

**FORSYTH COUNTY OFFICE OF ENVIRONMENTAL
ASSISTANCE AND PROTECTION
TV RENEWAL – STATEMENT OF BASIS**

Applicant: Ingredion Incorporated, Winston-Salem Plant	Site Location: 4501 Overdale Road	New Permit No. 00732-TV-16	
Technical Contact: Christopher Lynch	Phone: 336-785-8805	Responsible Official: Dave Cluskey	Title: Plant Manager
Agency Reviewer: Jeffrey A. Ebbitt	Signature:	Date:	
Agency Q/A Manager:	Signature:	Primary/Secondary SIC Code(s): 2046	

Date Application received: October 28, 2022	Date Approved:
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FACILITY DESCRIPTION

Ingredion Incorporated operates a corn wet milling facility located about four miles south of the city of Winston-Salem. Raw corn is received and processed via wet milling into a variety of products including sweeteners (glucose), industrial starches, animal feeds, and other products. Products are then shipped in bulk to customers via rail or truck.

Ingredion Incorporated is a major source with respect to Title V because the potential (and actual) emissions of nitrogen oxides (NO_x), sulfur dioxides (SO₂), volatile organic compounds (VOC), and carbon monoxide (CO) from the facility are greater than 100 tons per year. In addition, uncontrolled emissions of particulate matter less than 10 microns in diameter (PM₁₀) are also greater than 100 tons per year. Also, actual emissions of hydrogen chloride, a hazardous air pollutant, are greater than 10 tons per year and the potential combined HAP emissions are greater than 25 tons per year.

The request to renew the permit was received on October 28, 2022, well before the requirement to submit a renewal request nine months before the permit expires in accordance with permit condition **2.26** of the current permit.

The draft renewal permit will go through a 30-day public comment period and a concurrent 45-day review by EPA Region IV. The public comment period will be posted on our website.

I. STATEMENT OF COMPLIANCE

This Office has reviewed the compliance status of this facility. Based on a review of the application and knowledge of this facility gleaned from compliance inspections, the facility is in compliance with all applicable requirements. The applicant has certified that the facility will be in

compliance with all applicable requirements at the time of permit issuance and will continue to comply with these requirements. The applicant has also certified that the facility will be in compliance with all subsequent applicable requirements taking effect during the term of this permit and will meet such requirements on a timely basis.

II. SUMMARY OF EMISSION SOURCES AND CONTROL DEVICES

The following table identifies all emission sources and associated control devices for which the Title V Operating Permit is issued.

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
ES-11A	Corn Receiving (consisting of emission points C, A, B, and S)	W115891 W115894 W115895 W115803	Carter Day Fabric Filter Carter Day Fabric Filter Carter Day Fabric Filter Rolfes Fabric Filter
ES-11B	Corn Cleaning (consisting of emission points D, E, F, and T)	W115896 W115824 W115825 W115832	Carter Day Fabric Filter Air-Cure, Inc. Fabric Filter Donaldson Torit Fabric Filter Rolfes Fabric Filter
ES-25	Mill Products Loading (consisting of emission points H, O, P, Q, U, X, V, and AO)	W248893 W258891 W258896 W258899 W258895 W255897 W258894 W258898	Carter Day Fabric Filter Carter Day Fabric Filter Carter Day Fabric Filter Alanco Environmental Fabric Filter Carter Day Fabric Filter Carter Day Fabric Filter Carter Day Fabric Filter Material System Engineering Fabric Filter
ES-32	Starch Storage and Loading (consisting of emission points K and L)	W328891 W325892	Carter Day Fabric Filter Carter Day Fabric Filter
ES-83	Carbon Storage Silo (consisting of emission point N)	W838891	Donaldson Torit Fabric Filter
ES-85	Filter Aid Storage Silo (consisting of emission point G)	W858893	Donaldson Torit Fabric Filter
ES-14	Steeping (consisting of emission points SA1-8, SB1-8, SI1-3, Y, and M)	None	Some emissions routed through ES-62, ES-62C, or ES-62F

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
ES-22	Steepwater Evaporation	None	Some emissions routed through ES-62, ES-62C, or ES-62F
ES-31	Starch Drying firing natural gas with a total maximum heat input rate of 21.5 MMBtu/hr and two Mueller high Efficiency Process Transfer Cyclones in parallel (consisting of emission points I and J)	W318894 W318896	Two Ducon Wet multi-vane Scrubbers with fan spray nozzles in inlet duct
ES-15	Corn Wet Milling (consisting of Gluten Filter Vacuum Pumps - emission point AA, Fiber Dewatering – through emission point AL, Gluten Dewatering - emission points AF, AG, and AH, Ventilation Fans - emission points AK and AL, Germ Separation - emission point R)	W628893	Advanced Industries Technology Wet Cyclonic Scrubber
ES-21	Gluten Drying and Cooling (consisting of Gluten Dryer with a Fisher-Klosterman, Inc. High Efficiency Process Transfer Cyclone W215891 (Gluten Cooler) routed to emission point R)	W215893 W628893	Fisher-Klosterman, Inc. High Efficiency Cyclone Advanced Industries Technology Wet Cyclonic Scrubber
ES-23	Feed Drying and Cooling (consisting of #1 Feed Dryer, #2 Feed Dryer, and #3 Feed Dryer all routed through emission points Y, M, or EP-62F; and #1 Feed Cooler with two Carborundum High Efficiency Process Transfer Cyclones W235811 and W235812 in parallel, and #2 Feed Cooler with a Fisher-Klosterman, Inc. High Efficiency Process Transfer Cyclone W235815 routed through emission point R)	W235892 W235893 W235813 W628891 W628892 W628851 W628893	Two Carborundum Co. High Efficiency Cyclones Fisher-Klosterman, Inc. High Efficiency Cyclone Two Advanced Industries Technology Wet Cyclonic Scrubbers Swemco Direct Contact Tray Scrubber One Advanced Industries Technology Wet Cyclonic Scrubber

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
ES-24	Germ Drying and Cooling (consisting of #1 Germ Dryer, and #2 Germ Dryer routed through emission points Y, M, or EP-62F)	W245892 W245893 W245895 W245898	Two Paul Mueller Co. High Efficiency Cyclones Two Fisher-Klosterman, Inc. High Efficiency Cyclones
ES-81	Sulfur Burner System (consisting of emission point AI)	W818806	A.H. Lundberg Wet Scrubber
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 PCC Air Heater fired with Natural Gas (11.5 MMBtu/hr maximum heat input)	62SFB1 62SFB2	Zurn Industries Multicyclone Precipitair Pollution Control (PPC) Model 24R-1230-2711 Electrostatic Precipitator
ES-62F	Steam and Control Systems, Inc. (SCS) Hybrid Suspension/Grate Boiler designed to burn wet biomass/bio-based solid 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 (11.5 MMBtu/hr maximum heat input)	62F1 62F2	Zurn Air Systems T-A Mechanical Collector PPC Industries Model 34R-1330-37125 Electrostatic Precipitator
ES-62G	One Temporary Boiler fired with natural gas with a maximum heat input of less than 100 MMBtu/hr and a boiler efficiency rating of 80% or higher	None	None

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
ES-62D	Ash Handling System (emission point EP-Z)	CD-62D-(PC,SC, FF, & WS)	National Conveyors Company, Inc. Primary Cyclone Model A-1141A, Secondary Cyclone Model A-1195-SA, Fabric Filter Model A-1728-P, and Wet Scrubber Model A-1750-1
ES-WHS	Wood Handling System	None	None

III. EMISSION SOURCE-BY-SOURCE EVALUATION

1.0 ES-11A, Corn Receiving, Three (3) Carter Day Fabric Filters and One (1) Rolfes Fabric Filter; and ES-11B, Corn Cleaning, One (1) Carter Day Fabric Filter, One (1) Air-Cure, Inc. Fabric Filter, One (1) Donaldson Torit Fabric Filter, and One (1) Rolfes Fabric Filter

1.0.1 Description

Corn Receiving is a process which involves dry corn being transferred to storage silos primarily from rail cars with a small quantity of corn being received via truck. The corn is then transferred from storage through a cleaning process as needed prior to steeping. The corn unloading station includes conveyors and elevators and three corn storage silos (Corn unloading - emission point C, Corn storage silo #1 - emission point A, Corn storage silo #2 - emission point B, and Corn storage silo #3 - emission point S). The emission points are the exhaust of the respective control devices. All of these units began operation at this facility in 1981 except for Corn Silo #3 which began operation in 1984. Typically only one of the three silos (A, B, or S) operates in tandem with the unloading system (C) at any given time.

Corn Cleaning consists of conveyors used to transport the corn (emission point D), a corn cleaner (emission point E), clean corn hopper and two corn cleaning silos (corn cleaning silo #1 and #2, emission points F and T, respectively). The corn passes through mechanical cleaners designed to separate unwanted material, such as pieces of cobs, sticks, husks, chaff and dust, as well as any foreign matter such as stones. All of these units began operation in 1981 except for Corn Cleaning Silo #2 which began operation in 1984.

Compliance assurance monitoring (CAM) requirements (40 CFR Part 64) may apply to pollutant-specific emission units (PSEUs) located at TV facilities. The requirements of this rule apply to all PSEUs that use a control device; need the control device to achieve

compliance with any emission limitation or standard; and have pre-control device potential emissions of the applicable regulated air pollutant that are equal to or greater than 100% of the amount (in tons per year) required for a source to be classified as a major source (in this case, 100 tons/yr of PM₁₀). However, the rule exempts any PSEU from submitting a CAM plan if the emission limitations or standards were proposed by the U.S. EPA after November 15, 1990 (e.g. MACT or NSPS standards). This isn't the case for any of the equipment in these emission sources as they are only subject to local regulations.

As detailed below, emission points A, B, C, D, E, F, S, and T each have a control device but the allowable emissions limit for PM (which includes PM₁₀) can be met without the use of the control device and therefore, CAM does not apply to any of these PSEUs. In addition, the uncontrolled emissions of PM₁₀ from these sources are each less than 100 tons per year.

1.0.2 *Applicable Regulatory Requirements*

The following provides a summary of the limits and/or standards for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Applicable Standard	ES-#	Applicable Regulation
Particulate Matter	$E = 4.10 \times P^{0.67}$ when operating at process rates equal to or less than 60,000 lb/hr, and $E = (55.0 \times P^{0.11}) - 40$ when operating at process rates greater than 60,000 lb/hr where: E = allowable emission rate (lbs/hr) P = process weight rate in tons/hr.	ES-11A and ES-11B	Sec. 3D-0515 - Particulates from Miscellaneous Industrial Processes

1.1 **Sec. 3D-0515 - Particulates from Miscellaneous Industrial Processes**

This rule was promulgated for emissions of particulate matter from any stack, vent, or outlet of any industrial process for which no other emission control standards are applicable.

1.1.1 *Regulatory Analysis*

The allowable emission rate of PM for process rates up to 60,000 lbs/hr is determined by the following equation:

$$E = 4.10 \times P^{0.67}$$

and the allowable emission rate of PM for process rates greater than 60,000 lbs/hr is determined by the following equation:

$$E = [(55.0 \times P^{0.11}) - 40]$$

where: E = allowable emission rate for particulate matter in lb/hr, and
P = process weight rate in tons/hr

The allowable emission rate at any time is based on the actual process rate. The applicant only needs to show compliance with the higher allowable emission rate at maximum potential to ensure compliance with the rules.

The process weight per hour means the total weight of all materials introduced into any specific process that may cause any emission of particulate matter. In this case, the corn is the only material that could produce particulate matter and is the only weight considered. Each emission point has a different process rate for corn and these numbers are given below:

<u>Emission point</u>	<u>Max. Process rate (tons/hr)</u>
C, A, B, S (Corn Receiving)	700
D, E, F, T (Corn Cleaning)	182

Therefore, the **allowable emission rates are:**

$$E = [(55.0 \times 700^{0.11}) - 40] = 73.1 \text{ lb/hr each for emission points C, A, B, and S, and}$$

$$E = [(55.0 \times 182^{0.11}) - 40] = 57.5 \text{ lb/hr each for emission points D, E, F, and T}$$

The uncontrolled emission factor for these processes was obtained from AP-42, Table 9.9.1-1 for grain elevators dated March 2003. The uncontrolled PM emission factor for emission points A, B, C, and S is 0.032 lb/ton of grain handled or processed by railcar (SCC 3-02-005-53). The uncontrolled PM emission factor for emission points D, E, F, and T is 0.061 lb/ton for headhouse and grain handling (SCC 3-02-005-30).

This would give the following uncontrolled emission rates:

$$0.032 \text{ lb/ton} \times 700 \text{ tons/hr} = 22.4 \text{ lb/hr for each of the emission points A, B, C, and S; and}$$

$$0.061 \text{ lb/ton} \times 182 \text{ tons/hr} = 11.1 \text{ lb/hr for each of the emission points D, E, F, and T}$$

All of the emission sources are able to demonstrate compliance with the allowable PM emission limit without the use of their respective control devices and the potential, before control emission rates are less than 100 tpy. Therefore, CAM does not apply.

1.2 Monitoring Requirements

The applicant shall follow the requirements for monitoring the visible emissions for the control devices associated with these emission sources as a surrogate parameter to ensure compliance with the particulate matter standards. These requirements are identified in Section **V.1.2**.

1.3 Recordkeeping Requirements

The applicant shall follow the recordkeeping requirements specified in Section **V.1.2** for visible emissions.

1.4 Reporting Requirements

The applicant shall follow the reporting requirements specified in Section **V.1.3** for visible emissions.

1.5 Alternative Operating Scenario

There is no alternative operating scenario for this equipment.

1.6 Other Specific Conditions

Excess emissions reporting and malfunctions shall be reported in accordance with Sec. 3D-0535 - *Excess Emissions Reporting and Malfunctions*.

2.0 *ES-25, Mill Products Loading, Six (6) Carter Day Fabric Filters, One (1) Alanco Environmental Fabric Filter, and One (1) Material System Engineering Fabric Filter; and ES-32, Starch Storage and Loading, Two (2) Carter Day Fabric Filters; and ES-83, Carbon Storage, One Donaldson Torit Fabric Filter; and ES-85, Filter Aid Silo, One Donaldson Torit Fabric Filter*

2.0.1 *Description*

In the mill products loading (MPL) operation, dry corn germ, dry corn gluten meal, and dry corn gluten feed are received from their respective processes, stored in silos, and loaded to bulk trucks or rail cars for shipment to customers. Processes included are the MPL dust collector (X), gluten silo (O), feed silos #1 (P) and #2 (Q), inline feed silo (U), inline germ silo (V), #1 germ silo (H), and the railcar transport blower(AO). The railcar transport blower is used to transfer dry corn gluten meal and/or feed from a railcar to

their respective MPL storage silos. This process is only run occasionally and a requirement for the permittee to check visible emissions every time it is in operation will be included in the air quality permit. In 2009, the applicant requested, and was granted, an alternative scenario with regard to the visible emissions check for these emission sources. The permit includes a condition that allows an alternative to performing a qualitative observation each time the sources are in operation. The applicant 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.

In the starch storage and loading operation (Starch Loading Dust System, L), starch is pneumatically transferred from starch drying (ES-31) to a storage silo (Starch Silo, K) and periodically loaded from storage to shipment via bulk trucks or rail cars.

In the carbon storage operation (Carbon Silo, G), activated carbon is received on site in bulk and stored for use in the manufacturing process.

