



San Joaquin Valley

AIR POLLUTION CONTROL DISTRICT



OCT 07 2016

Diane Curelli
General Mills Operations, Inc.
WO1D One General Mills Blvd.
Minneapolis, MN 55426

Re: Notice of Preliminary Decision – Emission Reduction Credits
Facility Number: N-355
Project Number: N-1160825

Dear Ms. Curelli:

Enclosed for your review and comment is the District's analysis of General Mills Operations, Inc.'s application for Emission Reduction Credits (ERCs) resulting from the shutdown of breakfast cereal processing operations, at 2000 W Turner Road, Lodi. The quantity of ERCs proposed for banking is 3,072 lb-NOx/yr, 614 lb-SOx/yr, 14,301 lb-PM10/yr, 37,419 lb-CO/yr, and 953 lb-VOC/yr.

The notice of preliminary decision for this project will be published approximately three days from the date of this letter. After addressing all comments made during the 30-day public notice comment period, the District intends to issue the ERCs. Please submit your written comments on this project within the 30-day public comment period, as specified in the enclosed public notice.

Thank you for your cooperation in this matter. If you have any questions regarding this matter, please contact Mr. Jag Kahlon of Permit Services at (209) 557-6452.

Sincerely,

Arnaud Marjollet
Director of Permit Services

AM:JK

Enclosures

cc: Tung Le, CARB (w/enclosure) via email
cc: Gerardo C. Rios, EPA (w/enclosure) via email

Seyed Sadredin
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**San Joaquin Valley Air Pollution Control District
Emission Reduction Credit Banking
Application Review**

Facility Name: General Mills Operations, Inc. Date: September 27, 2016
Mailing Address: WO1D One General Mills Blvd. Engineer: Jag Kahlon
Minneapolis, MN 55426 Lead Engineer: Nick Peirce
Contact Person: Diane Curelli
Telephone: (763) 293-2452
ERC #(s): N-xxx-1, '-2, '-3, '-4, '-5
Project #: N-1160825
Deemed Complete: May 16, 2016

I. PROPOSAL

General Mills Operations, Inc. has shut down its breakfast cereal manufacturing plant in Lodi, California in December 2015. They have proposed to bank the Emission Reduction Credits (ERCs) from the emission units at the facility. The following table summarizes the bankable emissions reductions:

Bankable Emission Reductions (pounds)				
Pollutant	Q1	Q2	Q3	Q4
NO _x	899	877	794	502
SO _x	171	178	172	93
PM ₁₀	3,269	3,660	3,947	2,974
PM _{2.5} in PM ₁₀	915	1,025	1,026	714
CO	10,319	10,892	10,615	5,593
VOC	268	292	209	184

General Mills is on the "List of Covered Entities" under California Air Resources Board (CARB) greenhouse gas (GHG) regulation, and is not eligible to bank the GHG emission reductions since these GHG reductions do not meet "surplus" criterion per Section 4.5.3.1 of District Rule 2301 – Emission Reduction Credit Banking (1/19/12).

Refer to Appendix I for Draft ERC Certificates.

II. APPLICABLE RULES

Rule 2201 New and Modified Stationary Source Review Rule (2/18/16)
Rule 2301 Emission Reduction Credit Banking (1/19/12)

Rule 4001	New Source Performance Standards (4/14/99)
Rule 4002	National Emission Standards for Hazardous Air Pollutants (5/20/04)
Rule 4201	Particulate Matter Concentration (12/17/92)
Rule 4202	Particulate Matter – Emissions Rate (12/17/92)
Rule 4301	Fuel Burning Equipment (12/17/92)
Rule 4305	Boilers, Steam Generators, and Process Heaters – Phase 2 (8/21/03)
Rule 4306	Boilers, Steam Generators, and Process Heaters – Phase 3 (10/16/08)
Rule 4320	Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters greater than 5.0 MMBtu/hr (10/16/08)
Rule 4351	Boilers, Steam Generators, and Process Heaters – Phase 1 (8/21/03)
Rule 4701	Internal Combustion Engines – Phase 1 (8/21/03)
Rule 4702	Internal Combustion Engines (11/14/13)
Rule 4703	Stationary Gas Turbines (9/20/07)
Rule 4801	Sulfur Compounds (12/17/92)
Air Quality Plans	
Rules and Regulations in State Implementation Plan	

III. LOCATION OF REDUCTIONS

This facility is located at 2000 W Turner Road, Lodi, California.

IV. METHOD OF GENERATING REDUCTIONS

The emission reductions are from the permanent shutdown of several emissions units at the breakfast cereal manufacturing plant.

VII. EMISSION CALCULATIONS

A. Assumptions

- Assumptions will be stated as they are made during the evaluation.

B. Emission Factors

N-355-1:

CEREAL PLANT (PUFF II) CONSISTING OF A MATERIAL DISPENSING SYSTEM, A MATERIAL COOKING SYSTEM, A PUFF SYSTEM, A CEREAL-FLAVOR SPRAYING AND DRYING SYSTEM, AND A FINISHED CEREAL SCALPING AND CONVEYANCE SYSTEM

PM₁₀:

There are several units under each system. These units are a source of particulate matter emissions; therefore, most of them are served by dust

collectors. Particulate matter emissions vary from 0.0020 to 0.0028 gr/dscf, per information obtained from various source test results while processing project N-1083181.

Permit Limit	Rule 4201, 4202	Source Testing/other sources	AP-42 Section 9.9.2 (8/95)
0.1 gr-PM/dscf, 26.7 lb/day	--	0.0020 to 0.0028 gr/dscf	--

VOC:

General Mills have used various flavorings that contained VOC in their cereal manufacturing operation. Some of these VOC are expected to release during the cereal flavor spray application and drying processes. No test data are available to determine how much of these VOC were released into the atmosphere. Further, no usage data for these flavorings were reported on the annual emissions inventory sheets. Moreover, no data on flavor use was provided with the ERC banking application.

Permit Limit	Rule 4201, 4202	Source Testing/other sources	AP-42 Section 9.9.2 (8/95)
162.5 lb/day*, 147.9 lb/day based on 30- day rolling period*, and 53,984 lb/yr on a 12-month rolling period*	--	--	--

*These limits are combined total for both permit unit N-355-1 and '-2.

N-355-2:

CEREAL PLANT (PUFF I) CONSISTING OF A MATERIAL DISPENSING SYSTEM, A MATERIAL COOKING SYSTEM, A PUFF SYSTEM, A CEREAL-FLAVOR SPRAYING AND DRYING SYSTEM, AND A FINISHED CEREAL SCALPING AND CONVEYANCE SYSTEM

The EFs are similar to the EFs of Puff Line II under permit N-355-1. Therefore, please refer to the discussion under permit N-355-1.

N-355-5:

CEREAL PLANT PACKAGING SYSTEM: TWIN PACK LINE A SERVED BY A FLEX-KLEEN MODEL 20 PCBK3 III DUST COLLECTOR (AC-48), TWIN PACK LINE B SERVED BY A FLEX-KLEEN MODEL 20 PCBL3 III DUST

COLLECTOR (AC-49), LINE 4 BAGGING AND PACKAGING SERVED BY A FLEX-KLEEN MODEL 58USBC144-III DUST COLLECTOR (AC-53), 8 SCALES SERVED BY 4 BOEDECKER MODEL DC-58-144-3B DUST COLLECTORS (2 SCALES/DUST COLLECTOR), 8 BAGGERS EACH SERVED BY A DEDICATED BOEDECKER MODEL RDP-25-3-3-B DUST COLLECTOR, WHICH ARE ALL VENTED TO A FLEX-KLEEN CYCLONIC RECEIVER WITH SOCK FILTER (AC-89), CEREAL FILLING STATION (A-104) SERVED BY A DUST COLLECTION HOOD VENTED TO AN AMERICAN AIR FILTER MODEL B WET TYPE ROTOCLONE COLLECTOR (AC-104)

PM₁₀:

There are several units under this line. These units are a source of particulate matter emissions; therefore, most of them are served by dust collectors. Particulate matter emissions from each dust collector are 0.000078 gr/dscf, per information obtained from project N-1083089 and N-1123045. The following table summarizes the emissions factor:

Permit Limit	Rule 4201, 4202	Source Testing/other sources	AP-42 Section 9.9.2 (8/95)
0.1 gr-PM/dscf, 0.5 lb/day	--	7.8 x 10⁻⁵ gr/dscf	--

N-355-6:

BULK SWEETENER RECEIVING AND STORAGE OPERATION WITH ONE TRUCK RECEIVING PIT, TWO TRUCK/RAIL RECEIVING PITS, NINE FILTER RECEIVERS, 48 STORAGE SILOS, FLOUR DRYING SYSTEM, AND ASSOCIATED CONVEYING EQUIPMENT, ALL SERVED BY TWENTY-NINE BIN VENT FILTERS AND TEN BAGHOUSES

PM₁₀:

Pneumatic receiving of various fine materials (e.g., sugar, flour, etc.) is a source of particulate matter emissions. Per the application review under project N-1011086, the EF is 0.0036 lb/ton of material received. The following table summarizes the emissions factor:

Permit Limit	Rule 4201, 4202	Source Testing/other sources	AP-42 Section 9.9.2 (8/95)
0.1 gr-PM/dscf, 1.2 lb/day	--	0.0036 lb/ton of material	--

N-355-7:

DRY MIX PLANT SYSTEM: PRE-MIX OPERATION CONSISTING OF BAG DUMP, MIXER AND SIFTER; SIX DAY BINS (H-17) VENTED TO A BAGHOUSE (HC-17); MINOR INGREDIENTS RECEIVER, DRY INGREDIENTS RECEIVER, AND PRE-MIXER VENTED TO A BAGHOUSE (HC-18)

PM₁₀:

There are several units under this line. These units are a source particulate matter emissions; therefore, most of them are served by dust collectors. Per project N-960393, the total EF for material receiving, storage, mixing and handling operations is 0.0553 lb/ton of material processed. The following table summarizes the emissions factor:

Operations	Permit Limit	Rule 4201, 4202	Source Testing/other sources	AP-42 Section 9.9.2 (8/95)
Bag dump hopper, sifter, six day bins; and mixer	0.09 lb/hr (total)	--	0.0553 lb/ton of material	--

N-355-9:

MIX PLANT SYSTEM (MIXER #24A) SERVED BY A BAGHOUSE

N-355-10:

MIX PLANT SYSTEM (MIXER 24-B) SERVED BY A BAGHOUSE

N-355-11:

MIX PLANT SYSTEM (MIXER #25) SERVED BY A BAGHOUSE

N-355-12:

MIX PLANT SYSTEM (MIXER #26) SERVED BY A BAGHOUSE

N-355-13:

MIX PLANT SYSTEM (MIXER#27) SERVED BY A BAGHOUSE

PM₁₀:

The configuration of these permit units is presumed to be similar to the configuration of N-355-14-3. EF for N-355-14-3 is estimated to be 0.0028 lb-PM₁₀/ton of material processed¹ (per information in the confidential file under project N-1120492). The following table summarizes the emissions factor:

Operations	Permit Limit	Rule 4201, 4202	Source Testing/other sources	AP-42 Section 9.9.2 (8/95)
Mix plant system	0.1 gr/dscf	--	0.0028 lb/ton of material	--

¹EF is weighted average EF derived by taking the sum of the product of individual emission units and emission factor and dividing the total with the sum of the material process rate through individual units. Refer to Appendix III for detailed calculations.

N-355-14:

BULK MATERIAL MIXING OPERATION: TWO FLOUR/SWEETENER SCALE HOPPERS EACH SERVED BY ITS OWN HAF EQUIPMENT MODEL 24HLBV10S2 DUST COLLECTOR (HC-90, HC-91), A MIXER #29 AND MANUALLY ADDED INGREDIENTS OPERATION VENTED TO A HAF EQUIPMENT MODEL 24HLBV10S2 DUST COLLECTOR (HC-76), A DAY BIN, TWO TRANSITION PNEUMATIC CONVEYING SYSTEMS EACH SERVED BY ITS OWN HAF EQUIPMENT MODEL 18BV4S2 DUST COLLECTOR (HC-92, HC-93), AND TWO DAY BINS

PM₁₀:

There are several units under this permit. These units are a source of particulate matter emissions, and therefore, are served by dust collectors. EF is estimated to be 0.0028 lb-PM10/ton of material processed² (per information in the confidential file under project N-1120492). The following table summarizes the emissions factor:

Operations	Permit Limit	Rule 4201, 4202	Source Testing/other sources	AP-42 Section 9.9.2 (8/95)
Bulk material mixing operation	1.7 lb/day 0.1 gr/dscf	--	0.0028 lb/ton of material	--

N-355-16:

DRY MIX PLANT - SEASONING MIXER SYSTEM CONSISTING OF ONE BAG DUMP STATION/SCALPER (H-27) AND ONE SEASONING MIXER (H-28) ALL VENTED TO A FLEX KLEEN MODEL 58-BV-9-II DUST COLLECTOR (HC-27); ONE BAG DUMP STATION; THREE DAY BINS (H-65, H-66, & H-67) EACH VENTED TO AN HAF EQUIPMENT MODEL 58-BV-9-S-II-G DUST COLLECTOR (H-65, H-66 & H-67); ONE SCALE HOPPER RECEIVER (H-64) VENTED TO AN INTEGRAL HAF EQUIPMENT MODEL 18-CT-62-S-II DUST COLLECTOR (HC-64); ONE SUPER SACK DUMP-HOPPER, ONE SCALPER, AND ONE DAY BIN (H-86) ALL VENTED TO AN HAF EQUIPMENT MODEL 58-BV-25-S-2-G DUST COLLECTOR (HC-86)

PM₁₀:

There are several units under this permit. These units are a source of particulate matter emissions, and therefore, are served by dust collectors. EF is estimated to be 0.0123 lb-PM10/ton of material processed² (per information

²EF is weighted average EF derived by taking the sum of the product of individual emission units and emission factor and dividing the total with the sum of the material process rate through individual units. Refer to Appendix III for detailed calculations.

in the file under project N-1061648). The following table summarizes the emissions factor:

Operations	Permit Limit	Rule 4201, 4202	Source Testing/other sources	AP-42 Section 9.9.2 (8/95)
Dry mix plant	3.7 lb/day and 0.1 gr/dscf	--	0.0123 lb/ton of material	--

N-355-17:
MIX PLANT SYSTEM (FLOUR GRINDING) SYSTEM SERVED BY ONE BAGHOUSE AND TWO BIN VENT FILTERS

PM₁₀:
Per application review under project N-970659, EF for the operation is 0.011 lb/ton of product. The following table summarizes the emissions factor:

Operations	Permit Limit	Rule 4201, 4202	Source Testing/other sources	AP-42 Section 9.9.1-2 (3/03)
Flour day bin and transition hopper for the mixer	0.09 lb/hr (total)	--	0.011 lb/ton of material	0.012 lb/ton for grain hammermill vented to a baghouse

N-355-18:
MIX PLANT SYSTEM (SUGAR SYSTEM) SERVED BY SIX BAGHOUSES

PM₁₀:
Per application review under project N-1050012, EF for the operation is 0.028 lb/ton of product. The following table summarizes the emissions factor:

Operations	Permit Limit	Rule 4201, 4202	Source Testing/other sources	AP-42 Section 9.9.2 (8/95)
Mix plant system	None	--	0.028 lb/ton of material	--

N-355-20:
48.3 MMBTU/HR TRANE-MURRAY MODEL MCF2-50 BOILER EQUIPPED
WITH A NATCOM MODEL P-52-G-24-1419 ULTRA LOW-NOX BURNER

NOx:

Source testing on June 18, 2013 indicates 6.3 ppmvd NOx @ 3% O₂. The boiler was not tested in 2011 and 2012. Refer to Appendix IV for source test summary pages. The following table summarizes the emissions factor:

Permit Limit	Rule 4320	Source Testing/other sources	AP-42 Table 1.4-1
7 ppmvd @ 3% O ₂	7 ppmvd @ 3% O ₂	6.3 ppmvd @ 3% O₂ equates to 0.0076 lb/MMBtu	0.05 lb/MMBtu*

*EF for small boilers <100 MMBtu/hr equipped with low NOx burners, higher heating value of 1,000 Btu/scf is used for natural gas.

SOx:

Permit Limit	Rule 4320	Source Testing/other sources	AP-42 Table 1.4-2
0.00285 lb/MMBtu natural gas, 0.017 lb/MMBtu LPG fuel	None	--	0.0006 lb/MMBtu

PM₁₀:

Permit Limit	Rule 4320	Source Testing/other sources	AP-42 Table 1.4-2
0.0076 lb/MMBtu natural gas/ LPG fuel	PUC quality natural gas, propane, LPG or combination ; or 5 gr-S/100 scf; or emission control system that reduces SO ₂ by at least 95% by wt. or limit SO ₂ to less than or equal to 9 ppmvd @ 3% O ₂	0.003 lb/MMBtu*	0.0076 lb/MMBtu

*EF based on District's internal guidance document

CO:

Source testing on June 18, 2013 indicates 30.3 ppmvd NOx @ 3% O₂. The boiler was not tested in 2011 and 2012. Refer to Appendix IV for source test summary pages. The following table summarizes the emissions factor:

Permit Limit	Rule 4320	Source Testing/other sources	AP-42 Table 1.4-1
200 ppmvd @ 3% O ₂	400 ppmvd @ 3% O ₂	30.3 ppmvd @ 3% O₂ equates to 0.0224 lb/MMBtu	0.084 lb/MMBtu*

*EF for small boilers <100 MMBtu/hr, higher heating value of 1,000 Btu/scf is used for natural gas.

VOC:

Permit Limit	Rule 4320	Source Testing/other sources	AP-42 Table 1.4-2
0.0055 lb/MMBtu	None	None	0.0055 lb/MMBtu

N-355-21:

3.48 MW COGENERATION SYSTEM CONSISTING OF AN ALLISON MODEL 501 KB GAS TURBINE WITH A 16 MMBTU/HR DUCT BURNER SYSTEM ALL SERVED BY A SELECTIVE CATALYTIC REDUCTION SYSTEM, AND AN ELECTRIC MOTOR STARTER

NOx:

The following table summarizes the emissions. Refer to Appendix IV for source test summary pages.

Permit Limit	Rule 4703	Source Testing/other sources		AP-42 Table 3.1-1 (4/00)
5 ppmvd @ 15% O ₂	5 ppmvd @ 15% O ₂	Test Date	NOx (ppmvd @ 15% O ₂)*	See note**** (0.13 lb/MMBtu – NG turbine with water-steam injection)
		10/28/10	19.8**	
		2011	No data***	
		12/19/12	3.2	
		2/12/13	3.8	

*Both turbine and duct burner operating; **the cogen system was not equipped with an SCR system at that time; ***System was not tested in 2011; ****EF is not available for cogen systems equipped with SCR systems.

SOx:

Permit Limit	Rule 4703	Source Testing/other sources	AP-42 Table 3.1-2a (4/00)
0.00285 lb/MMBtu natural gas	None	--	0.0034 lb/MMBtu

PM10:

Permit Limit	Rule 4703	Source Testing/other sources	AP-42 Table 3.1-2a (4/00)
0.0066 lb/MMBtu	None	--	0.0066 lb/MMBtu

CO:

Refer to Appendix IV for source test summary pages.

Permit Limit	Rule 4703	Source Testing/other sources		AP-42 Table 3.1-1 (4/00)
200 ppmvd @ 15% O ₂	200 ppmvd @ 15% O ₂	Test Date	NOx (ppmvd @ 15% O ₂)*	See note***
		10/28/10	64.2	
		2011	No data**	
		12/19/12	80.4	
		2/12/13	78.2	

*Both turbine and duct burner operating; **System was not tested in 2011; ***CO factor is not available for cogen systems.

VOC:

The following table summarizes the emissions:

Permit Limit	Rule 4703	Source Testing/other sources	AP-42 Table 3.1-2a (4/00)
0.0021 lb/MMBtu	None	None	0.0021 lb/MMBtu

N-355-25-3:

GRAHAM SYSTEM CONSISTING OF TEN INGREDIENT BINS SERVED BY TEN INDIVIDUAL BAGHOUSES

PM10:

Receiving material into bins generates particulate matter emissions; therefore, these bins are served by baghouses. The following table summarizes the emissions factor:

Permit Limit	Rule 4201 and 4202	Source Testing/other sources	AP-42 Table 9.9.1-1 (3/03)
None	0.1 gr/dscf	--	0.00025 lb/ton of material*

*AP-42 lists 0.025 lb-PM/ton of material for storage bin vent without any emissions control equipment; using 99% control efficiency for the baghouse, EF would be 0.00025 lb/ton of material $[0.025 * (1-0.99)]$.

N-355-35:

GRAHAM SYSTEM: DOUGH PROCESSING SYSTEM CONSISTING OF DOUGH FORMERS, WET DOUGH RECEIVERS (D54) SERVING DOUGH DRYER #1 (D-12), DOUGH DRYER #2 (D-13), AND DOUGH DRYER #3 (D-14) CONNECTED IN SERIES. THIS OPERATION ALSO SERVES PERMIT UNIT #N-355-38.

PM10:

The following table summarizes the emissions factor:

Operations	Permit Limit	Rule 4201, 4202	Source Testing/other sources	AP-42 Section 9.9.2 (8/95)
Dryer served by baghouse (each)	0.0042 lb/ton of material, 72 tons/day	0.1 gr/dscf	--	--
Receivers served by baghouse	0.05 lb/ton of material, 72 tons/day	0.1 gr/dscf	--	--

N-355-38:

GRAHAM SYSTEM: PELLET COOLER (D-18) SERVED BY A BAGHOUSE (DC-18), PELLET TOASTER (D-16) WITH TWO 2.5 MMBTU/HR NATURAL GAS-FIRED BURNERS SERVED BY TWO CYCLONES AND A WET SCRUBBER (DC-16), AND DAY BINS (D-21) SERVED BY A BAGHOUSE (DC-21)

This permit unit has process emissions as well as combustion emissions. These are summarized below:

Process emissions:

PM10:

Per application review under project N-1031721, process EF is 0.0154 lb-PM10/ton of material processed. This EF includes emissions from pellet cooler, pellet toaster and day bins.

Operations	Permit Limit	Rule 4201, 4202	Source Testing/other sources	AP-42 Section 9.9.2 (8/95)
Process emissions	None	0.1 gr/dscf	0.0154 lb/ton of material	--

Combustion emissions:

NOx:

Permit Limit	Source Testing/other sources	AP-42 Table 1.4-1
None	--	0.1 lb/MMBtu

SOx:

Permit Limit	Rule 4801	Source Testing/other sources	AP-42 Table 1.4-2
None	2,000 ppmv	--	0.0006 lb/MMBtu

PM10:

Permit Limit	Rule 4201	Source Testing/other sources	AP-42 Table 1.4-2
None	0.1 gr/dscf	--	0.0076 lb/MMBtu

CO:

Permit Limit	Source Testing/other sources	AP-42 Table 1.4-1
None	--	0.084 lb/MMBtu

VOC:

Permit Limit	Source Testing/other sources	AP-42 Table 1.4-2
None	--	0.0055 lb/MMBtu

N-355-40:

GRAHAM SYSTEM: RECOVERY TOASTER (D-17) SERVED BY A CYCLONE AND A WET SCRUBBER (DC-17), A RECOVERY COOLER (D-19) SERVED BY A BAGHOUSE (DC-19), AND A GRINDER (D-20) SERVED BY TWO FILTER RECEIVERS (DC-20 AND DC-33)

Process emissions:

PM10:

Per application review under project N-1031721, process EF is 0.01546 lb-PM10/ton of material processed. This EF includes emissions from pellet cooler, pellet toaster and grinder.

Operations	Permit Limit	Rule 4201, 4202	Source Testing/other sources	AP-42 Section 9.9.2 (8/95)
Process emissions	None	0.1 gr/dscf	0.01546 lb/ton of material	--

Combustion emissions:

NOx:

Permit Limit	Source Testing/other sources	AP-42 Table 1.4-1
None	--	0.1 lb/MMBtu

SOx:

Permit Limit	Rule 4801	Source Testing/other sources	AP-42 Table 1.4-2
None	2,000 ppmv	--	0.0006 lb/MMBtu

PM10:

Permit Limit	Rule 4201	Source Testing/other sources	AP-42 Table 1.4-2
None	0.1 gr/dscf	--	0.0076 lb/MMBtu

CO:

Permit Limit	Source Testing/other sources	AP-42 Table 1.4-1
None	--	0.084 lb/MMBtu

VOC:

Permit Limit	Source Testing/other sources	AP-42 Table 1.4-2
None	--	0.0055 lb/MMBtu

N-355-42:

CEREAL PLANT VACUUM SYSTEM SERVED BY A BAGHOUSE

This vacuum system appears to have been operated to pick up spilled materials as part of good housekeeping practice. This process is a source of particulate matter emissions, and therefore, it is vented to baghouse. Based on the information provided by General Mills under project N-930640, EF is 2.08 lb-PM10/ton of material collected. The information is based on General Mills testing for the equipment.

PM10:

Permit Limit	Rule 4201	Source Testing/other sources	AP-42 Section 9.9.2 (8/95)
None	0.1 gr/dscf	2.08 lb/ton of material	--

N-355-44:

GRAHAM SYSTEM: SLURRY COOLER SERVED BY A BAGHOUSE

PM10:

Per application review under project N-930640, process EF is 0.00097 lb-PM₁₀/ton of material processed.

Permit Limit	Rule 4201	Source Testing/other sources	AP-42 Section 9.9.2 (8/95)
None	0.1 gr/dscf	0.00097 lb/ton of material	--

N-355-45:

CEREAL COATING OPERATION: ONE LINE WITH ENROBER (D23), DRYER (D22) VENTED TO SCRUBBER (DC22), & COOLER (D24) VENTED

TO FABRIC FILTER (DC24); THE SECOND LINE WITH ENROBER (D25)
VENTED TO SCRUBBER (DC25)

PM10:

Per application review under project N-1031721, total process EF is 0.0291 lb-PM10/ton of material processed. This EF includes emissions from enrobers, dryer, cooler. The following table summarizes the emission factors:

Operations	Permit Limit	Rule 4201, 4202	Source Testing/other sources	AP-42 Section 9.9.2 (8/95)
Enrober	0.01 lb/hr	0.1 gr/dscf	0.0033 lb/ton of material*	
Dryer vented to scrubber	None		0.0075 lb/ton of material*	
Dryer cooler vented to fabric filter	None		0.015 lb/ton of material*	
Enrober	None		0.0033 lb/ton of material*	
Total:			0.0291 lb/ton of material	

*Estimated using information in project N-1031721.

N-355-46:

TOKAY CEREAL PLANT; CENTRAL VACUUMING SYSTEM SERVED BY A HOFFCO PULSE SEPARATOR (MODEL # SCHA 14-58)

Note: 2011-2015 emissions inventory data has no records for this system. Therefore, no ERCs are being banked from this system.

N-355-47:

TOKAY CEREAL PLANT; PNEUMATIC RAILCAR RECEIVING SYSTEM SERVED BY TWO (2) FLEX-KLEEN BAGHOUSES (MODEL #58 CTBC 32)

PM10:

Per engineering evaluation under application # AP89-64 to 74 (9/20/89), EF for this process is 0.00029 lb//ton of material. The following table summarizes the emissions factor:

Permit Limit	Rule 4201	Source Testing/other sources	AP-42 Section 9.9.2 (8/95)
4.4 lb/day for entire Tokay cereal plant	0.1 gr/dscf	0.00029 lb/ton of material	--

N-355-56:

TOKAY CEREAL PLANT; FOUR AND SEVEN BULK STORAGE BINS SERVED BY ELEVEN MAC BAGHOUSES (MODEL #72 AVR 14) DUCTED THROUGH THREE BULK BIN EXHAUST HEADERS

Per engineering evaluation under application # AP89-64 to 74 (9/20/89), EF for this process is 0.00145 lb//ton of material. The following table summarizes the emissions factor:

Permit Limit	Rule 4201	Source Testing/other sources	AP-42 Section 9.9.2 (8/95)
4.4 lb/day for entire Tokay cereal plant	0.1 gr/dscf	0.00145 lb/ton of material	--

N-355-78:

BULK MATERIAL MIXING OPERATION: ONE MAJORS BAG DUMP HOPPER (H-19) SERVED BY AN ANDERSON DAHLEN/FLEX-KLEEN MODEL 18CTBS24I FILTER RECEIVER (HC-19), ONE FLEX-KLEEN MODEL 18CTBS24I MINORS FILTER RECEIVER (HC-20), ONE FLOUR SCALE HOPPER SERVED BY A HAF EQUIPMENT MODEL 24HLBV10S2 DUST COLLECTOR (HC-88), ONE BAG DUMP HOPPER SERVED BY A HAF EQUIPMENT MODEL 3636S DUST COLLECTOR (HC-89), ONE 250 CUBIC FOOT LOWE INDUSTRIES MIXER (H-21) SERVED BY A FLEX-KLEEN MODEL 30PVBL16 DUST COLLECTOR (HC-21), ONE SWEETENER SCALE HOPPER, ONE 250 CUBIC FOOT ANDERSON DAHLEN DAY BIN, AND ONE 250 CUBIC FOOT HOLDING MIXER (H-23) SERVED BY A HAF EQUIPMENT MODEL 58CT24S3 DUST COLLECTOR (HC-75)

PM10:

There are several units under this permit. These units are a source of particulate matter emissions, and therefore, are served by dust collectors. EF is estimated to be 0.0037 lb-PM10/ton of material processed² (per information

in the file under project N-1120492). The following table summarizes the emissions factor:

Operations	Permit Limit	Rule 4201, 4202	Source Testing/other sources	AP-42 Section 9.9.2 (8/95)
Bulk material mixing operation	2.6 lb/day	0.1 gr/dscf	0.0037 lb/ton of material	---

N-355-83:

355 HP CUMMINS DIESEL FIRED I.C. ENGINE MODEL #NT855GZ, SERIAL #56207, SERVING AN ONAN STANDBY GENERATOR (200 KW) FOR UTILITY POWER INTERRUPTIONS

Note: 2011-2015 emissions inventory data has no records for this unit. Therefore, no ERCs are being banked from this unit.

N-355-90:

VACUUM CLEANING SYSTEM WITH A LAMSON MODEL 814-4-0-AD PRIMARY SEPARATOR AND A KICE INDUSTRIES BAGHOUSE

This system is presumed to be same as the one under permit N-355-42. Therefore, emissions are expected to be same.

PM10:

Permit Limit	Rule 4201	Source Testing/other sources	AP-42 Section 9.9.2 (8/95)
None	0.1 gr/dscf	2.08 lb/ton of material	---

Note that it is assumed that 0.75% of finished product is lost due to material spills in the area.

N-355-92:

WHEAT GERM SIFTER AND CONVEYING SYSTEM SERVED BY A MAC, MODEL NO. 36AVR14-III, PNEUMATIC RECEIVER

Per application review under project N-950551, EF is 0.0426 lb-PM10/ton of material processed. The following table summarizes the emissions factors:

PM10:

Permit Limit	Rule 4201	Source Testing/other sources	AP-42 Section 9.9.2 (8/95)
None	0.1 gr/dscf	0.0426 lb/ton of material	--

N-355-94:

LINE 21 - PRODUCT DELIVERY AND PACKAGING SYSTEM CONSISTING OF A DAY BIN; A SCALPER (H-57), CONVEYOR (H-57), AND A HOPPER (H-57) ALL VENTED TO A BAGHOUSE (HC-57); AND FOUR BAGGERS (H-58 THROUGH H-61) VENTED TO A BAGHOUSE (HC-58)

Per application review under project N-980064, EF is 0.00167 lb-PM10/ton of material processed. The following table summarizes the emissions factors:

PM10:

Permit Limit	Rule 4201	Source Testing/other sources	AP-42 Section 9.9.2 (8/95)
0.04 lb/hr total for receiving and scalping and four baggers	0.1 gr/dscf	0.001676 lb/ton of material	--

N-355-95:

48.3 MMBTU/HR NEBRASKA NS-C-52-ECON NATURAL GAS/LPG FIRED BOILER EQUIPPED WITH A NATCOM MODEL P-48-G-24-1318 ULTRA-LOW NOX BURNER

NOx:

Source testing on June 18, 2013 indicates 4.9 ppmvd NOx @ 3% O₂. The boiler was not tested in 2011 and 2012. Refer to Appendix IV for source test summary pages. The following table summarizes the emissions factor:

Permit Limit	Rule 4320	Source Testing/other sources	AP-42 Table 1.4-1
7 ppmvd @ 3% O ₂	7 ppmvd @ 3% O ₂	4.9 ppmvd @ 3% O₂ (equates to 0.0059 lb/MMBtu)	0.05 lb/MMBtu*

*EF for small boilers <100 MMBtu/hr equipped with low NOx burners, higher heating value of 1,000 Btu/scf is used for natural gas.

SOx:

Permit Limit	Rule 4320	Source Testing/other sources	AP-42 Table 1.4-2
0.00285 lb/MMBtu natural gas, 0.017 lb/MMBtu LPG fuel	None		0.0006 lb/MMBtu

PM10:

Permit Limit	Rule 4320	Source Testing/other sources	AP-42 Table 1.4-2
0.0076 lb/MMBtu natural gas, and 0.6 lb/1,000 gallons on LPG fuel	PUC quality natural gas, propane, LPG or combination ; or 5 gr-S/100 scf; or emission control system that reduces SO ₂ by at least 95% by wt. or limit SO ₂ to less than or equal to 9 ppmvd @ 3% O ₂	0.003 lb/MMBtu*	0.0076 lb/MMBtu for natural gas fuel

*EF based on District's internal guidance document

CO:

Source testing on June 18, 2013 indicates 41.6 ppmvd CO @ 3% O₂. The boiler was not tested in 2011 and 2012. The following table summarizes the emissions factor:

Permit Limit	Rule 4320	Source Testing/other sources	AP-42 Table 1.4-1
200 ppmvd @ 3% O ₂	400 ppmvd @ 3% O ₂	41.6 ppmvd @ 3% O₂ (0.0307 lb/MMBtu)	0.084 lb/MMBtu*

*EF for small boilers <100 MMBtu/hr, higher heating value of 1,000 Btu/scf is used for natural gas.

VOC:

The following table summarizes the emissions factor:

Permit Limit	Rule 4320	Source Testing/other sources	AP-42 Table 1.4-2
0.0055 lb/MMBtu for natural gas and 0.5 lb-VOC/1,000 gal	None	None	0.0055 lb/MMBtu for natural gas

N-355-99:

144 BHP (INTERMITTENT) CLARKE MODEL JU4H-UFADW8 TIER 3 CERTIFIED DIESEL-FIRED EMERGENCY IC ENGINE POWERING A FIREWATER PUMP

NOx:

Permit Limit	Rule 4702	Source Testing/other sources	AP-42 Table 3.3-1 (10/96)
2.8 g/bhp-hr	None	--	14.1 g/bhp-hr

SOx:

Permit Limit	Rule 4702	Source Testing/other sources	AP-42 Table 3.3-1 (10/96)
0.0015% S by wt. (0.0051 g/bhp-hr)	None	--	0.9 g/bhp-hr

PM10:

Permit Limit	Rule 4702	Source Testing/other sources	AP-42 Table 3.3-1 (10/96)
0.09 g/bhp-hr	None	--	1.0 g/bhp-hr

CO:

Permit Limit	Rule 4702	Source Testing/other sources	AP-42 Table 3.3-1 (10/96)
1.0 g/bhp-hr	None	--	3.0 g/bhp-hr

VOC:

Permit Limit	Rule 4702	Source Testing/other sources	AP-42 Table 3.3-1 (10/96)
0.1 g/bhp-hr	None	None	1.1 g/bhp-hr

C. Baseline Period

Section 3.8 of District Rule 2201 defines the baseline period as “two consecutive years immediately prior to the submission of a complete application” or “another time period of at least two years within five years immediately prior to the submission of the complete application determined by the APCO as more representative of normal source operation”.

The two consecutive years immediately prior to the submission of a complete application is not representative of normal source operation. Therefore, the baseline period for each permit unit is determined using five year data for the period from Q2 2011 to Q1 2016 using the actual processing rate data supplied by the applicant.

Permit Unit	Baseline Period	Notes/Comments
N-355-1	Q4 2011 – Q3 2013	See process data and baseline period calculations in Appendix II of this document
N-355-2	Q4 2011 – Q3 2013	
N-355-5	Q3 2012 – Q2 2014	
N-355-6	Q1 2014 – Q4 2015	
N-355-7	Q1 2014 – Q4 2015	
N-355-9, '-10, '-11, '-12	Q4 2013 – Q3 2015	
N-355-13, '-14	Q2 2011– Q1 2013	
N-355-16	Q2 2013 – Q1 2015	
N-355-17	Q4 2013 – Q3 2015	
N-355-18	Q4 2013 – Q3 2015	
N-355-20	Q4 2011 – Q3 2013	
N-355-21	Q2 2011 – Q1 2013	

Continue...

Permit Unit	Baseline Period	Notes/Comments
N-355-25	Q2 2013 – Q1 2015	See process data and baseline period calculations in Appendix II of this document
N-355-35	Q2 2013 – Q1 2015	
N-355-38	Q2 2013 – Q1 2015	
N-355-40	Q2 2013 – Q1 2015	
N-355-42	Q2 2013 – Q1 2015	
N-355-44	Q2 2013 – Q1 2015	
N-355-45	Q2 2013 – Q1 2015	
N-355-47	Q2 2013 – Q1 2015	
N-355-56	Q2 2013 – Q1 2015	
N-355-78	Q1 2014 – Q4 2015	
N-355-83	No data	
N-355-90	Q1 2014 – Q4 2015	
N-355-92	Q4 2011 – Q3 2013	
N-355-94	Q1 2013 – Q4 2014	
N-355-95	Q3 2013 – Q2 2015	
N-355-99	Q1 2014 – Q4 2015	

Note that the baseline period is not same for all permit units since the actual processing rates were different among various types of operations at this site.

D. Historical Actual Emissions

Historical Actual Emissions (HAEs) are the emissions that actually occurred, and are calculated from actual records and established emission factors per Rule 2201, Section 6.2.1.

N-355-1:

CEREAL PLANT (PUFF II) CONSISTING OF A MATERIAL DISPENSING SYSTEM, A MATERIAL COOKING SYSTEM, A PUFF SYSTEM, A CEREAL-FLAVOR SPRAYING AND DRYING SYSTEM, AND A FINISHED CEREAL SCALPING AND CONVEYANCE SYSTEM

PM10:

Data submitted under project N-1094704 indicates that Lucky Charm and Honey Nut Cheerios were produced on this line at average production rate of 135 pounds/minute. Using this information and the process rates, actual operating time for each dust collector is estimated, which is then used to estimate the actual emissions.

Time = Q tons/qtr x 2,000 lb/ton x 1/135 min/lb

(E.g. Time = 4,799 tons/qtr x 2,000 lb/ton x 1/135 min/lb = 71,096 min/qtr)

Year	Process Rate (tons/qtr)			
	Q1	Q2	Q3	Q4
2011	--	--	--	5,172
2012	4,483	5,755	6,585	3,964
2013	5,116	5,290	5,395	--
Average	4,799	5,522	5,990	4,568
Time	71,096	81,807	88,741	67,674

$$\text{HAE (lb/qtr)} = \text{EF (gr/scf)} \times \text{Airflow rate (ft}^3\text{/min)} \times \text{lb/7,000 gr} \times \text{Time (min/qtr)}$$

Process Description	Device ID	EF	Airflow rate (cfm)	HAE (lb/qtr)			
		(gr-TSP/ft ³)		Q1	Q2	Q3	Q4
Material Dispensing System ¹	AC-1	0.0028	2,000	0	65	71	54
	AC-3	0.0028	500	14	16	18	14
	AC-62	0.0028	500	14	16	18	14
	AC-77	0.0028	250	7	8	9	7
	AC-78	0.0028	99	3	3	4	3
	AC-5	0.0028	500	14	16	18	14
	AC-12	0.0028	200	6	7	7	5
	AC-79	0.0028	100	3	3	4	3
	AC-45	0.0028	250	7	8	9	7
	AC-100	0.0028	400	11	13	14	11
Material Cooking System ²	AC-102	0.0028	100	3	3	4	3
	AC-17	0.00024	1,000	2	3	3	2
	AC-26 ⁵	0.002	2,800	57	65	71	54
Puff System ³	AC-76	0.0028	600	17	20	21	16
Cereal Flavor Spray System ⁴	AC-38	0.0022	700	16	18	20	15
	AC-37-1	0.002	13,000	264	304	330	251
	AC-37-2	0.002	2,800	57	65	71	54
Finished Cereal Scalp and Conveyance System ⁵	AC-44	0.002	6,000	122	140	152	116
	AC-68	0.002	4,500	91	105	114	87
	AC-75	0.002	3,500	71	82	89	68
	AC-43	0.002	10,000	203	234	254	193
Total				983	1,196	1,298	990

^{1,3} General Mills facility in Carlisle, Iowa performed a source test on storage bins and receivers (EP 45) on February 6, 1998. The average of three source test runs was 0.0028 gr-TSP/dscf; All TSP is presumed to be PM10.

² General Mills' facility in Albuquerque, New Mexico performed a source test on Line B "Ready Mix Bin Outlet" on January 12, 1995. The applicant informed that this plant produces cereals only. The "Ready Mix Bin Outlet" has cooked cereal that has not been dried yet. The average of two source test runs was 0.00024 gr-PM10/dscf

⁴ General Mills' facility in Lodi, California performed a source test on enrober system dust collector on November 1, 2006. The average PM emissions from three test runs are 0.0022 gr/dscf

⁵ General Mills' facility in Cedar Rapids, Iowa performed a source test on dryer EP-103 (cooler side) on November 4, 2002. The average of three source test runs was 0.0020 gr/scf. There is no moisture or temperature data available in the source test summary sheet to convert scf into dscf. This source test can be used for dry dough handling system, as the air is displaced through the cereal to condition it for further processing.

N-355-2:

CEREAL PLANT (PUFF I) CONSISTING OF A MATERIAL DISPENSING SYSTEM, A MATERIAL COOKING SYSTEM, A PUFF SYSTEM, A CEREAL-FLAVOR SPRAYING AND DRYING SYSTEM, AND A FINISHED CEREAL SCALPING AND CONVEYANCE SYSTEM

PM10:

General Mills data submitted under project N-1094704 indicates that Lucky Charm and Honey Nut Cheerios were produced on this line at average the production rate of 135 pounds/minute. Using this information and the process rates, actual operating time for each dust collector is estimated, which is then used to estimate the actual emissions.

$$\text{Time} = Q \text{ tons/qtr} \times 2,000 \text{ lb/ton} \times 1/135 \text{ min/lb}$$

$$(\text{E.g. Time} = 4,799 \text{ tons/qtr} \times 2,000 \text{ lb/ton} \times 1/135 \text{ min/lb} = 71,096 \text{ min/qtr})$$

Year	Process Rate (tons/qtr)			
	Q1	Q2	Q3	Q4
2011	--	--	--	5,172
2012	4,483	5,755	6,585	3,964
2013	5,116	5,290	5,395	--
Average	4,799	5,522	5,990	4,568
Time	71,096	81,807	88,741	67,674

$$\text{HAE (lb/qtr)} = \text{EF (gr/scf)} \times \text{Airflow rate (ft}^3\text{/min)} \times \text{lb/7,000 gr} \times \text{Time (min/qtr)}$$

Process Description	Device ID	EF	Airflow rate (cfm)	Emissions (lb/qtr)			
		(gr-TSP/ft ³)		Q1	Q2	Q3	Q4
Material Dispensing System ¹	AC-60	0.0028	2,000	57	65	71	54
	AC-61	0.0028	500	14	16	18	14
	AC-77 ⁷	0.0028	500	--	--	--	--
	AC-78 ⁷	0.0028	250	--	--	--	--
	AC-2	0.0028	99	3	3	4	3
	AC-64	0.0028	500	14	16	18	14
	AC-4	0.0028	200	6	7	7	5
	AC-11	0.0028	100	3	3	4	3
	AC-80	0.0028	250	7	8	9	7
	AC-45	0.0028	400	11	13	14	11
Material Cooking System ²	AC-103	0.0028	100	3	3	4	3
	AC-15	0.00024	1,000	2	3	3	2
	AC-26 ⁷	0.002	2,800	--	--	--	--
Puff System ³	N/A		0	0	0	0	0

Continue...

Process Description	Device ID	EF	Airflow rate (cfm)	Emissions (lb/qtr)			
		(gr-TSP/ft ³)		Q1	Q2	Q3	Q4
Cereal Flavor Spray System ⁴	AC-42 ⁶	0.0019	1,275	25	28	31	23
	AC-39-1	0.002	6,800	138	159	172	131
	AC-39-2	0.002	14,000	284	327	355	271
	AC-41	0.002	20,000	406	467	507	387
Finished Cereal Scalp and Conveyance System ⁵	AC-44 ⁷	0.002	6,000	--	--	--	--
	AC-68 ⁷	0.002	4,500	--	--	--	--
	AC-53	0.002	10,000	203	234	254	193
Total				1,177	1,354	1,469	1,120

^{1,3}General Mills facility in Carlisle, Iowa performed a source test on storage bins and receivers (EP 45) on February 6, 1998. The average of three source test runs was 0.0028 gr-TSP/dscf; All TSP is presumed to be PM10.

²General Mills' facility in Albuquerque, New Mexico performed a source test on Line B "Ready Mix Bin Outlet" on January 12, 1995. The applicant informed that this plant produces cereals only. The "Ready Mix Bin Outlet" has cooked cereal that has not been dried yet. The average of two source test runs was 0.00024 gr-PM10/dscf

⁴General Mills' facility in Lodi, California performed a source test on enrober system dust collector on November 1, 2006. The average PM emissions from three test runs are 0.0022 gr/dscf

⁵General Mills' facility in Cedar Rapids, Iowa performed a source test on dryer EP-103 (cooler side) on November 4, 2002. The average of three source test runs was 0.0020 gr/scf. There is no moisture or temperature data available in the source test summary sheet to convert scf into dscf. This source test can be used for dry dough handling system, as the air is displaced through the cereal to condition it for further processing

⁶Source test performed at General Mills, Lodi, California on 11/1/06. Average of three test runs was 0.0019 gr-TSP/dscf; All TSP are presumed to be PM10.

⁷Emissions control equipment shared between N-355-1 and -2. Permit N-355-1 already accounts for the emissions from these units; therefore, there contribution is set to zero under this permit.

N-355-5:

CEREAL PLANT PACKAGING SYSTEM: TWIN PACK LINE A SERVED BY A FLEX-KLEEN MODEL 20 PCBK3 III DUST COLLECTOR (AC-48), TWIN PACK LINE B SERVED BY A FLEX-KLEEN MODEL 20 PCBL3 III DUST COLLECTOR (AC-49), LINE 4 BAGGING AND PACKAGING SERVED BY A FLEX-KLEEN MODEL 58USBC144-III DUST COLLECTOR (AC-53), 8 SCALES SERVED BY 4 BOEDECKER MODEL DC-58-144-3B DUST COLLECTORS (2 SCALES/DUST COLLECTOR), 8 BAGGERS EACH SERVED BY A DEDICATED BOEDECKER MODEL RDP-25-3-3-B DUST COLLECTOR, WHICH ARE ALL VENTED TO A FLEX-KLEEN CYCLONIC RECEIVER WITH SOCK FILTER (AC-89), CEREAL FILLING STATION (A-104) SERVED BY A DUST COLLECTION HOOD VENTED TO AN AMERICAN AIR FILTER MODEL B WET TYPE ROTOCONE COLLECTOR (AC-104)

PM10:

Per correspondence under project N-1031721 indicates that maximum process rate for the packaging operation is 80,000 tons/year, which equates to about 304 lb/min (80,000 tons/yr x 2000 lb/ton x yr/8,760 hr x hr/60 min). Using this information and the process rates, actual operating time for each dust collector is estimated, which is then used to estimate the actual emissions. Note that process rate of 304 lb/min closely represent average total production of 270 lb/min of permit unit N-355-1 and '-2. However, for conservative time estimates, process rate of 304 lb/min will be used.

$$\text{Time} = Q \text{ tons/qtr} \times 2,000 \text{ lb/ton} \times 1/304 \text{ min/lb}$$

$$(\text{E.g. Time} = 11,965 \text{ tons/qtr} \times 2,000 \text{ lb/ton} \times 1/304 \text{ min/lb} = 78,717 \text{ min/qtr})$$

Year	Process Rate (tons/qtr)			
	Q1	Q2	Q3	Q4
2012	--	--	13,170	7,927
2013	10,232	5,290	5,395	10,691
2014	13,697	10,553	--	--
Average	11,965	7,921	9,283	9,309
Time	78,717	52,112	61,072	61,243

$$\text{HAE (lb/qtr)} = \text{EF (gr/scf)} \times \text{Airflow rate (ft}^3\text{/min)} \times \text{lb/7,000 gr} \times \text{Time (min/qtr)}$$

Process Description	Device ID ¹	EF ¹	Airflow rate (cfm) ¹	HAE (lb/qtr)			
		(gr-PM ₁₀ /ft ³)		Q1	Q2	Q3	Q4
Packaging System - Twin Pack Line A	AC-48	0.000078	120	0	0	0	0
Packaging System - Twin Pack Line B	AC-49	0.000078	120	0	0	0	0
Bagger 1 dust collector	AC-81	0.000078	200	0	0	0	0
Bagger 2 dust collector	AC-82	0.000078	200	0	0	0	0
Bagger 3 dust collector	AC-83	0.000078	200	0	0	0	0
Bagger 4 dust collector	AC-84	0.000078	200	0	0	0	0
Bagger 5 dust collector	AC-85	0.000078	200	0	0	0	0
Bagger 6 dust collector	AC-86	0.000078	200	0	0	0	0
Bagger 7 dust collector	AC-87	0.000078	200	0	0	0	0
Bagger 8 dust collector	AC-88	0.000078	200	0	0	0	0

Continue...

Process Description	Device ID ¹	EF ¹	Airflow rate (cfm) ¹	HAE (lb/qtr)			
		(gr-PM ₁₀ /ft ³)		Q1	Q2	Q3	Q4
Received from bagger units	AC-89	0.000078	600	1	0	0	0
Scale 1&2 exhaust collector	AC-90	0.000078	2,250	2	1	2	2
Scale 3&4 exhaust collector	AC-91	0.000078	2,250	2	1	2	2
Scale 5&6 exhaust collector	AC-92	0.000078	2,250	2	1	2	2
Scale 7&8 exhaust	AC-93	0.000078	1,275	1	1	1	1
Cereal filling station with dust collection hood vented to dust collector	AC-104	0.000078	10,000	9	6	7	7
Total				18	12	17	10

¹Information taken from project N-1083089 and N-1123045

N-355-6:

BULK SWEETENER RECEIVING AND STORAGE OPERATION WITH ONE TRUCK RECEIVING PIT, TWO TRUCK/RAIL RECEIVING PITS, NINE FILTER RECEIVERS, 48 STORAGE SILOS, FLOUR DRYING SYSTEM, AND ASSOCIATED CONVEYING EQUIPMENT, ALL SERVED BY TWENTY-NINE BIN VENT FILTERS AND TEN BAGHOUSES

PM₁₀:

Process rates during baseline period are shown in the following table.

Year	Process Rate (tons/qtr)			
	Q1	Q2	Q3	Q4
2014	12,128	10,406	11,629	11,337
2015	10,540	11,396	10,443	2,531
Average	11,334	10,901	11,036	6,934

HAE = EF (lb/ton process) x Process Rate (tons/qtr)

Process	EF (lb-PM ₁₀ /ton)	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
Pneumatic receiving of materials	0.0036	41	39	40	25

N-355-7:

DRY MIX PLANT SYSTEM: PRE-MIX OPERATION CONSISTING OF BAG DUMP, MIXER AND SIFTER; SIX DAY BINS (H-17) VENTED TO A BAGHOUSE (HC-17); MINOR INGREDIENTS RECEIVER, DRY

INGREDIENTS RECEIVER, AND PRE-MIXER VENTED TO A BAGHOUSE
(HC-18)

PM₁₀:

Process rates during baseline period are shown in the following table.

Year	Process Rate (tons/qtr)			
	Q1	Q2	Q3	Q4
2014	247	225	326	265
2015	241	235	312	0
Average	244	230	319	133

HAE = EF (lb/ton process) x Process Rate (tons/qtr)

Process	EF (lb- PM ₁₀ /ton)	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
Pre-mix Operation	0.0553	13	13	18	7

N-355-9:

MIX PLANT SYSTEM (MIXER #24A) SERVED BY A BAGHOUSE

N-355-10:

MIX PLANT SYSTEM (MIXER 24-B) SERVED BY A BAGHOUSE

N-355-11:

MIX PLANT SYSTEM (MIXER #25) SERVED BY A BAGHOUSE

N-355-12:

MIX PLANT SYSTEM (MIXER #26) SERVED BY A BAGHOUSE

For each permit unit,

PM₁₀:

Process rates during baseline period are shown in the following table.

Year	Process Rate (tons/qtr)			
	Q1	Q2	Q3	Q4
2013	--	--	--	1,906
2014	1,618	1,555	2,206	2,230
2015	1,793	1,728	2,015	--
Average	1,706	1,642	2,111	2,068

HAE = EF (lb/ton process) x Process Rate (tons/qtr)

Process	EF (lb- PM ₁₀ /ton)	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
Mix plant system	0.0028	5	5	6	6

N-355-13:
MIX PLANT SYSTEM (MIXER#27) SERVED BY A BAGHOUSE

PM₁₀:
Process rates during baseline period are shown in the following table.

Year	Process Rate (tons/qtr)			
	Q1	Q2	Q3	Q4
2011	--	459	327	269
2012	774	406	440	275
2013	490	--	--	--
Average	632	433	384	272

$$\text{HAE} = \text{EF (lb/ton process)} \times \text{Process Rate (tons/qtr)}$$

Process	EF (lb-PM ₁₀ /ton)	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
Mix plant system	0.0028	2	1	1	1

N-355-14:
BULK MATERIAL MIXING OPERATION: TWO FLOUR/SWEETENER SCALE HOPPERS EACH SERVED BY ITS OWN HAF EQUIPMENT MODEL 24HLBV10S2 DUST COLLECTOR (HC-90, HC-91), A MIXER #29 AND MANUALLY ADDED INGREDIENTS OPERATION VENTED TO A HAF EQUIPMENT MODEL 24HLBV10S2 DUST COLLECTOR (HC-76), A DAY BIN, TWO TRANSITION PNEUMATIC CONVEYING SYSTEMS EACH SERVED BY ITS OWN HAF EQUIPMENT MODEL 18BV4S2 DUST COLLECTOR (HC-92, HC-93), AND TWO DAY BINS

PM₁₀:
Process rates during baseline period are shown in the following table.

Year	Process Rate (tons/qtr)			
	Q1	Q2	Q3	Q4
2011	--	459	327	269
2012	774	406	440	275
2013	490	--	--	--
Average	632	433	384	272

$$\text{HAE} = \text{EF (lb/ton process)} \times \text{Process Rate (tons/qtr)}$$

Process	EF (lb-PM ₁₀ /ton)	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
Bulk material mixing operation	0.0028	2	1	1	1

N-355-16:

DRY MIX PLANT - SEASONING MIXER SYSTEM CONSISTING OF ONE BAG DUMP STATION/SCALPER (H-27) AND ONE SEASONING MIXER (H-28) ALL VENTED TO A FLEX KLEEN MODEL 58-BV-9-II DUST COLLECTOR (HC-27); ONE BAG DUMP STATION; THREE DAY BINS (H-65, H-66, & H-67) EACH VENTED TO AN HAF EQUIPMENT MODEL 58-BV-9-S-II-G DUST COLLECTOR (H-65, H-66 & H-67); ONE SCALE HOPPER RECEIVER (H-64) VENTED TO AN INTEGRAL HAF EQUIPMENT MODEL 18-CT-62-S-II DUST COLLECTOR (HC-64); ONE SUPER SACK DUMP-HOPPER, ONE SCALPER, AND ONE DAY BIN (H-86) ALL VENTED TO AN HAF EQUIPMENT MODEL 58-BV-25-S-2-G DUST COLLECTOR (HC-86)

PM₁₀:

Process rates during baseline period are shown in the following table.

Year	Process Rate (tons/qtr)			
	Q1	Q2	Q3	Q4
2013	--	2,513	1,229	1,298
2014	1,902	1,919	1,454	1,423
2015	1	--	--	--
Average	951	2,216	1,341	1,360

HAE = EF (lb/ton process) x Process Rate (tons/qtr)

Process	EF (lb-PM ₁₀ /ton)	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
Dry mix plant	0.0123	12	27	16	17

N-355-17:

MIX PLANT SYSTEM (FLOUR GRINDING) SYSTEM SERVED BY ONE BAGHOUSE AND TWO BIN VENT FILTERS

PM₁₀:

Process rates during baseline period are shown in the following table.

Year	Process Rate (tons/qtr)			
	Q1	Q2	Q3	Q4
2013	--	--	--	3,811
2014	3,236	3,111	4,413	4,460
2015	3,587	3,455	4,030	--
Average	3,412	3,283	4,222	4,136

HAE = EF (lb/ton process) x Process Rate (tons/qtr)

Process	EF (lb- PM ₁₀ /ton)	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
Dry mix plant	0.011	38	36	46	45

N-355-18:
MIX PLANT SYSTEM (SUGAR SYSTEM) SERVED BY SIX BAGHOUSES

PM₁₀:
Process rates during baseline period are shown in the following table.

Year	Process Rate (tons/qtr)			
	Q1	Q2	Q3	Q4
2013	--	--	--	2,225
2014	2,112	2,052	2,608	2,559
2015	2,242	2,021	1,612	--
Average	2,177	2,037	2,110	2,392

HAE = EF (lb/ton process) x Process Rate (tons/qtr)

Process	EF (lb- PM ₁₀ /ton)	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
Mix plant system	0.028	61	57	59	67

N-355-20:
48.3 MMBTU/HR TRANE-MURRAY MODEL MCF2-50 BOILER EQUIPPED
WITH A NATCOM MODEL P-52-G-24-1419 ULTRA LOW-NOX BURNER

Natural gas consumed (MM cubic feet) during the baseline period is
summarized in the following table.

Year	Process Rate (MM cubic feet natural gas/qtr)			
	Q1	Q2	Q3	Q4
2011	--	--	--	24
2012	16	17	8	7
2013	10	8	8	--
Average	13	12	8	15

NO_x:
EF (lb/MMBtu) = {EF (ppmvd @ 3% O₂) x 46 lb-NO₂/lb-mole x 8,578
dscf/MMBtu x 20.95/(20.95-3)}/{379.5 dscf/lb-mole x 10⁶}

HAE = EF (lb/MMBtu) x Process Rate (MM cf/qtr) x 1,000 Btu/cf

Unit/Process	EF	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
Boiler	6.3 ppmvd @ 3% O2 (equates to 0.0076 lb/MMBtu)	99	91	61	114

SO_x:

$$\text{HAE} = \text{EF (lb/MMBtu)} \times \text{Process Rate (MM cf/qtr)} \times 1,000 \text{ Btu/cf}$$

Unit/Process	EF (lb/MMBtu)	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
Boiler	0.0006	8	7	5	9

PM₁₀:

$$\text{HAE} = \text{EF (lb/MMBtu)} \times \text{Process Rate (MM cf/qtr)} \times 1,000 \text{ Btu/cf}$$

Unit/Process	EF (lb/MMBtu)	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
Boiler	0.003	39	36	24	45

CO:

$$\text{EF (lb/MMBtu)} = \{ \text{EF (ppmvd @ 3\% O}_2\text{)} \times 28 \text{ lb-CO/lb-mole} \times 8,578 \text{ dscf/MMBtu} \times 20.95 / (20.95 - 3) \} / \{ 379.5 \text{ dscf/lb-mole} \times 10^6 \}$$

$$\text{HAE} = \text{EF (lb/MMBtu)} \times \text{Process Rate (MM cf/qtr)} \times 1,000 \text{ Btu/cf}$$

Unit/Process	EF	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
Boiler	30.3 ppmvd @ 3% O2 (equates to 0.0224 lb/MMBtu)	291	269	179	336

VOC:

$$\text{HAE} = \text{EF (lb/MMBtu)} \times \text{Process Rate (MM cf/qtr)} \times 1,000 \text{ Btu/cf}$$

Unit/Process	EF (lb/MMBtu)	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
Boiler	0.0055	72	66	44	83

N-355-21:

3.48 MW COGENERATION SYSTEM CONSISTING OF AN ALLISON
MODEL 501 KB GAS TURBINE WITH A 16 MMBTU/HR DUCT BURNER

SYSTEM ALL SERVED BY A SELECTIVE CATALYTIC REDUCTION
SYSTEM, AND AN ELECTRIC MOTOR STARTER

Natural gas consumed (MM cubic feet) during the baseline period is summarized in the following table.

Process Rate (MM cubic feet natural gas/qtr)				
Year	Q1	Q2	Q3	Q4
2011	--	76	70	10
2012	56	48	57	51
2013	65	--	--	--
Average	60	62	63	31

NO_x:

$$EF \text{ (lb/MMBtu)} = \{EF \text{ (ppmvd @ 15\% O}_2\text{)} \times 46 \text{ lb-NO}_2\text{/lb-mole} \times 8,578 \text{ dscf/MMBtu} \times 20.95/(20.95-15)\} / \{379.5 \text{ dscf/lb-mole} \times 10^6\}$$

$$HAE = EF \text{ (lb/MMBtu)} \times \text{Process Rate (MM cf/qtr)} \times 1,000 \text{ Btu/cf}$$

Unit/Process	EF (lb/MMBtu)	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
Cogen System	0.0128*	768	--	--	--
	0.0117**	--	725	737	363

*Average of 2012 and 2013 test results = 3.5 ppmvd @ 15% O₂ equates to 0.0128 lb/MMBtu;

**2012 source test results = 3.2 ppmvd @ 15% O₂ equates to 0.0117 lb/MMBtu.

SO_x:

$$HAE = EF \text{ (lb/MMBtu)} \times \text{Process Rate (MM cf/qtr)} \times 1,000 \text{ Btu/cf}$$

Unit/Process	EF (lb/MMBtu)	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
Cogen System	0.00285	171	177	180	88

PM₁₀:

$$HAE = EF \text{ (lb/MMBtu)} \times \text{Process Rate (MM cf/qtr)} \times 1,000 \text{ Btu/cf}$$

Unit/Process	EF (lb/MMBtu)	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
Cogen System	0.0066	396	409	416	205

CO:

$$EF \text{ (lb/MMBtu)} = \{EF \text{ (ppmvd @ 15\% O}_2\text{)} \times 28 \text{ lb-CO/lb-mole} \times 8,578 \text{ dscf/MMBtu} \times 20.95/(20.95-15)\} / \{379.5 \text{ dscf/lb-mole} \times 10^6\}$$

$$HAE = EF \text{ (lb/MMBtu)} \times \text{Process Rate (MM cf/qtr)} \times 1,000 \text{ Btu/cf}$$

Unit/Process	EF (lb/MMBtu)	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
Cogen System	0.1767*	10,602	--	--	--
	0.1792**	--	11,110	11,290	5,555

*Average of 2012 and 2013 test results = 79.3 ppmvd @ 15% O₂ equates to 0.1767 lb/MMBtu; **2012 source test results = 80.4 ppmvd @ 15% O₂ equates to 0.1792 lb/MMBtu.

VOC:

HAE = EF (lb/MMBtu) x Process Rate (MM cf/qtr) x 1,000 Btu/cf

Unit/Process	EF (lb/MMBtu)	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
Cogen System	0.0021	126	130	132	65

N-355-25-3:

GRAHAM SYSTEM CONSISTING OF TEN INGREDIENT BINS SERVED BY TEN INDIVIDUAL BAGHOUSES

PM₁₀:

Process rates during baseline period are shown in the following table.

Year	Process Rate (tons/qtr)			
	Q1	Q2	Q3	Q4
2013	--	3,723	3,779	3,402
2014	4,419	3,631	5,114	3,826
2015	2,648	--	--	--
Average	3,533	3,677	4,446	3,614

HAE = EF (lb/ton process) x Process Rate (tons/qtr)

Process	EF (lb- PM ₁₀ /ton)	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
Ingredient bins	0.00025	1	1	1	1

N-355-35:

GRAHAM SYSTEM: DOUGH PROCESSING SYSTEM CONSISTING OF DOUGH FORMERS, WET DOUGH RECEIVERS (D54) SERVING DOUGH DRYER #1 (D-12), DOUGH DRYER #2 (D-13), AND DOUGH DRYER #3 (D-14) CONNECTED IN SERIES. THIS OPERATION ALSO SERVES PERMIT UNIT #N-355-38.

PM₁₀:

Process rates during the baseline period are shown in the following table.

Year	Process Rate (tons/qtr)			
	Q1	Q2	Q3	Q4
2013	--	4,653	4,724	4,252
2014	5,523	4,538	6,392	4,782
2015	3,310	--	--	--
Average	4,416	4,596	5,558	4,517

$$\text{HAE} = \text{EF (lb/ton process)} \times \text{Process Rate (tons/qtr)}$$

Process	EF (lb-PM ₁₀ /ton)	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
Dough processing system	0.0626*	276	288	348	283

*3 units x 0.0042 lb/ton-unit + 0.05 lb/ton

N-355-38:

GRAHAM SYSTEM: PELLET COOLER (D-18) SERVED BY A BAGHOUSE (DC-18), PELLET TOASTER (D-16) WITH TWO 2.5 MMBTU/HR NATURAL GAS-FIRED BURNERS SERVED BY TWO CYCLONES AND A WET SCRUBBER (DC-16), AND DAY BINS (D-21) SERVED BY A BAGHOUSE (DC-21)

Process emissions (PM₁₀):

Process rates during the baseline period are shown in the following table.

Year	Process Rate (tons/qtr)			
	Q1	Q2	Q3	Q4
2013	--	4,653	4,724	4,252
2014	5,523	4,538	6,392	4,782
2015	3,310	--	--	--
Average	4,416	4,596	5,558	4,517

$$\text{HAE} = \text{EF (lb/ton process)} \times \text{Process Rate (tons/qtr)}$$

Process	EF (lb-PM ₁₀ /ton)	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
Dough processing system	0.0154	68	71	86	70

Combustion emissions:

Natural gas consumption during the baseline period is summarized in the following table:

Year	Process Rate (MM Btu/qtr*)			
	Q1	Q2	Q3	Q4
2013	--	196	189	165
2014	218	184	236	199
2015	229	--	--	--
Average	224	190	212	182

*Heating value of 1,000 Btu/scf of natural gas is used.

$$\text{HAE} = \text{EF (lb/MMBtu)} \times \text{Process Rate (MM Btu/qtr)}$$

Pollutant	EF (lb/MMBtu)	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
NOx	0.1	22	19	21	18
SOx	0.0006	0	0	0	0
PM10	0.0076	2	1	2	1
CO	0.084	19	16	18	15
VOC	0.0055	1	1	1	1

N-355-40:

GRAHAM SYSTEM: RECOVERY TOASTER (D-17) SERVED BY A CYCLONE AND A WET SCRUBBER (DC-17), A RECOVERY COOLER (D-19) SERVED BY A BAGHOUSE (DC-19), AND A GRINDER (D-20) SERVED BY TWO FILTER RECEIVERS (DC-20 AND DC-33)

Process emissions (PM₁₀):

Process rates during the baseline period are shown in the following table.

Year	Process Rate (tons/qtr)			
	Q1	Q2	Q3	Q4
2013	--	4,653	4,724	4,252
2014	5,523	4,538	6,392	4,782
2015	3,310	--	--	--
Average	4,416	4,596	5,558	4,517

Based on the application under project N-1031721, the process rate for the recovery toaster is estimated to be 8% of the finished product. Therefore,

$$\text{HAE} = \text{EF (lb/ton process)} \times \text{Process Rate (tons/qtr)} \times 0.08$$

Process	EF (lb-PM ₁₀ /ton)	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
Recovery system	0.01546	5	6	7	6

Combustion emissions:

Natural gas consumption during the baseline period is summarized in the following table:

Year	Process Rate (MM Btu/qtr*)			
	Q1	Q2	Q3	Q4
2013	--	2.0	1.9	1.7
2014	2.2	1.9	2.4	2.0
2015	2.3	--	--	--
Average	2.3	1.9	2.1	1.8

*Heating value of 1,000 Btu/scf of natural gas is used.

$$\text{HAE} = \text{EF (lb/MMBtu)} \times \text{Process Rate (MM Btu/qtr)}$$

Pollutant	EF (lb/MMBtu)	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
NOx	0.1	0	0	0	0
SOx	0.0006	0	0	0	0
PM10	0.0076	0	0	0	0
CO	0.084	0	0	0	0
VOC	0.0055	0	0	0	0

N-355-42:

CEREAL PLANT VACUUM SYSTEM SERVED BY A BAGHOUSE

PM₁₀:

Process rates during the baseline period are shown in the following table.

Year	Process Rate (tons/qtr)			
	Q1	Q2	Q3	Q4
2013	--	4,653	4,724	4,252
2014	5,523	4,538	6,392	4,782
2015	3,310	--	--	--
Average	4,416	4,596	5,558	4,517

Per information in the file under project N-930640, 0.76% of product was lost which was vacuumed by the central vacuum system. Therefore,

$$\text{HAE} = \text{EF (lb/ton process)} \times \text{Process Rate (tons/qtr)} \times 0.0076$$

Process	EF (lb-PM ₁₀ /ton)	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
Vacuum system	2.08	70	73	88	71

N-355-44:
GRAHAM SYSTEM: SLURRY COOLER SERVED BY A BAGHOUSE

PM₁₀:
Process rates during the baseline period are shown in the following table.

Year	Process Rate (tons/qtr)			
	Q1	Q2	Q3	Q4
2013	--	4,653	4,724	4,252
2014	5,523	4,538	6,392	4,782
2015	3,310	--	--	--
Average	4,416	4,596	5,558	4,517

$$\text{HAE} = \text{EF (lb/ton process)} \times \text{Process Rate (tons/qtr)}$$

Process	EF (lb- PM ₁₀ /ton)	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
Slurry Cooler	0.00097	4	4	5	4

N-355-45:
CEREAL COATING OPERATION: ONE LINE WITH ENROBER (D23),
DRYER (D22) VENTED TO SCRUBBER (DC22), & COOLER (D24) VENTED
TO FABRIC FILTER (DC24); THE SECOND LINE WITH ENROBER (D25)
VENTED TO SCRUBBER (DC25)

PM₁₀:
Process rates during the baseline period are shown in the following table.

Year	Process Rate (tons/qtr)			
	Q1	Q2	Q3	Q4
2013	--	4,653	4,724	4,252
2014	5,523	4,538	6,392	4,782
2015	3,310	--	--	--
Average	4,416	4,596	5,558	4,517

$$\text{HAE} = \text{EF (lb/ton process)} \times \text{Process Rate (tons/qtr)}$$

Process	EF (lb- PM ₁₀ /ton)	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
Cereal coating system	0.0291*	129	134	162	131

*2x0.0033+0.0075+0.015 lb/ton

N-355-46:

TOKAY CEREAL PLANT; CENTRAL VACUUMING SYSTEM SERVED BY A HOFFCO PULSE SEPARATOR (MODEL # SCHA 14-58)

Note: 2011-2015 emissions inventory data has no records for this system. Therefore, no ERCs are being banked from this system.

N-355-47:

TOKAY CEREAL PLANT; PNEUMATIC RAILCAR RECEIVING SYSTEM SERVED BY TWO (2) FLEX-KLEEN BAGHOUSES (MODEL #58 CTBC 32)

PM₁₀:

Process rates during the baseline period are shown in the following table.

Year	Process Rate (tons/qtr)			
	Q1	Q2	Q3	Q4
2013	--	5,119	5,196	4,677
2014	6,076	4,992	7,031	5,260
2015	3,641	--	--	--
Average	4,858	5,055	6,114	4,969

HAE = EF (lb/ton process) x Process Rate (tons/qtr)

Process	EF (lb-PM ₁₀ /ton)	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
Material receiving operation	0.00029	1	1	2	1

N-355-56:

TOKAY CEREAL PLANT; FOUR AND SEVEN BULK STORAGE BINS SERVED BY ELEVEN MAC BAGHOUSES (MODEL #72 AVR 14) DUCTED THROUGH THREE BULK BIN EXHAUST HEADERS

PM₁₀:

Process rates during the baseline period are shown in the following table.

Year	Process Rate (tons/qtr)			
	Q1	Q2	Q3	Q4
2013	--	4,653	4,724	4,252
2014	5,523	4,538	6,392	4,782
2015	3,310	--	--	--
Average	4,416	4,596	5,558	4,517

HAE = EF (lb/ton process) x Process Rate (tons/qtr)

Process	EF (lb- PM ₁₀ /ton)	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
Bulk storage bins	0.00145	6	7	8	7

N-355-78:

BULK MATERIAL MIXING OPERATION: ONE MAJORS BAG DUMP HOPPER (H-19) SERVED BY AN ANDERSON DAHLEN/FLEX-KLEEN MODEL 18CTBS24I FILTER RECEIVER (HC-19), ONE FLEX-KLEEN MODEL 18CTBS24I MINORS FILTER RECEIVER (HC-20), ONE FLOUR SCALE HOPPER SERVED BY A HAF EQUIPMENT MODEL 24HLBV10S2 DUST COLLECTOR (HC-88), ONE BAG DUMP HOPPER SERVED BY A HAF EQUIPMENT MODEL 3636S DUST COLLECTOR (HC-89), ONE 250 CUBIC FOOT LOWE INDUSTRIES MIXER (H-21) SERVED BY A FLEX-KLEEN MODEL 30PVBL16 DUST COLLECTOR (HC-21), ONE SWEETENER SCALE HOPPER, ONE 250 CUBIC FOOT ANDERSON DAHLEN DAY BIN, AND ONE 250 CUBIC FOOT HOLDING MIXER (H-23) SERVED BY A HAF EQUIPMENT MODEL 58CT24S3 DUST COLLECTOR (HC-75)

PM₁₀:

Process rates during the baseline period are shown in the following table.

Year	Process Rate (tons/qtr)			
	Q1	Q2	Q3	Q4
2014	3,526	3,213	4,651	3,790
2015	3,436	3,356	4,461	0
Average	3,481	3,284	4,556	1,895

HAE = EF (lb/ton process) x Process Rate (tons/qtr)

Process	EF (lb- PM ₁₀ /ton)	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
Bulk material mixing operation	0.0037	13	12	17	7

N-355-83:

355 HP CUMMINS DIESEL FIRED I.C. ENGINE MODEL #NT855GZ, SERIAL #56207, SERVING AN ONAN STANDBY GENERATOR (200 KW) FOR UTILITY POWER INTERRUPTIONS

Note: 2011-2015 emissions inventory data has no records for this unit. Further, the applicant did not supply any data for this unit. Therefore, no ERCs are being banked from this unit.

