and all test results including intermediate parameter calculations; and
6. documentation of facility operating conditions during all testing periods and an explanation relating these operating conditions to maximum normal operation. If necessary, provide historical process data to verify maximum normal operation.

E. This Office will review emission test results with respect to the specified testing objectives as proposed by the permittee and approved by this Office.

2.24 **Termination, Modification, and Revocation of the Permit** [Rule 3Q .0519]

The Director may terminate, modify, or revoke and reissue this permit if:

A. the information contained in the application or presented in support thereof is determined to be incorrect;

B. the conditions under which the permit or permit renewal was granted have changed;

C. violations of conditions contained in the permit have occurred;

D. the permit holder fails to pay fees required under Section 3Q .0200 within 30 days after being billed;

E. the permittee refuses to allow the Director or his authorized representative upon presentation of credentials:

1. to enter, at reasonable times and using reasonable safety practices, the permittee's premises in which a source of emissions is located or in which any records are required to be kept under terms and conditions of the permit;

2. to have access, at reasonable times, to any copy or records required to be kept under terms and conditions of the permit;

3. to inspect, at reasonable times and using reasonable safety practices, any source of emissions, control equipment, and any monitoring equipment or method required in the permit; or

4. to sample, at reasonable times and using reasonable safety practices, any emission sources at the facility;

F. the U.S. EPA requests that the permit be revoked under 40 CFR 70.7(g) or 70.8(d); or

G. the Director finds that termination, modification, or revocation and reissuance of the permit is necessary to carry out the purpose of Chapter 3 of the Forsyth County Code.

2.25 **Permit Reopenings, Modifications, Revocations and Reissuances, or Terminations** [Rule 3Q .0508(i)(5))]

The Director may reopen, modify, revoke and reissue, or terminate this permit for reasons specified in Rule 3Q .0517 or .0519. The filing of a request by the permittee for a permit revision, revocation and reissuance, or termination, notification of planned changes, or anticipated noncompliance does not stay any permit condition in this permit.

2.26 **Permit Renewal** [Rule 3Q .0508(e) and Rule 3Q .0513]

This permit is issued for a term not to exceed five years. Permits issued under Title IV of the Clean Air Act shall be issued for a fixed period of five years. This permit shall expire at the end of its term. Permit expiration terminates the facility's right to operate unless a complete renewal application is submitted at least nine months before the date of permit expiration. If the permittee or applicant has complied with Rule 3Q .0512(b)(1), this permit shall not expire until the renewal permit has been issued or denied. All terms and conditions of this permit shall remain in effect until the renewal permit has been issued or denied.

2.27 **Reopening for Cause** [Rules 3Q .0517 and .0508(g)]

This permit shall be reopened and revised in accordance with Rule 3Q .0517 prior to its expiration date, for any of the following reasons:

A. Additional applicable requirements become applicable to the facility with remaining permit term of three or more years.

B. Additional requirements, including excess emissions requirements, become applicable to this source under Title IV of the Clean Air Act. Excess emissions offset plans for this source shall become part of this permit upon approval by the U.S. EPA.

C. The Director or the U.S. EPA finds that a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of this permit.

D. The Director or the U.S. EPA determines that the permit must be revised or revoked to assure compliance with the applicable requirements.

2.28 **Construction and Operation Permits** [Sections 3Q .0100 and .0300]

A construction and operating permit shall be obtained by the permittee for any proposed new or modified facility or emission source which is not exempted from having a permit prior to the beginning of construction or modification; in accordance with all applicable provisions of Sections 3Q .0100 and .0300.

2.29 **Permit Modifications** [Rules 3Q .0514, .0515, .0516, .0517, .0523 and .0524]

A. Permit modifications may be subject to the requirements of Rules 3Q .0514, .0515, .0516 and .0524.

B. Changes made pursuant to Rules 3Q .0523(a) and (b) do not require a permit modification.

C. The permittee shall submit an application for reopening for cause in accordance with Rule 3Q .0517 if notified by this Office.

D. To the extent that emissions trading is allowed under FCAQTC Subchapter 3D, including subsequently adopted maximum achievable control technology standards, emissions trading shall be allowed without permit revision pursuant to Rule 3Q .0523(c).

2.30 **Insignificant Activities** [Rules 3Q .0503 and .0508(i)(15)]

Because an emission source or activity is insignificant does not mean that the emission source or activity is exempted from any applicable requirement or that the owner or operator of the source is exempted from demonstrating compliance with any applicable requirement. The permittee shall have available at the facility at all times and made available to an authorized representative of this Office upon request, documentation, including calculations if necessary, to demonstrate that an emission source or activity is insignificant.

2.31 **Standard Application Form and Required Information** [Rules 3Q .0505 and .0507]

The permittee shall submit applications and required information in accordance with the provision of Rules 3Q .0505 and .0507.

2.32 **Property Rights** [Rule 3Q .0508(i)(8)]

This permit does not convey any property rights of any sort, or any exclusive privileges.

2.33 **Refrigerant Requirements (Stratospheric Ozone and Climate Protection)** [Rule 3Q .0508(b)]

A. If the permittee has appliances or refrigeration equipment, including air conditioning equipment, which use Class I or II ozone-depleting substances such as chlorofluorocarbons and hydrochlorofluorocarbons listed as refrigerants in 40 CFR 82 Subpart A, Appendices A and B, the permittee shall service, repair, and maintain such equipment according to the work practices and personnel certification requirements, and the permittee shall use certified recycling and recovery equipment specified in 40 CFR 82 Subpart F.

B. The permittee shall not knowingly vent or otherwise release any Class I or II substance into the environment during the repair, servicing, maintenance, or disposal of any such device except as provided in 40 CFR 82 Subpart F.

C. The permittee shall comply with all reporting and recordkeeping requirements of 40 CFR 82.166. Reports shall be submitted to the U.S. EPA or its designee as required.

2.34 **Prevention of Accidental Releases - Section 112(r)** [Rule 3Q .0508(h)]

If the permittee is required to develop and register a risk management plan pursuant to Section 112(r) of the federal Clean Air Act, then the permittee is required to register this plan in accordance with 40 CFR Part 68.

2.35 **Title IV Allowances** [Rule 3Q .0508(i)(1)]

The facility's emissions are prohibited from exceeding any allowances that the facility lawfully holds under Title IV of the Clean Air Act. This permit shall not limit the number of

allowances held by the permittee, but the permittee may not use allowances as a defense to noncompliance with any other applicable requirement.

2.36 **Air Pollution Alert, Warning or Emergency** [Section 3D .0300]

Should the Director of this Office declare an Air Pollution Alert, Warning or Emergency, the permittee will be required to operate in accordance with the permittee's previously approved Emission Reduction Plan or, in the absence of an approved plan, with the appropriate requirements specified in Section 3D .0300.

2.37 **Registration of Air Pollution Sources** [Rule 3D .0202]

The Director of this Office may require the permittee to register a source of air pollution. If the permittee is required to register a source of air pollution, this registration and required information shall be in accordance with Rule 3D .0202(b).

2.38 **Ambient Air Quality Standards** [Rule 3D .0501(e)]

In addition to any control or manner of operation necessary to meet emission standards specified in this permit, any source of air pollution shall be operated with such control or in such manner that the source shall not cause the ambient air quality standards in Rule 3D .0400 to be exceeded at any point beyond the premises on which the source is located. When controls more stringent than named in the applicable emission standards in this permit are required to prevent violation of the ambient air quality standards or are required to create an offset, the permit shall contain a condition requiring these controls.

2.39 **Odor** [Rule 3D .0522] ***Locally Enforceable Only***

The permittee shall not cause or permit the emission of odors beyond the facility's property lines which are harmful, irritating or which unreasonably interfere with the use and enjoyment of any person's properties or living conditions, or any public properties or facilities. Such odors are prohibited by Rule 3D .0522. No violation shall be cited, provided that the best practical treatment, maintenance, and control of odor(s) currently available are used. This requirement does not apply to normal agricultural practices, nor to accidental emissions of odors which are not normally produced during routine operations and activities as determined by the Director.

2.40 **Fugitive Dust Control Requirement** [Rule 3D .0540]

The permittee shall not cause or allow fugitive dust emissions to cause or contribute to substantive complaints or excess visible emissions beyond the property boundary. If substantive complaints or excessive fugitive dust emissions from the facility are observed beyond the property boundaries for six minutes in any one hour (using Reference Method 22 in 40 CFR 60, Appendix A), the owner or operator may be required to submit and implement a fugitive dust control plan as described in 3D .0540(f).

New Source Performance Standards (NSPS) General Provisions - Permit Conditions

2.41 **NSPS - General provisions** [40 CFR 60 Subpart A and Rule 3D .0524]

The permittee shall comply with all applicable requirements specified in the general provisions of the New Source Performance Standards (40 CFR 60 Subpart A) including but not limited to requirements concerning notifications, testing, monitoring, recordkeeping, modifications and reconstruction.

2.42 **NSPS - Good air pollution control practice** [40 CFR 60.11(d) and Rule 3D .0524]

At all times, including periods of startup, shutdown, and malfunction, the permittee shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions.

2.43 **NSPS - Circumvention** [40 CFR 60.12 and Rule 3D .0524]

Permittee shall not build, erect, install, or use any article, machine, equipment or process, the use of which conceals an emission which would otherwise constitute a violation of an applicable standard under 40 CFR 60. Such concealment includes, but is not limited to, the use of gaseous diluents to achieve compliance with an opacity standard or with a standard which is based on the concentration of a pollutant in the gases discharged to the atmosphere.

2.44 **NSPS - Maintain records - startup/shutdown/malfunction** [40 CFR 60.7(b) and Rule 3D .0524]

The permittee shall maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of the affected facility; any malfunction of the air pollution control equipment; or any periods during which a continuous monitoring system or monitoring device is inoperative.

2.45 **NSPS - Files available for inspection** [40 CFR 60.7(f) and Rule 3D .0524]

The permittee shall maintain a file of all measurements, including, if applicable: performance test measurements; adjustments and maintenance performed on these systems or devices; monitoring device calibration checks; and all other information required in 40 CFR 60 . This file shall be kept in a permanent form suitable for inspection and shall be retained at least two years following the date of such measurements, maintenance, reports, and records.

2.46 **NSPS - Performance testing facilities provided by permittee** [40 CFR 60.8(e) and Rule 3D .0524]

For any performance testing, the permittee shall provide, or cause to be provided, performance testing facilities as follows:

A. Sampling ports adequate for the applicable test methods. This includes:

1. constructing the air pollution control system such that volumetric flow rates and pollutant emission rates can be accurately determined by applicable test methods and procedures and
2. providing a stack or duct free of cyclonic flow during performance tests, as demonstrated by applicable test methods and procedures.

B. Safe sampling platform(s) with safe access.

C. Utilities for sampling and testing equipment.

D. Unless otherwise specified in the applicable subpart, each performance test shall consist of three separate runs using the applicable test method. Each run shall be conducted for the time and under the conditions specified in the applicable standard. For purposes of determining compliance with an applicable standard, the arithmetic means of results of the three runs shall apply.

Compliance Assurance Monitoring for Major Stationary Sources (CAM) General Conditions - [40 CFR Part 64]

Following are conditions based on the requirements found in 40 CFR Part 64. These conditions only apply to sources subject to the CAM requirements.

2.47 **CAM - Proper Maintenance** <40 CFR 64.7(b)> [Rule 3D .0614]

At all times, the permittee shall maintain the monitoring equipment, including but not limited to, maintaining necessary parts for routine repairs of the monitoring equipment.

2.48 **CAM - Continued Operation** <40 CFR 64.7(c)> [Rule 3D .0614]

Except for, as applicable, monitoring malfunctions, associated repairs, and required quality assurance or control activities (including, as applicable, calibration checks and required zero and span adjustments), the permittee shall conduct all monitoring in continuous operation (or shall collect data at all required intervals) at all times that the pollutant-specific emissions unit is operating. Data recorded during monitoring malfunctions, associated repairs, and required quality assurance or control activities shall not be used for purposes of this part, including data averages and calculations, or fulfilling a minimum data availability requirement, if applicable. The permittee shall use all the data collected during all other periods in assessing the operation of the control device and associated control system. A monitoring malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring to provide valid data. Monitoring failures that are caused in part by poor maintenance or careless operation are not malfunctions.

2.49 **CAM - Response to Excursions or Exceedances** <40 CFR 64.7(d)> [Rule 3D .0614]

Upon detecting an excursion or exceedance, the permittee shall restore operation of the pollutant-specific emissions unit (including the control device and associated capture system) to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions. The response shall include minimizing the period of any startup, shutdown or malfunction and taking any necessary corrective actions to restore normal operation and prevent the likely recurrence of the cause of an excursion or exceedance (other than those caused by excused startup or shutdown conditions). Such actions may include initial inspection and evaluation, recording that operations returned to normal without operator action (such as through response by a computerized distribution control system), or any necessary follow-up actions to return operation to within the indicator range, designed condition, or below the applicable emissions limitation or standard, as applicable.

Determination of whether the permittee has used acceptable procedures in response to an excursion or exceedance will be based on information available, which may include but is not limited to, monitoring results, review of operation and maintenance procedures and records, and inspection of the control device, associated capture system, and the process. Based on the results of this determination, this Office may require the permittee to develop and implement a Quality Improvement Plan (QIP). The elements of a QIP are identified in 40 CFR 64.8(b).