In the filter aid storage operation (Filter Aid Silo, N), filter aid is received on site in bulk and stored for use in manufacturing process.

Each of these processes is a source of particulate matter. As detailed below, emission points H, V, O, N, P, Q, U, L, X, K, G, and AO each have a control device (fabric filter) but the allowable emissions limit for PM (which includes PM₁₀) for all the emission points except G and N can be met without the use of the control device. In addition, the uncontrolled emissions of PM₁₀ from all of these sources are each less than 100 tons per year when taking into account the federally enforceable production limit of 29,200,000 bushels/year. Therefore, CAM does not apply to these PSEUs.

2.0.2 Applicable Regulatory Requirements

The following provides a summary of the limits and/or standards for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Applicable Standard	ES-#	Applicable Regulation
Particulate Matter	$E = 4.10 \times P^{0.67}$ when operating at process rates equal to or less than 60,000 lb/hr, and	ES-25, ES-32, ES-83, and ES-85	Sec. 3D-0515 - Particulates from Miscellaneous Industrial Processes

Regulated Pollutant	Applicable Standard	ES-#	Applicable Regulation
	<p>$E = (55.0 \times P^{0.11}) - 40$ when operating at process rates greater than 60,000 lb/hr</p> <p>where: E = allowable emission rate (lbs/hr) P = process weight rate in tons/hr.</p>		

2.1 Sec. 3D-0515 - Particulates from Miscellaneous Industrial Processes

This rule was promulgated for emissions of particulate matter from any stack, vent, or outlet of any industrial process for which no other emission control standards are applicable.

2.1.1 Regulatory Analysis

The allowable emission rate of PM for process rates up to 60,000 lbs/hr is determined by the following equation:

$$E = 4.10 \times P^{0.67}$$

and, the allowable emission rate of PM for process rates greater than 60,000 lbs/hr is determined by the following equation:

$$E = [(55.0 \times P^{0.11}) - 40]$$

where: E = allowable emission rate for particulate matter in lb/hr, and
P = process weight rate in tons/hr

The allowable emission rate at any time is based on the actual process rate. The applicant only needs to show compliance with the higher allowable emission rate at maximum potential to ensure compliance with the rules. The process weight per hour means the total weight of all materials introduced into any specific process that may cause any emission of particulate matter. In this case, the dry corn germ, dry corn gluten meal, dry corn gluten feed, starch, activated carbon, and filter aid are the only materials that could produce particulate matter and are the only weights considered. Each emission point has a different process rate and these numbers are listed below:

<u>Emission point</u>	<u>Max. Process rate (tons/hr)</u>
H (#1 Germ Silo)	6.2
V (Inline Germ Silo)	6.2
O (Gluten Silo)	4.8
G (Carbon Silo)	7.0

P (#1 Feed Silo)	17.1
U (Inline Feed Silo)	17.1
Q (#2 Feed Silo)	17.5
L (Starch Loading Dust System)	50.0
X (MPL Dust Collector)	150.0
K (Starch Silo)	12.5
N (Filter Aid Silo)	3.0
AO (Railcar Transport Blower)	15.0

Therefore, the **allowable emission rates** are:

$$E = 4.1 \times 6.2^{0.67} = 13.9 \text{ lb/hr each for emission points H and V;}$$

$$E = 4.1 \times 4.8^{0.67} = 11.7 \text{ lb/hr for emission point O;}$$

$$E = 4.1 \times 7.0^{0.67} = 15.1 \text{ lb/hr for emission point G;}$$

$$E = 4.1 \times 17.1^{0.67} = 27.5 \text{ lb/hr each for emission point P and U;}$$

$$E = 4.1 \times 17.5^{0.67} = 27.9 \text{ lb/hr for emission point Q;}$$

$$E = [(55.0 \times 50.0^{0.11}) - 40] = 44.6 \text{ lb/hr for emission point L;}$$

$$E = [(55.0 \times 150.0^{0.11}) - 40] = 55.4 \text{ lb/hr for emission point X;}$$

$$E = 4.1 \times 12.5^{0.67} = 22.3 \text{ lb/hr for emission point K;}$$

$$E = 4.1 \times 3.0^{0.67} = 8.56 \text{ lb/hr for emission point N; and}$$

$$E = 4.1 \times 15^{0.67} = 25.2 \text{ lb/hr for emission point AO}$$

The emission factors for all of these processes, except for the starch loading dust collector "L", carbon storage "G", and Filter aid silo "N", were obtained from AP-42, Table 9.9.7-1 for corn wet milling operations dated January 1995. The controlled emission factor for these processes is 0.0014 lb/ton and is for starch storage bins (SCC 3-02-014-07). The starch storage bins emission factor was chosen to represent all these processes because the starch is the finest product and represents a more conservative estimate of emissions. The AP-42 emission factor is for starch storage bins with a fabric filter so the applicant divided out the control efficiency of 99.0% to calculate an uncontrolled emission factor. This results in an uncontrolled emission factor of 0.14 lb/ton by the equation: $(0.0014\text{lb/ton})/(1 - 0.99)$.

The controlled emission factor for the starch loading dust collector "L" was obtained from AP-42, Table 9.9.7-1 for corn wet milling operations dated January 1995. The emission factor is 0.00049 lb/ton and is for starch bulk loadout (SCC 3-02-014-08). The AP-42 emission factor for the starch bulk loadout operation includes control by a fabric filter so, the applicant divided out the control efficiency of 99.0% to calculate an uncontrolled emission factor. This results in an uncontrolled emission factor of 0.049 lb/ton by the equation: $(0.00049\text{lb/ton})/(1 - 0.99)$.

The uncontrolled emission factor for the carbon storage silo “G” and filter aid storage silo “N” was obtained from Air Pollution Engineering Manual, 1992 Edition (aka AP-40), page 527, Table 4 and a compliance certification drafted by this Office and dated 02/02/1991. The uncontrolled emission factor is 20 lb/ton.

The uncontrolled potential emissions (tons/yr) were determined taking into consideration the federally enforceable limit of 29,200,000 bushels/year of corn and converting this limit to the amount of commercial tons of dry product. The applicant has submitted a request to keep this information confidential because it contains trade secrets that if made public could possibly hurt their business in a competitive manner. The potential operation rate in days/year is calculated based on the amount of commercial tons of dry product. This information was deemed to be confidential and is kept out of the public files and kept in a locked cabinet. The emission rates as a result of these calculations are as follows:

0.9 lb/hr each for emission points H and V;

0.7 lb/hr for emission point O;

2.4 lb/hr each for emission points P and U;

2.5 lb/hr for emission point Q;

2.5 lb/hr for emission point L;

21.0 lb/hr for emission point X;

1.8 lb/hr for emission point K;

60.0 lb/hr for emission point N;

140.0 lb/hr for emission point G; and

2.1 lb/hr for emission point AO

All of the emission points, except G and N are able to demonstrate compliance with the allowable PM emission limit without the use of their respective control devices. The fabric filters for emission points N and G are rated at 99% efficiency. Therefore, the controlled emission rate for these emission points is calculated as follows:

140.0 lb/hr x 0.01 = 1.4 lb/hr for emission point G; and

60.0 lb/hr x 0.01 = 0.6 lb/hr for emission point N

Therefore, the use of the fabric filters is required in order for emission points G and N to comply with this requirement.

The uncontrolled potential emissions (tons/yr) were determined by taking into consideration the federally enforceable limit of 29,200,000 bushels/year of corn and

converting this limit to the amount of commercial tons of dry product. The applicant has submitted a request to keep this information confidential because it contains trade secrets that if made public could possibly hurt their business in a competitive manner. The potential operation rate in days/year was calculated based on the amount of commercial tons of dry product. This information was deemed to be confidential and is kept out of the public files and kept in a locked cabinet. The uncontrolled emission rates as a result of these calculations are as follows:

- 4.0 tons/yr each for emission points H and V;*
- 3.0 tons/yr for emission point O;*
- 10.0 tons/yr each for emission points P, and U;*
- 11.0 tons/yr for emission point Q;*
- 3.0 tons/yr for emission point L;*
- 17.0 tons/yr for emission point X;*
- 7.0 tons/yr for emission point K;*
- 20.0 tons/yr for emission point N;*
- 10.0 tons/yr for emission point G; and*
- 0.3 tons/yr for emission point AO*

Even though the control devices are only needed for emission points G and N to demonstrate compliance with the allowable PM limit, the uncontrolled emissions from each of the emission points while taking into account the production limit are less than 100 tons per year. Therefore, CAM does not apply to any of these emission sources.

2.2 Monitoring Requirements

The applicant shall follow the requirements for monitoring the visible emissions for the control devices associated with these emission sources as a surrogate parameter to ensure compliance with the particulate matter standards. These requirements are identified in Section **V.1.2**.

However, the Railcar Transport Blower (AO), Carbon storage silo (N), and Filter Aid storage silo (G) are used infrequently, so the applicant shall perform a qualitative visual observation of the stack ducting emissions from these sources once per day each day that the source is operating. As noted above, the applicant may, as an alternative to performing a qualitative observation, perform a monthly preventative maintenance inspection of the fabric filters.

2.3 Recordkeeping Requirements

The applicant shall follow the recordkeeping requirements specified in Section **V.1.2** for visible emissions.

For the Railcar Transport Blower (AO), the Carbon storage silo (N), and the Filter Aid storage silo (G), 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 contain the following records: the date and time of visual observation; the person(s) who performed visual observation; the results of the visual observation (note color, duration, density (heavy or light), and include identifying stacks where visible emissions occurred); any actions taken to reduce the visible emissions; and the date and time a qualitative observation can't be obtained due to adverse weather conditions or darkness.

As an alternative to performing a qualitative observation noted above, the applicant may perform a monthly preventative maintenance inspection of the fabric filters. The preventative maintenance inspections shall include the following items: the date and time of preventative monitoring inspection; the person(s) who performed inspections; the results of the preventative maintenance inspections; any corrective actions taken as a result of the preventative maintenance inspections.

2.5 Reporting Requirements

The applicant shall follow the reporting requirements specified in Section **V.1.3** for visible emissions.

In addition, the applicant shall submit a summary report of the monitoring requirements for emission points N, G, and AO 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 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.

2.6 Alternative Operating Scenario

There is no alternative operating scenario for this equipment.

2.7 Other Specific Conditions

Excess emissions reporting and malfunctions shall be reported in accordance with Sec. 3D-0535 - *Excess Emissions Reporting and Malfunctions*.

3.0 ES-31, Starch Drying, Two (2) Ducon Wet Multi-vane Scrubbers

3.0.1 Description

Starch slurry from ES-15 is dewatered in a centrifuge then sent to a dryer where the starch is flash dried and then pneumatically conveyed to storage (ES-32). The two

Mueller high efficiency cyclones are for product collection/transfer rather than for control of particulates and are considered part of the process. The dried starch passes through the cyclones and the product collected goes on to Starch Storage and Loading (ES-32). The particulates not captured by the cyclones are then routed to the wet scrubbers for control.

This emission source is a direct-fired unit, meaning the combustion gases do come into direct contact with the process emissions. Therefore, it doesn't meet the definition of a process heater in Subpart DDDDDD and isn't subject to the Boiler MACT.

3.0.2 Applicable Regulatory Requirements

The following provides a summary of the limits and/or standards for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Applicable Standard	ES-#	Applicable Regulation
Particulate Matter	$E = 4.1 \times P^{0.67}$ where: E = allowable emission rate (lbs/hr) P = process weight rate in tons/hr.	ES-31	Sec. 3D-0515 - Particulates from Miscellaneous Industrial Processes
Sulfur Dioxide *	2.3 lb SO ₂ /MMBtu		Sec. 3D-0516 - Sulfur Dioxide Emissions from Combustion Sources

*This rule 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 applicant shall maintain the appropriate records for raw material usage and/or production rates in order to calculate the emissions data needed for permit condition **2.13** entitled, *Annual Emission Inventory Requirements*.

3.1 Sec. 3D-0515 - Particulates from Miscellaneous Industrial Processes

This rule was promulgated for emissions of particulate matter from any stack, vent, or outlet of any industrial process for which no other emission control standards are applicable.

3.1.1 Regulatory Analysis

The allowable emission rate of PM for process rates up to 60,000 lbs/hr is determined by the following equation:

$$E = 4.10 \times P^{0.67}$$

where: E = allowable emissions rate for particulate matter in lb/hr, and
P = process weight rate in tons/hr

The process weight per hour means the total weight of all materials introduced into any specific process that may cause any emission of particulate matter. In this case, the wet starch cake is the only material that could produce particulate matter and is the only weight considered. The process rate for ES-31 is 25,000 lbs/hr or 12.5 tons/hr as noted below:

<u>Emission points</u>	<u>Process rate (tons/hr)</u>
I and J (W318894 and W318896)	12.5 total for each emission point

Therefore, the allowable emission rates are:

$$E = 4.10 \times 12.5^{0.67} = 22.3 \text{ lb/hr or } 11.2 \text{ lb/hr each for emission points I and J}$$

The emission factor for these processes was obtained from AP-42, Table 9.9.7-1 for corn wet milling operations dated January, 1995. The controlled emission factor is 0.59 lb/ton and is for starch drying flash dryers (SCC 3-02-014-10, -12). The emission factor is for flash dryers with a wet scrubber so the applicant divided out the control efficiency of 95% for wet scrubbers to calculate an uncontrolled emission factor. This results in an uncontrolled emission factor of 11.8 lb/ton by the equation: $(0.59 \text{ lb/ton}) / (1 - 0.95)$.

This would give the following uncontrolled emission rate:

$$11.8 \text{ lb/ton} \times 12.5 \text{ tons/hr} = 147.5 \text{ lb/hr total or } 73.8 \text{ lb/hr each for emission points I and J}$$

The controlled emission rate is calculated in the following manner:

$$12.5 \text{ ton/hr} \times 0.59 \text{ lb/ton} = 7.4 \text{ lb/hr total or } 3.7 \text{ lb/hr each for emission points I and J}$$

The wet scrubbers are needed to ensure compliance with the allowable PM limit from these emission points. These scrubbers operate in parallel and half of the emissions are routed to each scrubber. The applicant calculated the uncontrolled potential emissions on a yearly basis by taking into consideration the federally enforceable limit of 29,200,000 bushels/year of corn and converting this limit to the amount of commercial tons of dry product. The applicant has submitted a request to keep this information confidential because it contains trade secrets that if made public could possibly hurt their business in a competitive manner. The potential operation rate in days/year was calculated based on the amount of commercial tons of dry product. This information was deemed to be confidential and is kept out of the public files and kept in a locked cabinet. The potential uncontrolled emission rate (ton/yr) as a result of these calculations is as follows:

$$311.9 \text{ ton/yr for emission points I and J.}$$

Each of these processes is subject to the PM standard and need the wet scrubbers to comply with this standard. Therefore, CAM does apply to each of these PSEUs because the uncontrolled emissions of PM from these sources are each greater than 100 tons per year when taking into account the emissions are based on the federally enforceable limit of 29,200,000 bushels/year. CAM requirements are in the current permit and are detailed below.

3.2 Monitoring Requirements

3.2.1 Compliance Assurance Monitoring required for compliance with Sec. 3D-0515 – Particulates from Miscellaneous Industrial Products

The applicant's CAM plan involves three different measures to ensure compliance with the particulate matter standard.