N-355-90:
VACUUM CLEANING SYSTEM WITH A LAMSON MODEL 814-4-0-AD
PRIMARY SEPARATOR AND A KICE INDUSTRIES BAGHOUSE

PM₁₀:

Process rates during the baseline period are shown in the following table.

Year	Process Rate (tons/qtr)			
	Q1	Q2	Q3	Q4
2014	12,128	10,406	11,629	11,337
2015	10,540	11,396	10,443	2,531
Average	11,334	10,901	11,036	6,934

Per information in the file under project N-930640, 0.76% of product was lost which was vacuumed by the central vacuum system. Therefore,

$$\text{HAE} = \text{EF (lb/ton process)} \times \text{Process Rate (tons/qtr)} \times 0.0076$$

Process	EF (lb-PM ₁₀ /ton)	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
Vacuum system	2.08	179	172	174	109

N-355-92:

WHEAT GERM SIFTER AND CONVEYING SYSTEM SERVED BY A MAC,
MODEL NO. 36AVR14-III, PNEUMATIC RECEIVER

PM₁₀:

Process rates during the baseline period are shown in the following table.

Year	Process Rate (tons/qtr)			
	Q1	Q2	Q3	Q4
2011	--	--	--	1,034
2012	897	1,151	1,317	793
2013	1,023	1,058	1,079	--
Average	960	1104	1198	914

$$\text{HAE} = \text{EF (lb/ton process)} \times \text{Process Rate (tons/qtr)}$$

Process	EF (lb-PM ₁₀ /ton)	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
Wheat germ sifting and conveying system	0.0426	41	47	51	39

N-355-94:

LINE 21 - PRODUCT DELIVERY AND PACKAGING SYSTEM CONSISTING OF A DAY BIN; A SCALPER (H-57), CONVEYOR (H-57), AND A HOPPER (H-57) ALL VENTED TO A BAGHOUSE (HC-57); AND FOUR BAGGERS (H-58 THROUGH H-61) VENTED TO A BAGHOUSE (HC-58)

PM₁₀:

Process rates during the baseline period are shown in the following table.

Year	Process Rate (tons/qtr)			
	Q1	Q2	Q3	Q4
2013	4,873	5,026	2,457	2,596
2014	3,803	3,839	2,909	2,846
Average	4,338	4,432	2,683	2,721

HAE = EF (lb/ton process) x Process Rate (tons/qtr)

Process	EF (lb-PM ₁₀ /ton)	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
Delivery and packaging system	0.00167	7	7	4	5

N-355-95:

48.3 MMBTU/HR NEBRASKA NS-C-52-ECON NATURAL GAS/LPG FIRED BOILER EQUIPPED WITH A NATCOM MODEL P-48-G-24-1318 ULTRA-LOW NOX BURNER

Natural gas consumed (MM cubic feet) during the baseline period is summarized in the following table.

Year	Process Rate (MM cubic feet natural gas/qtr)			
	Q1	Q2	Q3	Q4
2013	--	--	9	10
2014	11	19	10	11
2015	26	26	--	--
Average	18	23	10	10

NO_x:

EF (lb/MMBtu) = {EF (ppmvd @ 3% O₂) x 46 lb-NO₂/lb-mole x 8,578 dscf/MMBtu x 20.95/(20.95-3)}/{379.5 dscf/lb-mole x 10⁶}

HAE = EF (lb/MMBtu) x Process Rate (MM cf/qtr) x 1,000 Btu/cf

Unit/Process	EF	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
Boiler	4.9 ppmvd @ 3% O2 (equates to 0.0059 lb/MMBtu)	106	136	59	59

SO_x:

HAE = EF (lb/MMBtu) x Process Rate (MM cf/qtr) x 1,000 Btu/cf

Unit/Process	EF (lb/MMBtu)	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
Boiler	0.0006	11	14	6	6

PM₁₀:

HAE = EF (lb/MMBtu) x Process Rate (MM cf/qtr) x 1,000 Btu/cf

Unit/Process	EF (lb/MMBtu)	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
Boiler	0.003	54	69	30	30

CO:

EF (lb/MMBtu) = {EF (ppmvd @ 3% O₂) x 28 lb-CO/lb-mole x 8,578
dscf/MMBtu x 20.95/(20.95-3)}/{379.5 dscf/lb-mole x 10⁶}

HAE = EF (lb/MMBtu) x Process Rate (MM cf/qtr) x 1,000 Btu/cf

Unit/Process	EF	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
Boiler	0.0307	553	706	307	307

VOC:

HAE = EF (lb/MMBtu) x Process Rate (MM cf/qtr) x 1,000 Btu/cf

Unit/Process	EF (lb/MMBtu)	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
Boiler	0.0055	99	127	55	55

N-355-99:

144 BHP (INTERMITTENT) CLARKE MODEL JU4H-UFADW8 TIER 3
CERTIFIED DIESEL-FIRED EMERGENCY IC ENGINE POWERING A
FIREWATER PUMP

Fuel oil consumed, in units of 1,000 gallons, during the baseline period is
summarized in the following table.

Year	Process Rate (1,000 gallons/qtr)			
	Q1	Q2	Q3	Q4
2014	0.0409	0.0409	0.0409	0.0409
2015	0.0409	0.0409	0.0409	0.0409
Average	0.0409	0.0409	0.0409	0.0409

HAE = EF (g/bhp-hr) x 144 (bhp) x Process Rate x 1,000 (gal-fuel/qtr) x
lb/453.6 g x hr/10 gal

Pollutant	EF (g/bhp-hr)	HAE (lb/qtr)			
		Q1	Q2	Q3	Q4
NO _x	2.8	4	4	4	4
SO _x	0.0051	0	0	0	0
PM ₁₀	0.09	0	0	0	0
CO	1	1	1	1	1
VOC	0.1	0	0	0	0

Summary:

The following table summarizes quarterly HAE in pounds (Refer to Appendix VI for unit-by-unit HAE summary).

Pollutant	Q1	Q2	Q3	Q4
NO _x	999	975	882	558
SO _x	190	198	191	103
*PM ₁₀	3,632	4,067	4,386	3,304
CO	11,466	12,102	11,795	6,214
VOC	298	324	232	204

*PM₁₀ amounts shown in this table includes adjustment of estimated HAE to the permitted levels for permit units N-355-90 and '-92.

E. Actual Emission Reductions (AER)

General Mills had cancelled all the PTOs for the Lodi plant; there will be no unit operating at this site. Therefore all HAEs are AERs.

F. Air Quality Improvement Deduction

The air quality improvement deduction, per Rule 2201, Section 4.12.1, is 10% of the AERs.

Pollutant	Q1	Q2	Q3	Q4
NO _x	100	98	88	56
SO _x	19	20	19	10
PM ₁₀	363	407	439	330
CO	1147	1210	1180	621
VOC	30	32	23	20

G. Increases in Permitted Emissions

There is no increase in permitted emissions due to this project.

H. Bankable Emission Reductions

The bankable emission reductions are determined by subtracting the Air Quality Improvement Deductions from the AERs for each pollutant.

Pollutant	Q1	Q2	Q3	Q4
NO _x	899	877	794	502
SO _x	171	178	172	93
PM ₁₀	3,269	3,660	3,947	2,974
*PM _{2.5} in PM ₁₀	1,053	1,180	1,126	831
CO	10,319	10,892	10,615	5,593
VOC	268	292	209	184

*The amount of PM_{2.5} in PM₁₀ is calculated by multiplying PM_{2.5}/PM₁₀ fraction estimated for each quarter in Appendix VIII of this document.

VI. COMPLIANCE

To comply with the definition of Actual Emissions Reductions (Rule 2201, Section 3.2.1 and Rule 2301, Sections 3.6 and 4.2.1), the reductions must be:

A. Real

The emissions reductions are real since they were generated by shutdown of the emissions units.

B. Enforceable

The reductions are enforceable since the Permits to Operate (PTO) have been surrendered; further operation would subject the owner to enforcement actions.

C. Quantifiable

The reductions are quantifiable since they were calculated using facility's historic records on processing rate, emission factors (or factors closely represent the operations), and by applying calculations methodologies consistent with Rule 2201.

D. Permanent

The reductions are permanent since the applicant had shutdown the emissions units, and the PTO has been surrendered; further operation would require a permit from the District.

E. Surplus

This section will contain an explanation of what actions were taken to ensure that all emission reductions were surplus of the existing and newly proposed rules and plans. The following rules and plans were analyzed:

Rule 2201 New and Modified Stationary Source Review

N-355-1:

CEREAL PLANT (PUFF II) CONSISTING OF A MATERIAL DISPENSING SYSTEM, A MATERIAL COOKING SYSTEM, A PUFF SYSTEM, A CEREAL-FLAVOR SPRAYING AND DRYING SYSTEM, AND A FINISHED CEREAL SCALPING AND CONVEYANCE SYSTEM

PE = 26.7 lb-PM₁₀/day
= 9,746 lb-PM₁₀/yr based on 365 days/yr operation

The historical actual emissions are estimated to be 4,467 lb-PM₁₀/yr during the baseline period. These emissions are not in excess of the permitted limit. Therefore, the reductions are surplus of the permitted limit.

N-355-2:

CEREAL PLANT (PUFF I) CONSISTING OF A MATERIAL DISPENSING SYSTEM, A MATERIAL COOKING SYSTEM, A PUFF SYSTEM, A CEREAL-FLAVOR SPRAYING AND DRYING SYSTEM, AND A FINISHED CEREAL SCALPING AND CONVEYANCE SYSTEM

PE = 30.5 lb-PM₁₀/day
= 11,133 lb-PM₁₀/yr based on 365 days/yr operation

The historical actual emissions are estimated to be 5,120 lb-PM₁₀/yr during the baseline period. These emissions are not in excess of the permitted limit. Therefore, the reductions are surplus of the permitted limit.

N-355-5:

CEREAL PLANT PACKAGING SYSTEM: TWIN PACK LINE A SERVED BY A FLEX-KLEEN MODEL 20 PCBK3 III DUST COLLECTOR (AC-48), TWIN PACK LINE B SERVED BY A FLEX-KLEEN MODEL 20 PCBL3 III DUST COLLECTOR (AC-49), LINE 4 BAGGING AND PACKAGING SERVED BY A FLEX-KLEEN MODEL 58USBC144-III DUST COLLECTOR (AC-53), 8 SCALES SERVED BY 4 BOEDECKER MODEL DC-58-144-3B DUST COLLECTORS (2 SCALES/DUST COLLECTOR), 8 BAGGERS EACH SERVED BY A DEDICATED BOEDECKER MODEL RDP-25-3-3-B DUST COLLECTOR, WHICH ARE ALL VENTED TO A FLEX-KLEEN CYCLONIC RECEIVER WITH SOCK FILTER (AC-89), CEREAL FILLING STATION (A-104) SERVED BY A DUST COLLECTION HOOD VENTED TO AN

AMERICAN AIR FILTER MODEL B WET TYPE ROTOCLONE COLLECTOR
(AC-104)

PE = 0.5 lb-PM₁₀/day
= 183 lb-PM₁₀/yr based on 365 days/yr operation

The historical actual emissions are estimated to be 57 lb-PM₁₀/yr during the baseline period. These emissions are not in excess of the permitted limit. Therefore, the reductions are surplus of the permitted limit.

N-355-6:
BULK SWEETENER RECEIVING AND STORAGE OPERATION WITH ONE TRUCK RECEIVING PIT, TWO TRUCK/RAIL RECEIVING PITS, NINE FILTER RECEIVERS, 48 STORAGE SILOS, FLOUR DRYING SYSTEM, AND ASSOCIATED CONVEYING EQUIPMENT, ALL SERVED BY TWENTY-NINE BIN VENT FILTERS AND TEN BAGHOUSES

PE = 1.2 lb-PM₁₀/day
= 438 lb-PM₁₀/yr based on 365 days/yr operation

The historical actual emissions are estimated to be 145 lb-PM₁₀/yr during the baseline period. These emissions are not in excess of the permitted limit. Therefore, the reductions are surplus of the permitted limit.

N-355-7:
DRY MIX PLANT SYSTEM: PRE-MIX OPERATION CONSISTING OF BAG DUMP, MIXER AND SIFTER; SIX DAY BINS (H-17) VENTED TO A BAGHOUSE (HC-17); MINOR INGREDIENTS RECEIVER, DRY INGREDIENTS RECEIVER, AND PRE-MIXER VENTED TO A BAGHOUSE (HC-18)

PE = 0.09 lb-PM₁₀/hr
= 788 lb-PM₁₀/yr based on 8,760 hr/yr operation

The historical actual emissions are estimated to be 51 lb-PM₁₀/yr during the baseline period. These emissions are not in excess of the permitted limit. Therefore, the reductions are surplus of the permitted limit.

N-355-9:
MIX PLANT SYSTEM (MIXER #24A) SERVED BY A BAGHOUSE

N-355-10:
MIX PLANT SYSTEM (MIXER 24-B) SERVED BY A BAGHOUSE

N-355-11:
MIX PLANT SYSTEM (MIXER #25) SERVED BY A BAGHOUSE

N-355-12:
MIX PLANT SYSTEM (MIXER #26) SERVED BY A BAGHOUSE

N-355-13:
MIX PLANT SYSTEM (MIXER#27) SERVED BY A BAGHOUSE

These permits do not contain mass emission rates. However, the HAE emissions are estimated using appropriate emissions factor and actual process rate records. Therefore, the reduction are considered surplus of Rule 2201 requirements for these permit units.

N-355-14:
BULK MATERIAL MIXING OPERATION: TWO FLOUR/SWEETENER SCALE HOPPERS EACH SERVED BY ITS OWN HAF EQUIPMENT MODEL 24HLBV10S2 DUST COLLECTOR (HC-90, HC-91), A MIXER #29 AND MANUALLY ADDED INGREDIENTS OPERATION VENTED TO A HAF EQUIPMENT MODEL 24HLBV10S2 DUST COLLECTOR (HC-76), A DAY BIN, TWO TRANSITION PNEUMATIC CONVEYING SYSTEMS EACH SERVED BY ITS OWN HAF EQUIPMENT MODEL 18BV4S2 DUST COLLECTOR (HC-92, HC-93), AND TWO DAY BINS

PE = 1.7 lb-PM₁₀/day
= 621 lb-PM₁₀/yr based on 365 days/yr operation

The historical actual emissions are estimated to be 5 lb-PM₁₀/yr during the baseline period. These emissions are not in excess of the permitted limit. Therefore, the reductions are surplus of the permitted limit.

N-355-16:
DRY MIX PLANT - SEASONING MIXER SYSTEM CONSISTING OF ONE BAG DUMP STATION/SCALPER (H-27) AND ONE SEASONING MIXER (H-28) ALL VENTED TO A FLEX KLEEN MODEL 58-BV-9-II DUST COLLECTOR (HC-27); ONE BAG DUMP STATION; THREE DAY BINS (H-65, H-66, & H-67) EACH VENTED TO AN HAF EQUIPMENT MODEL 58-BV-9-S-II-G DUST COLLECTOR (H-65, H-66 & H-67); ONE SCALE HOPPER RECEIVER (H-64) VENTED TO AN INTEGRAL HAF EQUIPMENT MODEL 18-CT-62-S-II DUST COLLECTOR (HC-64); ONE SUPER SACK DUMP-HOPPER, ONE SCALPER, AND ONE DAY BIN (H-86) ALL VENTED TO AN HAF EQUIPMENT MODEL 58-BV-25-S-2-G DUST COLLECTOR (HC-86)

PE = 3.7 lb-PM₁₀/day
= 1,351 lb-PM₁₀/yr based on 365 days/yr operation

The historical actual emissions are estimated to be 72 lb-PM₁₀/yr during the baseline period. These emissions are not in excess of the permitted limit. Therefore, the reductions are surplus of the permitted limit.

N-355-17:
MIX PLANT SYSTEM (FLOUR GRINDING) SYSTEM SERVED BY ONE
BAGHOUSE AND TWO BIN VENT FILTERS

PE = 0.09 lb-PM₁₀/hr
= 788 lb-PM₁₀/yr based on 8,760 hr/yr operation

The historical actual emissions are estimated to be 165 lb-PM₁₀/yr during the baseline period. These emissions are not in excess of the permitted limit. Therefore, the reductions are surplus of the permitted limit.

N-355-18:
MIX PLANT SYSTEM (SUGAR SYSTEM) SERVED BY SIX BAGHOUSES

This permit does not contain mass emission rate. However, the HAE emissions are estimated using appropriate emissions factor and actual process rate records. Therefore, the reduction are considered surplus of Rule 2201 requirements for this permit unit.

N-355-20:
48.3 MMBTU/HR TRANE-MURRAY MODEL MCF2-50 BOILER EQUIPPED
WITH A NATCOM MODEL P-52-G-24-1419 ULTRA LOW-NOX BURNER

Per project N-1123738,

PE = 3,587 lb-NO_x/yr; 7,193 lb-SO_x/yr; 3,216 lb-PM₁₀/yr; 62,388 lb-CO/yr;
and 2,327 lb-VOC/yr

The historical actual emissions estimated in this project are 365 lb-NO_x/yr, 29 lb-SO_x/yr, 365 lb-PM₁₀/yr, 1,075 lb-CO/yr, and 265 lb-VOC/yr. These emissions are not in excess of the permitted limits. Therefore, the reductions are surplus of the permitted limits.

N-355-21:
3.48 MW COGENERATION SYSTEM CONSISTING OF AN ALLISON
MODEL 501 KB GAS TURBINE WITH A 16 MMBTU/HR DUCT BURNER
SYSTEM ALL SERVED BY A SELECTIVE CATALYTIC REDUCTION
SYSTEM, AND AN ELECTRIC MOTOR STARTER

Per project N-1113039,

PE = 11,053 lb-NO_x/yr; 1,578 lb-SO_x/yr; 3,655 lb-PM₁₀/yr; 246,998 lb-CO/yr;
and 1,163 lb-VOC/yr

The historical actual emissions estimated in this project are 2,593 lb-NO_x/yr, 616 lb-SO_x/yr, 1,426 lb-PM₁₀/yr, 38,557 lb-CO/yr, and 453 lb-VOC/yr. These

emissions are not in excess of the permitted limits. Therefore, the reductions are surplus.

N-355-25-3:

GRAHAM SYSTEM CONSISTING OF TEN INGREDIENT BINS SERVED BY TEN INDIVIDUAL BAGHOUSES

This permit does not contain mass emission rate. However, the HAE emissions are estimated using appropriate emissions factor and actual process rate records. Therefore, the reduction are considered surplus of Rule 2201 requirements for this permit unit.

N-355-35:

GRAHAM SYSTEM: DOUGH PROCESSING SYSTEM CONSISTING OF DOUGH FORMERS, WET DOUGH RECEIVERS (D54) SERVING DOUGH DRYER #1 (D-12), DOUGH DRYER #2 (D-13), AND DOUGH DRYER #3 (D-14) CONNECTED IN SERIES. THIS OPERATION ALSO SERVES PERMIT UNIT #N-355-38.

EF = 0.0042 lb-PM₁₀/ton of material for each dryer, 0.05 lb-PM₁₀/ton of material for the receiver

Process Rate = 72 tons/day

The permitted emissions factors are used along with the actual process rate during the baseline period to estimate the HAEs. The actual process rate for each quarter is less than the maximum permitted process rate of 6,480 tons/quarter (72 tons/day x 90 days/qtr). Therefore, these reductions are surplus of the permitted limits.

N-355-38:

GRAHAM SYSTEM: PELLET COOLER (D-18) SERVED BY A BAGHOUSE (DC-18), PELLET TOASTER (D-16) WITH TWO 2.5 MMBTU/HR NATURAL GAS-FIRED BURNERS SERVED BY TWO CYCLONES AND A WET SCRUBBER (DC-16), AND DAY BINS (D-21) SERVED BY A BAGHOUSE (DC-21)

N-355-42:

CEREAL PLANT VACUUM SYSTEM SERVED BY A BAGHOUSE

N-355-44:

GRAHAM SYSTEM: SLURRY COOLER SERVED BY A BAGHOUSE

These permits do not contain mass emission rates. However, the HAE emissions are estimated using appropriate emissions factor and actual process rate records. Therefore, the reduction are considered surplus of Rule 2201 requirements for these permit units.

N-355-45:
CEREAL COATING OPERATION: ONE LINE WITH ENROBER (D23), DRYER (D22) VENTED TO SCRUBBER (DC22), & COOLER (D24) VENTED TO FABRIC FILTER (DC24); THE SECOND LINE WITH ENROBER (D25) VENTED TO SCRUBBER (DC25)

PE = 0.01 lb-PM10/hr from the enrober (D23)

This permit does not contain mass emission rate for other units. However, the HAE emissions are estimated using appropriate emissions factor and actual process rate records. Therefore, the reduction are considered surplus of Rule 2201 requirements for this permit unit.

N-355-46:
TOKAY CEREAL PLANT; CENTRAL VACUUMING SYSTEM SERVED BY A HOFFCO PULSE SEPARATOR (MODEL # SCHA 14-58)

No ERCs are being banked from this system. Therefore, no further discussion is required.

N-355-47:
TOKAY CEREAL PLANT; PNEUMATIC RAILCAR RECEIVING SYSTEM SERVED BY TWO (2) FLEX-KLEEN BAGHOUSES (MODEL #58 CTBC 32)
N-355-56:

TOKAY CEREAL PLANT; FOUR AND SEVEN BULK STORAGE BINS SERVED BY ELEVEN MAC BAGHOUSES (MODEL #72 AVR 14) DUCTED THROUGH THREE BULK BIN EXHAUST HEADERS

The total potential PM10 from the Tokay Cereal Plant are limited to 4.4 lb/day, which equates to 1,606 lb/yr assuming 365 days of operation.

The historical actual emissions from permits N-355-47 and '-56 are estimated to be 33 lb-PM₁₀/yr during the baseline period. These emissions are not in excess of the permitted limit. Therefore, the reductions are surplus of the permitted limit for the Tokay Cereal Plant.

N-355-78:
BULK MATERIAL MIXING OPERATION: ONE MAJORS BAG DUMP HOPPER (H-19) SERVED BY AN ANDERSON DAHLEN/FLEX-KLEEN MODEL 18CTBS24I FILTER RECEIVER (HC-19), ONE FLEX-KLEEN MODEL 18CTBS24I MINORS FILTER RECEIVER (HC-20), ONE FLOUR SCALE HOPPER SERVED BY A HAF EQUIPMENT MODEL 24HLBV10S2 DUST COLLECTOR (HC-88), ONE BAG DUMP HOPPER SERVED BY A HAF EQUIPMENT MODEL 3636S DUST COLLECTOR (HC-89), ONE 250 CUBIC FOOT LOWE INDUSTRIES MIXER (H-21) SERVED BY A FLEX-KLEEN MODEL 30PVBL16 DUST COLLECTOR (HC-21), ONE

SWEETENER SCALE HOPPER, ONE 250 CUBIC FOOT ANDERSON DAHLEN DAY BIN, AND ONE 250 CUBIC FOOT HOLDING MIXER (H-23) SERVED BY A HAF EQUIPMENT MODEL 58CT24S3 DUST COLLECTOR (HC-75)

$$\begin{aligned} PE &= 2.6 \text{ lb-PM}_{10}/\text{day} \\ &= 949 \text{ lb-PM}_{10}/\text{yr based on 365 days/yr operation} \end{aligned}$$

The historical actual emissions are estimated to be 49 lb-PM₁₀/yr during the baseline period. These emissions are not in excess of the permitted limit. Therefore, the reductions are surplus of the permitted limit.

N-355-83:
355 HP CUMMINS DIESEL FIRED I.C. ENGINE MODEL #NT855GZ, SERIAL #56207, SERVING AN ONAN STANDBY GENERATOR (200 KW) FOR UTILITY POWER INTERRUPTIONS

No ERCs are being banked from this system. Therefore, no further discussion is required.

N-355-90:
VACUUM CLEANING SYSTEM WITH A LAMSON MODEL 814-4-0-AD PRIMARY SEPARATOR AND A KICE INDUSTRIES BAGHOUSE

$$EF = 0.0061 \text{ gr-PM}_{10}/\text{scf}; \text{ Air flowrate} = 1,250 \text{ scf/min}$$

Using EF and air flow rate,

$$\begin{aligned} PE &= (0.0061 \text{ gr-PM}_{10}/\text{scf})(1,250 \text{ scf/min})(60 \text{ min/hr})(8,760 \\ &\text{ hr/yr})(\text{lb}/7,000 \text{ gr}) \\ &= 573 \text{ lb-PM}_{10}/\text{yr} \end{aligned}$$

The estimated HAEs are above the permitted limits. These HAEs will be reduced to permitted levels. Therefore, the reductions are considered surplus of the permitted limits.

N-355-92:
WHEAT GERM SIFTER AND CONVEYING SYSTEM SERVED BY A MAC, MODEL NO. 36AVR14-III, PNEUMATIC RECEIVER

$$PE = 0.016 \text{ lb-PM}_{10}/\text{hr}; 140 \text{ lb-PM}_{10}/\text{yr}$$

The estimated HAEs are above the permitted limits. These HAEs will be reduced to permitted levels. Therefore, the reductions are considered surplus of the permitted limits.

N-355-94:

LINE 21 - PRODUCT DELIVERY AND PACKAGING SYSTEM CONSISTING OF A DAY BIN; A SCALPER (H-57), CONVEYOR (H-57), AND A HOPPER (H-57) ALL VENTED TO A BAGHOUSE (HC-57); AND FOUR BAGGERS (H-58 THROUGH H-61) VENTED TO A BAGHOUSE (HC-58)

PE = 0.04 lb-PM₁₀/hr
= 350 lb-PM₁₀/yr based on 8,760 hr/yr operation

The historical actual emissions are estimated to be 23 lb-PM₁₀/yr during the baseline period. These emissions are not in excess of the permitted limit. Therefore, the reductions are surplus of the permitted limit.

N-355-95:

48.3 MMBTU/HR NEBRASKA NS-C-52-ECON NATURAL GAS/LPG FIRED BOILER EQUIPPED WITH A NATCOM MODEL P-48-G-24-1318 ULTRA-LOW NOX BURNER

Per project N-1114105,

PE = 3,587 lb-NOx/yr; 1,206lb-SOx/yr; 3,216 lb-PM₁₀/yr; 62,388 lb-CO/yr; and 2,338 lb-VOC/yr

The historical actual emissions estimated in this project are 360 lb-NOx/yr, 37 lb-SOx/yr, 464 lb-PM₁₀/yr, 1,873 lb-CO/yr, and 336 lb-VOC/yr. These emissions are not in excess of the permitted limits. Therefore, the reductions are surplus of the permitted limits.

N-355-99:

144 BHP (INTERMITTENT) CLARKE MODEL JU4H-UFADW8 TIER 3 CERTIFIED DIESEL-FIRED EMERGENCY IC ENGINE POWERING A FIREWATER PUMP

Per project N-1113785,

PE = 89 lb-NOx/yr; 0 lb-SOx/yr; 3 lb-PM₁₀/yr; 32 lb-CO/yr; and 3 lb-VOC/yr

The historical actual emissions estimated in this project are 16 lb-NOx/yr, 0 lb-SOx/yr, 0 lb-PM₁₀/yr, 4 lb-CO/yr, and 0 lb-VOC/yr. These emissions are not in excess of the permitted limits. Therefore, the reductions are surplus of the permitted limits.

Rule 4001 New Source Performance Standards

40 CFR Part 60 Subpart Dc – Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

This subpart is reviewed to determine regulatory limits for the following units:

N-355-20:

48.3 MMBTU/HR TRANE-MURRAY MODEL MCF2-50 BOILER EQUIPPED WITH A NATCOM MODEL P-52-G-24-1419 ULTRA LOW-N

N-355-95:

48.3 MMBTU/HR NEBRASKA NS-C-52-ECON NATURAL GAS/LPG FIRED BOILER EQUIPPED WITH A NATCOM MODEL P-48-G-24-1318 ULTRA-LOW NOX BURNER OX BURNER

§60.42c Standard for sulfur dioxide (SO₂)

The section does not contain SO₂ standard for natural gas fired boilers. Therefore, no further discussion is required.

§60.43c Standard for particulate matter (PM)

The section does not contain PM standard for natural gas fired boilers. Therefore, no further discussion is required.

40 CFR Part 60 Subpart GG – Standards of Performance for Stationary Gas Turbines

This subpart is reviewed to determine regulatory limits for the following unit:

N-355-21:

3.48 MW COGENERATION SYSTEM CONSISTING OF AN ALLISON MODEL 501 KB GAS TURBINE WITH A 16 MMBTU/HR DUCT BURNER SYSTEM ALL SERVED BY A SELECTIVE CATALYTIC REDUCTION SYSTEM, AND AN ELECTRIC MOTOR STARTER

§60.332 Standard for nitrogen oxides

§60.332(c) requires the stationary gas turbine with heat input range of greater than 10 MMBtu/hr but less than or equal to 100 MMBtu/hr shall comply with the NO_x emission limit calculated using the following equation:

$$\text{STD} = 0.0150 \frac{(14.4)}{Y} + F; \text{ where}$$

STD = allowable ISO corrected NO_x emission concentration in % by volume @ 15% O₂ on dry basis

Y = Manufacturer's rated heat rate at manufacturer's rated load (kJ/w-hr) or, actual measured heat rate based on lower heating value of fuel as measured at actual peak load for the facility. The Y shall not exceed 14.4 kJ/w-hr.

F = NO_x emission allowance for fuel-bound nitrogen.

For this turbine,

$$Y = \left(47.22 \times 10^6 \frac{\text{Btu}}{\text{hr}} \right) \times \left(\frac{1 \text{ kJ}}{0.9478 \text{ Btu}} \right) \times \left(\frac{1}{3.48 \times 10^6 \text{ w}} \right) = 14.3 \frac{\text{kJ}}{\text{w-hr}}$$

F = 0; for conservative calculations

$$\text{STD} = 0.0150 \frac{(14.4)}{14.3} + 0 = 0.0151\% \text{ by volume @ 15\% O}_2;$$

This number is equivalent to 151 ppmvd @ 15% O₂.

Since the actual NO_x emissions were below the 151 ppmvd @ 15% O₂ limit, HAEs are surplus of this limit.

§60.333 Standard for SO_x:

§60.333(a) requires that the emissions of sulfur dioxide shall not exceed 0.015 percent by volume dry @ 15% O₂ (150 ppmvd @ 15% O₂).

The 150 ppmvd @ 15% O₂ limit specified in §60.333(a) is equivalent to 0.764 lb-SO₂/MMBtu as follows:

$$\frac{(150 \text{ ppmvd}) \times \left(8,578 \frac{\text{ft}^3}{\text{MMBtu}} \right) \times \left(64 \frac{\text{lb-SO}_2}{\text{lb-mol}} \right) \times \left(\frac{20.95}{20.95 - 15} \right)}{\left(379.5 \frac{\text{ft}^3}{\text{lb-mol}} \right) \times (10^6)} = 0.764 \frac{\text{lb-SO}_2}{\text{MMBtu}}$$

§60.333(b) requires that no fuel shall be burned which contains sulfur in excess of 0.8 percent by weight.

The percent sulfur by weight of natural gas of 1.0 gr-S/100 scf natural gas is 0.0337 percent by weight. This can be determined as follows (assuming a 100 scf sample comprised of methane at 60 °F):

$$\left(\frac{1.0 \text{ gr-S}}{100 \text{ ft}^3 - \text{NG}} \right) \times \left(\frac{\text{lb-S}}{7000 \text{ gr-S}} \right) \times \left(\frac{\text{ft}^3 - \text{NG}}{0.0424 \text{ lb-NG}} \right) = 3.37 \times 10^{-4} \frac{\text{lb-S}}{\text{lb-NG}}$$

The historical actual emissions are determined using an emission factor 0.00285 lb-SO_x/MMBtu. This EF is below 0.764 lb/MMBtu limit. Furthermore, 1.0 gr-S/100 scf equates to 0.0337% by wt. of sulfur, which is below the 0.8% by wt. of sulfur allowed under this section. Therefore, SO_x reductions are surplus of these standards.

Rule 4002 National Emission Standards for Hazardous Air Pollutants

40 CFR Part 63 Subpart DDDDD National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters

This subpart is applicable to boilers and process heaters located at Major Sources of HAP emissions.

This facility was an Area Source³ of HAP emissions. Therefore, the requirements of Subpart DDDDD were not applicable to the boilers under permit N-355-20 and '-95.

40 CFR Part 63 Subpart JJJJJJ National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources

Pursuant to Section 63.1195(e) a gas-fired boiler, as defined in Subpart JJJJJ, is not subject to any requirement of this Subpart. Pursuant to the definition in the subpart, a gas-fired boiler includes any boiler that burns gaseous fuels not combined with any solid fuels and burns liquid fuel only during periods of gas curtailment, gas supply interruption, startups, or periodic testing on liquid fuel.

The under permits N-355-20 and '-95 met the definition of a "gas-fired boiler" as they were required to use natural gas fuel or LPG. Therefore, Subpart JJJJJJ requirements were not applicable.

40 CFR Part 63 Subpart YYYY National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines

This subpart applies to a stationary combustion turbine located at a major source of HAP emissions.

The facility was not a Major HAP source⁴; therefore, this subpart does not apply to permit unit N-355-21.

³ Refer to Appendix VI for HAP calculations.

⁴ Refer to Appendix VI for HAP calculations.

Rule 4201 Particulate Matter Concentration

Section 3.0 prohibits discharge of dust, fumes, or total particulate matter into the atmosphere from any single source operation in excess of 0.1 grain per dry standard cubic foot.

N-355-1:

CEREAL PLANT (PUFF II) CONSISTING OF A MATERIAL DISPENSING SYSTEM, A MATERIAL COOKING SYSTEM, A PUFF SYSTEM, A CEREAL-FLAVOR SPRAYING AND DRYING SYSTEM, AND A FINISHED CEREAL SCALPING AND CONVEYANCE SYSTEM

N-355-2:

CEREAL PLANT (PUFF I) CONSISTING OF A MATERIAL DISPENSING SYSTEM, A MATERIAL COOKING SYSTEM, A PUFF SYSTEM, A CEREAL-FLAVOR SPRAYING AND DRYING SYSTEM, AND A FINISHED CEREAL SCALPING AND CONVEYANCE SYSTEM

Emission factors that are used to estimate particulate matter emissions vary from 0.0020 to 0.0028 gr/dscf (refer to section VII.B of this document). These factors are below the 0.1 gr/dscf limit in the rule; therefore, the reductions are surplus of the limit in this rule.

N-355-5:

CEREAL PLANT PACKAGING SYSTEM: TWIN PACK LINE A SERVED BY A FLEX-KLEEN MODEL 20 PCBK3 III DUST COLLECTOR (AC-48), TWIN PACK LINE B SERVED BY A FLEX-KLEEN MODEL 20 PCBL3 III DUST COLLECTOR (AC-49), LINE 4 BAGGING AND PACKAGING SERVED BY A FLEX-KLEEN MODEL 58USBC144-III DUST COLLECTOR (AC-53), 8 SCALES SERVED BY 4 BOEDECKER MODEL DC-58-144-3B DUST COLLECTORS (2 SCALES/DUST COLLECTOR), 8 BAGGERS EACH SERVED BY A DEDICATED BOEDECKER MODEL RDP-25-3-3-B DUST COLLECTOR, WHICH ARE ALL VENTED TO A FLEX-KLEEN CYCLONIC RECEIVER WITH SOCK FILTER (AC-89), CEREAL FILLING STATION (A-104) SERVED BY A DUST COLLECTION HOOD VENTED TO AN AMERICAN AIR FILTER MODEL B WET TYPE ROTOCLONE COLLECTOR (AC-104)

Emission factor that is used to estimate particulate matter emissions is 0.000078 gr/dscf (refer to section VII.B of this document). This factor is below the 0.1 gr/dscf limit in the rule; therefore, the reductions are surplus of the limit in this rule.

N-355-6:

BULK SWEETENER RECEIVING AND STORAGE OPERATION WITH ONE TRUCK RECEIVING PIT, TWO TRUCK/RAIL RECEIVING PITS, NINE FILTER RECEIVERS, 48 STORAGE SILOS, FLOUR DRYING SYSTEM, AND ASSOCIATED CONVEYING EQUIPMENT, ALL SERVED BY TWENTY-NINE BIN VENT FILTERS AND TEN BAGHOUSES

Under project N-1160856, permitted emissions of 1.2 lb-PM₁₀/day were used to estimate grain loading factor of 0.036 gr/dscf for each process operation. Since the reductions are surplus of the daily emission limit, they are presumed to be surplus of the 0.1 gr/dscf limit in the rule.

N-355-7:

DRY MIX PLANT SYSTEM: PRE-MIX OPERATION CONSISTING OF BAG DUMP, MIXER AND SIFTER; SIX DAY BINS (H-17) VENTED TO A BAGHOUSE (HC-17); MINOR INGREDIENTS RECEIVER, DRY INGREDIENTS RECEIVER, AND PRE-MIXER VENTED TO A BAGHOUSE (HC-18)

Per project N-960393, airflow rate for HC-17 baghouse and HC-18 are 772 cfm and 880 cfm respectively. It is presumed that air release through the dust collector at dry standard conditions.

The permit limits PM₁₀ emissions from bag dump hopper, the sifter and the six day bins to 0.04 lb/hr. This equates to:

$$\begin{aligned} &= 0.04 \text{ lb-PM}_{10}/\text{hr} \times \text{hr}/60 \text{ min} \times \text{min}/772 \text{ dscf} \times 7,000 \text{ gr/lb} \times \text{lb-PM}/\text{lb-PM}_{10} \\ &= 0.006 \text{ gr-PM}/\text{dscf} \end{aligned}$$

The permit limits PM₁₀ emissions from pre-mixing operation to 0.05 lb/hr. This equates to:

$$\begin{aligned} &= 0.05 \text{ lb-PM}_{10}/\text{hr} \times \text{hr}/60 \text{ min} \times \text{min}/880 \text{ dscf} \times 7,000 \text{ gr/lb} \times \text{lb-PM}/\text{lb-PM}_{10} \\ &= 0.007 \text{ gr-PM}/\text{dscf} \end{aligned}$$

At the permitted emission rate, the grain loading factor is below the 0.1 gr/dscf. Further, the actual reductions are surplus of the permitted emission rates. Therefore, it is concluded that the reductions are surplus of the rule limit.

N-355-9:

MIX PLANT SYSTEM (MIXER #24A) SERVED BY A BAGHOUSE

N-355-10:

MIX PLANT SYSTEM (MIXER 24-B) SERVED BY A BAGHOUSE

N-355-11:

MIX PLANT SYSTEM (MIXER #25) SERVED BY A BAGHOUSE

N-355-12:
MIX PLANT SYSTEM (MIXER #26) SERVED BY A BAGHOUSE
N-355-13:
MIX PLANT SYSTEM (MIXER#27) SERVED BY A BAGHOUSE

The configuration of these permit units is presumed to be similar to the configuration of N-355-14-3.

Per application under project N-1120492, airflow rate is 550 dscfm for HAF MODEL 24HLBV10S2 dust collector (listed in N-355-14). The grain factor is estimated to be:

$$\begin{aligned} &= 0.7 \text{ lb-PM}_{10}/\text{day}^5 \times \text{day}/1,440 \text{ min} \times \text{min}/550 \text{ dscf} \times 7,000 \text{ gr/lb} \times \text{lb-PM/lb-PM}_{10} \\ &= 0.006 \text{ gr-PM/dscfm} \end{aligned}$$

At the potential emission rate, the grain loading factor is below the 0.1 gr/dscf. Further, the actual reductions are surplus of the potential emission rates. Therefore, it is concluded that the reductions are surplus of the rule limit.

N-355-14:
BULK MATERIAL MIXING OPERATION: TWO FLOUR/SWEETENER SCALE HOPPERS EACH SERVED BY ITS OWN HAF EQUIPMENT MODEL 24HLBV10S2 DUST COLLECTOR (HC-90, HC-91), A MIXER #29 AND MANUALLY ADDED INGREDIENTS OPERATION VENTED TO A HAF EQUIPMENT MODEL 24HLBV10S2 DUST COLLECTOR (HC-76), A DAY BIN, TWO TRANSITION PNEUMATIC CONVEYING SYSTEMS EACH SERVED BY ITS OWN HAF EQUIPMENT MODEL 18BV4S2 DUST COLLECTOR (HC-92, HC-93), AND TWO DAY BINS

Per application under project N-1120492, airflow rate is 550 dscfm for HAF MODEL 24HLBV10S2 dust collector. The grain factor is estimated to be:

$$\begin{aligned} &= 0.7 \text{ lb-PM}_{10}/\text{day}^6 \times \text{day}/1,440 \text{ min} \times \text{min}/550 \text{ dscf} \times 7,000 \text{ gr/lb} \times \text{lb-PM/lb-PM}_{10} \\ &= 0.0006 \text{ gr-PM/dscfm} \end{aligned}$$

At the potential emission rate, the grain loading factor is below the 0.1 gr/dscf. Further, the actual reductions are surplus of the potential emission rates. Therefore, it is concluded that the reductions are surplus of the rule limit.

N-355-16:
DRY MIX PLANT - SEASONING MIXER SYSTEM CONSISTING OF ONE BAG DUMP STATION/SCALPER (H-27) AND ONE SEASONING MIXER (H-

⁵ PE for mixer (maximum emissions) taken from N-355-14-3 under project N-1120492.

⁶ PE for the mixer (maximum emissions) from N-355-14-4 under project N-1120492.

28) ALL VENTED TO A FLEX KLEEN MODEL 58-BV-9-II DUST COLLECTOR (HC-27); ONE BAG DUMP STATION; THREE DAY BINS (H-65, H-66, & H-67) EACH VENTED TO AN HAF EQUIPMENT MODEL 58-BV-9-S-II-G DUST COLLECTOR (H-65, H-66 & H-67); ONE SCALE HOPPER RECEIVER (H-64) VENTED TO AN INTEGRAL HAF EQUIPMENT MODEL 18-CT-62-S-II DUST COLLECTOR (HC-64); ONE SUPER SACK DUMP-HOPPER, ONE SCALPER, AND ONE DAY BIN (H-86) ALL VENTED TO AN HAF EQUIPMENT MODEL 58-BV-25-S-2-G DUST COLLECTOR (HC-86)

Air flow rate:

HC-27: 772 cfm (project N960393)

HAF EQUIPMENT MODEL 58-BV-9-S-II-G (each): 200 cfm (project N990800)

HC-64: 650 cfm (project N990800)

HC-86: 950 cfm (project N1061648)

Use of minimum airflow rate and maximum emissions would give highest grain loading factor. Therefore,

$$\begin{aligned} &= 3.7 \text{ lb-PM}_{10}/\text{day} \times \text{day}/1,440 \text{ min} \times \text{min}/200 \text{ dscf} \times 7,000 \text{ gr/lb} \times \text{lb-PM}/\text{lb-PM}_{10} \\ &= 0.09 \text{ gr-PM}/\text{dscf} \end{aligned}$$

At the permitted emission rate, the grain loading factor is below the 0.1 gr/dscf. Further, the actual reductions are surplus of the permitted emission rate used in the above calculations. Therefore, it is concluded that the reductions are surplus of the rule limit.

N-355-17:

MIX PLANT SYSTEM (FLOUR GRINDING) SYSTEM SERVED BY ONE BAGHOUSE AND TWO BIN VENT FILTERS

Flour day bin dust collector, HAF Equipment, Inc. model 84-BV-36-S-3G (HC-47A): 1,350 cfm (per application under project N-970659)

$$\begin{aligned} &= 0.07 \text{ lb-PM}_{10}/\text{hr} \times \text{hr}/60 \text{ min} \times \text{min}/1,350 \text{ dscf} \times 7,000 \text{ gr/lb} \times \text{lb-PM}/\text{lb-PM}_{10} \\ &= 0.006 \text{ gr-PM}/\text{dscf} \end{aligned}$$

Transition hopper for mixer #23, HAF Equipment, Inc. model 36-BV-4-S2G dust collector (HC-62): 50 cfm (per application under project N-970659)

$$\begin{aligned} &= 0.02 \text{ lb-PM}_{10}/\text{hr} \times \text{hr}/60 \text{ min} \times \text{min}/50 \text{ dscf} \times 7,000 \text{ gr/lb} \times \text{lb-PM}/\text{lb-PM}_{10} \\ &= 0.05 \text{ gr-PM}/\text{dscf} \end{aligned}$$

At the permitted emission rates, the grain loading factor is below the 0.1 gr/dscf. Further, the actual reductions are surplus of the permitted emission

rates used in the above calculations. Therefore, it is concluded that the reductions are surplus of the rule limit.

N-355-18:
MIX PLANT SYSTEM (SUGAR SYSTEM) SERVED BY SIX BAGHOUSES

The airflow rates information for the baghouses is not available. Per EPA's fact sheet document, EPA-452/F03-025, well-designed and operated baghouses have been shown to be capable of reducing overall particulate matter emissions to less than 0.01 gr/cf, and in number of case, to as low as 0.001 to 0.005 gr/cf. The baghouse is presumed to be well designed and properly maintained. Therefore, the emissions reductions are considered surplus of the rule limit.

N-355-20:
48.3 MMBTU/HR TRANE-MURRAY MODEL MCF2-50 BOILER EQUIPPED WITH A NATCOM MODEL P-52-G-24-1419 ULTRA LOW-NOX BURNER

The grain loading factor is 0.003 gr/dscf⁷ for natural gas combustion fuel. This factor is derived using an emission factor of 0.003 lb-PM₁₀/MMBtu, which is used to estimate the actual emissions. Therefore, emissions reductions are surplus of the rule limit.

N-355-21:
3.48 MW COGENERATION SYSTEM CONSISTING OF AN ALLISON MODEL 501 KB GAS TURBINE WITH A 16 MMBTU/HR DUCT BURNER SYSTEM ALL SERVED BY A SELECTIVE CATALYTIC REDUCTION SYSTEM, AND AN ELECTRIC MOTOR STARTER

The grain loading factor is 0.02 gr/dscf⁸ for natural gas combustion fuel. This factor is derived using an emission factor of 0.0066 lb-PM₁₀/MMBtu, which is used to estimate the actual emissions. Therefore, emissions reductions are surplus of the rule limit.

N-355-25-3:
GRAHAM SYSTEM CONSISTING OF TEN INGREDIENT BINS SERVED BY TEN INDIVIDUAL BAGHOUSES

Per application under project N-980600,

MAC 72 AVR14 – 4 baghouses – 663 cfm (each)
MAC 72AVR7 – 3 baghouses – 360 cfm (each)

⁷0.003 lb/MMBtu x 7,000 gr/lb x MMBtu/8,578 ft³ x 20.95/(20.95-3)

⁸0.0066 lb/MMBtu x 7,000 gr/lb x MMBtu/8,578 ft³ x 20.95/(20.95-15)

MAC 72AVR7 – 3 baghouses – 450 cfm (each)

There is no mass emission limit in the permit. Therefore, any bin can release up to 0.1 gr/dscf. Using the minimum airflow rate, a bin may have:

$$\begin{aligned} \text{PE} &= 0.1 \text{ gr/dscf} \times 360 \text{ ft}^3/\text{min} \times 60 \text{ min/hr} \times 24 \text{ hr/day} \times \text{lb}/7,000 \text{ gr} \\ &= 7.4 \text{ lb-PM/day or } 666 \text{ lb/qtr (based on 90 days of operation)} \end{aligned}$$

The actual emissions are significantly below the minimum quarterly emissions that this rule could have allowed; therefore, reductions are surplus of the rule limit.

N-355-35:

GRAHAM SYSTEM: DOUGH PROCESSING SYSTEM CONSISTING OF DOUGH FORMERS, WET DOUGH RECEIVERS (D54) SERVING DOUGH DRYER #1 (D-12), DOUGH DRYER #2 (D-13), AND DOUGH DRYER #3 (D-14) CONNECTED IN SERIES. THIS OPERATION ALSO SERVES PERMIT UNIT #N-355-38.

Dryer #1 served by Flex Kleen Model 30 PRBG 128: 9,300 dscfm (project N980600 application)

Dyer #2 served by Flex Kleen Model 30 PRBG 128: 9,300 dscfm (project N980600 application)

For dryer #1, or #2, the grain loading at the permitted emissions would be:

$$\begin{aligned} &= 0.0042 \text{ lb-PM}_{10}/\text{ton of material} \times 72 \text{ tons/day} \times \text{day}/1,440 \text{ min} \times \text{min}/9,300 \\ &\quad \text{dscf} \times 7,000 \text{ gr/lb} \times \text{lb-PM}/\text{lb-PM}_{10} \\ &= 0.0002 \text{ gr-PM/dscf} \end{aligned}$$

Dryer #3 served by Ducon venture-rod cyclonic scrubber: 12,700 dscfm (project N-1042588 application)

For dryer #3, the grain loading at the permitted emissions would be:

$$\begin{aligned} &= 0.0042 \text{ lb-PM}_{10}/\text{ton of material} \times 72 \text{ tons/day} \times \text{day}/1,440 \text{ min} \times \text{min}/12,700 \\ &\quad \text{dscf} \times 7,000 \text{ gr/lb} \times \text{lb-PM}/\text{lb-PM}_{10} \\ &= 0.0001 \text{ gr-PM/dscf} \end{aligned}$$

Receivers served by Flex Kleen Model 30 PVBL25-L baghouse: 3,300 dscfm (project N980600 application)

$$\begin{aligned} &= 0.05 \text{ lb-PM}_{10}/\text{ton of material} \times 72 \text{ tons/day} \times \text{day}/1,440 \text{ min} \times \text{min}/12,700 \\ &\quad \text{dscf} \times 7,000 \text{ gr/lb} \times \text{lb-PM}/\text{lb-PM}_{10} \\ &= 0.0053 \text{ gr-PM/dscf} \end{aligned}$$

At the permitted emission rates, the grain loading factor is below the 0.1 gr/dscf. Further, the actual reductions are surplus of the permitted emission rates used in the above calculations. Therefore, it is concluded that the reductions are surplus of the rule limit

N-355-38:

GRAHAM SYSTEM: PELLET COOLER (D-18) SERVED BY A BAGHOUSE (DC-18), PELLET TOASTER (D-16) WITH TWO 2.5 MMBTU/HR NATURAL GAS-FIRED BURNERS SERVED BY TWO CYCLONES AND A WET SCRUBBER (DC-16), AND DAY BINS (D-21) SERVED BY A BAGHOUSE (DC-21)

Process emissions:

Airflow data is as follows:

DC-18: 11,000 scfm (project N980600 application)

DC-16: 6,000 scfm (project N1031721 application)

DC-21: 360 scfm (presumed to be same as ingredient bins under N-355-25, project N980600 application)

There is no mass emission limit in the permit. Using the minimum airflow rate,

$$\begin{aligned} \text{PE} &= 0.1 \text{ gr/dscf} \times 360 \text{ ft}^3/\text{min} \times 60 \text{ min/hr} \times 24 \text{ hr/day} \times \text{lb}/7,000 \text{ gr} \\ &= 7.4 \text{ lb-PM/day or } 666 \text{ lb/qtr (based on 90 days of operation)} \end{aligned}$$

The total actual emissions are significantly below the minimum quarterly emissions from one source operation, therefore, reductions are surplus of the rule limit.

Combustion emissions:

The grain loading factor is 0.0072 gr/dscf⁹ for natural gas combustion fuel. This factor is derived using an emission factor of 0.0076 lb-PM₁₀/MMBtu, which is used to estimate the actual emissions. Therefore, emissions reductions are surplus of the rule limit.

N-355-40:

GRAHAM SYSTEM: RECOVERY TOASTER (D-17) SERVED BY A CYCLONE AND A WET SCRUBBER (DC-17), A RECOVERY COOLER (D-19) SERVED BY A BAGHOUSE (DC-19), AND A GRINDER (D-20) SERVED BY TWO FILTER RECEIVERS (DC-20 AND DC-33)

Process emissions:

Airflow data is as follows:

⁹0.0076 lb/MMBtu x 7,000 gr/lb x MMBtu/8,578 ft³ x 20.95/(20.95-3)

DC-17: 1,000 scfm (project N1031721 application)
DC-19: 1,300 scfm (project N980600 application)
DC-20, DC-33: Unknown

Using the minimum airflow rate,

$$\begin{aligned}\text{PE} &= 0.1 \text{ gr/dscf} \times 1,000 \text{ ft}^3/\text{min} \times 60 \text{ min/hr} \times 24 \text{ hr/day} \times \text{lb}/7,000 \text{ gr} \\ &= 20.6 \text{ lb-PM/day or } 1,854 \text{ lb/qtr (based on 90 days of operation)}\end{aligned}$$

The total actual emissions are significantly below the minimum quarterly emissions from one source operation, therefore, reductions are surplus of the rule limit.

Combustion emissions:

The grain loading factor is $0.0072 \text{ gr/dscf}^{10}$ for natural gas combustion fuel. This factor is derived using an emission factor of $0.0076 \text{ lb-PM}_{10}/\text{MMBtu}$, which is used to estimate the actual emissions. Therefore, emissions reductions are surplus of the rule limit.

N-355-42:

CEREAL PLANT VACUUM SYSTEM SERVED BY A BAGHOUSE

This vacuum system appears to have been operated to pick up materials as part of good housekeeping process. This process is a source of particulate matter emissions, and therefore, it is vented to baghouse. Based on the information provided by General Mills under project N-930640, EF is $2.08 \text{ lb-PM}_{10}/\text{ton}$ of material collected. The information is based on General Mills testing for the equipment.

PM₁₀:

Permit Limit	Rule 4201	Source Testing/other sources	AP-42 Section 9.9.2 (8/95)
None	0.1 gr/dscf	2.08 lb/ton of material	

Note that it is assumed that 0.75% of finished product is lost due to material spills in the area.

N-355-44:

GRAHAM SYSTEM: SLURRY COOLER SERVED BY A BAGHOUSE

Baghouse: 16,000 scfm (project N980600 application)

¹⁰ $0.0076 \text{ lb/MMBtu} \times 7,000 \text{ gr/lb} \times \text{MMBtu}/8,578 \text{ ft}^3 \times 20.95/(20.95-3)$

Using the airflow rate,

$$\begin{aligned}\text{PE} &= 0.1 \text{ gr/dscf} \times 16,000 \text{ ft}^3/\text{min} \times 60 \text{ min/hr} \times 24 \text{ hr/day} \times \text{lb}/7,000 \text{ gr} \\ &= 329.1 \text{ lb-PM/day or } 29,623 \text{ lb/qtr (based on 90 days of operation)}\end{aligned}$$

The total actual emissions are significantly below the minimum quarterly emissions from one source operation, therefore, reductions are surplus of the rule limit.

N-355-45:

CEREAL COATING OPERATION: ONE LINE WITH ENROBER (D23), DRYER (D22) VENTED TO SCRUBBER (DC22), & COOLER (D24) VENTED TO FABRIC FILTER (DC24); THE SECOND LINE WITH ENROBER (D25) VENTED TO SCRUBBER (DC25)

Per project N960380, the airflow rates

DC22: 3,000 scfm

DC24: 16,000 cfm

DC25: 3,000 scfm

Using the minimum airflow rate,

$$\begin{aligned}\text{PE} &= 0.1 \text{ gr/dscf} \times 3,000 \text{ ft}^3/\text{min} \times 60 \text{ min/hr} \times 24 \text{ hr/day} \times \text{lb}/7,000 \text{ gr} \\ &= 61.7 \text{ lb-PM/day or } 5,553 \text{ lb/qtr (based on 90 days of operation)}\end{aligned}$$

The total actual emissions are significantly below the minimum quarterly emissions from one source operation, therefore, reductions are surplus of the rule limit.

N-355-46:

TOKAY CEREAL PLANT; CENTRAL VACUUMING SYSTEM SERVED BY A HOFFCO PULSE SEPARATOR (MODEL # SCHA 14-58)

Note: 2011-2015 emissions inventory data has no records for this system. Therefore, no ERCs are being banked from this system.

N-355-47:

TOKAY CEREAL PLANT; PNEUMATIC RAILCAR RECEIVING SYSTEM SERVED BY TWO (2) FLEX-KLEEN BAGHOUSES (MODEL #58 CTBC 32)

PM10:

Per engineering evaluation under application # AP89-64 to 74 (9/20/89), EF for this process is 0.00029 lb//ton of material. The following table summarizes the emissions:

Permit Limit	Rule 4201	Source Testing/other sources	AP-42 Section 9.9.2 (8/95)
4.4 lb/day for entire Tokay cereal plant	0.1 gr/dscf	0.00029 lb/ton of material	--

N-355-56:

TOKAY CEREAL PLANT; FOUR AND SEVEN BULK STORAGE BINS SERVED BY ELEVEN MAC BAGHOUSES (MODEL #72 AVR 14) DUCTED THROUGH THREE BULK BIN EXHAUST HEADERS

Per application under project N-980600,

MAC 72 AVR14 – 663 cfm (each)

PE = 0.1 gr/dscf x 663 ft³/min x 60 min/hr x 24 hr/day x lb/7,000 gr
= 13.6 lb-PM/day or 1,224 lb/qtr (based on 90 days of operation)

The total actual emissions are significantly below the minimum quarterly emissions from one source operation; therefore, reductions are surplus of the rule limit.

N-355-78:

BULK MATERIAL MIXING OPERATION: ONE MAJORS BAG DUMP HOPPER (H-19) SERVED BY AN ANDERSON DAHLEN/FLEX-KLEEN MODEL 18CTBS24I FILTER RECEIVER (HC-19), ONE FLEX-KLEEN MODEL 18CTBS24I MINORS FILTER RECEIVER (HC-20), ONE FLOUR SCALE HOPPER SERVED BY A HAF EQUIPMENT MODEL 24HLBV10S2 DUST COLLECTOR (HC-88), ONE BAG DUMP HOPPER SERVED BY A HAF EQUIPMENT MODEL 3636S DUST COLLECTOR (HC-89), ONE 250 CUBIC FOOT LOWE INDUSTRIES MIXER (H-21) SERVED BY A FLEX-KLEEN MODEL 30PVBL16 DUST COLLECTOR (HC-21), ONE SWEETENER SCALE HOPPER, ONE 250 CUBIC FOOT ANDERSON DAHLEN DAY BIN, AND ONE 250 CUBIC FOOT HOLDING MIXER (H-23) SERVED BY A HAF EQUIPMENT MODEL 58CT24S3 DUST COLLECTOR (HC-75)

Airflow rate of the dust collectors is as follows:

HC-19: 550 dscfm (assumed)

HC-20: 550 dscfm (assumed)

HC-88: 550 dscfm (per application under project N-1120492)

HC-89: 1,200 dscfm (per application under project N-1120492)

HC-21: 1,400 dscfm (per application under project N-1120492)

HC-75: 750 cfm (per application under project N-1062412)

Using the minimum air flow,

$$\begin{aligned}\text{PE} &= 0.1 \text{ gr/dscf} \times 550 \text{ ft}^3/\text{min} \times 60 \text{ min/hr} \times 24 \text{ hr/day} \times \text{lb}/7,000 \text{ gr} \\ &= 11.3 \text{ lb-PM/day or } 1,017 \text{ lb/qtr (based on 90 days of operation)}\end{aligned}$$

The total actual emissions are significantly below the minimum quarterly emissions from one source operation; therefore, reductions are surplus of the rule limit.

N-355-83:
355 HP CUMMINS DIESEL FIRED I.C. ENGINE MODEL #NT855GZ,
SERIAL #56207, SERVING AN ONAN STANDBY GENERATOR (200 KW)
FOR UTILITY POWER INTERRUPTIONS

Note: 2011-2015 emissions inventory data has no records for this unit.
Therefore, no ERCs are being banked from this unit.

N-355-90:
VACUUM CLEANING SYSTEM WITH A LAMSON MODEL 814-4-0-AD
PRIMARY SEPARATOR AND A KICE INDUSTRIES BAGHOUSE

PTO N-355-90-3 limits the PM₁₀ emissions to 0.0061 gr/dscf. Assuming 80% of PM is PM₁₀, the PM would be 0.0076 gr/dscf (0.0061 gr-PM/dscf x gr-PM/0.8 gr-PM₁₀), which is below the 0.1 gr/dscf limit. Therefore, reductions are surplus of the rule limit.

N-355-92:
WHEAT GERM SIFTER AND CONVEYING SYSTEM SERVED BY A MAC,
MODEL NO. 36AVR14-III, PNEUMATIC RECEIVER

Per application under project N95051,

Airflow rate for dust collector: 250 cfm

$$\begin{aligned}\text{PE} &= 0.1 \text{ gr/dscf} \times 250 \text{ ft}^3/\text{min} \times 60 \text{ min/hr} \times 24 \text{ hr/day} \times \text{lb}/7,000 \text{ gr} \\ &= 5.1 \text{ lb-PM/day or } 459 \text{ lb/qtr (based on 90 days of operation)}\end{aligned}$$

The total actual emissions are significantly below the minimum quarterly emissions from one source operation; therefore, reductions are surplus of the rule limit.

N-355-94:
LINE 21 - PRODUCT DELIVERY AND PACKAGING SYSTEM CONSISTING
OF A DAY BIN; A SCALPER (H-57), CONVEYOR (H-57), AND A HOPPER

(H-57) ALL VENTED TO A BAGHOUSE (HC-57); AND FOUR BAGGERS (H-58 THROUGH H-61) VENTED TO A BAGHOUSE (HC-58)
Per application under project N980064,

The air flow rate through the baghouses:

HC-57: 3,250 cfm
HC-58: 750 cfm

Using the minimum air flow,

PE = $0.1 \text{ gr/dscf} \times 750 \text{ ft}^3/\text{min} \times 60 \text{ min/hr} \times 24 \text{ hr/day} \times \text{lb}/7,000 \text{ gr}$
= 15.4 lb-PM/day or 1,386 lb/qtr (based on 90 days of operation)

The total actual emissions are significantly below the minimum quarterly emissions from one source operation; therefore, reductions are surplus of the rule limit.

N-355-95:
48.3 MMBTU/HR NEBRASKA NS-C-52-ECON NATURAL GAS/LPG FIRED
BOILER EQUIPPED WITH A NATCOM MODEL P-48-G-24-1318 ULTRA-
LOW NOX BURNER

The grain loading factor is $0.003 \text{ gr/dscf}^{11}$ for natural gas combustion fuel. This factor is derived using an emission factor of $0.003 \text{ lb-PM}_{10}/\text{MMBtu}$, which is used to estimate the actual emissions. Therefore, emissions reductions are surplus of the rule limit.

N-355-99:
144 BHP (INTERMITTENT) CLARKE MODEL JU4H-UFADW8 TIER 3
CERTIFIED DIESEL-FIRED EMERGENCY IC ENGINE POWERING A
FIREWATER PUMP

The grain loading factor for this unit was $0.022 \text{ gr-PM}/\text{dscf}$. This factor was derived using emission factor of $0.09 \text{ g-PM}_{10}/\text{bhp-hr}$, which is used to estimate the actual emissions. Therefore, emissions reductions are surplus of the rule limit.

Rule 4202 Particulate Matter-Emission Rate

Section 4.0 of this rule, a person shall not discharge into the atmosphere PM emissions in excess of the maximum allowable limit (E_{Max}), in lb/hr, determined by the following specified in this Rule:

¹¹ $0.003 \text{ lb/MMBtu} \times 7,000 \text{ gr/lb} \times \text{MMBtu}/8,578 \text{ ft}^3 \times 20.95/(20.95-3)$

$$E_{\text{Max}} = 3.59 P^{0.62}, \text{ Process weight (P)} \leq 30 \text{ tons/hr}$$
$$E_{\text{Max}} = 17.31 P^{0.16}, P > 30 \text{ tons/hr}$$

N-355-1:

CEREAL PLANT (PUFF II) CONSISTING OF A MATERIAL DISPENSING SYSTEM, A MATERIAL COOKING SYSTEM, A PUFF SYSTEM, A CEREAL-FLAVOR SPRAYING AND DRYING SYSTEM, AND A FINISHED CEREAL SCALPING AND CONVEYANCE SYSTEM

N-355-2:

CEREAL PLANT (PUFF I) CONSISTING OF A MATERIAL DISPENSING SYSTEM, A MATERIAL COOKING SYSTEM, A PUFF SYSTEM, A CEREAL-FLAVOR SPRAYING AND DRYING SYSTEM, AND A FINISHED CEREAL SCALPING AND CONVEYANCE SYSTEM

The maximum emissions occur in the Q3 during which an average of 5,990 tons of cereal was processed during the baseline period. The average process rate was 4.05 tons per hour. This means, the equipment has been operated for 1,479 hours during that quarter.

$$E_{\text{Allowable}} = (3.59)(4.05)^{0.62}(1,479 \text{ hr/qtr})(1 \text{ lb-PM}_{10}/\text{lb-PM})$$
$$= 12,638 \text{ lb-PM}_{10}/\text{qtr}$$

Since the HAE is less than the allowable emissions for each quarter, the reductions are surplus of this rule standard.

N-355-5:

CEREAL PLANT PACKAGING SYSTEM: TWIN PACK LINE A SERVED BY A FLEX-KLEEN MODEL 20 PCBK3 III DUST COLLECTOR (AC-48), TWIN PACK LINE B SERVED BY A FLEX-KLEEN MODEL 20 PCBL3 III DUST COLLECTOR (AC-49), LINE 4 BAGGING AND PACKAGING SERVED BY A FLEX-KLEEN MODEL 58USBC144-III DUST COLLECTOR (AC-53), 8 SCALES SERVED BY 4 BOEDECKER MODEL DC-58-144-3B DUST COLLECTORS (2 SCALES/DUST COLLECTOR), 8 BAGGERS EACH SERVED BY A DEDICATED BOEDECKER MODEL RDP-25-3-3-B DUST COLLECTOR, WHICH ARE ALL VENTED TO A FLEX-KLEEN CYCLONIC RECEIVER WITH SOCK FILTER (AC-89), CEREAL FILLING STATION (A-104) SERVED BY A DUST COLLECTION HOOD VENTED TO AN AMERICAN AIR FILTER MODEL B WET TYPE ROTOCLONE COLLECTOR (AC-104)

The maximum emissions occur in the Q1 during which an average of 11,965 tons of cereal was packaged during the baseline period. The average process rate was 9.12 tons per hour. This means, the equipment has been operated for 1,312 hours during that quarter.

$$E_{\text{Allowable}} = (3.59)(9.12)^{0.62}(1,312 \text{ hr/qtr})(1 \text{ lb-PM}_{10}/\text{lb-PM})$$

$$= 18,545 \text{ lb-PM}_{10}/\text{qtr}$$

Since the HAE is less than the allowable emissions for each quarter, the reductions are surplus of this rule standard.

N-355-6:

BULK SWEETENER RECEIVING AND STORAGE OPERATION WITH ONE TRUCK RECEIVING PIT, TWO TRUCK/RAIL RECEIVING PITS, NINE FILTER RECEIVERS, 48 STORAGE SILOS, FLOUR DRYING SYSTEM, AND ASSOCIATED CONVEYING EQUIPMENT, ALL SERVED BY TWENTY-NINE BIN VENT FILTERS AND TEN BAGHOUSES

The maximum emissions occur in the Q1 during which an average of 11,334 tons of material processed during the baseline period.

Per application under project N1011086, the average delivery rate is 12 tons per hour. This means, the equipment has been operated for 945 hours during that quarter.

$$\begin{aligned} E_{\text{Allowable}} &= (3.59)(12)^{0.62}(945 \text{ hr/qtr})(1 \text{ lb-PM}_{10}/\text{lb-PM}) \\ &= 15,835 \text{ lb-PM}_{10}/\text{qtr} \end{aligned}$$

Since the HAE is less than the allowable emissions for each quarter, the reductions are surplus of this rule standard.

N-355-7:

DRY MIX PLANT SYSTEM: PRE-MIX OPERATION CONSISTING OF BAG DUMP, MIXER AND SIFTER; SIX DAY BINS (H-17) VENTED TO A BAGHOUSE (HC-17); MINOR INGREDIENTS RECEIVER, DRY INGREDIENTS RECEIVER, AND PRE-MIXER VENTED TO A BAGHOUSE (HC-18)

The maximum emissions occur in the Q3 during which an average of 319 tons of material processed during the baseline period.

Per application under project N960393, the average material process rate is 0.25 tons per hour. This means, the equipment has been operated for 510 hours during that quarter.

$$\begin{aligned} E_{\text{Allowable}} &= (3.59)(0.625)^{0.62}(510 \text{ hr/qtr})(1 \text{ lb-PM}_{10}/\text{lb-PM}) \\ &= 1,368 \text{ lb-PM}_{10}/\text{qtr} \end{aligned}$$

Since the HAE is less than the allowable emissions for each quarter, the reductions are surplus of this rule standard.

N-355-9:
MIX PLANT SYSTEM (MIXER #24A) SERVED BY A BAGHOUSE
N-355-10:
MIX PLANT SYSTEM (MIXER 24-B) SERVED BY A BAGHOUSE
N-355-11:
MIX PLANT SYSTEM (MIXER #25) SERVED BY A BAGHOUSE
N-355-12:
MIX PLANT SYSTEM (MIXER #26) SERVED BY A BAGHOUSE

The maximum emissions occur in the Q3 during which an average of 2,111 tons of material processed during the baseline period.

The process rate for this permit unit is presumed to be same as process rate under N-355-14. Per project N-1120492, process rate was 4 tons per hour. This means, the equipment has been operated for 528 hours during that quarter.

$$\begin{aligned} E_{\text{Allowable}} &= (3.59)(4)^{0.62}(528 \text{ hr/qtr})(1 \text{ lb-PM}_{10}/\text{lb-PM}) \\ &= 4,477 \text{ lb-PM}_{10}/\text{qtr} \end{aligned}$$

Since the HAE is less than the allowable emissions for each quarter, the reductions are surplus of this rule standard.

N-355-13:
MIX PLANT SYSTEM (MIXER#27) SERVED BY A BAGHOUSE

N-355-14:
BULK MATERIAL MIXING OPERATION: TWO FLOUR/SWEETENER SCALE HOPPERS EACH SERVED BY ITS OWN HAF EQUIPMENT MODEL 24HLBV10S2 DUST COLLECTOR (HC-90, HC-91), A MIXER #29 AND MANUALLY ADDED INGREDIENTS OPERATION VENTED TO A HAF EQUIPMENT MODEL 24HLBV10S2 DUST COLLECTOR (HC-76), A DAY BIN, TWO TRANSITION PNEUMATIC CONVEYING SYSTEMS EACH SERVED BY ITS OWN HAF EQUIPMENT MODEL 18BV4S2 DUST COLLECTOR (HC-92, HC-93), AND TWO DAY BINS

For permit N-355-13 or '-14, the maximum emissions occur in the Q1 during which an average of 632 tons of material processed during the baseline period.

The process rate for this permit unit N-355-13 is presumed to be same as process rate under N-355-14. Per project N-1120492, process rate was 4 tons per hour. This means, the equipment has been operated for 158 hours during that quarter.

$$\begin{aligned} E_{\text{Allowable}} &= (3.59)(4)^{0.62}(158 \text{ hr/qtr})(1 \text{ lb-PM}_{10}/\text{lb-PM}) \\ &= 1,340 \text{ lb-PM}_{10}/\text{qtr} \end{aligned}$$

Since the HAE is less than the allowable emissions for each quarter, the reductions are surplus of this rule standard.

N-355-16:

DRY MIX PLANT - SEASONING MIXER SYSTEM CONSISTING OF ONE BAG DUMP STATION/SCALPER (H-27) AND ONE SEASONING MIXER (H-28) ALL VENTED TO A FLEX KLEEN MODEL 58-BV-9-II DUST COLLECTOR (HC-27); ONE BAG DUMP STATION; THREE DAY BINS (H-65, H-66, & H-67) EACH VENTED TO AN HAF EQUIPMENT MODEL 58-BV-9-S-II-G DUST COLLECTOR (H-65, H-66 & H-67); ONE SCALE HOPPER RECEIVER (H-64) VENTED TO AN INTEGRAL HAF EQUIPMENT MODEL 18-CT-62-S-II DUST COLLECTOR (HC-64); ONE SUPER SACK DUMP-HOPPER, ONE SCALPER, AND ONE DAY BIN (H-86) ALL VENTED TO AN HAF EQUIPMENT MODEL 58-BV-25-S-2-G DUST COLLECTOR (HC-86)

The maximum emissions occur in the Q2 during which an average of 2,216 tons of material processed during the baseline period.

Per application review under project N-1061648, process rate was 2.5 tons per hour. This means, the equipment has been operated for 886 hours during that quarter.

$$\begin{aligned} E_{\text{Allowable}} &= (3.59)(2.5)^{0.62}(886 \text{ hr/qtr})(1 \text{ lb-PM}_{10}/\text{lb-PM}) \\ &= 5,614 \text{ lb-PM}_{10}/\text{qtr} \end{aligned}$$

Since the HAE is less than the allowable emissions for each quarter, the reductions are surplus of this rule standard.

N-355-17:

MIX PLANT SYSTEM (FLOUR GRINDING) SYSTEM SERVED BY ONE BAGHOUSE AND TWO BIN VENT FILTERS

The maximum emissions occur in the Q3 during which an average of 4,222 tons of material processed during the baseline period.

Per application review under project N970659, process rate was 6.75 tons per hour. This means, the equipment has been operated for 625 hours during that quarter.

$$\begin{aligned} E_{\text{Allowable}} &= (3.59)(6.75)^{0.62}(625 \text{ hr/qtr})(1 \text{ lb-PM}_{10}/\text{lb-PM}) \\ &= 7,331 \text{ lb-PM}_{10}/\text{qtr} \end{aligned}$$

Since the HAE is less than the allowable emissions for each quarter, the reductions are surplus of this rule standard.

N-355-18:
MIX PLANT SYSTEM (SUGAR SYSTEM) SERVED BY SIX BAGHOUSES

The maximum emissions occur in the Q4 during which an average of 2,392 tons of material processed during the baseline period.

Per application review under project N1050012, process rate was 1.5 tons per hour. This means, the equipment has been operated for 1,595 hours during that quarter.

$$\begin{aligned} E_{\text{Allowable}} &= (3.59)(1.5)^{0.62}(1,595 \text{ hr/qtr})(1 \text{ lb-PM}_{10}/\text{lb-PM}) \\ &= 7,363 \text{ lb-PM}_{10}/\text{qtr} \end{aligned}$$

Since the HAE is less than the allowable emissions for each quarter, the reductions are surplus of this rule standard.

N-355-20:
48.3 MMBTU/HR TRANE-MURRAY MODEL MCF2-50 BOILER EQUIPPED
WITH A NATCOM MODEL P-52-G-24-1419 ULTRA LOW-NOX BURNER

Section 3.0 of the rule defines process weight as the total weight of all materials introduced into any specific process, which process may cause any discharge into the atmosphere. Solid fuels charged shall be considered as part of the process weight, but liquid and gaseous fuels and combustion air shall not.

The unit was using natural gas fuel and combustion air during the baseline period. These elements are not part of the process weight. Therefore, maximum allowable particulate emissions cannot be quantified.