2.50 **CAM - Documentation of Need for Improved Monitoring** <40 CFR 64.7(e)> [Rule 3D .0614]

After approval of the CAM plan, if the permittee identifies a failure to achieve compliance with an emission limitation or standard for which the approved monitoring did not provide an indication of an excursion or exceedance while providing valid data, or the results of compliance or performance testing document a need to modify the existing indicator ranges or designated conditions, the permittee shall promptly notify this Office and, if necessary, submit a proposed modification to this permit to address the necessary monitoring changes. Such a modification may include, but is not limited to, reestablishing indicator ranges or designated conditions, modifying the frequency of conduction monitoring and collecting data, or the monitoring of additional parameters.

National Emission Standards for Hazardous Air Pollutants for Source Categories (NESHAP) General Conditions - [Rule 3D .1111]

Following are conditions found in the 40 CFR Part 63 NESHAP General Provisions. The following conditions only apply to sources subject to a relevant standard of a subpart of 40 CFR Part 63 except when otherwise specified in a particular subpart or in a relevant standard.

2.51 **NESHAP - General Provisions** <40 CFR 63 Subpart A> [Rule 3D .1111]

The permittee shall comply with all applicable requirements specified in the general provisions of the National Emission Standards for Hazardous Air Pollutants for Source

Categories (40 CFR 63 Subpart A) including but not limited to requirements concerning notifications, testing, monitoring, recordkeeping, modifications, construction, and reconstruction.

2.52 **NESHAP - Circumvention** <40 CFR 63.4(b)> [Rule 3D .1111]

The permittee shall not build, erect, install, or use any article, machine, equipment or process to conceal an emission that would otherwise constitute noncompliance with a relevant standard. Such concealment includes, but is not limited to, the use of gaseous diluents to achieve compliance with a relevant standard based on the concentration of a pollutant in the effluent discharged to the atmosphere, the use of diluents to achieve compliance with a relevant standard for visible emissions, and the fragmentation of an operation such that the operation avoids regulation by a relevant standard.

2.53 **NESHAP - Maintain Records** <40 CFR 63.10(b)(2)> [Rule 3D .1111]

For affected sources, the permittee shall maintain relevant records of:

A. the occurrence and duration of each startup, shutdown when the startup or shutdown causes the source to exceed any applicable emission limitation in the relevant emission standards;
B. all maintenance performed on the air pollution control equipment;
C. each period during which a CMS is malfunctioning or inoperative;
D. all required measurement needed to demonstrate compliance with a relevant standard;
E. all results of performance tests, CMS performance evaluations, and opacity and visible emission observations;
F. all measurements as may be necessary to determine the conditions of performance tests and performance evaluations;
G. all CMS calibration checks;
H. all adjustments and maintenance performed on CMS;
I. any information demonstrating whether a source is meeting the requirements for a waiver of recordkeeping or reporting requirements if the source has been granted a waiver under 40 CFR 63.10(f);
J. all emission levels relative to the criterion for obtaining permission to use an alternative to the relative accuracy test if the source has been granted such permission under 40 CFR 63.8(f)(6); and
K. all documentation supporting initial notifications and notifications of compliance status under 40 CFR 63.9.

2.54 **NESHAP - Files Available for Inspection** <40 CFR 63.10(b)(1)> [Rule 3D .1111]

The permittee shall maintain files of all information required by 40 CFR Part 63 recorded in a form suitable and readily available for expeditious inspection and review. The files shall be retained for at least five years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. At a minimum, the most recent two years of data shall be retained on site. The remaining three years of data may be retained off site.

2.55 **NESHAP - Performance Testing Facilities Provided by Permittee** <40 CFR 63.7(d)> [Rule 3D .1111]

For any performance testing for each new source and, at the request of the Director, for each existing source, the permittee shall provide performance testing facilities as follows:

A. Sampling ports adequate for test methods applicable to the affected source. This includes:
   1. Constructing the air pollution control system such that volumetric flow rates and pollutant emission rates can be accurately determined by applicable test methods and procedures; and
   2. Providing a stack or duct free of cyclonic flow during performance tests, as demonstrated by applicable test methods and procedures.
B. Safe sampling platform(s).
C. Safe access to sampling platform(s).
D. Utilities for sampling and testing equipment.
E. Any other facilities that the Director deems necessary for safe and adequate testing of a source.
F. Unless otherwise specified in the applicable subpart, each performance test shall be conducted according to the requirements in 40 CFR 63.7.

SECTION 3
SPECIFIC LIMITATIONS AND CONDITIONS

The emission source(s) and associated air pollution control device(s) listed below are subject to the following specific terms, conditions, and limitations, including the monitoring recordkeeping, and reporting requirements to which those requirements apply:

3.1 Facility-Wide Emission Source Conditions

A. Air toxics [Rules 3D .1100 and 3Q .0700] - *Local Enforcement Only*

1. **Air toxics - general** - Specification of a listed toxic air pollutant (TAP) in this permit does not excuse the permittee from complying with the requirements of Sections 3D .1100 and 3Q .0700 of the FCAQTC with regard to any other listed TAP emitted from the regulated facility, nor does this permit exempt the permittee from compliance with any future air toxics regulations promulgated pursuant to the requirements of the Clean Air Act. **[Sections 3D .1100 and 3Q .0700]**

2. **De minimis limits** - Total facility-wide emissions of the following pollutants, except those from the boilers ES-62, ES-62C, and ES-62E, and ES-62F which were exempt from the TAP program at the time the evaluation was performed, shall not exceed their respective de minimis emissions limits as shown in Rule 3Q .0711 unless a modeling demonstration is first approved by this Office which shows that the emissions of the subject TAPs from the facility will not adversely affect human health. This demonstration shall be in accordance with the requirements set forth in Sections 3D .1100 and 3Q .0700 of the FCAQTC. This demonstration must be made with an up-to-date version of a U.S. EPA approved computer model or, upon approval by this Office, calculated using the results of a previous modeling analysis showing compliance with the acceptable ambient levels for the pollutants listed below. **[Section 3Q .0700]**

Pollutant (CAS Number)	De minimis level
benzene (71-43-2)	8.1 lb/year
benzo(a)pyrene (50-32-8)	2.2 lb/year
formaldehyde (50-00-0)	0.04 lb/hour
n-hexane (110-54-3)	23 lb/day
toluene (108-88-3)	14.4 lb/hour and 98 lb/day

3. **Air toxic pollutant recordkeeping** - The permittee shall maintain updated records of production rates, throughputs, material usage, and other process operational information as is necessary to determine compliance with the emission rates specified in permit condition **3.1(A)(2)**. At a minimum these

records shall include data sufficient to calculate monthly averaged emission rates (in pounds per hour of emission source operation) for TAPs with 1-hour or 24-hour emission limits and yearly emission rates (in pounds per calendar year) for TAPs with annual emission limits.

Copies of these records shall be retained by the permittee for a period of three years after the date on which the record was made.

If requested by an agent of this Office, the permittee shall readily supply copies of these records at the time of inspection. Likewise, the permittee shall submit copies of the records upon request by this Office. **[Rules 3D .0605, 3D .1105, and 3Q .0308(a)(1)]**

B. Prevention of Significant Deterioration (PSD) [Rules 3D .0530 and 3Q .0317]

1. **Maximum daily production rate** [Rules 3D .0530 and 3Q .0317] - The permittee shall limit the grind rate of corn at the facility to a maximum of 80,000 bushels per day based on a three day average throughput. The total grind rate for any 365 day period shall not exceed 29,200,000 bushels of corn in order to avoid the applicability of Rule 3D .0530 for sulfur dioxide emissions from the modification undertaken in August 2006 (#00732-TV-6)..

2. **Recordkeeping requirement** [Rules 3D .0530 and 3Q .0317(b)] - The permittee shall record and maintain a record of the grind rate in bushels of corn per day in a log (written or electronic form). These records shall also include a three day rolling average of the grind rate during actual operating days to ensure compliance with the maximum grind rate. These records shall be totaled for the previous 365 day period to obtain the total 365 day grind rate. These records are to be kept on site and shall be made available for inspection by Office personnel.

3. **Reporting** [Rule 3D .0530 and 3Q .0317(b)] - The permittee shall submit the grind rate records as described in condition **3.1(B)(2)** to this Office by January 30th for the period July through December, and by July 30th for the period January through June. The permittee shall include a report of the daily grind rate during the alternate operating scenario (AOS) as separate from the average daily grind rate during normal operation. However, the average daily grind rate for the AOS shall be included in the totals for calculating the annual production rate for the six month reporting period.

C. Control of Visible Emissions [Rule 3D .0521] - This regulation applies to all emission sources at this facility unless otherwise specified in the specific conditions.

1. **Standard for all emission sources unless otherwise specified** [Rule 3D .0521(d)] - For sources manufactured after July 1, 1971, visible emissions shall not be more than 20% opacity when averaged over a six-minute period. However, six-minute averaging periods may exceed 20% opacity if:
   (a) No six-minute period exceeds 87% opacity;
   (b) No more than one six-minute period exceeds 20% opacity in any hour; and

(c) No more than four six-minute periods exceed 20% opacity in any 24-hour period.

2. **Testing** [Rules 3D .2602(i) and 3Q .0508(b) and (n)(2)] - If emissions testing is required by this Office or the U.S. EPA, or the permittee submits emissions testing to the Division in support of a permit application, the permittee shall perform such testing in accordance with the appropriate U.S. EPA reference method(s) as approved by this Office. The permittee may request approval from this Office for an alternate test method or procedure in writing.

3. **Monitoring and recordkeeping requirements** [Rule 3Q .0508(f)] - The permittee shall make a qualitative **monthly** observation of the stacks/vents ducting emissions from each source. The permittee shall keep a monthly log of this visible emission stack observation. The log shall contain the following:

   (a) the date and time of visual observation;
   (b) the person(s) who performed visual observation;
   (c) the results of the visual observation (note color, duration, density (heavy or light), and include identifying stacks where visible emissions occurred);
   (d) the operating conditions under which the visual observation was conducted; and
   (e) any actions taken to reduce the visible emissions.

4. **Reporting** [Rule 3Q.0508(f)(1)] - The permittee shall submit a summary report of the monitoring requirements specified in condition **3.1(C)(3)** to this Office by January 30th for the period July through December, and by July 30th for the period January through June. This report shall include the percentage of operational days in the reporting period for which a visible emission observation was made for EP-AO, EP-G, and EP-N.

3.2 ES-11A Corn Receiving including Corn Unloading and Corn Storage Silos 1 through #3, controlled by Fabric Filters W115891, W115894, W115895, and W115803; and ES-11B Corn Cleaning including Corn Transport, Corn Cleaner, and Corn Cleaning Silos #1 and #2, controlled by Fabric filters W115896, W115824, W115825, and W115832; and ES-25 Mill Products Loading including MPL Dust Collector, Gluten Silo, #1 Feed Silo, Inline Feed Silo, #2 Feed Silo, #1 Germ Silo, Inline Germ Silo, and Railcar Transport Blower controlled by Fabric Filters W255897, W258891, W258896, W258895, W258897, W248893, W258894 and W258898; and ES-32 Starch Storage and Loading including Starch Silo and Starch Loading Dust System, controlled by Fabric Filters W328891, and W325892; and ES-83 Carbon Storage, controlled by Fabric Filter W838891; and ES-85 Filter Aid Storage, controlled by Fabric Filter W858893

The following provides a summary of the limits and/or standards for the emission source(s) described above.

Regulated Pollutant	Applicable Standard	ES-#	Applicable Regulation
Particulate Matter	$E = (55.0 \times P^{0.11}) - 40$ when operating at process rates greater than 60,000 lb/hr; and $E = 4.10 \times P^{0.67}$ when operating at process rates equal to or less than 60,000 lb/hr where; E = allowable PM emission rate in lb/hr, and P = process weight in tons/hr	ES-11A, ES-11B, ES-25, ES-32, ES-83, and ES-85	3D .0515
Visible Emissions	20 percent opacity		3D .0521(d) - see condition **3.1(C)** for requirements (see below for frequency of visible observations for Railcar Transport Blower of ES-25, ES-83, and ES-85)

A. Particulates from Miscellaneous Industrial Processes - Corn Receiving (ES-11A), Corn Cleaning (ES-11B), Mill Products Loading (ES-25), Starch Storage And Loading (ES-32), Carbon Storage (ES-83), and Filter Aid Storage (ES-85) [Rule 3D .0515]

1. **Standard/Operation requirements** [Rule 3D .0515] -

(a) **Emission limit for ES-11A** - Particulate matter emissions from each of the processes in ES-11A (Corn Unloading, Storage Silo #1, Storage Silo #2, and Storage Silo #3) shall not exceed the allowable emissions rate calculated by the applicable formula in the above table. Accordingly, the potential emission rate from each of these processes shall at no times exceed 73.1 lb/hr based on maximum production.

(b) **Emission limit for ES-11B** - Particulate matter emissions from each of the processes in ES-11B (Corn Transport, Corn Cleaner, Corn Cleaning Silo #1, and Corn Cleaning Silo #2) shall not exceed the allowable emissions rate calculated by the applicable formula in the above table. Accordingly, the potential emission rate from each of these processes shall at no times exceed 57.5 lb/hr based on maximum product ion.