First, the applicant shall conduct a visible observation of each of the stacks on a monthly basis. 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.

Second, the applicant 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.

Third, the applicant shall conduct an annual internal inspection of the 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 systems 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.

3.3 Recordkeeping Requirements

The results of the CAM activities in Section **IV.3.2** above shall be recorded in a log (written or electronic form). The log shall be maintained on site and shall contain a record visible observations conducted for each of the stacks of ES-31 and any corrective actions taken to mitigate emissions. The log shall also contain a record of the presence or absence of scrubber flow water to Scrubbers W318894 and W318896 during operation of ES-31. In addition, the log shall contain a record of the validation dates of the flow sensing device and a record of the findings of the validation performed. The log shall also contain a record of the dates of the annual internal inspection of the control devices, the inspection results, and a record of the any corrective action taken as a result of the inspections.

3.4 Reporting Requirements

The applicant shall submit a summary report of the CAM requirements specified in Section IV.3.2 to this Office by January 30th and July 30th for the preceding six-month period.

3.5 Alternative Operating Scenario

There is no alternative operating scenario for this equipment.

3.6 Other Specific Conditions

Excess emissions reporting and malfunctions shall be reported in accordance with Sec. 3D-0535 - *Excess Emissions Reporting and Malfunctions*.

4.0 ***ES-15, Wet Milling, One (1) Advanced Industries Technology Wet Cyclonic Scrubber; and ES-21, Gluten Drying and Cooling, Two (2) Fisher-Klosterman, Inc. High Efficiency Cyclones and One (1) Advanced Industries Technology Wet Cyclonic Scrubber; and ES-23, Feed Drying and Cooling, Four (4) Carborundum Co. High Efficiency Cyclones, Two (2) Fisher-Klosterman, inc. High Efficiency Cyclones, Three (3) Advanced Industries Technology Wet Cyclonic Scrubbers, One (1) Swemco Direct Contact Tray Scrubber; and ES-24, Germ Drying and Cooling, Two (2) Paul Mueller Co. High Efficiency Cyclones, Three (3) Fisher-Klosterman, Inc. High Efficiency Cyclones, Two (2) Carborundum Co. High Efficiency Cyclones, Two (2) Advanced Industries Technology Wet Cyclonic Scrubbers, One (1) Swemco Direct Contact Tray Scrubber***

4.0.1 *Description*

Steeped corn from ES-14 is milled and separated into germ, gluten, feed, and starch in the Wet Milling process. The wet gluten meal, wet fiber, and wet germ are then dried in steam tube dryers, cooled and pulverized (dry gluten meal and dry fiber only) in ES-21, ES-23, and ES-24 respectively, and then sent to storage silos in the Mill Products Loading area (ES-25).

Control Strategy:

ES-15 - Emission point AA consists of emissions from the vacuum pump seal water used in dewatering gluten. The pH of the vacuum pump seal water is controlled to achieve 75% reduction of SO₂ emissions. Emission point AC consists of SO₂ and trace VOC emissions from the fiber dewatering process and is uncontrolled. Emissions points AF, AG, and AH consist of SO₂ and trace VOC emissions from gluten dewatering and are uncontrolled. Emission points AK and

AL consist of SO₂ and trace VOC emissions from the ventilation fans in the Wet Milling Process area and are uncontrolled. Emission point R consists of emission from the Germ Separation unit.

ES-21 - The gluten dryer exhausts to a high efficiency cyclone and the gluten is cooled then separated by a process transfer cyclone (emissions routed to EP-R) before it is routed to the gluten silo. PM emissions are reduced by both cyclones and the exhaust is routed to the Mill Products Scrubber (Advanced Industries) (EP-R) where SO₂ emissions are reduced by controlling the pH of the scrubber water.

ES-23 - A portion of the exhaust from this source is routed through various control devices then on to the solid fuel, gasified wood, or Deltak boiler for control of odor (EP-Y, 62F, or M). The other portion is routed through process transfer cyclones then on to the Mill Products Scrubber for control of SO₂ emissions. The control strategy is as follows:

Route through Boiler - PM, SO₂, and trace VOC emissions from each of the three feed dryers are routed through high efficiency cyclones. The exhaust from the #1 and #2 Feed Dryer cyclones are then routed through the #1 Feed Scrubber (W628891) and then tied in with the exhaust from the #2 Feed Scrubber to exhaust through the DC Scrubber (W628851). The exhaust from this scrubber is then routed to the solid fuel, wood, or Deltak boiler for odor control. The exhaust from the #3 Feed Dryer cyclone is routed through the #2 Feed Scrubber (W628892) where the exhaust is tied in with the exhaust from the #1 Feed Scrubber and then on to either the Keeler (ES-62C) or the SCS (ES-62F) boilers for odor control.

Route through Mill Products Scrubber - The dry feed is cooled and separated by three process transfer cyclones. Feed Cooler #1 exhaust is split between two cyclones (W235811 and W235812) and Feed Cooler #2 exhausts through W235815. PM emissions are reduced by the cyclones and the exhaust is then routed through the Mill Products Scrubber. These emissions include PM, SO₂, and trace VOC emissions. SO₂ emissions are reduced by 75% through the control of the pH of the scrubber water.

ES-24 - The exhaust from the #1 and #2 Germ Dryers are each routed through two high efficiency cyclones (W245892, W245893, and W245898, W245895 respectively). These cyclones control PM emissions. The emissions from the #1 Germ Dryer cyclones then are routed to the DC Scrubber (W628851). The exhaust from this scrubber is then routed either the Keeler (ES-62C) or the SCS (ES-62F) boilers for odor control as explained in ES-23 above. The exhaust from the #2 Germ Dryer is routed through the Feed Dryers in ES-23 to provide inlet air. These emissions follow the circuitous route through the cyclones and scrubbers used by the processes in ES-23 to eventually go through the either the Keeler (ES-62C) or the SCS (ES-62F) boilers for odor control. All emissions from this process are associated with the emissions from these boilers.

4.0.2 Applicable Regulatory Requirements

The following provides a summary of the limits and/or standards for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Applicable Standard	ES-#	Applicable Regulation
Particulate Matter	$E = 4.1 \times P^{0.67}$ where: E = allowable emission rate (lbs/hr) P = process weight rate in tons/hr.	ES-21 and ES-23	Sec. 3D-0515 - Particulates from Miscellaneous Industrial Processes
Sulfur Dioxide	3.3 lb SO ₂ /hr from emission point R (Mill Products Scrubber)	ES-15, ES-21, and ES-23	Sec. 3D-0530 - Prevention of Significant Deterioration (PSD) and Sec. 3Q-0317 - Avoidance Conditions
Sulfur Dioxide	0.88 lb SO ₂ /hr from emission point AA (Gluten Dewatering Vacuum Pumps)	ES-15	Sec. 3D-0530 - PSD and Sec. 3Q-0317 - Avoidance Conditions

4.1 Sec. 3D-0515 - Particulates from Miscellaneous Industrial Processes

This rule was promulgated for emissions of particulate matter from any stack, vent, or outlet of any industrial process for which no other emission control standards are applicable.

4.1.1 Regulatory Analysis

The allowable emission rate of PM for process rates up to 60,000 lbs/hr is determined by the following equation:

$$E = 4.10 \times P^{0.67}$$

where: E = allowable emission rate for particulate matter in lb/hr, and
 P = process weight rate in tons/hr

The process weight per hour means the total weight of all materials introduced into any specific process that may cause any emission of particulate matter. In this case, the wet gluten meal and the wet fiber are the only materials that could produce particulate matter and are the only weights considered. The process rates for ES-21 and ES-23 are given below:

<u>Emission point</u>	<u>Process rate (tons/hr)</u>
EP-R for ES-21 (Gluten Dryer)	4.7

& Cooler) EP-R for ES-23 (#1 & #2 Feed Coolers)	17.0
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Therefore, the allowable emission rates are:

$$E = 4.10 \times 4.7^{0.67} = 11.6 \text{ lb/hr for the Gluten Dryer \& Cooler, and}$$

$$E = 4.10 \times 17.0^{0.67} = 27.4 \text{ lb/hr or } 13.7 \text{ lb/hr each for \#1 \& \#2 Feed Coolers}$$

The emission factor for these processes was obtained from AP-42, Table 9.9.7-1 for corn wet milling operations. The emission factor is 0.49 lb/ton and is for gluten feed drying indirect-fired rotary dryers (SCC 3-02-007-64) and for gluten drying indirect-fired rotary dryers (SCC 3-02-007-69). These emission factors include a product recovery cyclone as these devices are used to recover product after the dryers to be further processed. Ingredient Incorporated's processes also employ high efficiency cyclones for product transfer and separation and are they considered part of the process and not control devices. Therefore, the use of these emission factors results in uncontrolled emissions data. Using these factors results in the following uncontrolled emission rates:

$$0.49 \text{ lb/ton} \times 4.7 \text{ tons/hr} = 2.30 \text{ lb/hr for the Gluten Dryer \& Cooler, and}$$

$$0.49 \text{ lb/ton} \times 17.0 \text{ tons/hr} = 8.33 \text{ lb/hr or } 4.17 \text{ lb/hr each for the \#1 \& \#2 Feed Coolers}$$

Both of these emission rates are below the allowable particulate limit without the use of the further control devices. In addition, the uncontrolled potential PM emissions are less than 100 tons per year (10.0 tons/yr for ES-21 and 36.5 tons/yr for ES-23). Therefore, CAM does not apply to particulate matter emissions from these sources.

Only the Gluten Dryer and Cooler (ES-21) and the #1 and #2 Feed Coolers (ES-23) are subject to the particulate standard of Sec. 3D-0515 because their exhaust is routed through the MP Scrubber (emission point R). Whereas, the emissions of the #1 through #3 Feed Dryers (ES-23) and the equipment in Germ Dryers (ES-24) are routed to one of the two boilers (ES-62C or ES-62F) which already have a particulate standard. In the case of ES-62C and ES-62F it is a BACT limit as a result of a PSD review.

4.2 Sec. 3D-0530 - PSD (Sulfur Dioxide) and Sec. 3Q-0317 - Avoidance Conditions for ES-15, ES-21, and ES-23

The purpose of this rule is to implement a program for the prevention of significant deterioration of air quality as required by 40 CFR 51.166. This facility is a PSD permitted facility due to the emissions from ES-62C and ES-62F and is subject to emission limits for SO₂ to protect ambient air. During a modification at the facility in 1995 the applicant chose to restrict the throughput of these processes in order to remain below the sulfur dioxide significance level of 40 tons for PSD (see Section V.2 below). Sec. 3Q-0317 is cited as the applicable regulation to establish an enforceable limit to avoid PSD regulations for the 1995 modification. Sec. 3D-0530 is cited as the applicable regulation

to establish an enforceable limit which ensures compliance with PSD regulations. The requirements for ES-15, ES-21, and ES-23 are discussed here. The requirements for ES-81 are addressed in Section **IV.5** below.

In addition to the process throughput limits, emission limits were requested for emission points AA (ES-15) and R (ES-21,23) to ensure that the total SO₂ emissions from the processes (which were previously unknown to exist) are accounted for in the original PSD ambient air analysis and remain below the PSD significance level of 40 tons/year. As a result of these emission limits, these emission points are not subject to CAM because the potential emissions for SO₂ are less than 100 tons per year.

4.2.1 Regulatory Analysis

Compliance with the emissions limit of 0.88 lb SO₂/hr for emission point AA is calculated as follows:

A stack test was performed in 1996 using Method 6 to measure SO₂ emissions from emission point AA. The results yielded an emissions rate of 2.41 lb SO₂/hr. The emissions from this source are proportional to the grind rate of the plant. The grind rate during the test was 55,000 bushels of corn per day. The maximum allowable grind rate is set by a federally enforceable permit condition at 80,000 bushels of corn per day. Emissions of SO₂ are controlled from the vacuum pump seal water by maintaining a pH greater than 5.0 which yield a control efficiency of 75%. To determine emissions rate at maximum rate of 80,000 bushels of corn per day:

$$2.41 \text{ lb SO}_2/\text{hr} \times 80,000 \text{ bushels/day} / 55,000 \text{ bushels/day} = 3.51 \text{ lb SO}_2/\text{hr}$$

$$3.51 \text{ lb SO}_2/\text{hr} \times 0.25 = 0.88 \text{ lb SO}_2/\text{hr}$$

Compliance with the emissions limit of 3.3 lb SO₂/hr for emission point R is calculated as follows:

A stack test was performed in 1996 using Method 6 to measure SO₂ emissions from emission point R which includes emissions from ES-21 and ES-23. The results yielded an emissions rate of 5.78 lb SO₂/hr. The emissions from this source are proportional to the grind rate of the plant. The grind rate during the test was 55,000 bushels of corn per day. The maximum allowable grind rate is set by a federally enforceable permit condition at 80,000 bushels of corn per day. A test was also performed on emission point AB (1st Grind Overflow Tank) to determine the SO₂ emissions rate. The resultant emissions rate was 4.78 lb SO₂/hr. These emissions are independent of the grind rate and are constant. These emissions were routed to the Mill Products Scrubber (emission point R) during the modifications to the plant in 1995. Therefore, these emissions must be added to those from the stack test results for emission point R to determine the total emissions rate. Emissions of SO₂ are controlled from the Mill Products Scrubber by maintaining a pH above 5.0 in the scrubber water which yields a control efficiency of 75%. To determine emissions rate at maximum rate of 80,000 bushels of corn per day:

$$5.78 \text{ lb SO}_2/\text{hr} \times 80,000 \text{ bushels/day} / 55,000 \text{ bushels/day} = 8.41 \text{ lb SO}_2/\text{hr}$$

$$(8.41 \text{ lb SO}_2/\text{hr} + 4.78 \text{ lb SO}_2/\text{hr}) \times 0.25 = 3.29 \text{ lb SO}_2/\text{hr}$$

4.3 Monitoring Requirements

4.3.1 Monitoring required for compliance with Sec. 3D-0515 - Particulates from Miscellaneous Industrial Sources

The applicant shall follow the requirements for monitoring the visible emissions for the control devices associated with these emission sources as a surrogate parameter to ensure compliance with the particulate matter standards. These requirements are identified in Section **V.1.2**.

4.3.2 Monitoring required for compliance with Sec. 3D-0530 - PSD and Sec 3Q-0317 - Avoidance Conditions

The applicant shall continuously monitor the pH values of the Gluten Filter Vacuum Pumps seal water and the Scrubber W628893 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 and the Scrubber W628893 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. 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 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.

4.4 Recordkeeping Requirements

4.4.1 Recordkeeping required for compliance with Sec. 3D-0515 - Particulates from Miscellaneous Industrial Sources

The applicant shall follow the recordkeeping requirements specified in Section **V.1.2** for visible emissions.

4.4.2 Recordkeeping required for compliance with Sec. 3D-0530 - PSD and Sec. 3Q-0317 - Avoidance Conditions

The daily pH of the Gluten Filter Vacuum Pumps seal water and the Scrubber W628893 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.

4.5 Reporting Requirements

The applicant shall follow the reporting requirements specified in Section V.1.3 for visible emissions.

In addition, the applicant shall submit a summary report of the monitoring requirements specified in Section IV.4.3.2 to this Office by January 30th for the period July through December, and by July 30th for the period January through June.

4.6 Alternative Operating Scenario

There is no alternative operating scenario for this equipment.