N-355-21:
3.48 MW COGENERATION SYSTEM CONSISTING OF AN ALLISON
MODEL 501 KB GAS TURBINE WITH A 16 MMBTU/HR DUCT BURNER
SYSTEM ALL SERVED BY A SELECTIVE CATALYTIC REDUCTION
SYSTEM, AND AN ELECTRIC MOTOR STARTER

Section 3.0 of the rule defines process weight as the total weight of all materials introduced into any specific process, which process may cause any discharge into the atmosphere. Solid fuels charged shall be considered as part of the process weight, but liquid and gaseous fuels and combustion air shall not.

The unit was using natural gas fuel and combustion air during the baseline period. These elements are not part of the process weight. Therefore, maximum allowable particulate emissions cannot be quantified.

N-355-25-3:

GRAHAM SYSTEM CONSISTING OF TEN INGREDIENT BINS SERVED BY TEN INDIVIDUAL BAGHOUSES

The maximum emissions occur in the Q3 during which an average of 4,446 tons of material processed during the baseline period.

Per application under project N970659, process rate was 12 tons per hour for ten bins (1.2 tons/hr/bin). This means, the equipment has been operated for 371 hours during that quarter.

$$\begin{aligned} E_{\text{Allowable}} &= (3.59)(12)^{0.62}(371 \text{ hr/qtr})(1 \text{ lb-PM}_{10}/\text{lb-PM}) \\ &= 6,217 \text{ lb-PM}_{10}/\text{qtr} \end{aligned}$$

Since the HAE is less than the allowable emissions for each quarter, the reductions are surplus of this rule standard.

N-355-35:

GRAHAM SYSTEM: DOUGH PROCESSING SYSTEM CONSISTING OF DOUGH FORMERS, WET DOUGH RECEIVERS (D54) SERVING DOUGH DRYER #1 (D-12), DOUGH DRYER #2 (D-13), AND DOUGH DRYER #3 (D-14) CONNECTED IN SERIES. THIS OPERATION ALSO SERVES PERMIT UNIT #N-355-38.

The maximum emissions occur in the Q3 during which an average of 5,558 tons of material processed during the baseline period.

Per permit N-355-35, process rate was 3 tons per hour through each unit. This means, the equipment has been operated for 1,853 hours during that quarter.

$$\begin{aligned} E_{\text{Allowable}} &= (3.59)(3)^{0.62}(1,853 \text{ hr/qtr})(1 \text{ lb-PM}_{10}/\text{lb-PM}) \\ &= 13,146 \text{ lb-PM}_{10}/\text{qtr} \end{aligned}$$

Since the HAE is less than the allowable emissions for each quarter, the reductions are surplus of this rule standard.

N-355-38:

GRAHAM SYSTEM: PELLET COOLER (D-18) SERVED BY A BAGHOUSE (DC-18), PELLET TOASTER (D-16) WITH TWO 2.5 MMBTU/HR NATURAL GAS-FIRED BURNERS SERVED BY TWO CYCLONES AND A WET SCRUBBER (DC-16), AND DAY BINS (D-21) SERVED BY A BAGHOUSE (DC-21)

Process emissions:

The maximum emissions occur in the Q3 during which an average of 5,558 tons of material processed during the baseline period.

Per permit N-355-35, process rate was 3 tons per hour through each unit. This means, the equipment has been operated for 1,853 hours during that quarter.

$$\begin{aligned} E_{\text{Allowable}} &= (3.59)(3)^{0.62}(1,853 \text{ hr/qtr})(1 \text{ lb-PM}_{10}/\text{lb-PM}) \\ &= 13,146 \text{ lb-PM}_{10}/\text{qtr} \end{aligned}$$

Since the HAE is less than the allowable emissions for each quarter, the reductions are surplus of this rule standard.

Combustion emissions:

The unit was using natural gas fuel and combustion air during the baseline period. These elements are not part of the process weight. Therefore, maximum allowable particulate emissions cannot be quantified.

N-355-40:

GRAHAM SYSTEM: RECOVERY TOASTER (D-17) SERVED BY A CYCLONE AND A WET SCRUBBER (DC-17), A RECOVERY COOLER (D-19) SERVED BY A BAGHOUSE (DC-19), AND A GRINDER (D-20) SERVED BY TWO FILTER RECEIVERS (DC-20 AND DC-33)

Process emissions:

Per application under project N1031721, the process rate was 0.25 tons per hour through each unit.

$$\begin{aligned} E_{\text{Allowable}} &= (3.59)(0.25)^{0.62}(2,160 \text{ hr/qtr})(1 \text{ lb-PM}_{10}/\text{lb-PM}) \\ &= 3,283 \text{ lb-PM}_{10}/\text{qtr} \end{aligned}$$

Since the HAE is less than the allowable emissions for each quarter, the reductions are surplus of this rule standard.

Combustion emissions:

The unit was using natural gas fuel and combustion air during the baseline period. These elements are not part of the process weight. Therefore, maximum allowable particulate emissions cannot be quantified.

N-355-42:
CEREAL PLANT VACUUM SYSTEM SERVED BY A BAGHOUSE

Per project N-930640, process rate was 0.025 tons per hour.

$$\begin{aligned} E_{\text{Allowable}} &= (3.59)(0.025)^{0.62}(2,160 \text{ hr/qtr})(1 \text{ lb-PM}_{10}/\text{lb-PM}) \\ &= 787 \text{ lb-PM}_{10}/\text{qtr} \end{aligned}$$

Since the HAE is less than the allowable emissions for each quarter, the reductions are surplus of this rule standard.

N-355-44:
GRAHAM SYSTEM: SLURRY COOLER SERVED BY A BAGHOUSE

Per application under project N970659, process rate was 2.5 tons per hour.

$$\begin{aligned} E_{\text{Allowable}} &= (3.59)(2.5)^{0.62}(2,160 \text{ hr/qtr})(1 \text{ lb-PM}_{10}/\text{lb-PM}) \\ &= 13,686 \text{ lb-PM}_{10}/\text{qtr} \end{aligned}$$

Since the HAE is less than the allowable emissions for each quarter, the reductions are surplus of this rule standard.

N-355-45:
CEREAL COATING OPERATION: ONE LINE WITH ENROBER (D23),
DRYER (D22) VENTED TO SCRUBBER (DC22), & COOLER (D24) VENTED
TO FABRIC FILTER (DC24); THE SECOND LINE WITH ENROBER (D25)
VENTED TO SCRUBBER (DC25)

The maximum emissions occur in the Q3 during which an average of 5,558 tons of material processed during the baseline period.

Per application under project N1031721, process rate was 3 tons per hour through each unit. This means, the equipment has been operated for 1,853 hours during that quarter.

$$\begin{aligned} E_{\text{Allowable}} &= (3.59)(3)^{0.62}(1,853 \text{ hr/qtr})(1 \text{ lb-PM}_{10}/\text{lb-PM}) \\ &= 13,146 \text{ lb-PM}_{10}/\text{qtr} \end{aligned}$$

Since the HAE is less than the allowable emissions for each quarter, the reductions are surplus of this rule standard.

N-355-46:
TOKAY CEREAL PLANT; CENTRAL VACUUMING SYSTEM SERVED BY A
HOFFCO PULSE SEPARATOR (MODEL # SCHA 14-58)

Note: 2011-2015 emissions inventory data has no records for this system.
Therefore, no ERCs are being banked from this system.

N-355-47:
TOKAY CEREAL PLANT; PNEUMATIC RAILCAR RECEIVING SYSTEM
SERVED BY TWO (2) FLEX-KLEEN BAGHOUSES (MODEL #58 CTBC 32)

The maximum emissions occur in the Q3 during which an average of 6,114
tons of material processed during the baseline period.

Per engineering evaluation under application # AP89-64 to 74 (9/20/89),
process rate is estimated to be 4.25 tons per hour (102 tons/day ÷ 24 hr/day).
This means, the equipment has been operated for 1,439 hours during that
quarter.

$$\begin{aligned} E_{\text{Allowable}} &= (3.59)(4.25)^{0.62}(1,853 \text{ hr/qtr})(1 \text{ lb-PM}_{10}/\text{lb-PM}) \\ &= 16,314 \text{ lb-PM}_{10}/\text{qtr} \end{aligned}$$

Since the HAE is less than the allowable emissions for each quarter, the
reductions are surplus of this rule standard.

N-355-56:
TOKAY CEREAL PLANT; FOUR AND SEVEN BULK STORAGE BINS
SERVED BY ELEVEN MAC BAGHOUSES (MODEL #72 AVR 14) DUCTED
THROUGH THREE BULK BIN EXHAUST HEADERS

The maximum emissions occur in the Q3 during which an average of 4,556
tons of material processed during the baseline period.

Per engineering evaluation under application # AP89-64 to 74 (9/20/89),
minimum process rate is estimated to be 2.25 tons per hour (54 tons/day ÷ 24
hr/day). This means, the equipment has been operated for 2,025 hours during
that quarter.

$$\begin{aligned} E_{\text{Allowable}} &= (3.59)(2.25)^{0.62}(2,025 \text{ hr/qtr})(1 \text{ lb-PM}_{10}/\text{lb-PM}) \\ &= 12,019 \text{ lb-PM}_{10}/\text{qtr} \end{aligned}$$

Since the HAE is less than the allowable emissions for each quarter, the
reductions are surplus of this rule standard.

N-355-78:

BULK MATERIAL MIXING OPERATION: ONE MAJORS BAG DUMP HOPPER (H-19) SERVED BY AN ANDERSON DAHLEN/FLEX-KLEEN MODEL 18CTBS24I FILTER RECEIVER (HC-19), ONE FLEX-KLEEN MODEL 18CTBS24I MINORS FILTER RECEIVER (HC-20), ONE FLOUR SCALE HOPPER SERVED BY A HAF EQUIPMENT MODEL 24HLBV10S2 DUST COLLECTOR (HC-88), ONE BAG DUMP HOPPER SERVED BY A HAF EQUIPMENT MODEL 3636S DUST COLLECTOR (HC-89), ONE 250 CUBIC FOOT LOWE INDUSTRIES MIXER (H-21) SERVED BY A FLEX-KLEEN MODEL 30PVBL16 DUST COLLECTOR (HC-21), ONE SWEETENER SCALE HOPPER, ONE 250 CUBIC FOOT ANDERSON DAHLEN DAY BIN, AND ONE 250 CUBIC FOOT HOLDING MIXER (H-23) SERVED BY A HAF EQUIPMENT MODEL 58CT24S3 DUST COLLECTOR (HC-75)

Per application review under project N-1120492, the process rate was 6 tons per hour.

$$\begin{aligned} E_{\text{Allowable}} &= (3.59)(6)^{0.62}(2,160 \text{ hr/qtr})(1 \text{ lb-PM}_{10}/\text{lb-PM}) \\ &= 23,551 \text{ lb-PM}_{10}/\text{qtr} \end{aligned}$$

Since the HAE is less than the allowable emissions for each quarter, the reductions are surplus of this rule standard.

N-355-83:

355 HP CUMMINS DIESEL FIRED I.C. ENGINE MODEL #NT855GZ, SERIAL #56207, SERVING AN ONAN STANDBY GENERATOR (200 KW) FOR UTILITY POWER INTERRUPTIONS

Note: 2011-2015 emissions inventory data has no records for this unit. Therefore, no ERCs are being banked from this unit.

N-355-90:

VACUUM CLEANING SYSTEM WITH A LAMSON MODEL 814-4-0-AD PRIMARY SEPARATOR AND A KICE INDUSTRIES BAGHOUSE

Per application under project N-930640, process rate was 0.025 tons per hour.

$$\begin{aligned} E_{\text{Allowable}} &= (3.59)(0.025)^{0.62}(2,160 \text{ hr/qtr})(1 \text{ lb-PM}_{10}/\text{lb-PM}) \\ &= 787 \text{ lb-PM}_{10}/\text{qtr} \end{aligned}$$

Since the HAE is less than the allowable emissions for each quarter, the reductions are surplus of this rule standard.

N-355-92:

WHEAT GERM SIFTER AND CONVEYING SYSTEM SERVED BY A MAC,
MODEL NO. 36AVR14-III, PNEUMATIC RECEIVER

The maximum emissions occur in the Q3 during which an average of 1,198 tons of material processed during the baseline period.

Per application under project N950551, process rate was 0.5 tons per hour.

$$\begin{aligned} E_{\text{Allowable}} &= (3.59)(0.5)^{0.62}(2,160 \text{ hr/qtr})(1 \text{ lb-PM}_{10}/\text{lb-PM}) \\ &= 5,046 \text{ lb-PM}_{10}/\text{qtr} \end{aligned}$$

Since the HAE is less than the allowable emissions for each quarter, the reductions are surplus of this rule standard.

N-355-94:

LINE 21 - PRODUCT DELIVERY AND PACKAGING SYSTEM CONSISTING OF A DAY BIN; A SCALPER (H-57), CONVEYOR (H-57), AND A HOPPER (H-57) ALL VENTED TO A BAGHOUSE (HC-57); AND FOUR BAGGERS (H-58 THROUGH H-61) VENTED TO A BAGHOUSE (HC-58)

Per application under project N980064, process rate was estimated to be 1.25 tons per hour.

$$\begin{aligned} E_{\text{Allowable}} &= (3.59)(1.25)^{0.62}(2,160 \text{ hr/qtr})(1 \text{ lb-PM}_{10}/\text{lb-PM}) \\ &= 8,905 \text{ lb-PM}_{10}/\text{qtr} \end{aligned}$$

Since the HAE is less than the allowable emissions for each quarter, the reductions are surplus of this rule standard.

N-355-95:

48.3 MMBTU/HR NEBRASKA NS-C-52-ECON NATURAL GAS/LPG FIRED BOILER EQUIPPED WITH A NATCOM MODEL P-48-G-24-1318 ULTRA-LOW NOX BURNER

Section 3.0 of the rule defines process weight as the total weight of all materials introduced into any specific process, which process may cause any discharge into the atmosphere. Solid fuels charged shall be considered as part of the process weight, but liquid and gaseous fuels and combustion air shall not.

The unit was using natural gas fuel and combustion air during the baseline period. These elements are not part of the process weight. Therefore, maximum allowable particulate emissions cannot be quantified.

N-355-99:

144 BHP (INTERMITTENT) CLARKE MODEL JU4H-UFADW8 TIER 3
CERTIFIED DIESEL-FIRED EMERGENCY IC ENGINE POWERING A
FIREWATER PUMP

Section 3.0 of the rule defines process weight as the total weight of all materials introduced into any specific process, which process may cause any discharge into the atmosphere. Solid fuels charged shall be considered as part of the process weight, but liquid and gaseous fuels and combustion air shall not.

The unit was using liquid fuel and combustion air during the baseline period. These elements are not part of the process weight. Therefore, maximum allowable particulate emissions cannot be quantified.

Rule 4301 Fuel Burning Equipment

The requirements of section 5.0 are as follows:

- Combustion contaminants (TSP) - Not to exceed 0.1 gr/dscf @ 12% CO₂ and 10 lb/hr.
- SO_x emissions - Not to exceed 200 lb/hr
- NO_x emissions - Not to exceed 140 lb/hr

N-355-20 and '-95:

These units were operated on natural gas fuel during the baseline period. Therefore, using natural gas emissions factors, the potential emission from each permit are as follows:

$$\begin{aligned}
 \text{PE} &= (0.008 \text{ lb-NO}_x/\text{MMBtu})(48.3 \text{ MMBtu/hr}) \\
 &= 0.39 \text{ lb-NO}_x/\text{hr} \text{ (842 lb/qtr using 2,160 hr/qtr operation)} \\
 &= (0.00285 \text{ lb-SO}_x/\text{MMBtu})(48.3 \text{ MMBtu/hr}) \\
 &= 0.14 \text{ lb-SO}_x/\text{hr} \text{ (302 lb/qtr using 2,160 hr/qtr operation)} \\
 \text{PM} \left(\frac{\text{gr}}{\text{dscf}} \right) &= \frac{\text{PM Emissions} \left(\frac{\text{lb - PM}}{\text{MMBtu}} \right) \times 7,000 \frac{\text{gr - PM}}{\text{lb - PM}}}{F_{\text{factor CO}_2} \left(\frac{\text{dscf}}{\text{MMBtu}} \right) \times \left(\frac{100\%}{12\%} \right)} \\
 &= \frac{\left(0.0076 \frac{\text{lb - PM}}{\text{MMBtu}} \right) \left(7,000 \frac{\text{gr - PM}}{\text{lb - PM}} \right)}{\left(1,024.2 \frac{\text{dscf}}{\text{MMBtu}} \right) \left(\frac{100\%}{12\%} \right)} \\
 &= 0.0062 \frac{\text{gr - PM}}{\text{dscf}}
 \end{aligned}$$

Since the HAE is less than the allowable emissions for each quarter, the reductions are surplus of the standards in this rule.

N-355-21 and '-99:

This unit is not subject to the requirement of this rule since it produces heat and power from direct heat transfer.

N-355-38:

The pellet toaster were operated on natural gas fuel during the baseline period. Therefore, using natural gas emissions factors, the potential emission from unit are as follows:

$$\begin{aligned}
 PE &= (0.1 \text{ lb-NOx/MMBtu})(2.5 \text{ MMBtu/hr}) \\
 &= 0.25 \text{ lb-NOx/hr (540 lb/qtr using 2,160 hr/qtr operation)} \\
 &= (0.00285 \text{ lb-SOx/MMBtu})(2.5 \text{ MMBtu/hr}) \\
 &= 0.007 \text{ lb-SOx/hr (15 lb/qtr using 2,160 hr/qtr operation)} \\
 PM \left(\frac{\text{gr}}{\text{dscf}} \right) &= \frac{PM \text{ Emissions} \left(\frac{\text{lb} - PM}{\text{MMBtu}} \right) \times 7,000 \frac{\text{gr} - PM}{\text{lb} - PM}}{F_{\text{factor CO}_2} \left(\frac{\text{dscf}}{\text{MMBtu}} \right) \times \left(\frac{100\%}{12\%} \right)} \\
 &= \frac{\left(0.0076 \frac{\text{lb} - PM}{\text{MMBtu}} \right) \left(7,000 \frac{\text{gr} - PM}{\text{lb} - PM} \right)}{\left(1,024.2 \frac{\text{dscf}}{\text{MMBtu}} \right) \left(\frac{100\%}{12\%} \right)} \\
 &= 0.0062 \frac{\text{gr} - PM}{\text{dscf}}
 \end{aligned}$$

Since the HAE is less than the allowable emissions for each quarter, the reductions are surplus of the standards in this rule.

- Rule 4305 Boilers, Steam Generators, and Process Heaters – Phase 2**
- Rule 4306 Boilers, Steam Generators, and Process Heaters – Phase 3**
- Rule 4320 Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters greater than 5.0 MMBtu/hr**
- Rule 4351 Boilers, Steam Generators, and Process Heaters – Phase 1**

Since the emission limits in Rule 4320 are more stringent than the limits in Rule 4305, 4306 and 4351 for gaseous fuel units, surplus analysis with Rule 4320 will be sufficient to prove that the reductions are surplus of the other rules.

N-355-20:
48.3 MMBTU/HR TRANE-MURRAY MODEL MCF2-50 BOILER EQUIPPED
WITH A NATCOM MODEL P-52-G-24-1419 ULTRA LOW-NOX BURNER

N-355-95:
48.3 MMBTU/HR NEBRASKA NS-C-52-ECON NATURAL GAS/LPG FIRED
BOILER EQUIPPED WITH A NATCOM MODEL P-48-G-24-1318 ULTRA-
LOW NOX BURNER

Rule 4320 emission limits for the above units are:

NOx: 7 ppmvd @ 3% O₂
CO: 400 ppmvd @ 3% O₂
Particulate Matter: Use PUC quality natural gas, commercial propane, butane,
or LPG, or a combination of such gases, or limit fuel sulfur content to no more
than 5 gr-S/100 scf, or emission control system to reduce SO₂ emissions by
at least 95% by weight or limit SO₂ to less than or equal to 9 ppmv @ 3% O₂

The following source test data is used to estimate actual emissions during the
baseline period. The units were operated on natural gas fuel.

N-355-20 - NOx: 6.3 ppmvd @ 3% O₂, CO: 30.3 ppmvd @ 3% O₂
N-355-95 - NOx: 4.9 ppmvd @ 3% O₂, CO: 41.6 ppmvd @ 3% O₂

The above values were below the permitted limits; therefore, NOx and CO
reductions are surplus of the rule limits.

Rule 4701 Internal Combustion Engines – Phase 1

Per section 4.2, except for the administrative requirement, the provisions of
this rule shall not apply to standby engines.

The engine under N-355-99 is a standby engine. Therefore, requirements of
this rule do not apply, and the reductions are considered surplus of this rule.

Rule 4702 Internal Combustion Engines

Per section 4.2, except for the requirements of section 5.9 and 6.2.3, the
requirements of this rule shall not apply to an emergency standby engine or a
low-use engine.

The engine under N-355-99 is an emergency standby engine. Therefore,
requirements of this rule do not apply, and the reductions are considered
surplus of this rule.

Rule 4703 Stationary Gas Turbines

N-355-21:

3.48 MW COGENERATION SYSTEM CONSISTING OF AN ALLISON MODEL 501 KB GAS TURBINE WITH A 16 MMBTU/HR DUCT BURNER SYSTEM ALL SERVED BY A SELECTIVE CATALYTIC REDUCTION SYSTEM, AND AN ELECTRIC MOTOR STARTER

This unit was subject to the following limits:

NOx: 5 ppmvd @ 15% O₂
CO: 200 ppmvd @ 15% O₂

The following source test data is used to estimate actual emissions during the baseline period. The unit was operated on natural gas fuel.

NOx: 3.2 to 3.5 ppmvd @ 15% O₂
CO: 79.3 to 80.4 ppmvd @ 15% O₂

The above values were below the permitted limits; therefore, NOx and CO reductions are surplus of the rule limits.

Rule 4801 Sulfur Compounds

Section 3.1 states that a person shall not discharge into the atmosphere sulfur compounds, which would exist as a liquid or gas at standard conditions, exceeding a concentration of two-tenths (0.2) percent by volume calculated as sulfur dioxide (SO₂) at the point of discharge on a dry basis averaged over 15 consecutive minutes.

N-355-20, '-21, '-38, '-95:

For the natural gas fuel combustion at a reference state of 60 °F, the Rule 4801 limit of 2,000 ppmvd is equivalent to:

$$\frac{(2000 \text{ ppmvd}) \left(8,578 \frac{\text{dscf}}{\text{MMBtu}} \right) \left(64 \frac{\text{lb} - \text{SO}_x}{\text{lb} - \text{mol}} \right)}{\left(379.5 \frac{\text{dscf}}{\text{lb} - \text{mol}} \right) (10^6)} \cong 2.9 \frac{\text{lb} - \text{SO}_x}{\text{MMBtu}}$$

The emissions from each of these permit unit were determined using emissions factor below the 2.9 lb/MMBtu limit; therefore, SOx reductions are surplus of the rule limit.

N-355-99:

Per application review under project N1113785, sulfur compound emissions are estimated to be 1.0 ppmv for 15 ppm sulfur in diesel fuel. The engine used 15 ppmv sulfur fuel. Therefore, the actual emissions must be below the limit in the rule, and reduction are considered surplus of the rule limit.

Air Quality Plans

Pursuant to section 3.2.2 of Rule 2201, to be considered surplus, the actual emissions reductions shall be in excess of adopted air quality plan pursuant to the California Clean Air Act. The adopted air quality plans by the District are discussed as follows:

2016 Plan for the 2008 8-Hour Ozone Standard¹²

N-355-20, '-95:

The Appendix C, Pages C-27 to C-31, are examined to determine the proposed NOx and VOC control measure for boilers subject to District Rules 4320.

Currently, this plan does not propose any specific control measures for NOx or VOC or emission limits for the boilers subject to District Rule 4320. Therefore, the HAE calculated above does not need to be discounted and all bankable emission reductions are considered surplus at this time.

N-355-21:

The Appendix C, Pages C-198 to C-200, are examined to determine the proposed NOx and VOC control measure for units subject to District Rule 4703.

Currently, this plan does not propose any specific control measures for NOx or VOC or emission limits for the units subject to District Rule 4703. Therefore, the HAE calculated above does not need to be discounted and all bankable emission reductions are considered surplus at this time.

N-355-99:

The Appendix C, Pages C-175 to C-197, are examined to determine the proposed NOx and VOC control measure for emergency IC engine subject to the limited requirements in District Rules 4702.

Currently, this plan does not propose any specific control measures for NOx or VOC or emission limits for the emergency IC engines subject to District Rule 4702. Therefore, the HAE calculated above does not need to be discounted and all bankable emission reductions are considered surplus at this time.

¹² The relevant pages are included in Appendix IX of this document for reference purpose. The entire plan is available at: http://www.valleyair.org/Air_Quality_Plans/Ozone-Plan-2016.htm

District's 2015 Plan for the 1997 PM_{2.5} Standard¹³

N-355-20, '-95:

The Appendix C, Pages C-35 to C-42, are examined to determine the proposed NO_x and PM control measure for boilers subject to District Rules 4306 and 4320.

Currently, this plan does not propose any specific control measure or emissions limits, and concludes that Rule 4306 and 4320 currently have in place the most stringent measures feasible to implement in the Valley. Therefore, emissions reductions are considered surplus of this plan for these units.

N-355-21:

The Appendix C, Pages C-142 to C-152, are examined to determine the proposed NO_x and PM control measure for units subject to District Rule 4703.

Currently, this plan does not propose any specific control measure or emissions limits, and concludes that Rule 4703 currently have in place the most stringent measures feasible to implement in the Valley. Therefore, emissions reductions are considered surplus of this plan for this unit.

N-355-99:

The Appendix C, Pages C-120 to C-141, are examined to determine the proposed NO_x and PM control measure for emergency IC engine subject to the limited requirements in District Rules 4702.

Currently, this plan does not propose any specific control measures for NO_x or PM or emission limits for the emergency IC engines subject to District Rule 4702. Therefore, the HAE calculated above does not need to be discounted and all bankable emission reductions are considered surplus at this time.

Rules and Regulations in State Implementation Plan (SIP)

Pursuant to section 3.2.2, to be considered surplus, actual emission reductions shall be in excess of a control measure noticed for workshop, or proposed or contained in a State Implementation Plan (SIP).

The following SIP approved rules and regulations¹⁴ in the other air Districts are reviewed to determine any requirements for the boilers, cogen equipment, and emergency IC engines at the facility.

¹³ The relevant pages are included in Appendix IX of this document for reference purpose. The entire plan is available at:
http://www.valleyair.org/Air_Quality_Plans/PM25Plans2015.htm

¹⁴ <http://yosemite.epa.gov/R9/r9sips.nsf/Casips?readform&count=100&state=California>

Bay Area Air Quality Management District
N-355-20 and '-95

Regulation 9 Rule 7 - Nitrogen Oxides and Carbon Monoxide from Industrial, Institutional and Commercial Boilers, Steam Generators and Process Heaters (May 4, 2011)

Per section 9-7-307, boilers, steam generators or process heaters with a rated heat input of 20 to less than 75 MMBtu/hr are required to comply with the following limits:

NOx: 9 ppmvd @ 3% O₂
CO: 400 ppmvd @ 3% O₂

The following source test data is used to estimate actual emissions during the baseline period. The units were operated on natural gas fuel.

N-355-20 - NOx: 6.3 ppmvd @ 3% O₂, CO: 30.3 ppmvd @ 3% O₂
N-355-95 - NOx: 4.9 ppmvd @ 3% O₂, CO: 41.6 ppmvd @ 3% O₂

Therefore, NOx and CO reductions are surplus of the rule limits.

N-355-21

Regulation 9 Rule 9 – Nitrogen Oxides from Stationary Gas Turbines (December 6, 2006)

Per section 9-9-301.2, turbines rated between 5-50 MMBtu/hr and operated on natural gas fuel are required to achieve 42 ppmvd @ 15% O₂.

The following source test data is used to estimate actual emissions during the baseline period. The unit was operated on natural gas fuel.

NOx: 3.2 to 3.5 ppmvd @ 15% O₂

Therefore, NOx reductions are surplus of this Rule.

N-355-99

Regulation 9 Rule 8 - Nitrogen Oxides and Carbon Monoxide from Stationary Internal Combustion Engines (July 25, 2007)

Per section 9-8-110, the requirements of Section 9-8-301 through 305 (emission limits), 501 (initial compliance demonstration) and 503 (quarterly compliance demonstration) do not apply to emergency standby engines. Therefore, emission reductions are considered surplus of this rule.

Ventura County Air Pollution Control District
N-355-20 and '-95

Rule 74.15 – Boilers, Steam Generators and Process Heaters (November 8, 1994)

Per section B.1, the limits are as follows:

NOx: 40 ppmv
CO: 400 ppmv

The limits are presumed to be at 3% O₂.

The following source test data is used to estimate actual emissions during the baseline period. The units were operated on natural gas fuel.

N-355-20 - NOx: 6.3 ppmvd @ 3% O₂, CO: 30.3 ppmvd @ 3% O₂

N-355-95 - NOx: 4.9 ppmvd @ 3% O₂, CO: 41.6 ppmvd @ 3% O₂

Therefore, NOx and CO reductions are surplus of the rule limits.

N-355-21

Rule 74.23 - Stationary Gas Turbines (January 8, 2002)

Per section B.1, for 2.9 MW to less than 10.0 MW gas turbines:

NOx = 25 x E/25 ppmv, where,

E = Unit's efficiency = (MRE at LHV)(LHV)/HHV,

MRE is the manufacturer's rated thermal efficiency, and shall not be less than 25%. LHV and HHV are lower heating value and higher heating value of the fuel respectively.

MRE data is not available; default value of 25% will be used.

NOx = 25 x (0.25*918/1,020) = 5.6 ppmv

The following source test data is used to estimate actual emissions during the baseline period. The unit was operated on natural gas fuel.

NOx: 3.2 to 3.5 ppmvd @ 15% O₂

Therefore, reductions are surplus of the rule limit.

N-355-99

Rule 74.9 - Stationary Internal Combustion Engines (November 8, 2005)

Section D, item 3, states that emergency standby engines operated during either an emergency or maintenance operation are not subject to section B (Requirements), C (Engine operator inspection plan) and E (Recordkeeping) of the rule. Therefore, reductions are surplus of this rule.

South Coast Air Quality Management District

N-355-20 and '-95:

Rule 1146 - Emissions of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters (November 1, 2013)

Per section (c)(1), group II units (20 MMBtu/hr to less than 75 MMBtu/hr) are required to achieve 9 ppmvd NO_x @ 3% O₂. Further, per section (c)(4), units shall not discharge more than 400 ppmvd @ 3% O₂.

The following source test data is used to estimate actual emissions during the baseline period. The units were operated on natural gas fuel.

N-355-20 - NO_x: 6.3 ppmvd @ 3% O₂, CO: 30.3 ppmvd @ 3% O₂

N-355-95 - NO_x: 4.9 ppmvd @ 3% O₂, CO: 41.6 ppmvd @ 3% O₂

Therefore, NO_x and CO reductions are surplus of the rule limits.

N-355-21:

Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines (August 8, 1997)

Per section (c)(1), NO_x emissions limit should be estimated as follows:

Compliance limit = Reference limit x EFF/25%, where.

Reference limit = 9 ppmvd @ 15% O₂ for units 2.9 to less than 10.0 MW.

EFF = $3413 \times 100\% / \text{Actual heat rate at HHV (Btu/kW-hr)}$

EFF = $3413 \times 100\% / 13,002 = 26.2\%$

Compliance limit = $(9 \text{ ppmvd @ } 15\% \text{ O}_2) \times 26.2\% / 25\%$
= 9.4 ppmvd @ 15% O₂

The following source test data is used to estimate actual emissions during the baseline period. The unit was operated on natural gas fuel.

NO_x: 3.2 to 3.5 ppmvd @ 15% O₂

Therefore, reductions are surplus of the rule limit.

N-355-99

Rule 1110.2 - Emissions from Gaseous- and Liquid-Fueled Engines (June 3, 2016)

Section (i)(1)(B) provides exemption from provision of section (d) for emergency standby engines. Therefore, reductions are surplus of this rule.

Sacramento Metropolitan Air Quality Management District

N-355-20 and '-95:

Rule 411 - NOx from Boilers, Process Heaters and Steam Generators (August 23, 2007)

Per section 301, units greater than 20 MMBtu/hr, are required to achieve the following limits:

NOx: 9 ppmvd @ 3% O₂
CO: 400 ppmvd @ 3% O₂

The following source test data is used to estimate actual emissions during the baseline period. The units were operated on natural gas fuel.

N-355-20 - NOx: 6.3 ppmvd @ 3% O₂, CO: 30.3 ppmvd @ 3% O₂
N-355-95 - NOx: 4.9 ppmvd @ 3% O₂, CO: 41.6 ppmvd @ 3% O₂

Therefore, NOx and CO reductions are surplus of the rule limits.

N-355-21:

Rule 413 - Stationary Gas Turbines (March 24, 2005)

Per section 302.1, item b, units greater than or equal to 2.9 MW and less than 10 MW, operated 877 hours or more per calendar year are required to achieve 25 ppmvd NOx @ 15% O₂.

The following source test data is used to estimate actual emissions during the baseline period. The unit was operated on natural gas fuel.

NOx: 3.2 to 3.5 ppmvd @ 15% O₂

Therefore, reductions are surplus of the rule limit.

N-355-99:

Rule 412 - Stationary Internal Combustion Engines Located at Major Stationary Sources of NOx (June 1, 1995)

Section 110 states that provisions of section 301 (RACT emission limit), section 302 (BARCT emission limit), section 303 (alternative control requirement) and section 400 (administrative requirements) shall not apply to emergency standby internal combustion engines. Therefore, reductions are surplus of this rule.

Summary:

Based on the above discussion, the HAEs calculated in Section V.D of this document are surplus of all the applicable rules and regulations.

F. Not used for the approval of an Authority to Construct or as Offsets

The ERCs generated by the shutdown of the emission units were not used in the approval of an Authority to Construct or as offsets for any project.

G. Timely Submittal

Section 5.5 of Rule 2301 requires that the ERC applications shall be submitted within 180 days after shutdown (date of permanent cession of emissions). The equipment was shutdown on December 11, 2015, and the ERC application was received on March 7, 2016. The application was received within 180 days after the shutdown date. Therefore, the application was submitted in a timely fashion.

VII. RECOMMENDATION

The District recommends that ERC Certificates should be issued to General Mills for the amount (pounds) indicated in the following table.

Pollutant	Q1	Q2	Q3	Q4
NO _x	899	877	794	502
SO _x	171	178	172	93
PM ₁₀	3,269	3,660	3,947	2,974
PM _{2.5} in PM ₁₀	915	1,025	1,026	714
CO	10,319	10,892	10,615	5,593
VOC	268	292	209	184

APPENDICES

Appendix I:	Draft ERC Certificates
Appendix II:	Processing Rate Records and Baseline Period Calculations
Appendix III:	Weighted EF Calculations (N-355-9 through '-14 and '-16)
Appendix IV:	Source Test Summaries (N-355-20, '-21 and '-95)
Appendix V:	HAE Summary Sheet
Appendix VI:	HAP Calculations
Appendix VII:	Surrendered Permits to Operate
Appendix VIII:	PM _{2.5} /PM ₁₀ Calculations
Appendix IX:	District's Air Quality Plans (Source Specific Pages Only)

Appendix I

Draft ERC Certificates

San Joaquin Valley
Air Pollution Control District

Northern Regional Office • 4800 Enterprise Way • Modesto, CA 95356-8718

Emission Reduction Credit Certificate

N1160825-79-1

ISSUED TO: GENERAL MILLS OPERATIONS, INC

ISSUED DATE: <DRAFT>

**LOCATION OF
REDUCTION:** WADE BROUGHTON
2000 W TURNER ROAD
LODI, CA 95242

For VOC Reduction In The Amount Of:

Quarter 1	Quarter 2	Quarter 3	Quarter 4
268 lbs	292 lbs	209 lbs	184 lbs

Method Of Reduction

- ☒ Shutdown of Entire Stationary Source
☐ Shutdown of Emissions Units
☐ Other

Shutdown of cereal manufacturing plant

Use of these credits outside the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) is not allowed without express written authorization by the SJVUAPCD.

Seyed Sadredin, Executive Director / APCO

Arnaud Marjollet, Director of Permit Services

San Joaquin Valley
Air Pollution Control District

Northern Regional Office • 4800 Enterprise Way • Modesto, CA 95356-8718

Emission Reduction Credit Certificate

N1160825-79-2

ISSUED TO: GENERAL MILLS OPERATIONS, INC

ISSUED DATE: <DRAFT>

**LOCATION OF
REDUCTION:** WADE BROUGHTON
2000 W TURNER ROAD
LODI, CA 95242

For NOx Reduction In The Amount Of:

Quarter 1	Quarter 2	Quarter 3	Quarter 4
899 lbs	877 lbs	794 lbs	502 lbs

Method Of Reduction

- ☒ Shutdown of Entire Stationary Source
☐ Shutdown of Emissions Units
☐ Other

Shutdown of cereal manufacturing plant

Use of these credits outside the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) is not allowed without express written authorization by the SJVUAPCD.

Seyed Sadredin, Executive Director / APCO

Arnaud Marjollet, Director of Permit Services

San Joaquin Valley
Air Pollution Control District

Northern Regional Office • 4800 Enterprise Way • Modesto, CA 95356-8718

Emission Reduction Credit Certificate

N1160825-79-3

ISSUED TO: GENERAL MILLS OPERATIONS, INC

ISSUED DATE: <DRAFT>

**LOCATION OF
REDUCTION:** WADE BROUGHTON
2000 W TURNER ROAD
LODI, CA 95242

For CO Reduction In The Amount Of:

Quarter 1	Quarter 2	Quarter 3	Quarter 4
10,319 lbs	10,892 lbs	10,615 lbs	5,593 lbs

Method Of Reduction

- ☒ Shutdown of Entire Stationary Source
☐ Shutdown of Emissions Units
☐ Other

Shutdown of cereal manufacturing plant

Use of these credits outside the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) is not allowed without express written authorization by the SJVUAPCD.

Seyed Sadredin, Executive Director / APCO

Arnaud Marjollet, Director of Permit Services

San Joaquin Valley
Air Pollution Control District

Northern Regional Office • 4800 Enterprise Way • Modesto, CA 95356-8718

Emission Reduction Credit Certificate

N1160825-79-4

ISSUED TO: GENERAL MILLS OPERATIONS, INC

ISSUED DATE: <DRAFT>

**LOCATION OF
REDUCTION:** WADE BROUGHTON
2000 W TURNER ROAD
LODI, CA 95242

For PM10 Reduction In The Amount Of:

Quarter 1	Quarter 2	Quarter 3	Quarter 4
3,269 lbs	3,660 lbs	3,947 lbs	2,974 lbs

Percentage Of PM2.5 Reductions:

Quarter 1	Quarter 2	Quarter 3	Quarter 4
28.0%	28.0%	26.0%	24.0%

Method Of Reduction

☒ **Shutdown of Entire Stationary Source**

☐ **Shutdown of Emissions Units**

☐ **Other**

Shutdown of cereal manufacturing plant

Use of these credits outside the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) is not allowed without express written authorization by the SJVUAPCD.

Seyed Sadredin, Executive Director / APCO

Arnaud Marjollet, Director of Permit Services

San Joaquin Valley
Air Pollution Control District

Northern Regional Office • 4800 Enterprise Way • Modesto, CA 95356-8718

Emission Reduction Credit Certificate

N1160825-79-5

ISSUED TO: GENERAL MILLS OPERATIONS, INC

ISSUED DATE: <DRAFT>

**LOCATION OF
REDUCTION:** WADE BROUGHTON
2000 W TURNER ROAD
LODI, CA 95242

For SOx Reduction In The Amount Of:

Quarter 1	Quarter 2	Quarter 3	Quarter 4
171 lbs	178 lbs	172 lbs	93 lbs

Method Of Reduction

- ☒ Shutdown of Entire Stationary Source
☐ Shutdown of Emissions Units
☐ Other

Shutdown of cereal manufacturing plant

Use of these credits outside the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) is not allowed without express written authorization by the SJVUAPCD.

Seyed Sadredin, Executive Director / APCO

Arnaud Marjollet, Director of Permit Services

Appendix II

Processing Rate Records and Baseline Period Calculations

Process Data

Device ID #	Process Number	Equipment Type	Units	Jan-2011	Feb-2011	Mar-2011	Q1 2011	Apr-2011	May-2011	Jun-2011	Q2 2011	Jul-2011	Aug-2011	Sep-2011	Q3 2011	Oct-2011	Nov-2011	Dec-2011	Q4 2011
			Source Classification Code																
			TONS PRODUCED (FINISHED)	3,371.928	1,220.522	2,482.716	7,075.165	1,012.903	831.097	2,438.938	4,282.938	2,547.788	3,028.273	2,144.296	7,720.356	877.721	2,018.919	2,275.830	5,172.470
1	1	Puff II System	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	3,371.928	1,220.522	2,482.716	7,075.165	1,012.903	831.097	2,438.938	4,282.938	2,547.788	3,028.273	2,144.296	7,720.356	877.721	2,018.919	2,275.830	5,172.470
2	1	Puff I System	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	6,743.855	2,441.044	4,965.432	14,150.331	2,025.806	1,662.194	4,877.876	8,565.875	5,095.577	6,056.545	4,288.591	15,440.713	1,755.443	4,037.838	4,551.659	10,344.939
5	1	Packaging System	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	6,248.582	2,994.320	5,964.151	15,207.053	2,709.866	2,044.125	4,786.523	9,540.513	4,806.945	5,691.714	4,955.238	15,453.897	2,821.037	3,332.949	4,222.632	10,376.618
6	1	Bulk Storage Bins	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	171.974	82.238	150.883	405.096	62.431	25.998	126.829	215.257	118.843	111.352	128.354	358.549	46.740	54.636	62.196	163.572
7	1	Pre-Mix Operation	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	1,002.220	782.083	1,296.050	3,080.353	508.999	236.267	811.704	1,556.970	727.534	830.952	915.051	2,473.537	525.426	473.298	603.078	1,601.802
9	1	Mix Line 24A	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	1,002.220	782.083	1,296.050	3,080.353	508.999	236.267	811.704	1,556.970	727.534	830.952	915.051	2,473.537	525.426	473.298	603.078	1,601.802
10	1	Mix Line 24B	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	1,002.220	782.083	1,296.050	3,080.353	508.999	236.267	811.704	1,556.970	727.534	830.952	915.051	2,473.537	525.426	473.298	603.078	1,601.802
11	1	Mix Line 25	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	1,002.220	782.083	1,296.050	3,080.353	508.999	236.267	811.704	1,556.970	727.534	830.952	915.051	2,473.537	525.426	473.298	603.078	1,601.802
12	1	Mix Line 26	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	161.748	275.426	296.062	733.236	181.828	144.325	133.293	459.446	106.727	53.658	166.515	326.901	133.510	52.131	83.678	269.318
13	1	Mix Line 27	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	161.748	275.426	296.062	733.236	181.828	144.325	133.293	459.446	106.727	53.658	166.515	326.901	133.510	52.131	83.678	269.318
14	1	Mix Line 28	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	848.464	978.557	1,237.722	3,064.743	894.147	869.851	1,287.095	3,051.092	733.877	669.407	776.681	2,179.964	904.697	877.415	793.440	2,575.552
16	1	Seasoning System	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	2,004.440	1,564.166	2,592.100	6,160.706	1,017.998	472.533	1,623.409	3,113.940	1,455.068	1,661.904	1,830.103	4,947.075	1,050.853	946.596	1,206.155	3,203.603
17	1	Flour Grinding	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	1,150.662	709.519	1,392.574	3,252.755	678.785	485.211	939.034	2,103.030	903.663	1,065.377	1,124.377	3,093.416	777.326	525.612	778.721	2,081.659
18	1	Sugar Conveying	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			MILLION CUBIC FEET BURNED	10.295	8.481	-	18.776	-	-	-	-	0.177	7.560	11.757	19.494	9.322	5.849	8.884	24.055
20	1	48.3 MMBtu/Hr NG Boiler	10200602	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			1000GALLONS BURNED	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	2	48.3 MMBtu/Hr Boiler - LPG (back up)	10201002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			MILLION CUBIC FEET BURNED	18.641	12.122	32.840	63.603	20.619	24.402	30.963	75.985	38.402	31.388	-	69.790	1.425	0.479	8.423	10.327
21	1	3.4MW NG Turbine	20200203	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			MILLION CUBIC FEET BURNED	-	-	0.001	0.001	0.002	0.002	0.002	0.005	0.003	0.001	-	0.004	-	0.000	0.000	0.000
22	1	16 MMBtu/Hr NG Duct Burner	30290003	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	2,766.197	1,493.374	2,931.231	7,190.802	1,033.186	803.953	2,280.117	4,117.256	1,886.647	1,400.572	2,565.891	5,853.110	1,211.842	1,952.894	1,455.732	4,620.468
25	1	10 Ingredient Bins	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	3,457.747	1,866.717	3,664.039	8,988.502	1,291.483	1,004.941	2,850.147	5,146.571	2,358.309	1,750.715	3,207.364	7,316.388	1,514.803	2,441.118	1,819.665	5,775.586
35	1	Dough Dryer	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	3,457.747	1,866.717	3,664.039	8,988.502	1,291.483	1,004.941	2,850.147	5,146.571	2,358.309	1,750.715	3,207.364	7,316.388	1,514.803	2,441.118	1,819.665	5,775.586
38	1	Graham System	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			MILLION CUBIC FEET BURNED	0.084	0.039	0.101	0.224	0.020	0.013	0.130	0.163	0.089	0.058	0.116	0.263	0.091	0.035	0.070	0.197
38	2	Natural Gas Usage - Toaster	30290003	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	3,457.747	1,866.717	3,664.039	8,988.502	1,291.483	1,004.941	2,850.147	5,146.571	2,358.309	1,750.715	3,207.364	7,316.388	1,514.803	2,441.118	1,819.665	5,775.586
40	1	Graham Recovery System - Grinder	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			MILLION CUBIC FEET BURNED	0.001	0.000	0.001	0.002	0.000	0.000	0.001	0.002	0.001	0.001	0.001	0.003	0.001	0.000	0.001	0.002
40	2	Graham System - Recovery Toaster	30290003	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	3,457.747	1,866.717	3,664.039	8,988.502	1,291.483	1,004.941	2,850.147	5,146.571	2,358.309	1,750.715	3,207.364	7,316.388	1,514.803	2,441.118	1,819.665	5,775.586
42	1	Cereal Plant Vac Sys - Dust Collection	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	3,457.747	1,866.717	3,664.039	8,988.502	1,291.483	1,004.941	2,850.147	5,146.571	2,358.309	1,750.715	3,207.364	7,316.388	1,514.803	2,441.118	1,819.665	5,775.586
44	1	Graham Sysytem - Slurry Cooler	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	3,457.747	1,866.717	3,664.039	8,988.502	1,291.483	1,004.941	2,850.147	5,146.571	2,358.309	1,750.715	3,207.364	7,316.388	1,514.803	2,441.118	1,819.665	5,775.586
45	1	Two Enrobers - Sprouts System	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	1	Tokay Cereal Plant - Central Vacuum Syst	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	3,803.521	2,053.389	4,030.442	9,887.352	1,420.631	1,105.435	3,135.161	5,661.228	2,594.140	1,925.787	3,528.100	8,048.027	1,666.283	2,685.230	2,001.631	6,353.144
47	1	Rail Car Receiving	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	3,457.747	1,866.717	3,664.039	8,988.502	1,291.483	1,004.941	2,850.147	5,146.571	2,358.309	1,750.715	3,207.364	7,316.388	1,514.803	2,441.118	1,819.665	5,775.586
56	1	Tokay Cereal Plant - Storage Bins	30299999																

Process Data

Device ID #	Process Number	Equipment Type	Units	Jan-2012	Feb-2012	Mar-2012	Q1 2012	Apr-2012	May-2012	Jun-2012	Q2 2012	Jul-2012	Aug-2012	Sep-2012	Q3 2012	Oct-2012	Nov-2012	Dec-2012	Q4 2012
			Source Classification Code																
			TONS PRODUCED (FINISHED)	1,498,407	1,532,603	1,451,559	4,482,569	1,480,240	1,422,743	2,852,064	5,755,047	2,895,567	2,108,539	1,581,142	6,585,248	1,397,333	881,056	1,685,214	3,963,602
1	1	Puff II System	30299999																
			TONS PRODUCED (FINISHED)	1,498,407	1,532,603	1,451,559	4,482,569	1,480,240	1,422,743	2,852,064	5,755,047	2,895,567	2,108,539	1,581,142	6,585,248	1,397,333	881,056	1,685,214	3,963,602
2	1	Puff I System	30299999																
			TONS PRODUCED (FINISHED)	2,996,815	3,065,205	2,903,118	8,965,137	2,960,480	2,845,486	5,704,128	11,510,093	5,791,133	4,217,078	3,162,284	13,170,495	2,794,665	1,762,111	3,370,427	7,927,203
5	1	Packaging System	30299999																
			TONS PRODUCED (FINISHED)	3,600,409	3,139,220	3,729,068	10,468,697	2,813,380	3,126,762	5,331,096	11,271,238	4,841,649	4,371,730	4,053,771	13,267,149	4,127,145	2,570,483	4,138,598	10,836,225
6	1	Bulk Storage Bins	30299999																
			TONS PRODUCED (FINISHED)	79,062	47,262	110,349	236,672	53,725	82,705	80,801	217,231	88,172	130,092	105,387	323,651	142,833	95,730	90,016	328,579
7	1	Pre-Mix Operation	30299999																
			TONS PRODUCED (FINISHED)	700,293	449,717	795,310	1,945,320	397,713	609,002	815,018	1,821,733	710,461	772,320	814,120	2,296,900	954,596	654,040	837,099	2,445,735
9	1	Mix Line 24A	30299999																
			TONS PRODUCED (FINISHED)	700,293	449,717	795,310	1,945,320	397,713	609,002	815,018	1,821,733	710,461	772,320	814,120	2,296,900	954,596	654,040	837,099	2,445,735
10	1	Mix Line 24B	30299999																
			TONS PRODUCED (FINISHED)	700,293	449,717	795,310	1,945,320	397,713	609,002	815,018	1,821,733	710,461	772,320	814,120	2,296,900	954,596	654,040	837,099	2,445,735
11	1	Mix Line 25	30299999																
			TONS PRODUCED (FINISHED)	700,293	449,717	795,310	1,945,320	397,713	609,002	815,018	1,821,733	710,461	772,320	814,120	2,296,900	954,596	654,040	837,099	2,445,735
12	1	Mix Line 26	30299999																
			TONS PRODUCED (FINISHED)	254,752	191,903	327,479	774,134	120,323	99,236	186,057	405,616	63,550	188,525	187,905	439,980	120,061	70,451	84,663	275,175
13	1	Mix Line 27	30299999																
			TONS PRODUCED (FINISHED)	254,752	191,903	327,479	774,134	120,323	99,236	186,057	405,616	63,550	188,525	187,905	439,980	120,061	70,451	84,663	275,175
14	1	Mix Line 28	30299999																
			TONS PRODUCED (FINISHED)	971,535	885,917	1,472,535	3,329,987	706,300	770,886	907,660	2,384,845	912,297	1,004,828	1,040,064	2,957,189	376,273	618,974	653,896	1,649,142
16	1	Seasoning System	30299999																
			TONS PRODUCED (FINISHED)	1,400,586	899,433	1,590,621	3,890,640	795,427	1,218,005	1,630,035	3,643,467	1,420,921	1,544,640	1,628,239	4,593,801	1,909,193	1,308,079	1,674,199	4,891,471
17	1	Flour Grinding	30299999																
			TONS PRODUCED (FINISHED)	840,801	642,647	911,004	2,394,451	533,256	681,608	991,613	2,206,477	778,433	905,276	989,052	2,672,761	1,091,925	675,771	981,354	2,749,050
18	1	Sugar Conveying	30299999																
			MILLION CUBIC FEET BURNED	6.811	4.977	4.045	15.833	6.367	8.376	2.388	17.131	3.444	-	4.931	8.375	1.615	1.928	3.341	6.884
20	1	48.3 MMBtu/Hr NG Boiler	10200602																
			1000GALLONS BURNED	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	2	48.3 MMBtu/Hr Boiler - LPG (back up)	10201002																
			MILLION CUBIC FEET BURNED	18.955	18.093	18.965	56.013	18.474	5.649	23.813	47.935	15.624	21.320	19.814	56.759	14.990	16.943	19.191	51.124
21	1	3.4MW NG Turbine	20200203																
			MILLION CUBIC FEET BURNED	0.000	0.002	0.001	0.003	0.001	0.000	0.001	0.003	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.003
22	1	16 MMBtu/Hr NG Duct Burner	30290003																
			TONS PRODUCED (FINISHED)	1,891,052	1,194,922	1,684,178	4,770,152	1,609,437	1,359,018	992,376	3,960,832	1,208,060	1,223,061	2,020,134	4,451,255	545,998	366,911	729,062	1,641,970
25	1	10 Ingredient Bins	30299999																
			TONS PRODUCED (FINISHED)	2,363,816	1,493,652	2,105,222	5,962,690	2,011,797	1,698,773	1,240,470	4,951,039	1,510,075	1,528,826	2,525,168	5,564,069	682,497	458,639	911,328	2,052,463
35	1	Dough Dryer	30299999																
			TONS PRODUCED (FINISHED)	2,363,816	1,493,652	2,105,222	5,962,690	2,011,797	1,698,773	1,240,470	4,951,039	1,510,075	1,528,826	2,525,168	5,564,069	682,497	458,639	911,328	2,052,463
38	1	Graham System	30299999																
			MILLION CUBIC FEET BURNED	0.061	0.049	0.053	0.164	0.078	0.059	0.045	0.182	0.055	0.037	0.077	0.168	0.010	0.004	0.001	0.015
38	2	Natural Gas Usage - Toaster	30290003																
			TONS PRODUCED (FINISHED)	2,363,816	1,493,652	2,105,222	5,962,690	2,011,797	1,698,773	1,240,470	4,951,039	1,510,075	1,528,826	2,525,168	5,564,069	682,497	458,639	911,328	2,052,463
40	1	Graham Recovery System - Grinder	30299999																
			MILLION CUBIC FEET BURNED	0.001	0.000	0.001	0.002	0.001	0.001	0.000	0.002	0.001	0.000	0.001	0.002	0.000	0.000	0.000	0.000
40	2	Graham System - Recovery Toaster	30290003																
			TONS PRODUCED (FINISHED)	2,363,816	1,493,652	2,105,222	5,962,690	2,011,797	1,698,773	1,240,470	4,951,039	1,510,075	1,528,826	2,525,168	5,564,069	682,497	458,639	911,328	2,052,463
42	1	Cereal Plant Vac Sys - Dust Collection	30299999																
			TONS PRODUCED (FINISHED)	2,363,816	1,493,652	2,105,222	5,962,690	2,011,797	1,698,773	1,240,470	4,951,039	1,510,075	1,528,826	2,525,168	5,564,069	682,497	458,639	911,328	2,052,463
44	1	Graham System - Slurry Cooler	30299999																
			TONS PRODUCED (FINISHED)	2,363,816	1,493,652	2,105,222	5,962,690	2,011,797	1,698,773	1,240,470	4,951,039	1,510,075	1,528,826	2,525,168	5,564,069	682,497	458,639	911,328	2,052,463
45	1	Two Enrobers - Sprouts System	30299999																
			TONS PRODUCED (FINISHED)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	1	Tokay Cereal Plant - Central Vacuum Syst	30299999																
			TONS PRODUCED (FINISHED)	2,600,197	1,643,017	2,315,744	6,558,958	2,212,976	1,868,650	1,364,518	5,446,143	1,661,083	1,681,709	2,777,685	6,120,476	750,747	504,502	1,002,460	2,257,709
47	1	Rail Car Receiving	30299999																
			TONS PRODUCED (FINISHED)	2,363,816	1,493,652	2,105,222	5,962,690	2,011,797	1,698,773	1,240,470	4,951,039	1,510,075	1,528,826	2,525,168	5,564,069	682,497	458,639	911,328	2,052,463
56	1	Tokay Cereal Plant - Storage Bins	30299999																
			TONS PRODUCED (FINISHED)	1,129,454	675,171	1,576,410	3,381,035	767,500	1,181,503	1,154,300	3,103,303	1,259,602	1,858,459	1,505,529	4,623,590	2,040,472	1,367,570	1,285,943	4,693,984
78	1	Ingredient Mixing Blenders	30299999																
			1000 GALLONS BURNED	0.007	0.007	0.007	0.022												

Process Data

Device ID #	Process Number	Equipment Type	Units	Jan-2013	Feb-2013	Mar-2013	Q1 2013	Apr-2013	May-2013	Jun-2013	Q2 2013	Jul-2013	Aug-2013	Sep-2013	Q3 2013	Oct-2013	Nov-2013	Dec-2013	Q4 2013
			Source Classification Code																
			TONS PRODUCED (FINISHED)	1,687,816	918,409	2,509,947	5,116,171	1,240,541	1,101,353	2,947,616	5,289,510	1,945,135	1,921,986	1,528,073	5,395,195	1,889,179	2,088,224	1,368,206	5,345,609
1	1	Puff II System	30299999				-				-				-				-
2	1	Puff I System	TONS PRODUCED (FINISHED)	1,687,816	918,409	2,509,947	5,116,171	1,240,541	1,101,353	2,947,616	5,289,510	1,945,135	1,921,986	1,528,073	5,395,195	1,889,179	2,088,224	1,368,206	5,345,609
			30299999				-				-				-				-
5	1	Packaging System	TONS PRODUCED (FINISHED)	3,375,632	1,836,817	5,019,893	10,232,342	2,481,083	2,202,706	5,895,232	10,579,020	3,890,271	3,843,973	3,056,146	10,790,389	3,778,357	4,176,448	2,736,412	10,691,217
			30299999				-				-				-				-
6	1	Bulk Storage Bins	TONS PRODUCED (FINISHED)	3,297,394	2,801,730	4,728,545	10,827,669	2,639,197	3,048,414	5,465,067	11,152,678	3,983,158	4,980,464	4,740,654	13,704,276	3,922,428	4,265,686	2,719,742	10,907,856
			30299999				-				-				-				-
7	1	Pre-Mix Operation	TONS PRODUCED (FINISHED)	94,914	64,155	101,312	260,381	40,064	39,640	111,496	191,200	121,158	137,506	166,039	424,703	109,400	86,363	59,240	255,004
			30299999				-				-				-				-
9	1	Mix Line 24A	TONS PRODUCED (FINISHED)	493,641	571,848	797,241	1,862,730	396,912	635,128	824,012	1,856,052	752,912	1,132,384	1,212,600	3,097,896	722,819	700,895	482,024	1,905,738
			30299999				-				-				-				-
10	1	Mix Line 24B	TONS PRODUCED (FINISHED)	493,641	571,848	797,241	1,862,730	396,912	635,128	824,012	1,856,052	752,912	1,132,384	1,212,600	3,097,896	722,819	700,895	482,024	1,905,738
			30299999				-				-				-				-
11	1	Mix Line 25	TONS PRODUCED (FINISHED)	493,641	571,848	797,241	1,862,730	396,912	635,128	824,012	1,856,052	752,912	1,132,384	1,212,600	3,097,896	722,819	700,895	482,024	1,905,738
			30299999				-				-				-				-
12	1	Mix Line 26	TONS PRODUCED (FINISHED)	493,641	571,848	797,241	1,862,730	396,912	635,128	824,012	1,856,052	752,912	1,132,384	1,212,600	3,097,896	722,819	700,895	482,024	1,905,738
			30299999				-				-				-				-
13	1	Mix Line 27	TONS PRODUCED (FINISHED)	26,876	250,699	212,811	490,386	112,815	505,791	248,773	867,379	227,994	299,623	212,844	740,461	100,448	125,915	58,385	284,748
			30299999				-				-				-				-
14	1	Mix Line 28	TONS PRODUCED (FINISHED)	26,876	250,699	212,811	490,386	112,815	505,791	248,773	867,379	227,994	299,623	212,844	740,461	100,448	125,915	58,385	284,748
			30299999				-				-				-				-
16	1	Seasoning System	TONS PRODUCED (FINISHED)	504,985	845,288	1,086,212	2,436,485	827,421	899,418	786,365	2,513,204	520,349	414,698	293,513	1,228,560	482,812	347,360	467,735	1,297,907
			30299999				-				-				-				-
17	1	Flour Grinding	TONS PRODUCED (FINISHED)	987,281	1,143,696	1,594,482	3,725,459	793,824	1,270,256	1,648,024	3,712,103	1,505,824	2,264,768	2,425,200	6,195,792	1,445,638	1,401,790	964,048	3,811,477
			30299999				-				-				-				-
18	1	Sugar Conveying	TONS PRODUCED (FINISHED)	643,831	753,329	887,439	2,284,599	559,462	778,825	1,006,980	2,345,267	815,209	1,223,391	1,285,033	3,323,633	813,300	870,985	540,615	2,224,899
			30299999				-				-				-				-
20	1	48.3 MMBtu/Hr NG Boiler	MILLION CUBIC FEET BURNED	3,338	4,307	2,325	9,970	2,573	1,425	3,662	7,660	2,266	3,041	2,795	8,102	1,978	1,441	4,038	7,457
			10200602				-				-				-				-
20	2	48.3 MMBtu/Hr Boiler - LPG (back up)	1000GALLONS BURNED	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			10201002				-				-				-				-
21	1	3.4MW NG Turbine	MILLION CUBIC FEET BURNED	20,078	14,963	29,795	64,836	17,187	19,415	35,950	72,552	24,939	22,855	21,000	68,794	27,494	29,506	19,837	76,837
			20200203				-				-				-				-
22	1	16 MMBtu/Hr NG Duct Burner	MILLION CUBIC FEET BURNED	0,001	0,001	0,002	0,004	0,001	0,001	0,002	0,004	0,002	0,001	0,001	0,004	0,002	0,002	0,001	0,005
			30290003				-				-				-				-
25	1	10 Ingredient Bins	TONS PRODUCED (FINISHED)	369,784	1,199,106	1,338,807	2,907,698	1,160,621	830,813	1,731,242	3,722,676	1,112,690	1,095,101	1,571,319	3,779,110	1,031,205	1,110,887	1,259,478	3,401,569
			30299999				-				-				-				-
35	1	Dough Dryer	TONS PRODUCED (FINISHED)	462,230	1,498,883	1,673,509	3,634,622	1,450,776	1,038,517	2,164,053	4,653,345	1,390,862	1,368,876	1,964,149	4,723,888	1,289,006	1,388,609	1,574,347	4,251,962
			30299999				-				-				-				-
38	1	Graham System	TONS PRODUCED (FINISHED)	462,230	1,498,883	1,673,509	3,634,622	1,450,776	1,038,517	2,164,053	4,653,345	1,390,862	1,368,876	1,964,149	4,723,888	1,289,006	1,388,609	1,574,347	4,251,962
			30299999				-				-				-				-
38	2	Natural Gas Usage - Toaster	MILLION CUBIC FEET BURNED	0,048	0,056	0,060	0,164	0,061	0,048	0,088	0,196	0,049	0,064	0,075	0,189	0,053	0,048	0,063	0,165
			30290003				-				-				-				-
40	1	Graham Recovery System - Grinder	TONS PRODUCED (FINISHED)	462,230	1,498,883	1,673,509	3,634,622	1,450,776	1,038,517	2,164,053	4,653,345	1,390,862	1,368,876	1,964,149	4,723,888	1,289,006	1,388,609	1,574,347	4,251,962
			30299999				-				-				-				-
40	2	Graham System - Recovery Toaster	MILLION CUBIC FEET BURNED	0,000	0,001	0,001	0,002	0,001	0,000	0,001	0,002	0,000	0,001	0,001	0,002	0,001	0,000	0,001	0,002
			30290003				-				-				-				-
42	1	Cereal Plant Vac Sys - Dust Collection	TONS PRODUCED (FINISHED)	462,230	1,498,883	1,673,509	3,634,622	1,450,776	1,038,517	2,164,053	4,653,345	1,390,862	1,368,876	1,964,149	4,723,888	1,289,006	1,388,609	1,574,347	4,251,962
			30299999				-				-				-				-
44	1	Graham System - Slurry Cooler	TONS PRODUCED (FINISHED)	462,230	1,498,883	1,673,509	3,634,622	1,450,776	1,038,517	2,164,053	4,653,345	1,390,862	1,368,876	1,964,149	4,723,888	1,289,006	1,388,609	1,574,347	4,251,962
			30299999				-				-				-				-
45	1	Two Enrobers - Sprouts System	TONS PRODUCED (FINISHED)	462,230	1,498,883	1,673,509	3,634,622	1,450,776	1,038,517	2,164,053	4,653,345	1,390,862	1,368,876	1,964,149	4,723,888	1,289,006	1,388,609	1,574,347	4,251,962
			30299999				-				-				-				-
46	1	Tokay Cereal Plant - Central Vacuum Syst	TONS PRODUCED (FINISHED)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			30299999				-				-				-				-
47	1	Rail Car Receiving	TONS PRODUCED (FINISHED)	508,453	1,648,771	1,840,860	3,998,084	1,595,854	1,142,368	2,380,458	5,118,680	1,529,949	1,505,764	2,160,564	5,196,276	1,417,906	1,527,470	1,731,782	4,677,158
			30299999				-				-				-				-
56	1	Tokay Cereal Plant - Storage Bins	TONS PRODUCED (FINISHED)	462,230	1,498,883	1,673,509	3,634,622	1,450,776	1,038,517	2,164,053	4,653,345	1,390,862	1,368,876	1,964,149	4,723,888	1,289,006	1,388,609	1,574,347	4,251,962
			30299999				-				-				-				-
78	1	Ingredient Mixing Blenders	TONS PRODUCED (FINISHED)	1,355,915	916,493	1,447,319	3,719,727	572,341	566,290	1,592,797	2,731,427	1,730,830	1,964,377	2,371,983	6,067,190	1,562,860	1,233,763	846,292	3,64

Process Data

Device ID #	Process Number	Equipment Type	Units	Jan-2014	Feb-2014	Mar-2014	Q1 2014	Apr-2014	May-2014	Jun-2014	Q2 2014	Jul-2014	Aug-2014	Sep-2014	Q3 2014	Oct-2014	Nov-2014	Dec-2014	Q4 2014
			Source Classification Code																
			TONS PRODUCED (FINISHED)	2,046.903	2,440.867	2,360.811	6,848.581	1,313.447	1,521.661	2,441.614	5,276.722	1,875.601	1,481.680	1,752.425	5,109.706	1,598.465	1,576.862	1,763.331	4,938.658
1	1	Puff II System	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	2,046.903	2,440.867	2,360.811	6,848.581	1,313.447	1,521.661	2,441.614	5,276.722	1,875.601	1,481.680	1,752.425	5,109.706	1,598.465	1,576.862	1,763.331	4,938.658
2	1	Puff I System	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	4,093.807	4,881.734	4,721.621	13,697.162	2,626.895	3,043.321	4,883.228	10,553.444	3,751.201	2,963.360	3,504.851	10,219.412	3,196.929	3,153.723	3,526.663	9,877.315
5	1	Packaging System	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	3,671.289	4,313.855	4,142.520	12,127.663	2,603.634	3,421.982	4,380.126	10,405.742	3,440.442	3,595.733	4,592.498	11,628.673	4,061.195	4,307.349	2,968.634	11,337.178
6	1	Bulk Storage Bins	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	81.447	57.505	107.838	246.790	63.339	90.852	70.742	224.933	89.504	84.797	151.248	325.549	69.693	157.922	37.719	265.334
7	1	Pre-Mix Operation	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	463.747	531.752	622.293	1,617.792	423.761	590.790	540.863	1,555.414	550.975	686.402	969.055	2,206.432	811.965	1,084.633	333.619	2,230.217
9	1	Mix Line 24A	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	463.747	531.752	622.293	1,617.792	423.761	590.790	540.863	1,555.414	550.975	686.402	969.055	2,206.432	811.965	1,084.633	333.619	2,230.217
10	1	Mix Line 24B	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	463.747	531.752	622.293	1,617.792	423.761	590.790	540.863	1,555.414	550.975	686.402	969.055	2,206.432	811.965	1,084.633	333.619	2,230.217
11	1	Mix Line 25	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	463.747	531.752	622.293	1,617.792	423.761	590.790	540.863	1,555.414	550.975	686.402	969.055	2,206.432	811.965	1,084.633	333.619	2,230.217
12	1	Mix Line 26	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	188.233	121.630	215.803	525.665	109.563	193.049	205.024	507.636	-	68.944	78.364	147.309	234.406	217.827	91.885	544.118
13	1	Mix Line 27	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	188.233	121.630	215.803	525.665	109.563	193.049	205.024	507.636	-	68.944	78.364	147.309	234.406	217.827	91.885	544.118
14	1	Mix Line 28	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	496.910	699.050	705.635	1,901.595	383.918	751.657	783.692	1,919.267	576.946	264.661	612.672	1,454.280	466.143	514.362	442.362	1,422.868
16	1	Seasoning System	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	927.494	1,063.504	1,244.587	3,235.584	847.522	1,181.580	1,081.725	3,110.827	1,101.950	1,372.804	1,938.109	4,412.863	1,623.931	2,169.266	667.238	4,460.434
17	1	Flour Grinding	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	649.754	749.195	712.684	2,111.633	516.075	760.129	775.405	2,051.608	625.936	845.621	1,136.029	2,607.587	985.092	1,092.195	482.121	2,559.408
18	1	Sugar Conveying	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			MILLION CUBIC FEET BURNED	4.002	3.326	2.600	9.928	1.483	3.761	1.614	6.858	4.623	6.067	0.963	11.653	2.408	1.608	2.808	6.824
20	1	48.3 MMBtu/Hr NG Boiler	10200802	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			1000GALLONS BURNED	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	2	48.3 MMBtu/Hr Boiler - LPG (back up)	10201002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			MILLION CUBIC FEET BURNED	30.093	32.440	28.865	91.399	2.836	16.222	26.651	45.709	25.935	16.909	18.845	61.689	26.264	20.525	25.260	72.048
21	1	3.4MW NG Turbine	20200203	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			MILLION CUBIC FEET BURNED	0.002	0.002	0.002	0.005	0.001	0.001	0.001	0.003	0.001	0.001	0.001	0.003	0.001	0.001	0.001	0.004
22	1	16 MMBtu/Hr NG Duct Burner	30290003	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	1,167.009	1,355.788	1,895.810	4,418.607	943.660	1,253.050	1,433.989	3,630.699	1,367.976	2,007.555	1,738.181	5,113.713	1,453.453	1,375.961	996.330	3,825.745
25	1	10 Ingredient Bins	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	1,458.761	1,694.735	2,369.763	5,523.259	1,179.575	1,566.312	1,792.487	4,538.374	1,709.970	2,509.444	2,172.726	6,392.141	1,816.816	1,719.952	1,245.413	4,782.181
35	1	Dough Dryer	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	1,458.761	1,694.735	2,369.763	5,523.259	1,179.575	1,566.312	1,792.487	4,538.374	1,709.970	2,509.444	2,172.726	6,392.141	1,816.816	1,719.952	1,245.413	4,782.181
38	1	Graham System	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			MILLION CUBIC FEET BURNED	0.062	0.072	0.084	0.218	0.046	0.065	0.074	0.184	0.079	0.084	0.073	0.236	0.081	0.058	0.059	0.199
38	2	Natural Gas Usage - Toaster	30290003	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	1,458.761	1,694.735	2,369.763	5,523.259	1,179.575	1,566.312	1,792.487	4,538.374	1,709.970	2,509.444	2,172.726	6,392.141	1,816.816	1,719.952	1,245.413	4,782.181
40	1	Graham Recovery System - Grinder	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			MILLION CUBIC FEET BURNED	0.001	0.001	0.001	0.002	0.000	0.001	0.001	0.002	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.002
40	2	Graham System - Recovery Toaster	30290003	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	1,458.761	1,694.735	2,369.763	5,523.259	1,179.575	1,566.312	1,792.487	4,538.374	1,709.970	2,509.444	2,172.726	6,392.141	1,816.816	1,719.952	1,245.413	4,782.181
42	1	Cereal Plant Vac Sys - Dust Collection	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	1,458.761	1,694.735	2,369.763	5,523.259	1,179.575	1,566.312	1,792.487	4,538.374	1,709.970	2,509.444	2,172.726	6,392.141	1,816.816	1,719.952	1,245.413	4,782.181
44	1	Graham System - Slurry Cooler	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	1,458.761	1,694.735	2,369.763	5,523.259	1,179.575	1,566.312	1,792.487	4,538.374	1,709.970	2,509.444	2,172.726	6,392.141	1,816.816	1,719.952	1,245.413	4,782.181
45	1	Two Enrobers - Sprouts System	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	1	Tokay Cereal Plant - Central Vacuum Syst	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	1,604.637	1,864.208	2,606.739	6,075.585	1,297.533	1,722.943	1,971.735	4,992.212	1,880.967	2,760.388	2,389.999	7,031.355	1,996.498	1,891.947	1,369.954	5,260.399
47	1	Rail Car Receiving	30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			TONS PRODUCED (FINISHED)	1,458.761	1,694.735	2,369.763	5,523.259	1,179.575	1,566.312	1,792.487	4,538.374	1,709.970	2,509.444	2,172.726	6,392.141	1,816.816	1,719.952	1,245.413	4,782.181
56	1	Tokay Cereal																	

Process Data

Device ID #	Process Number	Equipment Type	Units	Jan-2015	Feb-2015	Mar-2015	Q1 2015	Apr-2015	May-2015	Jun-2015	Q2 2015	Jul-2015	Aug-2015	Sep-2015	Q3 2015	Oct-2015	Nov-2015	Dec-2015	Q4 2015
			Source Classification Code																
1	1	Puff II System	TONS PRODUCED (FINISHED) 30299999	1,281.586	1,354.692	2,300.160	4,936.437	1,145.986	2,286.860	2,910.171	6,343.018	2,566.501	1,694.236	2,151.880	6,412.617	1,927.124	602.992	-	2,530.115
2	1	Puff I System	TONS PRODUCED (FINISHED) 30299999	1,281.586	1,354.692	2,300.160	4,936.437	1,145.986	2,286.860	2,910.171	6,343.018	2,566.501	1,694.236	2,151.880	6,412.617	1,927.124	602.992	-	2,530.115
5	1	Packaging System	TONS PRODUCED (FINISHED) 30299999	2,563.171	2,709.383	4,600.319	9,872.874	2,291.973	4,573.721	5,820.342	12,686.036	5,133.003	3,388.471	4,303.760	12,825.234	3,854.247	1,205.983	-	5,060.230
6	1	Bulk Storage Bins	TONS PRODUCED (FINISHED) 30299999	2,816.148	3,143.986	4,580.364	10,540.498	2,451.274	4,296.511	4,647.901	11,395.685	3,936.043	3,214.552	3,292.504	10,443.099	1,927.553	602.992	-	2,530.544
7	1	Pre-Mix Operation	TONS PRODUCED (FINISHED) 30299999	57.263	66.498	116.779	240.540	50.039	93.766	91.081	234.886	81.415	101.197	129.674	312.285	0.014	-	-	0.014
9	1	Mix Line 24A	TONS PRODUCED (FINISHED) 30299999	503.152	511.460	778.858	1,793.471	400.145	690.167	637.419	1,727.731	684.771	760.158	570.312	2,015.241	0.215	-	-	0.215
10	1	Mix Line 24B	TONS PRODUCED (FINISHED) 30299999	503.152	511.460	778.858	1,793.471	400.145	690.167	637.419	1,727.731	684.771	760.158	570.312	2,015.241	0.215	-	-	0.215
11	1	Mix Line 25	TONS PRODUCED (FINISHED) 30299999	503.152	511.460	778.858	1,793.471	400.145	690.167	637.419	1,727.731	684.771	760.158	570.312	2,015.241	0.215	-	-	0.215
12	1	Mix Line 26	TONS PRODUCED (FINISHED) 30299999	503.152	511.460	778.858	1,793.471	400.145	690.167	637.419	1,727.731	684.771	760.158	570.312	2,015.241	0.215	-	-	0.215
13	1	Mix Line 27	TONS PRODUCED (FINISHED) 30299999	126.845	153.965	223.386	504.195	180.990	69.933	-	250.923	-	-	-	-	-	-	-	-
14	1	Mix Line 28	TONS PRODUCED (FINISHED) 30299999	126.845	153.965	223.386	504.195	180.990	69.933	-	250.923	-	-	-	-	-	-	-	-
16	1	Seasoning System	TONS PRODUCED (FINISHED) 30299999	0.842	-	-	0.842	-	-	-	-	-	-	-	-	-	-	-	-
17	1	Flour Grinding	TONS PRODUCED (FINISHED) 30299999	1,006.305	1,022.921	1,557.717	3,586.942	800.290	1,380.334	1,274.839	3,455.463	1,369.542	1,520.316	1,140.624	4,030.482	0.429	-	-	0.429
18	1	Sugar Conveying	TONS PRODUCED (FINISHED) 30299999	613.825	715.718	912.082	2,241.624	522.115	803.860	695.092	2,021.067	547.817	608.126	456.250	1,612.193	0.172	-	-	0.172
20	1	48.3 MMBtu/Hr NG Boiler	MILLION CUBIC FEET BURNED 10200602	6.607	6.607	6.607	19.822	6.607	6.607	6.607	19.822	6.607	6.607	6.607	19.822	6.607	6.607	6.607	19.822
20	2	48.3 MMBtu/Hr Boiler - LPG (back up)	1000GALLONS BURNED 10201002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	1	3.4MW NG Turbine	MILLION CUBIC FEET BURNED 20200203	20.148	20.148	20.148	60.445	20.148	20.148	20.148	60.445	20.148	20.148	20.148	60.445	20.148	20.148	20.148	60.445
22	1	16 MMBtu/Hr NG Duct Burner	MILLION CUBIC FEET BURNED 30290003	0.001	0.001	0.001	0.003	0.001	0.001	0.001	0.003	0.001	0.001	0.001	0.003	0.001	0.001	0.001	0.003
25	1	10 Ingredient Bins	TONS PRODUCED (FINISHED) 30299999	324.470	649.518	1,673.744	2,647.732	932.005	1,880.460	2,101.032	4,913.496	1,691.117	1,938.372	1,774.322	5,403.811	1,628.333	898.271	-	2,526.604
35	1	Dough Dryer	TONS PRODUCED (FINISHED) 30299999	405.587	811.897	2,092.180	3,309.665	1,165.006	2,350.574	2,626.290	6,141.870	2,113.897	2,422.965	2,217.902	6,754.764	2,035.416	1,122.839	-	3,158.255
38	1	Graham System	TONS PRODUCED (FINISHED) 30299999	405.587	811.897	2,092.180	3,309.665	1,165.006	2,350.574	2,626.290	6,141.870	2,113.897	2,422.965	2,217.902	6,754.764	2,035.416	1,122.839	-	3,158.255
38	2	Natural Gas Usage - Toaster	MILLION CUBIC FEET BURNED 30290003	0.076	0.076	0.076	0.229	0.076	0.076	0.076	0.229	0.076	0.076	0.076	0.229	0.076	0.076	0.076	0.229
40	1	Graham Recovery System - Grinder	TONS PRODUCED (FINISHED) 30299999	405.587	811.897	2,092.180	3,309.665	1,165.006	2,350.574	2,626.290	6,141.870	2,113.897	2,422.965	2,217.902	6,754.764	2,035.416	1,122.839	-	3,158.255
40	2	Graham System - Recovery Toaster	MILLION CUBIC FEET BURNED 30290003	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.002
42	1	Cereal Plant Vac Sys - Dust Collection	TONS PRODUCED (FINISHED) 30299999	405.587	811.897	2,092.180	3,309.665	1,165.006	2,350.574	2,626.290	6,141.870	2,113.897	2,422.965	2,217.902	6,754.764	2,035.416	1,122.839	-	3,158.255
44	1	Graham System - Slurry Cooler	TONS PRODUCED (FINISHED) 30299999	405.587	811.897	2,092.180	3,309.665	1,165.006	2,350.574	2,626.290	6,141.870	2,113.897	2,422.965	2,217.902	6,754.764	2,035.416	1,122.839	-	3,158.255
45	1	Two Enrobers - Sprouts System	TONS PRODUCED (FINISHED) 30299999	405.587	811.897	2,092.180	3,309.665	1,165.006	2,350.574	2,626.290	6,141.870	2,113.897	2,422.965	2,217.902	6,754.764	2,035.416	1,122.839	-	3,158.255
46	1	Tokay Cereal Plant - Central Vacuum Syst	TONS PRODUCED (FINISHED) 30299999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	1	Rail Car Receiving	TONS PRODUCED (FINISHED) 30299999	446.146	893.087	2,301.398	3,640.631	1,281.506	2,585.632	2,888.919	6,756.057	2,325.286	2,665.262	2,439.692	7,430.240	2,238.958	1,235.123	-	3,474.081
56	1	Tokay Cereal Plant - Storage Bins	TONS PRODUCED (FINISHED) 30299999	405.587	811.897	2,092.180	3,309.665	1,165.006	2,350.574	2,626.290	6,141.870	2,113.897	2,422.965	2,217.902	6,754.764	2,035.416	1,122.839	-	3,158.255
78	1	Ingredient Mixing Blenders	TONS PRODUCED (FINISHED) 30299999	818.039	949.967	1,668.276	3,436.283	714.847	1,339.518	1,301.152	3,355.516	1,163.066	1,445.670	1,852.480	4,461.216	0.206	-	-	0.206
83	1	355 bhp Diesel Emerg IC Engine-Testing	1000 GALLONS BURNED 20200102	0.007	0.007	0.007	0.022	0.007	0.007	0.007	0.022	0.007	0.007	0.007	0.022	0.007	0.007	0.007	0.022
83	2	355 bhp Diesel Emerg IC Engine-Emergency	1000 GALLONS BURNED 20200102	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
90	1	Vacuum Cleaning System	TONS PRODUCED (FINISHED) 30299999	2,816.148	3,143.986	4,580.364	10,540.498	2,451.274	4,296.511	4,647.901	11,395.685	3,936.043	3,214.552	3,292.504	10,443.099	1,927.553	602.992	-	2,530.544
92	1	Wheat Germ Sifting and Conveying	TONS PRODUCED (FINISHED) 30299999	256.317	270.938	460.032	987.287	229.197	457.372	582.034	1,268.604	513.300	338.847	430.376	1,282.523	385.425	120.598	-	506.023
94	1	Line 21 - Receiving and Scalping	TONS PRODUCED (FINISHED) 30299999	0.842	-	-	0.842	-	-	-	-	-	-	-	-	-	-	-	-
94	2	Line 21 - Bagging	TONS PRODUCED (FINISHED) 30299999	0.842	-	-	0.842	-	-	-	-	-	-	-	-	-	-	-	-
95	1	48.3 MMBtu/Hr NG Boiler	MILLION CUBIC FEET BURNED 10200602	8.826	8.826	8.826	26.479	8.826	8.826	8.826	26.479	8.826	8.826	8.826	26.479	8.826	8.826	8.826	26.479
99	1	144 bhp Diesel Emerg IC Engine-Testing	THOUSANDS OF GALLONS 20300101	0.014	0.014	0.014	0.041	0.014	0.014	0.014	0.041	0.014	0.014	0.014	0.041	0.014	0.014	0.014	0.041
99	2	144 bhp Diesel Emerg IC Engine-Emergency	THOUSANDS OF GALLONS 20300101	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Baseline Period Determination for
N-355-1

Calendar Quarter	Material Processing Rate (short tons)	8 Quarter Difference
Q2 2011	4,283	
Q3 2011	7,720	
Q4 2011	5,172	
Q1 2012	4,483	
Q2 2012	5,755	
Q3 2012	6,585	
Q4 2012	3,964	
Q1 2013	5,116	310
Q2 2013	5,290	435
Q3 2013	5,395	145
Q4 2013	5,346	166
Q1 2014	6,849	462
Q2 2014	5,277	402
Q3 2014	5,110	218
Q4 2014	4,939	340
Q1 2015	4,936	317
Q2 2015	6,343	449
Q3 2015	6,413	576
Q4 2015	2,530	224
Q1 2016	0	632

Average: 5,075

The values in this column represent the absolute value of the difference between the facility's quarterly processing rate averaged over the last 5 years since the date the application was complete (5,075 tons - considered to be "normal" source operation) and the quarterly processing rate averaged over the previous 8 consecutive calendar quarters starting with Q2 2011 (application was deemed complete in April, 2016). The smallest "difference" is assumed to be the 8 consecutive calendar quarter period whose averaged processing rate most closely represents "normal" source operation. For example:

$145 = \text{ABS}(5,075 - (\text{SUM}(\text{Q4 2011 through Q3 2013})/8))$.