(c) **Emission limit for ES-25** - Particulate matter emissions from the processes in ES-25 shall not exceed the allowable emissions rate calculated by the applicable formula in the above table. Accordingly, the potential emissions from these processes shall at no times exceed the following emissions rates based on maximum production:

Emission Source Description	Maximum Allowable Emission Rate
MPL Dust Collector	55.4 lb/hr
Gluten Silo	11.7 lb/hr
#1 Feed Silo	27.5 lb/hr
Inline Feed Silo	27.5 lb/hr
#2 Feed Silo	27.9 lb/hr
#1 Germ Silo	13.9 lb/hr
Inline Germ Silo	13.9 lb/hr
Railcar Transport Blower	25.2 lb/hr

(d) **Emission limit for ES-32** - Particulate matter emissions from the processes in ES-32 shall not exceed the allowable emissions rate calculated by the applicable formula in the above table. Accordingly, the potential emissions from these processes shall at no times exceed the following emissions rates based on maximum production:

Emission Source Description	Maximum Allowable Emission Rate
Starch Silo	22.3 lb/hr
Starch Loading Dust System	44.6 lb/hr

(e) **Emission limit for ES-83** - Particulate matter emissions from the Carbon Silo shall not exceed the allowable emissions rate calculated by the applicable formula in the above table. Accordingly, the potential emission rate from this process shall at no times exceed 15.1 lb/hr based on maximum production.

(f) **Emission limit for ES-85** - Particulate matter emissions from the Filter Aid Silo shall not exceed the allowable emissions rate calculated by the applicable formula in the above table. Accordingly, the potential emission rate from this process shall at no times exceed 8.56 lb/hr based on maximum production.

2. **Testing** [Rules 3D .2602(i) and 3Q .0508(b) and (n)(2)] - The permittee shall follow the testing requirements specified in condition **3.1(C)(2)**.

3. **Monitoring requirement** [Rule 3Q .0508(f)] - The permittee shall follow the monitoring requirements for visible emissions in condition **3.1(C)**. In addition to monitoring visible emissions, and to ensure that optimum control efficiency is maintained, the permittee shall perform inspections and preventative maintenance in a manner consistent with good practice for minimizing emissions. As a minimum, the qualitative visible observation for fabric filters W258898, W838891, and W858893 must include the following:

(a) **For Railcar Transport Blower of ES-25, Carbon Silo (ES-83), and Filter Aid Silo (ES-85)** - The permittee shall perform a qualitative observation of the stack ducting emissions from these sources once per day each day that the source is operating. Or,

(b) **Alternative Monitoring for Railcar Transport Blower of ES-25, Carbon Silo (ES-83), and Filter Aid Silo (ES-85)** – As an alternative to performing a qualitative observation noted in permit condition **3.2(C)(3)(a)** above, the permittee may perform a monthly preventative maintenance inspection of the fabric filters. The preventative maintenance inspections shall include the following items:

(i) check fabric filter differential pressures;
(ii) check blow-down pressures and cycles;
(iii) inspect structural integrity of fabric filters;
(iv) check fabric filter mechanical operating components to ensure proper operation;
(v) oil fabric filter mechanical components as needed;
(vi) inspect blower belts and filters and replace as needed; and
(vii) inspect fabric filter bags, if indicated, and replace as required.

4. **Recordkeeping requirement** [Rule 3Q .0508(f)] - The results of all monitoring activities in permit condition **3.2(A)(3)(a)** shall be recorded in a log (written or electronic form). The log shall be maintained on site and shall contain the following records:

   (a) **For Railcar Transport Blower of ES-25**, **Carbon Silo (ES-83), and Filter Aid Silo (ES-85)** -

   (i) the date and time of visual observation;
   (ii) the person(s) who performed visual observation;
   (iii) the results of the visual observation (note color, duration, density (heavy or light), and include identifying stacks where visible emissions occurred);
   (iv) any actions taken to reduce the visible emissions; and
   (v) the date and time a qualitative observation can't be obtained due to adverse weather conditions or darkness.

5. **Recordkeeping requirement for Alternative Monitoring** [Rule 3Q .0508(f)] - The results of all monitoring activities in permit condition **3.2(A)(3)(b)** shall be recorded in a log (written or electronic form). The log shall be maintained on site and shall contain the following records:

   (a) **Recordkeeping for Railcar Transport Blower of ES-25**, **Carbon Silo (ES-83), and Filter Aid Silo (ES-85)** -

   (i) the date and time of preventative monitoring inspection;
   (ii) the person(s) who performed inspections;
   (iii) the results of the preventative maintenance inspections;
   (iv) any corrective actions taken as a result of the preventative maintenance inspections.

6. **Reporting requirement** [Rule 3Q .0508(f)(1)] - The permittee shall submit a summary report of the monitoring requirements specified in condition **3.2(A)(3)** to this Office by January 30th for the period July through December, and by July 30th for the period January through June. The report shall include the number of qualitative observations conducted during the reporting period for the Railcar Transport Blower of ES-25, Carbon Silo (ES-83), and Filter Aid Silo (ES-85) and the number of days each source was in operation during the reporting period. The report shall also include the dates the preventative maintenance inspections were performed and state whether the inspections were used as an alternative monitoring method in the reporting period in lieu of performing the qualitative observations for the stack visual emissions.

3.3 ES-15 Wet Milling including Gluten Filter Vacuum Pumps, Uncontrolled, and Germ Separation, controlled by Scrubber W628893; and ES-21 Gluten Drying and Cooling, controlled by Cyclone W215893 and Scrubber W628893; and ES-23 Feed Drying and Cooling, controlled by Cyclones W235893, W235892, and W235813, Scrubbers W628891, W628851, W628892, and W628893; and ES-81 Sulfur Burner, controlled by Scrubber W818806

The following provides a summary of the limits and/or standards for the emission source(s) described above.

Regulated Pollutant	Applicable Standard	ES-#	Applicable Regulation
Sulfur Dioxide	0.88 lb SO_2/hr on a 24 hr average from emission point AA (Gluten Filter Vacuum Pumps)	ES-15	40 CFR 51.166, 3D .0530, and 3Q .0317
Sulfur Dioxide	Combined total of 3.3 lb SO_2/hr on a 24 hr average from emission point R (Advanced Industries Technology Wet Scrubber) from all contributing sources		40 CFR 51.166, 3D .0530, and 3Q .0317
Sulfur Dioxide	0.1 lb SO_2/hr on a 24 hr average	ES-81	40 CFR 51.166, 3D .0530, and 3Q .0317
Particulate Matter	$E = 4.10 \times P^{0.67}$ where; E = allowable PM emission rate in lb/hr, and P = process weight in tons/hr	ES-21, and ES-23	3D .0515
Visible Emissions	20 percent opacity	ES-15, ES-21, ES-23, and ES-81	3D .0521(d) - see condition **3.1(C)** for requirements

A. **Prevention of Significant Deterioration (Sulfur Dioxide) - Wet Milling (ES-15), Sulfur Burner System (ES-81) [Rules 3D .0530 and 3Q .0317]** - These emission sources have federally enforceable limits applied to them to avoid the provisions of Rule 3D .0530. Should any of the following conditions be violated, this facility may become subject to

this rule.

1. **Emission requirements** [Rules 3D .0530 and 3Q .0317] -

   (a) **Emission limit for emission point AA** (ES-15) - Emissions of sulfur dioxide from the Gluten Filter Vacuum Pumps shall not exceed 0.88 pounds per hour based on a 24-hour average. This rate represents 75 percent sulfur dioxide reduction at 80,000 bushel/day production rate. In order to demonstrate compliance with this emission rate, the permittee shall control the pH levels of the Gluten Filter Vacuum Pump water to achieve a 75 percent reduction by maintaining the pH levels at or above 5.0.

   (b) **Emission limit for emission point R (ES-15, 21, and 23)** - Combined total emissions of sulfur dioxide from the Scrubber W628893 shall not exceed 3.3 pounds per hour based on a 24-hour average for all contributing sources. This rate represents 75 percent sulfur dioxide reduction at 80,000 bushel/day production rate. In order to demonstrate compliance with this emission rate, the permittee shall control the pH levels of the Scrubber W628893 water to achieve a 75 percent reduction by maintaining the pH levels at or above 5.0.

   (c) **Emission limit for ES-81** - Emissions of sulfur dioxide shall not exceed 0.1 pounds per hour based on a 24-hour average. In order to demonstrate compliance with this emission rate, the permittee shall control the pH levels of the Scrubber W818806 water by maintaining the pH levels at or above 5.5.

2. **Testing** [Rules 3D .2602(i) and 3Q .0508(n)(2) and (b)] - The permittee shall follow the testing requirements specified in condition **3.1(C)(2)**.

3. **Monitoring requirement** [Rules 3D .0530, 3Q .0317, and 3Q .0508(f)] - The permittee shall continuously monitor the pH values of the Gluten Filter Vacuum Pumps seal water, the Scrubber W628893 water, and the Scrubber W818806 water with a probe which shall be connected to a controller to regulate the caustic addition to the water and a 24-hour average shall be calculated. The permittee shall manually check the pH of the Gluten Filter Vacuum Pumps seal water, the Scrubber W628893 water, and the Scrubber W818806 water on a daily basis for comparison to the continuous monitor readings. The continuous pH monitors shall be recalibrated if the difference between the manual pH readings and the continuous pH readings is greater than 0.30, if the lowest reading is less than 0.30 pH above the required compliance pH value. As a minimum, the continuous pH monitors shall be recalibrated on a monthly basis.

   The manual checks of the pH must be performed for at least 90 percent of the operating days at the facility during the six-month reporting period and the recalibration of the continuous pH monitors when the difference between the manual pH readings and the continuous pH readings is greater than 0.30, if the lowest reading is less than 0.30 pH above the required compliance pH value, must be performed for at least 90 percent of the operating days at the facility during the six-month reporting period to ensure compliance with this requirement.

4. **Recordkeeping requirement** [Rules 3D .0530, 3Q .0317, and 3Q .0508(f)] - The daily pH of the Gluten Filter Vacuum Pumps seal water, the Scrubber W628893, and the Scrubber W818806 water obtained during manual pH readings and the average daily pH shall be recorded in a log to be kept on site along with the continuous monitor pH reading at the time of the manual check. The log shall also contain records of all calibration and maintenance dates of the pH monitoring equipment.

5. **Reporting requirement** [Rules 3D .0530, 3Q .0317(b), and 3Q .0508(f)(1)] - The permittee shall submit a summary report of the monitoring requirements specified in condition **3.3(A)(3)** to this Office by January 30th for the period July through December, and by July 30th for the period January through June. This report shall include the percentage of operational days in the reporting period for which manual pH readings were recorded and the percentage of days in the reporting period for which a recalibration of the continuous pH monitors was performed as required in condition **3.3(A)(3)**.

B. Particulates from Miscellaneous Industrial Processes - Gluten Drying and Cooling (ES-21), and Feed Drying and Cooling (ES-23) [Rule 3D .0515]

1. **Standard/Operation requirements** [Rule 3D .0515] -

   (a) **Emission limit for ES-21** - Particulate matter emissions from the Gluten Dryer and Cooler shall not exceed the allowable emissions rate calculated by the formula in the above table. Accordingly, the potential emissions from these processes shall at no times exceed 11.6 lb/hr based on maximum production.

   (b) **Emission limit for ES-23** - Particulate matter emissions from the processes in ES-23 shall not exceed the allowable emissions rate calculated by the formula in the above table. Accordingly, the potential emissions from these processes shall at no times exceed the following emissions rates based on maximum production:

Emission Source Description	Maximum Allowable Emission Rate
#1 Feed Cooler	13.7 lb/hr
#2 Feed Cooler	13.7 lb/hr

2. **Testing** [Rules 3D .2602(i) and 3Q .0508(b) and (n)(2)] - The permittee shall follow the testing requirements specified in condition **3.1(C)(2)**.

3. **Monitoring and recordkeeping requirements** [Rule 3Q .0508(f)] - The permittee shall follow the monitoring and recordkeeping requirements for visible emissions in condition **3.1(C)(3)**.

4. **Reporting requirement** [Rule 3Q .0508(f)(1)] - The permittee shall follow the reporting

requirements for visible emissions in condition **3.1(C)(4)**.

3.4 ES-31 Starch Drying, controlled by Scrubbers W318894 and W318896

The following provides a summary of the limits and/or standards for the emission source(s) described above.

Regulated Pollutant	Applicable Standard	ES-#	Applicable Regulation
Particulate Matter	$E = 4.10 \times P^{0.67}$ where; E = allowable PM emission rate in lb/hr, and P = process weight in tons/hr	ES-31	3D .0515
Sulfur Dioxide*	2.3 lb SO_2 /MMBtu	ES-31	3D .0516
Visible Emissions	20 percent opacity	ES-31	3D .0521(d) - see condition **3.1(C)** for requirements

*3D .0516 - *Sulfur Dioxide Emissions from Combustion Sources* applies to the natural gas dryers associated with this emission unit. Use of only natural gas assures compliance with this standard. No monitoring, recordkeeping, or reporting is required to assure compliance. However, the permittee shall maintain the appropriate records for raw material usage and/or production rates in order to calculate the emissions data needed for condition **2.13** entitled, *Annual Emission Inventory Requirements*.

A. Particulates from Miscellaneous Industrial Processes - Starch Drying (ES-31) [Rule 3D .0515]

1. **Standard/Operation requirements** [Rule 3D .0515] -

   (a) **Emission limit for ES-31** - Particulate matter emissions from ES-31 (Scrubbers W318894 and W318896) shall not exceed the allowable emissions rate calculated by the formula in the above table. Accordingly, the potential emission rate from this emission point shall at no time exceed 11.2 lb/hr based on maximum production.

2. **Testing** [Rules 3D .2602(i) and 3Q .0508(b) and (n)(2)] - The permittee shall follow the testing requirements specified in condition **3.1(C)(2)**.