4.7 Other Specific Conditions

Excess emissions reporting and malfunctions shall be reported in accordance with Sec. 3D-0535 - *Excess Emissions Reporting and Malfunctions*.

5.0 ES-81, Sulfur Burner System, One (1) Lundberg Wet Scrubber

5.0.1 Description

Molten sulfur is burned in the sulfur burner to produce gaseous SO₂ which is then absorbed into water to create sulfurous acid which is used in the steeping process (ES-14). Exhaust gas is routed to the A. H. Lundberg Wet Scrubber (W818806) (Emission Point A1). The pH of the scrubber water shall be controlled at or above a pH of 5.5.

5.0.2 Applicable Regulatory Requirements

The following provides a summary of the limits and/or standards for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Applicable Standard	ES-#	Applicable Regulation
Sulfur Dioxide	0.1 lb SO ₂ /hr	ES-81	Sec. 3D-0530 - PSD and Sec. 3Q-0317 - Avoidance Conditions

5.1 Sec. 3D-0530 - PSD (Sulfur dioxide) and Sec. 3Q-0317 - Avoidance Conditions for ES-81

The purpose of this rule is to implement a program for the prevention of significant deterioration of air quality as required by 40 CFR 51.166 . This facility is a PSD permitted facility due to the emissions from ES-62C and ES-62F and is subject to emission limits for SO₂ to protect ambient air. During a modification at the facility in 1995 the applicant chose to restrict the throughput of this processes in order to remain below the sulfur dioxide significance level of 40 tons for PSD. Sec. 3Q-0317 is cited as the applicable regulation to establish an enforceable limit which ensures compliance with PSD. Sec. 3D-0530 is cited as the applicable regulation to establish an enforceable limit which ensures compliance with PSD regulations. As a result of these emission limits to avoid PSD, this emission source is not subject to CAM because the potential emissions for SO₂ are less than 100 tons per year.

5.1.1 *Regulatory Analysis*

The sulfur burner was added to this facility in 1995 during a modification at the facility. These sulfur dioxide emissions were included in the model revision to show compliance with the National Ambient Air Quality Standards (NAAQS) and Increment in 1995. The maximum level of sulfur dioxide emissions and the allowable limit for the sulfur burner were set at 0.1 lb SO₂/hr and modeled at this rate.

The sulfur dioxide emissions are based on the SO₂ concentration of the steep acid tank and absorber added together to determine emissions entering the scrubber. A test was performed by Argo to determine the SO₂ vapor concentrations at 125 degrees Fahrenheit in process steep water. The scrubber has an efficiency of 99.3% for sulfur dioxide emissions and the maximum emissions from this source are 0.03 lb SO₂/hr but were modeled at 0.1 lb/hr. In order to demonstrate compliance with this emission rate, the applicant shall control the pH levels of the Wet Scrubber (W818806) water by maintaining the pH levels at or above 5.5.

5.2 **Monitoring Requirements**

The applicant shall continuously monitor the pH values of the Wet 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 Wet 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. 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 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.

5.3 **Recordkeeping Requirements**

The daily pH of the Wet 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.

5.4 Reporting Requirements

The permittee shall submit a summary report of the monitoring requirements specified in Section **IV.5.2** to this Office by January 30th for the period July through December and by July 30th for the period January through June.

All emissions from this source shall be included in the annual emissions inventory submitted to this Office.

5.5 Alternative Operating Scenario

There is no alternative operating scenario for this equipment.

5.6 Other Specific Conditions

Excess emissions reporting and malfunctions shall be reported in accordance with Sec 3D-0535 - *Excess Emissions Reporting and Malfunctions*.

6.0 *ES-62C, Keeler Hybrid Suspension/Grate Boiler and PCC Air Heater, One (1) Zurn Industries Multicyclone, and One (1) Precipitair Pollution Control Electrostatic Precipitator*

6.0.1 *Description*

This unit is an industrial boiler (313 MMBtu/hr maximum heat input when combusting 100% wood or wood/coal combination, and 245 MMBtu/hr maximum heat input when combusting 100% coal) firing coal, wood, corn cleanings, corn germ, dry and wet feed, and corn derived gluten meal and used for process and space heat. This boiler provides steam for the wet milling processes at the facility and is also be used to generate electricity for use by the facility. The PCC air heater (11.5 MMBtu/hr) combusts natural gas and is used to heat the process vapors before they enter the boiler. The emissions from the boiler and the PCC air heater are routed through a multicyclone (62SFB1) and then to the Electrostatic Precipitator (62SFB2) before exiting through emission point EP-Y.

The boiler is subject to requirements for PSD, NSPS and MACT. The applicant submitted notification to this Office that this boiler (ES-62C) is subject to the National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Industrial, Commercial, and Institutional Boilers and Process Heaters, 40 CFR 63, Subpart DDDDD. The Initial Notification was to be submitted no later than May 31, 2013. The applicant submitted this notification on May 28, 2013 in compliance with this requirement. This boiler must

comply with the MACT no later than January 31, 2016. A one time energy assessment and an initial tune up have been completed by this date. The applicant demonstrated compliance with the numerical emissions limits by July 29, 2016 through stack testing data as required by rule. The applicable requirements for compliance with the Boiler MACT are detailed below. Ingredion has submitted a permit application for the replacement of coal in the Keeler Boiler with natural gas. The permit will be modified after this renewal permit is issued.

6.0.2 Applicable Regulatory Requirements

The following provides a summary of the limits and/or standards for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Applicable Standard	Applicable Regulation
Particulate Matter	0.1 lb PM/million Btu	Sec. 3D-0524 - New Source Performance Standards (NSPS) and Sec. 3D-0530 (PSD)
Nitrogen Oxides	0.6 lb NO _x /million Btu	Sec. 3D-0524 and Sec. 3D-0530 (PSD)
Sulfur Dioxide	310 lb SO ₂ /hr	Sec. 3D-0530
Sulfur Dioxide	Sulfur content of coal shall not exceed 0.9 percent	40 CFR 51.166 and Sec. 3D-0530 (PSD)
HCl	0.022 lb/MMBtu	40 CFR 63.7500(a)(1), Table 2, and Sec. 3D-1111
Mercury	5.7E-06 lb/MMBtu	40 CFR 63.7500(a)(1), Table 2, and Sec. 3D-1111
Carbon Monoxide or (demonstrating 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 Sec. 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 Sec. 3D-1111
Visible Emissions	20% opacity	Sec. 3D-0524 and 40 CFR 60.43b(f)
Visible Emissions	10 percent opacity (daily block average)	40 CFR 63.7525(c), Table 8, and Sec. 3D-1111

Only Sec. 3D-0516 - *Sulfur Dioxide from Combustion Sources* - and Sec. 3D-0521 - *Control of Visible Emissions* - applies to the natural gas-fired PCC Air Heater. Use of natural gas easily assures compliance with both the 2.3 lb/MMBtu SO₂ standard and the 20% opacity standard. Therefore, no additional monitoring or recordkeeping requirements are required to demonstrate compliance with these limits. The emissions from the combustion of natural gas are accounted for in the 310 lb SO₂/hr limit on the boiler emissions and in the facility's annual emissions inventory.

6.1 Sec. 3D-0524 and Sec. 3D-0530 - New Source Performance Standards and PSD (Particulate Matter)

Sec. 3D-0524 incorporates the U.S. EPA New Source Performance Standards (NSPS) by reference and Sec. 3D-0530 incorporates the Federal PSD regulations as the floor when selecting BACT. NSPS and PSD both apply to regulate the standards of performance for PM from industrial steam generating units in this particular case. The boiler is subject to NSPS Subpart Db for boilers because it has a maximum fossil fuel heat input between 100 and 250 MMBtu/hr. The maximum potential emissions of SO₂ from this boiler are greater than 250 tons/year and therefore, any pollutants above the PSD significance levels need to be reviewed for PSD. The maximum potential emissions of PM are above the significance level of 25 tons/year and so PM emissions are subject to the PSD regulations.

6.1.1 Regulatory Analysis

The permit application for this boiler was received by this Office on June 14, 1984 which was five days prior to the proposed Subpart Db regulation. On October 17, 1984 Ingredion Incorporated submitted an application reflecting a BACT of 0.1 lb PM/MMBtu by employing a multicyclone and an electrostatic precipitator (ESP). This Office concurred with this determination and the EPA indicated that this level represented minimum BACT at that time. This standard shall apply at all times except during periods of startup, shutdown or malfunction.

The applicant provided in their technical analysis a PM emission factor (controlled) of 1.98 lb PM/ton of coal combusted. This factor is derived by using the uncontrolled emission factor in AP-42 Table 1.1-4 dated September 1998 for a spreader stoker coal boiler of 66 lb/ton and the control efficiency for the multicyclone and ESP of 97%. The applicant used the coal emission factor for PM because it provides more conservative results than the emission factor for wood. This factor is verified as follows:

$$66 \text{ lb PM/ton} \times (1 - 0.97) = 1.98 \text{ lb PM/ton}$$

Compliance with the allowable BACT limit for PM of 0.1 lb/MMBtu is demonstrated as follows: (given the 2019 actual average heat content of coal combusted in the boiler was 13,711 Btu/lb coal)

$$13,711 \text{ Btu/lb coal} \times 2,000 \text{ lb/ton} = 27.42 \text{ MMBtu/ton coal and,}$$

$$(1.98 \text{ lb PM/ton coal}) / 27.42 \text{ MMBtu/ton coal} = \underline{0.07 \text{ lb PM/MMBtu}}$$

Uncontrolled emissions of PM and PM₁₀ are greater than 100 tons per year and the boiler uses a control device to meet the BACT standard. Therefore, CAM applies to this boiler for emissions of PM₁₀.

6.2 Sec. 3D-0524 and Sec. 3D-0530 - NSPS and PSD (Nitrogen Oxides)

Sec. 3D-0524 incorporates the U.S. EPA NSPS by reference and Sec. 3D-0530 incorporates the Federal PSD regulations by reference. NSPS and PSD are parallel rules which regulate the standards of performance for NO_x from steam generating units in this particular case. The boiler is subject to NSPS Subpart Db for boilers because it has a maximum heat input between 100 and 250 MMBtu/hr. The maximum potential emissions of SO₂ from this boiler are greater than 250 tons/year and therefore, pollutants above the PSD significance levels were reviewed under PSD prior to construction of the boiler. The maximum potential emissions of nitrogen oxides are above the significance level of 40 tons/year and so NO_x emissions are subject to the PSD regulations.

6.2.1 Regulatory Analysis

The allowable standard for nitrogen oxide emissions for boilers subject to Subpart Db that combust coal is 0.60 lb NO_x/MMBtu heat input. The NSPS standard was proposed by the applicant as BACT for this boiler and is achieved through proper combustion design and operating techniques. This Office concurred with this determination and the EPA indicated that this limit is BACT for this source.

In addition, a performance test of the boiler was conducted on May 7, 1986 using Method 7 for Nitrogen oxides and the results of this test revealed an average NO_x emissions rate of 0.47 lb/MMBtu for the three test runs. This test was performed while running 100% coal. This test reveals that the NO_x limit can be met by the boiler because it was performed while combusting only coal which has a higher AP-42 emission factor for NO_x than that of wood. Therefore, the boiler has shown that it is in compliance with the limit even while combusting only coal which is more conservative than wood.

Compliance with this emission limit is determined on a 30-day rolling average basis and is demonstrated through the use of the continuous emissions monitor for NO_x and, if necessary, by using Method 7 of 40 CFR 60, Appendix A. CEM reports are submitted semiannually to this Office and a review of these records reveals the facility has not exceeded the BACT limit for nitrogen oxides based on the 30-day rolling average.

This source does not have a control device to reduce emissions of nitrogen oxides therefore, CAM does not apply.

6.3 Sec. 3D-0530 - PSD (Sulfur Dioxide)

Sec. 3D-0530 incorporates the Federal PSD regulations by reference. The maximum potential emissions of SO₂ from this boiler are greater than 250 tons/year and therefore, subject to the PSD regulations.

6.3.1 Regulatory Analysis

Modeling for PSD was performed in 1984 due to the construction of this boiler. The results of the modeling required a restriction be put on the sulfur content of the coal so the SO₂ emissions would comply with the 3-hour National Ambient Air Quality Standards (NAAQS) for sulfur dioxide. This restriction limits the sulfur content of coal to no more than 0.90% by weight. A restriction on the heat content was also required as a result of the modeling analysis. As a result, the thermal input to the boiler shall not exceed 245 million Btu per hour when using 100% coal or 313 million Btu per hour when using 100% wood or wood and coal fuel combination.

The resulting emissions of sulfur dioxide based on these restrictions yielded an emissions rate of 310 lb SO₂/hr. This limit, which was also determined to be Best Available Control Technology (BACT), was put into the applicant's air quality permit in 1992. During a modification of the facility in 1995 that included a "debottlenecking" of processes to increase production up to 80,000 bushels of corn per day it was discovered that several of the other processes at the facility also emitted SO₂.

Some of these processes (ES-22, #1 through #3 Feed Dryers in ES-23, and ES-24) had been routed through the boiler for control of odor and now needed to be quantified to show that they, along with boiler SO₂ emissions, meet the allowable limit of 310 lb/hr.

The process SO₂ emissions are based upon Method 6 tests performed prior to the modification at a point prior to the Keeler boiler to document the inlet SO₂ emissions. The highest result of the three test runs was 13.2 lb/hr. This value is directly proportional to the grind rate. The grind rate during the test was 55,000 bushels/day. The 1995 "debottlenecking" of equipment resulted in a maximum grind rate of 80,000 bushels/day and an average rate of 72,000 bushels/day. So, the calculation of the maximum process SO₂ emissions at each grind is as follows:

$13.2 \text{ lb SO}_2/\text{hr} \times 80,000 \text{ bushels/day (max grind rate)} / 55,000 \text{ bushels/day} = \underline{19.2 \text{ lb SO}_2/\text{hr}}$; and

$13.2 \text{ lb SO}_2/\text{hr} \times 72,000 \text{ bushels/day (avg grind rate)} / 55,000 \text{ bushels/day} = \underline{17.3 \text{ lb SO}_2/\text{hr}}$

The emission factor for this process was obtained from AP-42, Table 1.1-3 for bituminous coal combustion dated September, 1998. The uncontrolled emission factor is 38S or, 38 x the sulfur content of coal for spreader stoker boilers (SCC 1-01-002-04). The emission factor is 38 lb SO₂/ton x 0.9 (max sulfur content) = 34.2 lb/ton.

Compliance with the BACT limit is demonstrated in the following manner:

$(310 \text{ lb SO}_2/\text{hr} - 19.2 \text{ lb SO}_2/\text{hr (removing the process vapor emissions)}) / 34.2 \text{ lb SO}_2/\text{ton} = 8.5 \text{ tons of coal /hr.}$

This means that the applicant could not burn more than 8.5 tons of coal per hour in order to demonstrate compliance. In 2019, the applicant combusted 5,749 tons of coal over a boiler operating time of 8,081 hours. So, $(5,749 \text{ tons/yr}) / (8,081 \text{ hr/yr}) = 0.71 \text{ tons of coal/hr}$, which demonstrates compliance with the SO₂ BACT limit.

This source does not have a control device to reduce emissions of sulfur dioxide therefore, CAM does not apply.