Since this value is the smallest "difference", the 8 consecutive calendar quarter period associated with it (Q4 2011 - Q3 2013) is assumed to most closely represent "normal" source operation. Therefore, the baseline period is from **Q4 2011 - Q3 2013**.

Baseline Period Determination for

N-355

Calendar Quarter	Material Processing Rate (short tons)	8 Quarter Difference
Q2 2011	4,283	
Q3 2011	7,720	
Q4 2011	5,172	
Q1 2012	4,483	
Q2 2012	5,755	
Q3 2012	6,585	
Q4 2012	3,964	
Q1 2013	5,116	310
Q2 2013	5,290	435
Q3 2013	5,395	145
Q4 2013	5,346	166
Q1 2014	6,849	462
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Q3 2014	5,110	218
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Q1 2015	4,936	317
Q2 2015	6,343	449
Q3 2015	6,413	576
Q4 2015	2,530	224
Q1 2016	0	632

The values in this column represent the absolute value of the difference between the facility's quarterly processing rate averaged over the last 5 years since the date the application was complete (5,075 tons - considered to be "normal" source operation) and the quarterly processing rate averaged over the previous 8 consecutive calendar quarters starting with Q2 2011 (application was deemed complete in April, 2016). The smallest "difference" is assumed to be the 8 consecutive calendar quarter period whose averaged processing rate most closely represents "normal" source operation. For example:

$$145 = \text{ABS}(5,075 - (\text{SUM}(\text{Q4 2011 through Q3 2013})/8).$$

Since this value is the smallest "difference", the 8 consecutive calendar quarter period associated with it (Q4 2011 - Q3 2013) is assumed to most closely represent "normal" source operation. Therefore, the baseline period is from **Q4 2011 - Q3 2013**.

Average: 5,075

Baseline Period Determination for
N-355-5

Calendar Quarter	Material Processing Rate (short tons)	8 Quarter Difference
Q2 2011	8,566	
Q3 2011	15,441	
Q4 2011	10,345	
Q1 2012	8,965	
Q2 2012	11,510	
Q3 2012	13,170	
Q4 2012	7,927	
Q1 2013	10,232	1,153
Q2 2013	5,290	744
Q3 2013	5,395	512
Q4 2013	10,691	469
Q1 2014	13,697	123
Q2 2014	10,553	3
Q3 2014	10,219	366
Q4 2014	9,877	122
Q1 2015	9,873	167
Q2 2015	12,686	758
Q3 2015	12,825	1,687
Q4 2015	5,060	983
Q1 2016	0	729

The values in this column represent the absolute value of the difference between the facility's quarterly processing rate averaged over the last 5 years since the date the application was complete and the quarterly processing rate averaged over the previous 8 consecutive calendar quarters starting with Q2 2011. The smallest "difference" is assumed to be the 8 consecutive calendar quarter period whose averaged processing rate most closely represents "normal" source operation.

Since this value is the smallest "difference", the 8 consecutive calendar quarter period associated with it is assumed to most closely represent "normal" source operation. Therefore, the highlighted quarters represents the

Average: 9,616

Baseline Period Determination for
N-355-6

Calendar Quarter	Material Processing Rate (short tons)	8 Quarter Difference
Q2 2011	9,541	
Q3 2011	15,454	
Q4 2011	10,377	
Q1 2012	10,469	
Q2 2012	11,271	
Q3 2012	13,267	
Q4 2012	10,836	
Q1 2013	10,828	1,094
Q2 2013	11,153	1,296
Q3 2013	13,704	1,077
Q4 2013	10,908	1,144
Q1 2014	12,128	1,351
Q2 2014	10,406	1,243
Q3 2014	11,629	1,038
Q4 2014	11,337	1,101
Q1 2015	10,540	1,065
Q2 2015	11,396	1,095
Q3 2015	10,443	688
Q4 2015	2,531	360
Q1 2016	0	1,876

The values in this column represent the absolute value of the difference between the facility's quarterly processing rate averaged over the last 5 years since the date the application was complete and the quarterly processing rate averaged over the previous 8 consecutive calendar quarters starting with Q2 2011. The smallest "difference" is assumed to be the 8 consecutive calendar quarter period whose averaged processing rate most closely represents "normal" source

Since this value is the smallest "difference", the 8 consecutive calendar quarter period associated with it is assumed to most closely represent "normal" source operation. Therefore, the highlighted quarters represents the

Average: 10,411

Baseline Period Determination for
N-355-7

Calendar Quarter	Material Processing Rate (short tons)	8 Quarter Difference
Q2 2011	215	
Q3 2011	359	
Q4 2011	164	
Q1 2012	237	
Q2 2012	217	
Q3 2012	324	
Q4 2012	329	
Q1 2013	260	22
Q2 2013	191	19
Q3 2013	425	27
Q4 2013	255	38
Q1 2014	247	40
Q2 2014	225	41
Q3 2014	326	41
Q4 2014	265	33
Q1 2015	241	31
Q2 2015	235	36
Q3 2015	312	22
Q4 2015	0	10
Q1 2016	0	41

The values in this column represent the absolute value of the difference between the facility's quarterly processing rate averaged over the last 5 years since the date the application was complete and the quarterly processing rate averaged over the previous 8 consecutive calendar quarters starting with Q2 2011. The smallest "difference" is assumed to be the 8 consecutive calendar quarter period whose averaged processing rate most closely represents "normal" source

Since this value is the smallest "difference", the 8 consecutive calendar quarter period associated with it is assumed to most closely represent "normal" source operation. Therefore, the highlighted quarters represents the baseline period.

Average: 241

Baseline Period Determination for
N-355-9, '-10, '-11, '-12

Calendar Quarter	Material Processing Rate (short tons)	8 Quarter Difference
Q2 2011	1,557	
Q3 2011	2,474	
Q4 2011	1,602	
Q1 2012	1,945	
Q2 2012	1,822	
Q3 2012	2,297	
Q4 2012	2,446	
Q1 2013	1,863	200
Q2 2013	1,856	237
Q3 2013	3,098	315
Q4 2013	1,906	353
Q1 2014	1,618	313
Q2 2014	1,555	279
Q3 2014	2,206	268
Q4 2014	2,230	241
Q1 2015	1,793	232
Q2 2015	1,728	216
Q3 2015	2,015	81
Q4 2015	0	157
Q1 2016	0	359

The values in this column represent the absolute value of the difference between the facility's quarterly processing rate averaged over the last 5 years since the date the application was complete and the quarterly processing rate averaged over the previous 8 consecutive calendar quarters starting with Q2 2011. The smallest "difference" is assumed to be the 8 consecutive calendar quarter period whose averaged processing rate most closely represents "normal"

Since this value is the smallest "difference", the 8 consecutive calendar quarter period associated with it is assumed to most closely represent "normal" source operation. Therefore, the highlighted quarters represents the baseline period.

Average: 1,801

Baseline Period Determination for
N-355-13, '-14

Calendar Quarter	Material Processing Rate (short tons)	8 Quarter Difference
Q2 2011	459	
Q3 2011	327	
Q4 2011	269	
Q1 2012	774	
Q2 2012	406	
Q3 2012	440	
Q4 2012	275	
Q1 2013	490	39
Q2 2013	867	90
Q3 2013	740	142
Q4 2013	285	144
Q1 2014	526	113
Q2 2014	508	126
Q3 2014	147	89
Q4 2014	544	123
Q1 2015	504	125
Q2 2015	251	47
Q3 2015	0	45
Q4 2015	0	81
Q1 2016	0	146

The values in this column represent the absolute value of the difference between the facility's quarterly processing rate averaged over the last 5 years since the date the application was complete and the quarterly processing rate averaged over the previous 8 consecutive calendar quarters starting with Q2 2011. The smallest "difference" is assumed to be the 8 consecutive calendar quarter period whose averaged processing rate most closely represents "normal" source operation.

Since this value is the smallest "difference", the 8 consecutive calendar quarter period associated with it is assumed to most closely represent "normal" source operation. Therefore, the highlighted quarters represents the baseline period.

Average: 391

Baseline Period Determination for
N-355-16

Calendar Quarter	Material Processing Rate (short tons)	8 Quarter Difference
Q2 2011	3,051	
Q3 2011	2,180	
Q4 2011	2,576	
Q1 2012	3,330	
Q2 2012	2,385	
Q3 2012	2,957	
Q4 2012	1,649	
Q1 2013	2,436	955
Q2 2013	2,513	888
Q3 2013	1,229	769
Q4 2013	1,298	610
Q1 2014	1,902	431
Q2 2014	1,919	373
Q3 2014	1,454	185
Q4 2014	1,423	157
Q1 2015	1	148
Q2 2015	0	462
Q3 2015	0	616
Q4 2015	0	778
Q1 2016	0	1,015

The values in this column represent the absolute value of the difference between the facility's quarterly processing rate averaged over the last 5 years since the date the application was complete and the quarterly processing rate averaged over the previous 8 consecutive calendar quarters starting with Q2 2011. The smallest "difference" is assumed to be the 8 consecutive calendar quarter period whose averaged processing rate most closely represents "normal" source operation.

Since this value is the smallest "difference", the 8 consecutive calendar quarter period associated with it is assumed to most closely represent "normal" source operation. Therefore, the highlighted quarters represents the

Average: 1,615

Baseline Period Determination for
N-355-17

Calendar Quarter	Material Processing Rate (short tons)	8 Quarter Difference
Q2 2011	3,114	
Q3 2011	4,947	
Q4 2011	3,204	
Q1 2012	3,891	
Q2 2012	3,643	
Q3 2012	4,594	
Q4 2012	4,891	
Q1 2013	3,725	400
Q2 2013	3,712	475
Q3 2013	6,196	631
Q4 2013	3,811	707
Q1 2014	3,236	625
Q2 2014	3,111	558
Q3 2014	4,413	536
Q4 2014	4,460	482
Q1 2015	3,587	465
Q2 2015	3,455	433
Q3 2015	4,030	162
Q4 2015	0	314
Q1 2016	0	719

The values in this column represent the absolute value of the difference between the facility's quarterly processing rate averaged over the last 5 years since the date the application was complete and the quarterly processing rate averaged over the previous 8 consecutive calendar quarters starting with Q2 2011. The smallest "difference" is assumed to be the 8 consecutive calendar quarter period whose averaged processing rate most closely represents "normal" source operation.

Since this value is the smallest "difference", the 8 consecutive calendar quarter period associated with it is assumed to most closely represent "normal" source operation. Therefore, the highlighted quarters represents the baseline period.

Average: 3,601

Baseline Period Determination for
N-355-18

Calendar Quarter	Material Processing Rate (short tons)	8 Quarter Difference
Q2 2011	2,103	
Q3 2011	3,093	
Q4 2011	2,082	
Q1 2012	2,394	
Q2 2012	2,206	
Q3 2012	2,673	
Q4 2012	2,749	
Q1 2013	2,285	314
Q2 2013	2,345	344
Q3 2013	3,324	373
Q4 2013	2,225	391
Q1 2014	2,112	356
Q2 2014	2,052	336
Q3 2014	2,608	328
Q4 2014	2,559	304
Q1 2015	2,242	299
Q2 2015	2,021	258
Q3 2015	1,612	45
Q4 2015	0	234
Q1 2016	0	498

The values in this column represent the absolute value of the difference between the facility's quarterly processing rate averaged over the last 5 years since the date the application was complete and the quarterly processing rate averaged over the previous 8 consecutive calendar quarters starting with Q2 2011. The smallest "difference" is assumed to be the 8 consecutive calendar quarter period whose averaged processing rate most closely represents "normal" source operation.

Since this value is the smallest "difference", the 8 consecutive calendar quarter period associated with it is assumed to most closely represent "normal" source operation. Therefore, the highlighted quarters represents the baseline period.

Average: 2,134

Baseline Period Determination for
N-355-20

Calendar Quarter	Fuel Rate (MM cubic feet natural gas)	8 Quarter Difference
Q2 2011	0	
Q3 2011	19	
Q4 2011	24	
Q1 2012	16	
Q2 2012	17	
Q3 2012	8	
Q4 2012	7	
Q1 2013	10	1
Q2 2013	8	2
Q3 2013	8	0
Q4 2013	7	2
Q1 2014	10	3
Q2 2014	7	4
Q3 2014	12	3
Q4 2014	7	3
Q1 2015	20	2
Q2 2015	20	1
Q3 2015	20	1
Q4 2015	20	2
Q1 2016	0	1

The values in this column represent the absolute value of the difference between the facility's quarterly processing rate averaged over the last 5 years since the date the application was complete and the quarterly processing rate averaged over the previous 8 consecutive calendar quarters starting with Q2 2011. The smallest "difference" is assumed to be the 8 consecutive calendar quarter period whose averaged processing rate most closely represents "normal" source operation.

Since this value is the smallest "difference", the 8 consecutive calendar quarter period associated with it is assumed to most closely represent "normal" source operation. Therefore, the highlighted quarters represents the baseline period.

Average: 12

Baseline Period Determination for
N-355-21

Calendar Quarter	Natural gas consumption (MM cubic feet of natural gas)	8 Quarter Difference
Q2 2011	76	
Q3 2011	70	
Q4 2011	10	
Q1 2012	56	
Q2 2012	48	
Q3 2012	57	
Q4 2012	51	
Q1 2013	65	4
Q2 2013	73	5
Q3 2013	69	5
Q4 2013	77	4
Q1 2014	91	8
Q2 2014	46	8
Q3 2014	62	8
Q4 2014	72	11
Q1 2015	60	11
Q2 2015	60	9
Q3 2015	60	8
Q4 2015	60	6
Q1 2016	0	6

The values in this column represent the absolute value of the difference between the facility's quarterly processing rate averaged over the last 5 years since the date the application was complete and the quarterly processing rate averaged over the previous 8 consecutive calendar quarters starting with Q2 2011. The smallest "difference" is assumed to be the 8 consecutive calendar quarter period whose averaged processing rate most closely represents "normal" source operation.

Since this value is the smallest "difference", the 8 consecutive calendar quarter period associated with it is assumed to most closely represent "normal" source operation. Therefore, the highlighted quarters represents the baseline period.

Average: 58

Baseline Period Determination for
N-355-25

Calendar Quarter	Material Processing Rate (short tons)	8 Quarter Difference
Q2 2011	4,117	
Q3 2011	5,853	
Q4 2011	4,620	
Q1 2012	4,770	
Q2 2012	3,961	
Q3 2012	4,451	
Q4 2012	1,642	
Q1 2013	2,908	255
Q2 2013	3,723	206
Q3 2013	3,779	54
Q4 2013	3,402	206
Q1 2014	4,419	250
Q2 2014	3,631	291
Q3 2014	5,114	208
Q4 2014	3,826	65
Q1 2015	2,648	32
Q2 2015	4,913	181
Q3 2015	5,404	384
Q4 2015	2,527	275
Q1 2016	0	278

The values in this column represent the absolute value of the difference between the facility's quarterly processing rate averaged over the last 5 years since the date the application was complete and the quarterly processing rate averaged over the previous 8 consecutive calendar quarters starting with Q2 2011. The smallest "difference" is assumed to be the 8 consecutive calendar quarter period whose averaged processing rate most closely represents "normal" source operation.

Since this value is the smallest "difference", the 8 consecutive calendar quarter period associated with it is assumed to most closely represent "normal" source operation. Therefore, the highlighted quarters represents the

Average: 3,785

Baseline Period Determination for
N-355-35

Calendar Quarter	Material Processing Rate (short tons)	8 Quarter Difference
Q2 2011	5,147	
Q3 2011	7,316	
Q4 2011	5,776	
Q1 2012	5,963	
Q2 2012	4,951	
Q3 2012	5,564	
Q4 2012	2,052	
Q1 2013	3,635	319
Q2 2013	4,653	257
Q3 2013	4,724	67
Q4 2013	4,252	257
Q1 2014	5,523	312
Q2 2014	4,538	364
Q3 2014	6,392	260
Q4 2014	4,782	81
Q1 2015	3,310	40
Q2 2015	6,142	226
Q3 2015	6,755	480
Q4 2015	3,158	343
Q1 2016	0	347

The values in this column represent the absolute value of the difference between the facility's quarterly processing rate averaged over the last 5 years since the date the application was complete and the quarterly processing rate averaged over the previous 8 consecutive calendar quarters starting with Q2 2011. The smallest "difference" is assumed to be the 8 consecutive calendar quarter period whose averaged processing rate most closely represents "normal" source operation.

Since this value is the smallest "difference", the 8 consecutive calendar quarter period associated with it is assumed to most closely represent "normal" source operation. Therefore, the highlighted quarters represents the baseline period.

Average: 4,732

Baseline Period Determination for
N-355-38

Calendar Quarter	Material Processing Rate (short tons)	8 Quarter Difference
Q2 2011	5,147	
Q3 2011	7,316	
Q4 2011	5,776	
Q1 2012	5,963	
Q2 2012	4,951	
Q3 2012	5,564	
Q4 2012	2,052	
Q1 2013	3,635	319
Q2 2013	4,653	257
Q3 2013	4,724	67
Q4 2013	4,252	257
Q1 2014	5,523	312
Q2 2014	4,538	364
Q3 2014	6,392	260
Q4 2014	4,782	81
Q1 2015	3,310	40
Q2 2015	6,142	226
Q3 2015	6,755	480
Q4 2015	3,158	343
Q1 2016	0	347

The values in this column represent the absolute value of the difference between the facility's quarterly processing rate averaged over the last 5 years since the date the application was complete and the quarterly processing rate averaged over the previous 8 consecutive calendar quarters starting with Q2 2011. The smallest "difference" is assumed to be the 8 consecutive calendar quarter period whose averaged processing rate most closely represents "normal" source operation.

Since this value is the smallest "difference", the 8 consecutive calendar quarter period associated with it is assumed to most closely represent "normal" source operation. Therefore, the highlighted quarters represents the baseline period.

Average: 4,732

Baseline Period Determination for
N-355-40

Calendar Quarter	Material Processing Rate (short tons)	8 Quarter Difference
Q2 2011	5,147	
Q3 2011	7,316	
Q4 2011	5,776	
Q1 2012	5,963	
Q2 2012	4,951	
Q3 2012	5,564	
Q4 2012	2,052	
Q1 2013	3,635	319
Q2 2013	4,653	257
Q3 2013	4,724	67
Q4 2013	4,252	257
Q1 2014	5,523	312
Q2 2014	4,538	364
Q3 2014	6,392	260
Q4 2014	4,782	81
Q1 2015	3,310	40
Q2 2015	6,142	226
Q3 2015	6,755	480
Q4 2015	3,158	343
Q1 2016	0	347

The values in this column represent the absolute value of the difference between the facility's quarterly processing rate averaged over the last 5 years since the date the application was complete and the quarterly processing rate averaged over the previous 8 consecutive calendar quarters starting with Q2 2011. The smallest "difference" is assumed to be the 8 consecutive calendar quarter period whose averaged processing rate most closely represents "normal" source operation.

Since this value is the smallest "difference", the 8 consecutive calendar quarter period associated with it is assumed to most closely represent "normal" source operation. Therefore, the highlighted quarters represents the baseline period.

Average: 4,732

Baseline Period Determination for
N-355-42

Calendar Quarter	Material Processing Rate (short tons)	8 Quarter Difference
Q2 2011	5,147	
Q3 2011	7,316	
Q4 2011	5,776	
Q1 2012	5,963	
Q2 2012	4,951	
Q3 2012	5,564	
Q4 2012	2,052	
Q1 2013	3,635	319
Q2 2013	4,653	257
Q3 2013	4,724	67
Q4 2013	4,252	257
Q1 2014	5,523	312
Q2 2014	4,538	364
Q3 2014	6,392	260
Q4 2014	4,782	81
Q1 2015	3,310	40
Q2 2015	6,142	226
Q3 2015	6,755	480
Q4 2015	3,158	343
Q1 2016	0	347

The values in this column represent the absolute value of the difference between the facility's quarterly processing rate averaged over the last 5 years since the date the application was complete and the quarterly processing rate averaged over the previous 8 consecutive calendar quarters starting with Q2 2011. The smallest "difference" is assumed to be the 8 consecutive calendar quarter period whose averaged processing rate most closely represents "normal" source operation.

Since this value is the smallest "difference", the 8 consecutive calendar quarter period associated with it is assumed to most closely represent "normal" source operation. Therefore, the highlighted quarters represents the baseline period.

Average: 4,732

Baseline Period Determination for
N-355-44

Calendar Quarter	Material Processing Rate (short tons)	8 Quarter Difference
Q2 2011	5,147	
Q3 2011	7,316	
Q4 2011	5,776	
Q1 2012	5,963	
Q2 2012	4,951	
Q3 2012	5,564	
Q4 2012	2,052	
Q1 2013	3,635	319
Q2 2013	4,653	257
Q3 2013	4,724	67
Q4 2013	4,252	257
Q1 2014	5,523	312
Q2 2014	4,538	364
Q3 2014	6,392	260
Q4 2014	4,782	81
Q1 2015	3,310	40
Q2 2015	6,142	226
Q3 2015	6,755	480
Q4 2015	3,158	343
Q1 2016	0	347

The values in this column represent the absolute value of the difference between the facility's quarterly processing rate averaged over the last 5 years since the date the application was complete and the quarterly processing rate averaged over the previous 8 consecutive calendar quarters starting with Q2 2011. The smallest "difference" is assumed to be the 8 consecutive calendar quarter period whose averaged processing rate most closely represents "normal" source operation.

Since this value is the smallest "difference", the 8 consecutive calendar quarter period associated with it is assumed to most closely represent "normal" source operation. Therefore, the highlighted quarters represents the baseline period.

Average: 4,732

Baseline Period Determination for
N-355-45

Calendar Quarter	Material Processing Rate (short tons)	8 Quarter Difference
Q2 2011	5,147	
Q3 2011	7,316	
Q4 2011	5,776	
Q1 2012	5,963	
Q2 2012	4,951	
Q3 2012	5,564	
Q4 2012	2,052	
Q1 2013	3,635	319
Q2 2013	4,653	257
Q3 2013	4,724	67
Q4 2013	4,252	257
Q1 2014	5,523	312
Q2 2014	4,538	364
Q3 2014	6,392	260
Q4 2014	4,782	81
Q1 2015	3,310	40
Q2 2015	6,142	226
Q3 2015	6,755	480
Q4 2015	3,158	343
Q1 2016	0	347

The values in this column represent the absolute value of the difference between the facility's quarterly processing rate averaged over the last 5 years since the date the application was complete and the quarterly processing rate averaged over the previous 8 consecutive calendar quarters starting with Q2 2011. The smallest "difference" is assumed to be the 8 consecutive calendar quarter period whose averaged processing rate most closely represents "normal" source operation.

Since this value is the smallest "difference", the 8 consecutive calendar quarter period associated with it is assumed to most closely represent "normal" source operation. Therefore, the highlighted quarters represents the baseline period.

Average: 4,732

Baseline Period Determination for
N-355-47

Calendar Quarter	Material Processing Rate (short tons)	8 Quarter Difference
Q2 2011	5,661	
Q3 2011	8,048	
Q4 2011	6,353	
Q1 2012	6,559	
Q2 2012	5,446	
Q3 2012	6,120	
Q4 2012	2,258	
Q1 2013	3,998	351
Q2 2013	5,119	283
Q3 2013	5,196	74
Q4 2013	4,677	283
Q1 2014	6,076	344
Q2 2014	4,992	400
Q3 2014	7,031	286
Q4 2014	5,260	89
Q1 2015	3,641	44
Q2 2015	6,756	249
Q3 2015	7,430	528
Q4 2015	3,474	378
Q1 2016	0	382

The values in this column represent the absolute value of the difference between the facility's quarterly processing rate averaged over the last 5 years since the date the application was complete and the quarterly processing rate averaged over the previous 8 consecutive calendar quarters starting with Q2 2011. The smallest "difference" is assumed to be the 8 consecutive calendar quarter period whose averaged processing rate most closely represents "normal" source operation.

Since this value is the smallest "difference", the 8 consecutive calendar quarter period associated with it is assumed to most closely represent "normal" source operation. Therefore, the highlighted quarters represents the baseline period.

Average: 5,205

Baseline Period Determination for
N-355-56

Calendar Quarter	Material Processing Rate (short tons)	8 Quarter Difference
Q2 2011	5,147	
Q3 2011	7,316	
Q4 2011	5,776	
Q1 2012	5,963	
Q2 2012	4,951	
Q3 2012	5,564	
Q4 2012	2,052	
Q1 2013	3,635	319
Q2 2013	4,653	257
Q3 2013	4,724	67
Q4 2013	4,252	257
Q1 2014	5,523	312
Q2 2014	4,538	364
Q3 2014	6,392	260
Q4 2014	4,782	81
Q1 2015	3,310	40
Q2 2015	6,142	226
Q3 2015	6,755	480
Q4 2015	3,158	343
Q1 2016	0	347

The values in this column represent the absolute value of the difference between the facility's quarterly processing rate averaged over the last 5 years since the date the application was complete and the quarterly processing rate averaged over the previous 8 consecutive calendar quarters starting with Q2 2011. The smallest "difference" is assumed to be the 8 consecutive calendar quarter period whose averaged processing rate most closely represents "normal" source operation.

Since this value is the smallest "difference", the 8 consecutive calendar quarter period associated with it is assumed to most closely represent "normal" source operation. Therefore, the highlighted quarters represents the baseline period.

Average: 4,732

Baseline Period Determination for
N-355-78

Calendar Quarter	Material Processing Rate (short tons)	8 Quarter Difference
Q2 2011	3,075	
Q3 2011	5,122	
Q4 2011	2,337	
Q1 2012	3,381	
Q2 2012	3,103	
Q3 2012	4,624	
Q4 2012	4,694	
Q1 2013	3,720	310
Q2 2013	2,731	267
Q3 2013	6,067	386
Q4 2013	3,643	549
Q1 2014	3,526	567
Q2 2014	3,213	581
Q3 2014	4,651	584
Q4 2014	3,790	471
Q1 2015	3,436	436
Q2 2015	3,356	514
Q3 2015	4,461	313
Q4 2015	0	142
Q1 2016	0	583

The values in this column represent the absolute value of the difference between the facility's quarterly processing rate averaged over the last 5 years since the date the application was complete and the quarterly processing rate averaged over the previous 8 consecutive calendar quarters starting with Q2 2011. The smallest "difference" is assumed to be the 8 consecutive calendar quarter period whose averaged processing rate most closely represents "normal" source operation.

Since this value is the smallest "difference", the 8 consecutive calendar quarter period associated with it is assumed to most closely represent "normal" source operation. Therefore, the highlighted quarters represents the baseline period.

Average: 3,447

Baseline Period Determination for
N-355-83

Calendar Quarter	Material Processing Rate (short tons)	8 Quarter Difference
Q2 2011	0	
Q3 2011	0	
Q4 2011	0	
Q1 2012	0	
Q2 2012	0	
Q3 2012	0	
Q4 2012	0	
Q1 2013	0	0
Q2 2013	0	0
Q3 2013	0	0
Q4 2013	0	0
Q1 2014	0	0
Q2 2014	0	0
Q3 2014	0	0
Q4 2014	0	0
Q1 2015	0	0
Q2 2015	0	0
Q3 2015	0	0
Q4 2015	0	0
Q1 2016	0	0

The values in this column represent the absolute value of the difference between the facility's quarterly processing rate averaged over the last 5 years since the date the application was complete and the quarterly processing rate averaged over the previous 8 consecutive calendar quarters starting with Q2 2011. The smallest "difference" is assumed to be the 8 consecutive calendar quarter period whose averaged processing rate most closely represents "normal" source operation.

Since this value is the smallest "difference", the 8 consecutive calendar quarter period associated with it is assumed to most closely represent "normal" source operation. Therefore, the highlighted quarters represents the baseline period.

Average: 0

Baseline Period Determination for
N-355-90

Calendar Quarter	Material Processing Rate (short tons)	8 Quarter Difference
Q2 2011	9,541	
Q3 2011	15,454	
Q4 2011	10,377	
Q1 2012	10,469	
Q2 2012	11,271	
Q3 2012	13,267	
Q4 2012	10,836	
Q1 2013	10,828	1,094
Q2 2013	11,153	1,296
Q3 2013	13,704	1,077
Q4 2013	10,908	1,144
Q1 2014	12,128	1,351
Q2 2014	10,406	1,243
Q3 2014	11,629	1,038
Q4 2014	11,337	1,101
Q1 2015	10,540	1,065
Q2 2015	11,396	1,095
Q3 2015	10,443	688
Q4 2015	2,531	360
Q1 2016	0	1,876

The values in this column represent the absolute value of the difference between the facility's quarterly processing rate averaged over the last 5 years since the date the application was complete and the quarterly processing rate averaged over the previous 8 consecutive calendar quarters starting with Q2 2011. The smallest "difference" is assumed to be the 8 consecutive calendar quarter period whose averaged processing rate most closely represents "normal" source operation.

Since this value is the smallest "difference", the 8 consecutive calendar quarter period associated with it is assumed to most closely represent "normal" source operation. Therefore, the highlighted quarters represents the baseline period.

Average: 10,411

Baseline Period Determination for
N-355-92

Calendar Quarter	Material Processing Rate (short tons)	8 Quarter Difference
Q2 2011	857	
Q3 2011	1,544	
Q4 2011	1,034	
Q1 2012	897	
Q2 2012	1,151	
Q3 2012	1,317	
Q4 2012	793	
Q1 2013	1,023	62
Q2 2013	1,058	87
Q3 2013	1,079	29
Q4 2013	1,069	33
Q1 2014	1,370	92
Q2 2014	1,055	80
Q3 2014	1,022	44
Q4 2014	988	68
Q1 2015	987	63
Q2 2015	1,269	90
Q3 2015	1,283	115
Q4 2015	506	45
Q1 2016	0	126

The values in this column represent the absolute value of the difference between the facility's quarterly processing rate averaged over the last 5 years since the date the application was complete and the quarterly processing rate averaged over the previous 8 consecutive calendar quarters starting with Q2 2011. The smallest "difference" is assumed to be the 8 consecutive calendar quarter period whose averaged processing rate most closely represents "normal" source operation.

Since this value is the smallest "difference", the 8 consecutive calendar quarter period associated with it is assumed to most closely represent "normal" source operation. Therefore, the highlighted quarters represents the baseline period.

Average: 1,015

Baseline Period Determination for
N-355-94

Calendar Quarter	Material Processing Rate (short tons)	8 Quarter Difference
Q2 2011	6,102	
Q3 2011	4,360	
Q4 2011	5,151	
Q1 2012	6,660	
Q2 2012	4,770	
Q3 2012	5,914	
Q4 2012	3,298	
Q1 2013	4,873	1,911
Q2 2013	5,026	1,776
Q3 2013	2,457	1,538
Q4 2013	2,596	1,219
Q1 2014	3,803	862
Q2 2014	3,839	746
Q3 2014	2,909	370
Q4 2014	2,846	313
Q1 2015	2	296
Q2 2015	0	924
Q3 2015	0	1,231
Q4 2015	0	1,556
Q1 2016	0	2,031

The values in this column represent the absolute value of the difference between the facility's quarterly processing rate averaged over the last 5 years since the date the application was complete and the quarterly processing rate averaged over the previous 8 consecutive calendar quarters starting with Q2 2011. The smallest "difference" is assumed to be the 8 consecutive calendar quarter period whose averaged processing rate most closely represents "normal" source operation.

Since this value is the smallest "difference", the 8 consecutive calendar quarter period associated with it is assumed to most closely represent "normal" source operation. Therefore, the highlighted quarters represents the baseline period.

Average: 3,230

Baseline Period Determination for
N-355-95

Calendar Quarter	Material Processing Rate (MMscf of natural gas)	8 Quarter Difference
Q2 2011	21	
Q3 2011	19	
Q4 2011	22	
Q1 2012	6	
Q2 2012	9	
Q3 2012	9	
Q4 2012	10	
Q1 2013	11	1.1
Q2 2013	10	2.5
Q3 2013	9	3.8
Q4 2013	10	5.4
Q1 2014	11	4.8
Q2 2014	19	3.6
Q3 2014	10	3.4
Q4 2014	11	3.3
Q1 2015	26	1.4
Q2 2015	26	0.6
Q3 2015	26	2.8
Q4 2015	26	4.9
Q1 2016	0	3.6

The values in this column represent the absolute value of the difference between the facility's quarterly processing rate averaged over the last 5 years since the date the application was complete and the quarterly processing rate averaged over the previous 8 consecutive calendar quarters starting with Q2 2011. The smallest "difference" is assumed to be the 8 consecutive calendar quarter period whose averaged processing rate most closely represents "normal" source operation.

Since this value is the smallest "difference", the 8 consecutive calendar quarter period associated with it is assumed to most closely represent "normal" source operation. Therefore, the highlighted quarters represents the baseline period.

Average: 15

Baseline Period Determination for
N-355-99

Calendar Quarter	Fuel consumption rate (thousands of gallons)	8 Quarter Difference
Q2 2011	0.0409	
Q3 2011	0.0409	
Q4 2011	0.0409	
Q1 2012	0.0409	
Q2 2012	0.0409	
Q3 2012	0.0409	
Q4 2012	0.0409	
Q1 2013	0.0409	0.0020454545455
Q2 2013	0.0409	0.0020454545455
Q3 2013	0.0409	0.0020454545455
Q4 2013	0.0409	0.0020454545455
Q1 2014	0.0409	0.0020454545455
Q2 2014	0.0409	0.0020454545455
Q3 2014	0.0409	0.0020454545455
Q4 2014	0.0409	0.0020454545455
Q1 2015	0.0409	0.0020454545455
Q2 2015	0.0409	0.0020454545455
Q3 2015	0.0409	0.0020454545455
Q4 2015	0.0409	0.0020454545455
Q1 2016	0.0000	0.0030681818182

Average: 0.03886

The values in this column represent the absolute value of the difference between the facility's quarterly processing rate averaged over the last 5 years since the date the application was complete and the quarterly processing rate averaged over the previous 8 consecutive calendar quarters starting with Q2 2011. The smallest "difference" is assumed to be the 8 consecutive calendar quarter period whose averaged processing rate most closely represents "normal" source operation.

Since this value is the smallest "difference", the 8 consecutive calendar quarter period associated with it is assumed to most closely represent "normal" source operation. Therefore, the highlighted quarters represents the baseline period.

Appendix III
Weighted EF Calculations (N-355-9 through '-14 and '-16)

Weighted EF Calcs for Permit Units N-355-9 through '14

Item	Source Operation/Emissions Unit	EF ¹ (Controlled)	Throughput	PE	Source of EF comments
		lb-PM ₁₀ /ton	tons/day		
1	Flour/sweetener dispensing into a scale hopper vented to a dust collector	0.0036	77.76	0.279936	Pneumatic flour receiving operation under permit N-8069-1-0
2	material addition (Hand adds) salt, baking soda, etc. into mixer vented to a dust collector	0.0001	4.8	0.00048	manual loading of flour into a hopper; emission factor from permit N-8069-17-0
3	mixer vented to fabric filter	0.0068	96	0.6528	see PE1 worksheet for N-355-78
4	enclosed material transfer from the mixer to a day bin with a screw conveyor in the bottom	0.000046	96	0.004416	EPA's AP-42 Table 11.19.2-2, conveyor transfer point, controlled
5	enclosed material drop into two transition hoppers	0.000046	96	0.004416	same as item 4
6	pneumatic transfer of material from transition hopper to a day bin vented to fabric filter	0.0036	48	0.1728	same as item 1
7	pneumatic transfer of material from transition hopper to a day bin vented to fabric filter	0.0036	48	0.1728	same as item 1
	Total:		466.56	1.287648	
	Weighted EF:		0.0028		

Notes: ¹ EF for mixing and handling taken from the application review under project N-1120492 (N-355-14-3)

Weighted EF Calcs for Permit Unit N-355-16

Description	Max process rate	EF ¹ (lb-PM10/ton)	PE (lb/day)
Material receiving into the day bin (H-65)	24	0.0107625	0.258
Material receiving into the day bin (H-66)	24	0.0107625	0.258
Material receiving into the day bin (H-67)	24	0.0107625	0.258
Material conveying into the scale hopper filter receiver (H-64)	60	7.5E-05	0.005
Material loading into the bag dump scalper (H-27)	24	0.0415425	0.997
Material loading & mixing in the seasoning mixer (H-28)	60	0.0064575	0.387
material loading into the bulk sack dump hopper	8.5	0.0415425	0.353
Material loading & processing into the scalper	8.5	0.0415425	0.353
Material loading into the new day bin (H-86)	8.5	0.0107625	0.091
Total:	241.5		3
Weighted EF:	0.0123		

Notes: ¹EF per project N-1061648

Appendix IV
Source Test Summaries (N-355-20, '-21 and '-95)



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**SOURCE TEST REPORT
2013 EMISSION COMPLIANCE TESTS
GENERAL MILLS OPERATIONS, INC.
LODI, CALIFORNIA**

Prepared For:

GENERAL MILLS OPERATIONS, INC.
2000 West Turner Road
Lodi, California 95241

For Submittal To:

SAN JOAQUIN VALLEY APCD
4800 Enterprise Way
Modesto, California 95356

Prepared By:

THE AVOGADRO GROUP, LLC
2825 Verne Roberts Circle
Antioch, California 94509
(925) 680-4300

July 3, 2013



TABLE 1-1
SUMMARY OF AVERAGE RESULTS
GENERAL MILLS OPERATIONS, INC.
LODI, CALIFORNIA
JUNE 18, 2013

Parameter	Boiler 1	Boiler 2	Permit Limits
Process Data:			
Steam flow, KPPH	14.66	18.81	--
Gas Flow, KSCFH	16.04	22.48	--
Stack Gas:			
O ₂ , % volume dry	4.50	3.38	--
CO ₂ , % volume dry	9.36	10.01	--
CO Emissions:			
ppm volume dry	38.1	29.7	--
ppmvd @ 15% O ₂	41.6	30.3	200
NO_x Emissions:			
ppm volume dry	4.5	6.2	--
ppmvd @ 15% O ₂	4.9	6.3	7

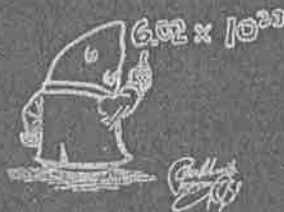


GENERAL MILLS OPERATIONS, INC.

LODI, CALIFORNIA

2010 EMISSION COMPLIANCE TESTS

COGEN TURBINE - BOILER #3



The Avogadro Group, LLC
November 18, 2010

10001.1c

TABLE 1-1
SUMMARY OF AVERAGE RESULTS
GENERAL MILLS OPERATIONS, INC.
LODI, CALIFORNIA
OCTOBER 28, 2010

Parameter	Turbine (Boiler 3) Duct Burners On	Turbine (Boiler 3) Duct Burners Off	Permit Limits
Process Data:			
Unit Load, %	87.2	87.2	--
Power Production, Mw	3.011	3.011	--
Stack Gas:			
O ₂ , % volume dry	11.7	15.4	--
CO ₂ , % volume dry	5.3	3.2	--
Vol. Flow Rate, dscfm	26,038	26,781	--
CO Emissions:			
ppm volume dry	99.6	3.0	--
ppmvd @ 15% O ₂	64.2	3.2	200
NO_x Emissions:			
ppm volume dry	31.1	28.5	--
ppmvd @ 15% O ₂	19.8	30.5	35
lb/hr as NO ₂	5.88	5.56	--
lb/day as NO ₂	141.2	133.3	250





The Avogadro Group, LLC

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NORTHERN REGION

**SOURCE TEST REPORT
2013 EMISSION COMPLIANCE TESTS
GENERAL MILLS OPERATIONS, INC.
LODI, CALIFORNIA**

Prepared For:

GENERAL MILLS OPERATIONS, INC.
2000 West Turner Road
Lodi, California 95241

For Submittal To:

SAN JOAQUIN VALLEY APCD
4800 Enterprise Way
Modesto, California 95356

Prepared By:

The Avogadro Group, LLC
2825 Verne Roberts Circle
Antioch, California 94509
(925) 680-4300

April 5, 2013

N-355
2/12/13

P.M. 4/9/13



TABLE 1-1
SUMMARY OF AVERAGE RESULTS
GENERAL MILLS OPERATIONS, INC.
LODI, CALIFORNIA
FEBRUARY 12, 2013

Parameter	Turbine (Boiler 3) Duct Burners On	Turbine (Boiler 3) Duct Burners Off	Permit Limits
Stack Gas:			
O ₂ , % volume dry	14.0	15.6	--
CO ₂ , % volume dry	3.9	3.0	--
CO Emissions:			
ppm volume dry	91.5	4.5	--
ppmvd @ 15% O ₂	78.2	5.1	200 ✓
NO_x Emissions:			
ppm volume dry	4.4	4.1	--
ppmvd @ 15% O ₂	3.8	4.6	5 ✓
NH₃ Emissions:			
ppm volume dry	4.5	2.0	--
ppmvd @ 15% O ₂	3.8	2.2	10 ✓





The Avogadro Group, LLC

SOURCE TEST REPORT 2012 EMISSION COMPLIANCE TESTS DECEMBER 2012 RETEST GENERAL MILLS OPERATIONS, INC. LODI, CALIFORNIA

Prepared For:

GENERAL MILLS OPERATIONS, INC.
2000 West Turner Road
Lodi, California 95241

For Submittal To:

SAN JOAQUIN VALLEY APCD
4800 Enterprise Way
Modesto, California 95356

Prepared By:

The Avogadro Group, LLC
2825 Verne Roberts Circle
Antioch, California 94509
(925) 680-4300

January 2, 2013



TABLE 1-1
SUMMARY OF AVERAGE RESULTS
GENERAL MILLS OPERATIONS, INC.
LODI, CALIFORNIA
DECEMBER 19, 2012

Parameter	Turbine (Boiler 3) Duct Burners On	Turbine (Boiler 3) Duct Burners Off	Permit Limits
Stack Gas:			
O ₂ , % volume dry	14.0	15.7	--
CO ₂ , % volume dry	3.9	3.0	--
CO Emissions:			
ppm volume dry	93.4	5.5	--
ppmvd @ 15% O ₂	80.4	6.2	200
NO_x Emissions:			
ppm volume dry	3.8	3.0	--
ppmvd @ 15% O ₂	3.2	3.4	5
NH₃ Emissions:			
ppm volume dry	6.0	3.9	--
ppmvd @ 15% O ₂	5.2	4.5	10



Appendix V
HAE Summary Sheet

HAE Summary

Permit #	NOx				SOx				PM10 (lb)				CO				VOC			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
N-355-1	--	--	--	--	--	--	--	--	983	1196	1298	--	--	--	--	--	--	--	--	--
N-355-2	--	--	--	--	--	--	--	--	1177	1354	1469	--	--	--	--	--	--	--	--	--
N-355-5	--	--	--	--	--	--	--	--	18	12	17	--	--	--	--	--	--	--	--	--
N-355-6	--	--	--	--	--	--	--	--	41	39	40	--	--	--	--	--	--	--	--	--
N-355-7	--	--	--	--	--	--	--	--	13	13	18	--	--	--	--	--	--	--	--	--
N-355-9	--	--	--	--	--	--	--	--	5	5	6	--	--	--	--	--	--	--	--	--
N-355-10	--	--	--	--	--	--	--	--	5	5	6	--	--	--	--	--	--	--	--	--
N-355-11	--	--	--	--	--	--	--	--	5	5	6	--	--	--	--	--	--	--	--	--
N-355-12	--	--	--	--	--	--	--	--	5	5	6	--	--	--	--	--	--	--	--	--
N-355-13	--	--	--	--	--	--	--	--	2	1	1	--	--	--	--	--	--	--	--	--
N-355-14	--	--	--	--	--	--	--	--	2	1	1	--	--	--	--	--	--	--	--	--
N-355-16	--	--	--	--	--	--	--	--	12	27	16	--	--	--	--	--	--	--	--	--
N-355-17	--	--	--	--	--	--	--	--	38	36	46	--	--	--	--	--	--	--	--	--
N-355-18	--	--	--	--	--	--	--	--	61	57	59	--	--	--	--	--	--	--	--	--
N-355-20	99	91	61	114	8	7	5	9	39	36	24	--	291	269	179	336	72	66	44	83
N-355-21	768	725	737	363	171	177	180	88	396	409	416	--	10,602	11,110	11,290	5,555	126	130	132	65
N-355-25	--	--	--	--	--	--	--	--	1	1	1	--	--	--	--	--	--	--	--	--
N-355-35	--	--	--	--	--	--	--	--	276	288	348	--	--	--	--	--	--	--	--	--
N-355-38	22	19	21	18	0	0	0	0	70	72	88	--	19	16	18	15	1	1	1	1
N-355-40	--	--	--	--	--	--	--	--	5	6	7	--	--	--	--	--	--	--	--	--
N-355-42	--	--	--	--	--	--	--	--	70	73	88	--	--	--	--	--	--	--	--	--
N-355-44	--	--	--	--	--	--	--	--	4	4	5	--	--	--	--	--	--	--	--	--
N-355-45	--	--	--	--	--	--	--	--	129	134	162	--	--	--	--	--	--	--	--	--
N-355-46	--	--	--	--	--	--	--	--	0	0	0	--	--	--	--	--	--	--	--	--
N-355-47	--	--	--	--	--	--	--	--	1	1	2	--	--	--	--	--	--	--	--	--
N-355-56	--	--	--	--	--	--	--	--	6	7	8	--	--	--	--	--	--	--	--	--
N-355-78	--	--	--	--	--	--	--	--	13	12	17	--	--	--	--	--	--	--	--	--
N-355-83	--	--	--	--	--	--	--	--	0	0	0	--	--	--	--	--	--	--	--	--
N-355-90	--	--	--	--	--	--	--	--	162	155	157	--	--	--	--	--	--	--	--	--
N-355-92	--	--	--	--	--	--	--	--	32	37	40	--	--	--	--	--	--	--	--	--
N-355-94	--	--	--	--	--	--	--	--	7	7	4	--	--	--	--	--	--	--	--	--
N-355-95	106	136	59	59	11	14	6	6	54	69	30	--	553	706	307	307	99	127	55	55
N-355-99	4	4	4	4	0	0	0	0	0	0	0	--	1	1	1	1	0	0	0	0
Total:	999	975	882	558	190	198	191	103	3,632	4,067	4,386	--	11,466	12,102	11,795	6,214	298	324	232	204
10% of Total:	100	98	88	56	19	20	19	10	363	407	439	--	1,147	1,210	1,180	621	30	32	23	20
AER: Total - 10% of Total:	899	877	794	502	171	178	172	93	3,269	3,660	3,947	--	10,319	10,892	10,615	5,593	268	292	209	184

Appendix VI

HAP Calculations

Summary of HAP Emissions

¹ Permit #	Description	HAPs (lb/yr)
N-355-20	48.3 MMBtu/hr boiler	26
N-355-21	3.48 MW Turbine and 16 MMBtu/hr duct burner	532
N-355-38	Graham system pellet toaster	3
N-355-40	Graham system recovery toaster	1
N-355-83	355 bhp diesel fueled IC engine	0
N-355-95	48.3 MMBtu/hr boiler	26
N-355-99	144 bhp diesel fueled IC engine	1
	Total (lb/yr):	589
	Total (tons/yr):	0.29
Note:		
1. HAPs are not expected from the other processes at this plant.		

Potential HAP Emissions from "N-355-20"

HAP	Emission Factor (lb/MMBtu) ⁽¹⁾	Maximum Hourly Emissions (lb/hr) ⁽²⁾	Maximum Annual Emissions (lb/yr) ⁽³⁾	
Acetaldehyde	3.10E-06	1.50E-04	1	
Acrolein	2.70E-06	1.30E-04	1	
Benzene	5.80E-06	2.80E-04	2	
1,3-Butadiene	n/a	--	--	
Ethyl benzene	6.90E-06	3.33E-04	3	
Formaldehyde	1.23E-05	5.94E-04	5	
Hexane	4.60E-06	2.22E-04	2	
Naphthalene	3.00E-07	1.45E-05	0	
PAHs	1.00E-07	4.83E-06	0	
Propylene Oxide	n/a	--	--	
Toluene	2.65E-05	1.28E-03	11	
Xylene	6.40E-08	3.09E-06	0	
Total			26	
Notes:				
1. These emission factors are obtained from Ventura County APCD, "AB2588 Combustion Emission Factors" natural gas fired external combustion equipment 10-100 MMBtu/hr, available at http://www.vcapcd.org/pubs/Engineering/AirToxics/combem.pdf				
2. Hourly emissions = EF (lb/MMBtu) x 48.3 (MMBtu/hr)				
3. Annual emissions = EF (lb/MMBtu) x 48.3(MMBtu/hr) x 8,760 (hr/yr)				

Potential HAP Emissions from "N-355-21 (Turbine)"

HAP	Emission Factor (lb/MMBtu) ⁽¹⁾	Maximum Hourly Emissions (lb/hr) ⁽²⁾	Maximum Annual Emissions (lb/yr) ⁽³⁾
Acrolein	6.40E-06	3.02E-04	3
Benzene	1.20E-05	5.67E-04	5
1,3-Butadiene	4.30E-07	2.03E-05	0
Ethyl benzene	3.20E-05	1.51E-03	13
Formaldehyde	7.10E-04	3.35E-02	294
Hexane	2.58E-04	1.22E-02	107
Naphthalene	1.30E-06	6.14E-05	1
PAHs (excluding Naphthalene)	3.14E-07	1.48E-05	0
Propylene Oxide	4.76E-05	2.25E-03	20
Toluene	1.30E-04	6.14E-03	54
Xylene	6.40E-05	3.02E-03	26
Total			523
Notes:			
1. EF taken from the application review under project N-1183490.			
2. Hourly emissions = EF (lb/MMBtu) x 47.22 (MMBtu/hr)			
3. Annual emissions = EF (lb/MMBtu) x 231 (MMBtu/hr) x 8,760 (hr/yr)			

Potential HAP Emissions from "N-355-21 (Duct burner)"

HAP	Emission Factor (lb/MMBtu) ⁽¹⁾	Maximum Hourly Emissions (lb/hr) ⁽²⁾	Maximum Annual Emissions (lb/yr) ⁽³⁾	
Acetaldehyde	3.10E-06	4.96E-05	0	
Acrolein	2.70E-06	4.32E-05	0	
Benzene	5.80E-06	9.28E-05	1	
1,3-Butadiene	n/a	--	--	
Ethyl benzene	6.90E-06	1.10E-04	1	
Formaldehyde	1.23E-05	1.97E-04	2	
Hexane	4.60E-06	7.36E-05	1	
Naphthalene	3.00E-07	4.80E-06	0	
PAHs	1.00E-07	1.60E-06	0	
Propylene Oxide	n/a	--	--	
Toluene	2.65E-05	4.24E-04	4	
Xylene	6.40E-08	1.02E-06	0	
Total			9	
Notes:				
1. These emission factors are obtained from Ventura County APCD, "AB2588 Combustion Emission Factors" natural gas fired external combustion equipment 10-100 MMBtu/hr, available at http://www.vcapcd.org/pubs/Engineering/AirToxics/combem.pdf				
2. Hourly emissions = EF (lb/MMBtu) x 16 (MMBtu/hr)				
3. Annual emissions = EF (lb/MMBtu) x 16 (MMBtu/hr) x 8,760 (hr/yr)				

Potential HAP Emissions from "N-355-38"

HAP	Emission Factor (lb/MMBtu) ⁽¹⁾	Maximum Hourly Emissions (lb/hr) ⁽²⁾	Maximum Annual Emissions (lb/yr) ⁽³⁾	
Acetaldehyde	3.10E-06	1.55E-05	0	
Acrolein	2.70E-06	1.35E-05	0	
Benzene	5.80E-06	2.90E-05	0	
1,3-Butadiene	n/a	--	--	
Ethyl benzene	6.90E-06	3.45E-05	0	
Formaldehyde	1.23E-05	6.15E-05	1	
Hexane	4.60E-06	2.30E-05	0	
Naphthalene	3.00E-07	1.50E-06	0	
PAHs	1.00E-07	5.00E-07	0	
Propylene Oxide	n/a	--	--	
Toluene	2.65E-05	1.33E-04	1	
Xylene	6.40E-08	3.20E-07	0	
Total			3	
Notes:				
1. These emission factors are obtained from Ventura County APCD, "AB2588 Combustion Emission Factors" natural gas fired external combustion equipment 10-100 MMBtu/hr, available at http://www.vcapcd.org/pubs/Engineering/AirToxics/combem.pdf				
2. Hourly emissions = EF (lb/MMBtu) x 2 units x 2.5 MMBtu/hr-unit				
3. Annual emissions = EF (lb/MMBtu) x 2 units x 2.5 MMBtu/hr-unit x 8,760 (hr/yr)				

Potential HAP Emissions from "N-355-40"

HAP	Emission Factor (lb/MMBtu) ⁽¹⁾	Maximum Hourly Emissions (lb/hr) ⁽²⁾	Maximum Annual Emissions (lb/yr) ⁽³⁾	
Acetaldehyde	3.10E-06	4.65E-06	0	
Acrolein	2.70E-06	4.05E-06	0	
Benzene	5.80E-06	8.70E-06	0	
1,3-Butadiene	n/a	--	--	
Ethyl benzene	6.90E-06	1.04E-05	0	
Formaldehyde	1.23E-05	1.85E-05	0	
Hexane	4.60E-06	6.90E-06	0	
Naphthalene	3.00E-07	4.50E-07	0	
PAHs	1.00E-07	1.50E-07	0	
Propylene Oxide	n/a	--	--	
Toluene	2.65E-05	3.98E-05	0	
Xylene	6.40E-08	9.60E-08	0	
Total			1	
Notes:				
1. These emission factors are obtained from Ventura County APCD, "AB2588 Combustion Emission Factors" natural gas fired external combustion equipment 10-100 MMBtu/hr, available at http://www.vcapcd.org/pubs/Engineering/AirToxics/combem.pdf				
2. Hourly emissions = EF (lb/MMBtu) x 1.5 MMBtu/hr				
3. Annual emissions = EF (lb/MMBtu) x 1.5 MMBtu/hr x 8,760 (hr/yr)				

Potential HAP Emissions from "N-355-83"

Pollutant	Emission Factor (lb/MMBtu) ⁽¹⁾	Maximum Hourly Emissions (lb/hr) ⁽²⁾	Maximum Annual Emissions (lb/yr) ⁽³⁾		
Acetaldehyde	7.67E-04	1.98E-03	0.0		
Acrolein	9.25E-05	2.39E-04	0.0		
Benzene	9.33E-04	2.41E-03	0.0		
1,3-Butadiene	3.91E-05	1.01E-04	0.0		
Ethyl benzene	--	--	--		
Formaldehyde	1.18E-03	3.04E-03	0.1		
Hexane	n/a	--	--		
Naphthalene	8.48E-05	2.19E-04	0.0		
PAHs	8.32E-05	2.15E-04	0.0		
Propylene Oxide	n/a	--	--		
Toluene	4.09E-04	1.06E-03	0.0		
Xylene	2.85E-04	7.35E-04	0.0		
Total			0.1		
Notes:					
1. The emission are taken from AP-42 Table 3.3-2 (10/96)					
2. Hourly emissions = EF (lb/MMBtu) x 2.58 MMBtu/hr; 18.8 gal/hr x 0.137 MMBtu/gal = 2.58 MMBtu/hr					
3. Annual emissions = EF (lb/MMBtu) x 2.58 (MMBtu/hr) x 20 (hr/yr)					

Potential HAP Emissions from "N-355-83"

[illegible]

Potential HAP Emissions from "N-355-95"

HAP	Emission Factor (lb/MMBtu) ⁽¹⁾	Maximum Hourly Emissions (lb/hr) ⁽²⁾	Maximum Annual Emissions (lb/yr) ⁽³⁾	
Acetaldehyde	3.10E-06	1.50E-04	1	
Acrolein	2.70E-06	1.30E-04	1	
Benzene	5.80E-06	2.80E-04	2	
1,3-Butadiene	n/a	--	--	
Ethyl benzene	6.90E-06	3.33E-04	3	
Formaldehyde	1.23E-05	5.94E-04	5	
Hexane	4.60E-06	2.22E-04	2	
Naphthalene	3.00E-07	1.45E-05	0	
PAHs	1.00E-07	4.83E-06	0	
Propylene Oxide	n/a	--	--	
Toluene	2.65E-05	1.28E-03	11	
Xylene	6.40E-08	3.09E-06	0	
Total			26	
Notes:				
1. These emission factors are obtained from Ventura County APCD, "AB2588 Combustion Emission Factors" natural gas fired external combustion equipment 10-100 MMBtu/hr, available at http://www.vcapcd.org/pubs/Engineering/AirToxics/combem.pdf				
2. Hourly emissions = EF (lb/MMBtu) x 48.3 (MMBtu/hr)				
3. Annual emissions = EF (lb/MMBtu) x 48.3(MMBtu/hr) x 8,760 (hr/yr)				

Potential HAP Emissions from "N-355-99"

Pollutant	Emission Factor (lb/MMBtu) ⁽¹⁾	Maximum Hourly Emissions (lb/hr) ⁽²⁾	Maximum Annual Emissions (lb/yr) ⁽³⁾		
Acetaldehyde	7.67E-04	1.05E-03	0.1		
Acrolein	9.25E-05	1.27E-04	0.0		
Benzene	9.33E-04	1.28E-03	0.1		
1,3-Butadiene	3.91E-05	5.36E-05	0.0		
Ethyl benzene	--	--	--		
Formaldehyde	1.18E-03	1.62E-03	0.2		
Hexane	n/a	--	--		
Naphthalene	8.48E-05	1.16E-04	0.0		
PAHs	8.32E-05	1.14E-04	0.0		
Propylene Oxide	n/a	--	--		
Toluene	4.09E-04	5.60E-04	0.1		
Xylene	2.85E-04	3.90E-04	0.0		
Total			0.5		
Notes:					
1. The emission are taken from AP-42 Table 3.3-2 (10/96)					
2. Hourly emissions = EF (lb/MMBtu) x 1.37 MMBtu/hr; 10 gal/hr x 0.137 MMBtu/gal = 1.37 MMBtu/hr					
3. Annual emissions = EF (lb/MMBtu) x 1.37 (MMBtu/hr) x 100 (hr/yr)					

Appendix VII
Surrendered Permits to Operate

INSPECTION WORKSHEET
EXPIRATION DATE: 04/30/2016

LEGAL OWNER OR OPERATOR: GENERAL MILLS OPERATIONS, INC
MAILING ADDRESS: WO1D DIANE CURELL
P.O. BOX 59145
MINNEAPOLIS, MN 55459-0145

LOCATION: WADE BROUGHTON
2000 W TURNER ROAD
LODI, CA 95242

PHYSICAL LOCATION: <PhysicalLocation>

INSPECT PROGRAM PARTICIPANT: NO

EQUIPMENT DESCRIPTION:
FACILITY-WIDE REQUIREMENTS

CONDITIONS

1. {4362} The owner or operator shall notify the District of any breakdown condition as soon as reasonably possible, but no later than one hour after its detection, unless the owner or operator demonstrates to the District's satisfaction that the longer reporting period was necessary. [District Rule 1100, 6.1; County Rules 110 (Fresno, Stanislaus, San Joaquin); 109 (Merced); 113 (Madera); and 111 (Kern, Tulare, Kings)] Federally Enforceable Through Title V Permit
2. {4363} The District shall be notified in writing within ten days following the correction of any breakdown condition. The breakdown notification shall include a description of the equipment malfunction or failure, the date and cause of the initial failure, the estimated emissions in excess of those allowed, and the methods utilized to restore normal operations. [District Rule 1100, 7.0; County Rules 110 (Fresno, Stanislaus, San Joaquin); 109 (Merced); 113 (Madera); and 111 (Kern, Tulare, Kings)] Federally Enforceable Through Title V Permit
3. {4364} The owner or operator of any stationary source operation that emits more than 25 tons per year of nitrogen oxides or reactive organic compounds, shall provide the District annually with a written statement in such form and at such time as the District prescribes, showing actual emissions of nitrogen oxides and reactive organic compounds from that source. [District Rule 1160, 5.0] Federally Enforceable Through Title V Permit
4. {4365} Any person building, altering or replacing any operation, article, machine, equipment, or other contrivance, the use of which may cause the issuance of air contaminants or the use of which may eliminate, reduce, or control the issuance of air contaminants, shall first obtain an Authority to Construct (ATC) from the District unless exempted by District Rule 2020 (12/20/07). [District Rule 2010, 3.0 and 4.0; and 2020] Federally Enforceable Through Title V Permit
5. {4366} The permittee must comply with all conditions of the permit including permit revisions originated by the District. All terms and conditions of a permit that are required pursuant to the Clean Air Act (CAA), including provisions to limit potential to emit, are enforceable by the EPA and Citizens under the CAA. Any permit noncompliance constitutes a violation of the CAA and the District Rules and Regulations, and is grounds for enforcement action, for permit termination, revocation, reopening and reissuance, or modification; or for denial of a permit renewal application. [District Rules 2070, 7.0; 2080; and 2520, 9.9.1 and 9.13.1] Federally Enforceable Through Title V Permit
6. {4367} A Permit to Operate or an Authority to Construct shall not be transferred unless a new application is filed with and approved by the District. [District Rule 2031] Federally Enforceable Through Title V Permit
7. {4368} Every application for a permit required under Rule 2010 (12/17/92) shall be filed in a manner and form prescribed by the District. [District Rule 2040] Federally Enforceable Through Title V Permit
8. {4369} The operator shall maintain records of required monitoring that include: 1) the date, place, and time of sampling or measurement; 2) the date(s) analyses were performed; 3) the company or entity that performed the analysis; 4) the analytical techniques or methods used; 5) the results of such analysis; and 6) the operating conditions at the time of sampling or measurement. [District Rule 2520, 9.4.1] Federally Enforceable Through Title V Permit

9. {4370} The operator shall retain records of all required monitoring data and support information for a period of at least 5 years from the date of the monitoring sample, measurement, or report. Support information includes copies of all reports required by the permit and, for continuous monitoring instrumentation, all calibration and maintenance records and all original strip-chart recordings. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
10. {4371} The operator shall submit reports of any required monitoring at least every six months unless a different frequency is required by an applicable requirement. All instances of deviations from permit requirements must be clearly identified in such reports. [District Rule 2520, 9.5.1] Federally Enforceable Through Title V Permit
11. {4372} Deviations from permit conditions must be promptly reported, including deviations attributable to upset conditions, as defined in the permit. For the purpose of this condition, promptly means as soon as reasonably possible, but no later than 10 days after detection. The report shall include the probable cause of such deviations, and any corrective actions or preventive measures taken. All required reports must be certified by a responsible official consistent with section 10.0 of District Rule 2520 (6/21/01). [District Rules 2520, 9.5.2 and 1100, 7.0] Federally Enforceable Through Title V Permit
12. {4373} If for any reason a permit requirement or condition is being challenged for its constitutionality or validity by a court of competent jurisdiction, the outcome of such challenge shall not affect or invalidate the remainder of the conditions or requirements in that permit. [District Rule 2520, 9.7] Federally Enforceable Through Title V Permit
13. {4374} It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of the permit. [District Rule 2520, 9.8.2] Federally Enforceable Through Title V Permit
14. {4375} The permit may be modified, revoked, reopened and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition. [District Rule 2520, 9.8.3] Federally Enforceable Through Title V Permit
15. {4376} The permit does not convey any property rights of any sort, or any exclusive privilege. [District Rule 2520, 9.8.4] Federally Enforceable Through Title V Permit
16. {4377} The Permittee shall furnish to the District, within a reasonable time, any information that the District may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the District copies of records required to be kept by the permit or, for information claimed to be confidential, the permittee may furnish such records directly to EPA along with a claim of confidentiality. [District Rule 2520, 9.8.5] Federally Enforceable Through Title V Permit
17. {4378} The permittee shall pay annual permit fees and other applicable fees as prescribed in Regulation III of the District Rules and Regulations. [District Rule 2520, 9.9] Federally Enforceable Through Title V Permit
18. {4379} Upon presentation of appropriate credentials, a permittee shall allow an authorized representative of the District to enter the permittee's premises where a permitted source is located or emissions related activity is conducted, or where records must be kept under condition of the permit. [District Rule 2520, 9.13.2.1] Federally Enforceable Through Title V Permit
19. {4380} Upon presentation of appropriate credentials, a permittee shall allow an authorized representative of the District to have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit. [District Rule 2520, 9.13.2.2] Federally Enforceable Through Title V Permit
20. {4381} Upon presentation of appropriate credentials, a permittee shall allow an authorized representative of the District to inspect at reasonable times any facilities, equipment, practices, or operations regulated or required under the permit. [District Rule 2520, 9.13.2.3] Federally Enforceable Through Title V Permit
21. {4382} Upon presentation of appropriate credentials, a permittee shall allow an authorized representative of the District to sample or monitor, at reasonable times, substances or parameters for the purpose of assuring compliance with the permit or applicable requirements. [District Rule 2520, 9.13.2.4] Federally Enforceable Through Title V Permit

22. {4383} No air contaminants shall be discharged into the atmosphere for a period or periods aggregating more than 3 minutes in any one hour which is as dark or darker than Ringelmann #1 or equivalent to 20% opacity and greater, unless specifically exempted by District Rule 4101 (02/17/05). If the equipment or operation is subject to a more stringent visible emission standard as prescribed in a permit condition, the more stringent visible emission limit shall supersede this condition. [District Rule 4101, and County Rules 401 (in all eight counties in the San Joaquin Valley)] Federally Enforceable Through Title V Permit
23. {4384} No person shall manufacture, blend, repackage, supply, sell, solicit or apply any architectural coating with a VOC content in excess of the corresponding limit specified in Table of Standards 1 effective until 12/30/10 or Table of Standards 2 effective on and after 1/1/11 of District Rule 4601 (12/17/09) for use or sale within the District. [District Rule 4601, 5.1] Federally Enforceable Through Title V Permit
24. {4385} All VOC-containing materials subject to Rule 4601 (12/17/09) shall be stored in closed containers when not in use. [District Rule 4601, 5.4] Federally Enforceable Through Title V Permit
25. {4386} The permittee shall comply with all the Labeling and Test Methods requirements outlined in Rule 4601 sections 6.1 and 6.3 (12/17/09). [District Rule 4601, 6.1 and 6.3] Federally Enforceable Through Title V Permit
26. {4387} With each report or document submitted under a permit requirement or a request for information by the District or EPA, the permittee shall include a certification of truth, accuracy, and completeness by a responsible official. [District Rule 2520, 9.13.1 and 10.0] Federally Enforceable Through Title V Permit
27. {4388} If the permittee performs maintenance on, or services, repairs, or disposes of appliances, the permittee shall comply with the standards for Recycling and Emissions Reduction pursuant to 40 CFR Part 82, Subpart F. [40 CFR 82 Subpart F] Federally Enforceable Through Title V Permit
28. {4389} If the permittee performs service on motor vehicles when this service involves the ozone-depleting refrigerant in the motor vehicle air conditioner (MVAC), the permittee shall comply with the standards for Servicing of Motor Vehicle Air Conditioners pursuant to all the applicable requirements as specified in 40 CFR Part 82, Subpart B. [40 CFR Part 82, Subpart B] Federally Enforceable Through Title V Permit
29. {4390} Disturbances of soil related to any construction, demolition, excavation, extraction, or other earthmoving activities shall comply with the requirements for fugitive dust control in District Rule 8021 unless specifically exempted under Section 4.0 of Rule 8021 (8/19/2004) or Rule 8011 (8/19/2004). [District Rules 8021 and 8011] Federally Enforceable Through Title V Permit
30. {4391} Outdoor handling, storage and transport of any bulk material which emits dust shall comply with the requirements of District Rule 8031, unless specifically exempted under Section 4.0 of Rule 8031 (8/19/2004) or Rule 8011 (8/19/2004). [District Rules 8031 and 8011] Federally Enforceable Through Title V Permit
31. {4392} An owner/operator shall prevent or cleanup any carryout or trackout in accordance with the requirements of District Rule 8041 Section 5.0, unless specifically exempted under Section 4.0 of Rule 8041 (8/19/2004) or Rule 8011 (8/19/2004). [District Rules 8041 and 8011] Federally Enforceable Through Title V Permit
32. {4393} Whenever open areas are disturbed, or vehicles are used in open areas, the facility shall comply with the requirements of Section 5.0 of District Rule 8051, unless specifically exempted under Section 4.0 of Rule 8051 (8/19/2004) or Rule 8011 (8/19/2004). [District Rules 8051 and 8011] Federally Enforceable Through Title V Permit
33. {4394} Any paved road or unpaved road shall comply with the requirements of District Rule 8061 unless specifically exempted under Section 4.0 of Rule 8061 (8/19/2004) or Rule 8011 (8/19/2004). [District Rules 8061 and 8011] Federally Enforceable Through Title V Permit
34. {4395} Any unpaved vehicle/equipment area that anticipates more than 50 Average annual daily Trips (AADT) shall comply with the requirements of Section 5.1.1 of District Rule 8071. Any unpaved vehicle/equipment area that anticipates more than 150 vehicle trips per day (VDT) shall comply with the requirements of Section 5.1.2 of District Rule 8071. On each day that 25 or more VDT with 3 or more axles will occur on an unpaved vehicle/equipment traffic area, the owner/operator shall comply with the requirements of Section 5.1.3 of District Rule 8071. On each day when a special event will result in 1,000 or more vehicles that will travel/park on an unpaved area, the owner/operator shall comply with the requirements of Section 5.1.4 of District Rule 8071. All sources shall comply with the requirements of Section 5.0 of District Rule 8071 unless specifically exempted under Section 4.0 of Rule 8071 (9/16/2004) or Rule 8011 (8/19/2004). [District Rules 8071 and 8011] Federally Enforceable Through Title V Permit

35. {4396} Any owner or operator of a demolition or renovation activity, as defined in 40 CFR 61.141, shall comply with the applicable inspection, notification, removal, and disposal procedures for asbestos containing materials as specified in 40 CFR 61.145 (Standard for Demolition and Renovation). [40 CFR 61 Subpart M] Federally Enforceable Through Title V Permit
36. {4397} The permittee shall submit certifications of compliance with the terms and standards contained in Title V permits, including emission limits, standards and work practices, to the District and the EPA annually (or more frequently as specified in an applicable requirement or as specified by the District). The certification shall include the identification of each permit term or condition, the compliance status, whether compliance was continuous or intermittent, the methods used for determining the compliance status, and any other facts required by the District to determine the compliance status of the source. [District Rule 2520, 9.16] Federally Enforceable Through Title V Permit
37. {4398} The permittee shall submit an application for Title V permit renewal to the District at least six months, but not greater than 18 months, prior to the permit expiration date. [District Rule 2520, 5.2] Federally Enforceable Through Title V Permit
38. {4399} When a term is not defined in a Title V permit condition, the definition in the rule cited as the origin and authority for the condition in a Title V permits shall apply. [District Rule 2520, 9.1.1] Federally Enforceable Through Title V Permit
39. {4400} Compliance with permit conditions in the Title V permit shall be deemed in compliance with the following outdated SIP requirements: Rule 401 (Madera, Fresno, Kern, Kings, San Joaquin, Stanislaus, Tulare and Merced), Rule 110 (Fresno, Stanislaus, San Joaquin), Rule 109 (Merced), Rule 113 (Madera), Rule 111 (Kern, Tulare, Kings), and Rule 202 (Fresno, Kern, Tulare, Kings, Madera, Stanislaus, Merced, San Joaquin). A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
40. {4401} Compliance with permit conditions in the Title V permit shall be deemed in compliance with the following applicable requirements: SJVUAPCD Rules 1100, sections 6.1 and 7.0 (12/17/92); 2010, sections 3.0 and 4.0 (12/17/92); 2031 (12/17/92); 2040 (12/17/92); 2070, section 7.0 (12/17/92); 2080 (12/17/92); 4101 (2/17/05); 4601 (12/17/09); 8021 (8/19/2004); 8031 (8/19/2004); 8041 (8/19/2004); 8051 (8/19/2004); 8061 (8/19/2004); and 8071 (9/16/2004). A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
41. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
42. When applicable to 40 CFR Part 68, a subject facility shall submit to the proper authority a Risk Management Plan when mandated by the regulation. [40 CFR Part 68] Federally Enforceable Through Title V Permit
43. The reporting periods for the Report of Required Monitoring and the Compliance Certification Report begin March 16 every year, unless alternative dates are approved by the District Compliance Division. These reports are due within 30 days after the end of the reporting period. [District Rule 2520] Federally Enforceable Through Title V Permit

INSPECTION
EXPIRATION DATE: 04/30/2016
WORKSHEET

LEGAL OWNER OR OPERATOR: GENERAL MILLS OPERATIONS, INC
MAILING ADDRESS: WO1D DIANE CURELLI
P.O. BOX 59145
MINNEAPOLIS, MN 55459-0145

LOCATION: WADE BROUGHTON
2000 W TURNER ROAD
LODI, CA 95242

INSPECT PROGRAM PARTICIPANT: NO

EQUIPMENT DESCRIPTION:

CEREAL PLANT (PUFF II) CONSISTING OF A MATERIAL DISPENSING SYSTEM, A MATERIAL COOKING SYSTEM, A PUFF SYSTEM, A CEREAL-FLAVOR SPRAYING AND DRYING SYSTEM, AND A FINISHED CEREAL SCALPING AND CONVEYANCE SYSTEM.