3. **Compliance Assurance Monitoring and recordkeeping requirements** [Rules 3D .0614 and 3Q .0508(f)] - In order to demonstrate compliance with the CAM plan for the wet scrubbers, the following monitoring and recordkeeping requirements apply:
   (a) The permittee shall follow the monitoring and recordkeeping requirements for visible emissions in condition **3.1(C)(3)**. An excursion is defined as the presence of a visible emission, except for the presence of water vapor, from either stack. If a visible emission is noted, the applicant shall conduct an investigation into the cause and

take the appropriate corrective action to mitigate the emissions.

(b) The permittee shall continuously monitor for the presence or absence of scrubber flow water to Scrubbers W318894 and W318896 during operation of ES-31. The presence of water to the scrubbers will provide assurance that the PM emissions are being controlled and maintained below the allowable limit. An excursion is defined as when the system is in operation and there is no water flow to or from the scrubber for a continuous six minute period during any operational day. In addition, validation of the operation of the flow sensing device shall be conducted monthly.

(c) The permittee shall conduct an annual internal inspection of Scrubbers W318894 and W318896 to ensure proper operation. An excursion is identified as any inspection which reveals the internal components of the scrubbers have been affected in a way that the scrubbers no longer operate as designed. An excursion will require the applicant to conduct an investigation into the cause and take appropriate corrective action to repair the internal components.

The results of all monitoring activities shall be recorded in a log (written or electronic form). The log shall be maintained on site and shall be made available to Office personnel.

4. **Reporting requirement** <40 CFR 64.9> [Rules 3D .0614 and 3Q .0508(f)(1)] – The permittee shall submit the following report:

(a) A summary report of the compliance assurance monitoring required in permit condition **3.4(A)(3)** including, as a minimum:

(i) Summary information on the number, duration and cause (including unknown cause, if applicable) of excursions or exceedances, as applicable, and the corrective actions taken;

(ii) Summary information on the number, duration and cause (including unknown cause, if applicable) for monitor downtime incidents (other than downtime associated with calibration checks, if applicable); and

(iii) A description of the actions taken to implement a QIP (if required by this Office) during the reporting period as specified in 40 CFR 64.8. Upon completion of a QIP, the owner or operator shall include in the next summary report documentation that the implementation of the plan has been completed and reduced the likelihood of similar levels of excursions or exceedances occurring.

This report shall be received by this Office by January 30th for the period July through December and by July 30th for the period January through June.

3.5 ES-62C Keeler Hybrid Suspension Grate Boiler designed to burn wet biomass/bio-based solid, controlled by Multicyclone 62SFB1 and ESP 62SFB2

The following provides a summary of the limits and/or standards for the emission source(s) described above.

Regulated Pollutant	Applicable Standard	Applicable Regulation
Particulate Matter	0.1 lb/MMBtu	40 CFR 51.166, 40 CFR 60.43b, 3D .0530, and 3D .0524
Nitrogen Oxides	0.6 lb NO_x/MMBtu	40 CFR 51.166, 40 CFR 60.44b, 3D .0530, and 3D .0524
Sulfur Dioxide	310 lb SO_2 /hr	40 CFR 51.166 and 3D .0530
Sulfur Dioxide	Sulfur content of coal shall not exceed 0.9 percent	40 CFR 51.166 and 3D .0530
Sulfur Dioxide	Coal shall not be used to supply more than 95 percent of the boiler's thermal input in any 12-month rolling period	40 CFR 51.166 and 3D .0530
HCL	0.022 lb/MMBtu	40 CFR 63.7500(a)(1), Table 2, and 3D .1111
Mercury	5.7E-06 lb/MMBtu	40 CFR 63.7500(a)(1), Table 2, and 3D .1111
Carbon Monoxide (or demonstrate compliance with a continuous emissions monitor (CEM))	3,500 ppm by volume on a dry basis corrected to 3 percent oxygen, 3-run average; (or 900 ppm by volume on a dry basis corrected to 3 percent oxygen, 30-day rolling average)	40 CFR 63.7500(a)(1), Table 2, and 3D .1111
Filterable Particulate Matter (or Total Selected Metals (TSM))	0.44 lb/MMBtu (or 4.5E-04 lb/MMBtu)	40 CFR 63.7500(a)(1), Table 2, and 3D .1111
Visible Emissions	20 percent opacity	40 CFR 60.43b(f) and 3D .0524
Visible Emissions	10 percent opacity (daily block average)	40 CFR 63.7525(c), Table 8, and 3D .1111

A. Prevention of Significant Deterioration [Rule 3D .0530], New Source Performance Standards [Rule 3D .0524]

1. **Standard for Particulate Matter** [Rules 3D .0530 and 3D .0524] - Total particulate matter emissions shall not exceed 0.1 pounds per million Btu heat input as determined by U.S. EPA Reference Method 5 (40 CFR 60 - Appendix A, amended November 14, 1990, or the most recent approved version of the method at the time of testing). This limit shall be met with the use of a multicyclone followed by an electrostatic precipitator as Best Available Control Technology.

   This standard shall apply at all times except during periods of startup, shutdown or malfunction.

2. **Testing** [Rules 3D .2602(i) and 3Q .0508(b) and (n)(2)] - The permittee shall follow the testing requirements specified in condition **3.1(C)(2)**.

3. **Periodic monitoring and recordkeeping requirements** [Rules 3D .0524 and 3Q .0508(f)] - The permittee shall monitor opacity as a surrogate to ensure the proper operation of the multicyclone and electrostatic precipitator. The permittee shall install, calibrate, maintain, and operate a continuous opacity monitor (COM) and record the output of the system in accordance with NSPS Subpart Db, 40 CFR 60.48b(a). The procedures under 40 CFR 60.13 shall be followed for installation, evaluation, and operation of the COM used to measure the opacity of emissions discharged to the atmosphere pursuant to NSPS Subpart Db, 40 CFR 60.48b(e) and Rule 3D .0524.

4. **Reporting requirement** [Rules 3D .0524 and 3Q .0508(f)(1)] - The permittee shall comply with all applicable recordkeeping and reporting requirements specified in 40 CFR 60.49b, including, but not limited to, the requirement to submit excess emissions reports for any excess emissions of opacity which occur during the six-month period. These reports shall be submitted no later than January 30th for the period July through December and no later than July 30th for the period January through June. If there are no excess emissions during the semiannual period, the permittee shall submit a report stating that no excess emissions occurred during the reporting period.

5. **Compliance Assurance Monitoring and recordkeeping requirements for particulate matter** <40 CFR Part 64> [Rules 3D .0614 and 3Q .0508(f)] - In order to demonstrate compliance with the CAM plan for the multicyclone and electrostatic precipitator, the following monitoring and recordkeeping requirements apply:
   (a) The permittee shall monitor opacity as a surrogate to ensure the proper operation of the multicyclone and electrostatic precipitator using the COM required in permit condition **3.5(A)(3)**.
   (b) The outlet opacity shall be continuously monitored to provide data for at least 90% of the operating hours in each steam generating unit day, in at least 27 out of 30 successive steam generating unit days.
   (c) The outlet opacity readings are recorded at least four times equally spaced over an hour for at least 90% of the operating hours.

(d) The averaging period for the opacity readings shall be six minutes.
(e) The permittee shall provide initial calibration of the COM in accordance with manufacturer's recommendation at startup. In addition, quarterly calibration of the COM shall be performed in accordance with manufacturer's recommended procedure. Preventative maintenance of the COM shall be performed on an annual basis.

An excursion is defined as data monitored greater than 12 percent opacity for more than three consecutive hours during an operation day, except for startup and shutdown. An excursion will trigger an investigation into its cause and the appropriate corrective action will be performed and documented.

6. **Reporting Requirement** <40 CFR 64.9> [Rules 3D .0614 and 3Q .0508(f)(1)] - The permittee shall submit the following report:
   (a) A summary report of the compliance assurance monitoring required in permit condition **3.5(A)(5)** including, as a minimum:
      (i) Summary information on the number, duration and cause (including unknown cause, if applicable) of excursions or exceedances, as applicable, and the corrective actions taken;
      (ii) Summary information on the number, duration and cause (including unknown cause, if applicable) for monitor downtime incidents (other than downtime associated with calibration checks, if applicable); and
      (iii) A description of the actions taken to implement a QIP (if required by this Office) during the reporting period as specified in 40 CFR 64.8. Upon completion of a QIP, the owner or operator shall include in the next summary report documentation that the implementation of the plan has been completed and reduced the likelihood of similar levels of excursions or exceedances occurring.

   This report shall be received by this Office by January 30th for the period July through December and by July 30th for the period January through June.

B. Prevention of Significant Deterioration [Rule 3D .0530], New Source Performance Standards [Rule 3D .0524]

1. **Standard for Nitrogen Oxides** [Rule 3D .0530 and 3D .0524] - Total nitrogen oxides emissions shall not exceed 0.6 pounds per million Btu heat input as determined by U.S. EPA Reference Method 7 (40 CFR 60 - Appendix A, amended November 14, 1990, or the most recent approved version of the method at the time of testing).

   This standard shall apply at all times including periods of startup, shutdown, or malfunction. Compliance with this emission limit is determined on a 30-day rolling average basis.

2. **Testing** [Rules 3D .2602(i) and 3Q .0508(b) and (n)(2)] - The permittee shall follow the testing requirements specified in condition **3.1(C)(2)**.

3. **Monitoring requirements** <40 CFR 60.48b(a)> [Rule 3D .0524 and 3Q .0508(f)] -

(a) The permittee shall install, calibrate, maintain, and operate a continuous monitoring system for measuring nitrogen oxides emissions discharged to the atmosphere and record the output of the system. The continuous monitoring system for nitrogen oxides shall be operated and data recorded during all periods of operation, except for continuous monitoring system breakdowns and repairs.

(b) When nitrogen oxides emission data are not obtained because of continuous monitoring system breakdowns, repairs, calibration checks and zero and span adjustments, emission data will be obtained by using standby monitoring systems, Method 7, Method 7A, or other approved reference methods to provide emission data for a minimum of 75 percent of the operating hours in each steam generating unit day, in at least 22 out of 30 successive steam generating unit days.

4 **Recordkeeping and reporting requirements** <40 CFR 60.49b> [Rules 3D .0524 and 3Q .0508(f)(1)] -

(a) The permittee shall comply with applicable recordkeeping and reporting requirements specified in 40 CFR 60.49b, including, but not limited to, the requirement to submit written excess emissions reports based on the data recorded by the continuous emissions monitoring system (CEM) for nitrogen oxides and opacity. These reports shall be submitted no later than January 30th for the period July through December and no later than July 30th for the period January through June.

(b) The CEM must be maintained, calibrated, operated and audited in accordance with 40 CFR 60, Appendix F quality assurance procedures. A data assessment report (DAR) which includes as a minimum the results of CEM accuracy assessments and all corrective actions taken when the CEM was determined to be out of control shall be filed with this Office. This report shall be submitted with the excess emissions report and received by this Office no later than January 30th for the period July through December and no later than July 30th for the period January through June.

C. **Prevention of Significant Deterioration [Rule 3D .0530]**

1. **Standards for Sulfur Dioxide** [Rule 3D .0530] -

(a) Total emissions of sulfur dioxide shall not exceed 310 pounds per hour.
(b) The sulfur content of coal shall not exceed 0.90% by weight.
(c) Coal shall not be used to supply more than 95.0% of the boiler's thermal input in any consecutive 12 month period.

2. **Testing** [Rules 3D .2602(i) and 3Q .0508(b) and (n)(2)] - The permittee shall follow the testing requirements specified in condition **3.1(C)(2)**.

3. **Monitoring** [Rule 3Q .0508(f)] - A gross sample of coal shall be obtained from each truckload of coal shipped to the permittee from the coal mine site and the combined

samples analyzed monthly for Btu, sulfur, and ash content by the coal mine's ASTM certified laboratory of choice in accordance with the following ASTM methods, or equivalent ASTM methods approved by this Office:

(a) D2234 - Collection of a Gross Sample of Coal
(b) D2013 - Methods for Preparing Coal Samples for Analysis
(c) D5865-99 - Gross Calorific Value of Coal and Coke by the Isoperibol Methods
(d) D4239 - Sulfur in Ash from Coal and Coke using High-Temperature Tube Furnace Combustion Method
(e) D3174 - Ash in the Analysis of Coal and Coke

4. **Recordkeeping and reporting requirements** [Rule 3Q .0508(f)] - All data generated by the sulfur content analysis specified in condition **3.5(C)(3)** shall be submitted to this Office on a semiannual basis. The report shall be received by this Office no later than January 30th for the period July through December and no later than July 30th for the period January through June. The following provisions also apply:

(a) Laboratory records of sample testing shall include documentation of the calibration and verification runs made for each piece of analytical equipment.
(b) Upon request of Office personnel, the permittee shall obtain a split sample and submit it to a certified commercial laboratory of this Office's choosing for analysis.

D. New Source Performance Standards (NSPS) Subpart Db Conditions [Rule 3D .0524]

1. **Monitoring and recordkeeping requirements** <40 CFR 60.49b(d)> [Rules 3D .0524 and 3Q .0508(f)] - The permittee shall record and maintain records of the total amount of coal, wood, corn cleanings, corn germ, and dry and wet feed burned in the boiler each month. The log should also include the date and time each fuel is burned.

2. **Reporting requirement** [Rules 3D .0524 and 3Q .0508(f)(1)] - The permittee shall submit the monthly total of each fuel burned in the boiler to this Office on a semiannual basis. The report shall be received by this Office no later than January 30th for the period July through December and no later than July 30th for the period January through June.