6.4 Sec. 3D-0524 - NSPS (Visible Emissions)

Sec. 3D-0524 incorporates the NSPS regulations in 40 CFR Part 60 by reference. 40 CFR 60.43b(f), of the NSPS, details the requirements for visible emissions from boilers subject to Subpart Db.

6.4.1 Regulatory analysis

Visible emissions shall not exceed 20% opacity when averaged over a six-minute period, except that six-minute periods averaging not more than 27% opacity may occur not more than once in any hour as determined by U.S. EPA Reference Method 9 (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 apply at all times, except during periods of startup, shutdown or malfunction in accordance with NSPS Subpart Db, 40 CFR 60.43b(f) and (g) and Sec. 3D-0524.

6.5 Sec. 3D-1111 “ National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Industrial, Commercial, and Institutional Boilers and Process Heaters”, (40 CFR 63, Subpart DDDDD)

The Keeler Boiler (ES-62C) and the SCS Boiler (ES-62F) are subject to the Boiler MACT. Each of these boilers meets the definition under the MACT subcategory as “Hybrid suspension/grate burners designed to burn wet biomass/bio-based solid”.

The Deltak Boiler (ES-62) is also subject to the Boiler MACT but since it only burns natural gas, it isn't required to meet any numeric emissions limits. It is only subject to work practice standards (boiler tune-up and a one-time energy assessment).

The Boiler MACT lists many options and alternate standards, as well as numerous methods to determine compliance and continuous compliance based on the standards with which the applicant chooses to comply. This review is based on the method of compliance the applicant chose but the permit will list the available options for each standard and reference the MACT for details on compliance.

The compliance date for the MACT was January 31, 2016 and the facility must be in compliance with the emission limits no later than July 29, 2016. The applicant has demonstrated compliance by those dates and is currently in compliance with the requirements of the MACT.

6.5.1 Regulatory Analysis for Sec. 3D-1111 and 40 CFR 63, Subpart DDDDD – NESHAP Emission Limits for HCl, Mercury, CO, PM or Total Selected Metals (TSM)

The emission limits for these boilers can be found in items 1 and 13 of Table 2 to Subpart DDDDD. The limits are as follows:

Pollutant	Emission limit (not applicable during startup or shutdown)	Notes on sampling volume or test run duration
HCl	2.2E-02 pounds per million Btu of heat input	For Method 26A, Collect a minimum of 1 dscm per run; for M26, collect a minimum of 120 liters per run.
Mercury	5.7E-06 pounds per million Btu of heat input	For M29, collect a minimum of 3 dscm per run; for M30A or M30B, collect a minimum sample as specified in the method; for ASTM D6784, collect a minimum of 3 dscm.
CO (or CEMS)	3,500 ppm by volume on a dry basis corrected to 3 percent oxygen, 3-run average; or (900 ppm by volume corrected to 3 percent oxygen, 30-day rolling average)	1 hour minimum sampling time per run.
Filterable PM (or TSM)	0.44 pounds per million Btu heat input; or (4.5E-04 pound per million Btu heat input	Collect a minimum of 2 dscm per run.

Compliance with the emission limits above is demonstrated through performance testing, which means either a stack test or a fuel analysis. An annual stack test has been conducted by Ingredient to demonstrate compliance with each of the above limits. Table 5 to Subpart DDDDD lists the Methods to use when complying with the limits via stack testing.

The applicant has tested the boilers to demonstrate compliance with the MACT limits several times since the permit was last renewed on July 18, 2014. The SCS Boiler was tested on November 20 and 24, 2014. The Keeler Boiler was tested on September 10 and 11, 2015. Then, the SCS again on November 15, 2016 and the Keeler Boiler on November 16, 2016. The SCS was tested again on September 6, 2017. The Keeler boiler was tested again on October 2, 2019 and it was found that they exceeded the HCl standard. They conducted a re-test on April 28, 2020 and passed for HCl by using coal from a mine with a lower chlorine content.

As an alternative to a stack test, the applicant may conduct fuel analyses to demonstrate compliance with HCl, mercury, or TSM (as an alternative to the PM limits). TSM means the combination of the following metallic HAPs: arsenic, beryllium, cadmium, chromium, lead, manganese, nickel, and selenium. Table 6 to the Subpart lists the Methods to be used when complying with the limits via fuel analysis. However, the applicant has chosen to comply with the standards via stack testing and the permit focuses on the requirements for such testing. The permit does list the option to conduct fuel analyses in case the applicant chooses to comply using this method.

Compliance with carbon monoxide can be demonstrated with either an annual stack test or the installation of a CO continuous emissions monitoring system (CEMS). The renewal permit will reference all the applicable tables and mention the options for alternative standards. The applicant has chosen to comply with the CO limit via stack testing.

Subsequent compliance tests:

If compliance is determined by performance stack test, the applicant shall conduct performance (stack) tests annually. If test results for 2 consecutive years are <75% of emission limit, the facility may conduct performance test every third year. If the stack test results are >75% of the emission limit, the stack testing must revert to an annual test until the results from 2 consecutive years are <75% of the limit. The facility must continue to comply with all applicable operating limits and monitoring requirements.

Ingredion has had stack tests that resulted in the emissions being less than 75% of the standard for both the Keeler and SCS boilers and has gone to stack testing every three years. However, the results of the most recent stack test for the Keeler boiler showed an exceedance of the HCl limit. Ingredion has opted to go back to annual MACT stack testing for the Keeler boiler until they have two consecutive years with less than 75% of the standard for all pollutants. Technically, the allowance to conduct testing every three years is pollutant specific but Ingredion has decided to re-test all the pollutants so they can set up a new allowable steam load limit and the oxygen trim limit by testing all of the pollutants. The SCS boiler is due for its three-year stack test at the end of this calendar year.

If compliance is determined by fuel analysis, the applicant shall conduct a fuel analysis each month, then reduce to the analysis results to a 12-month rolling average and maintain them below the emission limits. The applicant shall continue to comply with applicable operating limits and monitoring requirements. As mentioned above, the applicant is demonstrating compliance through stack testing, so the fuel analysis data is not pertinent to this permit but the information will be included in the permit as an option to stack testing.

Operating Limits and demonstrating continuous compliance:

Table 4 to Subpart DDDDD lists the applicable operating limits which must be followed by the applicant. The operating limits are based on the type of control device used for each pollutant. Ingredion will be subject to an opacity standard for ES-62C and ES-62F as outlined in item 6 of Table 4 for PM. The opacity standard is 10 percent and compliance with the standard is based on a daily block average of the recorded opacity levels. The applicant has had several violations noted in the past for exceeding the 10 percent opacity standard based on a daily block average. Notices of Violation have been issued along with Civil Penalties. The applicant has paid the penalties and has come back into compliance with this operating limit.

The facility is also subject to item 8 of Table 4. This item states that boilers demonstrating compliance with the emission limits with a performance test must maintain the operating load of each unit such that it does not exceed 110 percent of the highest hourly average operating load recorded during the most recent performance test. Compliance with this limit is based on a 30-day rolling average. The applicant has

maintained compliance with this operating limit.

Table 7 of the Subpart identifies the methods to establish the operating limits identified above. Item 4 of the Table identifies oxygen as the operating limit used to comply with the CO standard. The applicant shall collect oxygen data every 15 minutes during the entire period of the performance test. These data points are then averaged for each test run. Then, the applicant will establish the lowest hourly average oxygen level over the test runs as the minimum operating limit to be monitored. This limit is met by setting the oxygen trim system for both boilers to the minimum average established during the stack test. The applicant has demonstrated compliance with this operating limit.

Item 5 of Table 7 lists the procedure for establishing the maximum operating load during the performance test. The operator must collect the operating load or steam generation data every 15 minutes during the entire period of the performance test. These data points are then averaged for each test run. Then, the highest hourly average for the three test runs is multiplied by 1.1 to get the 110 percent operating load. Compliance with this limit is based on a 30-day rolling average.

Table 8 of the Subpart lists how to demonstrate continuous compliance with the emission limits based on the applicable operating limits. Item 1 addresses the installation of a continuous opacity monitor and how the applicant must average the readings over a daily block period. Ingredion Inc. already has opacity monitors installed on both boiler stacks. These were installed to comply with NSPS Subpart Db. Item 10 details the strategy for collecting the operating load data or steam generation data every 15 minutes. The daily average operating load or steam generation data must be less than 110 percent of the value recorded during the most recent performance test based on a 30-day rolling average. Item 9 refers to the oxygen content but it doesn't apply because the facility operates and maintains an oxygen trim system. This system shall be operated with the oxygen level set no lower than the lowest hourly average oxygen concentration measured during the most recent CO performance test as the operating limit for oxygen according to Table 7. The applicant has continued to demonstrate continuous compliance using these methods.

Work Practice Standards

Table 3 to the Subpart lists the work practice standards with which the applicant shall comply. Item 1 to the Subpart identifies the requirements for a tune-up of the boilers. The applicant shall conduct a tune-up of the boiler no later than January 31, 2016. Subsequent tune-ups shall be completed every five years. Normally, the tune-up is an annual requirement but the MACT allows for a five year tune-up for sources that have an oxygen trim system in place on their boilers. Ingredion Inc. does employ an oxygen trim system in both of the boilers (ES-62C and ES-62F). The specifications for the tune-up can be found in 40 CFR 63.7540 and are listed in the renewal permit. The applicant is in compliance with this work practice standard.

Items 5 and 6 of Table 3 of Subpart DDDDD identify the requirements during startup and shutdown of the boilers and they are listed in the renewal permit. The language for startup and shutdown was revised in 2015 and the renewal permit contains the revised language. The applicant has demonstrated compliance with these requirements and documents any startup/shutdowns in their semiannual reports.

6.6 Monitoring Requirements

6.6.1 *CAM and recordkeeping required for compliance with Sec. 3D-0530 - PSD and Sec. 3D-0524 - NSPS (Particulate Matter)*

In order to demonstrate compliance with the CAM plan for the multicyclone and electrostatic precipitator, the following monitoring and recordkeeping requirements apply:

- (a) The applicant shall monitor opacity as a surrogate to ensure the proper operation of the multicyclone and electrostatic precipitator using the COM described in Section **IV.6.6.2** below.
- (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 applicant 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.

6.6.2 *Monitoring and Recordkeeping required for compliance with Sec. 3D-0530 - PSD and Sec. 3D-0524 - NSPS (Particulate Matter)*

The applicant shall monitor opacity as a surrogate to ensure the proper operation of the multicyclone precleaner and electrostatic precipitator. The applicant 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 Sec. 3D-0524.

6.6.3 *Monitoring and Recordkeeping required for compliance with Sec. 3D-0530 - PSD and Sec. 3D-0524 - NSPS (Nitrogen Oxides)*

The applicant shall install, calibrate, maintain, and operate a continuous emissions monitoring system (CEM) for measuring nitrogen oxides emissions discharged to the atmosphere and record the output of the system. The CEM must be maintained, calibrated, operated and audited in accordance with 40 CFR 60, Appendix F quality

assurance procedures. 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.

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.

6.6.4 *Monitoring for compliance with Sec. 3D-0530 - PSD (Sulfur Dioxide)*

A gross sample of coal shall be obtained from each truckload of coal shipped to the permittee at 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:

- (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 Iso-peribol 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

6.6.5 *Monitoring for compliance with Sec. 3D-0524 - NSPS (Visible Emissions)*

The applicant shall follow the monitoring and recordkeeping requirements specified in Section **IV.6.4** above for visible emissions.

6.6.6 *Recordkeeping for compliance with Sec. 3D-1111 - NESHAP Boiler MACT*

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) Monthly records of fuel use, including the type(s) of fuel and amount(s) used, and chlorine content of coal delivered to the facility;
- (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.
 - (m) For each startup period, for units selecting definition (2) of "startup" in 40 CFR 63.7575 you must maintain records of the time that clean fuel combustion begins; the time when you start feeding fuels that are not clean fuels; the time when useful thermal energy is first supplied; and the time when the PM controls are engaged.
 - (n) If the applicant chooses to rely on definition(2) of "startup" in 40 CFR 63.7575, for each startup period, they must maintain records of the hourly steam temperature, hourly steam pressure, hourly steam flow, hourly flue gas temperature, and all hourly average CMS data (e.g., CEMS, PM CPMS, COMS, ESP total secondary electric power input, scrubber pressure drop) collected during each startup period to confirm that the control devices are engaged. In addition, if compliance with the PM emission limit is demonstrated using a PM control device, the applicant must maintain records as specified below:
 - (i) For a boiler or process heater with an electrostatic precipitator, record the number of fields in service, as well as each field's secondary voltage and secondary current during each hour of startup.
 - (o) If the applicant chooses to use definition (2) of "startup" in 40 CFR 63.7575 and they find that they are unable to safely engage and operate your PM control(s) within one hour of first firing of non-clean fuels, they may choose to rely on definition (1) of "startup" in 40 CFR 63.7575 or they may submit to this Office a request for a variance with the PM controls requirement, as described below:
 - (i) The request shall provide evidence of a documented manufacturer-identified safety issue.
 - (ii) The request shall provide information to document that the PM control device is adequately designed and sized to meet the applicable PM emission limit.
 - (iii) In addition, the request shall contain documentation that;
 - (A) The unit is using clean fuels to the maximum extent possible to bring the unit and PM control device up to the temperature necessary to alleviate or prevent the identified safety issues prior to the combustion of primary fuel;
 - (B) The unit has explicitly followed the manufacturer's procedures to alleviate or

- prevent the identified safety issue; and
- (C) Identifies with specificity the details of the manufacturer's statement of concern.
- (iv) The applicant must comply with all other work practice requirements, including but not limited to data collection, recordkeeping, and reporting requirements.

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. Inspections of the facility have documented compliance with the records retention requirement.

As part of this renewal, a requirement to maintain monthly records of the chlorine content of coal delivered to the facility will be added in paragraph (e) above. This additional information will provide characterization of the coal fuel to ensure the type of coal combusted in the boiler, i.e. type of fuel, is consistent with the type of fuel used to demonstrate compliance with the HCL emission limit. If the chlorine content of the coal received by the facility increases significantly, a new performance may be required to demonstrate compliance using the higher chlorine containing coal.

6.7 Reporting Requirements

6.7.1 CAM Reporting Requirements for compliance with Sec. 3D-0530 - PSD and Sec. 3D-0524 - NSPS (Particulate Matter)

The applicant shall submit a summary report of the compliance assurance monitoring required in Section **IV.6.6.2** including, as a minimum:

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

6.7.2 Reporting Requirements for compliance with Sec. 3D-0530 - PSD and Sec. 3D-0524 - NSPS (Particulate Matter)

The applicant 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.

6.7.3 Reporting Requirements for compliance with Sec. 3D-0530 - PSD and Sec. 3D-0524 - NSPS (Nitrogen Oxides)

The applicant shall submit written excess emissions reports based on the data recorded by the CEM for nitrogen oxides. In addition, 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. These reports shall be submitted to 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.

6.7.4 Reporting Requirements for compliance with Sec. 3D-0530 - PSD (Sulfur Dioxide)

All data generated by the sulfur content analysis specified in Section **IV.6.5.4** shall be submitted to this Office on a semiannual basis. The 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. 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 Department personnel, the permittee shall obtain a split sample and submit it to a certified commercial laboratory of this Office's choosing for analysis.

6.7.5 Reporting Requirements for compliance with Sec. 3D-0524 - NSPS (Visible Emissions)

The applicant shall follow the reporting requirements specified in Section **IV.7.7.2** above for visible emissions.