CONDITIONS

1. Particulate matter emissions shall not exceed 0.1 grain/dscf. [District Rule 4201] Federally Enforceable Through Title V Permit
2. Visible emissions from the exhaust of each dust collector (wet or dry) shall not equal or exceed 5% opacity for a period or periods aggregating more than three minutes in any one hour. [District Rule 2201] Federally Enforceable Through Title V Permit
3. The material dispensing system shall consist of the following: flour dispensing from bulk storage silo to day bins served by a FLEX-KLEEN MODEL 58CTBC18IIIG dust collector (AC-1); sweetener dispensing from bulk storage silo to day bins served by a FLEX-KLEEN MODEL 10PBVBL9II dust collector (AC-3); multiple product dispensing into day bins served by a FABRIC FILTER CORP OR MAC MODEL 88AVRF0602 dust collector (AC-62); material dispensing from bin #57 to day bins served by a shared HAF EQUIPMENT MODEL 36CF14S3G dust collector (AC-77) (shared with permit unit N-355-2); dry sweetener dispensing operation from bulk storage silo to day bins served by a shared FLEX-KLEEN MODEL 58CTBC14IIIG dust collector (AC-78) (shared with permit unit N-355-2); day bins served by a AERODYNE MODEL 12104-4 dust collector (AC-5), mixer served by a AERODYNE MODEL 120060089 dust collector (AC-12); regrinds dispensing to a mixer served by a MAC MODEL 18BV4 dust collector (AC-79); wheat germ dispensing from bins to mixed-material product receiver served by a MAC MODEL 36AVR14-III dust collector (AC-45); and mixed-material product receiver served by a HAF EQUIPMENT MODEL 58CT3283 dust collector (AC-100). [District Rule 2201] Federally Enforceable Through Title V Permit
4. The material cooking system shall consist of the following: transition hopper supplying mixed material to cookers served by a HAF EQUIPMENT MODEL 18BV4 dust collector (AC-102); steam-jacketed cookers, receiver, and steam-heated dryer served by a BOEDECKER DCP-30-196M168-38-G dust collector (AC-17); a product receiver (AC-23) served by an American Air Filter Rotoclone Model B Arrangement A Type W Size 20 Wet-Type dust collector (AC-106, shared with other emission units listed in this permit and permit N-355-2); a cyclone receiver and dry dough handling system consists of a screw conveyor and five electrically-heated conveyors served by a shared AAF-ROTOCLONE MODEL W12 WET-TYPE dust collector (AC-26) (shared with permit unit N-355-2). [District Rule 2201] Federally Enforceable Through Title V Permit
5. The puff system shall consist of the following: five permit-exempt natural gas-fired superheaters (0.5 MMBTU/HR each) serving five puff-formers; five post-puff-former cyclone receivers delivering product to a receiver on 4th floor which is served by a KICE MODEL VR32-6H dust collector (AC-76) and scalper; a day bin (South) and, a conveyor (CNV 12), both served by an American Air Filter Rotoclone Model B Arrangement A Type W Size 20 Wet-Type dust collector (AC-106, shared with other emission units listed in this permit and permit N-355-2). [District Rule 2201] Federally Enforceable Through Title V Permit
6. The cereal flavor spraying and drying system shall consist of the following: enrobbers served by a DUCON MODEL UW3-21 WET-TYPE dust collector (AC-38); steam-heated dryer served by an AAF-ROTOCLONE W24 WET-TYPE dust collector (AC-37-1) and an AAF-ROTOCLONE WRC12 WET-TYPE dust collector (AC-37-2) on cooler side. [District Rule 2201] Federally Enforceable Through Title V Permit

7. The finished cereal scalp and conveyance system shall consist of the following: finish cereal conveyors served by a shared FLEX-KLEEN MODEL 58WSBC81-III dust collector (AC-44) (shared with permit unit N-355-2); scalper served by a shared FLEX-KLEEN MODEL 58CTBC54-III dust collector (AC-68) (shared with permit unit N-355-2); scalper served by a BUHLER MODEL ASFA-44 dust collector (AC-43); material dispensing from dry minor ingredient bins to the cereal served by an AAF MODEL W840144 WET-TYPE dust collector (AC-75); a weight feeder (South) served by an American Air Filter Rotoclone Model B Arrangement A Type W Size 20 Wet-Type dust collector (AC-106, shared with other emission units listed in this permit and permit N-355-2). [District Rule 2201] Federally Enforceable Through Title V Permit
8. PM10 emissions from this permit unit shall not exceed 26.7 lb/day. [District Rule 2201] Federally Enforceable Through Title V Permit
9. The operator shall maintain the following water flow rates: a.) at least 1.0 gpm for AAF-Rotoclone Model W12 dust collector (AC-26), b.) at least 0.7 gpm for Ducon Model UW3-21 dust collector (AC-38), c.) at least 3.5 gpm for AAF-Rotoclone Model W24 dust collector (AC-37-1), d.) at least 1.0 gpm for AAF-Rotoclone Model WRC12 dust collector (AC-37-2), e.) at least 1.5 gpm for AAF Model W840144 dust collector (AC-75), and f.) at least 3.5 gpm for the American Air Filter Rotoclone Model B Arrangement A Type W Size 20 WET-TYPE dust collector (AC-106, shared with N-355-2). [District Rule 2201] Federally Enforceable Through Title V Permit
10. Material removed from each dust collector (wet or dry) shall be disposed of in a manner preventing entrainment into the atmosphere. [District Rule 2201] Federally Enforceable Through Title V Permit
11. The cleaning frequency and duration of each dust collector (wet or dry) shall be adjusted to optimize the control efficiency. [District Rule 2201] Federally Enforceable Through Title V Permit
12. Replacement bags numbering at least 10% of the total number of bags in the largest dust collector (dry), and for each type of bag, shall be maintained on the premises. [District Rule 2201] Federally Enforceable Through Title V Permit
13. Visible emissions from cyclones and dust collectors (wet or dry) that are in operation shall be checked quarterly. If visible emissions are observed, corrective action shall be taken to eliminate visible emissions. If visible emissions cannot be corrected within 24 hours, a visible emissions test using EPA Method 9 shall be conducted. [District Rule 2201] Federally Enforceable Through Title V Permit
14. Cyclones and dust collectors (wet or dry) shall be completely inspected annually for evidence of particulate matter breakthrough and repaired as needed. [District Rule 2201] Federally Enforceable Through Title V Permit
15. Dust collector (dry) filters shall be thoroughly inspected annually for tears, scuffs, abrasions, holes, or any evidence of particulate matter breakthrough and shall be replaced as needed. [District Rule 2201] Federally Enforceable Through Title V Permit
16. Records of cyclones and dust collectors (wet or dry) maintenance, inspections, and repair shall be maintained. The records shall include identification of the equipment, date of inspection, corrective action taken, and identification of the individual performing the inspection. [District Rule 2201] Federally Enforceable Through Title V Permit
17. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E=3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E=17.37 \times P^{0.62}$ if P is greater than 30 tons per hour (amended December 17, 1992). [District Rule 4202] Federally Enforceable Through Title V Permit
18. Water flow rate of each dust collector (wet) shall be monitored and recorded quarterly during operation of this unit. [District Rule 2201] Federally Enforceable Through Title V Permit
19. The permittee shall maintain records sufficient to demonstrate compliance with each emission limit and permit requirement. These records shall contain each calculated emission quantity as well as each process variable used in the respective calculations. [District Rules 1070 and 2201] Federally Enforceable Through Title V Permit
20. All records shall be maintained and retained on-site for a period of at least 5 years and shall be made available for District inspection upon request. [District Rules 1070 and 2201] Federally Enforceable Through Title V Permit

INSPECTION
EXPIRATION DATE: 04/30/2016
WORKSHEET

LEGAL OWNER OR OPERATOR: GENERAL MILLS OPERATIONS, INC
MAILING ADDRESS: WO1D DIANE CURELL
P.O. BOX 59145
MINNEAPOLIS, MN 55459-0145

LOCATION: WADE BROUGHTON
2000 W TURNER ROAD
LODI, CA 95242

INSPECT PROGRAM PARTICIPANT: NO

EQUIPMENT DESCRIPTION:

CEREAL PLANT PACKAGING SYSTEM: TWIN PACK LINE A SERVED BY A FLEX-KLEEN MODEL 20 PCBK3 III DUST COLLECTOR (AC-48), TWIN PACK LINE B SERVED BY A FLEX-KLEEN MODEL 20 PCBL3 III DUST COLLECTOR (AC-49), LINE 4 BAGGING AND PACKAGING SERVED BY A FLEX-KLEEN MODEL 58USBC144-III DUST COLLECTOR (AC-53), 8 SCALES SERVED BY 4 BOEDECKER MODEL DC-58-144-3B DUST COLLECTORS (2 SCALES/DUST COLLECTOR), 8 BAGGERS EACH SERVED BY A DEDICATED BOEDECKER MODEL RDP-25-3-3-B DUST COLLECTOR, WHICH ARE ALL VENTED TO A FLEX-KLEEN CYCLONIC RECEIVER WITH SOCK FILTER (AC-89), CEREAL FILLING STATION (A-104) SERVED BY A DUST COLLECTION HOOD VENTED TO AN AMERICAN AIR FILTER MODEL B WET TYPE ROTOCLONE COLLECTOR (AC-104)

CONDITIONS

1. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
2. All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District Rule 2201] Federally Enforceable Through Title V Permit
3. Visible emissions from each dust collector (wet or dry) shall not equal or exceed 5% opacity for a period or periods aggregating more than three minutes in any one hour. [District Rules 2201 and 4102] Federally Enforceable Through Title V Permit
4. Visible emissions from baghouses and cyclones that are in operation shall be checked quarterly. If visible emissions are observed, corrective action shall be taken to eliminate visible emissions. If visible emissions cannot be corrected within 24 hours, a visible emissions test using EPA Method 9 shall be conducted. [District Rule 2520] Federally Enforceable Through Title V Permit
5. Dust collection systems shall be completely inspected annually for evidence of particulate matter breakthrough and repaired as needed. [District Rule 2520] Federally Enforceable Through Title V Permit
6. Baghouse dust collector filters shall be thoroughly inspected annually for tears, scuffs, abrasions, holes, or any evidence of particulate matter breakthrough and shall be replaced as needed. [District Rule 2520] Federally Enforceable Through Title V Permit
7. PM10 emissions from this permit unit shall not exceed 0.5 lb/day. [District Rule 2201] Federally Enforceable Through Title V Permit
8. The baghouses shall be equipped with a pressure differential gauge to indicate the pressure drop across the bags. The gauges shall be maintained in good working condition at all times and shall be located in an easily accessible location. [District Rule 2201] Federally Enforceable Through Title V Permit
9. The differential pressure, as indicated by the pressure differential gauge associated with each baghouse, shall stay within the operating range of 0.1 to 8 inches of water column. [District Rule 2201] Federally Enforceable Through Title V Permit
10. Differential operating pressure shall be monitored and recorded on each day that the baghouses operate. [District Rule 2201] Federally Enforceable Through Title V Permit
11. Records of all maintenance of the baghouses, including all change outs of filter media, shall be maintained. [District Rule 2201] Federally Enforceable Through Title V Permit

12. The permittee shall maintain records sufficient to demonstrate compliance with each emission limit and permit requirement. These records shall contain each calculated emission quantity as well as each process variable used in the respective calculations. [District Rules 1070 and 2201] Federally Enforceable Through Title V Permit
13. Records of dust collector maintenance, inspections, and repair shall be maintained. The records shall include identification of the equipment, date of inspection, corrective action taken, and identification of the individual performing the inspection. [District Rule 2520] Federally Enforceable Through Title V Permit
14. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E=3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E=17.37 \times P^{0.62}$ if P is greater than 30 tons per hour.(amended December 17, 1992) [District Rule 4202] Federally Enforceable Through Title V Permit
15. All records shall be retained for a period of at least five years and shall be made available for District inspection upon request. [District Rule 1070] Federally Enforceable Through Title V Permit

INSPECTION
EXPIRATION DATE: 04/30/2016
WORKSHEET

LEGAL OWNER OR OPERATOR: GENERAL MILLS OPERATIONS, INC
MAILING ADDRESS: WO1D DIANE CURELL
P.O. BOX 59145
MINNEAPOLIS, MN 55459-0145

LOCATION: WADE BROUGHTON
2000 W TURNER ROAD
LODI, CA 95242

INSPECT PROGRAM PARTICIPANT: NO

EQUIPMENT DESCRIPTION:

BULK SWEETENER RECEIVING AND STORAGE OPERATION WITH ONE TRUCK RECEIVING PIT, TWO TRUCK/RAIL RECEIVING PITS, NINE FILTER RECEIVERS, 48 STORAGE SILOS, FLOUR DRYING SYSTEM, AND ASSOCIATED CONVEYING EQUIPMENT, ALL SERVED BY TWENTY-NINE BIN VENT FILTERS AND TEN BAGHOUSES

CONDITIONS

1. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
2. The District shall be notified of any breakdown conditions in accordance with Rule 1100 (Equipment Breakdown as amended December 17, 1992). [District Rule 1100] Federally Enforceable Through Title V Permit
3. Material removed from dust collection systems shall be disposed of in a manner preventing entrainment into the atmosphere. [District Rule 2201] Federally Enforceable Through Title V Permit
4. The dust collection systems cleaning frequencies and durations shall be adjusted to optimize the control efficiency. [District Rule 2201] Federally Enforceable Through Title V Permit
5. All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District Rule 2201] Federally Enforceable Through Title V Permit
6. Visible emissions from each dust collector serving the bulk sweetener receiving and storage operation shall not equal or exceed 5% opacity for a period or periods aggregating more than three minutes in any one hour. [District Rule 2201] Federally Enforceable Through Title V Permit
7. Visible emissions from baghouses that are in operation shall be checked quarterly. If visible emissions are observed, corrective action shall be taken to eliminate visible emissions. If visible emissions cannot be corrected within 24 hours, a visible emissions test using EPA Method 9 shall be conducted. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
8. Baghouse dust collection systems shall be completely inspected annually for evidence of particulate matter breakthrough and repaired as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
9. Baghouse dust collector filters shall be thoroughly inspected annually for tears, scuffs, abrasions, holes, or any evidence of particulate matter breakthrough and shall be replaced as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
10. PM10 emissions from this operation shall not exceed 1.2 pounds in any one day. [District Rule 2201] Federally Enforceable Through Title V Permit
11. Sufficient records of production and emission factor data to verify compliance with the permitted emission limits shall be maintained on the premises and shall be updated daily. [District Rules 1070 and 2201] Federally Enforceable Through Title V Permit
12. Records of baghouse dust collector maintenance, inspections, and repair shall be maintained. The records shall include identification of the equipment, date of inspection, corrective action taken, and identification of the individual performing the inspection. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit

13. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E=3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E=17.37 \times P^{0.62}$ if P is greater than 30 tons per hour (amended December 17, 1992). [District Rule 4202] Federally Enforceable Through Title V Permit
14. All records shall be retained on-site for a period of five years and be made available for District inspection upon request. [District Rule 1070] Federally Enforceable Through Title V Permit

INSPECTION
WORKSHEET
EXPIRATION DATE: 04/30/2016

LEGAL OWNER OR OPERATOR: GENERAL MILLS OPERATIONS, INC
MAILING ADDRESS: WO1D DIANE CURELL
P.O. BOX 59145
MINNEAPOLIS, MN 55459-0145

LOCATION: WADE BROUGHTON
2000 W TURNER ROAD
LODI, CA 95242

INSPECT PROGRAM PARTICIPANT: NO

EQUIPMENT DESCRIPTION:

DRY MIX PLANT SYSTEM: PRE-MIX OPERATION CONSISTING OF BAG DUMP, MIXER AND SIFTER; SIX DAY BINS (H-17) VENTED TO A BAGHOUSE (HC-17); MINOR INGREDIENTS RECEIVER, DRY INGREDIENTS RECEIVER, AND PRE-MIXER VENTED TO A BAGHOUSE (HC-18)

CONDITIONS

1. Visible emissions from the dust collector serving the bag dump receiving and day bin storage shall not exceed 5% opacity for a period or periods aggregating more than three minutes in any one hour. [District NSR Rule] Federally Enforceable Through Title V Permit
2. Visible emissions from the dust collector serving the premix mixer #23 shall not exceed 5% opacity for a period or periods aggregating more than three minutes in any one hour. [District NSR Rule] Federally Enforceable Through Title V Permit
3. Each dust collector shall be equipped with a pressure differential gauge to indicate the pressure drop across the bags. The gauges shall be maintained in good working condition at all times and shall be located in easily accessible locations. [District NSR Rule] Federally Enforceable Through Title V Permit
4. Material removed from dust collectors shall be disposed of in a manner preventing entrainment into the atmosphere. [District NSR Rule] Federally Enforceable Through Title V Permit
5. The cleaning frequency and duration of the dust collectors shall be adjusted to optimize the control efficiency. [District NSR Rule] Federally Enforceable Through Title V Permit
6. Replacement bags or cartridges numbering at least 10% of the total number of bags or cartridges in the largest dust collector using each type of bag or cartridge shall be maintained on the premises. [District NSR Rule] Federally Enforceable Through Title V Permit
7. The PM10 emissions from the bag dump hopper, the sifter, and the six day bins shall not exceed 0.04 pounds during any one hour. [District NSR Rule] Federally Enforceable Through Title V Permit
8. The PM10 emissions from the premixing operation including mixer #23 shall not exceed 0.05 pounds during any one hour. [District NSR Rule] Federally Enforceable Through Title V Permit
9. Visible emissions from baghouses, that are in operation shall be checked quarterly. If visible emissions are observed, corrective action shall be taken to eliminate visible emissions. If visible emissions cannot be corrected within 24 hours, a visible emissions test using EPA Method 9 shall be conducted. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
10. Baghouse dust collection systems shall be completely inspected annually for evidence of particulate matter breakthrough and repaired as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
11. Baghouse dust collector filters shall be thoroughly inspected annually for tears, scuffs, abrasions, holes, or any evidence of particulate matter breakthrough and shall be replaced as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
12. Records of baghouse dust collector maintenance, inspections, and repair shall be maintained. The records shall include identification of the equipment, date of inspection, corrective action taken, and identification of the individual performing the inspection. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit

13. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E=3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E=17.37 \times P^{0.62}$ if P is greater than 30 tons per hour. (amended December 17, 1992) [District Rule 4202] Federally Enforceable Through Title V Permit
14. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit

INSPECTION
EXPIRATION DATE: 04/30/2016
WORKSHEET

LEGAL OWNER OR OPERATOR: GENERAL MILLS OPERATIONS, INC
MAILING ADDRESS: WO1D DIANE CURELLI
P.O. BOX 59145
MINNEAPOLIS, MN 55459-0145

LOCATION: WADE BROUGHTON
2000 W TURNER ROAD
LODI, CA 95242

INSPECT PROGRAM PARTICIPANT: NO

EQUIPMENT DESCRIPTION:
MIX PLANT SYSTEM (MIXER #24A) SERVED BY A BAGHOUSE

CONDITIONS

1. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
2. All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District NSR Rule] Federally Enforceable Through Title V Permit
3. The District shall be notified of any breakdown conditions in accordance with Rule 1100 (Equipment Breakdown as amended December 17, 1992). [District Rule 1100] Federally Enforceable Through Title V Permit
4. Visible emissions from baghouses that are in operation shall be checked quarterly. If visible emissions are observed, corrective action shall be taken to eliminate visible emissions. If visible emissions cannot be corrected within 24 hours, a visible emissions test using EPA Method 9 shall be conducted. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
5. Baghouse dust collection system shall be completely inspected annually for evidence of particulate matter breakthrough and repaired as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
6. Baghouse dust collector filters shall be thoroughly inspected annually for tears, scuffs, abrasions, holes, or any evidence of particulate matter breakthrough and shall be replaced as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
7. Records of baghouse dust collector maintenance, inspections, and repair shall be maintained. The records shall include identification of the equipment, date of inspection, corrective action taken, and identification of the individual performing the inspection. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
8. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E=3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E=17.37 \times P^{0.62}$ if P is greater than 30 tons per hour. (amended December 17, 1992) [District Rule 4202] Federally Enforceable Through Title V Permit

INSPECTION
EXPIRATION DATE: 04/30/2016
WORKSHEET

LEGAL OWNER OR OPERATOR: GENERAL MILLS OPERATIONS, INC
MAILING ADDRESS: WO1D DIANE CURELL
P.O. BOX 59145
MINNEAPOLIS, MN 55459-0145

LOCATION: WADE BROUGHTON
2000 W TURNER ROAD
LODI, CA 95242

INSPECT PROGRAM PARTICIPANT: NO

EQUIPMENT DESCRIPTION:
MIX PLANT SYSTEM (MIXER 24-B) SERVED BY A BAGHOUSE

CONDITIONS

1. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
2. All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District NSR Rule] Federally Enforceable Through Title V Permit
3. The District shall be notified of any breakdown conditions in accordance with Rule 1100 (Equipment Breakdown as amended December 17, 1992). [District Rule 1100] Federally Enforceable Through Title V Permit
4. Visible emissions from baghouses that are in operation shall be checked quarterly. If visible emissions are observed, corrective action shall be taken to eliminate visible emissions. If visible emissions cannot be corrected within 24 hours, a visible emissions test using EPA Method 9 shall be conducted. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
5. Baghouse dust collection system shall be completely inspected annually for evidence of particulate matter breakthrough and repaired as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
6. Baghouse dust collector filters shall be thoroughly inspected annually for tears, scuffs, abrasions, holes, or any evidence of particulate matter breakthrough and shall be replaced as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
7. Records of baghouse dust collector maintenance, inspections, and repair shall be maintained. The records shall include identification of the equipment, date of inspection, corrective action taken, and identification of the individual performing the inspection. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
8. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E=3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E=17.37 \times P^{0.62}$ if P is greater than 30 tons per hour. (amended December 17, 1992) [District Rule 4202] Federally Enforceable Through Title V Permit

INSPECTION
EXPIRATION DATE: 04/30/2016
WORKSHEET

LEGAL OWNER OR OPERATOR: GENERAL MILLS OPERATIONS, INC
MAILING ADDRESS: WO1D DIANE CURELL
P.O. BOX 59145
MINNEAPOLIS, MN 55459-0145

LOCATION: WADE BROUGHTON
2000 W TURNER ROAD
LODI, CA 95242

INSPECT PROGRAM PARTICIPANT: NO

EQUIPMENT DESCRIPTION:
MIX PLANT SYSTEM (MIXER #25) SERVED BY A BAGHOUSE

CONDITIONS

1. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
2. All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District NSR Rule] Federally Enforceable Through Title V Permit
3. The District shall be notified of any breakdown conditions in accordance with Rule 1100 (Equipment Breakdown as amended December 17, 1992). [District Rule 1100] Federally Enforceable Through Title V Permit
4. Visible emissions from baghouses that are in operation shall be checked quarterly. If visible emissions are observed, corrective action shall be taken to eliminate visible emissions. If visible emissions cannot be corrected within 24 hours, a visible emissions test using EPA Method 9 shall be conducted. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
5. Baghouse dust collection system shall be completely inspected annually for evidence of particulate matter breakthrough and repaired as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
6. Baghouse dust collector filters shall be thoroughly inspected annually for tears, scuffs, abrasions, holes, or any evidence of particulate matter breakthrough and shall be replaced as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
7. Records of baghouse dust collector maintenance, inspections, and repair shall be maintained. The records shall include identification of the equipment, date of inspection, corrective action taken, and identification of the individual performing the inspection. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
8. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E=3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E=17.37 \times P^{0.62}$ if P is greater than 30 tons per hour. (amended December 17, 1992) [District Rule 4202] Federally Enforceable Through Title V Permit

INSPECTION
EXPIRATION DATE: 04/30/2016
WORKSHEET

LEGAL OWNER OR OPERATOR: GENERAL MILLS OPERATIONS, INC
MAILING ADDRESS: WO1D DIANE CURELL
P.O. BOX 59145
MINNEAPOLIS, MN 55459-0145

LOCATION: WADE BROUGHTON
2000 W TURNER ROAD
LODI, CA 95242

INSPECT PROGRAM PARTICIPANT: NO

EQUIPMENT DESCRIPTION:
MIX PLANT SYSTEM (MIXER #26) SERVED BY A BAGHOUSE

CONDITIONS

1. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
2. All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District NSR Rule] Federally Enforceable Through Title V Permit
3. The District shall be notified of any breakdown conditions in accordance with Rule 1100 (Equipment Breakdown as amended December 17, 1992). [District Rule 1100] Federally Enforceable Through Title V Permit
4. Visible emissions from baghouses that are in operation shall be checked quarterly. If visible emissions are observed, corrective action shall be taken to eliminate visible emissions. If visible emissions cannot be corrected within 24 hours, a visible emissions test using EPA Method 9 shall be conducted. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
5. Baghouse dust collection system shall be completely inspected annually for evidence of particulate matter breakthrough and repaired as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
6. Baghouse dust collector filters shall be thoroughly inspected annually for tears, scuffs, abrasions, holes, or any evidence of particulate matter breakthrough and shall be replaced as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
7. Records of baghouse dust collector maintenance, inspections, and repair shall be maintained. The records shall include identification of the equipment, date of inspection, corrective action taken, and identification of the individual performing the inspection. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
8. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E=3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E=17.37 \times P^{0.62}$ if P is greater than 30 tons per hour. (amended December 17, 1992) [District Rule 4202] Federally Enforceable Through Title V Permit

INSPECTION
EXPIRATION DATE: 04/30/2016
WORKSHEET

LEGAL OWNER OR OPERATOR: GENERAL MILLS OPERATIONS, INC
MAILING ADDRESS: WO1D DIANE CURELL
P.O. BOX 59145
MINNEAPOLIS, MN 55459-0145

LOCATION: WADE BROUGHTON
2000 W TURNER ROAD
LODI, CA 95242

INSPECT PROGRAM PARTICIPANT: NO

EQUIPMENT DESCRIPTION:
MIX PLANT SYSTEM (MIXER#27) SERVED BY A BAGHOUSE

CONDITIONS

1. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
2. All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District NSR Rule] Federally Enforceable Through Title V Permit
3. The District shall be notified of any breakdown conditions in accordance with Rule 1100 (Equipment Breakdown as amended December 17, 1992). [District Rule 1100] Federally Enforceable Through Title V Permit
4. Visible emissions from baghouses that are in operation shall be checked quarterly. If visible emissions are observed, corrective action shall be taken to eliminate visible emissions. If visible emissions cannot be corrected within 24 hours, a visible emissions test using EPA Method 9 shall be conducted. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
5. Baghouse dust collection system shall be completely inspected annually for evidence of particulate matter breakthrough and repaired as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
6. Baghouse dust collector filters shall be thoroughly inspected annually for tears, scuffs, abrasions, holes, or any evidence of particulate matter breakthrough and shall be replaced as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
7. Records of baghouse dust collector maintenance, inspections, and repair shall be maintained. The records shall include identification of the equipment, date of inspection, corrective action taken, and identification of the individual performing the inspection. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
8. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E=3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E=17.37 \times P^{0.62}$ if P is greater than 30 tons per hour. (amended December 17, 1992) [District Rule 4202] Federally Enforceable Through Title V Permit

INSPECTION
EXPIRATION DATE: 04/30/2016
WORKSHEET

LEGAL OWNER OR OPERATOR: GENERAL MILLS OPERATIONS, INC
MAILING ADDRESS: WO1D DIANE CURELL
P.O. BOX 59145
MINNEAPOLIS, MN 55459-0145

LOCATION: WADE BROUGHTON
2000 W TURNER ROAD
LODI, CA 95242

INSPECT PROGRAM PARTICIPANT: NO

EQUIPMENT DESCRIPTION:

BULK MATERIAL MIXING OPERATION: TWO FLOUR/SWEETENER SCALE HOPPERS EACH SERVED BY ITS OWN HAF EQUIPMENT MODEL 24HLBV10S2 DUST COLLECTOR (HC-90, HC-91), A MIXER #29 AND MANUALLY ADDED INGREDIENTS OPERATION VENTED TO A HAF EQUIPMENT MODEL 24HLBV10S2 DUST COLLECTOR (HC-76), A DAY BIN, TWO TRANSITION PNEUMATIC CONVEYING SYSTEMS EACH SERVED BY ITS OWN HAF EQUIPMENT MODEL 18BV4S2 DUST COLLECTOR (HC-92, HC-93), AND TWO DAY BINS

CONDITIONS

1. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
2. All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District NSR Rule] Federally Enforceable Through Title V Permit
3. Each dust collector shall be equipped with a pressure differential gauge to indicate the pressure drop across the filter media. The gauge shall be maintained in good working condition at all times and shall be located in an easily accessible location. [District Rule 2201] Federally Enforceable Through Title V Permit
4. Replacement filter media numbering at least 10% of the total number of individual filters in the largest dust collector using each type of filter shall be maintained on the premises. [District Rule 2201] Federally Enforceable Through Title V Permit
5. Material removed from each dust collector shall be disposed of in a manner preventing entrainment into the atmosphere. [District Rule 2201] Federally Enforceable Through Title V Permit
6. Each dust collector's cleaning frequency and duration shall be adjusted to optimize the control efficiency. [District Rule 2201] Federally Enforceable Through Title V Permit
7. Visible emissions from each dust collector serving the bulk material mixing operation shall not equal or exceed 5% opacity for a period or periods aggregating more than three minutes in any one hour. [District Rule 2201] Federally Enforceable Through Title V Permit
8. The bagged ingredients shall be added in a manner minimizing fugitive emissions. [District Rule 2201] Federally Enforceable Through Title V Permit
9. PM10 emissions from this operation shall not exceed 1.7 pounds during any one day. [District Rule 2201] Federally Enforceable Through Title V Permit
10. Visible emissions from dust collectors that are in operation shall be checked quarterly. If visible emissions are observed, corrective action shall be taken to eliminate visible emissions. If visible emissions cannot be corrected within 24 hours, a visible emissions test using EPA Method 9 shall be conducted. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
11. Each dust collection system shall be completely inspected annually for evidence of particulate matter breakthrough and repaired as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
12. Dust collector filters shall be thoroughly inspected annually for tears, scuffs, abrasions, holes, or any evidence of particulate matter breakthrough and shall be replaced as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit

13. Records of dust collector maintenance, inspections, and repair shall be maintained. The records shall include identification of the equipment, date of inspection, corrective action taken, and identification of the individual performing the inspection. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
14. The permittee shall maintain records sufficient to demonstrate compliance with the daily emission limit. These records shall contain each calculated emission quantity as well as each process variable used in the respective calculations. All records shall be retained for a minimum of five years, and shall be made available for District inspection upon request. [District Rules 1070 and 2201] Federally Enforceable Through Title V Permit
15. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E=3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E=17.37 \times P^{0.62}$ if P is greater than 30 tons per hour. (amended December 17, 1992) [District Rule 4202] Federally Enforceable Through Title V Permit

INSPECTION
EXPIRATION DATE: 04/30/2016
WORKSHEET

LEGAL OWNER OR OPERATOR: GENERAL MILLS OPERATIONS, INC
MAILING ADDRESS: WO1D DIANE CURELL
P.O. BOX 59145
MINNEAPOLIS, MN 55459-0145

LOCATION: WADE BROUGHTON
2000 W TURNER ROAD
LODI, CA 95242

INSPECT PROGRAM PARTICIPANT: NO

EQUIPMENT DESCRIPTION:

DRY MIX PLANT - SEASONING MIXER SYSTEM CONSISTING OF ONE BAG DUMP STATION/SCALPER (H-27) AND ONE SEASONING MIXER (H-28) ALL VENTED TO A FLEX KLEEN MODEL 58-BV-9-II DUST COLLECTOR (HC-27); ONE BAG DUMP STATION; THREE DAY BINS (H-65, H-66, & H-67) EACH VENTED TO AN HAF EQUIPMENT MODEL 58-BV-9-S-II-G DUST COLLECTOR (H-65, H-66 & H-67); ONE SCALE HOPPER RECEIVER (H-64) VENTED TO AN INTEGRAL HAF EQUIPMENT MODEL 18-CT-62-S-II DUST COLLECTOR (HC-64); ONE SUPER SACK DUMP-HOPPER, ONE SCALPER, AND ONE DAY BIN (H-86) ALL VENTED TO AN HAF EQUIPMENT MODEL 58-BV-25-S-2-G DUST COLLECTOR (HC-86)

CONDITIONS

1. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
2. Visible emissions from each dust collector serving the dry mix plant shall not exceed 5% opacity for a period or periods aggregating more than three minutes in any one hour. [District NSR Rule] Federally Enforceable Through Title V Permit
3. All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District NSR Rule] Federally Enforceable Through Title V Permit
4. Each dust collector shall be equipped with a pressure differential gauge to indicate the pressure drop across the bags. The gauge shall be maintained in good working condition at all times and shall be located in an easily accessible location. [District NSR Rule] Federally Enforceable Through Title V Permit
5. Material removed from each dust collectors shall be disposed of in a manner preventing entrainment into the atmosphere. [District NSR Rule] Federally Enforceable Through Title V Permit
6. The cleaning frequency and duration of each dust collector shall be adjusted to optimize the control efficiency. [District NSR Rule] Federally Enforceable Through Title V Permit
7. Replacement filter media numbering at least 10% of the total number of individual filters in the largest dust collector using each type of filter shall be maintained on the premises. [District NSR Rule] Federally Enforceable Through Title V Permit
8. PM10 emissions from this operation shall not exceed 3.7 pounds during any one day. [District Rule 2201] Federally Enforceable Through Title V Permit
9. Visible emissions from dust collectors that are in operation shall be checked quarterly. If visible emissions are observed, corrective action shall be taken to eliminate visible emissions. If visible emissions cannot be corrected within 24 hours, a visible emissions test using EPA Method 9 shall be conducted. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
10. Each dust collection systems shall be completely inspected annually for evidence of particulate matter breakthrough and repaired as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
11. Dust collector filters shall be thoroughly inspected annually for tears, scuffs, abrasions, holes, or any evidence of particulate matter breakthrough and shall be replaced as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit

12. Records of dust collector maintenance, inspections, and repair shall be maintained. The records shall include identification of the equipment, date of inspection, corrective action taken, and identification of the individual performing the inspection. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
13. The permittee shall maintain records sufficient to demonstrate compliance with the daily emission limit. These records shall contain each calculated emission quantity as well as each process variable used in the respective calculations. All records shall be retained for a minimum of five years, and shall be made available for District inspection upon request. [District Rules 1070 and 2201] Federally Enforceable Through Title V Permit
14. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E=3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E=17.37 \times P^{0.62}$ if P is greater than 30 tons per hour. [District Rule 4202] Federally Enforceable Through Title V Permit

INSPECTION
EXPIRATION DATE: 04/30/2016
WORKSHEET

LEGAL OWNER OR OPERATOR: GENERAL MILLS OPERATIONS, INC
MAILING ADDRESS: WO1D DIANE CURELL
P.O. BOX 59145
MINNEAPOLIS, MN 55459-0145

LOCATION: WADE BROUGHTON
2000 W TURNER ROAD
LODI, CA 95242

INSPECT PROGRAM PARTICIPANT: NO

EQUIPMENT DESCRIPTION:
MIX PLANT SYSTEM (FLOUR GRINDING) SYSTEM SERVED BY ONE BAGHOUSE AND TWO BIN VENT FILTERS

CONDITIONS

1. Visible emissions from the HAF Equipment, Inc. dust collector (HC-47A) serving the flour day bin shall not exceed 5% opacity for a period or periods aggregating more than three minutes in any one hour. [District NSR Rule] Federally Enforceable Through Title V Permit
2. Visible emissions from the HAF Equipment, Inc. dust collector (HC-62) serving the transition hopper for mixer #23 shall not exceed 5% opacity for a period or periods aggregating more than three minutes in any one hour. [District NSR Rule] Federally Enforceable Through Title V Permit
3. Dust collectors HC-47A and HC-62 shall each be equipped with a pressure differential gauge to indicate the pressure drop across the bags. The gauges shall be maintained in good working condition at all times and shall be located in easily accessible locations. [District NSR Rule] Federally Enforceable Through Title V Permit
4. The cleaning frequency and duration of dust collectors HC-47 and HC-62 shall be adjusted to optimize the control efficiency. [District NSR Rule] Federally Enforceable Through Title V Permit
5. Replacement bags numbering at least 10% of the total number of bags in dust collector HC-47 shall be maintained on the premises. [District NSR Rule] Federally Enforceable Through Title V Permit
6. At least one (1) replacement bag for dust collector HC-62 shall be maintained on the premises. [District NSR Rule] Federally Enforceable Through Title V Permit
7. The PM10 emissions from the flour day bin (H-47) vented to a HAF Equipment, Inc. model 84-BV-36-S-3G dust collector (HC-47A) shall not exceed 0.07 pounds during any one hour. [District NSR Rule] Federally Enforceable Through Title V Permit
8. The PM10 emissions from the transition hopper for mixer #23 vented to a HAF Equipment, Inc. model 36-BV-4-S2G dust collector (HC-62) shall not exceed 0.02 pounds during any one hour. [District NSR Rule] Federally Enforceable Through Title V Permit
9. Visible emissions from baghouse and bin vent filters that are in operation shall be inspected quarterly. If visible emissions are observed, corrective action shall be taken to eliminate visible emissions. If visible emissions cannot be corrected within 24 hours, a visible emissions test using EPA Method 9 shall be conducted. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
10. Baghouse and bin vent dust collection system shall be completely inspected annually for evidence of particulate matter breakthrough and repaired as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
11. Baghouse and bin vent dust collector filters shall be thoroughly inspected annually for tears, scuffs, abrasions, holes, or any evidence of particulate matter breakthrough and shall be replaced as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
12. Records of baghouse dust collector and bin vent filters maintenance, inspections, and repairs shall be maintained. The records shall include identification of the equipment, date of inspection, corrective action taken, and identification of the individual performing the inspection. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit

CONDITIONS FOR PERMIT N-355-17-4

Page 2 of 2

13. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E=3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E=17.37 \times P^{0.62}$ if P is greater than 30 tons per hour. (amended December 17, 1992) [District Rule 4202] Federally Enforceable Through Title V Permit
14. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit

INSPECTION
WORKSHEET
EXPIRATION DATE: 04/30/2016

LEGAL OWNER OR OPERATOR: GENERAL MILLS OPERATIONS, INC
MAILING ADDRESS: WO1D DIANE CURELLI
P.O. BOX 59145
MINNEAPOLIS, MN 55459-0145

LOCATION: WADE BROUGHTON
2000 W TURNER ROAD
LODI, CA 95242

INSPECT PROGRAM PARTICIPANT: NO

EQUIPMENT DESCRIPTION:
MIX PLANT SYSTEM (SUGAR SYSTEM) SERVED BY SIX BAGHOUSES

CONDITIONS

1. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
2. All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District NSR Rule] Federally Enforceable Through Title V Permit
3. The District shall be notified of any breakdown conditions in accordance with Rule 1100 (Equipment Breakdown as amended December 17, 1992). [District Rule 1100] Federally Enforceable Through Title V Permit
4. Visible emissions from baghouses that are in operation shall be checked quarterly. If visible emissions are observed, corrective action shall be taken to eliminate visible emissions. If visible emissions cannot be corrected within 24 hours, a visible emissions test using EPA Method 9 shall be conducted. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
5. Baghouse dust collection systems shall be completely inspected annually for evidence of particulate matter breakthrough and repaired as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
6. Baghouse dust collector filters shall be thoroughly inspected annually for tears, scuffs, abrasions, holes, or any evidence of particulate matter breakthrough and shall be replaced as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
7. Records of baghouse dust collector maintenance, inspections, and repair shall be maintained. The records shall include identification of the equipment, date of inspection, corrective action taken, and identification of the individual performing the inspection. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
8. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E=3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E=17.37 \times P^{0.62}$ if P is greater than 30 tons per hour. (amended December 17, 1992) [District Rule 4202] Federally Enforceable Through Title V Permit

INSPECTION
EXPIRATION DATE: 04/30/2016
WORKSHEET

LEGAL OWNER OR OPERATOR: GENERAL MILLS OPERATIONS, INC
MAILING ADDRESS: WO1D DIANE CURELL
P.O. BOX 59145
MINNEAPOLIS, MN 55459-0145

LOCATION: WADE BROUGHTON
2000 W TURNER ROAD
LODI, CA 95242

INSPECT PROGRAM PARTICIPANT: NO

EQUIPMENT DESCRIPTION:

48.3 MMBTU/HR TRANE-MURRAY MODEL MCF2-50 BOILER EQUIPPED WITH A NATCOM MODEL P-52-G-24-1419
ULTRA LOW-NOX BURNER

CONDITIONS

1. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
2. The unit shall be fired on PUC-regulated natural gas as the primary fuel and LPG as the back-up fuel. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit
3. NOx emissions from natural gas or LPG combustion shall not exceed 7 ppmvd @ 3% O2 referenced as NO2 or 0.008 lb/MMBtu. [District Rules 2201, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
4. CO emissions from natural gas or LPG combustion shall not exceed 200 ppmvd @ 3% O2 or 0.15 lb/MMBtu. [District Rules 2201, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
5. VOC emissions from natural gas or LPG combustion shall not exceed 0.0055 lb/MMBtu. [District Rule 2201] Federally Enforceable Through Title V Permit
6. SOx emissions from natural gas combustion shall not exceed 0.00285 lb/MMBtu. [District Rule 2201] Federally Enforceable Through Title V Permit
7. SOx emissions from LPG combustion shall not exceed 0.017 lb/MMBtu. [District Rule 2201] Federally Enforceable Through Title V Permit
8. PM10 emissions from natural gas or LPG combustion shall not exceed 0.0076 lb/MMBtu. [District Rule 2201] Federally Enforceable Through Title V Permit
9. Source testing to measure natural gas-combustion NOx and CO emissions from this unit shall be conducted at least once every twelve (12) months. After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months. If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
10. If the unit is fired on back-up fuel for a period exceeding 100 cumulative hours in a calendar year, the permittee shall perform source test to measure NOx and CO emissions from back-up fuel combustion within next 60 days. [District Rule 2201] Federally Enforceable Through Title V Permit
11. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit
12. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit
13. The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

14. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. No determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in rules 4305, 4306 and 4320. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
15. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
16. NO_x emissions for source test purposes shall be determined using EPA Method 7E or ARB Method 100 on a ppmv basis. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
17. CO emissions for source test purposes shall be determined using EPA Method 10 or ARB Method 100. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
18. Stack gas oxygen (O₂) shall be determined using EPA Method 3 or 3A or ARB Method 100. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
19. The permittee shall monitor and record the stack concentration of NO_x, CO, and O₂ at least once every month (in which a source test is not performed) using a portable emission monitor that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
20. If either the NO_x or CO concentrations corrected to 3% O₂, as measured by the portable analyzer, exceed the allowable emissions concentration, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of the performing the notification and testing required by this condition. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
21. All alternate monitoring parameter emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive-minute period. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
22. The permittee shall maintain records of: (1) the date and time of NO_x, CO, and O₂ measurements, (2) the O₂ concentration in percent and the measured NO_x and CO concentrations corrected to 3% O₂, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
23. Permittee shall determine sulfur content of combusted gas annually or shall demonstrate that the combusted gas is provided from a PUC or FERC regulated source. [District Rules 1081 and 4320] Federally Enforceable Through Title V Permit
24. A record of the amount of fuel burned, on a monthly basis, shall be kept. [40 CFR Part 60 Subpart 60.48c(g)(2)] Federally Enforceable Through Title V Permit
25. The permittee shall maintain records that include the date and the number of hours of operation when unit is fired on LPG. [District Rule 2201] Federally Enforceable Through Title V Permit

26. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rule 2201, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

INSPECTION
WORKSHEET

INSPECTION
EXPIRATION DATE: 04/30/2016
WORKSHEET

LEGAL OWNER OR OPERATOR: GENERAL MILLS OPERATIONS, INC
MAILING ADDRESS: WO1D DIANE CURELL
P.O. BOX 59145
MINNEAPOLIS, MN 55459-0145

LOCATION: WADE BROUGHTON
2000 W TURNER ROAD
LODI, CA 95242

INSPECT PROGRAM PARTICIPANT: NO

EQUIPMENT DESCRIPTION:

3.48 MW COGENERATION SYSTEM CONSISTING OF AN ALLISON MODEL 501 KB GAS TURBINE WITH A 16 MMBTU/HR DUCT BURNER SYSTEM ALL SERVED BY A SELECTIVE CATALYTIC REDUCTION SYSTEM, AND AN ELECTRIC MOTOR STARTER

CONDITIONS

1. {2256} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201, 3.1] Federally Enforceable Through Title V Permit
2. Sulfur compound emissions shall not exceed 0.2% by volume, 2,000 ppmv, on a dry basis averaged over 15 consecutive minutes. [40 CFR 60.333(a); District Rule 4801, County Rule 407 (San Joaquin)] Federally Enforceable Through Title V Permit
3. Water must be injected directly into the turbine's primary combustion zone at a water-to-fuel ratio of 0.8 to 1. [District Rule 2201] Federally Enforceable Through Title V Permit
4. The owner or operator shall operate and maintain in calibration a system which continuously measures and records: control system operating parameters, elapsed time of operation of the turbine, and the fuel consumption and the ratio of water to fuel being fired in the turbine. [40 CFR 60.334(a) and District Rule 4703, 6.2.2] Federally Enforceable Through Title V Permit
5. Water injection system supply at the inlet to the turbine shall have an operational flow meter. The flow meter shall be equipped with a flow totalizer. [District Rule 2201] Federally Enforceable Through Title V Permit
6. This unit shall be fired exclusively on PUC-quality natural gas as defined in 40 CFR 60.331(u) which has a total sulfur content of less than or equal to 1.0 gr/100 scf. [40 CFR 60.333(b), District Rule 4201, County 407 (San Joaquin)] Federally Enforceable Through Title V Permit
7. Emissions from the gas turbine and duct burner system shall not exceed any of the following limits: 200 ppmvd CO @ 15% O₂; 0.0066 lb-PM₁₀/MMBtu; 0.0021 lb-VOC/MMBtu (referenced as methane); and 0.00285 lb-SO_x/MMBtu (referenced as SO₂). The CO emission limit is based on a 3-hour average. [District Rules 2201 and 4703] Federally Enforceable Through Title V Permit
8. Ammonia slip (NH₃) emissions shall not exceed 10 ppmvd @ 15% O₂. [District Rule 2201] Federally Enforceable Through Title V Permit
9. Except during startup and shutdown periods, emissions from the gas turbine and duct burner system shall not exceed 5 ppmvd NO_x @ 15% O₂, based on a 3-hour average. [District Rules 2201 and 4703, and 40 CFR 60.332(c)] Federally Enforceable Through Title V Permit
10. During startup and shutdown periods, emissions from the gas turbine and duct burner system shall not exceed 35 ppmvd NO_x @ 15% O₂. [District Rules 2201 and 4703] Federally Enforceable Through Title V Permit
11. The duration of each startup and each shutdown shall not exceed 2 hours per event. [District Rules 2201 and 4703] Federally Enforceable Through Title V Permit
12. The total combined duration of startup and shutdowns shall not exceed 3 hours in any one day and shall not exceed 156 hours in any one calendar year. [District Rules 2201 and 4703] Federally Enforceable Through Title V Permit

13. Startup shall be defined as the period of time during which a unit is brought from a shutdown status to its SCR operating temperature and pressure, including the time required by the unit's emission control system to reach full operation. Shutdown shall be defined as the period of time during which a unit is taken from an operational to non-operational status as the fuel supply to the unit is completely turned off. [District Rules 2201 and 4703] Federally Enforceable Through Title V Permit
14. The emission control systems shall be in operation and emissions shall be minimized insofar as technologically feasible during startup and shutdown periods. [District Rule 4703] Federally Enforceable Through Title V Permit
15. Source testing to demonstrate compliance with the NO_x, CO, and NH₃ emission limits of the gas turbine system shall be conducted at least once every twelve months. The 3-run tests shall be performed at four evenly spaced load points in the normal operating range of the gas turbine. [40 CFR 60.335(a), (b)(2) and District Rules 1081 and 4703] Federally Enforceable Through Title V Permit
16. {2276} Any gas turbine with an intermittently operated auxiliary burner shall demonstrate compliance with the auxiliary burner both on and off. [40 CFR 60.335(b) and District Rule 4703, 6.3.3] Federally Enforceable Through Title V Permit
17. The owner or operator shall be required to conform to the sampling facilities, test methods and procedures described in District Rule 1081. [District Rule 1081, 3.0 and 6.0] Federally Enforceable Through Title V Permit
18. The District must be notified 30 days prior to any performance testing and a test plan shall be submitted for District approval 15 days prior to such testing. [District Rule 1081, 7.1] Federally Enforceable Through Title V Permit
19. NO_x emissions (referenced as NO₂) shall be determined using EPA Method 7E or EPA Method 20. The test results shall be corrected to ISO standard conditions as defined in 40 CFR Part 60 Subpart GG Section 60.335. [District Rules 1081 and 4703, 40 CFR 60.335(b)(1)] Federally Enforceable Through Title V Permit
20. CO emissions shall be determined using EPA Method 10 or EPA Method 10B. [District Rules 1081 and 4703] Federally Enforceable Through Title V Permit
21. Oxygen content of the exhaust gas shall be determined by using EPA Method 3, EPA Method 3A, or EPA Method 20. [District Rules 2201 and 4703] Federally Enforceable Through Title V Permit
22. Ammonia (NH₃) emissions shall be determined using BAAQMD Method ST-1B. [District Rules 1081, 2201 and 4102] Federally Enforceable Through Title V Permit
23. {2277} The HHV and LHV of the fuel combusted shall be determined using ASTM D3588, ASTM 1826, or ASTM 1945. [40 CFR 60.332(a) and (b) and District Rule 4703, 6.4.5] Federally Enforceable Through Title V Permit
24. Performance testing shall be witnessed by authorized District personnel. Test results must be submitted to the District within 60 days of performance testing. [District Rule 1081, 7.2 and 7.3] Federally Enforceable Through Title V Permit
25. All continuous monitoring systems and monitoring devices shall be installed and operational prior to conducting performance tests. Verification of operational status shall, as a minimum, include completion of the manufacturer's written requirements or recommendations for installation, operation, and calibration of the device. [District Rule 4703 and 40 CFR 60.13(b)] Federally Enforceable Through Title V Permit
26. If this unit is not fired on PUC-regulated natural gas, the sulfur content of each natural gas fuel source shall be tested weekly to determine compliance with the fuel sulfur content limit. Upon the completion of eight consecutive weekly tests that demonstrate compliance with the fuel sulfur content limit, the sulfur content testing may be conducted on a monthly schedule. If any test shows non-compliance with the fuel sulfur content limit while on a monthly testing schedule, the testing schedule shall return to weekly testing until eight consecutive weeks demonstrate compliance with the fuel sulfur content limit. [District Rule 2201 and 40 CFR 60.334(h)(3)] Federally Enforceable Through Title V Permit
27. If this unit is fired on PUC-regulated natural gas, then the owner or operator shall maintain copies of the natural gas bills on file. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
28. Ammonia shall be injected whenever the selective catalytic reduction system catalyst temperature exceeds the minimum ammonia injection temperature recommended by the manufacturer. [District Rule 2201]

29. Except during startup and shutdown periods, the ammonia injection rate shall be 2.63 lb/hr, or greater, when the duct burners are on and shall be 2.47 lb/hr, or greater, when the duct burners are off. [District Rules 2201 and 4703] Federally Enforceable Through Title V Permit
30. If the ammonia injection rate is less than the minimum ammonia injection rate, the permittee shall return the ammonia injection rate above the minimum ammonia injection rate established during compliance testing as soon as possible, but no longer than eight hours after detection. If the ammonia injection rate is not returned above the minimum ammonia injection rate established during compliance testing within eight hours, the permittee shall notify the District within the following one hour and conduct a source test within 60 days of the first exceedance to demonstrate compliance with the applicable emission limits at the reduced ammonia injection rate. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of the performing the notification and testing required by this condition. [District Rules 2201 and 4703] Federally Enforceable Through Title V Permit
31. The permittee shall monitor and record the stack concentration of NO_x (as NO₂), CO, and O₂ weekly using a portable emissions monitor that meets District specifications. If compliance with the NO_x and CO emissions is demonstrated for eight consecutive weeks, then the monitoring frequency will be reduced to monthly. If deviations are observed in two consecutive months, monitoring shall revert to weekly until eight consecutive weeks show no deviations. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within one day of restarting the unit unless monitoring has been performed within the last month if on a monthly monitoring schedule, or within the week if on a weekly monitoring schedule. [District Rules 2201 and 4703] Federally Enforceable Through Title V Permit
32. If the NO_x and/or CO concentrations, as measured by the permittee with a portable emissions monitor, exceed the permitted emission limits, the permittee shall notify the District and return the NO_x and CO concentrations to the permitted emission limits as soon as possible but no longer than eight hours after detection. If the permittee's portable emission monitor readings continue to exceed the permitted emissions limits after eight hours, the permittee shall notify the District within the following one hour, and conduct a certified source test within 60 days to demonstrate compliance with the permitted emissions limits. In lieu of conducting a source test, the permittee may stipulate that a violation has occurred, subject to enforcement action. The permittee must correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of performing the notification and testing required by this condition. [District Rules 2201 and 4703] Federally Enforceable Through Title V Permit
33. Compliance with ammonia emission limit shall be demonstrated utilizing one of the following procedures: 1) The permittee may utilize a continuous in-stack ammonia monitor to verify compliance with the ammonia emissions limit. 2) The permittee may utilize a District-approved calculation method using measured surrogate parameters to determine the daily ammonia emissions in ppmvd @ 15% O₂. The permittee shall submit a detailed calculation protocol or monitoring plan for District Approval prior to operation of the turbine with the SCR system. 3) The permittee may utilize draeger tubes to measure the ammonia in the exhaust stack. If this option is chosen, the ammonia monitoring using draeger tubes shall be conducted when performing portable emission monitoring for NO_x, CO, and O₂ emissions. [District Rules 2201 and 4102] Federally Enforceable Through Title V Permit
34. The owner or operator shall submit a report of NO_x excess emissions and periods of monitor downtime to the APCO semi-annually, and this report shall be postmarked by the 30th day following the end of each 6-month period. [40 CFR 60.334(j)(5)] Federally Enforceable Through Title V Permit
35. NO_x excess emissions shall be defined as any unit operating hour for which the average water to fuel injection rate, as measured by the continuous monitoring system, falls below the water to fuel ratio specified in this permit, including during startup and shutdown. NO_x excess emissions shall also be defined as any 4-hour rolling unit operating hour in which the average ammonia injection rate falls below the minimum ammonia injection rate(s) specified in this permit, not including startup or shutdown. NO_x monitor downtime shall be defined as any operating hour during which the water to fuel ratio or ammonia injection rate is either not recorded or is invalid. [40 CFR 60.334(j)(1)] Federally Enforceable Through Title V Permit

36. The permittee shall maintain records of the duration of each startup and shutdown, the total combined duration of all startup and shutdowns for each operating day, and the total combined duration of all startup and shutdowns for each calendar year. [District Rules 2201 and 4703] Federally Enforceable Through Title V Permit
37. Owner or operator shall maintain a stationary gas turbine system operating log that includes, on a daily basis, the actual local time start-up and stop time, length and reason for reduced load periods, total hours of operation, type and quantity of fuel used. [District Rule 4703, 6.2.6] Federally Enforceable Through Title V Permit
38. The owner or operator of the stationary gas turbine and duct burner system shall maintain records of the following: (1) Water to fuel injection continuous monitoring system measurements, (2) Ammonia injection rate monitoring system measurements, and (3) Periodic NOx, CO, and O2 portable emission monitor measurements. [District Rules 2201 and 4703] Federally Enforceable Through Title V Permit
39. All records shall be retained for a minimum of five years, and shall be made available for District inspection upon request. [District Rules 2201 and 4703] Federally Enforceable Through Title V Permit
40. The requirements of 40 CFR 72.6 (b) do not apply to this source because only non-Title IV sources can qualify to use the applicable template. A permit shield is granted from this requirement. [District Rules 2520, 13.2 and 4703, 6.2] Federally Enforceable Through Title V Permit
41. Compliance with permit conditions in the Title V permit shall be deemed compliance with the requirements of Rule 407 (San Joaquin). A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
42. Compliance with permit conditions in the Title V permit shall be deemed compliance with District Rules 1081 (as amended 12/16/93), Section 3.0, 6.0, 7.1, 7.2, and 7.3 and 4201 (as amended 12/17/92). A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

INSPECTION
EXPIRATION DATE: 04/30/2016
WORKSHEET

LEGAL OWNER OR OPERATOR: GENERAL MILLS OPERATIONS, INC
MAILING ADDRESS: WO1D DIANE CURELL
P.O. BOX 59145
MINNEAPOLIS, MN 55459-0145

LOCATION: WADE BROUGHTON
2000 W TURNER ROAD
LODI, CA 95242

INSPECT PROGRAM PARTICIPANT: NO

EQUIPMENT DESCRIPTION:
GRAHAM SYSTEM CONSISTING OF TEN INGREDIENT BINS SERVED BY TEN INDIVIDUAL BAGHOUSES

CONDITIONS

1. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
2. Each baghouse shall be equipped with a pressure differential gauge to indicate the pressure drop across the bags. The gauges shall be maintained in good working condition at all times and shall be located in easily accessible locations. [District NSR Rule] Federally Enforceable Through Title V Permit
3. Replacement bags numbering at least 10% of the total number of bags in the largest baghouse using each type of bag shall be maintained on the premises. [District NSR Rule] Federally Enforceable Through Title V Permit
4. Material removed from the baghouses shall be disposed of in a manner preventing entrainment into the atmosphere. [District NSR Rule] Federally Enforceable Through Title V Permit
5. The baghouse cleaning frequency and duration shall be adjusted to optimize the control efficiency. [District NSR Rule] Federally Enforceable Through Title V Permit
6. Visible emissions from baghouses that are in operation shall be checked quarterly. If visible emissions are observed, corrective action shall be taken to eliminate visible emissions. If visible emissions cannot be corrected within 24 hours, a visible emissions test using EPA Method 9 shall be conducted. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
7. Baghouse dust collection systems shall be completely inspected annually for evidence of particulate matter breakthrough and repaired as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
8. Baghouse dust collector filters shall be thoroughly inspected annually for tears, scuffs, abrasions, holes, or any evidence of particulate matter breakthrough and shall be replaced as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
9. Records of baghouse dust collector maintenance, inspections, and repair shall be maintained. The records shall include identification of the equipment, date of inspection, corrective action taken, and identification of the individual performing the inspection. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
10. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E=3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E=17.37 \times P^{0.62}$ if P is greater than 30 tons per hour. (amended December 17, 1992) [District Rule 4202] Federally Enforceable Through Title V Permit

INSPECTION
EXPIRATION DATE: 04/30/2016
WORKSHEET

LEGAL OWNER OR OPERATOR: GENERAL MILLS OPERATIONS, INC
MAILING ADDRESS: WO1D DIANE CURELLI
P.O. BOX 59145
MINNEAPOLIS, MN 55459-0145

LOCATION: WADE BROUGHTON
2000 W TURNER ROAD
LODI, CA 95242

INSPECT PROGRAM PARTICIPANT: NO

EQUIPMENT DESCRIPTION:

GRAHAM SYSTEM: DOUGH PROCESSING SYSTEM CONSISTING OF DOUGH FORMERS, WET DOUGH RECEIVERS (D54) SERVING DOUGH DRYER #1 (D-12), DOUGH DRYER #2 (D-13), AND DOUGH DRYER #3 (D-14) CONNECTED IN SERIES. THIS OPERATION ALSO SERVES PERMIT UNIT #N-355-38

CONDITIONS

1. The receivers (D-54) are vented to a Flex Kleen model 30 PVBL25-I pulse jet baghouse (DC-54). [District NSR Rule] Federally Enforceable Through Title V Permit
2. Dryer #1 (D-12) is vented to a Flex Kleen model 30PRBG 128 baghouse. [District NSR Rule] Federally Enforceable Through Title V Permit
3. Dryer #2 (D-13) is vented to a Flex Kleen model 30PRBG 128 baghouse. [District NSR Rule] Federally Enforceable Through Title V Permit
4. Dryer #3 (D-14) is vented to a wetted Ducon venturi-rod cyclonic scrubber. [District NSR Rule] Federally Enforceable Through Title V Permit
5. Visible emissions from the Flex Kleen Model 30PVBL25-I baghouse (DC-54) serving the receivers (D-54) shall not exceed 5% opacity for a period or periods aggregating more than three minutes in any one hour. [District NSR Rule] Federally Enforceable Through Title V Permit
6. Visible emissions from the two Flex Kleen model 30PRBG 128 baghouses serving Dryer #1 and 2 shall not exceed 5% opacity for a period or periods aggregating more than three minutes in any one hour. [District NSR Rule] Federally Enforceable Through Title V Permit
7. Visible emissions from the Ducon venturi-rod cyclonic scrubber serving dryer #3 shall not exceed 5% opacity for a period or periods aggregating more than three minutes in any one hour. [District NSR Rule] Federally Enforceable Through Title V Permit
8. Each dust collector shall be equipped with a pressure differential gauge to indicate the pressure drop across the bags. Each gauge shall be maintained in good working condition at all times and shall be located in an easily accessible location. [District NSR Rule] Federally Enforceable Through Title V Permit
9. Material removed from dust collectors shall be disposed of in a manner preventing entrainment into the atmosphere. [District NSR Rule] Federally Enforceable Through Title V Permit
10. The cleaning frequency and duration of dust collectors shall be adjusted to optimize the control efficiency. [District NSR Rule] Federally Enforceable Through Title V Permit
11. Replacement bags numbering at least 10% of the total number of bags in each dust collector shall be maintained on the premises. [District NSR Rule] Federally Enforceable Through Title V Permit
12. PM10 emissions from dryer #1 (D-12) served by a Flex Kleen Model 30PRBG baghouse shall not exceed 0.0042 lb-PM10/ton. [District NSR Rule] Federally Enforceable Through Title V Permit
13. Dryer #1 process rate shall not exceed 72 tons per day. [District NSR Rule] Federally Enforceable Through Title V Permit

14. PM10 emissions from dryer #2 (D-13) served by a Flex Kleen Model 30PRBG baghouse shall not exceed 0.0042 lb-PM10/ton. [District NSR Rule] Federally Enforceable Through Title V Permit
15. Dryer #2 process rate shall not exceed 72 tons per day. [District NSR Rule] Federally Enforceable Through Title V Permit
16. PM10 emissions from dryer #3 (D-14) served by a wetted Ducon venturi-rod cyclonic scrubber shall not exceed 0.0042 lb-PM10/ton. [District NSR Rule] Federally Enforceable Through Title V Permit
17. Dryer #3 process rate shall not exceed 72 tons per day. [District NSR Rule] Federally Enforceable Through Title V Permit
18. The PM10 emissions from the receivers (D-54) vented to a Flex Kleen Model 30PVB25-I baghouse (DC-54) shall not exceed 0.05 lb-PM10/ton. [District NSR Rule] Federally Enforceable Through Title V Permit
19. Receivers (D-54) process rate shall not exceed 72 tons per day. [District NSR Rule] Federally Enforceable Through Title V Permit
20. Daily and monthly records of the amount of dough processed thru the receivers (D-54) and each of the dryers shall be maintained. [District NSR Rule] Federally Enforceable Through Title V Permit
21. Visible emissions from baghouses that are in operation shall be checked daily. If visible emissions are observed, corrective action shall be taken to eliminate visible emissions. If visible emissions cannot be corrected within 24 hours, a visible emissions test using EPA Method 9 shall be conducted. [District Rule 2520, 9.3.2 and 40 CFR 64] Federally Enforceable Through Title V Permit
22. Baghouse dust collection system shall be completely inspected annually for evidence of particulate matter breakthrough and repaired as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
23. Baghouse dust collector filters shall be thoroughly inspected annually for tears, scuffs, abrasions, holes, or any evidence of particulate matter breakthrough and shall be replaced as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
24. Records of baghouse dust collector maintenance, inspections, and repair shall be maintained. The records shall include identification of the equipment, date of inspection, corrective action taken, and identification of the individual performing the inspection. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
25. Visible emissions from Ducon venturi-rod cyclonic scrubber shall be checked quarterly, during operation. If visible emissions are observed, corrective action shall be taken to eliminate visible emissions. If visible emissions cannot be corrected within 24 hours, a visible emissions test using EPA Method 9 shall be conducted. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
26. The Ducon venturi-rod cyclonic scrubber system shall be completely inspected annually for evidence of particulate matter breakthrough and repaired as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
27. Records of Ducon venturi-rod cyclonic scrubber maintenance, inspections, and repair shall be maintained. The records shall include identification of the equipment, date of inspection, corrective action taken, and identification of the individual performing the inspection. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
28. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E=3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E=17.37 \times P^{0.62}$ if P is greater than 30 tons per hour. (amended December 17, 1992) [District Rule 4202] Federally Enforceable Through Title V Permit
29. Particulate matter emissions shall not exceed 0.1 grain/dscf. [District Rule 4201, 3.1] Federally Enforceable Through Title V Permit
30. All records required by this permit shall be maintained and retained on site for a minimum of 5 years, and shall be made available for District inspection upon request. [District NSR Rule] Federally Enforceable Through Title V Permit

INSPECTION
EXPIRATION DATE: 04/30/2016
WORKSHEET

LEGAL OWNER OR OPERATOR: GENERAL MILLS OPERATIONS, INC
MAILING ADDRESS: WO1D DIANE CURELL
P.O. BOX 59145
MINNEAPOLIS, MN 55459-0145

LOCATION: WADE BROUGHTON
2000 W TURNER ROAD
LODI, CA 95242

INSPECT PROGRAM PARTICIPANT: NO

EQUIPMENT DESCRIPTION:

GRAHAM SYSTEM: PELLET COOLER (D-18) SERVED BY A BAGHOUSE (DC-18), PELLET TOASTER (D-16) WITH TWO 2.5 MMBTU/HR NATURAL GAS-FIRED BURNERS SERVED BY TWO CYCLONES AND A WET SCRUBBER (DC-16), AND DAY BINS (D-21) SERVED BY A BAGHOUSE (DC-21)

CONDITIONS

1. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
2. The baghouse shall be equipped with a pressure differential gauge to indicate the pressure drop across the bags. The gauge shall be maintained in good working condition at all times and shall be located in an easily accessible location. [District NSR Rule] Federally Enforceable Through Title V Permit
3. Replacement bags numbering at least 10% of the total number of bags in the largest baghouse using each type of bag shall be maintained on the premises. [District NSR Rule] Federally Enforceable Through Title V Permit
4. Material removed from dust collector(s) shall be disposed of in a manner preventing entrainment into the atmosphere. [District NSR Rule] Federally Enforceable Through Title V Permit
5. The baghouse cleaning frequency and duration shall be adjusted to optimize the control efficiency. [District NSR Rule] Federally Enforceable Through Title V Permit
6. Particulate matter emissions from the scrubber shall be no more than 0.1 gr/dscf and 10 lb/hr. [District Rules 4201 and 4301] Federally Enforceable Through Title V Permit
7. The scrubber shall have an operational differential pressure indicator. [District NSR Rule] Federally Enforceable Through Title V Permit
8. The scrubber liquid supply (at inlet to scrubber) shall have an operational pressure indicator and an operational flow meter. [District NSR Rule] Federally Enforceable Through Title V Permit
9. The scrubber sprays and/or nozzles shall be maintained in an optimum working condition. [District NSR Rule] Federally Enforceable Through Title V Permit
10. Fresh scrubber liquid shall be added as necessary to maintain scrubbing efficiency. The dissolved and suspended solids and the condensed organics shall not exceed 20% of the scrubbing stream. [District NSR Rule] Federally Enforceable Through Title V Permit
11. Sampling facilities for source testing shall be provided in accordance with the provisions of Rule 1081 (Source Sampling). [District Rule 1081] Federally Enforceable Through Title V Permit
12. The scrubber's liquid flow rate shall not be less than 1.25 gallons per minute. [District NSR Rule] Federally Enforceable Through Title V Permit
13. Visible emissions from the fabric filter(s) serving this operation shall not equal or exceed 5% opacity for a period or periods aggregating more than three minutes in any one hour. [District NSR Rule] Federally Enforceable Through Title V Permit

14. Visible emissions from baghouse, cyclones and scrubber that are in operation shall be checked quarterly. If visible emissions are observed, corrective action shall be taken to eliminate visible emissions. If visible emissions cannot be corrected within 24 hours, a visible emissions test using EPA Method 9 shall be conducted. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
15. Baghouse, cyclones, and scrubber dust collection systems shall be completely inspected annually for evidence of particulate matter breakthrough and repaired as needed. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
16. Baghouse dust collector filters shall be thoroughly inspected annually for tears, scuffs, abrasions, holes, or any evidence of particulate matter breakthrough and shall be replaced as needed. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
17. Records of baghouse, cyclones, and scrubber dust collector maintenance, inspections, and repair shall be maintained. The records shall include identification of the equipment, date of inspection, corrective action taken, and identification of the individual performing the inspection. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
18. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E=3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E=17.37 \times P^{0.62}$ if P is greater than 30 tons per hour. (amended December 17, 1992) [District Rule 4202] Federally Enforceable Through Title V Permit
19. The scrubber's liquid flow rate shall be observed and recorded quarterly during operation of this equipment. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
20. Records of the scrubber's liquid low rate shall be maintained. The records shall include identification of the equipment, date of inspections, corrective action taken, and identification of the individual performing the inspection. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
21. All records shall be retained for a period of at least 5 years and shall be made available for District inspection upon request. [District Rule 1070] Federally Enforceable Through Title V Permit

INSPECTION
WORKSHEET
EXPIRATION DATE: 04/30/2016

LEGAL OWNER OR OPERATOR: GENERAL MILLS OPERATIONS, INC
MAILING ADDRESS: WO1D DIANE CURELL
P.O. BOX 59145
MINNEAPOLIS, MN 55459-0145

LOCATION: WADE BROUGHTON
2000 W TURNER ROAD
LODI, CA 95242

INSPECT PROGRAM PARTICIPANT: NO

EQUIPMENT DESCRIPTION:

GRAHAM SYSTEM: RECOVERY TOASTER (D-17) SERVED BY A CYCLONE AND A WET SCRUBBER (DC-17), A RECOVERY COOLER (D-19) SERVED BY A BAGHOUSE (DC-19), AND A GRINDER (D-20) SERVED BY TWO FILTER RECEIVERS (DC-20 AND DC-33)

CONDITIONS

1. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
2. The baghouse shall be equipped with a pressure differential gauge to indicate the pressure drop across the bags. The gauge shall be maintained in good working condition at all times and shall be located in an easily accessible location. [District NSR Rule] Federally Enforceable Through Title V Permit
3. Replacement bags numbering at least 10% of the total number of bags in the largest baghouse using each type of bag shall be maintained on the premises. [District NSR Rule] Federally Enforceable Through Title V Permit
4. Material removed from the baghouse shall be disposed of in a manner preventing entrainment into the atmosphere. [District NSR Rule] Federally Enforceable Through Title V Permit
5. The baghouse cleaning frequency and duration shall be adjusted to optimize the control efficiency. [District NSR Rule] Federally Enforceable Through Title V Permit
6. Particulate matter emissions from the scrubber shall be no more than 0.1 gr/dscf and 10 lb/hr. [District Rules 4201 and 4301] Federally Enforceable Through Title V Permit
7. The scrubber shall have an operational differential pressure indicator. [District NSR Rule] Federally Enforceable Through Title V Permit
8. The scrubber liquid supply (at inlet to scrubber) shall have an operational pressure indicator and an operational flow meter. [District NSR Rule] Federally Enforceable Through Title V Permit
9. The scrubber sprays and/or nozzles shall be maintained in an optimum working condition. [District NSR Rule] Federally Enforceable Through Title V Permit
10. Fresh scrubber liquid shall be added as necessary to maintain scrubbing efficiency. The dissolved and suspended solids and the condensed organics shall not exceed 20% of the scrubbing stream. [District NSR Rule] Federally Enforceable Through Title V Permit
11. Sampling facilities for source testing shall be provided in accordance with the provisions of Rule 1081 (Source Sampling). [District Rule 1081] Federally Enforceable Through Title V Permit
12. The scrubber's liquid flow rate shall not be less than 0.28 gallons per minute. [District NSR Rule] Federally Enforceable Through Title V Permit
13. Visible emissions from the fabric filter(s) serving this operation shall not equal or exceed 5% opacity for a period or periods aggregating more than three minutes in any one hour. [District NSR Rule] Federally Enforceable Through Title V Permit

14. Visible emissions from the baghouse, cyclone, and scrubber that are in operation shall be checked quarterly. If visible emissions are observed, corrective action shall be taken to eliminate visible emissions. If visible emissions cannot be corrected within 24 hours, a visible emissions test using EPA Method 9 shall be conducted. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
15. Baghouse, cyclone, and scrubber dust collection systems shall be completely inspected annually for evidence of particulate matter breakthrough and repaired as needed. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
16. Baghouse dust collector filters shall be thoroughly inspected annually for tears, scuffs, abrasions, holes, or any evidence of particulate matter breakthrough and shall be replaced as needed. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
17. Records of baghouse, cyclone, and scrubber dust collector maintenance, inspections, and repair shall be maintained. The records shall include identification of the equipment, date of inspection, corrective action taken, and identification of the individual performing the inspection. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
18. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E=3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E=17.37 \times P^{0.62}$ if P is greater than 30 tons per hour. (amended December 17, 1992) [District Rule 4202] Federally Enforceable Through Title V Permit
19. The scrubber's liquid flow rate shall be observed and recorded quarterly during operation of this equipment. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
20. Records of the scrubber's liquid flow rate shall be maintained. The records shall include identification of the equipment, date of inspections, corrective action taken, and identification of the individual performing the inspection. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
21. All records shall be retained for a period of at least 5 years and shall be made available for District inspection upon request. [District Rule 1070] Federally Enforceable Through Title V Permit

INSPECTION
EXPIRATION DATE: 04/30/2016
WORKSHEET

LEGAL OWNER OR OPERATOR: GENERAL MILLS OPERATIONS, INC
MAILING ADDRESS: WO1D DIANE CURELLI
P.O. BOX 59145
MINNEAPOLIS, MN 55459-0145

LOCATION: WADE BROUGHTON
2000 W TURNER ROAD
LODI, CA 95242

INSPECT PROGRAM PARTICIPANT: NO

EQUIPMENT DESCRIPTION:
CEREAL PLANT VACUUM SYSTEM SERVED BY A BAGHOUSE.