E. Control of Visible Emissions [Rule 3D .0524]

1. **Standard** [Rule 3D .0524] - Visible emissions shall not exceed 20% opacity (six-minute average), except for one six-minute period per hour of not more than 27% opacity, in accordance with 40 CFR 60.43b(f). The opacity standard applies at all times, except during periods of startup, shutdown or malfunction.

2. **Testing** [Rules 3D .2602(i) and 3Q .0508(b) and (n)(2)] - The permittee shall follow the testing requirements specified in permit condition **3.1(C)(2)**.

3. **Monitoring and recordkeeping requirements** [Rules 3D .0524 and 3Q .0508(f)] - The permittee shall follow the monitoring and recordkeeping requirements specified in

condition **3.5(A)(2)**.

4. **Reporting requirements** [Rules 3D .0524 and 3Q .0508(f)(1)] - The permittee shall follow the reporting requirements specified in permit condition **3.5(A)(3)**.

F. National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters [Rule 3D .1111 and 40 CFR 63 Subpart DDDDD]

1. **Compliance date** <40 CFR 63.7510(e) and 63.7495> [Rule 3D .1111]
The permittee must comply with this subpart no later than January 31, 2016. An initial demonstration of compliance with the emissions standards through stack testing and/or fuel analysis shall be completed no later than July 29, 2016 (180 days after the compliance date).

2. **Standard for hydrogen chloride** <40 CFR 63.7500(a)(1)> [Rule 3D .1111] - Total hydrogen chloride emissions shall not exceed 0.022 pounds per million Btu heat input as determined by U.S. EPA Reference Methods 26 or 26A (40 CFR 60 - Appendix A, amended November 14, 1990, or the most recent approved version of the method at the time of testing).

   This standard shall apply at all times except during periods of startup or shutdown. When compliance is determined by using Method 26, a minimum of 1 dscm per run must be collected. When compliance is determined by using Method 26A, a minimum of 120 liters per test run must be collected.

3. **Standard for mercury** <40 CFR 63.7500(a)(1)> [Rule 3D .1111] - Total mercury emissions shall not exceed 5.7E-06 pounds per million Btu heat input as determined by U.S. EPA Reference Methods 29, 30A, or 30B (40 CFR 60 - Appendix A, amended November 14, 1990, or the most recent approved version of the method at the time of testing) or ASTM D6784.

   This standard shall apply at all times except during periods of startup or shutdown. When compliance is determined by using Method 29, a minimum of 3 dscm per test run must be collected. When compliance is determined by using Methods 30A or 30B, the permittee shall collect a minimum sample as specified in the method. When compliance is determined by using ASTM D6784, a minimum of 3 dscm per test run must be collected.

4. **Standards for carbon monoxide** <40 CFR 63.7500(a)(1)> [Rule 3D .1111] - Total carbon monoxide emissions shall not exceed 3,500 ppm by volume on a dry basis corrected to 3 percent oxygen based on a 3-run average. Or, as an alternative, the permittee may choose to install and operate a carbon monoxide CEMS whereas the carbon monoxide emissions shall not exceed 900 ppm by volume on a dry basis corrected to 3 percent oxygen.

These standards shall apply at all times except during periods of startup or shutdown. Each test run for carbon monoxide emissions sampling shall have a minimum of 1 hour sampling time. Compliance with the carbon monoxide emissions when using a CEMS shall be determined based on a 30-day rolling average.

5. **Standards for filterable particulate matter or total selected metals (TSM)** <40 CFR 63.7500(a)(1)> [Rule 3D .1111] - Total filterable particulate matter emissions shall not exceed 0.44 pounds per million Btu heat input. Or, if the permittee elects to demonstrate compliance with the alternative TSM limit, the TSM emissions shall not exceed 4.5E-04 pounds per million Btu heat input.

   These standards shall apply at all times except during periods of startup or shutdown. When conducting a stack test to demonstrate compliance with these limits, the permittee shall collect a minimum of 1 dscm per test run.

6. **Stack testing procedures** <40 CFR 63.7515 and 63.7520 and Tables 5 and 7 to the Subpart> [Rule 3D .1111] - For each boiler that is required, or the permittee elects, to demonstrate compliance with any of the applicable emissions limits in permit conditions **3.5(F)(2) through (5)** through performance testing, the initial compliance requirements include the following:

   (a) Each performance test shall be conducted in accordance with the requirements in 40 CFR 63.7(c), (d), (f), and (h) and Table 5 to Subpart DDDDD.
   (b) The permittee shall develop a site-specific stack test plan according to the requirements in 40 CFR 63.7(c).
   (c) The permittee shall conduct each performance test under the specific conditions listed in Tables 5 and establish operating limits according to Table 7 to Subpart DDDDD. The performance tests shall be conducted at representative operating load conditions while burning the type of fuel or mixture of fuels that has the highest content of chlorine and mercury, and TSM if you are opting to comply with the TSM alternative standard and you shall demonstrate initial compliance and establish the operating limits based on these performance tests. **These requirements could result in the need to conduct more than one performance test.** Following each performance test and until the next performance test, the permittee shall comply with the operating limit for operating load conditions as specified in Table 4 to Subpart DDDDD.
   (d) The permittee shall conduct a minimum of three separate test runs for each performance test as specified in 40 CFR 63.7(e)(3). Each test run must comply with the minimum applicable sampling times or volumes specified in Table 2 to Subpart DDDDD.
   (e) To determine compliance with the emission limits, the permittee shall use the F-Factor methodology and equations in sections 12.2 and 12.3 of EPA Method 19 at 40 CFR Part 60, appendix A-7 to convert the measure particulate matter concentrations, the measured HCL concentrations, the measured mercury concentrations, and the measured TSM concentrations that result from the performance test to pounds per million Btu heat input emission rates.
   (f) Except for a 30-day rolling average based on CEMS (or sorbent trap monitoring

system) data, if measurement results for any pollutant are reported as below the method detection level (e.g., laboratory analytical results for one or more sample components are below the method defined analytical detection level), the permittee shall use the method detection level as the measured emissions level for that pollutant in calculating compliance. The measured result for a multiple component analysis (e.g., analytical values for multiple Method 29 fractions both for individual HAP metals and for total HAP metals) may include a combination of method detection level data and analytical data reported above the method detection level.

7. **Subsequent stack tests** <40 CFR 63.7515> [Rule 3D .1111] - The permittee shall conduct all applicable performance tests according to permit condition **3.5(F)(6)** above on an annual basis, except as specified below. Annual performance tests must be completed no more than 13 months after the previous performance test, except as specified below:

   (a) If the performance tests for a given pollutant for at least two consecutive years show that the emissions are at or below 75 percent of the emission limit for the pollutant, and if there are no changes in the operation of the individual boiler or air pollution control equipment that could increase emissions, the permittee may choose to conduct performance tests for the pollutant every third year. Each such performance test must be conducted no more than 37 months after the pervious performance test. If you elect to demonstrate compliance using emission averaging in accordance with 40 CFR 63.7522, you must continue to conduct performance tests annually.
   (b) If a performance test shows emissions exceeded the emission limit or 75 percent of the emission limit for a pollutant, the permittee shall conduct annual performance tests for that pollutant until all performance tests over a consecutive 2-year period meet the required level (at or below 75 percent of the emission limit).

8. **Fuel analysis** <40 CFR 63.7510, 63.7515, 63.7521, 63.7530 and Tables 6 and 7 to the Subpart> [Rule 3D .1111] - For each boiler that is required, or the permittee elects, to demonstrate compliance with any of the applicable emissions limits in permit conditions **3.5(F)(2) through (5)** through fuel analysis, the initial compliance requirements include the following:

   (a) Conduct fuel analyses for chlorine and mercury for each type of fuel burned in your boiler according to the procedures outlined in 40 CFR 63.7521(b) through (e) and Table 6 to Subpart DDDDD, as applicable. If the permittee chooses to comply with the alternative TSM emission standard, a fuel analysis for TSM must also be performed using the applicable procedures noted above. The permittee shall establish operating limits according to 40 CFR 63.7530 and Table 7 to the Subpart. A fuel analysis is not required for natural gas.
   (b) The permittee shall develop a site-specific fuel monitoring plan according to the procedures and requirements in 40 CFR 63.7521(b)(1) and (2).
   (c) If the permittee chooses to demonstrate compliance with the mercury, HCL, or TSM emissions limits based on fuel analysis, a monthly fuel analysis must be conducted according to 40 CFR 63.7521 for each type of fuel burned that is subject to an emission limit in permit conditions **3.5(F)(2), (3), or (5)**. The permittee may comply

with this monthly requirement by completing the fuel analysis any time within the calendar month as long as the analysis is separated from the previous analysis by at least 14 calendar days. If a new type of fuel is burned, the permittee must conduct a fuel analysis before burning the new type of fuel in the boiler. The permittee shall still meet all applicable continuous compliance requirements in 40 CFR 63.7540. If each of 12 consecutive monthly fuel analyses demonstrates 75 percent or less of the compliance level, the fuel analysis frequency may be decreased to quarterly for that fuel. If any quarterly sample exceeds 75 percent of the compliance level or if you begin burning a new type of fuel, you must return to monthly monitoring for that fuel, until 12 months of fuel analyses are again less than 75 percent of the compliance level.

(d) The permittee is not required to conduct fuel analyses for fuels used for only startup, unit shutdown, and transient flame stability purposes. The permittee is required to conduct fuel analyses only for fuels and units that are subject to emission limits for mercury, HCL, or TSM.

9. **Emissions averaging** <40 CFR 63.7522 and 63.7541> [Rule 3D .1111] - As an alternative to meeting the requirements of 40 CFR 63.7500 for Filterable PM (or TSM), HCL, or mercury on a boiler-specific basis, the permittee may demonstrate compliance by emissions averaging, if the averaged emissions are not more than 90 percent of the applicable emission limit according to the procedures in 40 CFR 63.7522. Demonstrating continuous compliance under emission averaging shall be conducted according to 40 CFR 63.7541.

10. **Operating limits and demonstrating continuous compliance** <40 CFR 63.7520, 63.7525, and Tables 7 and 8 to Subpart DDDDDD> [Rule 3D .1111] - The permittee shall comply with the following operating limits to demonstrate continuous compliance with the Boiler MACT:

Establishing operating limits:

(a) For carbon monoxide, the permittee shall collect oxygen data every 15 minutes from the oxygen trim system during the entire period of the stack test. The hourly average oxygen concentration shall be determined by computing the hourly averages using all of the 15-minute readings taken during the stack test. The permittee shall determine the lowest hourly average oxygen concentration established during the stack test as the minimum operating limit.

(b) For particulate matter, the permittee shall use opacity as a surrogate parameter. The opacity shall be maintained to less than or equal to 10 percent opacity based on a daily block average.

(c) For any pollutant for which compliance is demonstrated by a performance test, the permittee shall establish a unit specific limit for the maximum operating load in accordance with permit condition **3.5(F)(6)(c)** above. The permittee shall collect operating load or steam generation data every 15 minutes during the entire period of the performance test. The average operating load shall be determined by computing the hourly averages using all of the 15-minute readings taken during the stack test. The permittee shall determine the highest hourly average of the three tests run averages during the stack test, and multiply this by 1.1 (110 percent) as the operating

limit.

Demonstrating continuous compliance:

(d) For carbon monoxide, the permittee shall set the oxygen trim system to the minimum oxygen level determined during the stack test.

(e) For particulate matter, the permittee shall install, operate, certify, maintain, and collect the opacity system monitoring data according to 40 CFR 63.7525(c) and 63.7535 and reduce the data to 6-minute averages. The permittee shall maintain the opacity to less than or equal to 10 percent based on a daily block average.

(f) For boiler load, the permittee shall collect the operating load data or steam generation every 15 minutes. The permittee shall maintain the operating load such that it does not exceed 110 percent of the highest hourly average operating load recorded during the most recent performance test based on a 30-day rolling average.

11. **Work practice standards (Boiler tune-up)** <40 CFR 63.7515 and 63.7540(a)(10)> [Rule 3D .1111] - The permittee shall conduct an initial tune-up of the boiler **no later than January 31, 2016**. Subsequent to the initial tune-up, the permittee shall conduct a tune-up of the boiler every five years to demonstrate continuous compliance. The permittee may delay the burner inspection specified in permit condition **(11)(a)** below, until the next scheduled or unscheduled unit shutdown, but the permittee must inspect the burner at least once every 72 months. The five year tune-up shall be performed no more than 61 months after the previous tune-up and be performed as specified below:

(a) As applicable, inspect the burner, and clean or replace any components of the burner as necessary (you may delay the burner inspection until the next scheduled unit shutdown). At units where entry into a piece of process equipment or into a storage vessel is required to complete the tune-up inspections, inspections are required only during planned entries into the storage vessel or process equipment;

(b) Inspect the flame pattern, as applicable, and adjust the burner as necessary to optimize the flame pattern. The adjustment should be consistent with the manufacturer's specifications, if available;

(c) Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure that it is correctly calibrated and functioning properly (you may delay the inspection until the next scheduled unit shutdown;

(d) Optimize total emissions of CO. This optimization should be consistent with the manufacturer's specifications, if available, and with any NO_X requirement to which the unit is subject;

(e) Measure the concentrations in the effluent stream of CO in parts per million, by volume, and oxygen in volume percent, before and after the adjustments are made (measurements may be either on a dry or wet basis, as long as it is the same basis before and after the adjustments are made). Measurements may be taken using a portable CO analyzer; and

(f) Maintain on-site and submit, if requested by this Office, an annual report containing the information below:

(i) The concentrations of CO in the effluent stream in parts per million by volume, and oxygen in volume percent, measured at high fire or typical operating load, before and after the tune-up of the boiler or process heater;

(ii) A description of any corrective actions taken as a part of the tune-up; and
(iii) The type and amount of fuel used over the 12 months prior to the tune-up, but only if the unit was physically and legally capable of using more than one type of fuel during that period. Units sharing a fuel meter may estimate the fuel used by each unit.