6.7.6 Reporting Requirements for compliance with Sec. 3D-1111 - NESHAP Boiler MACT

The facility shall submit a semi-annual report to the Office that contains the information dependent upon how the facility chooses to comply with the limits in the Subpart. 40 CFR 63.7550(c) lists four different options of report details. Ingredion has complied with the emission limits via stack testing so, that is the option spelled out in the renewal permit. The reports due for any alternative standards are mentioned in the permit but will not go into as much detail as the ones for stack testing.

The first report is to be postmarked or received by this Office no later than July 31, 2016 and shall contain:

- (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, operating limit, or work practice standard 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 the 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.
- (o) For each instance of startup or shutdown include the information required to be monitored, collected, or recorded according to the requirements of 40 CFR 63.7575(d).

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).

Ingredion has demonstrated compliance with the reporting requirements by submitting their semiannual reports in a timely manner. The latest report was received on January 29, 2020.

6.7.6 Notification Requirements for compliance with Sec. 3D-1111 - NESHP Boiler MACT

The facility 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 the facility. In addition, the facility 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 when switching fuels or making a physical change to the boiler and the fuel switch or physical change resulted in the applicability of a different subcategory, the permittee must provide notice of the date upon which you switched fuels or made the physical change within 30 days of the switch/change. The notification must identify:
 - (i) The name of the owner or operator of the affected source, the location of the source, the boiler(s) that have switched fuels, were physically changed, and the date of the notice;
 - (ii) The currently applicable subcategory; and
 - (iii) The date upon which the fuel switch or physical change occurred.

The facility has notified this agency in the past 60 days prior to scheduling any stack testing.

6.8 Alternative Operating Scenario

This emission source does not have an alternative operating scenario. However, when this boiler and ES-62F are both not operational, process vapors are routed to the Deltak boiler. This AOS is described in the Section **IV.7.7**.

6.9 Other Specific Conditions

A log must be maintained on site, and available for inspection, which accurately documents 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. The monthly totals of each fuel burned shall be reported to this Office by January 30th and July 30th for the preceding six-month period. This recordkeeping and reporting requirement is required of all sources subject to NSPS Subpart Db. This requirement is in 40 CFR 60.49b(d) and the information recorded is to be used to determine the annual capacity factor of each fuel. The facility received a waiver from the U.S. EPA in 1998 from having to calculate the annual capacity factor because it is not relevant to determining any allowable limits for this boiler. However, the facility is still required to record the fuel usages and report them to this Office.

Excess emissions reporting and malfunctions shall be reported in accordance with Sec. 3D-0535 - *Excess Emissions Reporting and Malfunctions*.

7.0 ES-62G, One Temporary Boiler fired with natural gas, Uncontrolled

7.0.1 Description

The Temporary boiler is an industrial boiler (<100 MMBtu/hr maximum heat input) firing only natural gas with an efficiency rating of 80% or higher. The boiler will be used to provide process steam when one of the other boilers is down for maintenance due to the Deltak boiler (ES-62) no longer being on site. A Temporary boiler was first brought on site and operated at this facility in 2020. The emissions from the boiler are not controlled and therefore, this process is not subject to CAM.

The Temporary boiler is exempt from both the Nation Emission Standards for Hazardous Air Pollutants (NESHAP) Part 63, Subpart DDDDD (Boiler MACT) and the New Source Performance Standards (NSPS) Part 60, Subpart Dc as long as it meets the definition of "temporary boiler" in each of these regulations. The applicant has stated they intend to comply with this definition.

7.0.2 Applicable Regulatory Requirements

The following provides a summary of the limits and/or standards for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance

were correct.

Regulated Pollutant	Applicable Standard	ES-#	Applicable Regulation
Particulate Matter	$E = 1.090 \times Q^{-.2594}$ where: E = allowable emission rate (lb/MMBtu) Q = maximum heat input rate of all fuel burning heat exchangers (MMBtu/hr)	ES-62G	Sec. 3D-0503
Sulfur Dioxide *	2.3 lb SO ₂ /MMBtu	ES-62G	Sec. 3D-0516
Toxic Air Pollutants Steam Flow Requirements	117,308 10 ³ lb/yr, 62.96 10 ³ lb /hr, and 1,262 10 ³ lb /day	ES-62G	Sec. 3Q-0317(a)(8), Sec. 3Q-0308(a)(1), Sec. 3Q-0707

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

7.1 Sec. 3D-0503 - Particulates from Fuel Burning Indirect Heat Exchangers

This rule regulates the emissions of particulate matter from the combustion of fuel that are discharged to any stack or chimney into the atmosphere.

7.1.1 Regulatory Analysis

The allowable emission rate of PM is determined by the following equation:

$$E = 1.090 \times Q^{-.2594}$$

where:

E = allowable emission rate in lb/MMBtu, and

Q = maximum heat input rate of all fuel burning heat exchangers in MMBtu/hr

The Temporary boiler will have a maximum heat input of less than 100 million Btu per hour. The temporary boiler may have a different maximum heat input each time one is brought onto the site to assist with the steam load during routine maintenance of either the Keeler or SCS boiler. Therefore, the permit will contain the above equation to determine the allowable PM limit based on the maximum heat input of all the boilers at the facility. Due to the inherent low PM emissions from the combustion of natural gas, it

is expected that the temporary boiler will be in compliance with any PM allowable limit.

7.2 Sec. 3Q-0317(a)(8) – Avoidance Conditions (Toxic Air Pollutants Steam Flow Requirements)

This rule allows for owners or operators to request terms and conditions be placed in the permit to avoid other rules of Subchapter 3. In this case, the owner has requested terms and conditions be included in the permit to avoid the requirements for Toxic Air Pollutants from the operation of the Temporary Boiler.

7.2.1 Regulatory Analysis

The applicant notified our Office in August 2020 that the Deltak boiler had an issue with the feedwater while it was in operation and that resulted in extensive damage to the boiler. The applicant decided that the cost of repairing the boiler would outweigh the cost of having a temporary boiler brought on-site to run in tandem with the Keeler (ES-62C) or the SCS (ES-62F) boiler while one or the other is down for its annual maintenance.

The applicant had several meetings with our Office to discuss the permit ramifications of having a temporary boiler brought onto the site to operate during the routine maintenance of either the Keeler or SCS boilers to provide supplementary steam to the plant. The temporary boiler will emit toxic air pollutants (TAP) as did the Deltak boiler. To ensure that there are no net increases of toxic air pollutants, TAPs) in the permit for benzene, benzo-a-pyrene, formaldehyde, n-hexane, and toluene, the actual TAP emissions from the Deltak boiler were compared to the emissions from the temporary boiler.

The applicant submitted an application that includes a permit limit on the operation of the temporary boiler such that the steam load of the temporary boiler will not exceed the “actual rate of emissions” as defined in Sec. 3Q-0703 of the FCAQCOTC from the Deltak boiler based on the corresponding steam load for each of these “actual rate of emissions”. The annual, hourly, and daily maximum steam loads were derived using calendar years 2018 and 2019 as representative of normal operation in accordance with the definition of “actual rate of emissions” in Sec. 3Q-0703. Provided the temporary boiler is at least as efficient as the Deltak, steam load limits on the temporary boiler will demonstrate and ensure that the emissions from the temporary boiler do not exceed the actual TAP emissions previously emitted from the Deltak boiler. This will ensuring no net increase in TAP emissions, and other emissions, from this project.

The applicant provided the maximum steam load for the annual, hourly and daily periods from the Deltak boiler for calendar years 2018 and 2019. These rates are 117,308 thousand pounds per year (10^3 lb/yr), 62.96 10^3 lb /hour, and 1,262 10^3 lb /day. These limits are included in the draft permit to ensure no emissions increase for the removal of the Deltak boiler and operation of the temporary boiler. The applicant stated the temporary boiler will be supplied with the same quality of feedwater used by the Deltak boiler. They further stated the temporary boiler would be operated at 150 psig (same as the Deltak boiler) with no superheat, and discharged into the same steam header as the Deltak boiler. The applicant uses feedwater flow as the tracking method for steam flow to demonstrate compliance with these limits. The feedwater is continually tracked by the

applicant. Any temporary boiler brought on site will also need to have a boiler efficiency equal to or greater than 80%. The Deltak boiler had a boiler efficiency of about 75% based on the Deltak boiler's operation during the shutdown of the SCS boiler in 2019, as provided by the applicant.

7.3 Standard/Operation Requirements

The temporary boiler shall have a boiler efficiency of 80% or higher and steam flow from the temporary boiler shall not exceed the following annual, hourly, and daily limits based on a measurement of the feedwater:

Time period	Steam Flow (thousand pounds, 10 ³ lb)
Annual	117,308 10 ³ lb/year
Hourly	62.96 10 ³ lb /hour
Daily	1,262 10 ³ lb /day

7.4 Monitoring/Recordkeeping Requirements

The permittee shall monitor the feedwater of ES-62G to determine the steam flow on a continuous basis to demonstrate compliance with the steam flow limits in Section 7.3 above. Measurements of the feedwater shall be obtained and recorded at least four times equally spaced over each hour of operation. The applicant shall install, calibrate, operate, and maintain the monitoring equipment according to manufacturer's recommendations and Sec. 3D-0611(c) as applicable. Records shall be kept in a log on site and the log shall be available for inspection by this Office.

7.5 Reporting/Notification Requirements

The applicant shall submit a report of the annual, hourly, and daily steam flow on a semiannual basis to this Office. This report shall be received by this Office by July 30th for the previous months of January through June, and by January 30th for the previous months of July through December.

A written notification, hard copy or electronic, providing the date the temporary boiler was ordered and the date and time the temporary boiler **began operation**. This notification shall include information describing make, model, firing rate (MMBtu/hr), boiler efficiency rating, and installation location of the boiler. This notification shall be submitted so that it is received no later than three business days after the date the temporary boiler commences operation.

A written notification, hard copy or electronic, providing the date the temporary boiler was removed from the facility and the date and time the temporary boiler **last ceased operation** prior to its removal. This notification shall be submitted so that it is received no later than five business days after the date the temporary boiler is removed from the facility.

7.6 Other Specific Conditions

The boiler must at all times meet the definition of temporary boiler as stated in section 63.7575 of 40 CFR Part 63, Subpart DDDDD and in section 60.41c of 40 CFR Part 60, Subpart Dc.

Excess emissions reporting and malfunctions shall be reported in accordance with Sec. 3D-0535 - *Excess Emissions Reporting and Malfunctions*.

8.0 ES-62F, Steam and Control Systems, Inc. Hybrid suspension/grate Boiler, Zurn Air Systems Mechanical Collector and PPC Electrostatic Precipitator

8.0.1 Description

This is an industrial boiler (324.5 MMBtu/hr maximum heat input when combusting wood and natural gas, and 245 MMBtu/hr maximum heat input when combusting only natural gas) firing wood, natural gas, corn cleanings, corn germ, dry and wet feed, and corn derived gluten meal. This boiler provides steam for the wet milling processes at the facility and can also generate electricity for use by the facility. The construction/operation permit for this boiler became effective in 1997. The existing coal/wood-fired boiler (ES-62C) operates at a reduced rate, as required, to provide the remainder of the plant steam needs. The emissions from the boiler and the PCC air heater are routed through a multicyclone (62F1) and then to the Electrostatic Precipitator (62F2) before exiting through emission point EP-62F.

The SCS boiler (ES-62F) meets the definition of a hybrid suspension/grate burner designed to burn wet biomass/bio-based solid in the subcategories of boilers and process heaters in 40 CFR 63.7499(h). The wet biomass, by definition, must have a moisture content of greater than 40%. The permit requires quarterly sampling of the fuel to demonstrate compliance with this definition and submit the results in their semi annual report.

The applicant has submitted notification to this Office that this boiler (ES-62F) is subject to the National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Industrial, Commercial, and Institutional Boilers and Process Heaters, 40 CFR 63, Subpart DDDDD. The Initial Notification was to be submitted no later than May 31, 2013. The applicant submitted this notification on May 28, 2013 in compliance with this requirement. This boiler must comply with the MACT no later than January 31, 2016. A one time energy assessment and an initial tune up must be completed by this date. The applicant must demonstrate compliance with emissions limits by July 29, 2016. The applicant has met all these requirements for this boiler.

8.0.2 Applicable Regulatory Requirements

The following provides a summary of the limits and/or standards for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Applicable Standard	Applicable Regulation
Particulate Matter	0.03 lb PM/million Btu	Sec. 3D-0530
Nitrogen Oxides	0.30 lb NO _x /million Btu	Sec. 3D-0530
Sulfur Dioxide	2.3 lb SO ₂ /MMBtu	Sec. 3D-0516
Carbon Monoxide	0.43 lb CO/MMBtu	Sec. 3D-0530
HCl	0.022 lb/MMBtu	40 CFR 63.7500(a)(1), Table 2, and Sec. 3D-1111
Mercury	5.7E-06 lb/MMBtu	40 CFR 63.7500(a)(1), Table 2, and Sec. 3D-1111
Carbon Monoxide or (demonstrating 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 Sec. 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 Sec. 3D-1111
Visible Emissions	20% opacity	Sec. 3D-0524 and 40 CFR 60.43b(f)
Visible Emissions	10 percent opacity (daily block average)	40 CFR 63.7525(c), Table 8, and Sec. 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 Sec. 3D-0524

8.1 Sec. 3D-0530 - PSD (Particulate Matter)

Sec. 3D-0530 incorporates the Federal PSD regulations by reference. The maximum potential emissions of PM from this boiler were above the PSD significance level of 25 tons/year and so PM emissions are subject to the PSD regulations.

8.1.1 Regulatory Analysis

The applicant provided in their technical analysis a PM emission factor (controlled) of 0.03 lb PM/MMBtu from the combustion of wood which is guaranteed by the vendor of the unit and achieved through the use of a mechanical collector (multicyclone) and an ESP as BACT. This limit was proposed as BACT for PM for this boiler and approved by

this Office.

A stack test was performed on November 16, 1998 after initial operation of the boiler to determine compliance with the allowable BACT limit for PM. The test results revealed a measured value of 0.0045 lb PM/MMBtu, which demonstrated compliance with the BACT limit. The most recent stack test conducted on September 7, 2017 to demonstrate compliance with the MACT limits for PM resulted in a PM limit of 1.5E-03 lb PM/MMBtu, which also document compliance with the PSD limit for PM.

Uncontrolled emissions of PM and PM₁₀ are greater than 100 tons per year and the boiler uses a control device to meet the BACT standard. Therefore, CAM applies to this boiler for emissions of PM₁₀.

8.2 Sec. 3D-0530 - PSD (Nitrogen Oxides)

Sec. 3D-0530 incorporates the Federal PSD regulations by reference. The maximum potential emissions of nitrogen oxides were above the significance level of 40 tons/year and so NO_x emissions are subject to the PSD regulations.

8.2.1 Regulatory Analysis

The applicant provided in their technical analysis a NO_x emission factor of 0.30 lb NO_x/MMBtu from the combustion of wood which is guaranteed by the vendor of the unit and is achieved by the boiler design of low excess air and staged combustion as BACT. This BACT limit was established in July, 2000 after the applicant was required to conduct a re-analysis of the BACT limit after discovering, subsequent to startup that the unit could not meet the original BACT emissions limit of 0.19 lb/MMBtu. This limit is based on a guarantee by the vendor of the boiler. This limit was proposed as BACT for NO_x for this boiler and approved by this Office.