CONDITIONS

1. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
2. Each baghouse shall be equipped with a pressure differential gauge to indicate the pressure drop across the bags. The gauges shall be maintained in good working condition at all times and shall be located in easily accessible locations. [District NSR Rule] Federally Enforceable Through Title V Permit
3. Replacement bags numbering at least 10% of the total number of bags in the largest baghouse using each type of bag shall be maintained on the premises. [District NSR Rule] Federally Enforceable Through Title V Permit
4. Material removed from dust collector(s) shall be disposed of in a manner preventing entrainment into the atmosphere. [District NSR Rule] Federally Enforceable Through Title V Permit
5. The baghouse cleaning frequency and duration shall be adjusted to optimize the control efficiency. [District NSR Rule] Federally Enforceable Through Title V Permit
6. Visible emissions from baghouses that are in operation shall be checked quarterly. If visible emissions are observed, corrective action shall be taken to eliminate visible emissions. If visible emissions cannot be corrected within 24 hours, a visible emissions test using EPA Method 9 shall be conducted. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
7. Baghouse dust collection system shall be completely inspected annually for evidence of particulate matter breakthrough and repaired as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
8. Baghouse dust collector filters shall be thoroughly inspected annually for tears, scuffs, abrasions, holes, or any evidence of particulate matter breakthrough and shall be replaced as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
9. Records of baghouse dust collector maintenance, inspections, and repair shall be maintained. The records shall include identification of the equipment, date of inspection, corrective action taken, and identification of the individual performing the inspection. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
10. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E=3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E=17.37 \times P^{0.62}$ if P is greater than 30 tons per hour.(amended December 17, 1992) [District Rule 4202] Federally Enforceable Through Title V Permit

EXPIRATION DATE: 04/30/2016

LEGAL OWNER OR OPERATOR: GENERAL MILLS OPERATIONS, INC
MAILING ADDRESS: WO1D DIANE CURELL
P.O. BOX 59145
MINNEAPOLIS, MN 55459-0145

LOCATION: WADE BROUGHTON
2000 W TURNER ROAD
LODI, CA 95242

INSPECT PROGRAM PARTICIPANT: NO

EQUIPMENT DESCRIPTION:
GRAHAM SYSTEM: SLURRY COOLER SERVED BY A BAGHOUSE

CONDITIONS

1. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
2. Each baghouse shall be equipped with a pressure differential gauge to indicate the pressure drop across the bags. The gauges shall be maintained in good working condition at all times and shall be located in easily accessible locations. [District NSR Rule] Federally Enforceable Through Title V Permit
3. Replacement bags numbering at least 10% of the total number of bags in the largest baghouse using each type of bag shall be maintained on the premises. [District NSR Rule] Federally Enforceable Through Title V Permit
4. Material removed from dust collector(s) shall be disposed of in a manner preventing entrainment into the atmosphere. [District NSR Rule] Federally Enforceable Through Title V Permit
5. The baghouse cleaning frequency and duration shall be adjusted to optimize the control efficiency. [District NSR Rule] Federally Enforceable Through Title V Permit
6. Visible emissions from baghouses that are in operation shall be checked quarterly. If visible emissions are observed, corrective action shall be taken to eliminate visible emissions. If visible emissions cannot be corrected within 24 hours, a visible emissions test using EPA Method 9 shall be conducted. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
7. Baghouse dust collection system shall be completely inspected annually for evidence of particulate matter breakthrough and repaired as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
8. Baghouse dust collector filters shall be thoroughly inspected annually for tears, scuffs, abrasions, holes, or any evidence of particulate matter breakthrough and shall be replaced as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
9. Records of baghouse dust collector maintenance, inspections, and repair shall be maintained. The records shall include identification of the equipment, date of inspection, corrective action taken, and identification of the individual performing the inspection. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
10. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E=3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E=17.37 \times P^{0.62}$ if P is greater than 30 tons per hour. (amended December 17, 1992) [District Rule 4202] Federally Enforceable Through Title V Permit

INSPECTION
EXPIRATION DATE: 04/30/2016
WORKSHEET

LEGAL OWNER OR OPERATOR: GENERAL MILLS OPERATIONS, INC
MAILING ADDRESS: WO1D DIANE CURELL
P.O. BOX 59145
MINNEAPOLIS, MN 55459-0145

LOCATION: WADE BROUGHTON
2000 W TURNER ROAD
LODI, CA 95242

INSPECT PROGRAM PARTICIPANT: NO

EQUIPMENT DESCRIPTION:

CEREAL COATING OPERATION: ONE LINE WITH ENROBER (D23), DRYER (D22) VENTED TO SCRUBBER (DC22), & COOLER (D24) VENTED TO FABRIC FILTER (DC24); THE SECOND LINE WITH ENROBER (D25) VENTED TO SCRUBBER (DC25)

CONDITIONS

1. Particulate matter emissions from the scrubber shall be no more than 0.1 gr/dscf and 10 lb/hr. [District Rules 4201 and 4301] Federally Enforceable Through Title V Permit
2. Each scrubber shall have an operational differential pressure indicator. [District NSR Rule] Federally Enforceable Through Title V Permit
3. Each scrubber's liquid supply (at inlet to scrubber) shall have an operational flow meter. [District NSR Rule] Federally Enforceable Through Title V Permit
4. Each scrubber's sprays and/or nozzles shall be maintained in an optimum working condition. [District NSR Rule] Federally Enforceable Through Title V Permit
5. Fresh scrubber liquid shall be added as necessary to maintain scrubbing efficiency. [District NSR Rule] Federally Enforceable Through Title V Permit
6. For wet scrubber DC-22, the liquid flow rate shall not be less than 0.56 gallons per minute. [District NSR Rule] Federally Enforceable Through Title V Permit
7. For wet scrubber DC-25, the liquid flow rate shall not be less than 0.56 gallons per minute. [District NSR Rule] Federally Enforceable Through Title V Permit
8. The PM10 emissions from the Enrober (D-23) shall not exceed 0.01 pounds during any one hour. [District NSR Rule] Federally Enforceable Through Title V Permit
9. Visible emissions from the fabric filter(s) serving this operation shall not equal or exceed 5% opacity for a period or periods aggregating more than three minutes in any one hour. [District NSR Rule] Federally Enforceable Through Title V Permit
10. Material removed from fabric filter shall be disposed of in a manner preventing entrainment into the atmosphere. [District NSR Rule] Federally Enforceable Through Title V Permit
11. The fabric filter cleaning frequency and duration shall be adjusted to optimize the control efficiency. [District NSR Rule] Federally Enforceable Through Title V Permit
12. Visible emissions from baghouses and scrubbers that are in operation shall be checked quarterly. If visible emissions are observed, corrective action shall be taken to eliminate visible emissions. If visible emissions cannot be corrected within 24 hours, a visible emissions test using EPA Method 9 shall be conducted. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
13. Fabric filter and scrubber dust collection systems shall be completely inspected annually for evidence of particulate matter breakthrough and repaired as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit

14. Fabric filter dust collector filters shall be thoroughly inspected annually for tears, scuffs, abrasions, holes, or any evidence of particulate matter breakthrough and shall be replaced as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
15. Records of fabric filter and scrubber collector maintenance, inspections, and repair shall be maintained. The records shall include identification of the equipment, date of inspection, corrective action taken, and identification of the individual performing the inspection. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
16. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E=3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E=17.37 \times P^{0.62}$ if P is greater than 30 tons per hour. (amended December 17, 1992) [District Rule 4202] Federally Enforceable Through Title V Permit
17. Each scrubber's liquid flow rate shall be observed and recorded quarterly during operation of this equipment. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
18. Records of each scrubber's liquid flow rate shall be maintained. The records shall include identification of the equipment, date of inspections, corrective action taken, and identification of the individual performing the inspection. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
19. All records shall be retained for a period of at least 5 years and shall be made available for District inspection upon request. [District Rule 1070] Federally Enforceable Through Title V Permit

INSPECTION
EXPIRATION DATE: 04/30/2016
WORKSHEET

LEGAL OWNER OR OPERATOR: GENERAL MILLS OPERATIONS, INC
MAILING ADDRESS: WO1D DIANE CURELL
P.O. BOX 59145
MINNEAPOLIS, MN 55459-0145

LOCATION: WADE BROUGHTON
2000 W TURNER ROAD
LODI, CA 95242

INSPECT PROGRAM PARTICIPANT: NO

EQUIPMENT DESCRIPTION:
TOKAY CEREAL PLANT; PNEUMATIC RAILCAR RECEIVING SYSTEM SERVED BY TWO (2) FLEX-KLEEN BAGHOUSES (MODEL #58 CTBC 32)

CONDITIONS

1. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
2. Each baghouse shall be equipped with a pressure differential gauge to indicate the pressure drop across the bags. The gauge shall be maintained in good working condition at all times and shall be located in an easily accessible location. [District NSR Rule] Federally Enforceable Through Title V Permit
3. Replacement bags numbering at least 10% of the total number of bags in the largest baghouse using each type of bag shall be maintained on the premises. [District NSR Rule] Federally Enforceable Through Title V Permit
4. Material removed from the baghouses shall be disposed of in a manner preventing entrainment into the atmosphere. [District NSR Rule] Federally Enforceable Through Title V Permit
5. The baghouse cleaning frequency and duration shall be adjusted to optimize the control efficiency. [District NSR Rule] Federally Enforceable Through Title V Permit
6. Total controlled PM10 emissions from the Tokay Plant shall not exceed 4.4 pounds during any one day. [District NSR Rule] Federally Enforceable Through Title V Permit
7. Visible emissions from baghouses that are in operation shall be checked daily. If visible emissions are observed, corrective action shall be taken to eliminate visible emissions. If visible emissions cannot be corrected within 24 hours, a visible emissions test using EPA Method 9 shall be conducted. [District Rule 2520, 9.3.2 and 40 CFR 64] Federally Enforceable Through Title V Permit
8. Baghouse dust collection systems shall be completely inspected annually for evidence of particulate matter breakthrough and repaired as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
9. Baghouse dust collector filters shall be thoroughly inspected annually for tears, scuffs, abrasions, holes, or any evidence of particulate matter breakthrough and shall be replaced as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
10. Records of baghouse dust collector maintenance, inspections, and repair shall be maintained. The records shall include identification of the equipment, date of inspection, corrective action taken, and identification of the individual performing the inspection. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
11. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E=3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E=17.37 \times P^{0.62}$ if P is greater than 30 tons per hour.(amended December 17, 1992) [District Rule 4202] Federally Enforceable Through Title V Permit

EXPIRATION DATE: 04/30/2016

LEGAL OWNER OR OPERATOR: GENERAL MILLS OPERATIONS, INC
MAILING ADDRESS: WO1D DIANE CURELL
P.O. BOX 59145
MINNEAPOLIS, MN 55459-0145

LOCATION: WADE BROUGHTON
2000 W TURNER ROAD
LODI, CA 95242

INSPECT PROGRAM PARTICIPANT: NO

EQUIPMENT DESCRIPTION:

TOKAY CEREAL PLANT; FOUR AND SEVEN BULK STORAGE BINS SERVED BY ELEVEN MAC BAGHOUSES (MODEL #72 AVR 14) DUCTED THROUGH THREE BULK BIN EXHAUST HEADERS

CONDITIONS

1. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
2. Each baghouse shall be equipped with a pressure differential gauge to indicate the pressure drop across the bags. The gauge shall be maintained in good working condition at all times and shall be located in an easily accessible location. [District NSR Rule] Federally Enforceable Through Title V Permit
3. Replacement bags numbering at least 10% of the total number of bags in the largest baghouse using each type of bag shall be maintained on the premises. [District NSR Rule] Federally Enforceable Through Title V Permit
4. Material removed from the baghouses shall be disposed of in a manner preventing entrainment into the atmosphere. [District NSR Rule] Federally Enforceable Through Title V Permit
5. The baghouse cleaning frequency and duration shall be adjusted to optimize the control efficiency. [District NSR Rule] Federally Enforceable Through Title V Permit
6. Total controlled PM10 emissions from the Tokay Plant shall not exceed 4.4 pounds during any one day. [District NSR Rule] Federally Enforceable Through Title V Permit
7. Visible emissions from baghouses that are in operation shall be checked quarterly. If visible emissions are observed, corrective action shall be taken to eliminate visible emissions. If visible emissions cannot be corrected within 24 hours, a visible emissions test using EPA Method 9 shall be conducted. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
8. Baghouse dust collection systems shall be completely inspected annually for evidence of particulate matter breakthrough and repaired as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
9. Baghouse dust collector filters shall be thoroughly inspected annually for tears, scuffs, abrasions, holes, or any evidence of particulate matter breakthrough and shall be replaced as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
10. Records of baghouse dust collector maintenance, inspections, and repair shall be maintained. The records shall include identification of the equipment, date of inspection, corrective action taken, and identification of the individual performing the inspection. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
11. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E=3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E=17.37 \times P^{0.62}$ if P is greater than 30 tons per hour. (amended December 17, 1992) [District Rule 4202] Federally Enforceable Through Title V Permit

EXPIRATION DATE: 04/30/2016

LEGAL OWNER OR OPERATOR: GENERAL MILLS OPERATIONS, INC
MAILING ADDRESS: WO1D DIANE CURELL
P.O. BOX 59145
MINNEAPOLIS, MN 55459-0145

LOCATION: WADE BROUGHTON
2000 W TURNER ROAD
LODI, CA 95242

INSPECT PROGRAM PARTICIPANT: NO

EQUIPMENT DESCRIPTION:

BULK MATERIAL MIXING OPERATION: ONE MAJORS BAG DUMP HOPPER (H-19) SERVED BY AN ANDERSON DAHLEN/FLEX-KLEEN MODEL 18CTBS24I FILTER RECEIVER (HC-19), ONE FLEX-KLEEN MODEL 18CTBS24I MINORS FILTER RECEIVER (HC-20), ONE FLOUR SCALE HOPPER SERVED BY A HAF EQUIPMENT MODEL 24HLBV10S2 DUST COLLECTOR (HC-88), ONE BAG DUMP HOPPER SERVED BY A HAF EQUIPMENT MODEL 3636S DUST COLLECTOR (HC-89), ONE 250 CUBIC FOOT LOWE INDUSTRIES MIXER (H-21) SERVED BY A FLEX-KLEEN MODEL 30PVB16 DUST COLLECTOR (HC-21), ONE SWEETENER SCALE HOPPER, ONE 250 CUBIC FOOT ANDERSON DAHLEN DAY BIN, AND ONE 250 CUBIC FOOT HOLDING MIXER (H-23) SERVED BY A HAF EQUIPMENT MODEL 58CT24S3 DUST COLLECTOR (HC-75)

CONDITIONS

1. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
2. Each dust collector shall be equipped with a pressure differential gauge to indicate the pressure drop across the filter media. The gauge shall be maintained in good working condition at all times and shall be located in an easily accessible location. [District Rule 2201] Federally Enforceable Through Title V Permit
3. Replacement filter media numbering at least 10% of the total number of individual filters in the largest dust collector using each type of filter shall be maintained on the premises. [District Rule 2201] Federally Enforceable Through Title V Permit
4. Material removed from each dust collector shall be disposed of in a manner preventing entrainment into the atmosphere. [District Rule 2201] Federally Enforceable Through Title V Permit
5. Each dust collector's cleaning frequency and duration shall be adjusted to optimize the control efficiency. [District Rule 2201] Federally Enforceable Through Title V Permit
6. Visible emissions from each dust collector serving the bulk material mixing operation shall not equal or exceed 5% opacity for a period or periods aggregating more than three minutes in any one hour. [District Rule 2201] Federally Enforceable Through Title V Permit
7. The bagged ingredients shall be added in a manner minimizing fugitive emissions. [District Rule 2201] Federally Enforceable Through Title V Permit
8. PM10 emissions from this operation shall not exceed 2.6 pounds during any one day. [District Rule 2201] Federally Enforceable Through Title V Permit
9. Visible emissions from dust collectors that are in operation shall be checked quarterly. If visible emissions are observed, corrective action shall be taken to eliminate visible emissions. If visible emissions cannot be corrected within 24 hours, a visible emissions test using EPA Method 9 shall be conducted. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
10. Each dust collection system shall be completely inspected annually for evidence of particulate matter breakthrough and repaired as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
11. Dust collector filters shall be thoroughly inspected annually for tears, scuffs, abrasions, holes, or any evidence of particulate matter breakthrough and shall be replaced as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit

12. Records of dust collector maintenance, inspections, and repair shall be maintained. The records shall include identification of the equipment, date of inspection, corrective action taken, and identification of the individual performing the inspection. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
13. The permittee shall maintain records sufficient to demonstrate compliance with the daily emission limit. These records shall contain each calculated emission quantity as well as each process variable used in the respective calculations. All records shall be retained for a minimum of five years, and shall be made available for District inspection upon request. [District Rules 1070 and 2201] Federally Enforceable Through Title V Permit
14. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E=3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E=17.37 \times P^{0.62}$ if P is greater than 30 tons per hour. (amended December 17, 1992) [District Rule 4202] Federally Enforceable Through Title V Permit

INSPECTION
EXPIRATION DATE: 04/30/2016
WORKSHEET

LEGAL OWNER OR OPERATOR: GENERAL MILLS OPERATIONS, INC
MAILING ADDRESS: WO1D DIANE CURELL
P.O. BOX 59145
MINNEAPOLIS, MN 55459-0145

LOCATION: WADE BROUGHTON
2000 W TURNER ROAD
LODI, CA 95242

INSPECT PROGRAM PARTICIPANT: NO

EQUIPMENT DESCRIPTION:

355 HP CUMMINS DIESEL FIRED I.C. ENGINE MODEL #NT855GZ, SERIAL #56207, SERVING AN ONAN STANDBY GENERATOR (200 KW) FOR UTILITY POWER INTERRUPTIONS

CONDITIONS

1. {824} Sulfur compound emissions shall not exceed 0.2% by volume, 2000 ppmv, on a dry basis averaged over 15 consecutive minutes. [Rule 404 (Madera), 406 (Fresno) and 407 (6 remaining counties in the San Joaquin Valley)] Federally Enforceable Through Title V Permit
2. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201, 3.1] Federally Enforceable Through Title V Permit
3. {826} Unit shall be fired only on diesel fuel with a sulfur content of less than 0.05% by weight. [Rule 404 (Madera), 406 (Fresno) and 407 (6 remaining counties in the San Joaquin Valley)] Federally Enforceable Through Title V Permit
4. The engine shall be operated with timing retarded four degrees from manufacturers recommended standard timing. [District NSR Rule] Federally Enforceable Through Title V Permit
5. Emissions from this IC engine shall not exceed: 10.0 g-NOx/bhp-hr. [District NSR Rule and 13 CCR 2423 and 17 CCR 93115] Federally Enforceable Through Title V Permit
6. {833} Compliance with permit conditions in the Title V permit shall be deemed compliance with the following applicable requirements of SJVUAPCD Rule 4201; Rule 404 (Madera), 406 (Fresno), and 407 (Kings, Merced, San Joaquin, Tulare, Kern, and Stanislaus). A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
7. This engine shall be equipped with an operational non-resettable elapsed time meter or other APCO approved alternative. [District Rule 4702, 17 CCR 93115, and 40 CFR 60 Subpart IIII] Federally Enforceable Through Title V Permit
8. Only CARB certified diesel fuel containing not more than 0.0015% sulfur by weight is to be used. [District Rules 2201 and 4801, 17 CCR 93115, 40 CFR Part 60 Subpart IIII] Federally Enforceable Through Title V Permit
9. This engine shall be operated and maintained in proper operating condition as recommended by the engine manufacturer or emissions control system supplier. [District Rule 4702 and 40 CFR 60 Subpart IIII] Federally Enforceable Through Title V Permit
10. During periods of operation for maintenance, testing, and required regulatory purposes, the permittee shall monitor the operational characteristics of the engine as recommended by the manufacturer or emission control system supplier (for example: check engine fluid levels, battery, cables and connections; change engine oil and filters; replace engine coolant; and/or other operational characteristics as recommended by the manufacturer or supplier). [District Rule 4702] Federally Enforceable Through Title V Permit
11. An emergency situation is an unscheduled electrical power outage caused by sudden and reasonably unforeseen natural disasters or sudden and reasonably unforeseen events beyond the control of the permittee. [District Rule 4702] Federally Enforceable Through Title V Permit

12. This engine shall not be used to produce power for the electrical distribution system, as part of a voluntary utility demand reduction program, or for an interruptible power contract. [District Rule 4702] Federally Enforceable Through Title V Permit
13. The permittee shall maintain monthly records of emergency and non-emergency operation. Records shall include the number of hours of emergency operation, the date and number of hours of all testing and maintenance operations, the purpose of the operation (for example: load testing, weekly testing, rolling blackout, general area power outage, etc.) and records of operational characteristics monitoring. For units with automated testing systems, the operator may, as an alternative to keeping records of actual operation for testing purposes, maintain a readily accessible written record of the automated testing schedule. [District Rule 4702] Federally Enforceable Through Title V Permit
14. This engine shall be operated only for testing and maintenance of the engine, required regulatory purposes, and during emergency situations. Operation of the engine for maintenance, testing, and required regulatory purposes shall not exceed 20 hours per calendar year. [District Rule 4702, 17 CCR 93115 and 40 CFR Part 60 Subpart IIII] Federally Enforceable Through Title V Permit
15. The permittee shall maintain monthly records of the type of fuel purchased. [District Rule 4702 and 17 CCR 93115] Federally Enforceable Through Title V Permit
16. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rule 4702 and 17 CCR 93115] Federally Enforceable Through Title V Permit

INSPECTION
EXPIRATION DATE: 04/30/2016
WORKSHEET

LEGAL OWNER OR OPERATOR: GENERAL MILLS OPERATIONS, INC
MAILING ADDRESS: WO1D DIANE CURELL
P.O. BOX 59145
MINNEAPOLIS, MN 55459-0145

LOCATION: WADE BROUGHTON
2000 W TURNER ROAD
LODI, CA 95242

INSPECT PROGRAM PARTICIPANT: NO

EQUIPMENT DESCRIPTION:
VACUUM CLEANING SYSTEM WITH A LAMSON MODEL 814-4-0-AD PRIMARY SEPARATOR AND A KICE INDUSTRIES BAGHOUSE

CONDITIONS

1. The baghouse shall be equipped with a pressure differential gauge to indicate the pressure drop across the bags. The gauge shall be maintained in good working condition at all times and shall be located in an easily accessible location. [District NSR Rule] Federally Enforceable Through Title V Permit
2. Replacement bags numbering at least 10% of the total number of bags in the largest baghouse using each type of bag shall be maintained on the premises. [District NSR Rule] Federally Enforceable Through Title V Permit
3. Material removed from dust collector(s) shall be disposed of in a manner preventing entrainment into the atmosphere. [District NSR Rule] Federally Enforceable Through Title V Permit
4. The baghouse cleaning frequency and duration shall be adjusted to optimize the control efficiency. [District NSR Rule] Federally Enforceable Through Title V Permit
5. There shall be no visible emissions from the dust control system. [District NSR Rule] Federally Enforceable Through Title V Permit
6. Total controlled PM10 emissions shall not exceed 0.0061 grains per standard cubic foot of air flow from the baghouse. [District NSR Rule] Federally Enforceable Through Title V Permit
7. Air flow through the baghouse shall not exceed 1,250 standard cubic feet per minute. [District NSR Rule] Federally Enforceable Through Title V Permit
8. A daily log of the hours of operation of the dust collector shall be kept on the premises and shall be made available for district inspection upon request. [District NSR Rule] Federally Enforceable Through Title V Permit
9. Visible emissions from baghouses that are in operation shall be checked quarterly. If visible emissions are observed, corrective action shall be taken to eliminate visible emissions. If visible emissions cannot be corrected within 24 hours, a visible emissions test using EPA Method 9 shall be conducted. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
10. Baghouse dust collection system shall be completely inspected annually for evidence of particulate matter breakthrough and repaired as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
11. Baghouse dust collector filters shall be thoroughly inspected annually for tears, scuffs, abrasions, holes, or any evidence of particulate matter breakthrough and shall be replaced as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
12. Records of baghouse dust collector maintenance, inspections, and repair shall be maintained. The records shall include identification of the equipment, date of inspection, corrective action taken, and identification of the individual performing the inspection. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
13. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E=3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E=17.37 \times P^{0.62}$ if P is greater than 30 tons per hour. (amended December 17, 1992) [District Rule 4202] Federally Enforceable Through Title V Permit

CONDITIONS FOR PERMIT N-355-90-3

Page 2 of 2

14. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit

INSPECTION
WORKSHEET

EXPIRATION DATE: 04/30/2016

LEGAL OWNER OR OPERATOR: GENERAL MILLS OPERATIONS, INC
MAILING ADDRESS: WO1D DIANE CURELL
P.O. BOX 59145
MINNEAPOLIS, MN 55459-0145

LOCATION: WADE BROUGHTON
2000 W TURNER ROAD
LODI, CA 95242

INSPECT PROGRAM PARTICIPANT: NO

EQUIPMENT DESCRIPTION:

WHEAT GERM SIFTER AND CONVEYING SYSTEM SERVED BY A MAC, MODEL NO. 36AVR14-III, PNEUMATIC RECEIVER

CONDITIONS

1. The pneumatic receiver shall be equipped with a pressure differential gauge to indicate the pressure drop across the bags. The gauge shall be maintained in good working condition at all times and shall be located in an easily accessible location. [District NSR Rule] Federally Enforceable Through Title V Permit
2. Replacement bags numbering at least 10% of the total number of bags in the fabric filter collector using each type of bag shall be maintained on the premises. [District NSR Rule] Federally Enforceable Through Title V Permit
3. Material removed from the pneumatic receiver shall be disposed of in a manner preventing entrainment into the atmosphere. [District NSR Rule] Federally Enforceable Through Title V Permit
4. The pneumatic receiver cleaning frequency and duration shall be adjusted to optimize the control efficiency. [District NSR Rule] Federally Enforceable Through Title V Permit
5. There shall be no visible emissions from the pneumatic receiver. [District NSR Rule] Federally Enforceable Through Title V Permit
6. The controlled PM10 emission rate shall not exceed 0.016 lbs. per hour. [District NSR Rule] Federally Enforceable Through Title V Permit
7. Records of the daily amount of material processed by this operation shall be kept on the premises at all times and shall be made available for District inspection upon request. [District NSR Rule] Federally Enforceable Through Title V Permit
8. Enclosure shall be completely inspected annually for evidence of particulate matter breakthrough and repaired as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
9. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E=3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E=17.37 \times P^{0.62}$ if P is greater than 30 tons per hour. (amended December 17, 1992) [District Rule 4202] Federally Enforceable Through Title V Permit
10. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit

INSPECTION
EXPIRATION DATE: 04/30/2016
WORKSHEET

LEGAL OWNER OR OPERATOR: GENERAL MILLS OPERATIONS, INC
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P.O. BOX 59145
MINNEAPOLIS, MN 55459-0145

LOCATION: WADE BROUGHTON
2000 W TURNER ROAD
LODI, CA 95242

INSPECT PROGRAM PARTICIPANT: NO

EQUIPMENT DESCRIPTION:

LINE 21 - PRODUCT DELIVERY AND PACKAGING SYSTEM CONSISTING OF A DAY BIN; A SCALPER (H-57), CONVEYOR (H-57), AND A HOPPER (H-57) ALL VENTED TO A BAGHOUSE (HC-57); AND FOUR BAGGERS (H-58 THROUGH H-61) VENTED TO A BAGHOUSE (HC-58)

CONDITIONS

1. Visible emissions from the Flex Kleen model 84CTBC42-II-G dust collector (HC-57) serving the scalper (H-57), conveyor (H-57), and the product hopper (H-57) shall not exceed 5% opacity for a period or periods aggregating more than three minutes in any one hour. [District NSR Rule] Federally Enforceable Through Title V Permit
2. Visible emissions from the HAF model 58BV25S3G dust collector (HC-58) serving the four baggers (H-58 through H-61) shall not exceed 5% opacity for a period or periods aggregating more than three minutes in any one hour. [District NSR Rule]
3. The dust collectors shall be equipped with a pressure differential gauge to indicate the pressure drop across the bags. The gauge shall be maintained in good working condition at all times and shall be located in an easily accessible location. [District NSR Rule] Federally Enforceable Through Title V Permit
4. Material removed from dust collectors shall be disposed of in a manner preventing entrainment into the atmosphere. [District NSR Rule] Federally Enforceable Through Title V Permit
5. The cleaning frequency and duration of the dust collectors shall be adjusted to optimize the control efficiency. [District NSR Rule] Federally Enforceable Through Title V Permit
6. Replacement bags or cartridges numbering at least 10% of the total number of bags or cartridges in the largest dust collector using each type of bag or cartridge shall be maintained on the premises. [District NSR Rule] Federally Enforceable Through Title V Permit
7. The controlled PM10 emissions from the receiving and scalping operation shall not exceed 0.02 pounds during any one hour. [District NSR Rule] Federally Enforceable Through Title V Permit
8. The controlled PM10 emissions from the four baggers shall not exceed 0.02 pounds during any one hour. [District NSR Rule] Federally Enforceable Through Title V Permit
9. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
10. Visible emissions from baghouses that are in operation shall be checked quarterly. If visible emissions are observed, corrective action shall be taken to eliminate visible emissions. If visible emissions cannot be corrected within 24 hours, a visible emissions test using EPA Method 9 shall be conducted. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
11. Baghouse dust collection systems shall be completely inspected annually for evidence of particulate matter breakthrough and repaired as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
12. Baghouse dust collector filters shall be thoroughly inspected annually for tears, scuffs, abrasions, holes, or any evidence of particulate matter breakthrough and shall be replaced as needed. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit

13. Records of baghouse dust collector maintenance, inspections, and repair shall be maintained. The records shall include identification of the equipment, date of inspection, corrective action taken, and identification of the individual performing the inspection. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
14. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E = 3.59 \times P^{0.62}$ if P is less than or equal to 30 tons per hour, or $E = 17.37 \times P^{0.62}$ if P is greater than 30 tons per hour. (amended December 17, 1992) [District Rule 4202] Federally Enforceable Through Title V Permit

INSPECTION
EXPIRATION DATE: 04/30/2016
WORKSHEET

LEGAL OWNER OR OPERATOR: GENERAL MILLS OPERATIONS, INC
MAILING ADDRESS: WO1D DIANE CURELL
P.O. BOX 59145
MINNEAPOLIS, MN 55459-0145

LOCATION: WADE BROUGHTON
2000 W TURNER ROAD
LODI, CA 95242

INSPECT PROGRAM PARTICIPANT: NO

EQUIPMENT DESCRIPTION:

48.3 MMBTU/HR NEBRASKA NS-C-52-ECON NATURAL GAS/LPG FIRED BOILER EQUIPPED WITH A NATCOM
MODEL P-48-G-24-1318 ULTRA-LOW NOX BURNER

CONDITIONS

1. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
2. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
3. All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District Rule 2201] Federally Enforceable Through Title V Permit
4. The unit shall only be fired on PUC-quality natural gas or LPG. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit
5. A non-resettable, totalizing mass or volumetric fuel flow meter to measure the amount of natural gas/LPG combusted in the unit shall be installed, utilized and maintained. [District Rule 2201 and 40 CFR Part 60 Subpart 60.48c (g)] Federally Enforceable Through Title V Permit
6. While firing on natural gas, the emissions shall not exceed any of the following limits: 7 ppmvd NO_x @ 3% O₂ or 0.008 lb-NO_x/MMBtu, 0.00285 lb-SO_x/MMBtu, 0.0076 lb-PM₁₀/MMBtu, 200 ppmvd CO @ 3% O₂, or 0.0055 lb-VOC/MMBtu. [District Rules 2201, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
7. While firing on LPG, the emissions shall not exceed any of the following limits: 7 ppmvd NO_x @ 3% O₂ or 0.008 lb-NO_x/MMBtu, 0.00285 lb-SO_x/MMBtu, 0.6 lb-PM₁₀/1000 gal, 200 ppmvd CO @ 3% O₂, or 0.5 lb-VOC/1000 gal. [District Rules 2201, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
8. Source testing to measure natural gas-combustion NO_x and CO emissions from this unit shall be conducted at least once every twelve (12) months. After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months. If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
9. If the unit is fired on both natural gas and LPG during any calendar year, additional source testing for NO_x and CO emissions shall be performed for any fuel that is fired for more than 100 hours during that calendar year and has not been previously tested as a part of the facility's annual source testing requirement. [District Rules 2201, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
10. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit
11. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit
12. The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

13. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. No determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4306. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
14. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
15. NO_x emissions for source test purposes shall be determined using EPA Method 7E or ARB Method 100 on a ppmv basis. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
16. CO emissions for source test purposes shall be determined using EPA Method 10 or ARB Method 100. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
17. Stack gas oxygen (O₂) shall be determined using EPA Method 3 or 3A or ARB Method 100. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
18. The permittee shall monitor and record the stack concentration of NO_x, CO, and O₂ at least once every month (in which a source test is not performed) using a portable emission monitor that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
19. If either the NO_x or CO concentrations corrected to 3% O₂, as measured by the portable analyzer, exceed the allowable emissions concentration, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of the performing the notification and testing required by this condition. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
20. All alternate monitoring parameter emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive-minute period. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
21. The permittee shall maintain records of: (1) the date and time of NO_x, CO, and O₂ measurements, (2) the O₂ concentration in percent and the measured NO_x and CO concentrations corrected to 3% O₂, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
22. Permittee shall determine sulfur content of combusted gas annually or shall demonstrate that the combusted gas is provided from a PUC or FERC regulated source. [District Rules 1081 and 4320] Federally Enforceable Through Title V Permit
23. A record of the amount of fuel burned, on a monthly basis, shall be kept. [40 CFR Part 60 Subpart 60.48c(g)] Federally Enforceable Through Title V Permit
24. The permittee shall maintain records that include the date and the number of hours that the unit fires on LPG. [District Rule 2201, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

25. All records shall be maintained and retained on-site for a minimum of five years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

INSPECTION
WORKSHEET

INSPECTION
EXPIRATION DATE: 04/30/2016
WORKSHEET

LEGAL OWNER OR OPERATOR: GENERAL MILLS OPERATIONS, INC
MAILING ADDRESS: WO1D DIANE CURELL
P.O. BOX 59145
MINNEAPOLIS, MN 55459-0145

LOCATION: WADE BROUGHTON
2000 W TURNER ROAD
LODI, CA 95242

INSPECT PROGRAM PARTICIPANT: NO

EQUIPMENT DESCRIPTION:

144 BHP (INTERMITTENT) CLARKE MODEL JU4H-UFADW8 TIER 3 CERTIFIED DIESEL-FIRED EMERGENCY IC ENGINE POWERING A FIREWATER PUMP

CONDITIONS

1. {14} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
2. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101] Federally Enforceable Through Title V Permit
3. Only CARB certified diesel fuel containing not more than 0.0015% sulfur by weight is to be used. [District Rules 2201 and 4801 and 17 CCR 93115 and 40 CFR Part 60 Subpart IIII] Federally Enforceable Through Title V Permit
4. This engine shall be equipped with an operational non-resettable elapsed time meter or other APCO approved alternative. [District Rule 4702] Federally Enforceable Through Title V Permit
5. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]
6. Emissions from this IC engine shall not exceed any of the following limits: 2.8 g-NOx/bhp-hr, 1.0 g-CO/bhp-hr, or 0.1 g-VOC/bhp-hr. [District Rule 2201 and 17 CCR 93115 and 40 CFR Part 60 Subpart IIII] Federally Enforceable Through Title V Permit
7. Emissions from this IC engine shall not exceed 0.09 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102 and 17 CCR 93115 and 40 CFR Part 60 Subpart IIII] Federally Enforceable Through Title V Permit
8. This engine shall be operated and maintained in proper operating condition as recommended by the engine manufacturer or emissions control system supplier. [District Rule 4702 and 17 CCR 93115 and 40 CFR Part 60 Subpart IIII] Federally Enforceable Through Title V Permit
9. This engine shall be operated only for testing and maintenance of the engine, required regulatory purposes, and during emergency situations. For testing purposes, the engine shall only be operated the number of hours necessary to comply with the testing requirements of the National Fire Protection Association (NFPA) 25 - "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems", 2002 edition. Total hours of operation for all maintenance, testing, and required regulatory purposes shall not exceed 100 hours per calendar year. [District Rule 4702 and 17 CCR 93115 and 40 CFR Part 60 Subpart IIII] Federally Enforceable Through Title V Permit
10. An emergency situation is an unscheduled electrical power outage caused by sudden and reasonably unforeseen natural disasters or sudden and reasonably unforeseen events beyond the control of the permittee. [District Rule 4702] Federally Enforceable Through Title V Permit
11. The permittee shall maintain monthly records of emergency and non-emergency operation. Records shall include the number of hours of emergency operation, the date and number of hours of all testing and maintenance operations, and the purpose of the operation (for example: load testing, weekly testing, rolling blackout, general area power outage, etc.). For units with automated testing systems, the operator may, as an alternative to keeping records of actual operation for testing purposes, maintain a readily accessible written record of the automated testing schedule. [District Rule 4702 and 17 CCR 93115] Federally Enforceable Through Title V Permit

12. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rule 4702 and 17 CCR 93115] Federally Enforceable Through Title V Permit

INSPECTION
WORKSHEET

Appendix VIII
PM_{2.5}/PM₁₀ Calculations

PM_{2.5}/PM₁₀ Calculations

PM_{2.5}/PM₁₀ Fraction

N-355-1:

CEREAL PLANT (PUFF II) CONSISTING OF A MATERIAL DISPENSING SYSTEM, A MATERIAL COOKING SYSTEM, A PUFF SYSTEM, A CEREAL-FLAVOR SPRAYING AND DRYING SYSTEM, AND A FINISHED CEREAL SCALPING AND CONVEYANCE SYSTEM

N-355-2:

CEREAL PLANT (PUFF I) CONSISTING OF A MATERIAL DISPENSING SYSTEM, A MATERIAL COOKING SYSTEM, A PUFF SYSTEM, A CEREAL-FLAVOR SPRAYING AND DRYING SYSTEM, AND A FINISHED CEREAL SCALPING AND CONVEYANCE SYSTEM

Due to the unavailability of process specific emission factors, EPA's Table 9.9.1-1 (3/03), grain drying, rack dryer (legs, conveyors, belts, distributor, scales, enclosed cleaners, etc.) will be used. PM_{2.5}/PM₁₀ fraction is 0.173 (0.13/0.75).

N-355-5:

CEREAL PLANT PACKAGING SYSTEM: TWIN PACK LINE A SERVED BY A FLEX-KLEEN MODEL 20 PCBK3 III DUST COLLECTOR (AC-48), TWIN PACK LINE B SERVED BY A FLEX-KLEEN MODEL 20 PCBL3 III DUST COLLECTOR (AC-49), LINE 4 BAGGING AND PACKAGING SERVED BY A FLEX-KLEEN MODEL 58USBC144-III DUST COLLECTOR (AC-53), 8 SCALES SERVED BY 4 BOEDECKER MODEL DC-58-144-3B DUST COLLECTORS (2 SCALES/DUST COLLECTOR), 8 BAGGERS EACH SERVED BY A DEDICATED BOEDECKER MODEL RDP-25-3-3-B DUST COLLECTOR, WHICH ARE ALL VENTED TO A FLEX-KLEEN CYCLONIC RECEIVER WITH SOCK FILTER (AC-89), CEREAL FILLING STATION (A-104) SERVED BY A DUST COLLECTION HOOD VENTED TO AN AMERICAN AIR FILTER MODEL B WET TYPE ROTOCONE COLLECTOR (AC-104)

Due to the unavailability of process specific emission factors, EPA's Table 9.9.1-1 (3/03), headhouse and grain handling (legs, conveyors, belts, distributor, scales, enclosed cleaners, etc.) will be used. PM_{2.5}/PM₁₀ fraction is 0.171 (0.0058/0.034).

N-355-6:

BULK SWEETENER RECEIVING AND STORAGE OPERATION WITH ONE TRUCK RECEIVING PIT, TWO TRUCK/RAIL RECEIVING PITS, NINE FILTER RECEIVERS, 48 STORAGE SILOS, FLOUR DRYING SYSTEM, AND ASSOCIATED CONVEYING EQUIPMENT, ALL SERVED BY TWENTY-NINE BIN VENT FILTERS AND TEN BAGHOUSES

Due to the unavailability of process specific emission factors, EPA's Table 9.9.1-1 (3/03), grain receiving, hopper truck/railcar will be used. PM_{2.5}/PM₁₀ fraction is 0.167 (0.0013/0.0078).

N-355-7:
 DRY MIX PLANT SYSTEM: PRE-MIX OPERATION CONSISTING OF BAG DUMP, MIXER AND SIFTER; SIX DAY BINS (H-17) VENTED TO A BAGHOUSE (HC-17); MINOR INGREDIENTS RECEIVER, DRY INGREDIENTS RECEIVER, AND PRE-MIXER VENTED TO A BAGHOUSE (HC-18)

N-355-9:
 MIX PLANT SYSTEM (MIXER #24A) SERVED BY A BAGHOUSE

N-355-10:
 MIX PLANT SYSTEM (MIXER 24-B) SERVED BY A BAGHOUSE

N-355-11:
 MIX PLANT SYSTEM (MIXER #25) SERVED BY A BAGHOUSE

N-355-12:
 MIX PLANT SYSTEM (MIXER #26) SERVED BY A BAGHOUSE

N-355-13:
 MIX PLANT SYSTEM (MIXER#27) SERVED BY A BAGHOUSE

N-355-14:
 BULK MATERIAL MIXING OPERATION: TWO FLOUR/SWEETENER SCALE HOPPERS EACH SERVED BY ITS OWN HAF EQUIPMENT MODEL 24HLBV10S2 DUST COLLECTOR (HC-90, HC-91), A MIXER #29 AND MANUALLY ADDED INGREDIENTS OPERATION VENTED TO A HAF EQUIPMENT MODEL 24HLBV10S2 DUST COLLECTOR (HC-76), A DAY BIN, TWO TRANSITION PNEUMATIC CONVEYING SYSTEMS EACH SERVED BY ITS OWN HAF EQUIPMENT MODEL 18BV4S2 DUST COLLECTOR (HC-92, HC-93), AND TWO DAY BINS

N-355-16:
 DRY MIX PLANT - SEASONING MIXER SYSTEM CONSISTING OF ONE BAG DUMP STATION/SCALPER (H-27) AND ONE SEASONING MIXER (H-28) ALL VENTED TO A FLEX KLEEN MODEL 58-BV-9-II DUST COLLECTOR (HC-27); ONE BAG DUMP STATION; THREE DAY BINS (H-65, H-66, & H-67) EACH VENTED TO AN HAF EQUIPMENT MODEL 58-BV-9-S-II-G DUST COLLECTOR (H-65, H-66 & H-67); ONE SCALE HOPPER RECEIVER (H-64) VENTED TO AN INTEGRAL HAF EQUIPMENT MODEL 18-CT-62-S-II DUST COLLECTOR (HC-64); ONE SUPER SACK DUMP-HOPPER, ONE SCALPER, AND ONE DAY BIN (H-86) ALL VENTED TO AN HAF EQUIPMENT MODEL 58-BV-25-S-2-G DUST COLLECTOR (HC-86)

N-355-17:
 MIX PLANT SYSTEM (FLOUR GRINDING) SYSTEM SERVED BY ONE BAGHOUSE AND TWO BIN VENT FILTERS

N-355-18:
 MIX PLANT SYSTEM (SUGAR SYSTEM) SERVED BY SIX BAGHOUSES

Due to the unavailability of process specific emission factors, EPA's Table 9.9.1-1 (3/03), headhouse and grain handling (legs, conveyors, belts, distributor, scales, enclosed cleaners, etc.) will be used. PM2.5/PM10 fraction is 0.171 (0.0058/0.034).

N-355-20:

48.3 MMBTU/HR TRANE-MURRAY MODEL MCF2-50 BOILER EQUIPPED WITH A NATCOM MODEL P-52-G-24-1419 ULTRA LOW-NOX BURNER

Per SJVAPCD PM Size Fractions – Source; 2016 Ozone SIP Planning Inventory v1.01 worksheet, PM2.5/PM10 fraction is 1 for natural gas fired boilers under food and agricultural category (EIC 052-005-0110-0000).

N-355-21:

3.48 MW COGENERATION SYSTEM CONSISTING OF AN ALLISON MODEL 501 KB GAS TURBINE WITH A 16 MMBTU/HR DUCT BURNER SYSTEM ALL SERVED BY A SELECTIVE CATALYTIC REDUCTION SYSTEM, AND AN ELECTRIC MOTOR STARTER

Per SJVAPCD PM Size Fractions – Source; 2016 Ozone SIP Planning Inventory v1.01 worksheet, PM2.5/PM10 fraction is 1 for natural gas fired turbines under food and agricultural category (EIC 052-045-0110-0000).

N-355-25-3:

GRAHAM SYSTEM CONSISTING OF TEN INGREDIENT BINS SERVED BY TEN INDIVIDUAL BAGHOUSES

N-355-35:

GRAHAM SYSTEM: DOUGH PROCESSING SYSTEM CONSISTING OF DOUGH FORMERS, WET DOUGH RECEIVERS (D54) SERVING DOUGH DRYER #1 (D-12), DOUGH DRYER #2 (D-13), AND DOUGH DRYER #3 (D-14) CONNECTED IN SERIES. THIS OPERATION ALSO SERVES PERMIT UNIT #N-355-38.

For each permit, due to the unavailability of process specific emission factors, EPA's Table 9.9.1-1 (3/03), headhouse and grain handling (legs, conveyors, belts, distributor, scales, enclosed cleaners, etc.) will be used. PM2.5/PM10 fraction is 0.171 (0.0058/0.034).

N-355-38:

GRAHAM SYSTEM: PELLET COOLER (D-18) SERVED BY A BAGHOUSE (DC-18), PELLET TOASTER (D-16) WITH TWO 2.5 MMBTU/HR NATURAL GAS-FIRED BURNERS SERVED BY TWO CYCLONES AND A WET SCRUBBER (DC-16), AND DAY BINS (D-21) SERVED BY A BAGHOUSE (DC-21)

Process emissions:

Due to the unavailability of process specific emission factors, EPA's Table 9.9.1-1 (3/03), headhouse and grain handling (legs, conveyors, belts, distributor, scales, enclosed cleaners, etc.) will be used. PM2.5/PM10 fraction is 0.171 (0.0058/0.034).

Combustion emissions:

Per SJVAPCD PM Size Fractions – Source; 2016 Ozone SIP Planning Inventory v1.01 worksheet, PM2.5/PM10 fraction is 0.9743 for natural gas fired process heaters under food and agricultural category (EIC 052-010-0110-0000).

N-355-42:

CEREAL PLANT VACUUM SYSTEM SERVED BY A BAGHOUSE

N-355-44:

GRAHAM SYSTEM: SLURRY COOLER SERVED BY A BAGHOUSE

N-355-45:

CEREAL COATING OPERATION: ONE LINE WITH ENROBER (D23), DRYER (D22) VENTED TO SCRUBBER (DC22), & COOLER (D24) VENTED TO FABRIC FILTER (DC24); THE SECOND LINE WITH ENROBER (D25) VENTED TO SCRUBBER (DC25)

N-355-46:

TOKAY CEREAL PLANT; CENTRAL VACUUMING SYSTEM SERVED BY A HOFFCO PULSE SEPARATOR (MODEL # SCHA 14-58)

N-355-47:

TOKAY CEREAL PLANT; PNEUMATIC RAILCAR RECEIVING SYSTEM SERVED BY TWO (2) FLEX-KLEEN BAGHOUSES (MODEL #58 CTBC 32)

N-355-56:

TOKAY CEREAL PLANT; FOUR AND SEVEN BULK STORAGE BINS SERVED BY ELEVEN MAC BAGHOUSES (MODEL #72 AVR 14) DUCTED THROUGH THREE BULK BIN EXHAUST HEADERS

N-355-78:

BULK MATERIAL MIXING OPERATION: ONE MAJORS BAG DUMP HOPPER (H-19) SERVED BY AN ANDERSON DAHLEN/FLEX-KLEEN MODEL 18CTBS24I FILTER RECEIVER (HC-19), ONE FLEX-KLEEN MODEL 18CTBS24I MINORS FILTER RECEIVER (HC-20), ONE FLOUR SCALE HOPPER SERVED BY A HAF EQUIPMENT MODEL 24HLBV10S2 DUST COLLECTOR (HC-88), ONE BAG DUMP HOPPER SERVED BY A HAF EQUIPMENT MODEL 3636S DUST COLLECTOR (HC-89), ONE 250 CUBIC FOOT LOWE INDUSTRIES MIXER (H-21) SERVED BY A FLEX-KLEEN MODEL 30PVBL16 DUST COLLECTOR (HC-21), ONE SWEETENER SCALE HOPPER, ONE 250 CUBIC FOOT ANDERSON DAHLEN DAY BIN, AND ONE 250 CUBIC FOOT HOLDING MIXER (H-23) SERVED BY A HAF EQUIPMENT MODEL 58CT24S3 DUST COLLECTOR (HC-75)

For each of the above permits, due to the unavailability of process specific emission factors, EPA's Table 9.9.1-1 (3/03), headhouse and grain handling (legs, conveyors, belts, distributor, scales, enclosed cleaners, etc.) will be used. PM2.5/PM10 fraction is 0.171 (0.0058/0.034).

N-355-83:

355 HP CUMMINS DIESEL FIRED I.C. ENGINE MODEL #NT855GZ, SERIAL #56207, SERVING AN ONAN STANDBY GENERATOR (200 KW) FOR UTILITY POWER INTERRUPTIONS

Per SJVAPCD PM Size Fractions – Source; 2016 Ozone SIP Planning Inventory v1.01 worksheet, PM2.5/PM10 fraction is 1 for diesel fuel IC engines under food and agricultural category (EIC 052-040-1200-0000).

N-355-90:

VACUUM CLEANING SYSTEM WITH A LAMSON MODEL 814-4-0-AD PRIMARY SEPARATOR AND A KICE INDUSTRIES BAGHOUSE

Due to the unavailability of process specific emission factors, EPA's Table 9.9.1-1 (3/03), headhouse and grain handling (legs, conveyors, belts, distributor, scales, enclosed cleaners, etc.) will be used. PM2.5/PM10 fraction is 0.171 (0.0058/0.034).

N-355-92:

WHEAT GERM SIFTER AND CONVEYING SYSTEM SERVED BY A MAC, MODEL NO. 36AVR14-III, PNEUMATIC RECEIVER

Due to the unavailability of process specific emission factors, EPA's Table 9.9.1-1 (3/03), grain cleaning. PM2.5/PM10 fraction is 0.168 (0.0032/0.019).

N-355-94:

LINE 21 - PRODUCT DELIVERY AND PACKAGING SYSTEM CONSISTING OF A DAY BIN; A SCALPER (H-57), CONVEYOR (H-57), AND A HOPPER (H-57) ALL VENTED TO A BAGHOUSE (HC-57); AND FOUR BAGGERS (H-58 THROUGH H-61) VENTED TO A BAGHOUSE (HC-58)

Due to the unavailability of process specific emission factors, EPA's Table 9.9.1-1 (3/03), headhouse and grain handling (legs, conveyors, belts, distributor, scales, enclosed cleaners, etc.) will be used. PM2.5/PM10 fraction is 0.171 (0.0058/0.034).

N-355-95:

48.3 MMBTU/HR NEBRASKA NS-C-52-ECON NATURAL GAS/LPG FIRED BOILER EQUIPPED WITH A NATCOM MODEL P-48-G-24-1318 ULTRA-LOW NOX BURNER

Per SJVAPCD PM Size Fractions – Source; 2016 Ozone SIP Planning Inventory v1.01 worksheet, PM2.5/PM10 fraction is 1 for natural gas fired boilers under food and agricultural category (EIC 052-005-0110-0000).

N-355-99:

144 BHP (INTERMITTENT) CLARKE MODEL JU4H-UFADW8 TIER 3 CERTIFIED DIESEL-FIRED EMERGENCY IC ENGINE POWERING A FIREWATER PUMP

Per SJVAPCD PM Size Fractions – Source; 2016 Ozone SIP Planning Inventory v1.01 worksheet, PM2.5/PM10 fraction is 1 for diesel fuel IC engines under food and agricultural category (EIC 052-040-1200-0000).

PM2.5 Emissions

Using above discussed PM2.5/PM10 fraction for each unit, PM2.5 emissions would be:

HAE PM2.5 = HAE PM10 x PM2.5/PM10 fraction

Permit #	PM10 (lb)				PM2.5/P M10 Fraction	PM2.5 (lb)			
	Q1	Q2	Q3	Q4		Q1	Q2	Q3	Q4
N-355-1	983	1196	1298	990	0.173	170	207	225	171
N-355-2	1177	1354	1469	1120	0.173	204	234	254	194
N-355-5	18	12	17	10	0.171	3	2	3	2
N-355-6	41	39	40	25	0.167	7	7	7	4
N-355-7	13	13	18	7	0.171	2	2	3	1
N-355-9	5	5	6	6	0.171	1	1	1	1
N-355-10	5	5	6	6	0.171	1	1	1	1
N-355-11	5	5	6	6	0.171	1	1	1	1
N-355-12	5	5	6	6	0.171	1	1	1	1
N-355-13	2	1	1	1	0.171	0	0	0	0
N-355-14	2	1	1	1	0.171	0	0	0	0
N-355-16	12	27	16	17	0.171	2	5	3	3
N-355-17	38	36	46	45	0.171	6	6	8	8
N-355-18	61	57	59	67	0.171	10	10	10	11
N-355-20	99	91	61	114	1	99	91	61	114
N-355-21	396	409	416	205	1	396	409	416	205
N-355-25	1	1	1	1	0.171	0	0	0	0
N-355-35	276	288	348	283	0.171	47	49	60	48
N-355-38***	70	72	88	71	0.171*, 0.9743**	13	13	16	12
N-355-40	5	6	7	6	0.171	1	1	1	1
N-355-42	70	73	88	71	0.171	12	12	15	12
N-355-44	4	4	5	4	0.171	1	1	1	1
N-355-45	129	134	162	131	0.171	22	23	28	22
N-355-46	0	0	0	0	0.171	0	0	0	0
N-355-47	1	1	2	1	0.171	0	0	0	0
N-355-56	6	7	8	7	0.171	1	1	1	1
N-355-78	13	12	17	7	0.171	2	2	3	1
N-355-83	0	0	0	0	1	0	0	0	0
N-355-90	162	155	157	99	0.171	28	27	27	17
N-355-92	32	37	40	31	0.168	5	6	7	5
N-355-94	7	7	4	5	0.171	1	1	1	1
N-355-95	137	175	76	76	1	137	175	76	76
N-355-99	0	0	0	0	1	0	0	0	0
Total	3,775	4,228	4,469	3,419	--	1,173	1,288	1,230	914

*Process emissions; **Combustion emissions; ***Combustion emissions were Q1: 2 lb, Q2: 1 lb, Q3: 2 lb, Q4: 1 lb, process emissions were: Q1: 68 lb, Q2: 71 lb, Q3: 86 lb, Q4: 70 lb

Summary:

PM2.5/PM10 fraction that will be applied to quarterly emissions would be:

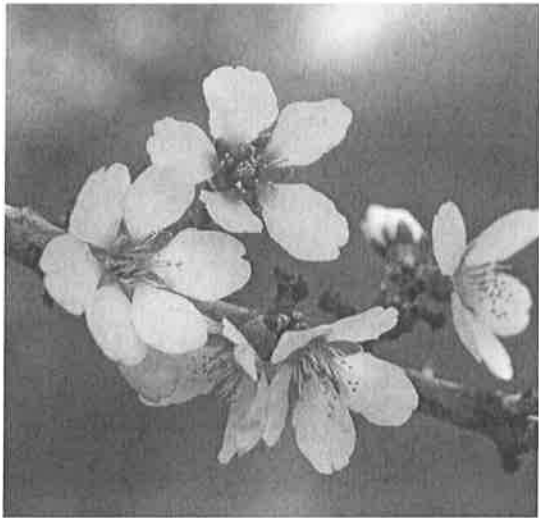
Q1: 31% (1,173/3,775)

Q2: 31% (1,288/4,228)

Q3: 28% (1,230/4,469)

Q4: 27% (914/3,419)

Appendix IX
District's Air Quality Plans (Source Specific Pages Only)



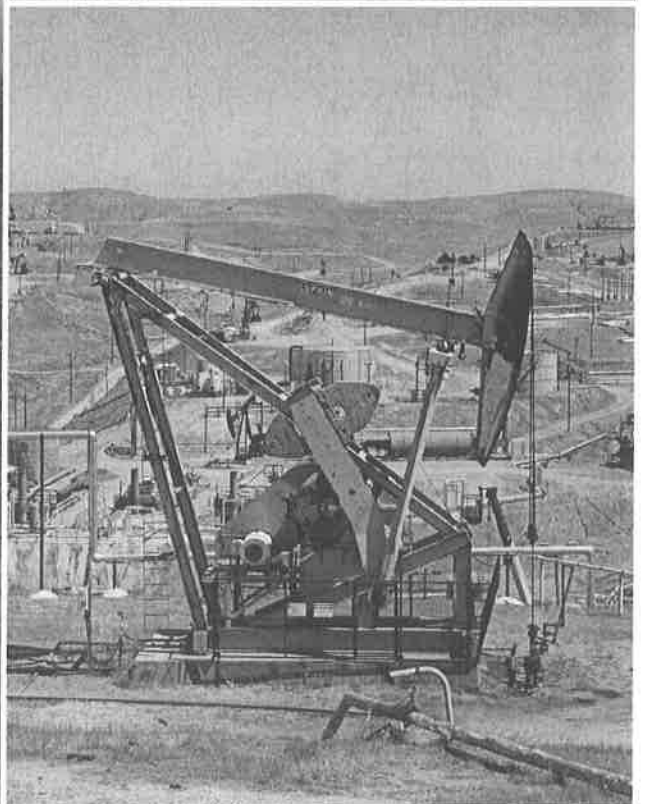
San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT



2016 Ozone Plan

for 2008 8-Hour Ozone Standard

Adopted - June 16, 2016



Boilers N-355-20 and '-95

C.5 RULE 4306 AND RULE 4320 ADVANCED EMISSION REDUCTION OPTIONS FOR BOILERS, STEAM GENERATORS, AND PROCESS HEATERS GREATER THAN 5.0 MMBTU/HR

C.5.1 Emissions Inventory (Summer Average – Tons per day)

	2012	2015	2018	2021	2024	2027	2029	2030	2031
NOx	1.91	1.55	1.42	1.28	1.15	1.04	0.98	0.95	0.91
VOC	0.68	0.65	0.61	0.58	0.55	0.53	0.51	0.51	0.5

C.5.2 District Rule 4306/4320 Description

Rules 4306 and 4320 apply to any gaseous fuel or liquid fuel fired boiler, steam generator, or process heater with a total rated heat input greater than 5 million British thermal units per hour (MMBtu/hr). The purpose of these rules is to limit NOx and carbon monoxide (CO) emissions from boilers, steam generators, and process heaters of this size range.

Rule 4320 is the third generation rule for this source category. The first District rule for this source category, Rule 4305 (Boilers, Steam Generators, and Process Heaters), was adopted on December 16, 1993. Rule 4305 was superseded by Rule 4306 (Boilers, Steam Generators, and Process Heaters – Phase 3) on September 18, 2003 to implement a NOx control measure from the District's ozone and PM10 attainment plans, lowering the NOx emissions limits in Rule 4305. Since adoption, Rule 4306 has been amended twice.

The amendment of Rule 4306 in October 2008 was initially proposed to lower the NOx emission limit from 9 ppmv to 6 ppmv for units greater than 20 MMBtu/hr. It was determined that the proposed NOx limits could be accomplished by using selective catalytic reduction (SCR) or a combination of SCR and ultra-low NOx burners (ULNBs), thus making the lower limits technologically feasible. However, through the public workshop process and additional research it was also determined that most of the units subject to Rule 4306 have undergone several generations of NOx controls, and consequently, certain applications of SCR may not be cost effective and/or technological infeasible because of physical limitations. Therefore, the lower NOx limits were included in new Rule 4320 and an option was provided in the rule that allows for the payment of an annual emissions fee based on total actual emissions, rather than installation of additional NOx controls. These fees are used by the District to achieve cost effective NOx reductions through District incentive programs, the District's Technology Advancement Program, and other routes. The previous versions of Rule 4305 and 4306 combined with the implementation of Rule 4320 achieve approximately 96% control of NOx emissions from this source category.

The implementation of Rule 4320 does not substitute the requirements of Rule 4306, but enforces requirements supplementary to Rule 4306. As such, this evaluation is applicable to both Rule 4306 and Rule 4320.

Facilities with units subject to this rule represent a wide range of industries, including but not limited to electrical utilities, cogeneration, oil and gas production, petroleum refining, manufacturing and industrial processes, food and agricultural processing, and service and commercial facilities.

To recognize the operational and technical differences between different types of equipment subject to Rules 4306 and 4320, the different equipment types were separated into several major categories, with different requirements, including the following:

- Units with a total rated heat input greater than 5.0 MMBtu/hr to 20.0 MMBtu/hr
- Units with a total rated heat input greater than 20.0 MMBtu/hr
- Oilfield steam generators of all ratings and fuel types
- Refinery units of all ratings and fuel types
- Low-use units limited by a Permit to Operate to an annual heat input greater than 1.8 billion Btu/year but less than or equal to 30 billion Btu/year
- Units at a wastewater treatment facility using less than 50% PUC quality fuel
- Small specialty units operated by a small producer

C.5.3 *How does District Rule 4306/4320 compare with federal rules and regulations?*

C.5.3.1 *EPA – Control Technique Guidelines (CTG)*

EPA CTG requirements are not applicable to this source category.

C.5.3.2 *EPA – Alternative Control Techniques (ACT) Document*

C.5.3.2.1 *ACT - EPA-453/R-93-034 (Alternative Control Techniques Document – NOx emissions from Process Heaters)*

The requirements of Rules 4306/4320 are as stringent as or more stringent than the requirements in the ACT.

C.5.3.2.2 *ACT - EPA-453/R-93-022 (Alternative Control Techniques Document – NOx Emissions from Industrial/Commercial/Institutional Boilers)*

The requirements of Rules 4306/4320 are as stringent as or more stringent than the requirements in the ACT.

C.5.3.2.3 ACT - EPA-453/R-93-023 (Alternative Control Techniques Document – NOx Emissions from Utility Boilers)

The requirements of Rules 4306/4320 are as stringent as or more stringent than the requirements in the ACT.

C.5.3.3 Standards of Performance for New Stationary Sources (NSPS)

C.5.3.3.1 NSPS - 40 CFR 60 Subpart D (Standards of Performance for Fossil-Fuel Fired Steam Generators for Which Construction Is Commenced After August 17, 1971)

The requirements of Rules 4306/4320 are as stringent as or more stringent than the requirements in the NSPS.

C.5.3.3.2 NSPS - 40 CFR 60 Subpart Db (Standards of Performance for Industrial- Commercial-Institutional Steam Generating Units)

The requirements of Rules 4306/4320 are as stringent as or more stringent than the requirements in the NSPS.

C.5.3.3.3 NSPS - 40 CFR 60 Subpart Dc (Standards of Performance for Small Industrial- Commercial-Institutional Steam Generating Units)

The requirements of Rules 4306/4320 are as stringent as or more stringent than the requirements in the NSPS.

C.5.3.4 National Emission Standards for Hazardous Air Pollutants (NESHAPs) and Maximum Achievable Control Technologies (MACTs)

C.5.3.4.1 NESHAP/MACT - 40 CFR 63 Subpart DDDDD (NESHAP for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters)

The requirements of Rules 4306/4320 are as stringent as or more stringent than the requirements in the NESHAP.

C.5.4 How Does District Rule 4306/4320 compare with California State regulations?

There are no state regulations applicable to this source category.

C.5.5 How does District Rule 4306/4320 compare to rules in other air districts?**C.5.5.1 Bay Area AQMD****C.5.5.1.1 Regulation 9 Rule 7 (Nitrogen Oxides and Carbon Monoxide from Industrial, Institutional and Commercial Boilers, Steam Generators and Process Heaters)**

The requirements in Rules 4306/4320 are as stringent as or more stringent than those in Rule 9-7.

C.5.5.1.2 Regulation 9 Rule 10 (Nitrogen Oxides and Carbon Monoxide from Boilers, Steam Generators and Process Heaters in Petroleum Refineries)

The requirements in Rules 4306/4320 are as stringent as or more stringent than those in Rule 9-10.

C.5.5.2 Sacramento Metropolitan AQMD**C.5.5.2.1 Rule 411 (NO_x from Boilers, Process Heaters and Steam Generators)**

The requirements in Rules 4306/4320 are as stringent as or more stringent than those in Rule 411.

C.5.5.3 South Coast AQMD**C.5.5.3.1 Rule 1146 (Emissions of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters)**

The requirements in Rules 4306/4320 are as stringent as or more stringent than those in Rule 1146.

C.5.5.4 Ventura County APCD**C.5.5.4.1 Rule 74.15 (Boilers, Steam Generators and Process Heaters)**

The requirements in Rules 4306/4320 are as stringent as or more stringent than those in Rule 74.15.

C.5.6 Potential Emission Reduction Opportunities

In its 2015 PM_{2.5} Plan, the District evaluated this source category to determine if there are any feasible emission reduction opportunities. This extensive evaluation included the evaluation of potential emission reduction opportunities such as low temperature oxidation; EM_x; PM_{2.5} limits for alternative fuels; and PM potential emissions reductions from ESP and Scrubber technologies. The District evaluation determined that Rule

4306/4320 has the most stringent measures feasible to implement in the Valley.¹⁶ The District re-evaluated the aforementioned options and has determined that no additional feasible opportunities have been developed in the last 12 months since the adoption of the 2015 PM_{2.5} Plan. Therefore, there are no additional emission reduction opportunities at this time.

C.5.7 Evaluation Findings

Rules 4306 and 4320 currently have in place the most stringent measures feasible to implement in the Valley and therefore meet or exceed federal RACT requirements for this source category. As the District continues to develop future attainment plans to address increasingly stringent federal air quality standards, this source category will be re-evaluated for additional potential opportunities to reduce emissions.

¹⁶ SJVUAPCD. 2015 Plan for the 1997 PM_{2.5} Standard. Appendix C Best Available Control Measures and Most Stringent Measures (2015, April 16). Retrieved from http://www.valleyair.org/Air_Quality_Plans/PM25Plans2015.htm

Cogen System N-355-21

C.57 RULE 4703 STATIONARY GAS TURBINES**C.57.1 Emissions Inventory (Summer Average – Tons per day)**

	2012	2015	2018	2021	2024	2027	2029	2030	2031
NOx	3.17	2.84	2.98	2.89	2.94	2.99	3.03	3.04	3.06
VOC	0.71	0.69	0.72	0.73	0.74	0.76	0.77	0.78	0.78

C.57.2 District Rule 4703 Description

The provisions of this rule are applicable to all stationary gas turbine systems, which are subject to District permitting requirements, and with electrical generation ratings equal to or greater than 0.3 megawatt (MW) or a maximum heat input rating of more than 3 million British Thermal Units per hour (MMBtu/hr), and that are used for the generation of electrical power. The purpose of this rule is to limit NOx emissions from these stationary gas turbines.

