



**San Joaquin Valley**  
AIR POLLUTION CONTROL DISTRICT



**HEALTHY AIR LIVING™**

**JAN 21 2015**

Mark Ferguson  
Diamond Pet Food Processors of Ripon  
942 S Stockton Ave  
Ripon, CA 95366

**Re: Notice of Preliminary Decision - Authority to Construct**  
**Facility Number: N-8234**  
**Project Number: N-1143145**

Dear Mr. Ferguson:

Enclosed for your review and comment is the District's analysis of Diamond Pet Food Processors of Ripon's application for an Authority to Construct for establishing emission limits for the pet food manufacturing operations, at 942 South Stockton, Ave, Ripon, California.

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 period, the District intends to issue the Authority to Construct. 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/ya

Enclosures

cc: Mike Tollstrup, CARB (w/ enclosure) via email

**Seyed Sadredin**

Executive Director/Air Pollution Control Officer

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**San Joaquin Valley Air Pollution Control District  
Authority to Construct  
Application Review**

<b>Facility Name:</b> Diamond Pet Food Processors of Ripon	<b>Date:</b> January 13, 2015
<b>Mailing Address:</b> 942 S Stockton Ave Ripon, CA 95366	<b>Engineer:</b> Jagmeet Kahlon <b>Lead Engineer:</b> Nick Peirce
<b>Contact Person:</b> Randy Frazier, Consultant	
<b>Telephone:</b> (925) 605-8471	
<b>Fax:</b> (925) 560-1042	
<b>Application #(s):</b> N-8234-4-2, '-5-2 and '-6-2	
<b>Project #:</b> N-1143145	
<b>Deemed Complete:</b> October 10, 2014	

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**I. PROPOSAL**

**N-8234-4-2, '-5-2 and '-6-2:**

Diamond Pet Food Processors of Ripon ("Diamond") has proposed the following modifications to the pet food manufacturing operation:

1. Establish a combined NOx emission limit of 0.471 lb/hour for each permit unit.

The proposed NOx limit includes emissions from natural gas combustion in the dryer, as well as, NOx generated by the cold plasma injector systems on various stacks including wet cyclone, dryer cyclone, dryer cooler cyclone, and vertical cooler cyclone. The cold plasma injector systems are being used to abate pet food odors from the manufacturing operation.

2. Establish VOC emission limit of 0.047 lb/ton of finished product produced for each permit unit. This limit is based on the source test results of the VOC testing conducted on August 12, 2014.
3. Establish parameters that would ensure proper operation of each cold plasma injector system.
4. Lastly, Diamond has proposed to incorporate the modifications proposed under previous permitting action under project N-1130470, which includes:
  - o Establishing PM<sub>10</sub> and CO emission factors;
  - o Establishing material processing rate of 780 tons/day for each pet food line, as well as, for all three lines; and

- Use of cold plasma injection systems on wet cyclone, dryer cyclone, dryer cooler cyclone, and vertical cooler cyclone.

The Authority to Construct (ATC) permits issued under this project will supersede the previously issued ATCs for units N-8234-4-1, '5-1 and '6-1.

## **II. APPLICABLE RULES**

Rule 2201 New and Modified Stationary Source Review Rule (4/21/11)  
Rule 2410 Prevention of Significant Deterioration (11/26/12)  
Rule 4101 Visible Emissions (02/17/05)  
Rule 4102 Nuisance (12/17/92)  
Rule 4201 Particulate Matter Concentration (12/17/92)  
Rule 4202 Particulate Matter – Emission Rate (12/17/92)  
Rule 4301 Fuel Burning Equipment (12/17/92)  
Rule 4309 Dryer, Dehydrators, and Ovens (12/15/05)  
Rule 4801 Sulfur Compounds (12/17/92)  
California Health & Safety Code 41700 (Public Nuisance)  
California Health & Safety Code 42301.6 (School Notice)  
Public Resources Code 21000-21177: California Environmental Quality Act (CEQA)  
California Code of Regulations, Title 14, Division 8, Chapter 3, Sections 15000-15387: CEQA Guidelines

## **III. PROJECT LOCATION**

The facility location is 942 S Stockton Ave, Ripon, California. There is no K-12 school within 1,000 feet of this location. Therefore, this project is not subject to school notice requirements in Section 42301.6 of the California Health and Safety Code.

## **IV. PROCESS DESCRIPTION**

This facility has several emission units including material receiving and storage operations (silos/bins), hammermills, screens/scalpers, elevators, conditioners, dryers, coolers, boilers, mechanical and pneumatic material conveying systems and packing machines.

Diamond receives raw materials such as whole corn, beet pulp, chicken meal, cracked barley and peas via rail cars or trucks. The material is screened and stored in appropriate silos/bins located outside of the main production building. On an as needed basis, an appropriate amount of the stored materials is dispensed from the silos/bins into a pre-grinding hammermill system or directly to enclosed drag screw conveyors. The pre-ground material and the materials in the enclosed

drag screw conveyors are then transferred to enclosed belt conveyors, which transfers the material to the bins in the mill tower via enclosed bucket elevators.

The material in the mill tower is then dispensed to associated scale bins. From the scale bins, the material is dispensed into surge bins. The material in the surge bins is then dispensed into an enclosed mixer, and then either transferred into an enclosed bucket elevator feeding an enclosed transfer auger or into a truck loadout spout. The enclosed transfer auger feeds three surge bins, each associated with one of the three identical hammermill systems. Each hammermill system consists of a feeding system, hammermill unit, plenum, enclosed screw conveyor, vibratory screener, and a pneumatic transfer system (bin vent filter with static socks) for transferring "overs" from the screener to the extruder surge bin, which feeds the extruder of each pet food processing line.

