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**Technical Support Document  
Frito-Lay, Inc.  
Permit # V20684.000**

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## 1. BACKGROUND

### 1.1 Applicant/Application History

This Title V pertains to a snack food processing and packaging operation owned and operated by Frito-Lay, Inc. a Delaware Corporation. The SIC Code is 2096. The facility is located at 1450 W. Maricopa Casa Grande Highway, Casa Grande, Arizona, upon a parcel also identified by Pinal County Assessor's Parcel # 503-35-0110.

This facility was historically a Class II source until the issuance of V20638.000 in July 2010. That revision added a steam-producing biomass boiler, which increased allowable emissions of Nitrogen Oxides (NO<sub>x</sub>) to above the Class I Title V threshold of 100 tons per year.

### 1.2 Attainment Classification

This facility is located in an area designated as non-attainment for PM<sub>10</sub> and attainment for all other pollutants.

### 1.3 Permitting History

Renewal V20684.000 adds the PM<sub>10</sub> testing requirements for the potato chip fryer stack listed in Section §7.F of the permit.

Revision V20665.R02, authorized the facility to replace the two existing ovens 5.3 mm btu/hr each on its Universal Tortilla Chip (UTC) Line with one new 6.14 mm btu/hr oven and replace two proofers with one proofer. Since the modification does not result in an emission increase, this revision is considered to be minor.

Revision, V20665.R01, added a baked cheese puff line including a bulk bag room with a bulk bag potato flake unloader, one extruder and associated filters, one natural gas dryer (0.8 MMBtu/hr) and one seasoning loop.

This facility's food processing and packaging operation was historically permitted with a Class II permit. The facility has been permitted since before 1993.

B30826.R01 was issued on 5/2/08 and was a revision to add the Sun Chips Line.

V20638.000 was issued on 7/19/10 and permitted the biomass boiler.

V20638.R01 was issued on 4/8/14, limited the biomass boiler to 50 MMBtu/hr by limiting the annual heat input to 438,000 MMBtu, removed the optional use of Tire Derived Fuel, added nuts and nut shells as an allowed fuel, revised single and aggregate HAP emission limits, updated monitoring, reporting and recordkeeping requirements, updated testing requirements and incorporated the National Emissions Standards for Hazardous Air Pollutants for Commercial, Industrial and Institutional Boilers, 40 CFR Part 63, Subpart JJJJJ.

V20665.000 was a renewal issued on 7/24/15. This permit incorporated the requirements of 40 CFR 63, Subpart ZZZZ for Stationary Reciprocating Internal Combustion Engines (RICE) and 40 CFR 60, Subpart IIII Standards of Performance for Stationary Compression Ignition Internal Combustion Engines as related to the emergency fire pump engine, limited the use of the emergency fire pump engine to 500 hours, modified existing visual opacity monitoring / testing schedules and reduced the HAP stack testing frequency from annually to biennial.

### 1.4 Compliance/Enforcement History

The addition of the biomass boiler created compliance issues in 2011 and an enforcement file was opened resulting in the issuance of an NOV in June 2013. The V20638.R01 permit revision in part addressed issues identified in the NOV.

This facility was last inspected on January 14, 2021. The facility was found to be in compliance.

## 2. PROCESS DESCRIPTION

### 2.1 General Process

The facility includes six (6) processing lines for the different types of products that Frito-Lay manufactures: Sun Chips, corn chips, tortilla chips, potato chips, fried cheese puffs and baked cheese puffs. Besides the grain receiving and handling and grain milling, the different lines require steam for kettles, fryers and dryers. The historical fuel burning equipment (boiler, ovens, flare) burn only natural gas or propane.

V20638.000 authorized the installation of a 78.3 MMBtu/hr biomass-fueled boiler to generate steam, equipped with a multiclone and electrostatic precipitator stack control systems, as well as a fuel handling system and fly ash handling system. Revision V20638.R01 limited the biomass boiler to 50 MMBtu/hr by limiting the annual heat input to 438,000 MMBtu.