This standard shall apply at all times including periods of startup, shutdown, or malfunction. Compliance with this limit shall be demonstrated by the installation, operation and maintenance of a continuous emissions monitor (CEM). Compliance with this emission limit is determined on a 30-day rolling average basis. CEM reports are submitted semiannually to this Office and a review of these records reveals the facility has not exceeded the BACT limit for nitrogen oxides based on the 30-day rolling average.

This source does not have a control device to reduce emissions of nitrogen oxides therefore, CAM does not apply.

8.3 Sec. 3D-0516 - Sulfur Dioxide Emissions from Combustion Sources

This rule regulates the emission of sulfur dioxide from any source of combustion that is discharged from any stack or chimney.

8.3.1 Regulatory Analysis

The rule limits the amount of sulfur dioxide emitted from this source to no more than 2.3

pounds of sulfur dioxide per million Btu input.

The applicant used the appropriate AP-42 emission factor for the emissions calculations. The factor used is 0.025 lb SO₂/MMBtu of heat input of wood from Table 1.6-2 of AP-42 for bark/bark and wet wood/wet wood-fired boiler (SCC 1-01-009-22) dated September, 2003. The applicant calculated SO₂ emissions from the combustion of wood instead of from natural gas because it results in higher emissions of SO₂ and is more conservative.

This emission factor demonstrates the emissions of SO₂ are in compliance with the allowable limit of 2.3 lb/MMBtu.

In addition, process vapors containing SO₂ emissions will be routed to this boiler. The maximum SO₂ emissions from the process vapors are 19.2 lb/hr (calculated in Section **IV.6.3.1.**) so, this must be added to the emissions from the combustion of wood to get 27.31 lb/hr as calculated below:

0.025 lb/MMBtu x 324.5 MMBtu/hr = 8.11 lb SO₂/hr from the combustion of wood.

and,

8.11 lb/hr + 19.2 lb SO₂/hr from process vapors = 27.31 lb/hr.

so,

(27.31 lb/hr) (324.5 MMBtu/hr) = 0.084 lb/MMBtu which is less than the allowable limit.

This source does not have a control device to reduce emissions of SO₂ therefore, CAM does not apply. 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 permit condition **2.13** entitled *Annual Emission Inventory Requirements*.

8.4 Sec. 3D-0530 - PSD (Carbon Monoxide)

Sec. 3D-0530 incorporates the Federal PSD regulations by reference. The maximum potential emissions of carbon monoxide are above the significance level of 100 tons/year and so carbon monoxide emissions are subject to the PSD regulations.

8.4.1 Regulatory Analysis

The applicant originally provided in their technical analysis a carbon monoxide emission factor of 0.3 lb CO/MMBtu from the combustion of wood which is guaranteed by the vendor of the unit and is achieved by the boiler design of low excess air and staged combustion. This limit was proposed as BACT for CO for this boiler and approved by this Office. The applicant is required to perform an annual stack test to demonstrate compliance with this BACT limit.

Ingredion failed a stack test for carbon monoxide (CO) emissions from the SCS Boiler (ES-62F) on September 6, 2017. This was the fourth failed stack test for CO since 2012. Ingredion subsequently entered into a Special Order by Consent to re-analyze the Best Available Control Technology (BACT) limit for CO. On February 4, 2020, permit TV-13 was issued with a new BACT limit for CO, which is **0.43 lb CO/MMBtu**. A stack test was performed on October 4, 2022 and the results (0.27 lb CO/MMBtu) showed compliance with the revised limit.

This source does not have a control device to reduce emissions of CO therefore, CAM does not apply.

8.5 Sec. 3D-0524 - NSPS (Visible Emissions)

Sec. 3D-0524 incorporates the NSPS regulations in 40 CFR Part 60 by reference. 40 CFR 60.43b(f) of the NSPS details the requirements for visible emissions from boilers subject to Subpart Db.

8.5.1 Regulatory analysis

Visible emissions shall not exceed 20% opacity when averaged over a six-minute period, except that six-minute periods averaging not more than 27% opacity may occur not more than once in any hour as determined by U.S. EPA Reference Method 9 (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 apply at all times, except during periods of startup, shutdown or malfunction in accordance with NSPS Subpart Db, 40 CFR 60.43b(f) and (g) and Sec. 3D-0524.

8.6 Sec. 3D-0524 - NSPS (Annual Capacity Factor)

Sec. 3D-0524 incorporates the NSPS regulations in 40 CFR Part 60 by reference. 40 CFR 60.44b(k) of the NSPS details the requirements for calculating the annual capacity factor to avoid the nitrogen oxide emissions standard for applicable boilers subject to Subpart Db.

8.6.1 Regulatory analysis

The applicant has requested that a federally enforceable permit condition which limits the annual capacity factor for natural gas to 10% or less be included in their air quality permit. This restriction enables the applicant to be exempt from the NO_x standard in NSPS Subpart Db pursuant to 40 CFR 60.44b(d) and the accompanying requirement for a continuous emissions monitoring system. However, the permittee has decided to install a continuous emissions monitor for NO_x and will maintain and operate it in accordance with NSPS Subpart Db, 40 CFR 60.48b and Sec. 3D-0524 - NSPS even though they are not subject to these requirements.

The applicant has been submitting records on a semiannual basis documenting the annual capacity factor. The latest records received on January 30, 2020 show the highest 12-month rolling annual capacity factor is 4.7 percent from November 2019, which meets the requirement of this rule.

8.7 3D .1111 “ National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Industrial, Commercial, and Institutional Boilers and Process Heaters”, (40 CFR 63, Subpart DDDDD)

The Keeler Boiler (ES-62C) and the SCS Boiler (ES-62F) are subject to the Boiler MACT. Each of these boilers is listed under the MACT subcategory as “Hybrid Suspension/Grate Boiler designed to burn wet biomass/bio-solid”. In order to demonstrate compliance with the MACT, the SCS Boiler shall follow the same requirements as the Keeler Boiler as applicable. These requirements are detailed in Section **IV.6.5.1**.

8.8 Monitoring and Recordkeeping Requirements

8.8.1 CAM required for compliance with Sec. 3D-0530 - PSD (Particulate Matter)

In order to demonstrate compliance with the CAM plan for the multicyclone and electrostatic precipitator, the following monitoring and recordkeeping requirements apply:

- (a) The applicant shall monitor opacity as a surrogate to ensure the proper operation of the multicyclone and electrostatic precipitator using the COM described in Section **IV.8.8.2** below.
- (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 applicant 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.

8.8.2 Monitoring and Recordkeeping required for compliance with Sec. 3D-0530 - PSD (Particulate Matter)

The applicant shall monitor opacity as a surrogate to ensure the proper operation of the multicyclone precleaner and electrostatic precipitator. The applicant 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 Sec. 3D-0524.

8.8.3 *Monitoring and Recordkeeping required for compliance with Sec. 3D-0530 - PSD (Nitrogen Oxides)*

The applicant shall install, calibrate, maintain, and operate a continuous emissions monitoring system (CEM) for measuring nitrogen oxides emissions discharged to the atmosphere and record the output of the system. The CEM must be maintained, calibrated, operated and audited in accordance with 40 CFR 60, Appendix F quality assurance procedures. 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.

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.

8.8.4 *Monitoring required for compliance with Sec. 3D-0530 - PSD (Carbon Monoxide)*

The applicant is required to perform an annual stack test in accordance with the appropriate EPA Reference Methods to demonstrate compliance with the BACT limit for CO. The most recent stack test was conducted on March 2, 2020 and the results demonstrated compliance with the revised CO BACT limit.

8.8.5 *Monitoring and Recordkeeping required for compliance with Sec. 3D-0524 - NSPS (Visible Emissions)*

The applicant shall follow the monitoring and recordkeeping requirements specified in Section **IV.8.8.2** above for visible emissions.

8.8.6 *Monitoring and Recordkeeping required for compliance with Sec. 3D-0524 - NSPS (Annual Capacity Factor)*

The applicant shall record and maintain records of each fuel combusted during each day and calculate the annual capacity factor individually for wood and natural gas semiannually. 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 means the ratio between the actual heat input to the boiler from wood and 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. This recordkeeping is required pursuant to NSPS Subpart Db, 40 CFR 60.49b(d) and Sec. 3D-0524.

8.8.7 *Recordkeeping Requirements for compliance with Sec. 3D-1111 - NESHAP (Boiler MACT)*

In order to demonstrate compliance with the reporting requirements in the Boiler MACT,

the SCS Boiler shall follow the same requirements as the Keeler Boiler as applicable. These requirements are detailed in Section **IV.6.6.6**.

8.9 Reporting Requirements

8.9.1 CAM Reporting Requirements for compliance with Sec. 3D-0530 - PSD (Particulate Matter)

The applicant shall submit a summary report of the compliance assurance monitoring required in Section **IV.8.8.2** including, as a minimum:

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

8.9.2 Reporting Requirements for compliance with Sec. 3D-0530 -PSD (Particulate Matter)

The applicant 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.

8.9.3 Reporting Requirements for compliance with Sec. 3D-0530 -PSD (Nitrogen Oxides)

The applicant shall submit written excess emissions reports based on the data recorded by the CEM for nitrogen oxides. In addition, 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. These reports shall be submitted to 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.

8.9.4 Reporting Requirements for compliance with Sec. 3D-0524 - NSPS (Visible Emissions)

The applicant shall follow the reporting requirements specified in Section **IV.9.8.2** above for visible emissions.

8.9.5 *Reporting Requirements for compliance with Sec. 3D-0524 - NSPS (Annual Capacity Factor)*

The applicant shall submit records of the annual capacity factor for natural gas, based on a 12-month rolling average, semiannually to verify that the natural gas annual capacity factor is not above 10%.

8.9.6 *Reporting Requirements for compliance with Sec. 3D-1111 - NESHAP (Boiler MACT)*

In order to demonstrate compliance with the reporting requirements in the Boiler MACT, the SCS Boiler shall follow the same requirements as the Keeler Boiler as applicable. These requirements are detailed in Section **IV.6.7.6**.

8.10 Alternative Operating Scenario

This emission source does not have an alternative operating scenario. However, when this boiler and ES-62C are both not operational, process vapors are routed to the Deltak boiler. This AOS is described in the Section **IV.7.7**.

8.11 Other Specific Conditions

Thermal input to the boiler shall not exceed 324.5 MMBtu/hr when using 100% wood or fuel combination, or 245 MMBtu/hr when using only natural gas in accordance with Sec. 3D-0530.

Excess emissions reporting and malfunctions shall be reported in accordance with Sec. 3D-0535 - *Excess Emissions Reporting and Malfunctions*.

9.0 *ES-62D, Ash Handling System, National Conveyors Company, Inc. Primary Cyclone Model A-1141A, Secondary Cyclone Model A-1195-SA, Fabric Filter Model A-1728-P, and Wet Scrubber Model A-1750-1*

9.0.1 *Description*

The bottom ash and the fly ash from ES-62C and ES-62F are pneumatically transferred to the ash silo by means of a vacuum created by a steam jet. The pneumatic transfer air and the ash are separated at the silo by two cyclones in series. The primary cyclone separates the majority of the ash. The collected ash from both cyclones is discharged to the ash silo. The primary cyclone air exhaust discharges into a secondary cyclone where most of the remaining ash is collected and discharged into the ash silo. The exhaust from the secondary cyclone is discharged to a fabric filter. Particulate matter captured by the fabric filter is discharged into the ash silo. The exhaust from the fabric filter passes through the steam eductor, which creates the pneumatic transfer vacuum to a final wet scrubber before being discharged to the atmosphere (EP-Z). Fugitive dust (ash) is conditioned with water prior to loading into trucks for transport from the facility for final disposal.

9.0.2 Applicable Regulatory Requirements

The following provides a summary of the limits and/or standards for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Applicable Standard	Applicable Regulation
Particulate Matter	0.02 lb PM/hour	Sec. 3D-0530 - PSD
Particulate Matter (Fugitives)	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	Sec. 3D-0530

9.1 Sec. 3D-0530 - PSD (Particulate Matter)

The purpose of this rule is to implement a program for the prevention of significant deterioration of air quality as required by 40 CFR 51.166. This facility is subject to PSD due to the particulate matter emissions from ES-62F being greater than the PSD significance level of 25 ton/year.

9.1.1 Regulatory Analysis

The bottom ash and flyash is transferred pneumatically through two cyclones in series followed by a fabric filter then a wet scrubber. The particulate emissions limit from this process was set at 0.02 lb/hr as the BACT limit. This Office has agreed that BACT is being met by this process and that, due to the minimal amount of particulate matter emissions, further effort to reduce emissions from this source would not yield significant results. The EPA concurred with this decision at the time the BACT was determined.

The applicant referenced this Office's compliance certification dated February 2, 1991 as the basis for the emission factor for particulate matter from this process in Section 29 of the application. This compliance certification cited an emission factor from AP-42 Table 8.10-2 (revised - see below) which was for particulate emissions from the process of pneumatically unloading cement to an elevated storage silo. This factor was 0.27 lb PM/ton and was found to be satisfactory to use as a surrogate factor for emissions of ash.

AP-42 has since been revised and the new emission factors for concrete batching are found in AP-42 Table 11.12-2 dated June 2006. The uncontrolled emission factor for particulate emissions from the process of pneumatically unloading cement to an elevated storage silo (SCC 3-05-011-07) is 0.36 lb PM/ton. The entire series of control devices in this source have a combined total control efficiency of 99.9% and are considered BACT for this source.

The maximum loading of the ash silo is 8 tons/hr or 70,080 tons/yr (8 tons/hr x 8,760 hr/yr). The uncontrolled emission rate from this process is calculated as follows:

$$8 \text{ tons/hr} \times 0.36 \text{ lb PM/ton} = \underline{2.88 \text{ lb/hr}}$$

Taking into account the control efficiency of 99.9% for the control device system, the controlled emission rate is calculated as follows:

$$2.88 \text{ lb/hr} \times (1 - 0.999) = \underline{0.00288 \text{ lb/hr}}$$

The uncontrolled emissions on a yearly basis are calculated as follows:

$(2.88 \text{ lb/hr}) \times (8,760 \text{ hr/yr}) / (2,000 \text{ lb/ton}) = \underline{12.6 \text{ ton/yr}}$. The uncontrolled emissions are less than 100 ton/yr and therefore CAM is not applicable to this process.

9.2 Monitoring Requirements

The applicant shall follow the monitoring and recordkeeping requirements for visible emissions in Section **V.1.2.1**.

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 applicant 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: an annual internal inspection of each of the control device's structural integrity; and a monthly visual inspection of the system ductwork, and material collection unit for leaks.

9.3 Recordkeeping Requirements

The results of all inspections and maintenance performed as required in Section **IV.9.2** above shall be recorded in a log (written or electronic form). The log shall be maintained on site and shall contain the following records: the date and time of actions recorded; the results of each inspection; and the results of any maintenance performed on the control devices.

9.4 Reporting Requirements

The applicant shall submit a summary report of the monitoring requirements specified in Section **IV.9.2** to this Office by January 30th and July 30th for the preceding six-month period.

9.5 Alternative Operating Scenario

There is no alternative operating scenario for this equipment.