12. **Work practice standards (Energy Assessment)** <Item 4 of Table 3 to Subpart DDDDD> [Rule 3D .1111] - The permittee must have a one-time energy assessment performed by a qualified energy assessor **no later than January 31, 2016**. An energy assessment completed on or after January 1, 2008, that meets or is amended to meet the energy assessment requirements in the permit condition, satisfies the energy assessment requirement. A facility that operates under an energy management program compatible with ISO 50001 that includes the affected units also satisfies the energy assessment requirement. The energy assessment must include the following with extent of the evaluation for items (a) to (e) appropriate for the on-site technical hours listed in 40 CFR 63.7575:

(a) A visual inspection of the boiler or process heater system;
(b) An evaluation of operating characteristics of the boiler or process heater systems, specifications of energy using systems, operating and maintenance procedures, and unusual operating constraints;
(c) An inventory of major energy use systems consuming energy from affected boilers and process heaters and which are under the control of the boiler/process heater owner/operator;
(d) A review of available architectural and engineering plans, facility operation and maintenance procedures and logs, and fuel usage;
(e) A review of the facility's energy management practices and provide recommendations for improvements consistent with the definition of energy management practices, if identified;
(f) A list of cost-effective energy conservation measures that are within the facility's control;
(g) A list of the energy savings potential of the energy conservation measures identified; and
(h) A comprehensive report detailing the ways to improve efficiency, the cost of specific improvements, benefits, and the time frame for recouping those investments.

13. **Work practice standards (Startup and Shutdown Procedures)** <Items 5 and 6 of Table 3 to Subpart DDDDD> [Rule 3D .1111]

(a) *Startup*: The permittee must operate all CMS during startup. For startup of a boiler, the permittee must use one or a combination of the following clean fuels: natural gas, synthetic natural gas, propane, distillate oil, syngas, ultra-low sulfur diesel, fuel oil-soaked rags, kerosene, hydrogen, paper, cardboard, refinery gas, and liquefied petroleum gas.

If the boiler is started by firing coal/solid fossil fuel, biomass/bio-based solids, heavy liquid fuel, or gas 2 (other) gases, the permittee must vent emissions to the main

stack(s) and engage all of the applicable control devices. Startup ends when steam or heat is supplied for any purpose.

The permittee shall comply with all applicable emission limits at all times except for startup or shutdown periods conforming to this work practice. Monitoring data must be collected during periods of startup, as specified in 40 CFR 63.7535(b). Records must also be kept during periods of startup. Reports concerning activities and periods of startup shall be submitted as specified in permit **3.5(F)(15)**.

(b) *Shutdown*: The permittee must operate all CMS during shutdown. While firing coal/solid fossil fuel, biomass/bio-based solids, heavy liquid fuel, or gas 2 (other) gases during shutdown, the permittee must vent emissions to the main stack(s) and engage all of the applicable control devices.

The permittee shall comply with all applicable emission limits at all times except for startup or shutdown periods conforming to this work practice. Monitoring data must be collected during periods of shutdown, as specified in 40 CFR 63.7535(b). Records must also be kept during periods of shutdown. Reports concerning activities and periods of shutdown shall be submitted as specified in permit **3.5(F)(15)**.

14. **Recordkeeping requirements** <40 CFR 63.7555> [Rule 3D .1111 and 3Q .0508(f)] - The permittee shall keep all applicable records required in accordance with 40 CFR 63.7555 including, but not limited to, the following:

(a) A copy of each notification and report that you submitted to demonstrate compliance, including all documentation supporting any notification or semiannual report;
(b) Records of all performance tests, fuel analyses, or other compliance demonstrations and performance evaluations;
(c) For each CEMS, COMS, and continuous monitoring system, records as stated in 40 CFR 63.7555(b);
(d) Records of all monitoring data and calculated averages for applicable operating limits to show continuous compliance with each emission limit and operating limit that applies;
(e) Records of monthly fuel use, including the type(s) of fuel and amount(s) used;
(f) Copy of all calculations and supporting documentation of maximum chlorine, mercury, and/or TSM fuel input that were done to demonstrate compliance with the respective emission limits through performance testing;
(g) Copy of all calculations and supporting documentation of HCL, mercury, and/or TSM emission rates that were done to demonstrate compliance with the respective emission limits through fuel analysis. The permittee may use the results from one fuel analysis for multiple boilers provided they are all burning the same fuel type. However, you must calculate chlorine fuel input, or HCL emission rate, for each boiler;
(h) Records that document that the emissions in previous stack test(s) were less than 75 percent of the applicable emission limit, and document that there was no change in source operations, including fuel composition and operation of air pollution control equipment, that would cause emissions of the relevant pollutant to increase within the

past year;
(i) Records of the occurrence and duration of each malfunction of the boiler, or of the associated air pollution control and monitoring equipment;
(j) Records of actions taken during periods of malfunction to minimize emissions including corrective actions to restore the malfunctioning boiler, air pollution control, or monitoring equipment to its normal or usual manner of operation;
(k) Records of the calendar date, time, occurrence and duration of each startup and shutdown; and
(l) Records of the type(s) and amount(s) of fuels used during each startup and shutdown.

Records shall be in a form suitable and readily available for expeditious review. Each record shall be kept for 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. Each record shall be kept on site, or they must be accessible from on site, for at least 2 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record.

15. **Reporting requirements** <40 CFR 63.7550> [Rule 3D .1111 and 3Q .0508(f)] - The facility shall submit a semi-annual report to this Office postmarked or received no later than January 31st for the period July through December and no later than July 31st for the period January through June. The first report is to be postmarked or received by this Office no later than July 31, 2016. The reports shall contain the following information:

(a) Company and Facility name and address;
(b) Process unit information, emissions limitations, and operating parameter limitations;
(c) Date of report and beginning and ending dates of the reporting period;
(d) The total operating time during the reporting period;
(e) The total fuel use by each individual boiler within the reporting period, including, but not limited to, a description of the fuel, whether the fuel has received a non-waste determination by the EPA or your basis for concluding the fuel is not a waste, and the total fuel usage amounts with units of measure;
(f) If the applicant is conducting performance tests once every three years, the date of the last two performance tests and a statement as to whether there have been any operational changes since the last performance test that could increase emissions;
(g) If the applicant wishes to burn a new type of fuel and cannot demonstrate compliance with the maximum chlorine input operating limit using Equation 7 of 40 CFR 63.7530, or the maximum mercury input operating limit using Equation 8 of 40 CFR 63.7530, or the maximum TSM input operating limit using Equation 9 of 40 CFR 63.7530, the applicant shall include in the compliance report a statement indicating the intent to conduct a new performance test within 60 days of starting to burn the new fuel;
(h) If there are no deviations from any emission limits or operating limits, a statement that there were no deviations from the emission limits or operating limits during the reporting period;
(i) If a malfunction occurred during the reporting period, the report shall include the number, duration, and a brief description for each type of malfunction which occurred during the reporting period and which caused or may have caused any applicable emission limitation to be exceeded. The report shall also include a description of

actions taken by the permittee during a malfunction of a boiler or associated air pollution control device or CMS to minimize emissions in accordance with 40 CFR 63.7500(a)(3), including actions taken to correct the malfunction;

(j) If the permittee plans to demonstrate compliance by emission averaging, certify the emission level achieved or the control technology employed is no less stringent than the level or control technology contained in the notification of compliance status;

(k) For each reporting period, the compliance reports must include all of the calculated 30-day rolling average values based on the daily CEMS (CO and mercury) and CPMS (PM CPMS output, scrubber pH, scrubber liquid flow rate, scrubber pressure drop) data;

(l) A statement by a responsible official with that official's name, title, and signature, certifying the truth, accuracy, and completeness of the content of the report.

(m) For each deviation from an emission limit or operating limit that occurs at an individual boiler where you are not using a CMS to comply with that emission limit or operating limit, the report shall additionally contain:
  (i) a description of the deviation and which emission limit or operating limit from which you deviated;
  (ii) Information on the number, duration, and cause (including unknown cause), as applicable, and the corrective action taken; and
  (iii) If the deviation occurred during an annual performance test, provide the date the annual performance test was completed.

(n) For each deviation from an emission limit, operating limit, and monitoring requirement occurring at an individual boiler where you are using a CMS to comply with that emission limit or operating limit, the report shall additionally contain the following information. This includes any deviations from the site-specific plan as required in 40 CFR 63.7505(d).
  (i) The date and time that each deviation started and stopped and a description of the nature of the deviation (i.e. what you deviated from);
  (ii) The date and time that each CMS was inoperative, except for zero (low-level) and high-level checks;
  (iii) The date, time, and duration that each CMS was out of control, including the information in 40 CFR 63.8(c)(8);
  (iv) The date and time that each deviation started and stopped;
  (v) A summary of the total duration of the deviation during ht reporting period and the total duration as a percent of the total source operating time during the reporting period;
  (vi) A characterization of the total duration of the deviations during the reporting period into those that are due to control equipment problems, process problems, other known causes, and other unknown causes;
  (vii) A Summary of the total duration of CMS's downtime during the reporting period and the total duration of CMS downtime as a percent of the total source operating time during the reporting period;
  (viii) A brief description of the source for which there was a deviation; and
  (ix) A description of any changes in CMS's, processes, or controls since the last reporting period for the source for which there was a deviation.

In addition to submitting the compliance report to this Office, the permittee shall

submit the compliance report electronically using CEDRI that is accessed through the EPA's Central Data Exchange (CDX) (www.epa.gov/cdx).

16. **Notification requirements** <40 CFR 63.7545> [Rule 3D .1111] - The permittee shall submit to this Office all of the notifications in 40 CFR 63.7(b) and (c), 63.8(e), (f)(4) and (6), and 63.9(b) through (h) that are applicable to your facility. In addition, the permittee shall submit the following notifications:

    (a) A Notification of Intent to conduct a performance test at least 60 days before the performance test is scheduled to begin;
    (b) A Notification of Compliance Status according to 40 CFR 63.9(h)(2)(ii). For the initial compliance demonstration for each boiler, the permittee shall submit the Notification of Compliance Status, including all performance test results and fuel analyses, before the close of business on the 60th day following the completion of all performance test and/or other initial compliance demonstrations for all boilers at the facility according to 63.10(d)(2). The Notification of Compliance Status report must contain all of the following information:
        (i) A description of the affected boilers, including identification of which subcategories the unit is in, the design heat capacity of the unit, a description of the add-on controls used on the unit to comply with Subpart DDDDD, description of the fuel(s) burned, and justification for the selection of fuel(s) burned during the compliance demonstrations;
        (ii) Summary of the results of all performance tests and fuel analyses, and calculations conducted to demonstrate initial compliance including all established operating limits, including:
            (A) Identification of whether you are complying with the PM emission limit or the alternative TSM emission limit; and
            (B) Identification of whether you are complying with the output-based emission limits or the heat input-based (i.e., lb/MMBtu or ppm) emission limits.
        (iii) A summary of the maximum CO emission levels recorded during the performance test to show that you have met any applicable emission standard in Table 2 to Subpart DDDDD, if you are not using a CO CEMS to demonstrate compliance;
        (iv) Identification of whether you plan to demonstrate compliance with each applicable emission limit through performance testing, a CEMS, or fuel analysis;
        (v) Identification of whether you plan to demonstrate compliance by emissions averaging and identification of whether you plan to demonstrate compliance by using efficiency credits through energy conservation:
            (A) If you plan to demonstrate compliance by emission averaging, report the emission level that was being achieved or the control technology employed on January 31, 2013.
        (vi) A signed certification that you have met all applicable emission limits and work practice standards;
        (vii) If you had a deviation from any emission limit, work practice standard, or operating limit, the permittee shall also submit a description of the deviation, the duration of the deviation, and the corrective action taken in the Notification of Compliance Status report; and
        (viii) A certification of compliance, as applicable, and signed by a responsible official

stating:
(A) "This facility complies with the required initial tune-up according to the procedures in 40 CFR 63.7540(a)(10)(i) through (vi)."
(B) "This facility has had an energy assessment performed according to 40 CFR 63.7530(e)."
(C) Except for units that burn only natural gas, refinery gas, or other gas 1 fuel, or units that qualify for a statutory exemption as provided in section 129(g)(1) of the Clean Air Act, include the following: "No secondary material that are solid waste were combusted in any affected unit."

G. Monitoring requirement for moisture content of biomass fuel [Rule 3Q .0508(f)(1)]

1. **Testing** - The permittee shall sample the biomass fuel on a quarterly basis to determine the moisture content of the fuel. The sampling shall be conducted according to the requirements detailed in 40 CFR 63.7521 and Table 6 to Subpart DDDDD.

2. **Recordkeeping requirements** - For each quarterly sample, the permittee shall record the following:
   (i) The date and time of the sampling;
   (ii) The date the analysis was performed;
   (iii) The name of the company or entity that performed the analysis;
   (iv) The analytical techniques of method used to collect and analyze the sample;
   (v) The result of the analysis; and
   (vi) The moisture content based on an as-fired annual heat input basis.