The historical 79.2 MMBtu/hr natural gas boiler, which is limited to 2160 hours of propane burning, was kept to supplement or as backup for the biomass boiler.

### 2.2 Biomass Boiler (Existing Operation)

The biomass boiler includes a fuel handling system consisting of the following process:

1. "Wood waste" is the primary source of fuel and is delivered via covered tractor trailer into a concrete bunker. The wood waste arrives on site pre-screened and pre-chipped so there no wood processing at the facility.
2. The wood fuel is transported by a drag chain through a sifter screen to remove any large debris.
3. The wood fuel is conveyed by an incline belt
4. The biomass fuel passes through a magnet conveyor near the end of the incline belt which is designed to remove any residual metals (mostly copper, iron, and nickel) which could still be present in the fuel source and which could generate toxics.
5. The fuel drops into a hopper before it enters the boiler.

"Wood waste" can include wood from demolished buildings, green wood waste: tree clippings, limbs and cuttings, forest product waste and bark, wood pallets, sawdust and sanderdust, pelletized grass and leaves, and nuts and nut shells. Wood waste must contain less than 1% total by weight of any or any combination of the following contaminants: plastics, rubber, glass, painted wood (including leaded paint), chemically treated wood (e.g., chromium, copper, arsenic, creosote, or pentachlorophenol), metals and salts.

Fly ash is generated by the biomass boiler. In order to minimize fugitive emissions from the handling of fly ash, Frito-Lay collects the ash at 4 collection points each with a control valve to prevent system overload and malfunction. The fly ash is conveyed via an enclosed drag chain conveyor to a drop chute which directs it to a tarped collection bin. PM10 and PM2.5 emissions are expected at the transfer point between the drop chute and the collection bin. The ash bins are properly discarded by a vendor.

Frito-Lay installed a multi-clone/electrostatic precipitator (ESP) system to control particulate matter (PM10 and PM2.5) emissions from the biomass boiler. The multi-clone consists of several smaller cyclones arranged in series to remove larger particles from the gas stream. The electrostatic precipitator will be arranged in series with the multi-clone, and will be removing finer particles from the gas stream using the force of an induced electrostatic charge.

## 2.3 Product Lines

### 2.3.1 Corn Transfer and Cleaning (Existing Operation)

Frito-Lay receives whole corn via hopper truck and rail car. The raw materials are unloaded to two corn silos for storage. From the silos, the corn is mixed with a natural conditioning agent and water and is metered into steam-jacketed kettles where the raw materials are pre-cooked. From the kettles, the material is emptied into a multi-tank system for soaking, prior to being rinsed, drained, and reconstituted. The reconstituted material is used in the fried corn chip line and the fried tortilla chip line.

### 2.3.2 Fried Potato Chip Line (Existing Operation)

Raw materials are delivered by truck or railcar and conveyed to in-plant storage facilities. From storage, these materials are metered through the manufacturing process where they are prepped, inspected, cooked in vegetable oil, seasoned and conveyed to packaging.

Particulate matter emissions from these processes originate from the fryer (cooker) and the primary seasoner. Raw materials are cooked in vegetable oil, which is steam-heated in a heat exchanger and circulated through the cooker. During the cooking process, the raw materials release water vapor and absorb vegetable oil. Emissions directly off the cooker consist of water vapor with entrained vegetable oil particles, which are drawn up through the cooker hood exhaust stacks into a water-based scrubber. After cooking, a pneumatic seasoning system is used to apply seasoning to the product. The design of this system includes enclosures, vacuum capture plenums and an evacuation and control system, which is vented to the atmosphere. Additional seasoning is then applied by means of a mechanical seasoner, located within the processing area. The chips are seasoned via dispersion of flavoring in powder form into a mixing tumbler. The seasoning dispersion system consists of a bag dump station feeding a helix conveyor that in turn transfers the powder to a hopper for the actual feed into the tumbler. The seasoning tumbler is cylindrical in shape with reduced openings on both ends to allow for feed/discharge of product during continuous operation.