Rule 4703 was adopted on August 18, 1994. Since its adoption, the rule has been amended six times. The latest rule amendment in September 2007 strengthened the rule by establishing more stringent NOx limits for existing stationary gas turbines. EPA finalized approval for Rule 4703 on October 21, 2009 and deemed this rule as being at least as stringent as established RACT requirements. NOx emissions have been controlled by over 86% for this source category.

The requirements of Rule 4703 affect owners and operators of stationary gas turbine systems used to pump, compress, generate electricity, or perform other tasks. The four major industry groups are oil and gas production, utilities, manufacturing, and government.

In complying with the rule, all affected entities are required to control NOx and CO emissions by installing approved emissions control devices. Early in the rule development process, the District identified five different emissions control technologies that could be used to achieve proposed limits for stationary gas turbines. Of the five options, four mainly control NOx emissions, while the other one controls CO emissions. The four NOx control technologies are:

- Dilutant (water or steam) injection systems,
- Dry, low-NOx,
- Selective catalytic reduction, and
- SCONOX

Costs associated with different compliance options vary a great deal depending on technologies and available products. Depending on the size of the existing turbine systems, engine model and make, type of existing emissions control equipment, and many other factors, owners and operators of stationary gas turbine systems face different compliance costs. The impacts of Rule 4703 have been concentrated in the oil

and gas production sector and utilities sector of the Valley, as they own and operate the vast majority of stationary gas turbines subject to the rule.

C.57.3 *How does District Rule 4703 compare with federal rules and regulations?*

C.57.3.1 *EPA – Control Technique Guidelines (CTG)*

EPA CTG requirements are not applicable to this source category.

C.57.3.2 *EPA – Alternative Control Technology (ACT)*

C.57.3.2.1 *EPA-435/R-93-007 (Alternative Control Techniques Document—NO_x Emissions from Stationary Gas Turbines)*

The requirements of Rule 4703 are as stringent as or more stringent than the requirements in the ACT.

C.57.3.3 *Standards of Performance for New Stationary Sources (NSPS)*

C.57.3.3.1 *40 CFR 60 Subpart GG (Standards of Performance for Stationary Gas Turbines)*

The requirements of Rule 4703 are as stringent as or more stringent than the requirements in the NSPS.

C.57.3.3.2 *40 CFR 60 Subpart KKKK (Standards of Performance for Stationary Combustion Turbines)*

The requirements of Rule 4703 are as stringent as or more stringent than the requirements in the NSPS.

C.57.3.4 *National Emission Standards for Hazardous Air Pollutants (NESHAPs) and Maximum Achievable Control Technologies (MACTs)*

C.57.3.4.1 *40 CFR 63 Subpart YYYY (NESHAP for Stationary Combustion Turbines)*

The requirements of Rule 4703 are as stringent as or more stringent than the requirements in the NESHAP.

C.57.4 *How does District Rule 4703 compare with California State regulations?*

There are no state regulations applicable to this source category.

C.57.5 *How does District Rule 4703 compare to regulations from other air districts?*

C.57.5.1 Bay Area AQMD**C.57.5.1.1 Regulation 9 Rule 9 (Nitrogen Oxides from Stationary Gas Turbines)**

The requirements in Rule 4703 are as stringent as or more stringent than those in Rule 9-9.

C.57.5.2 Sacramento Metro AQMD**C.57.5.2.1 Rule 413 (Stationary Gas Turbines)**

The requirements in Rule 4703 are as stringent as or more stringent than those in Rule 413.

C.57.5.3 South Coast AQMD**C.57.5.3.1 Rule 1134 (Emissions of Oxides of Nitrogen from Stationary Gas Turbines)**

The requirements in Rule 4703 are as stringent as or more stringent than those in Rule 1134.

C.57.5.4 Ventura County APCD**C.57.5.4.1 Rule 74.23 (Stationary Gas Turbines)**

The requirements in Rule 4703 are as stringent as or more stringent than those in Rule 74.23.

C.57.6 Potential Emission Reduction Opportunities

In its 2015 PM_{2.5} Plan the District evaluated this source category to determine if there are any feasible emission reduction opportunities. The District found that Rule 4703 currently has in place the most stringent measures feasible to implement in the Valley.⁹³ The District re-evaluated the aforementioned options and has determined that no additional feasible opportunities have been developed in the last 12 months since the adoption of the 2015 PM_{2.5} Plan. Therefore, there are no additional emission reduction opportunities at this time.

C.57.7 Evaluation Findings

Rule 4703 currently has in place the most stringent measures feasible to implement in the Valley and therefore meets or exceeds federal RACT requirements for this source category.

⁹³ SJVUAPCD. 2015 Plan for the 1997 PM_{2.5} Standard. Appendix C Best Available Control Measures and Most Stringent Measures (2015, April 16). Retrieved from http://www.valleyair.org/Air_Quality_Plans/PM25Plans2015.htm

IC Engines N-355-83 and '-99

C.56 RULE 4702 INTERNAL COMBUSTION ENGINES**C.56.1 Emissions Inventory (Summer Average – Tons per day)**

	2012	2015	2018	2021	2024	2027	2029	2030	2031
NOx	16.83	11.68	8.16	7.30	6.46	5.79	5.36	5.16	5.05
VOC	1.55	1.27	0.96	0.89	0.79	0.73	0.69	0.67	0.66

C.56.2 District Rule 4702 Description

Rule 4702 applies to any internal combustion (IC) engine rated at 25 brake horsepower (bhp) or greater. The purpose of this rule is to limit NOx, carbon monoxide (CO), VOC, and SOx emissions from units subject to this rule.

The District's original IC engine rule, Rule 4701 (Internal Combustion Engines – Phase 1), was adopted on May 21, 1992, superseded by Rule 4702, adopted on August 21, 2003, and subsequently amended five times. The rule established NOx limits between 25-50 ppmv achieving 90-96% control for non-agricultural operation rich-burn engines, and 65-75 ppmv achieving 85-90% control for non-agricultural operation lean-burn engines. Through years of implementing increasingly stringent requirements, Rules 4701 and 4702 have achieved significant reductions of NOx and PM emissions.

Substantial emission reductions from agricultural IC engines have also been achieved through a combination of regulatory efforts and incentive actions. Rule 4702 has effectively reduced emissions from agricultural engines by 84% since the 2005 amendments to the rule, with substantial investments being made by the affected sources to comply with the rule. The rule was further strengthened in August 2011 when rule amendments implemented more stringent NOx limits as low as 11 ppmv for non-agricultural operations spark-ignited engines. Additional emission reductions are forthcoming under Rule 4702 as compliance dates for emission control requirements continue to approach over the coming years.

An internal combustion engine is any engine that operates by burning its fuel inside the engine. Engines generate power by the combustion of an air/fuel mixture. The main types of engines are spark-ignited engines and compression-ignited (or diesel) engines. In the case of spark-ignited engines, a spark plug ignites the air/fuel mixture. Spark-ignited engines come in several designs such as: two-stroke and four-stroke, rich-burn and lean-burn, turbocharged and naturally aspirated. Spark-ignited engines may use one or more fuels, such as natural gas, propane, butane, liquefied petroleum gas, oil field gas, digester gas, landfill gas, methanol, ethanol, and gasoline. Compression-ignited engines rely on heating of the inducted air during the compression stroke to ignite the injected diesel fuel. In addition to being classified into spark-ignited and compression-ignited, IC engines can be further classified as either two-stroke or four-stroke engines. Most diesel engines are four-stroke, while larger diesel engines often

are two-stroke. Natural gas-fired spark-ignited engines are usually four-stroke, but some operators prefer two-stroke engines for their applications.

Engines are used by a variety of private businesses and public agencies throughout the Valley for a number of purposes, primarily for powering pumps, compressors, or electrical generators. Examples of businesses and industries that use engines include: schools and universities, agriculture, oil and gas production and pipelines, petroleum refining, manufacturing facilities, food processing, electrical power generation, landfill and waste water treatment facilities, and water districts. Many engines are limited or low use in nature, such as emergency standby engines that provide backup power when electric service is interrupted.

C.56.3 *How does District Rule 4702 compare with federal rules and regulations?*

C.56.3.1 *EPA – Control Technique Guidelines (CTG)*

There are no EPA Control Technique Guidelines (CTG) requirements for this source category.

C.56.3.2 *EPA – Alternative Control Technology (ACT)*

C.56.3.2.1 *EPA – 453/R-93-032 (Alternative Control Techniques Document – NO_x Emissions from Stationary Reciprocating Internal Combustion Engines)*

The District evaluated the requirements contained within the EPA – 453/R-93-032 ACT document and found no requirements that were more stringent than those already in Rule 4702.

C.56.3.3 *Standards of Performance for New Stationary Sources (NSPS)*

C.56.3.3.1 *40 CFR 60 Subpart IIII (Standards of Performance for Stationary Compression Ignition Internal Combustion Engines)*

The District evaluated the requirements contained within 40 CFR 60 Subpart IIII and found no requirements that were more stringent than those already in Rule 4702.

C.56.3.3.2 *40 CFR 60 Subpart JJJJ (Standards of Performance for Stationary Spark Ignition Internal Combustion Engines)*

The District evaluated the requirements contained within 40 CFR 60 Subpart JJJJ and found no requirements that were more stringent than those already in Rule 4702.

C.56.3.4 *National Emission Standards for Hazardous Air Pollutants (NESHAPs) and Maximum Achievable Control Technologies (MACTs)*

C.56.3.4.1 *40 CFR 63 Subpart ZZZZ (NESHAP for Stationary Reciprocating Internal Combustion Engines)*

The District evaluated the requirements contained within 40 CFR 63 Subpart ZZZZ NESHAP and found no requirements that were more stringent than those already in Rule 4702.

C.56.4 *How does District Rule 4702 compare with California State regulations?*

C.56.4.1 *17 CCR 93114 (ATCM to Reduce Particulate Emissions from Diesel-Fueled Engines—Standards for Nonvehicular Diesel Fuel)*

The District implements the requirements of 17 CCR 93114 through Rule 4702 and the District's new source review permitting program (Rule 2201).

C.56.4.2 *17 CCR 93115 (ATCM for Stationary Compression Ignition Engines)*

The District implements the requirements of 17 CCR 93115 through Rule 4702 and the District's new source review permitting program (Rule 2201).

C.56.5 *How does District Rule 4702 compare to regulations from other air districts?*

C.56.5.1 *Bay Area AQMD*

C.56.5.1.1 *Regulation 9 Rule 8 (Nitrogen Oxides and Carbon Monoxide from Stationary Internal Combustion Engines)*

The District evaluated the requirements contained within BAAQMD's Regulation 9 Rule 8 and found no requirements that were more stringent than those already in Rule 4702.

C.56.5.2 *Sacramento Metro AQMD*

C.56.5.2.1 *Rule 412 (Stationary Internal Combustion Engines Located at Major Stationary Sources of NOx)*

The District evaluated the requirements contained within SMAQMD's Rule 412 and found no requirements that were more stringent than those already in Rule 4702.

C.56.5.3 *Ventura County APCD*

C.56.5.3.1 *Rule 74.9 (Stationary Internal Combustion Engines)*

The District evaluated the requirements contained within VCAPCD's Rule 74.9 and found no requirements that were more stringent than those already in Rule 4702.

C.56.5.4 South Coast AQMD**C.56.5.4.1 Rule 1110.2 (Emissions from Gaseous- and Liquid-Fueled Engines) and Rules 2000 – 2020 (RECLAIM program)**

South Coast Air Quality Management District (SCAQMD) regulates the emissions from IC engines through a combination of control measures. SCAQMD 1110.2 is directly applicable to IC engines and includes emissions limitations for various applications. SCAQMD's RECLAIM program (Rules 2000 – 2020) allows most operators to purchase credits in lieu of instituting engine emissions controls otherwise required under SCAQMD 1110.2. Given these overlapping sets of requirements, Rule 4702 must be compared in context of both regulations. Additionally, many of the engine applications found in the Valley vary substantially from engine applications in SCAQMD; for example, engines used for agricultural irrigation pumping that exist in the Valley and are no longer found in SCAQMD. While not directly comparable, the following tables compare the emission limits between SCAQMD Rule 1110.2 and District Rule 4702.

Table C-5 Comparison of District and SCAQMD NO_x Emission Limits for Non-Agricultural Operations (Non-AO) Spark-Ignited Waste Gas Engines Rated at > 50 bhp (corrected to 15% oxygen on a dry basis)

Engine Type	District NO _x Limit (ppmv)	SCAQMD NO _x Limit (ppmv)
Waste Gas Fueled (Rich-Burn)	50	<u>Until 01-01-16</u> bhp ≥ 500: 36 x ECF ⁸⁹ bhp < 500: 45 x ECF ⁹² <u>On and after 01-01-16</u> 11 ppmv
Waste Gas Fueled (Lean-Burn)	65 ppmv or 90% reduction	<u>Until 01-01-16</u> bhp ≥ 500: 36 x ECF ⁹² bhp < 500: 45 x ECF ⁹² <u>On and after 01-01-16</u> 11 ppmv

⁸⁹ The efficiency correction factor (ECF) is 1.0, unless: 1) The engine operator has measured the engine's net specific energy consumption, in compliance with ASME Performance Test Code PTC 17 -1973, at the average load of the engine; and 2) the ECF-corrected emission limit is made a condition of the engine's permit to operate. The ECF is never less than 1.0 so in some cases the SCAQMD limits could potentially be less stringent than the District's NO_x limits.

Table C-6 Comparison of District and SCAQMD NOx Emission Limits for Non-AO Spark-Ignited Engines Rated > 50 bhp (corrected to 15% oxygen on a dry basis)

Engine Type	District NOx Limit (ppmv)	SCAQMD NOx Limit (ppmv)
1. Rich-Burn		
Rich-Burn Engine (except for below special applications)	11	11
Cyclic Loaded, Field Gas Fueled	50	11
Limited Use	25	11 ⁹⁰
2. Lean-Burn Engines		
Lean-Burn Engine (except for below special applications)	11	11
Two-Stroke, Gaseous Fueled, > 50 bhp and < 100 bhp	75	11
Limited Use	65	11
Lean-Burn Engine used for gas compression	65 ppmv or 93% reduction	11

Table C-7 Comparison of District and SCAQMD NOx Emission Limits for Agricultural Operations (AO) Spark-Ignited Engines Rated > 50 bhp (corrected to 15% oxygen on a dry basis)

Engine Type	District NOx Limit	SCAQMD NOx Limit
1. Rich-Burn	90 ppmv or 80% reduction	11
2. Lean-Burn	150 ppmv or 70% reduction	11
3. Certified and installed on or before June 16, 2005	Meet a Certified Spark-Ignited Engine Standard of HC + NOx < 0.6 g/bhp-hr	11

Medium and large operators in the South Coast Air Basin are most likely part of the South Coast RECLAIM program and are subsequently not required to meet the engine emission limitations included in Rule 1110.2. All facilities that emit over a certain threshold are required to participate in the RECLAIM program. As part of the RECLAIM program, certain companies receive emission allocations every year, usable for 12 months. The portion of the allocation not needed to offset the operator's own emissions can be sold to other companies. If the operator does not receive an emission allocation, they must buy emission credits from operators with unused emission allocations. In this way, the RECLAIM program is similar to a cap-and-trade program. The District does not have a RECLAIM-type program for this source category; therefore, all operators are required to meet the stringent emission limitations included in Rule 4702.

⁹⁰ SCAQMD exempt units that operate less than 500 hours from this limit; District defines "limited use" units as those operating less than 4,000 hours and only exempts engines operating less than 200 hours.

Although the SCAQMD emission level of 11 ppm has not yet been proven as technologically feasible in agricultural settings and it is unclear what percentage of facilities are complying with the current SCAQMD NOx limits for non-ag categories, the District evaluated the cost-effectiveness and feasibility of implementing an 11 ppmv NOx emission limit for the following categories of IC engines:

- Non-Agricultural Operations (Non-AO) Waste Gas Engines
- Non-AO Spark-Ignited Engines
 - Cyclic Loaded, Field Gas Fueled
 - Limited Use Engines
 - Lean-Burn Engines
 - Rich-Burn Engines
 - Two-Stroke, Gaseous Fueled Engines 50-100 bhp
 - Lean-Burn Engines Used for Gas Compression
- Agricultural Operations (AO) Spark-Ignited Engines

The District also evaluated the cost-effectiveness and feasibility of implementing intermediate NOx emission limits for AO spark-ignited engines that more closely match the current NOx emission limits for non-AO limited use rich-burn and lean-burn engines.

To determine potential emissions reductions, the District used the following equations:

$$\text{NOx} = (\text{BHP} \times \text{HR} \times \text{EF} \times \text{LF}) / (\text{CF})$$

Where:

NOx	=	Current annual NOx emissions or potential annual NOx emissions in ton/year
BHP	=	engine power
HR	=	annual hours of operation
EF	=	NOx emission factor
LF	=	engine load factor
CF	=	conversion factor from grams to pounds

The estimated annual NOx emissions reduction was calculated using the following equation:

$$\text{Potential Emissions Reduction} = \text{current annual NOx emissions} - \text{potential NOx annual NOx emissions}$$

NON-AGRICULTURAL OPERATIONS (NON-AO) WASTE GAS ENGINES

The District analyzed the technological feasibility of lowering the NO_x emission limit for waste gas engines and determined that due to the variability of waste gas, additional levels of NO_x control on existing waste gas engines can pose significant technical and feasibility challenges. Waste gas includes landfill gas, which is generated at landfills, and digester gas, which is generated from anaerobic digestion. Both landfill and digester gas result from the decomposition of organic matter by microorganisms in the absence of oxygen. Unlike pipeline natural gas, the composition of waste gas is not consistent or guaranteed. The heating value and composition of the gas (e.g. methane and oxygen contents) will vary with the type of materials that enter the landfill or digester and can also fluctuate seasonally or even daily. Both landfill and digester gases contain impurities, such as siloxanes, sulfur compounds, and halides. Landfill gas also contains entrained particulate matter, and both landfill and digester gas may contain particulate that results from combustion of the impurities in the gas. The contaminants in waste gas can coat and/or poison catalysts, rendering them ineffective. Because of its variable composition and contaminants, untreated waste gas is not interchangeable with pipeline-quality natural gas, and extensive and costly cleanup would be necessary to allow the use of catalytic emission controls needed to achieve 11 ppmv. This is not a practical option for most existing waste gas-fired engines, which were not designed to include the required gas systems and catalytic controls.

In addition to the District's efforts to identify additional potential technology options for this category, SCAQMD has also been evaluating this issue. In February 2008, SCAQMD amended Rule 1110.2 to include an 11 ppmv limit for waste gas engines rated at > 50 bhp. The original compliance date for this emissions limit was July 1, 2012, with the assumption that SCAQMD would complete a Technology Assessment to verify the feasibility of available control technologies for waste gas engines. However, SCAQMD had to amend Rule 1110.2 in September 2012 to extend the compliance deadline for waste gas engines from 2012 to 2016 in order to allow for more time to complete their Final Technology Assessment, which is currently still incomplete and has yet to identify feasible technology options. Additionally, these sources may also be in a position to avoid installing additional NO_x control technologies through their participation in SCAQMD's RECLAIM program.

District Rule 4702 contains the most stringent limits feasible for existing waste gas-fueled engines based on the use of combustion processes that minimize emissions without the use of post-combustion catalytic controls. Therefore, Rule 4702 meets or exceeds RACT for non-AO waste gas-fueled spark-ignited engines.

OTHER NON-AO SPARK-IGNITED ENGINES

Cyclic Loaded, Field Gas Fueled

Cyclic-loaded, field gas fueled engines can achieve some level of control, but not the stringent level of control that can be imposed on engines that operate in a narrow and more stable range of loads. The exhaust gas temperature of cyclic loaded engines

varies as a function of the engine load; however, catalyst chemistry is dependent on a minimum temperature to be effective in reducing emissions. When the cyclic load engine is operating in a particular engine load range, the exhaust gas temperature can reach the catalyst's effective range and allow for emissions to be well-controlled; however, as the engine cycles out of this load range, the exhaust gas temperature becomes too low for effective emissions control. Since the exhaust temperature fluctuates frequently for this category of units, it is technologically infeasible to require a lower NOx limit for cyclic loaded field-gas fueled engines. The current emission limit for this category of engines meets or exceeds RACT for these sources.

Limited Use Engines

During the 2011 amendments to Rule 4702, the District created this category of engines based on the high costs and cost effectiveness associated with the installation of additional controls for these engines (< 4,000 hours of operation). As discussed in the staff report, the NOx emission reductions foregone from not lowering the existing NOx limits to 11 ppmv for limited use engines was insignificant (about 0.004 tons per day in 2011).⁹¹

However, because the evaluation was conducted in 2011, the District re-evaluated the cost effectiveness of lowering the NOx emission limits to 11 ppmv for limited use non-AO rich-burn and lean-burn engines. The costs in the analyses below were gathered from information in the District's Permits database, IC engine manufacturers, and operators.

Limited Use Lean-Burn Engines

When evaluating the ability to lower NOx emissions to 11 ppmv, an operator can either retrofit the existing lean-burn IC engine with a selective catalytic reduction (SCR) system or install a new lean-burn engine with an SCR system. In many cases, retrofitting an existing IC engine is technologically infeasible or may require substantial additional unanticipated costs (such as the incompatibility of an older engine with less sophisticated operating controls with additional control technology, additional labor/maintenance costs, etc.). However, for the purpose of evaluating all potential controls, the District has included both options in the below analysis.

⁹¹ SJVAPCD. (2011, August 18). *Adopt Revised Proposed Amendments to Rule 4702 (Internal Combustion Engines)*. Retrieved from http://www.valleyair.org/Board_meetings/GB/agenda_minutes/Agenda/2011/August/Agenda_Item_10_Aug_18_2011.pdf

Table C-8 Annual Costs for Retrofitting an Existing Limited Use Lean-Burn Engine and Installing a New Limited Use Lean-Burn Engine with SCR

Item	Assumptions/Methodology	Cost
Average Engine Power Rating	1,100 brake horsepower (bhp)	n/a
Annual Operation	2,500 hours (hr)	n/a
Capital Costs		
New Engine Cost (without SCR)	Includes: engine, freight, installation, start-up, additional equipment (belt guards, fuel connection, etc.), and tax	\$110,656
Annualized Engine Capital Costs (10 years, 10%)	0.163 x New Engine Cost	\$18,037
SCR Equipment Costs		
SCR System	\$73,000 per engine	\$73,000
550 gallon double wall plastic urea tank and accessories	\$5,270 per tank	\$5,270
3 hp rotary screw air compressor with dryer and receiver tank	\$5,875 per compressor package	\$5,875
Total SCR Equipment Costs	Equipment costs x 20% profit/mark-up	\$100,974
SCR Installation Costs		
Start-up and Commissioning Rate	\$1,500/day; assume 1 day for each system	\$1,500
Electrical upgrade to power compressor	n/a	\$0
Total SCR Installation Costs		\$1,500
Total SCR Capital Costs	SCR Equipment Costs + SCR Installation Costs	\$102,474
Annualized SCR Capital Costs (10 years, 10%)	0.163 x Total SCR Capital Costs	\$16,703
Annual Operating and Maintenance Costs		
Annual Reagent (urea) Cost	\$3 per gallon; 1 gallon/hr Cost = \$3 x 2,500 hr	\$7,500
Annual Increase in Fuel Cost (due to drop in fuel efficiency with SCR)	Fuel usage = 9,322.5 standard cubic feet per hour (scf/hr) Fuel cost (per 1,000 scf) = \$7.36 Fuel cost (per hour) = (9,322.5 x \$7.36) / 1,000 Fuel cost (per year) = hourly cost x 2,500 hr 2.5% drop in fuel efficiency Added Fuel Cost = Annual fuel cost x 2.5%	\$4,288
Annual Electricity Cost (for compressor)	3 hp compressor = 2.24 kW power rating Electricity rate for industrial operations = \$0.132/kW-hr Hourly electricity cost = 2.24 kW x \$0.132/kW-hr Daily meter charge = \$49.281 Annual electricity cost = hourly cost x 2500 hr Annual meter charge = daily meter charge x 365 days Total utility cost = Annual electricity cost + Annual meter charge	\$18,728

Item	Assumptions/Methodology	Cost
Annual Catalyst Cost	Life of catalyst = 5 years Cost per catalyst = \$5,000 Catalyst costs for 10 years = \$5,000 x 2 Annualized cost = \$10,000 x 0.163	\$1,630
Annual Maintenance Cost	Maintenance = \$0.02 per bhp per hour of operation Annual cost = \$0.02 x 1,100 bhp x 2,500 hr	\$55,000
Annual Operating & Maintenance (O&M) Costs	Annual O&M = Annual Reagent Cost+ Annual Increase in Fuel Cost + Annual Electricity Cost + Annual Catalyst Cost + Annual Maintenance Cost	\$87,147
Annual Cost for Retrofit of LB Engine with SCR	Annualized SCR Capital Cost + Annual O&M Cost	\$103,850
Annual Cost for New LB Engine with SCR	Annualized Engine Capital Cost + Annualized SCR Capital Cost + Annual O&M Cost	\$121,887

The emissions reductions are calculated below:

$$\begin{aligned}
 \text{BHP} &= 1,100 \text{ bhp} \\
 \text{HR} &= 2,500 \text{ hours/year (hr/yr)} \\
 \text{EF1} &= 0.78 \text{ g-NOx/bhp-hr (equivalent to 65 ppmvd NOx at 15\% O}_2\text{; assuming 35\% thermal efficiency)} \\
 \text{EF2} &= 0.132 \text{ g-NOx/bhp-hr (equivalent to 11 ppmvd NOx at 15\% O}_2\text{; assuming 35\% thermal efficiency)} \\
 \text{LF} &= 0.8 \\
 \text{CF} &= 453.6 \text{ grams/pound (g/lb)}
 \end{aligned}$$

$$\begin{aligned}
 \text{Current NOx} &= (\text{BHP} \times \text{HR} \times \text{EF1} \times \text{LF}) / (\text{CF}) \\
 &= (1,100 \text{ bhp} \times 2,500 \text{ hr/yr} \times 0.78 \text{ g-NOx/bhp-hr} \times 0.8) / (453.6 \text{ g/lb}) \\
 &= 3,783 \text{ lb-NOx/year}
 \end{aligned}$$

$$\begin{aligned}
 \text{Potential NOx} &= (\text{BHP} \times \text{HR} \times \text{EF2} \times \text{LF}) / (\text{CF}) \\
 &= (1,100 \text{ bhp} \times 2,500 \text{ hr/yr} \times 0.132 \text{ g-NOx/bhp-hr} \times 0.8) / (453.6 \text{ g/lb}) \\
 &= 640 \text{ lb-NOx/year}
 \end{aligned}$$

$$\begin{aligned}
 \text{Potential Emissions Reduction} &= \text{Current NOx} - \text{Potential NOx} \\
 \text{Potential Emissions Reduction} &= (3,783 - 640 \text{ lb}) \times (1 \text{ ton} / 2,000 \text{ lb}) \\
 \text{Potential Emissions Reduction} &= 1.57 \text{ tons/year}
 \end{aligned}$$

Cost Effectiveness: The cost effectiveness is the added cost, in dollars per year, of the control technology, divided by the emissions reductions achieved, in tons per year. Based on the calculations above, the cost effectiveness of retrofitting or replacing current limited use lean-burn spark-ignited engines is as follows:

- Retrofitted limited use lean-burn engine with SCR: \$66,146/ton of NOx reduced
- New limited use lean-burn engine with SCR: \$77,635/ton of NOx reduced

As demonstrated in the analysis and summary above, it is not cost effective to require the retrofit or replacement of limited use lean-burn engines to achieve 11 ppmv.

Limited Use Rich-Burn Engines

When evaluating the ability to lower NO_x emissions to 11 ppmv, an operator will generally retrofit the existing rich-burn IC engine with a nonselective catalytic reduction (NSCR) system. In many cases, retrofitting an existing IC engine is technologically infeasible or may require substantial additional unanticipated costs (such as the incompatibility of an older engine with less sophisticated operating controls with additional control technology, additional labor/maintenance costs, etc.). However, for the purpose of evaluating potential controls in this category, the District has included the less costly, potentially feasible scenario of retrofitting an existing rich-burn engine with NSCR in the below analysis.

Table C-9 Annual Costs for Retrofitting an Existing Limited Use Rich-Burn Engine

Item	Assumptions/Methodology	Cost
Average Engine Power Rating	500 bhp	n/a
Annual Operation	2,500 hours (hr)	n/a
Capital Costs		
New Catalyst System	Includes: catalyst, air-to fuel ratio controller, ignition system, and installation	\$75,000
Annualized Catalyst Capital Cost (10 years, 10%)	0.163 x New Catalyst System	\$12,225
Annual Cost for Retrofit of RB Engine with New Catalyst	Annualized Catalyst Capital Cost	\$12,225

The emissions reductions are calculated below:

$$\begin{aligned}
 \text{BHP} &= 500 \text{ bhp} \\
 \text{HR} &= 2,500 \text{ hours/year (hr/yr)} \\
 \text{EF1} &= 0.30 \text{ g-NO}_x/\text{bhp-hr (equivalent to 25 ppmvd NO}_x \text{ at 15\% O}_2\text{; assuming 35\% thermal efficiency)} \\
 \text{EF2} &= 0.132 \text{ g-NO}_x/\text{bhp-hr (equivalent to 11 ppmvd NO}_x \text{ at 15\% O}_2\text{; assuming 35\% thermal efficiency)} \\
 \text{LF} &= 0.8 \\
 \text{CF} &= 453.6 \text{ grams/pound (g/lb)}
 \end{aligned}$$

$$\begin{aligned}
 \text{Current NO}_x &= (\text{BHP} \times \text{HR} \times \text{EF1} \times \text{LF}) / (\text{CF}) \\
 &= (500 \text{ bhp} \times 2,500 \text{ hr/yr} \times 0.30 \text{ g-NO}_x/\text{bhp-hr} \times 0.8) / (453.6 \text{ g/lb}) \\
 &= 661 \text{ lb-NO}_x/\text{year}
 \end{aligned}$$

$$\begin{aligned}\text{Potential NOx} &= (\text{BHP} \times \text{HR} \times \text{EF2} \times \text{LF}) / (\text{CF}) \\ &= (500 \text{ bhp} \times 2,500 \text{ hr/yr} \times 0.132 \text{ g-NOx/bhp-hr} \times 0.8) / (453.6 \text{ g/lb}) \\ &= 291 \text{ lb-NOx/year}\end{aligned}$$

$$\begin{aligned}\text{Potential Emissions Reduction} &= \text{Current NOx} - \text{Potential NOx} \\ \text{Potential Emissions Reduction} &= (661 - 291 \text{ lb}) \times (1 \text{ ton} / 2,000 \text{ lb}) \\ \text{Potential Emissions Reduction} &= \mathbf{0.19 \text{ tons/year}}\end{aligned}$$

Cost Effectiveness: The cost effectiveness is the added cost, in dollars per year, of the control technology, divided by the emissions reductions achieved, in tons per year. Based on the calculations above, the cost effectiveness of retrofitting limited use rich-burn spark-ignited engines is as follows:

- Retrofitted limited use rich-burn non-AO engine with new catalyst:
\$64,342/ton of NOx reduced

As demonstrated in the analysis and summary above, it is not cost effective to require the retrofit of limited use rich-burn engines to achieve 11 ppmv, even without including additional substantial costs, such as annual operating and maintenance costs.

Two-Stroke, Gaseous Fueled Engines 50-100 bhp

There is no control technology compatible with two-stroke, gaseous fueled engines, including SCR, which will allow these units to achieve a NOx emission limit below 75 ppmv. An 11 ppmv NOx emission limit is not technologically feasible for these engines; the current limit implements RACT for two-stroke, gaseous fueled engines less than 100 bhp.

Lean-Burn Engines Used in Gas Compression

Similar to the "Limited Use" engine category, during the 2011 amendments to Rule 4702, the District created this category of engines based on the technological infeasibility to control these types of engines. Lean-burn engines used in gas compression in the Valley are used in natural gas distribution and storage service, and these engines frequently experience changing load conditions. As noted in EPA's Stationary IC Engine Technical Support Document⁹², SCR use is problematic for these engines due to the fluctuations over a broad range of conditions. For this reason, EPA states that there is an insufficient basis to conclude that SCR is an appropriate technology for large lean-burn engines used for gas compression. The current emission limit is achievable through low-NOx combustion technology, which includes changes to the engine's timing, enhanced control of the air-fuel ratio, and other changes that lower NOx emissions. Due to the technological complexities associated with lean-burn engines used in gas compression, the current emissions limit implements RACT for these units.

⁹² EPA. (2003, October). *Stationary Reciprocating Internal Combustion Engines Technical Support Document for NOx SIP Call*.

AO SPARK-IGNITED ENGINES

Over the past decade, AOs have invested significant capital to retrofit and replace thousands of irrigation pump and other engines reducing emissions by over 80% in this category, and continue to do so as emission limitations and associated compliance deadlines come into effect under Rule 4702. In addition to the high cost-effectiveness and potential technical infeasibility associated with retrofitting or replacing existing AO spark-ignited engines, requiring additional costly controls on existing AO engines is economically challenging and potentially infeasible.

AO Rich-Burn and Lean-Burn Engine Retrofit Evaluation

Retrofitting existing spark-ignited rich-burn and lean-burn engines poses several challenges that are not present when installing new, replacement engines. The District had to overcome many obstacles and challenges in retrofitting existing AO engines when the District adopted its current emission limits and has worked closely with AO engine owners and operators and control system manufacturers to ensure compliance with this stringent emission limit. Efforts to ensure compliance with the current rule limit are continuing today. However, lowering the emission limits even further would present a number of challenges with respect to technological feasibility as outlined in the following list.

1. Engine power losses from adding controls
2. Existing engines may require overhaul
3. Existing engines cannot meet lower emissions levels due to narrower margin of compliance
4. Control systems must be custom designed
5. Errors generated during control system installation
6. Retrofit controls can damage an engine
7. Engine can damage a control system
8. Compliance costs
9. Engines operated in remote locations

1. Engine power losses from adding controls

An engine is chosen based on its ability to provide the required power output at a reasonable engine speed (rpm) that will not over-stress the engine over its expected service life. Add-on emission control systems result in additional loads that the engine may not have been originally designed to accommodate. In addition, due to the extreme drought conditions, engine owners and operators have needed to increase the power output for well pump engines as the water table has dropped. As the engines work harder to pump water, there is less power output available to accommodate emission control systems.

2. Existing engines may require overhaul

The engines in use at AOs have been in service for many years, even decades, and are heavily worn. A worn engine can burn oil, leak fluids, and run rough. For an uncontrolled engine, some of the effects of engine wear do not have a major effect on the engine's ability to do its job (e.g. pumping water). However, the operation of a catalytic emission control system requires that the engine be operated consistently smooth. An expensive major engine overhaul or rebuild would be necessary to ensure smooth engine operation prior to installing a catalytic emission control system. Many AOs do not have the resources (e.g., staff, experience, technical training, etc.) to complete an engine overhaul or rebuild without outside assistance. Meeting more stringent/lower emission standards increases the need for the engine to operate properly.

3. Existing engines cannot meet lower emissions levels due to narrower margin of compliance

As emission limits are lowered, there is a narrower margin of compliance and proper engine operation becomes more critical. AOs in the District have to constantly ensure that their engine is properly maintained and within all the appropriate specifications to ensure compliance with the current emission limit, more so than newer engines. The lower emissions levels will result in additional stresses on the engine and increased maintenance and monitoring efforts that result from operating a retrofitted engine. Even then, due to the age of the engine and based on engine not appropriately designed for additional add-on systems and the associated loads, engines will not be able to meet the lower limits.

4. Control systems must be custom designed

For proper control system design, the engine condition, make, model, power output, and exhaust gas flow rate and temperature must be considered. There are no universal, off-the-shelf, one size-fits-all systems available for purchase. Control system design also assumes that an engine is operating properly and smoothly per the engine manufacturer's specifications. To ensure proper operation of the control system, an engine may need to be overhauled or rebuilt prior to installation of the control system. A common problem with many retrofit emission control systems is installation of a system on an engine that is not operating smoothly or to engine manufacturer specifications. Installing a control system on a rough running engine will result in poor control system operation and eventually system and engine damage. Proper system design and engine operation is more important as emission limits are lowered since the margin of compliance will be much less.

5. Errors generated during control system installation

Site conditions like gas supply pressure can cause an existing engine to operate rough. If site issues are not addressed prior to installation of a control system, the control system will not operate correctly. An installer may attempt to correct rough engine

operation by making the combustion more fuel rich; however, this technique will not provide lasting results and will cause accelerated engine and control system wear and eventually failure. An emission control system that is designed to meet lower emission limits will require a larger catalyst element which will be more expensive to replace if permanently damaged.

6. Retrofit controls can damage an engine

For proper control of exhaust pollutants, a catalyst must be operated at a certain temperature range that is higher than normal exhaust temperatures. Additional fuel is often injected into the engine with the intent that the additional fuel will pass through the combustion chamber and ignite in the exhaust system prior to the catalyst (the high catalyst temperature ignites the fuel). This extra fuel results in higher engine operating temperatures since some of the extra fuel is combusted during normal engine combustion. The increased engine temperature leads to accelerated engine wear and reduced engine reliability. Due to wear and older design, increased combustion temperatures lead to engine failure and permanent engine damage.

7. Engine can damage a control system

An existing, worn engine can burn oil and run rough. Oil in the exhaust stream will foul/mask a catalyst which will result in reduced emission control efficiency and likely permanent damage to a catalyst element. The air-fuel ratio controller will attempt to adjust engine operation (e.g., injecting more fuel) to keep the control system operating within the specified parameters; however, adjusting engine operation will not correct a fouled catalyst. Continued operation with a damaged catalyst will lead to permanent catalyst damage. An emission control system that is designed to meet lower emission limits will require a larger catalyst element which will be more expensive to replace if permanently damaged and this cycle will be repeated further adding to the cost.

8. Compliance costs

Unlike many industries, AOs compete on an international basis and cannot pass increased production costs on to consumers. AOs must absorb the compliance costs associated with lower emission standards, for example: retrofit and replacement costs; additional maintenance costs; additional monitoring costs; and additional testing costs. These additional regulatory costs put them at an economic disadvantage to their competitors.

9. Engines operated in remote locations

AO spark-ignited engines are generally located in rural, hard to access areas with minimal oversight since AOs have limited resources and staffing. With seasonal labor and minimal year-round staffing, it is difficult for AOs to provide the frequent and complex maintenance required for retrofitted or new engines equipped with advanced emission controls. Lower emission limits are achieved only through well maintained engines and control systems. Lower emissions limits lead to increased maintenance

and monitoring efforts. The oil production industry is the only other major industry in the Valley that has IC engines located in remote locations; however, with the highly technical nature of oil production and refining as compared to agricultural production and additional economic resources, it is feasible for the oil and gas production industry to hire qualified staff dedicated to maintaining and operating IC engines and other equipment on-site.

Retrofitting AO engines with emission control systems to meet increasingly stringent emission limits poses unique challenges that are not applicable when replacing engines. Based on the challenges outlined above, meeting 25 ppm or even 11 ppmv with existing AO engines is not feasible. The additional maintenance, monitoring, and testing, along with the cost of rebuilding engines and the cost of the emission control system, may even be more costly than installing a replacement engine.

AO Lean-Burn Engine Replacement with SCR

When evaluating the ability to lower NO_x emissions, an agricultural operator can install a new lean-burn engine with an SCR system. The cost-effectiveness analysis to lower emissions to 11 ppmv is as follows:

Table C-10 Annual Costs for Installing a New AO Lean-Burn Engine with SCR

Item	Assumptions/Methodology	Cost
Average Engine Power Rating	241 bhp	n/a
Annual Operation	2,500 hours (hr)	n/a
Capital Costs (Engine)		
New Engine Cost (without SCR)	Includes: engine, freight, installation, start-up, additional equipment (belt guards, fuel connection, etc.), and tax	\$109,480
Annualized Engine Capital Costs (10 years, 10%)	0.163 x New Engine Cost	\$17,845
SCR Equipment Costs		
SCR System	\$73,000 per engine	\$73,000
550 gallon double wall plastic urea tank and accessories	\$5,270 per tank	\$5,270
3 hp rotary screw air compressor with dryer and receiver tank	\$5,875 per compressor package	\$5,875
Total SCR Equipment Costs	Equipment costs x 20% profit/mark-up	\$100,974
SCR Installation Costs		
Start-up and Commissioning Rate	\$1,500/day; assume 1 day for each system	\$1,500
Electrical upgrade to power compressor	\$43.22/foot; avg. 1,020 feet to extend electrical line	\$44,084
Total SCR Installation Costs		\$45,584
Total SCR Capital Costs	SCR Equipment Costs + SCR Installation Costs	\$146,558

Item	Assumptions/Methodology	Cost
Annualized SCR Capital Costs (10 years, 10%)	0.163 x Total SCR Capital Costs	\$23,889
Annual Operating and Maintenance Costs (SCR)		
Annual Reagent (urea) Cost	\$3 per gallon; 1 gallon/hr Cost = \$3 x 2,500 hr	\$7,500
Annual Increase in Fuel Cost (due to drop in fuel efficiency with SCR)	Fuel usage = 1,750.7 standard cubic feet per hour (scf/hr) Fuel cost (per 1,000 scf) = \$7.36 Fuel cost (per hour) = (1,750.7 x \$7.36) / 1,000 Fuel cost (per year) = hourly cost x 2,500 hr 2.5% drop in fuel efficiency Added Fuel Cost = Annual fuel cost x 2.5%	\$805
Annual Electricity Cost (for compressor)	3 hp compressor = 2.24 kW power rating Electricity rate for AO = \$0.136/kW-hr Hourly electricity cost = 2.24 kW x \$0.136/kW-hr Annual electricity cost = hourly cost x 2,500 hr	\$761
Annual Catalyst Cost	Life of catalyst = 5 years Cost per catalyst = \$5,000 Catalyst costs for 10 years = \$5,000 x 2 Annualized cost = \$10,000 x 0.163	\$1,630
Annual Maintenance Cost	Maintenance = \$0.02 per bhp per hour of operation Annual cost = \$0.02 x 241 bhp x 2,500 hr	\$12,050
Annual Operating & Maintenance (O&M) Costs	Annual O&M = Annual Reagent Cost + Annual Increased Fuel Cost + Annual Electricity Cost + Annual Catalyst Cost + Annual Maintenance Cost	\$22,746
Annual Cost for New LB Engine with SCR	Annualized Engine Capital Cost + Annualized SCR Capital Cost + Annual O&M Cost	\$64,480

*The values within this table are rounded.

The emissions reductions are calculated below:

$$\begin{aligned}
 \text{BHP} &= 241 \text{ bhp} \\
 \text{HR} &= 2,500 \text{ hours/year (hr/yr)} \\
 \text{EF1} &= 2.092 \text{ g-NOx/bhp-hr (equivalent to 150 ppmv)} \\
 \text{EF2} &= 0.132 \text{ g-NOx/bhp-hr (equivalent to 11 ppmv)} \\
 \text{LF} &= 0.65 \\
 \text{CF} &= 453.6 \text{ grams/pound (g/lb)}
 \end{aligned}$$

$$\begin{aligned}
 \text{Current NOx} &= (\text{BHP} \times \text{HR} \times \text{EF1} \times \text{LF}) / (\text{CF}) \\
 &= (241 \text{ bhp} \times 2,500 \text{ hr/yr} \times 2.092 \text{ g-NOx/bhp-hr} \times 0.65) / (453.6 \text{ g/lb}) \\
 &= 1,806 \text{ lb-NOx/year}
 \end{aligned}$$

$$\begin{aligned}
 \text{Potential NOx} &= (\text{BHP} \times \text{HR} \times \text{EF2} \times \text{LF}) / (\text{CF}) \\
 &= (241 \text{ bhp} \times 2,500 \text{ hr/yr} \times 0.132 \text{ g-NOx/bhp-hr} \times 0.65) / 453.6 \\
 &= 114 \text{ lb-NOx/year}
 \end{aligned}$$

Potential Emissions Reduction = Current NO_x – Potential NO_x
 Potential Emissions Reduction = (1,806-114 lb) x (1 ton / 2,000 lb)
Potential Emissions Reduction = 0.85 tons/year

Cost Effectiveness: The cost effectiveness is the added cost, in dollars per year, of the control technology, divided by the emissions reductions achieved, in tons per year. Based on the calculations above, the cost effectiveness of replacing current AO lean-burn spark-ignited engines is as follow:

- New lean-burn engine with SCR: \$75,859/ton of NO_x reduced

As demonstrated in the analysis and summary above, it is not cost effective to replace existing AO lean-burn engines with newer engines equipped with SCR systems.

Since new lean-burn engines equipped with SCR systems are now all currently designed and sold to meet NO_x emissions levels of 11 ppmv, there is not a more cost-effective option available to meet an intermediate emissions level of 25 ppmv through the purchase of new lean-burn engines equipped with SCR.

AO Lean-Burn Engine Replacement without SCR

When evaluating the ability to lower NO_x emissions to 65 ppmv, an agricultural operator can replace the existing lean-burn IC engine with a new lean-burn engine certified to meet 65 ppmv without the need of an SCR system.

Table C-11 Annual Costs for Installing a New AO Lean-Burn Engine

Item	Assumptions/Methodology	Cost
Average Engine Power Rating	241 bhp	n/a
Annual Operation	2,500 hours (hr)	n/a
Capital Costs (Engine)		
New Engine Cost (without SCR)	Includes: engine, freight, installation, start-up, additional equipment (belt guards, fuel connection, etc.), and tax	\$109,480
Annualized Engine Capital Costs (10 years, 10%)	0.163 x New Engine Cost	\$17,845
Annual Operating and Maintenance Costs		
Annual Maintenance Cost	Maintenance = \$0.01 per bhp per hour of operation Annual cost = \$0.01 x 241 bhp x 2,500 hr	\$6,025
Annual Cost for New LB Engine	Annualized Engine Capital Cost + Annual O&M Cost	\$23,870

*The values within this table are rounded.

The emissions reductions are calculated below:

BHP	=	241 bhp
HR	=	2,500 hours/year (hr/yr)
EF1	=	2.092 g-NOx/bhp-hr (equivalent to 150 ppmv)
EF2	=	0.78 g-NOx/bhp-hr (equivalent to 65 ppmv)
LF	=	0.65
CF	=	453.6 grams/pound (g/lb)

$$\begin{aligned}\text{Current NOx} &= (\text{BHP} \times \text{HR} \times \text{EF1} \times \text{LF}) / (\text{CF}) \\ &= (241 \text{ bhp} \times 2,500 \text{ hr/yr} \times 2.092 \text{ g-NOx/bhp-hr} \times 0.65) / (453.6 \text{ g/lb}) \\ &= 1,806 \text{ lb-NOx/year}\end{aligned}$$

$$\begin{aligned}\text{Potential NOx} &= (\text{BHP} \times \text{HR} \times \text{EF2} \times \text{LF}) / (\text{CF}) \\ &= (241 \text{ bhp} \times 2,500 \text{ hr/yr} \times 0.78 \text{ g-NOx/bhp-hr} \times 0.65) / 453.6 \\ &= 673 \text{ lb-NOx/year}\end{aligned}$$

$$\begin{aligned}\text{Potential Emissions Reduction} &= \text{Current NOx} - \text{Potential NOx} \\ \text{Potential Emissions Reduction} &= (1,806 - 673 \text{ lb}) \times (1 \text{ ton} / 2,000 \text{ lb}) \\ \text{Potential Emissions Reduction} &= \mathbf{0.57 \text{ tons/year}}\end{aligned}$$

Cost Effectiveness: The cost effectiveness is the added cost, in dollars per year, of the control technology, divided by the emissions reductions achieved, in tons per year. Based on the calculations above, the cost effectiveness of replacing current AO lean-burn spark-ignited engines is as follows:

- New lean-burn engine: \$41,877/ton of NOx reduced

As demonstrated in the analysis and summary above, it is not cost effective to replace existing AO lean-burn engines with newer engines.

AO Rich-Burn Engine Replacement with 3-Way Catalyst Meeting 11 ppmv

When evaluating the ability to lower NOx emissions, an agricultural operator can install a new rich-burn engine with a 3-way catalyst. The cost-effectiveness is shown below:

Table C-12 Annual Cost for Installing a New AO Rich-Burn Engine with a 3-way Catalyst

Item	Assumptions/Methodology	Cost
Average Engine Power Rating	256 bhp	n/a
Annual Operation	2,500 hours (hr)	n/a
Total Capital Costs		
New Engine Cost	Includes: engine with 3-way catalyst, freight, installation, and tax	\$95,000
Annualized Engine Capital Costs (10 years, 10%)	0.163 x New Engine Cost	\$15,485
Annual Operating and Maintenance Costs (SCR)		
Annual Added Fuel Cost (due to drop in fuel efficiency with catalyst)	Fuel usage = 1,859.7 scf/hr Fuel cost (per 1,000 scf) = \$7.36 Fuel cost (per hour) = (1,859.7 x \$7.36) / 1,000 Fuel cost (per year) = hourly cost x 2,500 hr Assume 2.5% drop in fuel efficiency Added Fuel cost = Annual fuel cost x 2.5%	\$855
Annual Catalyst Cost	Life of catalyst = 5 years Cost per catalyst = \$5,000 Catalyst costs for 10 years = \$5,000 x 2 Annualized Catalyst Cost = \$10,000 x 0.163	\$1,630
Annual Maintenance Cost	Maintenance = \$0.02 per bhp per hour of operation Annual Maintenance Cost = \$0.02 x 256 bhp x 2,500 hr	\$12,800
Annual Operating & Maintenance (O&M) Costs	Annual O&M = Annual Added Fuel Cost + Annual Catalyst Cost + Annual Maintenance Cost	\$15,285
Annual Cost for New RB Engine with 3-way	Annualized Engine Capital Cost + Annual O&M Cost	\$30,770

*The values within the above table are rounded.

The emissions reductions are calculated below:

$$\begin{aligned}
 \text{BHP} &= 256 \text{ bhp} \\
 \text{HR} &= 2,500 \text{ hours/year} \\
 \text{EF1} &= 1.255 \text{ g-NOx/bhp-hr (equivalent to 90 ppmv)} \\
 \text{EF2} &= 0.132 \text{ g-NOx/bhp-hr (equivalent to 11 ppmv)} \\
 \text{LF} &= 0.65 \\
 \text{CF} &= 453.6 \text{ grams/pound}
 \end{aligned}$$

$$\begin{aligned}
 \text{Current NOx} &= (\text{BHP} \times \text{HR} \times \text{EF1} \times \text{LF}) / (\text{CF}) \\
 &= (256 \text{ bhp} \times 2,500 \text{ hr/yr} \times 1.255 \text{ g-NOx/bhp-hr} \times 0.65) / 453.6 \\
 &= 1,151 \text{ lb-NOx/year}
 \end{aligned}$$

$$\begin{aligned}
 \text{Potential NOx} &= (\text{BHP} \times \text{HR} \times \text{EF2} \times \text{LF}) / (\text{CF}) \\
 &= (256 \text{ bhp} \times 2,500 \text{ hr/yr} \times 0.132 \text{ g-NOx/bhp-hr} \times 0.65) / 453.6 \\
 &= 121 \text{ lb-NOx/year}
 \end{aligned}$$

Potential Emissions Reduction = Current NOx – Potential NOx
 Potential Emissions Reduction = (1,151-121 lb) x (1 ton / 2,000 lb)
Potential Emissions Reduction = 0.52 tons/year

Cost Effectiveness: The cost effectiveness is the added cost, in dollars per year, of the control technology, divided by the emissions reductions achieved, in tons per year. Based on the calculations above, the cost effectiveness of replacing current AO rich-burn engines is as follows:

- New rich-burn engine with a 3-way catalyst to meet 11 ppmv: \$59,173/ton of NOx reduced

As demonstrated in the analysis and summary above, it is not cost effective to replace existing spark-ignited engines with new rich-burn engines with 3-way catalysts meeting 11 ppmv.

AO Rich-Burn Engine Replacement with 3-Way Catalyst Meeting 25 ppmv

In order to meet 25 ppmv, an agricultural operator can install a new rich-burn engine with a slightly smaller catalyst compared to the catalyst needed to meet an 11 ppmv emission level.

Table C-13 Annual Cost for Installing a New AO Rich-Burn Engine with a 3-way Catalyst

Item	Assumptions/Methodology	Cost
Average Engine Power Rating	256 bhp	n/a
Annual Operation	2,500 hr	n/a
Total Capital Costs		
New Engine Cost	Includes: engine with 3-way catalyst, freight, installation, and tax	\$95,000
Annualized Engine Capital Costs (10 years, 10%)	0.163 x New Engine Cost	\$15,485
Annual Operating and Maintenance Costs (SCR)		
Annual Added Fuel Cost (due to drop in fuel efficiency with catalyst)	Fuel usage = 1,859.7 scf/hr Fuel cost (per 1,000 scf) = \$7.36 Fuel cost (per hour) = (1,859.7 x \$7.36) / 1,000 Fuel cost (per year) = hourly cost x 2,500 hr Assume 2.5% drop in fuel efficiency Added Fuel cost = Annual fuel cost x 2.5%	\$855
Annual Catalyst Cost	Life of catalyst = 5 years Cost per catalyst = \$4,000 Catalyst costs for 10 years = \$4,000 x 2 Annualized Catalyst Cost = \$8,000 x 0.163	\$1,304
Annual Maintenance Cost	Maintenance = \$0.02 per bhp per hour of operation Annual Maintenance Cost = \$0.02 x 256 bhp x 2,500 hr	\$12,800

Item	Assumptions/Methodology	Cost
Annual Operating & Maintenance (O&M) Costs	Annual O&M = Annual Added Fuel Cost + Annual Catalyst Cost + Annual Maintenance Cost	\$14,959
Annual Cost for New RB Engine with 3-way	Annualized Engine Capital Cost + Annual O&M Cost	\$30,444

*The values within the above table are rounded.

The emissions reductions are calculated below:

$$\begin{aligned}
 \text{BHP} &= 256 \text{ bhp} \\
 \text{HR} &= 2,500 \text{ hours/year} \\
 \text{EF1} &= 1.255 \text{ g-NOx/bhp-hr (equivalent to 90 ppmv)} \\
 \text{EF2} &= 0.30 \text{ g-NOx/bhp-hr (equivalent to 25 ppmv)} \\
 \text{LF} &= 0.65 \\
 \text{CF} &= 453.6 \text{ grams/pound}
 \end{aligned}$$

$$\begin{aligned}
 \text{Current NOx} &= (\text{BHP} \times \text{HR} \times \text{EF1} \times \text{LF}) / (\text{CF}) \\
 &= (256 \text{ bhp} \times 2,500 \text{ hr/yr} \times 1.255 \text{ g-NOx/bhp-hr} \times 0.65) / 453.6 \\
 &= 1,151 \text{ lb-NOx/year}
 \end{aligned}$$

$$\begin{aligned}
 \text{Potential NOx} &= (\text{BHP} \times \text{HR} \times \text{EF2} \times \text{LF}) / (\text{CF}) \\
 &= (256 \text{ bhp} \times 2,500 \text{ hr/yr} \times 0.30 \text{ g-NOx/bhp-hr} \times 0.65) / 453.6 \\
 &= 275 \text{ lb-NOx/year}
 \end{aligned}$$

$$\begin{aligned}
 \text{Potential Emissions Reduction} &= \text{Current NOx} - \text{Potential NOx} \\
 \text{Potential Emissions Reduction} &= (1,151 - 275 \text{ lb}) \times (1 \text{ ton} / 2,000 \text{ lb}) \\
 \text{Potential Emissions Reduction} &= 0.44 \text{ tons/year}
 \end{aligned}$$

Cost Effectiveness: The cost effectiveness is the added cost, in dollars per year, of the control technology, divided by the emissions reductions achieved, in tons per year. Based on the calculations above, the cost effectiveness of replacing current AO rich-burn engines is as follows:

- New rich-burn engine with a 3-way catalyst to meet 25 ppmv: \$69,191/ton of NOx reduced

As demonstrated in the analysis and summary above, it is not cost effective to replace existing spark-ignited engines with new rich-burn engines with 3-way catalysts meeting 25 ppmv.

Since new rich-burn engines equipped with 3-way catalysts are now all currently designed and sold to meet NOx emissions levels of 25 ppmv, there is not a more cost-effective option available to meet an intermediate emissions level of 65 ppmv through the purchase of new rich-burn engines.

C.56.7 Potential Emission Reduction Opportunities

As discussed above, there are no additional emission reduction opportunities at this time for Rule 4702.

C.56.8 Evaluation Findings

Rule 4702 currently has in place the most stringent measures feasible to implement in the Valley and therefore meets or exceeds federal RACT requirements for this source category. As the District continues to develop future attainment plans to address increasingly stringent federal air quality standards, this source category will be re-evaluated for additional potential opportunities to reduce emissions.

2015 Plan for the 1997 PM_{2.5} Standard

San Joaquin Valley Unified Air Pollution Control District

Boilers N-355-20 and '-95

C.7 RULE 4306 AND RULE 4320 ADVANCED EMISSION REDUCTION OPTIONS FOR BOILERS, STEAM GENERATORS, AND PROCESS HEATERS GREATER THAN 5.0 MMBTU/HR

Discussion

Rules 4306 and 4320 apply to any gaseous fuel or liquid fuel fired boiler, steam generator, or process heater with a total rated heat input greater than 5 million British thermal units per hour (MMBtu/hr). The purpose of these rules is to limit NO_x and carbon monoxide (CO) emissions from boilers, steam generators, and process heaters of this size range.

Rule 4320 is the third generation rule for this source category. The first District rule for this source category, Rule 4305 (Boilers, Steam Generators, and Process Heaters), was adopted on December 16, 1993. Rule 4305 was superseded by Rule 4306 (Boilers, Steam Generators, and Process Heaters – Phase 3) on September 18, 2003 to implement a NO_x control measure from the District's ozone and PM₁₀ attainment plans, lowering the NO_x emissions limits in Rule 4305. Since adoption, Rule 4306 has been amended twice.

The amendment of Rule 4306 in October 2008 was initially proposed to lower the NO_x emission limit from 9 ppmv to 6 ppmv for units greater than 20 MMBtu/hr. It was determined that the proposed NO_x limits could be accomplished by using selective catalytic reduction (SCR) or a combination of SCR and ultra-low NO_x burners (ULNBs), thus making the lower limits technologically feasible. However, through the public workshop process and additional research it was also determined that most of the units subject to Rule 4306 have undergone several generations of NO_x controls, and consequently, certain applications of SCR may not be cost effective and/or technological infeasible because of physical limitations. Therefore, the lower NO_x limits were included in new Rule 4320 and an option was provided in the rule that allows for the payment of an annual emissions fee based on total actual emissions, rather than installation of additional NO_x controls. These fees are used by the District to achieve cost effective NO_x reductions through District incentive programs, the District's Technology Advancement Program, and other routes. The previous versions of Rule 4305 and 4306 combined with the implementation of Rule 4320 achieve approximately 96% control of NO_x emissions from this source category.

The implementation of Rule 4320 does not substitute the requirements of Rule 4306, but enforces requirements supplementary to Rule 4306. As such, this evaluation is applicable to both Rule 4306 and Rule 4320.

Source Category

Facilities with units subject to this rule represent a wide range of industries, including but not limited to electrical utilities, cogeneration, oil and gas production, petroleum refining, manufacturing and industrial processes, food and agricultural processing, and service and commercial facilities.

To recognize the operational and technical differences between different types of equipment subject to Rules 4306 and 4320, the different equipment types were separated into several major categories, with different requirements, including the following:

- Units with a total rated heat input greater than 5.0 MMBtu/hr to 20.0 MMBtu/hr
- Units with a total rated heat input greater than 20.0 MMBtu/hr
- Oilfield steam generators of all ratings and fuel types
- Refinery units of all ratings and fuel types
- Low-use units limited by a Permit to Operate to an annual heat input greater than 1.8 billion Btu/year but less than or equal to 30 billion Btu/year
- Units at a wastewater treatment facility using less than 50% PUC quality fuel
- Small specialty units operated by a small producer

Emissions Inventory

Pollutant	2012	2013	2014	2015	2016	2017	2018	2019	2020
<i>Annual Average - Tons per day</i>									
PM2.5	1.27	1.25	1.23	1.21	1.19	1.17	1.14	1.13	1.10
NOx	1.93	1.83	1.72	1.61	1.56	1.51	1.46	1.41	1.36
SOx	0.60	0.59	0.24	0.24	0.23	0.23	0.23	0.22	0.22
<i>Winter Average - Tons per day</i>									
PM2.5	1.25	1.24	1.21	1.19	1.17	1.15	1.13	1.11	1.09
NOx	1.88	1.78	1.68	1.57	1.51	1.47	1.42	1.38	1.32
SOx	0.58	0.57	0.24	0.23	0.23	0.23	0.22	0.21	0.21

As detailed in Chapter 5, the significance thresholds for source categories for the purpose of evaluating the application of BACM and MSM requirements are 1.4 tons per day (tpd) for PM2.5 combustion emissions, 13.1 tons per day (tpd) for NOx, and 1.0 tpd for SOx. As identified in the above table, emissions from boilers, steam generators, and process heaters greater than 5.0 MMBtu/hr are lower than the BACM/MSM significance thresholds. Therefore, the Clean Air Act does not require a control measure evaluation for this source category for the purpose of satisfying BACM/MSM requirements; however, the District has still conducted a full control measure evaluation for this source category.

How does District Rule 4306/4320 compare with federal and state rules and regulations?

Federal Regulations

There are no EPA CTG requirements for this source category.

ACT

- EPA-453/R-93-034 (Alternative Control Techniques Document – NOx emissions from Process Heaters)

The District evaluated the requirements contained within the ACT for NO_x Emissions from Process Heaters and found no requirements that were more stringent than those already in Rules 4306 and 4320.

- EPA-453/R-93-022 (Alternative Control Techniques Document – NO_x Emissions from Industrial/Commercial/Institutional Boilers)

The District evaluated the requirements contained within the ACT for NO_x Emissions from Industrial/Commercial/Institutional Boilers and found no requirements that were more stringent than those already in Rules 4306 and 4320.

- EPA-453/R-93-023 (Alternative Control Techniques Document – NO_x Emissions from Utility Boilers)

The District evaluated the requirements contained within the ACT for NO_x Emissions from Utility Boilers and found no requirements that were more stringent than those already in Rules 4306 and 4320.

NSPS

- 40 CFR 60 Subpart D (Standards of Performance for Fossil-Fuel Fired Steam Generators for Which Construction Is Commenced After August 17, 1971)

The District evaluated the requirements contained within 40 CFR 60 Subpart D and found no requirements that were more stringent than those already in Rules 4306 and 4320.

- 40 CFR 60 Subpart Db (Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units)

The District evaluated the requirements contained within 40 CFR 60 Subpart Db and found no requirements that were more stringent than those already in Rules 4306 and 4320.

- 40 CFR 60 Subpart Dc (Standards of Performance for Small Industrial- Commercial-Institutional Steam Generating Units)

The District evaluated the requirements contained within 40 CFR 60 Subpart Dc and found no requirements that were more stringent than those already in Rules 4306 and 4320.

NESHAP/ MACT

- 40 CFR 63 Subpart DDDDD (NESHAP for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters)

40 CFR 63 Subpart DDDDD was amended on January 31, 2013 to include new emission limits for PM, CO, and total selective metals (TSM), replace numeric dioxin

emission limits with work practice standards, add new subcategories of facilities, and add alternative monitoring approaches for compliance with the PM limit. The PM limit in District Rule 4320 is more stringent for liquid fuels because it only allows liquid fuels to be burned during PUC quality natural gas curtailment periods. It is equivalent to DDDDD for all gasses burned except for gasses exceeding $40 \mu\text{g}/\text{m}^3$ of mercury.

The District evaluated the requirements contained within the above NESHAP and found no requirements that were more stringent than those already in Rules 4306 and 4320.

State Regulations

There are no state regulations applicable to this source category.

How does District Rule 4306/4320 compare to rules in other air districts?

SCAQMD

- Rule 1146 (Emissions of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters)

SCAQMD Rule 1146 was amended on November 1, 2013 to include rule language clarifications and revisions to address SIP creditability issues. None of the amendments affected emissions reductions.

The District evaluated the requirements contained within SCAQMD's Rule 1146 and found no requirements that were more stringent than those already in Rules 4306 and 4320.

BAAQMD

- Regulation 9 Rule 7 (Nitrogen Oxides and Carbon Monoxide from Industrial, Institutional and Commercial Boilers, Steam Generators and Process Heaters)

The District evaluated the requirements contained within BAAQMD's Regulation 9 Rule 7 and found no requirements that were more stringent than those already in Rules 4306 and 4320.

- Regulation 9 Rule 10 (Nitrogen Oxides and Carbon Monoxide from Boilers, Steam Generators and Process Heaters in Petroleum Refineries)

The District evaluated the requirements contained within BAAQMD's Regulation 9 Rule 10 and found no requirements that were more stringent than those already in Rules 4306 and 4320.

SMAQMD

- Rule 411 (NO_x from Boilers, Process Heaters and Steam Generators)

The District evaluated the requirements contained within SMAQMD's Rule 411 and found no requirements that were more stringent than those already in Rules 4306 and 4320.

VCAPCD

- Rule 74.15 (Boilers, Steam Generators and Process Heaters)

The District evaluated the requirements contained within VCAPCD's Rule 74.15 and found no requirements that were more stringent than those already in Rules 4306 and 4320.

Additional Emission Reduction Opportunities

Over the years, the District has adopted numerous generations of rules and rule amendments for boilers greater than 5 MMBtu/hr that have significantly reduced NOx and PM emissions from this source category. The emissions inventory for NOx from these boilers has dropped from 40.2 tpd in 1993 to 1.61 tpd in 2015. As part of these regulatory efforts, hundreds of boilers in the Valley have been equipped with the best available NOx and PM control technologies. Given the significant effort already made to reduce emissions from this source category, there are little remaining opportunities for obtaining additional emissions reductions.

Low Temperature Oxidation

The District researched emerging technologies that may have the potential to reduce emissions. A Low Temperature Oxidation (LTO) System was installed at a dairy in the SCAQMD and was able to reach NOx limits between 1.0- 3.2 ppmv for loads 4.1-13 MMBtu/hr. The LTO system utilizes ozone to oxidize and control various pollutants, including NOx. According to the SCAQMD BACT database information, capital and installation costs ranged from \$360,000 - \$400,000 for the LTO system when it was installed in 1997.²² Installation within the South Coast region was heavily subsidized with government funding and the installation costs appear cost prohibitive for an installation that is not subsidized. In addition, the LTO system is classified as "Other Technologies" in the SCAQMD BACT guidelines, which means that the technology has not met the achieved in practice (AIP) criteria of six months of continuous operation at a minimum of 50% operating capacity and does not qualify as the lowest achievable emission rate (LAER). Since the technology has not been achieved in practice and cost prohibitive without significant subsidies, this is not a feasible opportunity at this time.

EMx

The District researched the potential for emissions reductions through EMx, the second generation of the SCONox technology that is a post-combustion control that reduces NOx, SOx, CO, and volatile organic compound (VOC) emissions. This technology has not been AIP in the District and there is no available data that indicates that SCONox or EMx has been installed on boilers even though the manufacturer's website states that the technology is transferrable to industrial boilers. Based on research of the best available controls from EPA and other air districts, the SCONox and EMx systems have only been utilized by power plants for control of turbine emissions. In fact, cost effectiveness analyses conducted by the District for the installation of SCONox/EMx

²² South Coast Air Quality Management District. (2012). *SCAQMD Best Available Control Technology (BACT) Database*.

units on large power plant turbine installations within the Valley have been found to not be cost effective. Given the high cost effectiveness demonstrated for turbines and lack of demonstrated practice with boilers, this technology is not feasible or cost effective for reducing emissions from this category.

PM_{2.5} Limits for Alternative Fuels

The majority of boilers (>5 MMBtu/hr) in the Valley combust Public Utilities Commission (PUC) quality natural gas, which contains a very low sulfur content and inherently has low emissions. Few boilers in the Valley use alternative fuels for their combustion processes. Alternative fuels include digester gas, produced gas, and liquid fuel. Units fired on digester gas or produced gas are already required to use inlet gas scrubbers to meet District rule requirements. Current rule language requires that liquid fuel shall be used only during a PUC-quality natural gas curtailment period provided it contains no more than 15 ppm sulfur. While the use of liquid fuel is strictly limited, the feasibility of reducing PM emissions through adding PM_{2.5} limits for units using liquid fuel was explored as part of the District's comprehensive control measure evaluation.

There are 83 units that are permitted to utilize liquid fuel in the Valley (>5 MMBtu/hr) during a natural gas curtailment with an average combined emissions inventory of approximately 0.034 tons per year of total PM. The low emissions inventory is attributed to the fact that these units either utilize liquid fuel as a backup if there is a natural gas curtailment. The following three technologies were researched as potential opportunities to reduce PM emissions: baghouses, electrostatic precipitators (ESPs), and wet scrubbers. Baghouses control total PM and PM_{2.5} emissions by 90-99%; ESPs control total PM and PM_{2.5} emissions by 90-99%; and wet scrubbers control large particulates (>PM₅) by 99% and PM_{2.5} emissions by approximately 50%.²³ Currently, there are a few crude oil-fired or field gas-fired steam generators operating in crude oil production facilities that are required by their permits to operate SO_x scrubbers and ESPs. However, baghouses are typically not used with liquid-fired boilers due to the potential clogging of the baghouse²⁴ and are therefore not a recommended technology due to infeasibility and safety issues.

²³ Northeast States for Coordinated Air Use Management. (November 2008) *Applicability and Feasibility of NO_x, SO₂, and PM Emissions Control Technologies for Industrial, Commercial, and Institutional (ICI) Boilers*. Retrieved from <http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CB8QFjAA&url=http%3A%2F%2Fwww.nescaum.org%2Fdocuments%2Fici-boilers-20081118-final.pdf%2F&ei=7nfvVlivFai1sAT07IHIAg&usq=AFQjCNFBdQn7MVAibSTZlbHV7-ojXkVIXQ&bvm=bv.86956481.d.cWc>.

²⁴ Northeast States for Coordinated Air Use Management. (November 2008) *Applicability and Feasibility of NO_x, SO₂, and PM Emissions Control Technologies for Industrial, Commercial, and Institutional (ICI) Boilers*. Retrieved from <http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CB8QFjAA&url=http%3A%2F%2Fwww.nescaum.org%2Fdocuments%2Fici-boilers-20081118-final.pdf%2F&ei=7nfvVlivFai1sAT07IHIAg&usq=AFQjCNFBdQn7MVAibSTZlbHV7-ojXkVIXQ&bvm=bv.86956481.d.cWc>.

PM Potential Emissions Reductions for an ESP and Scrubber

For the purposes of these calculations, the following assumptions were made:

1. For simplicity, the analysis will evaluate the cost effectiveness of these technologies for total PM reductions from liquid fuel fired units.
2. The PM control efficiency of an ESP is 99%.
3. The PM control efficiency of a scrubber is 99%.

Potential Emissions Reductions_(ESP) = (Total PM Emissions) x (Control Efficiency)

Potential Emissions Reduction_(ESP) = 0.034 tons/year X 0.99

Potential Emissions Reduction_(ESP) = 0.0337 tons/ year (tpy)

Potential Emissions Reductions_(scrubber) = (Total PM Emissions) x (Control Efficiency)

Potential Emissions Reduction_(scrubber) = 0.034 tons/year X 0.99

Potential Emissions Reduction_(scrubber) = 0.0337 tons/ year (tpy)

Annualized Cost of an ESP and Wet Scrubber

The capital cost for the installation of an ESP for a 1-5 MMBtu/hr boiler ranges from \$90,000 - \$100,000 and the annual maintenance cost is \$1,000-\$2,000.²⁵ For the wet scrubber system, EPA estimated the annualized cost at \$5,300-\$102,000 per sm³/sec at an average air flow rate of 0.7-47 sm³/sec.²⁶ The District used the following assumptions in the cost effectiveness calculations:

1. The capital cost of an ESP for a 5 MMBtu/hr boiler is assumed to be \$100,000.
2. The annual maintenance cost of an ESP for a 5 MMBtu/hr boiler is assumed to be \$2,000.
3. The annualized cost of a wet scrubber system is assumed to be the median of the range above (\$53,650 per sm³/sec).
4. The average air flow rate for a wet scrubber system is assumed to be the median of the range above (23.85 sm³/sec).
5. The total capital and maintenance cost of an ESP will be calculated by multiplying the cost of 1 unit by the total number of units.
6. The total annualized cost of a wet scrubber will be calculated by multiplying the annualized cost of 1 unit by the total number of units.
7. Lifetime of the ESP is 10 years at 10% interest. To account for this, the annualized capital cost will be calculated by multiplying the total capital cost by the capital recovery factor of 0.1627 and adding the annual maintenance costs.

Annual Cost_(ESP) = (Total Capital Cost) x (0.1627) + (Annual Maintenance Cost x 83)

Annual Cost_(ESP) = (\$100,000 x 83) x (0.1627) + (\$2,000 x 83)

Annual Cost_(ESP) = \$1,516,410/year

²⁵ Catherine Roberts. (March 2009) *Information on Air Pollution Control Technology for Woody Biomass Boilers*. Environmental Protection Agency Office of Air Quality Planning and Standards and Northeast States for Coordinated Air Use Management.

²⁶ EPA. (2002). *Air Pollution Control Technology Fact Sheet: Spray-Chamber/Spray-Tower Wet Scrubber*. Retrieved from <http://www.epa.gov/ttn/catc1/dir1/fspytwr.pdf>.

$$\begin{aligned}\text{Annual Cost}_{(\text{scrubber})} &= (\text{Annualized Cost of 1 unit}) \times (\text{Number of Units}) \times (\text{Avg. Flow Rate}) \\ \text{Annual Cost}_{(\text{scrubber})} &= (\$53,650/\text{sm}^3/\text{sec}) \times (83) \times (23.85 \text{ sm}^3/\text{sec}) \\ \text{Annual Cost}_{(\text{scrubber})} &= \$106,202,858/\text{year}\end{aligned}$$

Cost Effectiveness of an ESP and Wet Scrubber

Cost Effectiveness = Annual Cost / Annual Emissions Reductions

$$\begin{aligned}\text{Cost Effectiveness}_{(\text{ESP})} &= (\$1,516,410/\text{year}) / (0.0337 \text{ tons}/\text{year}) \\ \text{Cost Effectiveness}_{(\text{ESP})} &= \$44,997,329/\text{ton of PM}\end{aligned}$$

$$\begin{aligned}\text{Cost Effectiveness}_{(\text{scrubber})} &= (\$106,202,858/\text{year}) / (0.0337 \text{ tons}/\text{year}) \\ \text{Cost Effectiveness}_{(\text{scrubber})} &= \$3,151,420,104/\text{ton of PM}\end{aligned}$$

As illustrated above, neither PM control technology is a cost effective option for this source category. The cost of the ESP technology does not include costs of retrofitting equipment and/or the facility or compliance monitoring costs, which would drive the cost effectiveness up even more.