Frozen meat (beef, chicken and lamb) is delivered to the facility via trucks. The meat is stored in a refrigerated building.

There are currently three separate identical pet food processing lines. Each of these processing lines is capable of manufacturing various pet food kibble based on the production needs and given recipes. The process starts with a specific pet food kibble recipe. Depending on the recipe, an appropriate amount of each material is dispensed from the small bins, mixed, and transferred into steam conditioners. Each recipe may use frozen meat (beef, chicken and lamb), which is delivered to the facility via trucks, and stored in a refrigerated building. As part of the recipe, ground meat is injected into the steam conditioners, and thoroughly pasteurized/steam conditioned to release starches, which act as binding agents for the material. The material is then extruded to form pet food kibble. The freshly extruded moist kibble is transferred via cyclone to the conveyor belt that serves the dryer and dryer-cooler in each processing line. In the dryer and dryer-cooler the kibble is dried using hot air from natural gas combustion then cooled. The dried kibble is then coated with chicken fat and canola oil to bind other nutrients such as dry digest and probiotics. The coated kibble is then cooled further in vertical coolers, then packaged and stored in a warehouse or shipped directly to the customers.

## **V. EQUIPMENT LISTING**

### N-8234-4-2, '5-2, '6-2: **PET FOOD PROCESSING LINES**

The following permit conditions are included as part of the equipment description:

- **Material Dispensing, Kibble Manufacturing, and Conveying Systems:** The material from the extruder surge bin is dispensed into an extruder bin from

where the material is transferred into an EXTRU-TECH 24X144 steam-conditioner system. The material is extruded to form kibbles. The kibbles are pneumatically conveyed using HEPA filtered air into a dryer receiving chamber using HORIZON SYSTEMS HT-68 high volume cyclone with a static sock filter. The owner or operator shall install, maintain, and operate Uniqair's, 6kW, 6 plasma cylinders, cold plasma injection system to abate odors in the air stream from the wet cyclone (Horizon HT-68) prior to its discharge into the atmosphere. [District Rules 2201 and 4102]

- **Dryer System:** The system consists of an EXTRU-TECH 1053-2P-AF11, 10 MMBtu/hr (total) direct-fired natural gas fired dryer with five drying sections, each section is equipped with an ECLIPSE WINNOX WX0200 burner with a maximum heat input rate of 2.0 MMBtu/hr. The dryer exhaust is vented to a MAC HE60 high efficiency cyclone. The owner or operator shall install, maintain, and operate Uniqair's, 15kW, 15 plasma cylinders, cold plasma injection system to abate odors in the air stream from the dryer cyclone (MAC HE60) prior to its discharge into the atmosphere. [District Rules 2201 and 4102]
- **Cooler and Conveying System:** The system consists of three cooler sections, all vented to a MAC high efficiency cyclone, a discharge conveyor for the transfer of dried kibbles into a hopper. The material from the hopper is pneumatically conveyed to an enclosed shaker screener. The owner or operator shall install, maintain, and operate Uniqair's, 9 kW, 9 plasma cylinders, cold plasma injection system to abate odors in the air stream from the dryer cooler cyclone (MAC) prior to its discharge into the atmosphere. [District Rules 2201 and 4102]
- **Fines Collection and Conveying System:** This system collects fines from two locations in the dryer, the dryer cyclone discharge, and the cooler cyclone discharge, and vents these fines to a HORIZON SYSTEMS 285 WRDL8 baghouse. This baghouse is vented indoors. [District Rule 2201]
- **Screening and Conveying System.** The system consists of an enclosed shaker screener, an enclosed surge bin, and an enclosed weigh belt. The fines (rejects) are conveyed to the totes in the basement. The surge bin shall be vented to a HORIZON SYSTEMS MODEL 21VFTC6 cartridge dust collector system. Each tote shall have a tight-fitting lid with a static sock filter. [District Rule 2201]
- **Coating and Conveying System:** The system consists of a hopper where material from a weight belt is sprayed with chicken fat and canola oil (or other similar ingredients) and a coating reel where dry dog/cat digest and probiotics (or other similar ingredients) are sprinkled to be absorbed into the

kibbles. The kibbles are then conveyed pneumatically to a vertical cooler system using a filter receiver system with a static sock filter. [District Rule 2201]

- **Vertical Cooler and Conveying System:** A vertical cooler vented to a MAC HE52 high efficiency cyclone. The dried material falls on a vibratory pan on sliding rails. The material (accepts) from the vibratory pan drops into a hopper from where the dried kibbles are pneumatically conveyed to 14 finished product bins. Each bin shall be vented to a HORIZON SYSTEMS MODEL 21VFTC6 cartridge dust collector system. The fines (rejects) from MAC HE52 cyclone discharge and vibratory pan are conveyed to the totes in the basement. Each tote shall have a tight-fitting lid with a static sock filter. The owner or operator shall install, maintain, and operate Uniqair's, 3 kW, 3 plasma cylinders, cold plasma injection system to abate odors in the air stream from the vertical cooler cyclone (MAC HE52) prior to its discharge into the atmosphere. [District Rules 2201 and 4102]