### 2.3.3 Fried Corn Chip Line (Existing Operation)

The reconstituted material from the corn cleaning system is shaped, cut, and cooked in vegetable oil. The vegetable oil is steam-heated in a heat exchanger and continuously circulated through the fryer (cooker). The finished product is then seasoned, cooled and conveyed to packaging.

This line is equipped with a high efficiency oil mist eliminator (OME) and an ambient cooler, downstream from the fryer, which is used to cool the product and is also a source of particulate matter. The application of seasoning is done in a mechanical seasoner and therefore no emissions are generated. The mechanical seasoner operates in the same manner as the one described for the Potato Chip Line.

### 2.3.4 Fried Tortilla Chip Line (Existing Operation)

The reconstituted material from the corn cleaning system is shaped and then baked/toasted in an oven, cooled, preconditioned and cooked in vegetable oil. The oil is steam-heated in a heat exchanger. This line is equipped with an ambient air cooler. The finished product is seasoned, cooled and conveyed to packaging. The seasoning is done in a mechanical seasoner. The mechanical seasoner operates in the same manner as the one described for the Potato Chip Line.

Emissions are generated at 3 different places on this line: the ovens, the fryer and the ambient air cooler.

#### 2.3.5 Fried Cheese Puff Line (Existing Operation)

Corn meal is received in pre-ground form and stored in a silo. From the silo, it is fed into a mixer where it is blended with water before entering the 4 steam-heated extruders. After the extruders, the product is fed into the oil cooker. The cooker is also steam-heated. The cooker is equipped with an oil mist eliminator. The cooked product is conveyed to a seasoning applicator, cooled and sent for packaging. A scrubber is used to control emissions from seasoning the product.

Emissions are generated at the silo, extruders (which are vented through a rotoclone for fine particle removal), fryer, ambient air cooler and slurry skid fume scrubber.

#### 2.3.6 Baked Cheese Puff Line (New operation)

Cornmeal is transferred from existing silos to the cornmeal filter receiver and corresponding hopper. Potato flakes are transferred from the new potato flake bulk bag unloader to the potato flake vacuum receiver. Potato flakes and cornmeal are then transferred to the extruder. The extruder feeds puffs into a series of conveyors before being fed to the dryer. The dryer fires natural gas and vents to the atmosphere out of an exhaust stack on the roof. After drying, puffs are sent through a seasoning tumbler that uses seasoning processed from the seasoning loop. The puffs are then sent through a series of metering conveyors that send product to packaging tubes. The packaged product is finally loaded onto pallets by robots.

Particulate emissions from the cornmeal receiver, potato flake receiver and extruder are controlled by an IQC filter baghouse.

#### 2.3.7 Sun Chips Line (Existing Operation)

Sun Chips are manufactured from both whole wheat and corn. Whole wheat berries are vacuum unloaded from a railcar into bulk silos. Then they are vacuum transferred to a wheat cleaner. The berries are then transferred from the cleaner to a receiver above a cooking kettle. The berries are finally discharged from the receiver into the cook kettle and from there to the extruder. Whole corn is received by railcar and transferred to a hammermill which exhausts into a Roto-clone, and then to a sifter and a mixer. Seasonings are also transferred from the "Super Sack" silo to the mixer with the corn. The seasoned corn product is then transferred to a weigh belt and then to the extruder. In the extruder, both wheat and corn product are used together to manufacture the desired product. After the extruder, the product is fried in a steam-heated deep fryer equipped with a high efficiency oil mist eliminator to recover process oil. After the fryer, an ambient cooler cools the product for packaging. Particulate matter emissions are generated from the corn and wheat handling, at the hammermill and during the frying process.

As part of the V20638.000 Title V permit application, permittee disclosed the installation of an On-Machine Seasoning system, which had not been permitted before. This seasoning system is made up of several small tumblers, and it services 8 packaging tubes to produce bags of chips. Maximum capacity of the OMS system is limited by the capacity of the packaging tubes (2,300 lb/hr for each of the 7 small-bag tubes and 1,400 lb/hr for one large-bag tube). A dust collector controls the seasoning dust in the packaging area. The dust collector has been installed for employee comfort, and not necessarily to reduce emissions for compliance purposes. During a site visit on 6/3/2010, PCAQCD confirmed that the OMS dust collector exhausts back into the building, therefore it is not considered an emissions unit.