Evaluation Findings

Even though boilers, steam generators, and process heaters greater than 5.0 MMBtu/hr are not a significant source of NO_x, or SO_x in the Valley, the District has evaluated all potential control technologies and all control technologies achieved in practice in other areas or included in other state implementation plans. As demonstrated above, Rule 4306 and 4320 currently have in place the most stringent measures feasible to implement in the Valley and therefore meet or exceed both BACM and MSM requirements for this source category. As the District continues to develop new attainment plans that address more stringent National Ambient Air Quality Standards, the District will continue to evaluate potential opportunities to reduce emissions from this source category in the Valley.

Cogen System N-355-21

C.18 RULE 4703 STATIONARY GAS TURBINES

Discussion

The provisions of this rule are applicable to all stationary gas turbine systems, which are subject to District permitting requirements, and with electrical generation ratings equal to or greater than 0.3 megawatt (MW) or a maximum heat input rating of more than 3 million British Thermal Units per hour (MMBtu/hr), and that are used for the generation of electrical power. The purpose of this rule is to limit NO_x emissions from these stationary gas turbines.

Rule 4703 was adopted on August 18, 1994. Since its adoption, the rule has been amended six times. The latest rule amendment in September 2007 strengthened the rule by establishing more stringent NO_x limits for existing stationary gas turbines. EPA finalized approval for Rule 4703 on October 21, 2009 and deemed this rule as being at least as stringent as established RACT requirements. NO_x emissions have been controlled by over 86% for this source category.

Source Category

The requirements of Rule 4703 affect owners and operators of stationary gas turbine systems used to pump, compress, generate electricity, or perform other tasks. The four major industry groups are oil and gas production, utilities, manufacturing, and government.

In complying with the rule, all affected entities are required to control NO_x and CO emissions by installing approved emissions control devices. Early in the rule development process, the District identified five different emissions control technologies that could be used to achieve proposed limits for stationary gas turbines. Of the five options, four mainly control NO_x emissions, while the other one controls CO emissions. The four NO_x control technologies are:

- Dilutant (water or steam) injection systems,
- Dry, low-NO_x,
- Selective catalytic reduction, and
- SCONOX

Costs associated with different compliance options vary a great deal depending on technologies and available products. Depending on the size of the existing turbine systems, engine model and make, type of existing emissions control equipment, and many other factors, owners and operators of stationary gas turbine systems face different compliance costs. The impacts of Rule 4703 have been concentrated in the oil and gas production sector and utilities sector of the Valley, as they own and operate the vast majority of stationary gas turbines subject to the rule.

Emissions Inventory

Pollutant	2012	2013	2014	2015	2016	2017	2018	2019	2020
<i>Annual Average - Tons per day</i>									
PM2.5	1.22	1.28	1.14	1.09	1.11	1.14	1.14	1.14	1.10
NOx	3.09	3.23	2.89	2.77	2.83	2.89	2.90	2.92	2.81
SOx	0.22	0.23	0.20	0.19	0.19	0.20	0.20	0.20	0.19
<i>Winter Average - Tons per day</i>									
PM2.5	1.21	1.27	1.13	1.08	1.10	1.13	1.13	1.14	1.09
NOx	3.00	3.14	2.82	2.70	2.76	2.82	2.83	2.84	2.74
SOx	0.21	0.23	0.20	0.19	0.19	0.20	0.20	0.20	0.19

As detailed in Chapter 5, the significance thresholds for source categories for the purpose of evaluating the application of BACM and MSM requirements are 1.4 tons per day (tpd) for PM2.5 combustion, 13.1 tpd for NOx, and 1.0 tpd for SOx. As identified in the above table, emissions from stationary gas turbines are lower than the BACM/MSM significance thresholds. Therefore, the Clean Air Act does not require a control measure evaluation for this source category for the purpose of satisfying BACM/MSM requirements; however, the District has still conducted a full control measure evaluation for stationary gas turbines.

How does District Rule 4703 compare with federal and state rules and regulations?

Federal Regulations

There are no EPA CTG requirements for this source category.

ACT

- EPA-435/R-93-007 (Alternative Control Techniques Document—NOx Emissions from Stationary Gas Turbines)

The District evaluated the requirements contained within the ACT for NOx Emissions from Stationary Gas Turbines and found no requirements that were more stringent than those already in Rule 4703.

NSPS

- 40 CFR 60 Subpart GG (Standards of Performance for Stationary Gas Turbines)

The District evaluated the requirements contained within 40 CFR 60 Subpart GG and found no requirements that were more stringent than those already in Rule 4703.

- 40 CFR 60 Subpart KKKK (Standards of Performance for Stationary Combustion Turbines)

The District evaluated the requirements contained within above NSPS and found no requirements that were more stringent than those already in Rule 4703.

NESHAP/ MACT

- 40 CFR 63 Subpart YYYY (NESHAP for Stationary Combustion Turbines)

The District evaluated the requirements contained within 40 CFR 63 Subpart YYYY and found no requirements that were more stringent than those already in Rule 4703.

State Regulations

There are no state regulations applicable to this source category.

How does District Rule 4703 compare to rules in other air districts?

SCAQMD

- Rule 1134 (Emissions of Oxides of Nitrogen from Stationary Gas Turbines)

The District evaluated the requirements contained within SCAQMD's Rule 1134 and found no requirements that were more stringent than those already in Rule 4703.

BAAQMD

- Regulation 9 Rule 9 (Nitrogen Oxides from Stationary Gas Turbines)

The District evaluated the requirements contained within BAAQMD's Regulation 9 Rule 9 and found no requirements that were more stringent than those already in Rule 4703.

SMAQMD

- Rule 413 (Stationary Gas Turbines)

The District evaluated the requirements contained within SMAQMD's Rule 413 and found no requirements that were more stringent than those already in Rule 4703.

VCAPCD

- Rule 74.23 (Stationary Gas Turbines)

The District evaluated the requirements contained within VCAPCD's Rule 74.23 and found no requirements that were more stringent than those already in Rule 4703.

Additional Emission Reduction Opportunities

The District has adopted numerous rule amendments to the turbine rule that have successfully and significantly reduced emissions from this source category. The emissions inventory for NO_x from turbines has been reduced from 31.9 tpd in 1994 to 2.77 tpd in 2015. Significant emission reductions have been achieved through the implementation of the most stringent regulations in the nation for this source category and significant investments by stakeholders to implement effective and innovative emission control technologies. Given the significant efforts and investments already made to reduce emissions from this source category, there are little remaining feasible opportunities for obtaining additional emissions reductions.

BACT Comparisons

Comparisons of this rule with the District, BAAQMD, and SCAQMD BACT requirements showed that some BACT emissions limits are more stringent than Rule 4703 limits. For units greater than 3 MW, some of the District's NO_x limits ranged from 3-5 ppmv, whereas the BACT limits ranged from 2-3 ppmv. For units less than 3 MW, the District's NO_x limit was 9 ppmv, whereas the BACT limit was 5 ppmv. The BACT guidelines list SCR and SCONO_x as the emissions control technologies used to achieve emission limits in the range of 2-5 ppmv. Although lower emission limits are potentially achievable for this source category, BACT requirements are imposed on new or modified turbine installations where ultra-low NO_x controls can be installed and the equipment and the facility can be designed to function with this new technology. Rule 4703 is a prohibitory rule that has undergone several generations of NO_x limits for existing units in the Valley; facilities comply with these limits by retrofitting their existing equipment. Requiring the installation of entirely new turbine systems is extremely expensive and not cost effective, and therefore not required of facilities.

Selective Catalytic Reduction

Many of the larger units (> 3MW) have already employed SCR to achieve the 5 ppmv limits in place. Therefore, the District evaluated the potential opportunity to employ SCR for units less than 3 MW.

A SCR system reduces NO_x emissions by converting the emissions to water and elemental nitrogen. Ammonia is generally injected into the exhaust stream and reacts with the nitrogen. Due to the high cost of SCR systems, they are typically used for controlling emissions from larger units, greater than 3 MW that generally create more emissions. The cost effectiveness of an SCR system for a 1 MW unit was calculated based on the cost effectiveness methodologies in the 2007 Staff Report for Rule 4703 and some of the newer methodologies used to calculate the cost effectiveness of SCR in the August 2011 Staff Report for Rule 4702. The tables below present the total annual costs for a new SCR system and a retrofit system.

Table C-28 SCR Annual Costs for a New Installation on a 1 MW Turbine

Item		Source	Cost
Turbine Rating	1 MW		
SCR Cost/KW	\$125/KW	Mid-point between high and low estimate from R4703 analysis	
Operating Hours	7884 hrs/year		
Direct Capital Costs			
Total Purchased Equip Cost	\$125/KW x 1000 KW		\$125,000
Freight	5% Purchased Equip. Cost (PEC)	Rule 4702	\$6,250
Sales Tax	8.25% PEC	Rule 4702	\$10,313
Direct Installation Costs	25% PEC	Rule 4702	\$31,250
Total Direct Capital Costs			\$172,813
Indirect Capital Costs			
Facilities	5% PEC	Rule 4702	\$6,250
Engineering	10% PEC	Rule 4702	\$12,500
Process Contingency	5% PEC	Rule 4702	\$6,250
Total Indirect Capital Costs			\$25,000
Project Contingency	20% PEC	Rule 4702	\$25,000
Total Capital Costs (TCC)	Direct Capital + Indirect Capital + Project Contingency	Rule 4702	\$222,813
Annualized Capital Costs (10 years @ 10%)	0.1627*TCC	Rule 4702	\$36,252
Direct Annual Costs			
Operating Costs			
Operator	0.5 hr/shift, \$25/hr	OAQPS	\$13,688
Supervisor	15% of operator	OAQPS	\$2,053
Maintenance Costs			
Labor	0.5 hr/shift, \$25/hr	OAQPS	\$13,688
Material	100% of labor cost	OAQPS	\$13,688
Utility Costs			
Electricity Costs		Variable	\$5,747
Cat. Replacement		MHIA	\$5,621
Cat. Disposal		OAQPS	\$211
Ammonia		Variable	\$1,008
NH3 Inject Skid		MHIA	\$2,916
Total Direct Annual Costs			\$58,620
Indirect Annual Costs			
Overhead	60% of Operating and Maintenance	OAQPS	\$25,870
Administrative	0.02 x PEC	OAQPS	\$2,500
Insurance	0.01 x PEC	OAQPS	\$1,250
Property Tax	0.01 x PEC	OAQPS	\$1,250
Capital Recovery	0.13 x PEC (10% int. rate, 15 yr period)	OAQPS	\$16,250
Total Indirect Annual Costs			\$47,120
Total Annual Costs	Annualized capital + Direct Annual + Indirect Annual		\$141,992

Table C-29 SCR Annual Costs for a Retrofit on a 1 MW Turbine

Item		Source	Cost
Turbine Rating	1 MW		
SCR Cost/KW	\$325/KW	Middle point between high and low estimate from R4703 analysis	
Operating Hours	7884 hrs/year		
Direct Capital Costs			
Total Purchased Equip Cost	\$325/KW x 1000 KW		\$325,000
Freight	5% Purchased Equip. Cost (PEC)	Rule 4702	\$16,250
Sales Tax	8.25% PEC	Rule 4702	\$26,813
Direct Installation Costs	25% PEC	Rule 4702	\$81,250
Total Direct Capital Costs			\$449,313
Indirect Capital Costs			
Facilities	5% PEC	Rule 4702	\$16,250
Engineering	10% PEC	Rule 4702	\$32,500
Process Contingency	5% PEC	Rule 4702	\$16,250
Total Indirect Capital Costs			\$65,000
Project Contingency	20% PEC	Rule 4702	\$65,000
Total Capital Costs (TCC)	Direct Capital + Indirect Capital + Project Contingency	Rule 4702	\$579,313
Annualized Capital Costs (10 years @ 10%)	0.1627*TCC	Rule 4702	\$94,254
Direct Annual Costs			
<i>Operating Costs</i>			
Operator	0.5 hr/shift, \$25/hr	OAQPS	\$13,688
Supervisor	15% of operator	OAQPS	\$2,053
<i>Maintenance Costs</i>			
Labor	0.5 hr/shift, \$25/hr	OAQPS	\$13,688
Material	100% of labor cost	OAQPS	\$13,688
<i>Utility Costs</i>			
Electricity Costs		Variable	\$5,747
Cat. Replacement		MHIA	\$5,621
Cat. Disposal		OAQPS	\$211
Ammonia		Variable	\$1,008
NH3 Inject Skid		MHIA	\$2,916
Total Direct Annual Costs			\$58,620
Indirect Annual Costs			
Overhead	60% of Operating and Maintenance	OAQPS	\$25,870
Administrative	0.02 x PEC	OAQPS	\$6,500
Insurance	0.01 x PEC	OAQPS	\$3,250
Property Tax	0.01 x PEC	OAQPS	\$3,250
Capital Recovery	0.13 x PEC (10% int. rate, 15 yr period)	OAQPS	\$42,250
Total Indirect Annual Costs			\$81,120
Total Annual Costs			
	Annualized capital + Direct Annual + Indirect Annual		\$233,994

Potential Emissions Reduction Methodology

The estimated current annual NOx emissions and the estimated potential annual NOx emissions were calculated using the following equation:

$$\text{NOx} = \text{LF} \times \text{MMBtu/hr} \times \text{HR} \times \text{EF} / 2,000 \text{ lb/ton}$$

Where:

NOx = Current annual NOx emissions or potential annual NOx emissions (tpy)
LF = turbine load factor
MMBtu/HR = heat input rating
HR = annual hours of operation
EF = NOx emission factor in pounds per MMBtu

Where:

EF = NOx emission factor in ppmv x 0.00366
ppmv = NOx emissions in parts per million corrected to 15% oxygen
0.00366 = Conversion factor used: 0.00366 lb/MMBtu per ppmv NOx

The estimated annual NOx emissions reduction was calculated using the following equation:

$$\text{NOx Emissions Reduction} = \text{Current NOx emissions} - \text{Potential NOx emissions}$$

Potential Emissions Reduction Calculation

The emissions reduction calculations below utilized the following information:

Loading factor = 0.75

Heat input rating for a 1 MW unit = 15 MMBtu/hr

Annual Hours of Operation = 7884 hours

Current Emission Factor in Rule 4703 = 9 ppmv

Potential Emissions Factor through the use of SCR = 5 ppmv

$$\begin{aligned} \text{Current NOx} &= \text{LF} \times \text{MMBtu/hr} \times \text{HR} \times \text{EF} / 2,000 \text{ lb/ton} \\ &= 0.75 \times 15 \times 7884 \times (9 \times 0.00366) / 2000 \\ &= 1.46 \text{ tons/year} \end{aligned}$$

$$\begin{aligned} \text{Potential NOx} &= \text{LF} \times \text{MMBtu/hr} \times \text{HR} \times \text{EF} / 2,000 \text{ lb/ton} \\ &= 0.75 \times 15 \times 7884 \times (5 \times 0.00366) / 2000 \\ &= 0.81 \text{ tons/year} \end{aligned}$$

$$\begin{aligned} \text{Emissions Reductions} &= \text{Current NOx emissions} - \text{Potential NOx emissions} \\ &= 0.65 \text{ tons/year} \end{aligned}$$

Table C-30 SCR Cost Effectiveness

Type of Installation	MW	MMBtu/hr	Current NOx Emission Factor (EF), ppmv	Potential NOx EF, ppmv	NOx Reduction (Tons/Year)	Total Annual Cost (\$)	Cost Effectiveness (\$/ton)
New	1	15	9	5	0.65	\$141,992	\$218,449
Retrofit	1	15	9	5	0.65	\$233,994	\$359,991

As demonstrated above, SCR is not a cost effective option as a retrofit or replacement for units less than 3 MW.

EMx

Certain BACT limits for simple cycle plants were achieved through the use of SCONOx. This multifaceted technology reduces NOx, SOx, carbon monoxide (CO), and volatile organic compound (VOC) emissions and is stated as achieving NOx levels less than 1.5 ppmv by its manufacturer. One issue with the use of SCONOx is that it requires steam to operate and simple cycle plants do not generate steam. Therefore, a simple cycle facility would have to add a boiler to their facility to generate steam for the SCONOx system, making the addition of this technology more costly. The District is not aware of any SCONOx applications on simple cycle plants.⁷⁷ While SCONOx is better suited for combined cycle turbines, this technology has not been achieved in practice (AIP) yet in the District.

BAAQMD evaluated SCONOx, now known as the EMx system, for turbines in a recent Final Determination of Compliance (FDOC) for the Oakley Generating Station. The FDOC states that EMx could potentially be an improvement over SCR as an add-on control device for achieving NOx reductions – assuming it can achieve the same level of NOx control – because it does not use ammonia. Ammonia has the potential, under certain atmospheric conditions, to react with nitric acid in the atmosphere to form ammonium nitrate, which can be a form of PM2.5. However, based on the implementation of EMx at a facility in Shasta County, BAAQMD voiced some concerns for its use.

EMx has never been used on a large utility-scale turbine and so there is no data on which to make a direct evaluation of how well the technology would work on larger turbines. EMx has been used on a smaller aeroderivative turbine at the Redding Power Plant Unit No. 5, a 45-MW combined-cycle facility in Shasta County, CA. The Shasta County Air Quality Management District evaluated EMx at the Redding facility under a demonstration NOx limit of 2.0 ppm, which SCR can consistently achieve. After three years of operation, the Shasta County AQMD evaluated whether the facility was meeting this demonstration limit with EMx, and concluded that “Redding Power is not

⁷⁷ Brian K. Lusher, Bay Area Air Quality Management District. (June 2010). *Final Determination of Compliance: Marsh Landing Generating Station*.

able to reliably and continuously operate while maintaining the NO_x demonstration limit of 2.0 ppmvd @ 15% O₂.⁷⁸

The FDOC states that although the EMx manufacturer maintains that such problems have been overcome, concerns remain about how consistently the technology would be able to perform. Communications between BAAQMD and Shasta County Air District confirmed that the earlier conclusions about the achievability of a lower limit remain valid.⁷⁹ In addition, monthly reports of Continuous Emissions Monitoring System (CEMS) data submitted by Redding Power Plant to Shasta County Air District during 2007 and 2008 indicated that emissions have often been substantially higher.⁸⁰ Furthermore, the data from Redding is from a smaller aeroderivative turbine, and there is no guarantee that if it were scaled up for uses on utility-size turbines that it would even be able to achieve the performance required from larger turbines. For these reasons, BAAQMD concluded that EMx is not as developed as SCR and cannot achieve the same level of emissions performance that SCR is capable of.

SCAQMD is funding a research project that will study and demonstrate the feasibility of control technologies to reduce PM_{2.5} and ultrafine particulate emissions from natural gas-fired turbine power plants. EMx is one of the two technologies that were selected for demonstration. The findings of this report could potentially be beneficial for evaluating the feasibility of EMx applications for turbines in the future.

SO_x

The District considered implementing sulfur dioxide (SO₂) limits at least as stringent as the requirements in 40 CFR 60 Subpart KKKK (Standards of Performance for Stationary Combustion Turbines). Fuel treatment sulfur removal systems were recognized as being able to reduce SO_x emissions from turbines, other than those fired on Public Utilities Commission (PUC) quality natural gas. One Valley facility installed SCR onto their digester gas-fired turbine to meet the Rule 4703 limit. To do this, they installed a fuel pretreatment system that removes H₂S and siloxanes, as they can damage the SCR catalyst if not removed. Other landfill and digester-gas turbines outside the District are also using these systems.

There are only seven units at six facilities in the Valley that utilize a fuel other than natural gas. Four units are fired on diesel gas, while the other three units utilize digester gas. However, the facilities with diesel-fired units utilize natural gas the majority of the time and utilize diesel fuel only during emergencies. Due to California Diesel Fuel requirements, the diesel facilities in the Valley are limited to a sulfur content of 0.0016 lb-SO₂/MMBtu. PUC-quality natural gas typically has a sulfur content of 0.00285 lb-SO₂/MMBtu and digester turbines are limited to 0.016 lb-SO₂/MMBtu per

⁷⁸ Letter from R. Bell, Air Quality District Manager, Shasta County Air Quality Management District, to R. Bennett, Safety & Environmental Coordinator, Redding Electric Utility, June 23, 2005.

⁷⁹ Kathleen Truesdell, Bay Area Air Quality Management District. (January 2011). *Final Determination of Compliance: Oakley Generating Station*.

⁸⁰ Kathleen Truesdell, Bay Area Air Quality Management District. (January 2011). *Final Determination of Compliance: Oakley Generating Station*.

District permits' requirements. By comparison, the Subpart KKKK limit is much higher at 0.060 lb-SO₂/MMBtu and all of the units in the Valley are achieving much lower SO₂ limits. Adding a SO₂ limit similar to Subpart KKKK to the rule will not foster additional emissions reductions for Valley facilities.

PM_{2.5}

PM_{2.5} reduction technologies for turbines were also researched. Post-combustion controls, including baghouses, electrostatic precipitators, and scrubbers were examined since these technologies can be used to remove PM_{2.5} emissions from exhaust gas streams.

As previously mentioned, every unit in the Valley subject to Rule 4703 operates on strictly natural gas, with the exception of seven facilities that operated on an alternate fuel part-time or during emergencies. Based on District Permits records and information in the BAAQMD FDOC for the Oakley Generating Station, electrostatic precipitators, baghouses, and scrubbers have not been achieved-in-practice for natural gas-fired turbines. These devices are normally used on solid fuel fired sources or others with high PM emissions, and are not used in natural gas-fired applications, which have inherently low PM emissions. The District is not aware of any gas turbine that has ever been required to use add-on controls such as these. BAAQMD reviewed the EPA BACT/LAER Clearinghouse and confirmed that EPA has no record of any post-combustion particulate controls that have been required for natural gas-fired gas turbines.⁸¹

Furthermore, these devices would not be technologically feasible to implement for certain facilities. As noted in the BAAQMD FDOC, if add-on control equipment were installed, it would create significant backpressure that would significantly reduce the efficiency of a power plant and would cause more emissions per unit power produced. Moreover, these devices are designed to be applied to emissions streams with far higher particulate emissions, and they would have very little effect on the low-PM emissions streams from natural gas-fired facilities in further reducing PM emissions.⁸² It takes an emissions stream with a much higher grain loading for these types of abatement devices to operate efficiently. This low level of abatement efficiency (if any) also means that these types of control devices would not be cost effective, even if they could feasibly be applied to this type of source. For these reasons, post-combustion particulate control equipment is not technologically feasible for units subject to Rule 4703.

As previously mentioned, SCAQMD is funding a research project that will study and demonstrate the feasibility of control technologies to reduce PM_{2.5} and ultrafine particulate emissions from natural gas-fired turbine power plants. Sulfur removal and the EMx multi-pollutant control system are the two technologies which were selected for

⁸¹ Kathleen Truesdell, Bay Area Air Quality Management District. (January 2011). *Final Determination of Compliance: Oakley Generating Station*.

⁸² Kathleen Truesdell, Bay Area Air Quality Management District. (January 2011). *Final Determination of Compliance: Oakley Generating Station*.

demonstration. The findings of this report could potentially be beneficial for evaluating the cost effectiveness and feasibility of applying these emerging technologies to turbines in the future.

Evaluation Findings

Even though stationary gas turbines are not a significant source of PM_{2.5}, NO_x, or SO_x in the Valley, the District has evaluated all potential control technologies and all control technologies achieved in practice in other areas or included in other state implementation plans. As demonstrated above, Rule 4703 currently has in place the most stringent measures feasible to implement in the Valley and therefore meets or exceeds both BACM and MSM requirements for this source category. As the District continues to develop new attainment plans that address more stringent National Ambient Air Quality Standards, the District will continue to evaluate potential opportunities to reduce emissions from stationary gas turbines in the Valley.

IC Engines N-355-83 and '-99

C.17 RULE 4702 INTERNAL COMBUSTION ENGINES

Discussion

Rule 4702 applies to any internal combustion (IC) engine rated at 25 brake horsepower (bhp) or greater. The purpose of this rule is to limit NO_x, carbon monoxide (CO), volatile organic compounds (VOC), and SO_x emissions from units subject to this rule.

The District's original IC engine rule, Rule 4701 (Internal Combustion Engines – Phase 1), was adopted on May 21, 1992, superseded by Rule 4702, adopted on August 21, 2003, and subsequently amended five times. The rule originally established NO_x limits between 25-50 ppmv achieving 90-96% control for non-agricultural operations rich-burn engines and 65-75 ppmv achieving 85-90% control for non-agricultural operations lean-burn engines. In its continuous effort to improve air quality in the Valley, the District has adopted numerous amendments to Rule 4702 that have resulted in significant reductions of NO_x and PM emissions.

Substantial emission reductions from agricultural IC engines have also been achieved through a combination of regulatory efforts and incentive actions. Rule 4702 has effectively reduced emissions from agricultural engines by 84% since the 2005 amendments to the rule, with substantial investments being made by the affected sources to comply with the rule. The rule was further strengthened in August 2011 when rule amendments implemented more stringent NO_x limits as low as 11 ppmv for non-agricultural operations spark-ignited engines. Additional emission reductions are forthcoming under Rule 4702 as compliance dates for emission control requirements continue to approach over the coming years.

Source Category

An internal combustion engine is any engine that operates by burning its fuel inside the engine. Engines generate power by the combustion of an air/fuel mixture. The main types of engines are spark-ignited engines and compression-ignited (or diesel) engines. In the case of spark-ignited engines, a spark plug ignites the air/fuel mixture. Spark-ignited engines come in several designs such as: two-stroke and four-stroke, rich-burn and lean-burn, turbocharged and naturally aspirated. Spark-ignited engines may use one or more fuels, such as natural gas, propane, butane, liquefied petroleum gas, oil field gas, digester gas, landfill gas, methanol, ethanol, and gasoline.

Compression-ignited engines rely on heating of the inducted air during the compression stroke to ignite the injected diesel fuel. In addition to being classified into compression-ignited and spark-ignited, IC engines can be further divided into two-stroke and four-stroke engines. Most diesel engines are four-stroke, while larger diesel engines often are two-stroke. Natural gas fired spark-ignited engines are usually four-stroke, but some operators prefer two-stroke engines for their applications.

Engines are used by a variety of private businesses and public agencies throughout the Valley for a number of purposes, primarily for powering pumps, compressors, or electrical generators. Examples of businesses and industries that use engines include schools and universities, agriculture, oil and gas production and pipelines, petroleum

refining, manufacturing facilities, food processing, electrical power generation, landfill and waste water treatment facilities, and water districts. Many engines are limited or low use in nature, such as emergency standby engines that provide backup power when electric service is interrupted.

Emissions Inventory

Pollutant	2012	2013	2014	2015	2016	2017	2018	2019	2020
<i>Annual Average - Tons per day</i>									
PM2.5	0.49	0.49	0.48	0.40	0.31	0.30	0.29	0.28	0.27
NOx	13.06	12.85	12.50	9.21	7.22	6.82	6.57	6.37	6.09
SOx	0.12	0.12	0.12	0.09	0.08	0.08	0.08	0.08	0.08
<i>Winter Average - Tons per day</i>									
PM2.5	0.36	0.36	0.35	0.30	0.24	0.23	0.23	0.22	0.21
NOx	9.44	9.29	9.03	6.82	5.51	5.24	5.07	4.93	4.72
SOx	0.10	0.10	0.09	0.08	0.07	0.07	0.07	0.07	0.07

As detailed in Chapter 5, the significance threshold for source categories for the purpose of evaluating the application of BACM and MSM requirements is 1.4 tons per day (tpd) for PM2.5 combustion, 13.1 tpd for NOx, and 1.0 tpd for SOx. As identified in the above table, emissions from IC engines are lower than the BACM/MSM significance thresholds. Therefore, the Clean Air Act does not require a control measure evaluation for this source category for the purpose of satisfying BACM/MSM requirements; however, the District has still conducted a full control measure evaluation for IC engines.

How does District Rule 4702 compare with federal and state rules and regulations?

Federal Regulations

There are no EPA Control Technique Guidelines (CTG) requirements for this source category. Rule 4702 is at least as stringent as the following applicable federal regulations:

ACT

- EPA – 453/R-93-032 (Alternative Control Techniques Document – NOx Emissions from Stationary Reciprocating Internal Combustion Engines)

The District evaluated the requirements contained within the EPA – 453/R-93-032 ACT document and found no requirements that were more stringent than those already in Rule 4702.

NSPS

- 40 CFR 60 Subpart IIII (Standards of Performance for Stationary Compression Ignition Internal Combustion Engines)

The District evaluated the requirements contained within 40 CFR 60 Subpart IIII and found no requirements that were more stringent than those already in Rule 4702.

- 40 CFR 60 Subpart JJJJ (Standards of Performance for Stationary Spark Ignition Internal Combustion Engines)

The District evaluated the requirements contained within 40 CFR 60 Subpart JJJJ and found no requirements that were more stringent than those already in Rule 4702.

NESHAP/ MACT

- 40 CFR 63 Subpart ZZZZ (NESHAP for Stationary Reciprocating Internal Combustion Engines)

The District evaluated the requirements contained within 40 CFR 63 Subpart ZZZZ NESHAP and found no requirements that were more stringent than those already in Rule 4702.

State Regulations

The following state regulations apply to sources covered under Rule 4702:

- 17 CCR 93114 (ATCM to Reduce Particulate Emissions from Diesel-Fueled Engines—Standards for Nonvehicular Diesel Fuel)
- 17 CCR 93115 (ATCM for Stationary Compression Ignition Engines)

The District implements the requirements of 17 CCR 93114 and 17 CCR 93115 through Rule 4702 and the District's new source review permitting program (Rule 2201).

How does District Rule 4702 compare to rules in other air districts?

BAAQMD

- Regulation 9 Rule 8 (Nitrogen Oxides and Carbon Monoxide from Stationary Internal Combustion Engines)

The District evaluated the requirements contained within BAAQMD's Regulation 9 Rule 8 and found no requirements that were more stringent than those already in Rule 4702.

SMAQMD

- Rule 412 (Stationary Internal Combustion Engines Located at Major Stationary Sources of NO_x)

The District evaluated the requirements contained within SMAQMD's Rule 412 and found no requirements that were more stringent than those already in Rule 4702.

VCAPCD

- Rule 74.9 (Stationary Internal Combustion Engines)

The District evaluated the requirements contained within VCAPCD's Rule 74.9 and found no requirements that were more stringent than those already in Rule 4702.

SCAQMD

- Rule 1110.2 (Emissions from Gaseous- and Liquid-Fueled Engines)
- Rules 2000 – 2020 (RECLAIM program)

South Coast Air Quality Management District (SCAQMD) regulates the emissions from IC engines through a combination of control measures. SCAQMD 1110.2 is directly applicable to IC engines and includes emissions limitations for various applications. SCAQMD's RECLAIM program (Rules 2000 – 2020) allows most operators to purchase credits in lieu of instituting engine emissions controls otherwise required under SCAQMD 1110.2. Given these overlapping sets of requirements, Rule 4702 must be compared in context of both regulations. Additionally, many of the engine applications found in the San Joaquin Valley vary substantially from engine applications in SCAQMD; for example, engines used for agricultural irrigation pumping that exist in the Valley and are no longer found in SCAQMD. While not directly comparable, the following tables compare the emission limits between SCAQMD Rule 1110.2 and District Rule 4702.

Table C-19 Comparison of District and SCAQMD NOx Emission Limits for Non-Agricultural Operations (Non-AO) Spark-Ignited Waste Gas Engines Rated at >50 bhp (corrected to 15% oxygen on a dry basis)

Engine Type	District NOx Limit (ppmv)	SCAQMD NOx Limit (ppmv)
Waste Gas Fueled (Rich-Burn)	50	<u>Until 01-01-16</u> bhp $\geq$ 500: $36 \times \text{ECF}^{72}$ bhp < 500: $45 \times \text{ECF}^1$ <u>On and after 01-01-16</u> 11 ppmv
Waste Gas Fueled (Lean-Burn)	65 ppmv or 90% reduction	<u>Until 01-01-16</u> bhp $\geq$ 500: $36 \times \text{ECF}^1$ bhp < 500: $45 \times \text{ECF}^1$ <u>On and after 01-01-16</u> 11 ppmv

⁷² The efficiency correction factor (ECF) is 1.0 unless: 1) The engine operator has measured the engine's net specific energy consumption, in compliance with ASME Performance Test Code PTC 17 -1973, at the average load of the engine; and 2) the ECF-corrected emission limit is made a condition of the engine's permit to operate. The ECF is never less than 1.0 so in some cases the SCAQMD limits could potentially be less stringent than the District's NOx limits.

Table C-20 Comparison of District and SCAQMD NOx Emission Limits for Non-AO Spark-Ignited Engines Rated >50 bhp (corrected to 15% oxygen on a dry basis)

Engine Type	District NOx Limit (ppmv)	SCAQMD NOx Limit (ppmv)
1. Rich-Burn		
Rich-Burn Engine (except for below special applications)	11	11
Cyclic Loaded, Field Gas Fueled	50	11
Limited Use	25	11 ⁷³
2. Lean-Burn Engines		
Lean-Burn Engine (except for below special applications)	11	11
Two-Stroke, Gaseous Fueled, >50 bhp and < 100 bhp	75	11
Limited Use	65	11 ²
Lean-Burn Engine used for gas compression	65 ppmv or 93% reduction	11

Table C-21 Comparison of District and SCAQMD NOx Emission Limits for Agricultural Operations (AO) Spark-Ignited Engines Rated >50 bhp (corrected to 15% oxygen on a dry basis)

Engine Type	District NOx Limit	SCAQMD NOx Limit
1. Rich-Burn	90 ppmv or 80% reduction	11
2. Lean-Burn	150 ppmv or 70% reduction	11
3. Certified and installed on or before June 16, 2005	Meet a Certified Spark-Ignited Engine Standard of HC + NOx < 0.6 g/bhp-hr	11

Medium and large operators in the South Coast Air Basin are most likely part of the South Coast RECLAIM program and are subsequently not required to meet the engine emission limitations included in Rule 1110.2. All facilities that emit over a certain threshold are required to participate in the RECLAIM program. As part of the RECLAIM program certain companies receive emission allocations every year and each allocation is good for 12 months. The portion of the allocation not needed to offset the operator's own emissions can be sold to other companies. If the operator does not receive an emission allocation, they must buy emission credits from operators with unused emission allocations. In this way, the RECLAIM program is similar to a cap-and-trade program. The District does not have a RECLAIM-type program for this source category and all operators are required to meet the stringent emission limitations included in Rule 4702.

⁷³ SCAQMD exempt units that operate less than 500 hours from this limit; District defines "limited use" units as those operating less than 4,000 hours and only exempts engines operating less than 200 hours.

Although the SCAQMD emission level of 11 ppm has not yet been proven as technologically feasible in agricultural settings and it is unclear what percentage of facilities are complying with the current SCAQMD NOx limits for non-ag categories, the District evaluated the cost-effectiveness and feasibility of implementing an 11 ppmv NOx emission limit for the following categories of IC engines:

- Non-Agricultural Operations (Non-AO) Waste Gas Engines
- Non-AO Spark-Ignited Engines
 - Cyclic Loaded, Field Gas Fueled
 - Limited Use Engines
 - Lean-Burn Engines
 - Rich-Burn Engines
 - Two-Stroke, Gaseous Fueled Engines 50-100 bhp
 - Lean-Burn Engines Used for Gas Compression
- Agricultural Operations (AO) Spark-Ignited Engines

The District also evaluated the cost-effectiveness and feasibility of implementing intermediate NOx emission limits for AO spark-ignited engines that more closely match the current NOx emission limits for non-AO limited use rich-burn and lean-burn engines. The following analyses were conducted:

- 25 ppmv NOx emission limit for AO Rich-Burn Spark-Ignited Engines
- 65 ppmv NOx emission limit for AO Lean-Burn Spark-Ignited Engines

To determine potential emissions reductions, the District used the following equations:

$$\text{NOx} = (\text{BHP} \times \text{HR} \times \text{EF} \times \text{LF}) / (\text{CF})$$

Where:

NOx	=	Current annual NOx emissions or potential annual NOx emissions in ton/year
BHP	=	engine power
HR	=	annual hours of operation
EF	=	NOx emission factor
LF	=	engine load factor
CF	=	conversion factor from grams to pounds

The estimated annual NOx emissions reduction was calculated using the following equation:

$$\text{Potential Emissions Reduction} = \text{current annual NOx emissions} - \text{potential NOx annual NOx emissions}$$

NOx Emission Limitation for Non-Agricultural Operations (Non-AO) Waste Gas Engines:

The District analyzed the technological feasibility of lowering the NOx emission limit for waste gas engines and determined that due to the variability of waste gas, additional levels of NOx control on existing waste gas engines can pose significant technical and feasibility challenges. Waste gas includes landfill gas, which is generated at landfills, and digester gas, which is generated from anaerobic digestion. Both landfill and digester gas result from the decomposition of organic matter by microorganisms in the absence of oxygen. Unlike pipeline natural gas, the composition of waste gas is not consistent or guaranteed. The heating value and composition of the gas (e.g. methane and oxygen contents) will vary with the type of materials that enter the landfill or digester and can also fluctuate seasonally or even daily. Both landfill and digester gases contain impurities, such as siloxanes, sulfur compounds, and halides. Landfill gas also contains entrained particulate matter, and both landfill and digester gas may contain particulate that results from combustion of the impurities in the gas. The contaminants in waste gas can coat and/or poison catalysts, rendering them ineffective. Because of its variable composition and contaminants, untreated waste gas is not interchangeable with pipeline-quality natural gas and extensive and costly cleanup would be necessary to allow the use of catalytic emission controls needed to achieve 11 ppmv. This is not a practical option for most existing waste gas-fired engines, which were not designed to include the required gas systems and catalytic controls.

In addition to the District's efforts to identify additional potential technology options for this category, SCAQMD has also been evaluating this issue. In February 2008, SCAQMD amended Rule 1110.2 to include an 11 ppmv limit for waste gas engines rated at >50 bhp. The original compliance date for this emissions limit was July 1, 2012, with the assumption that SCAQMD would complete a Technology Assessment to verify the feasibility of available control technologies for waste gas engines. However, SCAQMD had to amend Rule 1110.2 in September 2012 to extend the compliance deadline for waste gas engines from 2012 to 2016 in order to allow for more time to complete their Final Technology Assessment, which is currently still incomplete and has yet to identify feasible technology options. Additionally, these sources may also be in a position to avoid installing additional NOx control technologies through their participation in SCAQMD's RECLAIM program.

District Rule 4702 contains the most stringent limits feasible for existing waste gas-fueled engines based on the use of combustion processes that minimize emissions without the use of post-combustion catalytic controls. Therefore, Rule 4702 meets or exceeds BACM and MSM for non-AO waste gas fueled spark-ignited engines. Additionally, the District continues to investigate potential NOx and SOx control technologies for waste gas engines through its Technology Advancement Program, with projects currently approved for funding that will continue to demonstrate new technologies in this sector.

NOx Emission Limitation for Non-AO Spark-Ignited Engines:***Cyclic Loaded, Field Gas Fueled***

Cyclic-loaded, field gas fueled engines can achieve some level of control, but not the stringent level of control that can be imposed on engines that operate in a narrow and more stable range of loads. The exhaust gas temperature of cyclic loaded engines varies as a function of the engine load; however, catalyst chemistry is dependent on a minimum temperature to be effective in reducing emissions. When the cyclic load engine is operating in a particular engine load range, the exhaust gas temperature can reach the catalyst's effective range and allow for emissions to be well-controlled; however, as the engine cycles out of this load range, the exhaust gas temperature becomes too low for effective emissions control. Since the exhaust temperature fluctuates frequently for this category of units, it is technologically infeasible to require a lower NOx limit for cyclic loaded field-gas fueled engines. The current emission limit for this category of engines meets or exceeds BACM and MSM for these sources.

Limited Use Engines

During the 2011 amendments to Rule 4702, the District created this category of engines based on the high costs and cost effectiveness associated with the installation of additional controls for these engines (> 4,000 hours of operation). As discussed in the staff report, the NOx emission reductions foregone from not lowering the existing NOx limits to 11 ppmv for limited use engines was insignificant (about 0.004 tons per day in 2011).⁷⁴

However, since the evaluation was conducted in 2011, the District re-evaluated the cost effectiveness of lowering the NOx emission limits to 11 ppmv for limited use non-AO rich-burn and lean-burn engines. The costs in the analyses below were gathered from information in the District's Permits database, IC engine manufacturers, and operators.

Limited Use Lean-Burn Engines

When evaluating the ability to lower NOx emissions to 11 ppmv, an operator can either retrofit the existing lean-burn IC engine with a selective catalytic reduction (SCR) system or install a new lean-burn engine with an SCR system. In many cases, retrofitting an existing IC engine is technologically infeasible or may require substantial additional unanticipated costs (such as the incompatibility of an older engine with less sophisticated operating controls with additional control technology, additional labor/maintenance costs, etc.). However, for the purpose of evaluating all potential controls, the District has included both options in the below analysis.

⁷⁴ SJVAPCD. (2011, August 18). *Adopt Revised Proposed Amendments to Rule 4702 (Internal Combustion Engines)*. Retrieved from http://www.valleyair.org/Board_meetings/GB/agenda_minutes/Agenda/2011/August/Agenda_Item_10_Aug_18_2011.pdf

Table C-22 Annual Costs for Retrofitting an Existing Limited Use Lean-Burn Engine and Installing a New Limited Use Lean-Burn Engine with SCR

Item	Assumptions/Methodology	Cost
Average Engine Power Rating	1100 brake horsepower (bhp)	n/a
Annual Operation	2500 hours (hr)	n/a
Capital Costs		
New Engine Cost (without SCR)	Includes: engine, freight, installation, start-up, additional equipment (belt guards, fuel connection, etc.), and tax	\$110,656
Annualized Engine Capital Costs (10 years, 10%)	$0.163 \times \text{New Engine Cost}$	\$18,037
SCR Equipment Costs		
SCR System	\$73,000 per engine	\$73,000
550 gallon double wall plastic urea tank and accessories	\$5,270 per tank	\$5,270
3 hp rotary screw air compressor with dryer and receiver tank	\$5,875 per compressor package	\$5,875
Total SCR Equipment Costs	Equipment costs $\times$ 20% profit/mark-up	\$100,974
SCR Installation Costs		
Start-up and Commissioning Rate	\$1,500/day; assume 1 day for each system	\$1,500
Electrical upgrade to power compressor	n/a	\$0
Total SCR Installation Costs		\$1,500
Total SCR Capital Costs	SCR Equipment Costs + SCR Installation Costs	\$102,474
Annualized SCR Capital Costs (10 years, 10%)	$0.163 \times \text{Total SCR Capital Costs}$	\$16,703
Annual Operating and Maintenance Costs		
Annual Reagent (urea) Cost	\$3 per gallon; 1 gallon/hr Cost = $\$3 \times 2500 \text{ hr}$	\$7,500
Annual Increase in Fuel Cost (due to drop in fuel efficiency with SCR)	Fuel usage = 9,322.5 standard cubic feet per hour (scf/hr) Fuel cost (per 1,000 scf) = \$7.36 Fuel cost (per hour) = $(9,322.5 \times \$7.36) / 1000$ Fuel cost (per year) = hourly cost $\times$ 2500 hr 2.5% drop in fuel efficiency Added Fuel Cost = Annual fuel cost $\times$ 2.5%	\$4,288
Annual Electricity Cost (for compressor)	3 hp compressor = 2.24 kW power rating Electricity rate for industrial operations = \$0.132/kW-hr Hourly electricity cost = $2.24 \text{ kW} \times \$0.132/\text{kW-hr}$ Daily meter charge = \$49.281 Annual electricity cost = hourly cost $\times$ 2500 hr Annual meter charge = daily meter charge $\times$ 365 days Total utility cost = Annual electricity cost + Annual meter charge	\$18,728

Item	Assumptions/Methodology	Cost
Annual Catalyst Cost	Life of catalyst = 5 years Cost per catalyst = \$5,000 Catalyst costs for 10 years = \$5,000 x 2 Annualized cost = \$10,000 x 0.163	\$1,630
Annual Maintenance Cost	Maintenance = \$0.02 per bhp per hour of operation Annual cost = \$0.02 x 1,100 bhp x 2500 hr	\$55,000
Annual Operating & Maintenance (O&M) Costs	Annual O&M = Annual Reagent Cost + Annual Increase in Fuel Cost + Annual Electricity Cost + Annual Catalyst Cost + Annual Maintenance Cost	\$87,147
Annual Cost for Retrofit of LB Engine with SCR	Annualized SCR Capital Cost + Annual O&M Cost	\$103,850
Annual Cost for New LB Engine with SCR	Annualized Engine Capital Cost + Annualized SCR Capital Cost + Annual O&M Cost	\$121,887

The emissions reductions are calculated below:

$$\begin{aligned}
 \text{BHP} &= 1,100 \text{ bhp} \\
 \text{HR} &= 2,500 \text{ hours/year (hr/yr)} \\
 \text{EF1} &= 0.78 \text{ g-NOx/bhp-hr (equivalent to 65 ppmvd NOx at 15\% O}_2\text{; assuming 35\% thermal efficiency)} \\
 \text{EF2} &= 0.132 \text{ g-NOx/bhp-hr (equivalent to 11 ppmvd NOx at 15\% O}_2\text{; assuming 35\% thermal efficiency)} \\
 \text{LF} &= 0.8 \\
 \text{CF} &= 453.6 \text{ grams/pound (g/lb)}
 \end{aligned}$$

$$\begin{aligned}
 \text{Current NOx} &= (\text{BHP} \times \text{HR} \times \text{EF1} \times \text{LF}) / (\text{CF}) \\
 &= (1,100 \text{ bhp} \times 2500 \text{ hr/yr} \times 0.78 \text{ g-NOx/bhp-hr} \times 0.8) / (453.6 \text{ g/lb}) \\
 &= 3,783 \text{ lb-NOx/year}
 \end{aligned}$$

$$\begin{aligned}
 \text{Potential NOx} &= (\text{BHP} \times \text{HR} \times \text{EF2} \times \text{LF}) / (\text{CF}) \\
 &= (1,100 \text{ bhp} \times 2500 \text{ hr/yr} \times 0.132 \text{ g-NOx/bhp-hr} \times 0.8) / (453.6 \text{ g/lb}) \\
 &= 640 \text{ lb-NOx/year}
 \end{aligned}$$

$$\begin{aligned}
 \text{Potential Emissions Reduction} &= \text{Current NOx} - \text{Potential NOx} \\
 \text{Potential Emissions Reduction} &= (3,783 - 640 \text{ lb}) \times (1 \text{ ton} / 2,000 \text{ lb}) \\
 \text{Potential Emissions Reduction} &= \mathbf{1.57 \text{ tons/year}}
 \end{aligned}$$

Cost Effectiveness

The cost effectiveness is the added cost, in dollars per year, of the control technology, divided by the emissions reductions achieved, in tons per year. Based on the calculations above, the cost effectiveness of retrofitting or replacing current limited use lean-burn spark-ignited engines is as follows:

- Retrofit limited use lean-burn engine with SCR: \$66,086/ton of NOx reduced
- New limited use lean-burn engine with SCR: \$77,564/ton of NOx reduced

As demonstrated in the analysis and summary above, it is not cost effective to require the retrofit or replacement of limited use lean-burn engines to achieve 11 ppmv.

Limited Use Rich-Burn Engines

When evaluating the ability to lower NOx emissions to 11 ppmv, an operator will generally retrofit the existing rich-burn IC engine with a nonselective catalytic reduction (NSCR) system. In many cases, retrofitting an existing IC engine is technologically infeasible or may require substantial additional unanticipated costs (such as the incompatibility of an older engine with less sophisticated operating controls with additional control technology, additional labor/maintenance costs, etc.). However, for the purpose of evaluating potential controls in this category, the District has included the less costly, potentially feasible scenario of retrofitting an existing rich-burn engine with NSCR in the below analysis.

Table C-23 Annual Costs for Retrofitting an Existing Limited Use Rich-Burn Engine

Item	Assumptions/Methodology	Cost
Average Engine Power Rating	500 bhp	n/a
Annual Operation	2500 hours (hr)	n/a
Capital Costs		
New Catalyst System	Includes: catalyst, air-to fuel ratio controller, ignition system, and installation	\$75,000
Annualized Catalyst Capital Cost (10 years, 10%)	0.163 x New Catalyst System	\$12,225
Annual Cost for Retrofit of RB Engine with New Catalyst	Annualized Catalyst Capital Cost	\$12,225

The emissions reductions are calculated below:

$$\begin{aligned}
 \text{BHP} &= 500 \text{ bhp} \\
 \text{HR} &= 2,500 \text{ hours/year (hr/yr)} \\
 \text{EF1} &= 0.30 \text{ g-NOx/bhp-hr (equivalent to 25 ppmvd NOx at 15\% O}_2\text{; assuming 35\% thermal efficiency)} \\
 \text{EF2} &= 0.132 \text{ g-NOx/bhp-hr (equivalent to 11 ppmvd NOx at 15\% O}_2\text{; assuming 35\% thermal efficiency)} \\
 \text{LF} &= 0.8 \\
 \text{CF} &= 453.6 \text{ grams/pound (g/lb)}
 \end{aligned}$$

$$\begin{aligned}
 \text{Current NOx} &= (\text{BHP} \times \text{HR} \times \text{EF1} \times \text{LF}) / (\text{CF}) \\
 &= (500 \text{ bhp} \times 2500 \text{ hr/yr} \times 0.30 \text{ g-NOx/bhp-hr} \times 0.8) / (453.6 \text{ g/lb}) \\
 &= 661 \text{ lb-NOx/year}
 \end{aligned}$$

$$\begin{aligned}
 \text{Potential NOx} &= (\text{BHP} \times \text{HR} \times \text{EF2} \times \text{LF}) / (\text{CF}) \\
 &= (500 \text{ bhp} \times 2500 \text{ hr/yr} \times 0.132 \text{ g-NOx/bhp-hr} \times 0.8) / (453.6 \text{ g/lb})
 \end{aligned}$$

$$= 291 \text{ lb-NOx/year}$$

Potential Emissions Reduction = Current NOx – Potential NOx

Potential Emissions Reduction = (661 - 291 lb) x (1 ton / 2,000 lb)

Potential Emissions Reduction = 0.19 tons/year

Cost Effectiveness

The cost effectiveness is the added cost, in dollars per year, of the control technology, divided by the emissions reductions achieved, in tons per year. Based on the calculations above, the cost effectiveness of retrofitting or replacing current limited use rich-burn spark-ignited engines is as follows:

- Retrofitted limited use rich-burn non-AO engine with new catalyst:
\$66,015/ton of NOx reduced

As demonstrated in the analysis and summary above, it is not cost effective to require the retrofit or replacement of limited use rich-burn engines to achieve 11 ppmv, even without including additional substantial costs, such as annual operating and maintenance costs.

Two-Stroke, Gaseous Fueled Engines 50-100 bhp

There is no control technology compatible with two-stroke, gaseous fueled engines, including SCR, which will allow these units to achieve a NOx emission limit below 75 ppmv. An 11 ppmv NOx emission limit is not technologically feasible for these engines; the current limit implements BACM and MSM for two-stroke, gaseous fueled engines less than 100 bhp.

Lean-Burn Engines Used in Gas Compression

Similar to the "Limited Use" engine category, during the 2011 amendments to Rule 4702, the District created this category of engines based on the technological infeasibility to control these types of engines. Lean-burn engines used in gas compression in the Valley are used in natural gas distribution and storage service, and these engines frequently experience changing load conditions. As noted in EPA's Stationary IC Engine Technical Support Document⁷⁵, SCR use is problematic for these engines due to the fluctuations over a broad range of conditions. For this reason, EPA states that there is an insufficient basis to conclude that SCR is an appropriate technology for large lean-burn engines used for gas compression. The current emission limit is achievable through low-NOx combustion technology, which includes changes to the engine's timing, enhanced control of the air-fuel ratio, and other changes that lower NOx emissions. Due to the technological complexities associated with lean-burn engines used in gas compression, the current emissions limit implements BACM and MSM for these units.

⁷⁵ EPA. (2003, October). *Stationary Reciprocating Internal Combustion Engines Technical Support Document for NOx SIP Call*.

NOx Emission Limitation for AO Spark-Ignited Engines:

Potential methods for reducing NOx emissions from Agriculture Operation (AO) spark-ignited engines include retrofitting them with emission control technologies or replacing them. As the below analysis demonstrates, given the high costs and limited seasonal nature of operation of AO spark-ignited engines, requiring additional controls beyond the existing stringent requirements is not cost-effective and often technologically infeasible. Despite the technological feasibility issues associated with retrofitting or replacing existing AO spark-ignited engines, the District evaluated the cost effectiveness and feasibility of achieving an 11 ppmv NOx emission limit for the following scenarios:

- Installing a new IC lean-burn engine with SCR as a replacement for an existing unit
- Retrofitting an existing lean-burn IC engine with SCR
- Installing a new rich-burn engine with a three-way catalyst system as a replacement for an existing unit

The District also evaluated the cost effectiveness and feasibility of achieving intermediate NOx emission limits of 25 ppmv for AO rich-burn spark-ignited engines and a 65 ppmv for lean-burn spark-ignited engines, similar to the corresponding limited use engine limits for non-AO engines. The scenarios evaluated include:

- Installing a new IC lean-burn engine as a replacement for an existing unit to meet 65 ppmv
- Installing a new rich-burn engine with a three-way catalyst system as a replacement for an existing unit to meet 25 ppmv

The costs in the analyses below were gathered from information in the District's Permits database, IC engine manufacturers, and agricultural industry representatives.

AO Lean-Burn Engines (11 ppmv)

When evaluating the ability to lower NOx emissions to 11 ppmv, an agricultural operator can either retrofit the existing lean-burn IC engine with a selective catalytic reduction (SCR) system or install a new lean-burn engine with an SCR system.

Table C-24 Annual Costs for Retrofitting an Existing AO Lean-Burn Engine with SCR and Installing a New AO Lean-Burn Engine with SCR

Item	Assumptions/Methodology	Cost
Average Engine Power Rating	241 brake horsepower (bhp)	n/a
Annual Operation	2500 hours (hr)	n/a
Capital Costs (Engine)		
New Engine Cost (without SCR)	Includes: engine, freight, installation, start-up, additional equipment (belt guards, fuel connection, etc.), and tax	\$109,480
Annualized Engine Capital Costs (10 years, 10%)	$0.163 \times \text{New Engine Cost}$	\$17,845
SCR Equipment Costs		
SCR System	\$73,000 per engine	\$73,000
550 gallon double wall plastic urea tank and accessories	\$5,270 per tank	\$5,270
3 hp rotary screw air compressor with dryer and receiver tank	\$5,875 per compressor package	\$5,875
Total SCR Equipment Costs	Equipment costs $\times$ 20% profit/mark-up	\$100,974
SCR Installation Costs		
Start-up and Commissioning Rate	\$1,500/day; assume 1 day for each system	\$1,500
Electrical upgrade to power compressor	\$43.22/foot; avg. 1,020 feet to extend electrical line	\$44,084
Total SCR Installation Costs		\$45,584
Total SCR Capital Costs	SCR Equipment Costs + SCR Installation Costs	\$146,558
Annualized SCR Capital Costs (10 years, 10%)	$0.163 \times \text{Total SCR Capital Costs}$	\$23,889
Annual Operating and Maintenance Costs (SCR)		
Annual Reagent (urea) Cost	\$3 per gallon; 1 gallon/hr Cost = $\$3 \times 2500 \text{ hr}$	\$7,500
Annual Increase in Fuel Cost (due to drop in fuel efficiency with SCR)	Fuel usage = 1750.7 standard cubic feet per hour (scf/hr) Fuel cost (per 1,000 scf) = \$7.36 Fuel cost (per hour) = $(1,750.7 \times \$7.36) / 1000$ Fuel cost (per year) = hourly cost $\times$ 2500 hr 2.5% drop in fuel efficiency Added Fuel Cost = Annual fuel cost $\times$ 2.5%	\$805
Annual Electricity Cost (for compressor)	3 hp compressor = 2.24 kW power rating Electricity rate for AO = \$0.136/kW-hr Hourly electricity cost = $2.24 \text{ kW} \times \$0.136/\text{kW-hr}$ Annual electricity cost = hourly cost $\times$ 2500 hr	\$761
Annual Catalyst Cost	Life of catalyst = 5 years Cost per catalyst = \$5,000 Catalyst costs for 10 years = $\$5,000 \times 2$ Annualized cost = $\$10,000 \times 0.163$	\$1,630
Annual Maintenance Cost	Maintenance = \$0.02 per bhp per hour of operation Annual cost = $\$0.02 \times 241 \text{ bhp} \times 2500 \text{ hr}$	\$12,050

Item	Assumptions/Methodology	Cost
Annual Operating & Maintenance (O&M) Costs	Annual O&M = Annual Reagent Cost+ Annual Increased Fuel Cost + Annual Electricity Cost + Annual Catalyst Cost + Annual Maintenance Cost	\$22,746
Annual Cost for Retrofit of LB Engine with SCR	Annualized SCR Capital Cost + Annual O&M Cost	\$46,635
Annual Cost for New LB Engine with SCR	Annualized Engine Capital Cost + Annualized SCR Capital Cost + Annual O&M Cost	\$64,480

*The values within this table are rounded.

The emissions reductions are calculated below:

$$\begin{aligned}
 \text{BHP} &= 241 \text{ bhp} \\
 \text{HR} &= 2,500 \text{ hours/year (hr/yr)} \\
 \text{EF1} &= 2.092 \text{ g-NOx/bhp-hr (equivalent to 150 ppmv)} \\
 \text{EF2} &= 0.132 \text{ g-NOx/bhp-hr (equivalent to 11 ppmv)} \\
 \text{LF} &= 0.65 \\
 \text{CF} &= 453.6 \text{ grams/pound (g/lb)}
 \end{aligned}$$

$$\begin{aligned}
 \text{Current NOx} &= (\text{BHP} \times \text{HR} \times \text{EF1} \times \text{LF}) / (\text{CF}) \\
 &= (241 \text{ bhp} \times 2500 \text{ hr/yr} \times 2.092 \text{ g-NOx/bhp-hr} \times 0.65) / (453.6 \text{ g/lb}) \\
 &= 1,806 \text{ lb-NOx/year}
 \end{aligned}$$

$$\begin{aligned}
 \text{Potential NOx} &= (\text{BHP} \times \text{HR} \times \text{EF2} \times \text{LF}) / (\text{CF}) \\
 &= (241 \text{ bhp} \times 2500 \text{ hr/yr} \times 0.132 \text{ g-NOx/bhp-hr} \times 0.65) / 453.6 \\
 &= 114 \text{ lb-NOx/year}
 \end{aligned}$$

$$\begin{aligned}
 \text{Potential Emissions Reduction} &= \text{Current NOx} - \text{Potential NOx} \\
 \text{Potential Emissions Reduction} &= (1806 - 114 \text{ lb}) \times (1 \text{ ton} / 2,000 \text{ lb}) \\
 \text{Potential Emissions Reduction} &= \mathbf{0.85 \text{ tons/year}}
 \end{aligned}$$

Cost Effectiveness (AO Lean-Burn, 11 ppmv)

The cost effectiveness is the added cost, in dollars per year, of the control technology, divided by the emissions reductions achieved, in tons per year. Based on the calculations above, the cost effectiveness of retrofitting or replacing current AO lean-burn spark-ignited engines is as follows:

- Retrofitted lean-burn engine with SCR: \$55,118/ton of NOx reduced
- New lean-burn engine with SCR: \$76,209/ton of NOx reduced

In addition to the unique feasibility issues that AOs face with regards to the installation and maintenance of IC engines (see below), the cost effectiveness values above demonstrate that it is not cost effective to retrofit or replace existing AO lean-burn engines with new more controlled engines.

AO Lean-Burn Engines (65 ppmv)

When evaluating the ability to lower NOx emissions to 65 ppmv, an agricultural operator would have to replace the existing lean-burn IC engine with a new lean-burn engine certified to meet 65 ppmv.

Table C-25 Annual Costs for Installing a New AO Lean-Burn Engine

Item	Assumptions/Methodology	Cost
Average Engine Power Rating	241 brake horsepower (bhp)	n/a
Annual Operation	2500 hours (hr)	n/a
Capital Costs (Engine)		
New Engine Cost (without SCR)	Includes: engine, freight, installation, start-up, additional equipment (belt guards, fuel connection, etc.), and tax	\$109,480
Annualized Engine Capital Costs (10 years, 10%)	0.163 x New Engine Cost	\$17,845
Annual Operating and Maintenance Costs		
Annual Maintenance Cost	Maintenance = \$0.01 per bhp per hour of operation Annual cost = \$0.01 x 241 bhp x 2500 hr	\$6,025
Annual Cost for New LB Engine	Annualized Engine Capital Cost + Annual O&M Cost	\$23,870

*The values within this table are rounded.

The emissions reductions are calculated below:

$$\begin{aligned}
 \text{BHP} &= 241 \text{ bhp} \\
 \text{HR} &= 2,500 \text{ hours/year (hr/yr)} \\
 \text{EF1} &= 2.092 \text{ g-NOx/bhp-hr (equivalent to 150 ppmv)} \\
 \text{EF2} &= 0.78 \text{ g-NOx/bhp-hr (equivalent to 65 ppmv)} \\
 \text{LF} &= 0.65 \\
 \text{CF} &= 453.6 \text{ grams/pound (g/lb)}
 \end{aligned}$$

$$\begin{aligned}
 \text{Current NOx} &= (\text{BHP} \times \text{HR} \times \text{EF1} \times \text{LF}) / (\text{CF}) \\
 &= (241 \text{ bhp} \times 2500 \text{ hr/yr} \times 2.092 \text{ g-NOx/bhp-hr} \times 0.65) / (453.6 \text{ g/lb}) \\
 &= 1,806 \text{ lb-NOx/year}
 \end{aligned}$$

$$\begin{aligned}
 \text{Potential NOx} &= (\text{BHP} \times \text{HR} \times \text{EF2} \times \text{LF}) / (\text{CF}) \\
 &= (241 \text{ bhp} \times 2500 \text{ hr/yr} \times 0.78 \text{ g-NOx/bhp-hr} \times 0.65) / 453.6 \\
 &= 673 \text{ lb-NOx/year}
 \end{aligned}$$

$$\begin{aligned}
 \text{Potential Emissions Reduction} &= \text{Current NOx} - \text{Potential NOx} \\
 \text{Potential Emissions Reduction} &= (1806 - 673 \text{ lb}) \times (1 \text{ ton} / 2,000 \text{ lb}) \\
 \text{Potential Emissions Reduction} &= \mathbf{0.57 \text{ tons/year}}
 \end{aligned}$$

Cost Effectiveness (AO Lean-Burn, 65 ppmv)

The cost effectiveness is the added cost, in dollars per year, of the control technology, divided by the emissions reductions achieved, in tons per year. Based on the calculations above, the cost effectiveness of replacing current AO lean-burn spark-ignited engines is as follows:

- New lean-burn engine: \$42,146/ton of NOx reduced

In addition to the unique feasibility issues that AOs face with regards to the installation and maintenance of IC engines (see below), the cost effectiveness value above demonstrates that it is not cost effective to replace existing AO lean-burn engines with newer less polluting engines.

AO Rich-Burn Engines (11 ppmv)

When evaluating the ability to lower NOx emissions to 11 ppmv, an agricultural operator can install a new rich-burn engine with 3-way catalyst.

Table C-26 Annual Cost for Installing a New AO Rich-Burn Engine with a 3-way Catalyst

Item	Assumptions/Methodology	Cost
Average Engine Power Rating	256 bhp	n/a
Annual Operation	2500 hr	n/a
Total Capital Costs		
New Engine Cost	Includes: engine with 3-way catalyst, freight, installation, and tax	\$95,000
Annualized Engine Capital Costs (10 years, 10%)	0.163 x New Engine Cost	\$15,485
Annual Operating and Maintenance Costs (SCR)		
Annual Added Fuel Cost (due to drop in fuel efficiency with catalyst)	Fuel usage = 1,859.7 scf/hr Fuel cost (per 1,000 scf) = \$7.36 Fuel cost (per hour) = (1,859.7 x \$7.36) / 1000 Fuel cost (per year) = hourly cost x 2500 hr Assume 2.5% drop in fuel efficiency Added Fuel cost = Annual fuel cost x 2.5%	\$855
Annual Catalyst Cost	Life of catalyst = 5 years Cost per catalyst = \$5,000 Catalyst costs for 10 years = \$5,000 x 2 Annualized Catalyst Cost = \$10,000 x 0.163	\$1,630
Annual Maintenance Cost	Maintenance = \$0.02 per bhp per hour of operation Annual Maintenance Cost = \$0.02 x 256 bhp x 2500 hr	\$12,800
Annual Operating & Maintenance (O&M) Costs	Annual O&M = Annual Added Fuel Cost + Annual Catalyst Cost + Annual Maintenance Cost	\$15,285
Annual Cost for New RB Engine with 3-way	Annualized Engine Capital Cost + Annual O&M Cost	\$30,770

*The values within the above table are rounded.

The emissions reductions are calculated below:

BHP	=	256 bhp
HR	=	2,500 hours/year
EF1	=	1.255 g-NOx/bhp-hr (equivalent to 90 ppmv)
EF2	=	0.132 g-NOx/bhp-hr (equivalent to 11 ppmv)
LF	=	0.65
CF	=	453.6 grams/pound

$$\begin{aligned}\text{Current NOx} &= (\text{BHP} \times \text{HR} \times \text{EF1} \times \text{LF}) / (\text{CF}) \\ &= (256 \text{ bhp} \times 2500 \text{ hr/yr} \times 1.255 \text{ g-NOx/bhp-hr} \times 0.65) / 453.6 \\ &= 1,151 \text{ lb-NOx/year}\end{aligned}$$

$$\begin{aligned}\text{Potential NOx} &= (\text{BHP} \times \text{HR} \times \text{EF2} \times \text{LF}) / (\text{CF}) \\ &= (256 \text{ bhp} \times 2500 \text{ hr/yr} \times 0.132 \text{ g-NOx/bhp-hr} \times 0.65) / 453.6 \\ &= 121 \text{ lb-NOx/year}\end{aligned}$$

$$\begin{aligned}\text{Potential Emissions Reduction} &= \text{Current NOx} - \text{Potential NOx} \\ \text{Potential Emissions Reduction} &= (1,151 - 121 \text{ lb}) \times (1 \text{ ton} / 2,000 \text{ lb}) \\ \text{Potential Emissions Reduction} &= \mathbf{0.52 \text{ tons/year}}\end{aligned}$$

Cost Effectiveness (AO Rich-Burn, 11 ppmv)

The cost effectiveness is the added cost, in dollars per year, of the control technology, divided by the emissions reductions achieved, in tons per year. Based on the calculations above, the cost effectiveness of replacing current AO rich-burn engines is as follows:

- New rich-burn engine with a 3-way catalyst to meet 11 ppmv: \$59,754/ton of NOx reduced

In addition to the unique feasibility issues that AOs face with regards to the installation and maintenance of IC engines (see below), the cost effectiveness value above demonstrates that it is not cost effective to replace existing AO spark-ignited engines with new controlled engines.

AO Rich-Burn Engines (25 ppmv)

In order to meet a 25 ppmv, an agricultural operator would have to install a new rich-burn engine with a slightly less expensive catalyst compared to the catalyst needed to meet 11 ppmv.

Table C-27 Annual Cost for Installing a New AO Rich-Burn Engine with a 3-way Catalyst

Item	Assumptions/Methodology	Cost
Average Engine Power Rating	256 bhp	n/a
Annual Operation	2500 hr	n/a
Total Capital Costs		
New Engine Cost	Includes: engine with 3-way catalyst, freight, installation, and tax	\$95,000
Annualized Engine Capital Costs (10 years, 10%)	0.163 x New Engine Cost	\$15,485
Annual Operating and Maintenance Costs (SCR)		
Annual Added Fuel Cost (due to drop in fuel efficiency with catalyst)	Fuel usage = 1,859.7 scf/hr Fuel cost (per 1,000 scf) = \$7.36 Fuel cost (per hour) = (1,859.7 x \$7.36) / 1000 Fuel cost (per year) = hourly cost x 2500 hr Assume 2.5% drop in fuel efficiency Added Fuel cost = Annual fuel cost x 2.5%	\$855
Annual Catalyst Cost	Life of catalyst = 5 years Cost per catalyst = \$4,000 Catalyst costs for 10 years = \$4,000 x 2 Annualized Catalyst Cost = \$8,000 x 0.163	\$1,304
Annual Maintenance Cost	Maintenance = \$0.02 per bhp per hour of operation Annual Maintenance Cost = \$0.02 x 256 bhp x 2500 hr	\$12,800
Annual Operating & Maintenance (O&M) Costs	Annual O&M = Annual Added Fuel Cost + Annual Catalyst Cost + Annual Maintenance Cost	\$14,959
Annual Cost for New RB Engine with 3-way	Annualized Engine Capital Cost + Annual O&M Cost	\$30,444

*The values within the above table are rounded.

The emissions reductions are calculated below:

$$\begin{aligned}
 \text{BHP} &= 256 \text{ bhp} \\
 \text{HR} &= 2,500 \text{ hours/year} \\
 \text{EF1} &= 1.255 \text{ g-NOx/bhp-hr (equivalent to 90 ppmv)} \\
 \text{EF2} &= 0.30 \text{ g-NOx/bhp-hr (equivalent to 25 ppmv)} \\
 \text{LF} &= 0.65 \\
 \text{CF} &= 453.6 \text{ grams/pound}
 \end{aligned}$$

$$\begin{aligned}
 \text{Current NOx} &= (\text{BHP} \times \text{HR} \times \text{EF1} \times \text{LF}) / (\text{CF}) \\
 &= (256 \text{ bhp} \times 2500 \text{ hr/yr} \times 1.255 \text{ g-NOx/bhp-hr} \times 0.65) / 453.6 \\
 &= 1,151 \text{ lb-NOx/year}
 \end{aligned}$$

$$\begin{aligned}
 \text{Potential NOx} &= (\text{BHP} \times \text{HR} \times \text{EF2} \times \text{LF}) / (\text{CF}) \\
 &= (256 \text{ bhp} \times 2500 \text{ hr/yr} \times 0.30 \text{ g-NOx/bhp-hr} \times 0.65) / 453.6
 \end{aligned}$$

$$= 275 \text{ lb-NOx/year}$$

Potential Emissions Reduction = Current NOx – Potential NOx

Potential Emissions Reduction = (1,151-275 lb) x (1 ton / 2,000 lb)

Potential Emissions Reduction = 0.44 tons/year

Cost Effectiveness (AO Rich-Burn, 25 ppmv)

The cost effectiveness is the added cost, in dollars per year, of the control technology, divided by the emissions reductions achieved, in tons per year. Based on the calculations above, the cost effectiveness of replacing current AO rich-burn engines is as follows:

- New rich-burn engine with a 3-way catalyst to meet 25 ppmv: \$69,521/ton of NOx reduced

In addition to the unique feasibility issues that AOs face with regards to the installation and maintenance of IC engines (see below), the cost effectiveness values above demonstrate that it is not cost effective to replace existing AO spark-ignited engines with new controlled engines.

Other Feasibility Considerations AO Spark-Ignited Engines

In addition to the high cost-effectiveness and potential infeasibility associated with retrofitting or replacing existing AO spark-ignited engines currently regulated under Rule 4702, requiring additional costly controls on AO engines is economically challenging and potentially infeasible. Unlike most other industries, AOs cannot pass increased production costs on to consumers, thereby forcing AOs to absorb the compliance costs associated with costly additional retrofits and replacements. Over the past decade, AOs have invested significant capital to retrofit and replace thousands of irrigation pump and other engines reducing emissions by over 80% in this category, and continue to do so as emission limitations and associated compliance deadlines materialize under Rule 4702.

Additionally, AO spark-ignited engines are generally located in rural, hard to access areas with minimal oversight due to limited resources and staffing. With seasonal labor and minimal year-round staffing, it is difficult for AOs to provide the frequent and complex maintenance required for retrofitted or new engines equipped with advanced emission controls. The oil production industry is the only other major industry in the Valley that has IC engines located in remote locations; however, with the highly technical nature of oil production and refining as compared to agricultural production and additional economic resources, it is feasible for the oil and gas production industry to hire qualified staff dedicated to maintaining and operating IC engines and other equipment on-site.

Additional Emission Reduction Opportunities

SOx and PM limitations

Rule 4702 contains stringent requirements requiring the combustion of Public Utilities Commission (PUC) quality natural gas, or other equivalent ultra-low sulfur fuels, and diesel engines subject to Rule 4702 are required to be EPA Tier 3 or Tier 4 certified, depending on the size of the engine and the annual operating hours. EPA Tier 3 and 4 certifications require the units to meet low PM limits and Tier 4 engines are required to meet even lower PM emissions through the use of particulate filters. Given the low PM2.5 and SOx emissions from IC engines and existing rule requirements, the District determined that no further requirements were needed to address PM2.5 and SOx emissions.

Emission limitation exemptions for emergency standby engines and low-use engines

The existing requirements are consistent with Air Resources Board (ARB) RACT/BARCT Determination for Spark-Ignited Engines and ARB Airborne Toxics Control Measures (ATCM). Since these units are used only for emergencies or in very limited capacities, emissions from these units are relatively minor, and requiring additional emissions controls would likely not be cost effective.

Non-Regulatory Actions

The District implements a stationary agricultural irrigation pump engine program as a component of the *Heavy-Duty Engine Program*. This program provides incentives for both the conversion of Tier 1 and Tier 2 engines to lower NOx and PM-emitting Tier 4 engines and for the electrification of diesel engines, as the District highly prioritizes electrification efforts to achieve zero and near-zero emissions from engines. The District's legislative platform⁷⁶ includes support for incentive funding through the Carl Moyer Program. Continued support of this funding stream will continue to provide incentives for accelerated reductions from IC engines.

Meeting air quality standards requires transformative measures and technologies to achieve near zero emissions. In order to further develop technology to close the gap in required emissions reductions, the District operates a Technology Advancement Program (TAP). Along with its own resources, the District seeks state and federal assistance through its legislative platform to advance technologies to reduce emissions in the Valley. District TAP projects seek innovations in several areas of technology including IC engines. While no technologies to reduce emissions from IC engines have been achieved in practice yet, these projects may provide the basis for future feasible, SIP-creditable emission reductions.

⁷⁶ SJVAPCD. (January 2015). *Legislative Platform 2015*.

http://www.valleyair.org/Board_meetings/GB/agenda_minutes/Agenda/2015/January/final/10.pdf

Evaluation Findings

Even though IC engines are not a significant source of PM_{2.5} or SO_x in the Valley, the District has evaluated all potential control technologies and all control technologies achieved in practice in other areas or included in other state implementation plans. As demonstrated above, Rule 4702 currently has in place the most stringent measures feasible to implement in the Valley and therefore meets or exceeds both BACM and MSM requirements for this source category. As the District continues to develop new attainment plans that address more stringent National Ambient Air Quality Standards, the District will continue to evaluate potential opportunities to reduce NO_x emissions from IC engines in the Valley.