## **VI. EMISSION CONTROL TECHNOLOGY EVALUATION**

### **Baghouses:**

Baghouses (or dust collectors, sock filters, cartridge filters etc.) are expected to have at least 99% control efficiency for PM<sub>10</sub> emissions. To ensure the proper operation of these baghouses, the visible emissions from each dust collector will be limited to less than 5% opacity per District Policy SSP-1005 (9/16/98). The following condition will be included in each permit:

- Visible emissions, at the exhaust of each dust collector system (baghouse, cartridge dust collector, cyclone etc.) shall not equal or exceed 5% opacity for a period or periods aggregating more than three minutes in any one hour. [District Rule 2201]

### **Cyclones:**

There are multiple high efficiency cyclones at this site. Per EPA's AP-42, Appendix B.2, high efficiency cyclones control 80% of the particles between 0-2.5 microns in size. Thus, the proposed high efficiency cyclones are assumed to control at least 80% of the particles between 0-10.0 microns in size (PM<sub>10</sub>).

### **Cold Plasma Injection Systems:**

The primary purpose of this technology is to abate pet food odors. Ambient air is drawn through a strong electric field in a plasma reactor. The reactor dissociates water molecules and oxygen into an extremely reactive gas comprised of a mixture of oxygen atoms, ions, and radicals etc., with elevated energy levels. This gas, often called 'active oxygen', is continuously injected into the laden stream, for the oxidation of the odorous compounds.

The latest odor test (July, 2014) indicates an overall average odor control of 56% for each line. The minimum and maximum odor control efficiency for various stacks is as follows: wet cyclone: 33-71%, dryer cyclone: 33-88%, cooler cyclone: 41-69%, and vertical cooler: 27-61%.

There are significant variations between odor control efficiency numbers. Diamond explained that these variations can be attributed to several variables including feed quality (i.e. variation in quality of lamb meat/meal among various vendors), sampling approach (i.e., the uncontrolled samples were taken by turning off the plasma reactor system rather than simultaneously obtaining samples upstream and downstream of the cold plasma injector systems), ambient conditions (i.e., samples for various stacks were taken on different days), and sample duration in storage, conditions during storage, shipment variables, measurement variables, and lab analysis.

**VII. EMISSION CALCULATIONS**

**A. Assumptions**

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

**B. Emission Factors**

**1. Pre-project Emission Factors (EF1)**

N-8234-4-1 to '6-1

The previously issued ATCs cannot be converted into Permit to Operate (PTOs). Therefore, EF1s are not listed here.

**2. Post-project Emission Factors (EF2)**

N-8234-4-2, '5-2 and '6-2

*Natural gas combustion in dryer:*

Pollutant	EF2	Source
*NO <sub>x</sub>	2.1 ppmvd @ 19% O <sub>2</sub> (0.024 lb/MMBtu)	N-8234-4-1, '5-1 and '6-1
SO <sub>x</sub>	0.00285 lb/MMBtu	District Policy APR-1720
**PM <sub>10</sub>	--	See table footnote
CO	16.5 ppmvd @ 19% O <sub>2</sub> (0.112 lb/MMBtu)	Applicant's proposal
**VOC	--	See table footnote

\*NO<sub>x</sub> emission factor = 20 ppmvd @ 3% O<sub>2</sub> (proposed) x (20.9 - 19)/(20.9-3) = 2.1 ppmvd @ 19% O<sub>2</sub>

\*\*PM<sub>10</sub> and VOC emissions are included in the process emissions (see below); note that the dryers are direct-fired units.

*Process emissions:*

PM<sub>10</sub>:

Per evaluation under project N-1130470,

EF2 = 0.0612 lb-PM<sub>10</sub>/ton of finished material

VOC:

The applicant has proposed to establish VOC emission limit of 0.047 lb/ton of finished material for all VOC emitting operations including sources vented through wet cyclone, dryer cyclone, dryer cooler cyclone, vertical cooler. Therefore,

EF2 = 0.047 lb/ton of finished material

*Cold plasma injection systems:*

The portable analyzer readings downstream of each cold plasma system are summarized in the following table.

Pollutant	Unit	EF2 (ppmvd)	Source/Comments
NO <sub>x</sub>	Wet kibble conveying cyclone (HT-68)	0.98	Per applicant
	Dryer (MAC HE60)	2.27	Per applicant; EF includes emissions from natural gas combustion
	Cooler (MAC)	1.2	Per applicant
	Vertical cooler (MAC HE52)	0.72	

C. Potential to Emit

1. Pre-Project Potential to Emit (PE1)

N-8234-4 to '6

These units are treated as new emissions units, as none of the previously issued ATCs can be converted into Permit to Operate (PTO). Therefore, EF1s are not listed here.

2. Post-Project Potential to Emit (PE2)

N-8234-4-2, '5-2, '6-2

*Natural gas combustion in dryer:*

The potential emissions for a dryer under each permit unit are as follows:

$$PE2 \left( \frac{\text{lb}}{\text{day}} \right) = \left( EF2 \frac{\text{lb}}{\text{MMBtu}} \right) \left( 10 \frac{\text{MMBtu}}{\text{hr}} \right) \left( 24 \frac{\text{hr}}{\text{day}} \right)$$

$$PE2 \left( \frac{\text{lb}}{\text{yr}} \right) = \left( PE2 \frac{\text{lb}}{\text{day}} \right) \left( 365 \frac{\text{days}}{\text{yr}} \right)$$

Pollutant	EF2 (lb/MMBtu)	PE2 (lb/day)	PE2 (lb/yr)
NO <sub>x</sub>	0.024	5.8	2,117
SO <sub>x</sub>	0.00285	0.7	256
**PM <sub>10</sub>	--	--	--
CO	0.112	26.9	9,819
**VOC	--	--	--

\*Potential emissions are included in the process emissions (see below)

**Process emissions:**

There are several emission units under each permit. Overall, emissions from the permit units are determined in the following section using proposed production rate of 780 tons/day for each line, and a combined rate of 780 tons/day for all lines.