## 2.4 Fuel Burning Equipment

In addition to the product lines and the biomass boiler, the facility includes the following fuel burning equipment:

1. 6.14 MMBtu/hr oven for the Tortilla Chip line. The permit allows this oven to burn natural gas as main fuel and up to 2160 hours of propane<sup>1</sup> per year as a backup.
2. 79.2 MMBtu/hr boiler to generate steam. It burns natural gas mainly but it is also allowed 2160 hours per year of propane use.
3. 0.415 MMBtu/hr starch dryer. It burns natural gas mainly but it is also allowed 2160 hours per year of propane use.
4. 0.80 MMBtu/hr baked cheese puff dryer. It burns natural gas mainly but it is also allowed 2160 hours per year of propane use.
5. 1.5 MMBtu/hr propane flare used to test the propane delivery system or for gas blowdown.
6. (1) diesel emergency fire pump
7. 3.3 MM Btu natural gas HVAC units

## 3. EMISSIONS

### 3.1 General Methodology

See previous TSDs for a detailed description of the emission calculations for this facility. Facility potential / allowable emissions and changes in emissions associated with this renewal are summarized below.

### 3.2 Potential / Allowable Emissions

This renewal does not propose changes that effect existing process emissions. The tables below incorporate the emergency generator that has historically been listed under insignificant activities.

Table 3-1: UNCONTROLLED EMISSIONS BY SOURCE

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<sup>1</sup>This limitation was taken by Frito-Lay during previous revisions in order to maintain their emissions below 50 tpy and therefore avoiding higher "synthetic minor" fees.

UNCONTROLLED POTENTIAL EMISSIONS (TPY)							
	NOx	VOC	CO	PM <sub>10</sub>	PM <sub>2.5</sub>	SOx	HAPs
Corn Transfer	0	0	0	0.09	0.09	0	0
Corn Cleaner	0	0	0	1.11	1.11	0	0
Scrubber/fryer	0	0	0	24.53	24.53	0	0
Corn Chip Fryer	0	0	0	7.36	7.36	0	0
Corn Chip Ambient Cooler	0	0	0	0.79	0.79	0	0
Tortilla Chip Ovens	0.84	0.12	11.5	0.17	0.17	0.01	0.04
Tortilla Chip Fryers	0	0	0	2.36	2.36	0	0
Dorito Ambient Cooler	0	0	0	0.92	0.92	0	0
Corn Meal Transfer	0	0	0	0.01	0.01	0	0
Fried Cheese Puff Extruder	0	0	0	1.66	1.66	0	0
Fried Cheese Puff Fryer	0	0	0	0.85	0.85	0	0
Fried Cheese Puff Ambient Cooler	0	0	0	0.79	0.79	0	0
Fried Cheese Puff Seasoning Fume Scrubber	0	0	0	0.18	0.18	0	0
Baked Cheese Puff Dryer	0.03	0.01	0.29	0.55	0.55	0	6.49E-03
Baked Cheese Puff Extruder Cornmeal Filter				0.369	0.369		
Baked Cheese Puff Potato Flake Filter				0.182	0.182		
Baked Cheese Puff Seasoning Fume Scrubber				0.18	0.18		
HVAC	1.42	0.07	1.19	0.11	0.11	0.01	2.67E-02
Natural Gas Boiler	43.41	1.70	28.43	2.42	2.42	3.81	0.64
Starch Dryer	0.26	0.01	0.13	0.57	0.57	0.02	0.003
Propane Flare	1.01	0.04	0.13	0.03	0.03	0.07	0.01
Sun Chip Line	0	0.72	0	14.61	14.61	0	0
Biomass Boiler <sup>1</sup>	102.9	17.2	99.5	137.2	106.3	12.7	20.55
Fuel Handling System	0	0	0	0.92	0.14	0	0
Fly Ash System	0	0	0	0.1	0.1	0	0
Emergency Fire Pump	27.2	2.2	5.9	1.9	1.9	1.8	0.02

<sup>1</sup> The Biomass Boiler emissions in Table 3-1 account for the full potential of the unit as built at 78.3 MMBtu/hr. The Biomass Boiler emissions in Table 3-2 account for the permit imposed rolling 12-month limit of 438,000 MMBtu heat input.