3. **Notification requirement** - The permittee shall notify this Office if the results of the fuel moisture content analysis performed pursuant to condition 3.5(G)(1) are less than 40% based on an as-fired annual heat input basis. Moisture content of less than 40% for the biomass fuel is considered a fuel switch as detailed in 40 CFR 63.7545(h) and subject to the applicable emissions specified in 40 CFR 63.7500. The permittee shall notify this Office within 30 days of the switch and provide the following information:
   (i) The name of the owner/operator of the affected source, the location of the affected source, the boiler(s) that have switched fuels, and the date of the notice;
   (ii) The current applicable boiler subcategory under Subpart DDDDD; and
   (iii) The date upon which the fuel switch occurred.

4. **Reporting requirement** - The permittee shall submit the moisture content sampling results as described in condition **3.5(G)(2)** to this Office by January 30th for the period July through December, and by July 30th for the period January through June.

3.6 ES-62F Steam and Control Systems, Inc. (SCS) Hybrid Suspension Grate designed to burn wet biomass/bio-based solid Gasified-wood Boiler, controlled by Multicyclone 62F1 and ESP 62F2

The following provides a summary of the limits and/or standards for the emission source(s) described above.

Regulated Pollutant	Applicable Standard	Applicable Regulation
Particulate Matter	0.03 lb/MMBtu	40 CFR 51.166 and 3D .0530
Nitrogen Oxides	0.30 lb NO_x/MMBtu	40 CFR 51.166 and 3D .0530
Sulfur Dioxide	2.3 lb SO_2 /MMBtu	3D .0516
Carbon Monoxide	0.43 lb CO/MMBtu	40 CFR 51.166 and 3D .0530
HCL	0.022 lb/MMBtu	40 CFR 63.7500(a)(1), Table 2, and 3D .1111
Mercury	5.7E-06 lb/MMBtu	40 CFR 63.7500(a)(1), Table 2, and 3D .1111
Carbon Monoxide (or demonstrate compliance with a continuous emissions monitor (CEM))	3,500 ppm by volume on a dry basis corrected to 3 percent oxygen, 3-run average; (or 900 ppm by volume on a dry basis corrected to 3 percent oxygen, 30-day rolling average)	40 CFR 63.7500(a)(1), Table 2, and 3D .1111
Filterable Particulate Matter (or Total Selected Metals (TSM))	0.44 lb/MMBtu (or 4.5E-04 lb/MMBtu)	40 CFR 63.7500(a)(1), Table 2, and 3D .1111
N/A	Natural gas usage shall be limited to an annual capacity factor of 10 percent or less	40 CFR 60.44b(k) and 3D .0524
Visible Emissions	20 percent opacity	40 CFR 60.43b(f) and 3D .0524
Visible Emissions	10 percent opacity (daily block average)	40 CFR 63.7525(c), Table 8, and 3D .1111

A. Prevention of Significant Deterioration [Rule 3D .0530]

1. **Standard for Particulate Matter** [Rule 3D .0530] - Total particulate matter emissions shall not exceed 0.03 pounds per million Btu heat input as determined by U.S. EPA Reference Method 5 (40 CFR 60 - Appendix A, amended October 17, 2000, or the most recent approved version of the method at the time of testing). This limit shall be met with the use of a multicyclone followed by an electrostatic precipitator as Best Available Control Technology.

   This standard shall apply at all times except during periods of startup, shutdown or malfunction.

2. **Testing** [Rules 3D .2602(i) and 3Q .0508(b) and (n)(2)] - The permittee shall follow the testing requirements specified in condition **3.1(C)(2)**.

3. **Periodic monitoring and recordkeeping requirements** [Rules 3D .0524 and 3Q .0508(f)] - The permittee shall monitor opacity as a surrogate to ensure the proper operation of the multicyclone and electrostatic precipitator. The permittee shall install, calibrate, maintain, and operate a continuous opacity monitor (COM) and record the output of the system in accordance with NSPS Subpart Db, 40 CFR 60.48b(a). The procedures under 40 CFR 60.13 shall be followed for installation, evaluation, and operation of the COM used to measure the opacity of emissions discharged to the atmosphere pursuant to NSPS Subpart Db, 40 CFR 60.48b(e) and Rule 3D .0524.

4. **Reporting requirement** [Rules 3D .0524 and 3Q .0508(f)(1)] - The permittee shall comply with all applicable recordkeeping and reporting requirements specified in 40 CFR 60.49b, including, but not limited to, the requirement to submit excess emissions reports for any excess emissions of opacity which occur during the six-month period. These reports shall be submitted no later than January 30th for the period July through December and no later than July 30th for the period January through June. If there are no excess emissions during the semiannual period, the permittee shall submit a report stating that no excess emissions occurred during the reporting period.

5. **Compliance Assurance Monitoring and Recordkeeping requirements for particulate matter** <40 CFR Part 64> [Rules 3D .0614 and 3Q .0508(f)] - In order to demonstrate compliance with the CAM plan for the multicyclone and electrostatic precipitator, the following monitoring and recordkeeping requirements apply:
   (a) The permittee shall monitor opacity as a surrogate to ensure the proper operation of the multicyclone and electrostatic precipitator using the COM required in permit condition **3.6(A)(3)**.
   (b) The outlet opacity shall be continuously monitored to provide data for at least 90% of the operating hours in each steam generating unit day, in at least 27 out of 30 successive steam generating unit days.
   (c) The outlet opacity readings are recorded at least four times equally spaced over an hour for at least 90% of the operating hours.
   (d) The averaging period for the opacity readings shall be six minutes.
   (e) The permittee shall provide initial calibration of the COM in accordance with

manufacturer's recommendation at startup. In addition, quarterly calibration of the COM shall be performed in accordance with manufacturer's recommended procedure. Preventative maintenance of the COM shall be performed on an annual basis.
An excursion is defined as data monitored greater than 12 percent opacity for more than three consecutive hours during an operation day, except for startup and shutdown. An excursion will trigger an investigation into its cause and the appropriate corrective action will be performed and documented.

6. **Reporting Requirement** <40 CFR 64.9> [Rules 3D .0614 and 3Q .0508(f)(1)] - The permittee shall submit the following report:
   (a) A summary report of the compliance assurance monitoring required in permit condition **3.6(A)(5)** including, as a minimum:
      (i) Summary information on the number, duration and cause (including unknown cause, if applicable) of excursions or exceedances, as applicable, and the corrective actions taken;
      (ii) Summary information on the number, duration and cause (including unknown cause, if applicable) for monitor downtime incidents (other than downtime associated with calibration checks, if applicable); and
      (iii) A description of the actions taken to implement a QIP (if required by this Office) during the reporting period as specified in 40 CFR 64.8. Upon completion of a QIP, the owner or operator shall include in the next summary report documentation that the implementation of the plan has been completed and reduced the likelihood of similar levels of excursions or exceedances occurring.

   This report shall be received by this Office by January 30th for the period July through December and by July 30th for the period January through June.

B. **Prevention of Significant Deterioration [Rule 3D .0530]**

1. **Standard for Nitrogen Oxides** [Rule 3D .0530] - Total nitrogen oxides emissions shall not exceed 0.30 pounds per million Btu heat input as determined by U.S. EPA Reference Method 7 (40 CFR 60 - Appendix A, amended November 14, 1990, or the most recent approved version of the method at the time of testing). This limit shall be met by the proper operation of the boiler design of low excess air and staged combustion as Best Available Control Technology. Compliance with this limit shall be demonstrated by the installation, operation and maintenance of a continuous emissions monitor (CEM).

   This standard shall apply at all times including periods of startup, shutdown, or malfunction. Compliance with this emission limit is determined on a 30-day rolling average basis.

2. **Testing** [Rules 3D .2602(i) and 3Q .0508(b) and (n)(2)] - The permittee shall follow the testing requirements specified in condition **3.1(C)(2)**.

3. **Monitoring requirements** [Rules 3D .0530 and 3Q .0508(f)] -

(a) The permittee shall install, calibrate, maintain, and operate a continuous monitoring system for measuring nitrogen oxides emissions discharged to the atmosphere and record the output of the system. The continuous monitoring system for nitrogen oxides shall be operated and data recorded during all periods of operation, except for continuous monitoring system breakdowns and repairs.

(b) When nitrogen oxides emission data are not obtained because of continuous monitoring system breakdowns, repairs, calibration checks and zero and span adjustments, emission data will be obtained by using standby monitoring systems, Method 7, Method 7A, or other approved reference methods to provide emission data for a minimum of 75 percent of the operating hours in each steam generating unit day, in at least 22 out of 30 successive steam generating unit days.

4. **Recordkeeping and reporting requirements** [Rules 3D .0530 and 3Q .0508(f)] -

(a) The permittee shall submit written excess emissions reports based on the data recorded by the CEM for nitrogen oxides. This report shall be submitted no later than January 30th for the period July through December and no later than July 30th for the period January through June.

(b) The CEM must be maintained, calibrated, operated and audited in accordance with 40 CFR 60, Appendix F quality assurance procedures. A data assessment report (DAR) which includes as a minimum the results of CEM accuracy assessments and all corrective actions taken when the CEM was determined to be out of control shall be filed with this Office. This report shall be submitted with the excess emissions report no later than January 30th for the period July through December and no later than July 30th for the period January through June.

C. **Sulfur Dioxide Emissions from Combustion Sources [Rule 3D .0516]**

1. **Standard** [Rule 3D .0516] - Emissions of sulfur dioxide from the SCS Boiler shall not exceed 2.3 pounds per million Btu heat input. Sulfur dioxide formed by the combustion of sulfur in fuels, wastes, ores, and other substances shall be included when determining compliance with this standard.

2. **Testing** [Rules 3D .2602(i) and 3Q .0508(b) and (n)(2)] - The permittee shall follow the testing requirements specified in condition **3.1(C)(2)**.

3. **Monitoring, recordkeeping, and reporting requirements** - No monitoring, recordkeeping, or reporting is required for sulfur dioxide emissions from the combustion of wood, natural gas, corn cleanings, corn germ, and dry and wet feed for this source. However, the permittee shall maintain the appropriate records for raw material usage and/or production rates in order to calculate the emissions data needed to fulfill the requirements for condition **2.13** entitled *Annual Emission Inventory Requirements*.

D. Prevention of Significant Deterioration [Rule 3D .0530]

1. **Standard for Carbon Monoxide** [Rule 3D .0530] - Total carbon monoxide emissions shall not exceed 0.43 pounds per million Btu heat input as determined by U.S. EPA Reference Method 10 (40 CFR 60 - Appendix A, amended November 14, 1990, or the most recent approved version of the method at the time of testing). This limit shall be met by the boiler design of low excess air and staged combustion and good operating combustion practices as Best Available Control Technology.

2. **Testing** [Rules 3D .2602(i) and 3Q .0508(b) and (n)(2)] - The permittee shall demonstrate compliance with the carbon monoxide emission limit by conducting an annual performance test. The permittee shall follow the testing requirements specified in conditions **2.22, 2.23, and 3.1(C)(2)**.

3. **Monitoring, recordkeeping, and reporting requirements** - No monitoring, recordkeeping, or reporting is required for carbon monoxide emissions from the combustion of wood, natural gas, corn cleanings, corn germ, and dry and wet feed for this source. However, the permittee shall maintain the appropriate records for raw material usage and/or production rates in order to calculate the emissions data needed to fulfill the requirements for condition **2.13** entitled *Annual Emission Inventory Requirements*.

E. New Source Performance Standards (NSPS) Subpart Db Conditions [Rule 3D .0524]

1. **Standard** <40 CFR 60.49b(d)> [Rule 3D .0524] - Natural gas usage shall be limited to an annual capacity factor of 10% or less in order to avoid the nitrogen oxides standard in Subpart Db in accordance with 40 CFR 60.44b(k).

2. **Monitoring and recordkeeping requirements** <40 CFR 60.49b(d)> [Rules 3D .0524 and 3Q .0508(f)] - The permittee shall record and maintain records of each fuel combusted during each day and calculate the annual capacity factor for natural gas on a semiannual basis. The annual capacity factor is determined on a 12-month rolling average basis with a new annual capacity factor calculated at the end of each calendar month. The annual capacity factor is the ratio between the actual heat input to the boiler from natural gas during a calendar year and the potential heat input to the boiler had it been operated for 8,760 hours during a calendar year at the maximum steady state design heat input capacity.

3. **Reporting requirement** [Rules 3D .0524 and 3Q .0508(f)(1)] - The permittee shall submit records of the annual capacity factor for natural gas, based on a 12-month rolling average by January 30th for the period July through December, and by July 30th for the period January through June.

F. Control of Visible Emissions [Rule 3D .0524] -

1. **Standard** [Rule 3D .0524] - Visible emissions shall not exceed 20% opacity (six-minute

average), except for one six-minute period per hour of not more than 27% opacity, in accordance with 40 CFR 60.43b(f). The opacity standard applies at all times, except during periods of startup, shutdown or malfunction.

2. **Testing** [Rules 3D .2602(i) and 3Q .0508(b) and (n)(2)] - The permittee shall follow the testing requirements specified in condition **3.1(C)(2)**.

3. **Monitoring and recordkeeping requirements** [Rules 3D .0524 and 3Q .0508(f)] - The permittee shall follow the monitoring and recordkeeping requirements specified in condition **3.6(A)(2)**.

4. **Reporting requirement** [Rules 3D .0524 and 3Q .0508(f)(1)] - The permittee shall follow the reporting requirements specified in permit condition **3.6(A)(3)**.