PM<sub>10</sub>:

$$PE2 \left( \frac{\text{lb}}{\text{day}} \right) = \left( 0.0612 \frac{\text{lb - PM}_{10}}{\text{ton of finished material}} \right) \left( 780 \frac{\text{tons}}{\text{day - line}} \right) = 47.7 \frac{\text{lb - PM}_{10}}{\text{day}}$$

$$PE2 \left( \frac{\text{lb}}{\text{yr}} \right) = \left( 47.7 \frac{\text{lb - PM}_{10}}{\text{day}} \right) \left( 365 \frac{\text{days}}{\text{yr}} \right) = 17,411 \frac{\text{lb - PM}_{10}}{\text{yr}}$$

VOC:

$$PE2 \left( \frac{\text{lb}}{\text{day}} \right) = \left( 0.047 \frac{\text{lb - VOC}}{\text{ton of finished material}} \right) \left( 780 \frac{\text{tons}}{\text{day - line}} \right) = 36.7 \frac{\text{lb - VOC}}{\text{day}}$$

$$PE2 \left( \frac{\text{lb}}{\text{yr}} \right) = \left( 36.7 \frac{\text{lb - VOC}}{\text{day}} \right) \left( 365 \frac{\text{days}}{\text{yr}} \right) = 13,396 \frac{\text{lb - VOC}}{\text{yr}}$$

*Cold plasma Injection systems:*

$$PE2 \left( \frac{\text{lb}}{\text{hr}} \right) = \frac{(EF2 \text{ ppmvd}) \left( 46.01 \frac{\text{lb} - \text{NO}_x}{\text{mol}} \right) \left( \text{Flow rate} \frac{\text{dscf}}{\text{min}} \right) \left( 60 \frac{\text{min}}{\text{hr}} \right)}{\left( 379.5 \frac{\text{ft}^3 - \text{gas}}{\text{mol} - \text{gas}} \right) (10^6)}$$

Pollutant	Unit	EF2 (ppmvd)	Flow rate (dscfm)	PE2 (lb/hr)
NO <sub>x</sub>	**Wet kibble conveying cyclone (HT-68)	0.98	6,199	0.044
	*Dryer (MAC HE60)	2.27	14,602	0.241
	**Cooler (MAC)	1.2	16,107	0.141
	**Vertical cooler (MAC HE52)	0.72	8,645	0.045
Total:				0.471

\*NO<sub>x</sub> emissions include emissions from natural gas combustion in the dryer and cold plasma injector system.

\*\*NO<sub>x</sub> emissions generate due to the presence of the cold plasma Injection systems. The processes associated with wet kibble conveying cyclone, cooler and vertical cooler does not involve any combustion/oxidation processes; therefore, these processes are not expected to cause any NO<sub>x</sub> emissions.

Summary:

The potential emissions from each pet food manufacturing line are summarized in the following table. Note PM<sub>10</sub> and VOC emissions are combined for all three lines (N-8234-4-2, '5-2 and '6-2).

$$PE2 \left( \frac{\text{lb}}{\text{day}} \right) = \left( PE2 \frac{\text{lb}}{\text{hr}} \right) \left( 24 \frac{\text{hr}}{\text{day}} \right)$$

$$PE2 \left( \frac{\text{lb}}{\text{yr}} \right) = \left( PE2 \frac{\text{lb}}{\text{day}} \right) \left( 365 \frac{\text{days}}{\text{yr}} \right)$$

Pollutant	PE2 (lb/hr)	PE2 (lb/day)	PE2 (lb/yr)
NO <sub>x</sub>	0.471	11.3	4,125
SO <sub>x</sub>	0.029	0.7	256
PM <sub>10</sub>	1.988	47.7	17,411
CO	1.121	26.9	9,819
VOC	1.529	36.7	13,396

3. Quarterly Emissions Changes (QEC)

This calculation is required for application's emission profile, which is used for the District's internal tracking purposes. QECs are calculated as follows:

$$QEC = (PE2 - PE1)/4$$

Permit	Quarterly (lb)				
	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	CO	VOC
N-8234-4-1	1,031.25	64	1,451*	2,454.75	1,116.25*
N-8234-5-1	1,031.25	64	1,451*	2,454.75	1,116.25*
N-8234-6-1	1,031.25	64	1,451*	2,454.75	1,116.25*

\*QECs are equally proportioned among the three dryers.

4. Adjusted Increase In Permitted Emissions (AIPE)

AIPE is used to determine if BACT is required for modifications to an existing emissions unit with valid Permit to Operate. AIPE is calculated using the equations mentioned in Section 4.3 and 4.4 of Rule 2201.

$$AIPE = PE2 - \left( \frac{EF2}{EF1} \right) (PE1)$$

N-8234-4 to '6

The existing ATCs cannot be converted into PTOs. Therefore, these units are treated as new emission units under this project. BACT for these units will be evaluated on "Potential to Emit" basis rather than "AIPE" basis.