V20665.R01 Sub-total (Baked Cheese Puff line and HVAC)	1.45	0.08	1.48	1.39	1.39	0.01	0.032
<b>TOTAL</b>	<b>178.5</b>	<b>22.2</b>	<b>148.6</b>	<b>201.4</b>	<b>169.7</b>	<b>18.4</b>	<b>21.3</b>

Table 3-2: CONTROLLED EMISSIONS BY SOURCE

CONTROLLED POTENTIAL EMISSIONS (TPY)							
	NOx	VOC	CO	PM10	PM2.5	SOx	HAPs
Corn Transfer	0	0	0	0.09	0.09	0	0
Corn Cleaner	0	0	0	0.22	0.22	0	0
Scrubber/fryer	0	0	0	2.76	2.76	0	0
Corn Chip Fryer	0	0	0	0.74	0.74	0	0
Corn Chip Ambient Cooler	0	0	0	0.79	0.79	0	0
Tortilla Chip Ovens	0.84	0.12	11.5	0.17	0.17	0.01	0.04
Tortilla Chip Fryers	0	0	0	0.24	0.24	0	0
Dorito Ambient Cooler	0	0	0	0.92	0.92	0	0
Corn Meal Transfer	0	0	0	0.01	0.01	0	0
Fried Cheese Puff Extruder	0	0	0	0.79	0.79	0	0
Fried Cheese Puff Fryer	0	0	0	0.85	0.85	0	0
Fried Cheese Puff Ambient Cooler	0	0	0	0.79	0.79	0	0
Fried Cheese Puff Fume Scrubber	0	0	0	0.18	0.18	0	0
Baked Cheese Puff Dryer	0.03	0.01	0.29	0.55	0.55	0	6.49E-03
Baked Cheese Puff Extruder Cornmeal Filter				0.004	0.004		
Baked Cheese Puff Potato Flake Filter				0.002	0.002		
Baked Cheese Puff Fume Scrubber				0.18	0.18		
HVAC	1.42	0.07	1.19	0.11	0.11	0.01	2.67E-02
Natural Gas Boiler	43.41	1.7	28.43	2.42	2.42	3.81	0.64
Starch Dryer	0.26	0.01	0.13	0.57	0.57	0.02	0.003
Propane Flare	1.01	0.04	0.13	0.03	0.03	0.07	0.01



Sun Chip Line	0	0.6	0	3.20	3.2	0	0
Biomass Boiler <sup>1</sup>	65.7	11.0	63.5	5.5	1.88	8.1	13.12
Fuel Handling System	0	0	0	0.92	0.14	0	0
Fly Ash System	0	0	0	0.1	0.1	0	0
Emergency Fire Pump	1.6	0.1	0.3	0.1	0.1	0.1	0.0
V20665.R01 Sub-total (Baked Cheese Puff line and HVAC)	1.45	0.08	1.48	0.85	0.85	0.01	0.032
<b>TOTAL</b>	<b>115.7</b>	<b>13.7</b>	<b>107.0</b>	<b>23.1</b>	<b>18.7</b>	<b>12.1</b>	<b>13.9</b>

### 3.3 Changes in Emissions

The change in emissions for the baked cheese puff line and the HVAC is below the significant emission rate for all the quantified pollutants. Since the change in emissions is not significant and no substantive changes to existing monitoring, reporting or recordkeeping requirements were made this revision qualifies as a minor permit revision.

### 3.4 Greenhouse Gas Emissions

On July 20, 2011 EPA deferred the application of PSD and Title V permitting requirements to CO<sub>2</sub> emissions from bioenergy and other biogenic stationary sources. 40 CFR 51.166, 52.21, 70.2 and 71.1 were all amended to not include CO<sub>2</sub> emissions from by-products, residues and waste from agriculture, forestry and related industries as well as the non-fossilized and biodegradable organic fraction of industrial and municipal waste until July 21, 2014. Since the biomass boiler burns material fitting this description Permit #V20638.R01 did not address greenhouse gas emissions.