G. **National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters [Rule 3D .1111 and 40 CFR 63 Subpart DDDDD]** - The permittee shall demonstrate compliance with the NESHAP, Subpart DDDDD for the boiler (ES-62F), by complying with all of the requirements under permit condition **3.5(F)** above as applicable.

H. **Monitoring requirement for moisture content of biomass fuel [Rule 3Q .0508(f)(1)]** - The permittee shall comply with the testing, recordkeeping and reporting requirements under permit condition **3.5(G)** above.

3.7 ES-62 Deltak Boiler, Uncontrolled

The following provides a summary of the limits and/or standards for the emission source(s) described above.

Regulated Pollutant	Applicable Standard	ES-#	Applicable Regulation
Particulate Matter	0.33 lb PM/MMBtu	ES-62	3D .0503
Sulfur Dioxide*	2.3 lb SO_2 /MMBtu		3D .0516
Sulfur Dioxide	14.46 lb SO_2/hr	ES-62^{AOS}	40 CFR 51.166 and 3D .0530
Sulfur Dioxide	The daily grind rate shall be limited to 60,000 bushels of corn per day based on a three day average throughput during the alternative operating scenario		
Visible Emissions	20 percent opacity	ES-62	3D .0521(d) - see condition **3.1(C)** for requirements

*3D .0516 - *Sulfur Dioxide Emissions from Combustion Sources* applies to the boilers associated with these emission units. Use of only natural gas assures compliance with this standard. No monitoring, recordkeeping, or reporting is required to assure compliance. However, the permittee shall maintain the appropriate records for raw material usage and/or production rates in order to calculate the emissions data needed for condition **2.13** entitled, *Annual Emission Inventory Requirements*.
AOS = Alternate Operating Scenario

A. Particulates from Fuel Burning Indirect Heat Exchangers [Rule 3D .0503]

1. **Standard/Operation requirements** [Rule 3D .0503] **-**
   (a) **Emission limit for ES-62** - Particulate matter emissions shall not exceed 0.33 lb/MMBtu based on maximum heat input.

2. **Testing** [Rules 3D .2602(i) and 3Q .0508(b) and (n)(2)] - The permittee shall follow the testing requirements specified in condition **3.1(C)(2)**.

3. **Monitoring, recordkeeping, and reporting** - No monitoring, recordkeeping, or reporting is required for particulate matter emissions from the combustion of natural gas for these sources. However, the permittee shall maintain the appropriate records for raw material usage and/or production rates in order to calculate the emissions data needed to fulfill the requirements for condition **2.13** entitled *Annual Emission Inventory Requirements*.

B. **Prevention of Significant Deterioration [Rule 3D .0530]** - This rule applies to ES-62 during the **alternative operating scenario (AOS)** when both ES-62C and ES-62F are

shutdown due to maintenance. The AOS shall occur only during March 1 to May 30 and/or September 1 to November 30. Process exhaust air containing SO_2 normally routed to ES-62C or ES-62F shall be rerouted to the Deltak boiler at all times during the AOS period.

1. **Standard/Operation requirements for ES-62** [Rule 3D .0530] -

   (a) Total sulfur dioxide emissions shall not exceed 14.46 pounds per hour during the AOS.
   (b) The daily grind rate shall be limited to 60,000 bushels of corn per day based on a three day average throughput during the AOS.

2. **Testing** [Rules 3D .2602(i) and 3Q .0508(b) and (n)(2)] - The permittee shall follow the testing requirements specified in condition **3.1(C)(2)**.

3. **Monitoring, recordkeeping, and reporting requirements** - The permittee shall follow the monitoring, recordkeeping, and reporting requirements specified in conditions **3.1(B)(1) through (3)**.

C. **National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters [Rule 3D .1111 and 40 CFR 63 Subpart DDDDD]**

1. **Compliance date** <40 CFR 63.7495> [Rule 3D .1111]
   The permittee must comply with this subpart no later than January 31, 2016.

2. **Work practice standards (Boiler tune-up)** <40 CFR 63.7515 and 63.7540(a)(10)> [Rule 3D .1111]
   The permittee must conduct an initial tune-up of the boiler no later than January 31, 2016. Subsequent to the initial tune-up, the permittee must conduct an annual tune-up to demonstrate continuous compliance. The annual tune-up must be performed no more than 13 months after the previous tune-up and be performed as specified below:

   (a) As applicable, inspect the burner, and clean or replace any components of the burner as necessary (you may delay the burner inspection until the next scheduled unit shutdown). At units where entry into a piece of process equipment or into a storage vessel is required to complete the tune-up inspections, inspections are required only during planned entries into the storage vessel or process equipment;
   (b) Inspect the flame pattern, as applicable, and adjust the burner as necessary to optimize the flame pattern. The adjustment should be consistent with the manufacturer's specifications, if available;
   (c) Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure that it is correctly calibrated and functioning properly (you may delay the inspection until the next scheduled unit shutdown;
   (d) Optimize total emissions of CO. This optimization should be consistent with the manufacturer's specifications, if available, and with any NO_X requirement to which the unit is subject;
   (e) Measure the concentrations in the effluent stream of CO in parts per million, by

volume, and oxygen in volume percent, before and after the adjustments are made (measurements may be either on a dry or wet basis, as long as it is the same basis before and after the adjustments are made). Measurements may be taken using a portable CO analyzer; and

(f) Maintain on-site and submit, if requested by this Office, an annual report containing the information below:
   (i) The concentrations of CO in the effluent stream in parts per million by volume, and oxygen in volume percent, measured at high fire or typical operating load, before and after the tune-up of the boiler or process heater;
   (ii) A description of any corrective actions taken as a part of the tune-up; and
   (iii) The type and amount of fuel used over the 12 months prior to the tune-up, but only if the unit was physically and legally capable of using more than one type of fuel during that period. Units sharing a fuel meter may estimate the fuel used by each unit.

3. **Work practice standards (Energy Assessment)** <Item 4 of Table 3 to Subpart DDDDD of Part 63> [Rule 3D .1111] - The permittee must have a one-time energy assessment performed by a qualified energy assessor no later than January 31, 2016. An energy assessment completed on or after January 1, 2008, that meets or is amended to meet the energy assessment requirements in the permit condition, satisfies the energy assessment requirement. A facility that operates under an energy management program compatible with ISO 50001 that includes the affected units also satisfies the energy assessment requirement. The energy assessment must include the following with extent of the evaluation for items (a) to (e) appropriate for the on-site technical hours listed in 40 CFR 63.7575:

   (a) A visual inspection of the boiler or process heater system;
   (b) An evaluation of operating characteristics of the boiler or process heater systems, specifications of energy using systems, operating and maintenance procedures, and unusual operating constraints;
   (c) An inventory of major energy use systems consuming energy from affected boilers and process heaters and which are under the control of the boiler/process heater owner/operator;
   (d) A review of available architectural and engineering plans, facility operation and maintenance procedures and logs, and fuel usage;
   (e) A review of the facility's energy management practices and provide recommendations for improvements consistent with the definition of energy management practices, if identified;
   (f) A list of cost-effective energy conservation measures that are within the facility's control;
   (g) A list of the energy savings potential of the energy conservation measures identified; and
   (h) A comprehensive report detailing the ways to improve efficiency, the cost of specific improvements, benefits, and the time frame for recouping those investments.

4. **Notification of compliance status** <40 CFR 63.9(h)(2)(ii), 63.7530(d), (e), and (f), and 63.7545(e)> [Rule 3D .1111]

The permittee shall send an initial Notification of Compliance Status to this Office before the close of business on the 60th day following the completion of the initial tune-up of the boiler and the one-time energy assessment. The notification shall include the following information:
(a) A signed certification that you have met all applicable work practice standards;
(b) A certification of compliance signed by the responsible official stating; "This facility complies with the required initial tune-up according to the procedures in 40 CFR 63.7540(a)(10)(i) through (vi)";
(c) A certification of compliance signed by the responsible official stating; "This facility has had an energy assessment performed according to 40 CFR 63.7530(e)" and is an accurate depiction of the facility at the time of the assessment; and
(d) If you had a deviation from any work practice standard, you must also submit a description of the deviation, the duration of the deviation, and the corrective action taken.

5. **Recordkeeping requirements** <40 CFR 63.7555 and 63.7560> [Rule 3D .1111]
The permittee shall maintain files of all information (including all reports and notifications and all documentation supporting initial notifications and notifications of compliance status) required by Subpart DDDDD recorded in a form suitable and readily available for expeditious inspection and review. The files shall be retained for at least 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. At a minimum, the most recent 2 years of data shall be retained on site. The remaining 3 years of data may be retained off site. Such files may be maintained on microfilm, on a computer, on computer floppy disks, on magnetic tape disks, or on microfiche.

6. **Reporting requirements** <40 CFR 63.7550> [Rule 3D .1111]
The permittee shall submit a compliance report to this Office containing the following information:
(a) Company and Facility name and address;
(b) Process unit information;
(c) Date of report and the beginning and ending dates of the reporting period (January 1st through December 31st);
(d) The total operating time during the reporting period; and
(e) The date of the most recent tune-up of the boiler and the date of the most recent burner inspection if it was not done annually and was delayed until the next scheduled or unscheduled boiler shutdown.

The first report is due January 31, 2017 and shall cover the period January 1, 2016 through December 31, 2016. Subsequent reports shall be postmarked or submitted no later than January 31st of each year.

In addition to submitting the compliance report to this Office, the permittee shall submit the compliance report electronically using CEDRI that is accessed through the EPA's Central Data Exchange (CDX) (www.epa.gov/cdx).

3.8 ES-62D Ash Handling System, Controlled by Cyclones 62D-PC and 62D-SC, Fabric Filter 62D-FF, and Scrubber 62D-WS; and ES-WHS Wood Handling System, Uncontrolled

The following provides a summary of the limits and/or standards for the emission source(s) described above.

Regulated Pollutant	Applicable Standard	ES-#	Applicable Regulation
Particulate Matter	0.02 lb PM/hr	ES-62D	40 CFR 51.166 and 3D .0530
Particulate Matter (fugitive)	Fugitive dust emissions from coal handling and storage are to be minimized and all trucks carrying coal or ash shall use tarps or covers to minimize fugitive dust emissions		
Particulate Matter (fugitive)	Fugitive dust emissions from the wood-fuel conveyors shall be minimized by use of covered conveyors	ES-WHS	
Visible Emissions	20 percent opacity	ES-62D, and ES-WHS	3D .0521(d) - see condition **3.1(C)** for requirements

A. Prevention of Significant Deterioration [Rule 3D .0530]

1. **Standard/Operation requirements** [Rule 3D .0530] **-**

   (a) **Emission limit for ES-62D** - Total emissions of particulate matter shall not exceed 0.02 pounds per hour. This limit shall be met with the use of two cyclones, a fabric filter, and a wet scrubber as Best Available Control Technology.

   (b) **Fugitive dust emissions standard for ES-62D** - Fugitive dust emissions from coal handling and storage are to be minimized and all trucks carrying coal or ash shall use tarps or covers to minimize fugitive dust emissions as Best Available Control Technology.

   (c) **Fugitive dust emissions standard for ES-62WHS** - Fugitive dust emissions from the wood-fuel conveyors shall be minimized by use of covered conveyors as Best Available Control Technology.

2. **Testing** [Rules 3D .2602(i) and 3Q .0508(b) and (n)(2)] - The permittee shall follow the

testing requirements specified in condition **3.1(C)(2)**.

3. **Monitoring requirement** [Rule 3Q .0508(f)] - The permittee shall follow the monitoring and recordkeeping requirements for visible emissions in condition **3.1(C)(3)**. In addition to monitoring visible emissions, particulate matter emissions from the ash handling system shall be controlled by the control devices during all periods of operation. To ensure that optimum control efficiency is maintained, the permittee shall perform inspections and preventative maintenance in a manner consistent with good practice for minimizing emissions. As a minimum, the inspection and maintenance requirement must include the following:

   (a) an annual internal inspection of each of the control device's structural integrity; and
   (b) a monthly visual inspection of the system ductwork, and material collection unit for leaks.

4. **Recordkeeping requirement** [Rule 3Q .0508(f)] - The results of all inspections and maintenance performed shall be recorded in a log (written or electronic form). The log shall be maintained on site and shall contain the following records:

   (a) the date and time of actions recorded;
   (b) the results of each inspection; and
   (c) the results of any maintenance performed on the control devices.

5. **Reporting requirement** [Rule 3Q .0508(f)(1)] - The permittee shall submit a summary report of the monitoring requirements specified condition **3.8(A)(3)** to this Office by January 30th for the period July through December, and by July 30th for the period January through June.

Appendix D

PUBLIC NOTICE AND RELATED CORRESPONDANCE

The following individuals were notified via electronic mail at the start of the Public Comment period for the Preliminary Determination Summary for Prevention of Significant Determination for Ingredion Incorporated directing them to the Forsyth County website where they could view the entire document in an electronic format:

Terry Johnson
SIP Regulations and Permitting
U.S. Environmental Protection Agency
Region 4, Atlanta, Georgia

Mark Cuilla
Title V Permits Branch Supervisor
NC Department of Environmental Quality
Division of Air Quality, Raleigh, North Carolina

Dave Cluskey
Plant Manager
Ingredion Incorporated, Winston-Salem Plant

Christopher Lynch
EHS Manager
Ingredion Incorporated, Winston-Salem Plant

J. Dudley Watts, Jr.
Forsyth County Manager

Lee Garrity
Winston-Salem City Manager