D. Facility Emissions

1. Pre-Project Stationary Source Potential to Emit (SSPE1)

Pursuant to Section 4.9 of District Rule 2201, SSPE1 is the Potential to Emit from all units with valid Authorities to Construct (ATC) or Permits to Operate (PTO) at the Stationary Source and the quantity of emission reduction credits (ERCs) which have been banked since September 19, 1991 for Actual Emissions Reductions (AERs) that have occurred at the source, and which have not been used on-site.

The potential emissions are taken from the application review under project N-1130470. Note that even though ATCs N-8234-4-0, '4-1, '5-0, '5-1, '6-0 and '6-1 are not expired, these ATCs are considered invalid since Diamond cannot meet the emission limits in these permits.

Diamond Pet Food Processors of Ripon  
N-8234-4-2, '5-2 and '6-2, N-1143145

SSPE1 (lb/yr)					
Permit	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	CO	VOC
N-8234-1-2	--	--	570	--	--
N-8234-2-2	--	--	1,063	--	--
N-8234-3-2	--	--	6,388	--	--
N-8234-7-0	--	--	292	--	--
N-8234-8-0	--	--	292	--	--
N-8234-9-0	--	--	74	--	--
N-8234-10-0	1,424	365	986	4,745	511
N-8234-11-0	1,424	365	986	4,745	511
N-8234-12-0	359	0	15	107	45
ERC	0	0	0	0	0
<b>SSPE1</b>	<b>3,207</b>	<b>730</b>	<b>10,666</b>	<b>9,597</b>	<b>1,067</b>

2. Post-Project Stationary Source Potential Emissions (SSPE2)

Pursuant to Section 4.10 of District Rule 2201, the Post-Project Stationary Source Potential to Emit (SSPE2) is the Potential to Emit (PE) from all units with valid Authorities to Construct (ATC) or Permits to Operate (PTO) at the Stationary Source and the quantity of emission reduction credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site.

SSPE2 (lb/yr)					
Permit	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	CO	VOC
N-8234-1-2	--	--	570	--	--
N-8234-2-2	--	--	1,063	--	--
N-8234-3-2	--	--	6,388	--	--
N-8234-4-2	4,125	256	17,411	9,819	13,396
N-8234-5-2	4,125	256		9,819	
N-8234-6-2	4,125	256		9,819	
N-8234-7-0	--	--	292	--	--
N-8234-8-0	--	--	292	--	--
N-8234-9-0	--	--	74	--	--
N-8234-10-0	1,424	365	986	4,745	511
N-8234-11-0	1,424	365	986	4,745	511
N-8234-12-0	359	0	15	107	45
ERC	0	0	0	0	0
<b>SSPE2</b>	<b>15,582</b>	<b>1,498</b>	<b>28,077</b>	<b>39,054</b>	<b>14,463</b>

3. Major Source Determination

Rule 2201 Major Source Determination

Pursuant to District Rule 2201, a Major Source is a stationary source with a SSPE2 equal to or exceeding one or more of the following threshold values. For the purposes of determining major source status the following shall not be included:

- Any ERCs associated with the stationary source
- Emissions from non-road IC engines (i.e. IC engines at a particular site at the facility for less than 12 months)
- Fugitive emissions, except for the specific source categories specified in 40 CFR 51.165

Rule 2201 Major Source Determination (lb/year)					
Category	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	CO	VOC
SSPE1	3,207	730	10,666	9,597	1,067
SSPE2	15,582	1,498	28,077	39,054	14,463
Major Source Thresholds	20,000	140,000	140,000	200,000	20,000
Major Source?	No	No	No	No	No

From the above table, the facility is not an existing Major Source and is not becoming a Major Source as a result of this project.

Rule 2410 Major Source Determination

The facility or the equipment evaluated under this project is not listed as one of the categories specified in 40 CFR 52.21 (b)(1)(i). Therefore the following PSD Major Source thresholds are applicable.

PSD Major Source Determination (tons/year)						
Category	NO <sub>2</sub>	VOC	SO <sub>2</sub>	CO	PM	PM <sub>10</sub>
Estimated Facility PE before Project Increase	1.6	0.5	0.4	4.8	5.3	5.3
PSD Major Source Thresholds	250	250	250	250	250	250
PSD Major Source?	No	No	No	No	No	No

From the above table, the facility is not an existing major source under PSD for any pollutant.

4. Stationary Source Increase in Permitted Emissions (SSIPE)

$$\text{SSIPE} = \text{SSPE2} - \text{SSPE1}$$

Pollutant	SSPE2 (lb/yr)	SSPE1 (lb/yr)	SSIPE (lb/yr)
NO <sub>x</sub>	15,582	3,207	12,375
SO <sub>x</sub>	1,498	730	768
PM <sub>10</sub>	28,077	10,666	17,411
CO	39,054	9,597	29,457
VOC	14,463	1,067	13,396

5. SB 288 Major Modification

The purpose of Major Modification calculations is to determine the following:

- A. If Best Available Control Technology (BACT) is triggered for a new or modified emission unit that results in a Major Modification (District Rule 2201, §4.1.3); and
- B. If a public notification is triggered (District Rule 2201, §5.4.1).

Per section VII.D.3 of this document, this facility is not a Major Source for any pollutant. Thus, this project will not trigger an SB-288 Major Modification.