While the biogenic deferral rule has expired, the United States Supreme court issued a decision on June 23, 2014 addressing the application of stationary source permitting requirements to GHGs. In light of that decision, EPA released a memo on July 24, 2014. EPA has concluded that Title V permits must still incorporate and assure compliance with applicable GHG limits that are applicable requirements under a PSD permit issued to an “anyway source”. Since this facility is not an existing PSD source there are no GHG regulations applicable to the facility at this time. Thus this permit does not quantify GHG emissions.

## 4. REGULATORY REQUIREMENTS AND MONITORING

### 4.1 TITLE V/PSD Applicability

This facility constitutes a “major source” of Nitrogen Oxides (NO<sub>x</sub>) and Carbon Monoxide (CO) mostly due to the emissions from the biomass boiler, and therefore requires a permit pursuant to Title V of the CAA Amendments of 1990.

Even without the limitations of the permit, the source is not at risk of becoming a "major emitting source" within the meaning of 40 CFR §51.166, which would require the facility to go through a Prevention of Significant Deterioration (PSD) review.

4.2 NSPS / NESHAP Applicability

The biomass boiler is subject to the requirements of 40 CFR Part 60, Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units. See previous TSDs for a detailed explanation of which provisions apply to the biomass boiler.

Permit V20638.R01 added 40 CFR Part 63, Subpart JJJJJ, NESHAP for Commercial, Industrial and Institutional Boilers at area sources provisions to the permit. The natural gas boiler is exempted from Subpart JJJJJ. See the V20638.R01 TSD for a detailed explanation of the provisions applicable to the biomass boiler.

Renewal, V20665.000, added 40 CFR Part 63, Subpart ZZZZ, NESHAP for Stationary Reciprocating Internal Combustion Engines (RICE) and 40 CFR Part 60, Subpart IIII, NSPS for Compression Ignition Internal Combustion Engines, , provisions to the permit as related to the emergency fire pump engine. Since the engine is only used for emergency purposes these provisions are limited to purchasing a certified unit, hours of operation limitations and recordkeeping.

4.3 Regulatory Emission Limitations and Compliance/Monitoring

This revision retains all applicable emission limitations set forth in the previous permit and adds the baked cheese puff line to existing compliance / monitoring / testing provisions.

5. AMBIENT IMPACT ASSESSMENT

Since the applicant is not proposing a significant emission increase for the facility, a new air quality impact analysis is not required. See previous TSDs for a detailed discussion of the ambient impact assessment.

6. LIST OF COMMON ABBREVIATIONS

AP-42 .....	“Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources”, 5 <sup>th</sup> Edition
CAA .....	Clean Air Act
CAM.....	Compliance Assurance Monitoring
CDX .....	Central Data Exchange
CEDRI.....	Compliance and Emissions Data Reporting Interface
CFR .....	Code of Federal Regulations
CMS .....	Continuous Monitoring System
CO .....	Carbon Monoxide
hr .....	Hour
lb.....	Pound
MACT .....	Maximum Achievable Control Technology
MMBTU.....	Million British Thermal Units
Mod. ....	Modification
MSDS .....	Material Safety Data Sheet
NOX .....	Nitrogen Oxides
NSPS .....	New Source Performance Standard
NESHAP .....	National Emission Standard for Hazardous Air Pollutants
NSR .....	New Source Review
PCAQCD.....	Pinal County Air Quality Control District
PGCAQCD.....	Pinal-Gila Counties Air Quality Control District
PM10 .....	Particulate Matter nominally less than 10 Micrometers
PSD .....	Prevention of Significant Deterioration
SIC .....	Standard Industrial Code
SOX.....	Sulfur Dioxide

tpy.....tons per year  
TSD .....Technical Support Document  
USEPA R9 ..... United States Environmental Protection Agency Region 9  
VOC ..... Volatile Organic Compound  
yr ..... year