9.6 Other Specific Conditions

Excess emissions reporting and malfunctions shall be reported in accordance with Sec. 3D-0535 - *Excess Emissions Reporting and Malfunctions*.

10.0 ES-WHS, Wood Handling System, Uncontrolled

10.0.1 Description

The wood handling system supplies wood to the boilers, ES-62C and ES-62F. The wood handling system will be fed by a front-end loader to a live bottom fuel feed hopper with a capacity of 80 tons per hour. Wood fuel for ES-62F will be transferred to the boiler via 80 tons per hour covered conveyor system. No controls are associated with this system and therefore, CAM does not apply to this source.

10.0.2 Applicable Regulatory Requirements

The following provides a summary of the limits and/or standards for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Applicable Standard	Applicable Regulation
Particulate Matter (Fugitives)	Fugitive dust emissions from the wood fuel conveyors shall be minimized by use of covered conveyors	Sec. 3D-0530 - PSD

10.1 Sec. 3D-0530 - PSD (Particulate Matter)

The purpose of this rule is to implement a program for the prevention of significant deterioration of air quality as required by 40 CFR 51.166. This facility is a PSD permitted facility due to the particulate matter emissions from ES-62F being greater than the PSD significance level of 25 ton/year.

10.1.1 Regulatory Analysis

The applicant proposed that no controls other than the covered conveyors be required as BACT for the wood storage pile and transfer operations due to the insignificance of these emissions. This BACT analysis review was conducted in 1997. This Office concurred with this determination and the EPA indicated that these work practice standards represented BACT at that time.

10.2 Monitoring Requirements

There are no monitoring requirements for this source.

10.3 Recordkeeping Requirements

There are no recordkeeping requirements for this source.

10.4 Reporting Requirements

Emissions estimates from this source shall be included in the annual emissions inventory.

10.5 Alternative Operating Scenario

There is no alternate operating scenario for this equipment.

10.6 Other Specific Conditions

Excess emissions reporting and malfunctions shall be reported in accordance with Sec. 3D-0535 - *Excess Emissions Reporting and Malfunctions*.

V. FACILITY-WIDE EMISSION SOURCE CONDITIONS

1.0 Sec. 3D-0521 - Control of Visible Emissions

This rule was promulgated for the prevention, abatement, and control of emissions generated from fuel burning operations and other industrial processes where an emissions can be reasonably expected to occur, except during startups, shutdowns or malfunctions made in accordance with other conditions in the Title V Operating Permit.

1.1 Regulatory Requirements

Sec. 3D-0521(d) states - For sources established after July 1, 1971, visible emissions shall not be more than 20 percent opacity when averaged over a six-minute period except that six-minute periods averaging no more than 87 percent opacity may occur not more than once in any hour nor more than four times in any 24 hour period.

Regulated Pollutant	Applicable Standard	ES-#	Applicable Regulation
Visible Emissions	20% opacity	Facility-wide, except for emission sources subject to NSPS or NESHAP regulations (ES-62C and ES-62F)	Sec. 3D-0521(d)

All of the emission sources meet the allowable particulate matter standard in Sec. 3D-0515 without the use of their control devices except the Carbon Silo (EP-N) of ES-83, the Filter Aid Silo (ES-G) of ES-85, and the Starch Dryers (EP-I and EP-J) of ES-31.

Therefore, the applicant is required to perform more stringent monitoring of these sources to ensure compliance. Emissions from the Railcar Transport Blower (EP-AO) of ES-25, Carbon Storage Silo (EP-N), and the Filter Aid Silo (EP-G) are each controlled by a fabric filter. These emission sources are used infrequently so, a qualitative visible observation shall be performed each time the tank or silos are loaded. The applicant may also use the monthly preventative maintenance inspections to demonstrate compliance in lieu of the qualitative visible observations. The Starch Dryers (EP-I and EP-J) are controlled by a wet scrubber and subject to CAM and additional monitoring is included in the permit to ensure compliance with their allowable emissions limit.

1.2 Monitoring and Recordkeeping Requirements

1.2.1 Monitoring and recordkeeping requirements for all emission sources

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.

The qualitative observations of the stacks/vents were previously required to be conducted on a daily basis. However, they were changed to a monthly observation during a previous renewal of the permit in 2006. They were changed to monthly because the facility had been conducting daily observations for 8 years since the TV permit was first issued and the applicant hadn't observed many instances of visible emissions during the checks. Also, the majority of the emission sources covered by this requirement meet the allowable particulate limit without the use of their control devices. As noted above, qualitative visible observations of the stacks AO, N, and G are required once per day for each day the source is in operation. For stacks I and J, they must conduct the monthly visible observations in addition to the CAM requirements. These requirements are noted in above in Section **II 3.2.1**. For these reasons, in 2006, the daily observations were relaxed to the monthly observations.

1.3 Reporting Requirements

The applicant shall submit a summary report of the visible observation records as described in Section **V.1.2** above, to this Office by January 30th for the period July through December and by July 30th for the period January through June.

2.0 Sec. 3D-0530 - PSD (Sulfur dioxide)

The purpose of this rule is to implement a program for the prevention of significant deterioration of air quality as required by 40 CFR 51.166. This facility is a PSD permitted

facility due to the emissions from ES-62C and ES-62F. During a modification of the facility in 1995, the applicant revised an earlier PSD NAAQS and Increment modeling demonstration to account for SO₂ emission increases resulting from a new source and process improvements including debottlenecking. This demonstration resulted in emission limits for some specific sources described above, as well as facility wide processing limits. Taking in to account these new limitations, the emission increases from the modification were shown to be less than the 40 tpy PSD significant increase threshold. In addition to Sec. 3D-0530 cited as the applicable regulation for the limits established under PSD, Sec. 3Q-0317 is cited as the applicable regulation to establish an enforceable limit to avoid PSD review for the 1995 modification.

2.1 Regulatory Requirements

A federally enforceable permit condition has been established in the permit limiting the emission of sulfur dioxide from the emission units at the facility by limiting the process throughput to no more than 80,000 bushels/day of corn determined as a three day rolling total and 29,200,000 bushels/year of corn determined as a 365 day rolling total. Compliance with these limits protect ambient air and ensure the sulfur dioxide emissions remain below the PSD significance level of 40 tons/year. The applicant has shown continuous compliance with these limits through recordkeeping and reporting requirements.

The following provides a summary of the limits and/or standards for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Applicable Standard	ES-#	Applicable Regulation
Sulfur Dioxide	Process Throughput not to exceed 80,000 bushels/day determined as a three day rolling total and 29,200,000 bushels/year determined as a 365 day rolling total.	Facility-wide	Sec. 3D-0530 - PSD and Sec. 3Q-0317 - Avoidance Conditions

The requirement is written facility-wide emission source conditions section and reads as follows:

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 requirements of Sec. 3D-0530.

2.2 Monitoring Requirements

The grind rates are obtained on a daily basis from the amount of corn being put into the steeps (ES-14). These daily figures are rough estimates of the grind rate and they are

adjusted monthly. The adjustments usually result in a number higher than recorded on a daily basis.

2.3 Recordkeeping Requirements

A record of the grind rate in bushels of corn per day shall be recorded and maintained in a log (written or electronic format). These readings are obtained from the corn being put into the steeps (ES-14). 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. The log shall include the daily grind rate based on a three day average, and the 365 day rolling total grind rate.

2.4 Reporting Requirements

The applicant shall submit the grind rate records as described in Section **V.2.3** above, to this Office by January 30th for the period July through December and by July 30th for the period January through June. The applicant 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.

VI. LOCAL ONLY ENFORCEMENT

The requirements in this section are subject to local enforcement only and are not federally enforceable.

1.1 Sec. 3D-1100 - Control of Toxic Air Pollutants

The provisions of this rule apply to the entire facility (facility-wide) for each toxic air pollutant (TAP) that has been triggered and reviewed for comparison with the acceptable ambient levels (AAL) set forth in this section of the code. Ingredion Incorporated submitted an application to modify the burner size for the Starch Dryer (ES-31) on February 4, 2008 which did require that an evaluation be performed due to the potential increase in TAP emissions from the combustion of natural gas in the replacement dryer.

The TAPs reviewed at that time were; benzene, benzo(a)pyrene, formaldehyde, n-hexane, and toluene. The only other sources at the facility that emit these TAPs are the boilers (ES-62C, ES-62E, and ES-62F) but they were exempt from conducting a TAP evaluation pursuant to Sec. 3Q-0702(a)(18). The boilers are now exempt from the TAP program because they are subject to a MACT.

Since the only source of these TAP emissions at the facility during the past review was the replacement burner of the Starch Drying process, the TAP evaluation was for these pollutants alone. All five of the TAPs were reviewed by this Office were found to be

below the de minimis levels in Sec. 3Q-0711. A modeling demonstration was not required to demonstrate compliance and the permit identifies these pollutants along with their respective de minimis levels. No extra monitoring or recordkeeping, other than the basic requirements, is required because the emissions are below the de minimis levels.

This Office did however conduct an informal review of the toxic air pollutants from the fuels of the boilers (ES-62 (replaced with Temporary Boiler ES-62G), ES-62C, and ES-62F) in September, 2008 to determine if the facility should be called by the Director to perform a facility-wide air toxics evaluation. The products of combustion in this case are coal, wood, and the corn cleanings as identified in each boiler description above. The TAP emissions and stack data used for the determination was from the applicant's annual emissions inventory. Initially, a SCREEN model was run for the boiler stacks with a standard emission rate and worst-case meteorology. The results of the SCREEN model showed non-compliance with the AALs for various pollutants. This Office then conducted an AERMOD modeling analysis for the pollutants with the highest SCREEN concentrations (chromium, hydrogen chloride, and mercury compounds) in each regulated averaging period (i.e., annual, daily, and hourly standard).

The refined modeling for these three "worst-case" TAPs showed compliance with the AALs. The highest concentration of the three pollutants was only at 1% of the AAL. Since these pollutants were determined to be the "worst-case" for each averaging period, this Office made the conclusion that all other pollutants associated with the combustion process also achieve compliance with the applicable AAL. No further modeling was required at the time, and this Office will not be requiring the facility to provide a formal demonstration of compliance. The results of the modeling analysis will not be included in the renewal permit since a Director's call was not made under Sec. 3Q-0712.

2.0 Sec. 3D-0522 - Control and Prohibition of Odorous Emissions

2.0.1 Description

This regulation applies to all facilities and prohibits the emissions of odors beyond the property lines that 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.

2.0.1 Regulatory Analysis

Violation of this regulation is determined by EAP upon investigation of a complaint. There is not currently a requirement for the permittee to perform any monitoring/recordkeeping/reporting activities for this rule. Any future requirements will only be in response to complaints received by this Office.

This facility has had complaints lodged against it in the past with regard to odor. When a new complaint is received, a visit to the area of the complainant is conducted and if the complaint is validated, a telephone call is made to the permittee to determine if there are any malfunctions or plant upsets that may be the source of the odor. No odor complaints were received concerning this facility during the previous permit term.

The applicant has routed all of the vapors from their feed dryers to the boiler to control odors as described in this statement of basis and this Office has determined that the applicant has done all they could to minimize odors at this facility. This Office may require the facility to demonstrate maximum feasible control technology and install additional odor controls if additional complaints and investigations by this Office determine an analysis is necessary.

VII. MACT APPLICABILITY AND REQUIREMENTS

Based on the current HAP emissions, this facility is a Title V source with respect to HAP emissions. Therefore, it is subject to any applicable MACT standards.

The applicant has submitted notification to this Office that the boilers ES-62C, and ES-62F are subject to the National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Industrial, Commercial, and Institutional Boilers and Process Heaters, 40 CFR 63, Subpart DDDDD.

This MACT was originally promulgated on September 13, 2004 in the Federal Register. The compliance date for the existing affected sources was September 13, 2007. However, the United States Court of Appeals for the District of Columbia Circuit vacated the Boiler MACT rule on July 30, 2007. In June of 2010, the EPA proposed a new version of the Boiler MACT. This version also went through some challenges and delays. The final rule for the Major Source boilers was published in the Federal Register on January 31, 2013. Applicable permit requirements are noted in Section III above for the individual boilers. The applicant is currently in compliance with these regulations.

VIII. PERMIT SHIELD (INCLUDING NON-APPLICABLE REQUIREMENTS)

In accordance with Sec. 3Q-0512, general condition 2.7 of the Title V Operating Permit will contain a provision stating that compliance with the terms, conditions, and limitations of the Title V permit shall be deemed in compliance with applicable requirements specifically identified in the permit, as of the date of permit issuance. If the permit does not expressly state that a permit shield exists then it shall be presumed not to provide such a shield.

IX. GENERAL CONDITIONS

The General Conditions section of the Title V Operating Permit lists additional applicable rule

requirements that the permittee must adhere to, as with any other permit condition. These requirements in general are common to all Title V facilities. The general conditions include provisions such as annual fee payment, permit renewal and expiration, transfer of ownership or operation, submission of documents, inspections and entry procedures, reopen for cause, severability, etc. In addition, conditions in this section of the permit include the general conditions specific to the NSPS, CAM, and the NESHAP rules. These conditions are not necessarily common to all Title V facilities, only those facilities with sources subject to the NSPS, CAM, and the NESHAP regulations.

X. INSIGNIFICANT ACTIVITIES

The insignificant activities listed in the application have been reviewed and verified. Although each activity is not listed in the Title V Operating Permit, a general condition is placed in the permit stating that all insignificant activities shall comply with the applicable requirements. A list of the insignificant activities will be included as an Attachment to the permit.

XI. PUBLIC NOTICE

This Office will post a notice on our web page concerning the renewal of this permit. The notice will provide for a 30 day comment period, with an opportunity for a public hearing if one is requested. Concurrent with the 30 day public comment period, the draft permit will be emailed to EPA Region IV for their review. The EPA review period is for 45 days. Concurrent review by the public and the EPA is known as parallel processing.

XII. EAP COMMENTS/RECOMMENDATIONS

The agency recommends the renewal Title V Operating Permit (#00732-TV-16) be issued as written.

Changes made to the permit as part of this renewal process:

- Removed Section 1.1 “Operating Conditions Not Covered Under the Permit Shield” because these conditions are fully incorporated into the permit and under the permit shield due to this permit action. The change was for the addition of a temporary boiler to the facility. This Section was also removed from the Table of Contents. This was removed because the entire permit is shielded now that it is undergoing a renewal and review by the U.S. EPA.

- Updated the permit number from TV-15 to TV-16;
- Deleted PART II AIR QUALITY CONSTRUCTION PERMIT as the Temporary Boiler Modification Project has been completed and the unit has been added to PART I of the permit.
- Updated the conditions in SECTION 2 FACILITY GENERAL ADMINISTRATIVE CONDITIONS to conform with recent changes in the Forsyth County Air Quality Technical Code. Added general permit condition **2.41** NESHAP - National Emission Standard for Asbestos <40 CFR Part 61, Subpart M> [Sec. 3D-1110] to the permit and renumbered the general conditions that follow this condition (old **2.41** becomes **2.42** and so on).
- Changed the Emission Point ID number for the Fiber Dewatering equipment in ES-15 from AC to AL as the result of an approved Section 502(b)(10) change in accordance with Sec. 3Q-0523.
- Updated the maker of two fabric filters in ES-11B and one fabric filter each in ES-83 and ES-85 as the result of previously approved Section 502(b)(10) changes in accordance with Sec. 3Q-0523.