6. Federal Major Modification

The purpose of Federal Major Modification calculations is to determine the following:

- A. If a Rule-compliance project qualifies for District Rule 2201's BACT Exemptions (District Rule 2201, §4.2.3); and
- B. If an Alternate Siting analysis must be performed (District Rule 2201, §4.15.1);
- C. If the applicant must provide certification that all California stationary sources owned, operated, or controlled by the applicant that are subject to emission limits are in compliance with those limits or are on a schedule for compliance with all applicable emission limits and standards; and

D. If a public notification is triggered. (District Rule 2201, §5.4.1)

Per section VII.D.3 of this document, this facility is not a Major Source for any pollutant. Thus, this project will not trigger a Federal Major Modification.

## VIII. COMPLIANCE

### Rule 2201 New and Modified Stationary Source Review Rule

#### 1. Best Available Control Technology (BACT)

BACT requirements shall be triggered on a pollutant-by-pollutant basis and on an emissions unit-by-emissions unit basis. Unless exempted pursuant to Section 4.2, BACT shall be required for the following actions:

- Any new emissions unit or relocation from one Stationary Source to another of an existing emissions unit with a Potential to Emit (PE2) exceeding 2.0 pounds in any one day;
- Modifications to an existing emissions unit with a valid Permit to Operate resulting in an Adjusted Increase in Permitted Emissions (AIPE) exceeding 2.0 pounds in any one day;
- Any new or modified emissions unit, in a stationary source project, which results in a Major Modification, as defined in this rule.

NO<sub>x</sub>:

The following units have potentials to emit in excess of 2.0 pounds per day:

- Dryers (N-8234-4, '-5, and '-6)

#### Dryers (N-8234-4, '-5, and '-6)

BACT Guideline 5.2.6 is referenced to determine BACT for these dryers. The most stringent emission limit in this guideline is 20 ppmvd @ 3% O<sub>2</sub> (0.024 lb/MMBtu). This limit is a technologically feasible option. The applicant has proposed to achieve 20 ppmv @ 3% O<sub>2</sub> or less (0.024 lb/MMBtu) for each dryer. Thus, BACT requirements are satisfied.

Moreover, the District has also conducted a cost-effectiveness analysis to equip each dryer with a burner system capable of achieving 9 ppmvd @ 3%

O<sub>2</sub> (0.011 lb/MMBtu) or less for each dryer, and concluded that this option is not cost-effective at this time.

Refer to Appendix II for detailed "Top-Down BACT Analysis".

Note that NO<sub>x</sub> emissions associated with the wet cyclone stack, cooler cyclone, vertical cooler cyclone are solely generated by the cold plasma injection systems, which are installed to abate pet food odor such that the facility can comply with District Rule 4102 (Nuisance). The District practice is not to evaluate BACT on control techniques applied for rule compliance projects. Therefore, BACT analysis will not be performed for the cold plasma injection systems installed on wet cyclone, cooler cyclone and vertical cooler cyclone stacks.

**SO<sub>x</sub>:**

None of the proposed units has a potential to emit more than 2.0 pounds per day for SO<sub>x</sub>.

**PM<sub>10</sub>:**

The following units have potential to emit in excess of 2.0 pounds per day:

- Hot kibble conveying operation (N-8234-4, '5, and '6)
- Dryers (N-8234-4, '5, and '6)
- Dryer coolers (N-8234-4, '5, and '6)
- Vertical coolers (N-8234-4, '5, and '6)

Hot kibble conveying operation (N-8234-4, '5, and '6)

Dryers (N-8234-4, '5, and '6)

BACT Guideline 5.2.6 is referenced to determine the BACT for conveying and drying process emissions. The most stringent technique is to use high efficiency cyclones due high moisture in the material. The hot kibble conveying and drying operations are vented through its own high efficiency cyclone. Thus, BACT requirements are satisfied.

Dryer coolers (N-8234-4, '5, and '6)

BACT Guideline 5.2.7 is referenced to determine the BACT for the cooling process emissions. The most stringent technique is to use enclosed conveyors and vent grain coolers to a 1D-3D cyclone high efficiency cyclone. Each dryer cooler and vertical cooler is vented through its own high efficiency cyclone. Thus, BACT requirements are satisfied.

Refer to Appendix II for detailed "Top-Down BACT Analysis".

**CO:**

The potential CO emissions from the entire stationary source are less than 200,000 pounds per year. Thus, BACT is not triggered for CO emissions.

**VOC:**

The following units have potential to emit in excess of 2.0 pounds per day:

- o Hot kibble conveying operation (N-8234-4, '-5, and '-6)
- o Dryers (N-8234-4, '-5, and '-6)
- o Dryer coolers (N-8234-4, '-5, and '-6)
- o Vertical coolers (N-8234-4, '-5, and '-6)

A project specific "Top-Down BACT analysis" is presented in Appendix II of this document.

Based on this analysis, none of technologically feasible options (i.e., use of regenerative thermal oxidizer (RTO), carbon adsorption system, VOC concentrator with RTO, and biofiltration system) is cost effective, and therefore, none of them is required as BACT at this time.

Diamond had installed multiple cold plasma injection units to abate pet food odors from various exhausts including dryer cyclone (MAC HE60), dryer cooler cyclone (MAC), wet kibble conveying cyclone (Horizon HT-68) and vertical cooler cyclone (MAC HE52). They are not claiming any VOC control efficiency for the cold plasma injection systems. The system is solely proposed to reduce pet food odor and nuisance complaints.

**2. Offsets**

Offsets are examined on pollutant-by-pollutant basis. The following table summarizes SSPE2, offset thresholds, and whether or not offsets are triggered.

Category	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	CO	VOC
SSPE2	15,582	1,498	28,077	39,054	14,463
Offset Thresholds	20,000	54,750	28,200	200,000	20,000
Offsets Triggered?	No	No	No	No	No

**3. Public Notification**

District Rule 2201, section 5.4, requires a public notification for the affected pollutants from the following types of projects:

- New Major Sources
- Major Modifications (SB 288, Federal Major Modification)
- New emission units with a PE>100 lb/day of any one pollutant
- Modifications with SSPE1 below an Offset threshold and SSPE2 above an Offset threshold on a pollutant-by-pollutant basis
- New stationary sources with SSPE2 exceeding Offset thresholds
- Any permitting action with a SSIPE exceeding 20,000 lb/yr for any one pollutant

Per section VII.D.4 of this document, SSIPE for CO emissions exceed the 20,000 lb/yr threshold. Thus, this project triggers a 30-day public notice.

#### 4. Daily Emission Limits (DELs)

The daily emissions limitations (DELs) and other enforceable conditions are required by Section 3.17 to restrict a unit's maximum daily emissions. DELs for each permit are as follows:

##### N-8234-4-1, '5-1, '6-1

- PM<sub>10</sub> emissions from the operations covered under this permit shall not exceed 0.0612 pounds per ton of finished material produced. [District Rule 2201]
- VOC emissions from the operations covered under this permit shall not exceed 0.047 pounds per ton of finished material produced. [District Rule 2201]
- No more than 36 tons of ground meat shall be injected into the steam-conditioner in any one day. [District Rule 2201]<sup>1</sup>
- The amount of finished product produced under this line shall not exceed 780 tons in any one day. [District Rule 2201]
- The combined amount of finished product produced through all pet food manufacturing lines (N-8234-4, '5 and '6) shall not exceed 780 tons in any one day. [District Rule 2201]
- Emissions from the dryer shall not exceed any of the following limits: 2.1 ppmvd NO<sub>x</sub> @ 19% O<sub>2</sub> (0.024 lb-NO<sub>x</sub>/MMBtu), 16.5 ppmvd CO @ 19% O<sub>2</sub> (0.112 lb-CO/MMBtu) and 0.00285 lb-SO<sub>x</sub>/MMBtu. [District Rules 2201 and 4309]

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<sup>1</sup>This condition is taken from the ATC project N-1103242, and is retained in this project to retain the validity of the VOC and PM<sub>10</sub> emission factors, which were established during testing under ATCs N-8234-4-0, '4-1, '5-0, '5-1, '6-0 and '6-1.

## 5. Compliance Assurance

### Source Testing

N-8234-4-1, '-5-1, '-6-1

Each of these permit units has a hot kibble conveying cyclone (Horizon HT-68 cyclone) conveying wet kibbles from an extruder to a 10 MMBtu/hr natural gas-fired dryer, the exhaust of which is vented through a MAC HE60 high efficiency cyclone, a dryer cooler vented through a MAC high efficiency cyclone, material fines collection system collecting fines from two locations in the dryer and vent those to an Indoor HORIZON SYSTEMS 285 WRDL8 (or equal) baghouse, a vertical cooler vented through a MAC HE52 high efficiency cyclone, and finished storage bins each served by HORIZON SYSTEMS MODEL 21VFTC8 (or equal) cartridge dust collector systems.

### VOC and odorous compounds:

The exhaust streams from Horizon HT-68, MAC HE60, MAC, and MAC HE52 are odorous and contain several types of VOC compounds. These streams are treated by injecting extremely reactive gas comprised of a mixture of oxygen atoms, ions, and radicals, etc. (approx. 10% of the laden airflow rate stream) generated by the cold plasma injection systems by ionizing the ambient air. The injected plasma reacts with the VOC/odor laden stream and reduces the intensity of odorous compounds including some VOC emissions.

Under previously issued ATCs N-8234-4-1, '-5-1 and '-6-1, Diamond had conducted odor control efficiency (via odor panel tests) of full-scale cold plasma injection system on each exhaust stack. Overall, the average odor control efficiency is 56% for each line. Diamond is not proposing any changes to the plasma injection system at this time. Therefore, no additional odor control efficiency testing is required.

Under previously issued ATCs N-8234-4-1, '-5-1 and '-6-1, Diamond had performed VOC testing after installing the cold plasma injection systems. Diamond has proposed to re-establish VOC emission limits based on the test results. Therefore, no additional VOC testing is required.

However, the District may require VOC and odor control efficiency testing at any time should conditions at this facility warrant such testing.

### PM<sub>10</sub> emissions:

Per District Policy APR-1705, Section II, Step 4, non-combustion equipment served by a baghouse or dust collector with expected PM<sub>10</sub> emissions of 30 pounds per day or greater must be tested upon initial start-up. Units with PM<sub>10</sub> emissions in excess of 70 pounds per day should also be tested on annual basis.

The potential emissions from each permit unit are 47.7 lb-PM<sub>10</sub>/day. These emissions are estimated using the results from previous source tests. The cold plasma injection system is not expected to adversely affect the particulate matter emissions. Therefore, no additional testing is required.

**NO<sub>x</sub> and CO emissions:**

Diamond has recently conducted a source test (September 16, 2014) for each dryer stack and have successfully demonstrated compliance with the limits in permits N-8234-4-1, '5-1 and '6-1. Therefore, initial source testing is not required under these permits. Diamond will be required to conduct a periodic NO<sub>x</sub> and CO testing at least once every 24 months for each dryer stack as this required by Rule 4309.

Diamond is required to conduct an initial portable analyzer test to determine NO<sub>x</sub> emissions downstream of each cold plasma injection system to verify compliance with the total hourly NO<sub>x</sub> emission rate.

**Monitoring**

**N-8234-4-1, '5-1, '6-1**

The applicant has proposed to monitor NO<sub>x</sub>, CO and O<sub>2</sub> concentrations on a monthly basis using portable analyzer under ATCs N-8234-4-0, '5-0 and '6-0. This monitoring scheme is retained in the permits associated with this project.

**Recordkeeping**

**N-8234-4-1, '5-1, '6-1**

The applicant will be required to keep records of NO<sub>x</sub>, CO and O<sub>2</sub> readings on a monthly basis, and process rate records. All records are required to be kept for a period of at least 5 years.

**Reporting**

Source test reports will be required to be submitted within 60 days of each source test.

**6. Ambient Air Quality Analysis (AAQA)**

Pursuant to Section 4.14 of Rule 2201, an AAQA shall be conducted for the purpose of determining whether a new or modified Stationary Source will cause or make worse a violation of an air quality standard. The District's Technical Services Division conducted the required analysis. The following table shows the summary of AAQA:

Pollutant	1 Hour	3 Hours	8 Hours	24 Hours	Annual
CO	Pass	X	Pass	X	X
NO <sub>x</sub>	Pass <sup>1</sup>	X	X	X	Pass
SO <sub>x</sub>	Pass	Pass	X	Pass	Pass
PM <sub>10</sub>	X	X	X	Pass <sup>2</sup>	Pass <sup>2</sup>
PM <sub>2.5</sub>	X	X	X	Pass <sup>2</sup>	Pass <sup>2</sup>

<sup>1</sup>The project was compared to the 1-hour NO<sub>2</sub> National Ambient Air Quality Standard that became effective on April 12, 2010 using the District's approved procedures.

<sup>2</sup>Refined modeling was performed to determine if the pollutant's impact was below EPA's level of significance as found in 40 CFR Part 61.166 (b)(2). The criteria pollutant was determined to be below EPA's level of significance.

The emissions from the proposed equipment will not cause or contribute significantly to a violation of the State and National AAQS. Note that CO, SO<sub>x</sub>, PM<sub>10</sub>, PM<sub>2.5</sub> results are taken from the AAQA under previous project N-1130470.

## 7. Compliance Certification

Per Section 4.15 of Rule 2201, "Compliance Certification" and "Alternative Siting Analysis" is required for any project, which constitutes a New Major Source or a Federal Major Modification.

This facility is not a new major source. Furthermore, the proposed project does not constitute a Federal major modification per section VII.D.6 of this document. Therefore, compliance certification and alternative siting analysis is not required.

Compliance is expected with this Rule.

### Rule 2410 Prevention of Significant Deterioration

Rule 2410 applies to pollutants for which the District is in attainment or for unclassified, pollutants. The pollutants addressed in the PSD applicability determination are listed as follows:

- NO<sub>2</sub> (as a primary pollutant)
- SO<sub>2</sub> (as a primary pollutant)
- CO
- PM
- PM<sub>10</sub>

#### Step1:

The first step of this PSD evaluation consists of determining whether the facility is an existing PSD Major Source or not.

Per section VII.D.3 of this document, this facility is not an existing major source under PSD.

**Step2:**

In the case the facility is NOT an existing PSD Major Source but is an existing source, the second step of the PSD evaluation is to determine if the project, by itself, would be a PSD major source.

**I. Potential to Emit for New or Modified Emission Units vs PSD Major Source Thresholds**

As a screening tool, the project potential to emit from all new and modified units is compared to the PSD major source threshold, and if total project potential to emit from all new and modified units is below this threshold, no further analysis will be needed.

The facility or the equipment evaluated under this project is not listed as one of the categories specified in 40 CFR 52.21 (b)(1)(i). Therefore, the following PSD Major Source thresholds are applicable.

PSD Significant Emission Increase Determination: Potential to Emit (tons/year)						
Category	NO <sub>2</sub>	VOC	SO <sub>2</sub>	CO	PM	PM <sub>10</sub>
Total PE from N-8234-4-2, '5-2 and '6-2	6.2	6.7	0.4	14.7	8.7	8.7
PSD Major Source threshold	250	250	250	250	250	250
New PSD Major Source?	No	No	No	No	No	No

As shown in the table above, the project potential to emit, by itself, does not exceed any of the PSD major source thresholds. Therefore Rule 2410 is not applicable and no further discussion is required.

**Rule 4101 Visible Emissions**

Section 5.0, indicates that 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 dark or darker than Ringelmann 1 or equivalent to 20% opacity. The following condition will be placed in each permit:

- o 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]

Compliance is expected with this Rule.

**Rule 4102 Nuisance**

Section 4.0 prohibits discharge of air contaminants, which could cause injury, detriment, nuisance or annoyance to the public. The following condition will be placed on each permit:

- No air contaminant shall be released into the atmosphere, which causes a public nuisance. [District Rule 4102]

**California Health & Safety Code 41700 - Health Risk Assessment**

District Policy APR 1905 - Risk Management Policy for Permitting New and Modified Sources specifies that for an increase in emissions associated with a proposed new source or modification, the District perform an analysis to determine the possible impact to the nearest resident or worksite. The Risk Management Review summary is as follows:

Risk Management Review Summary					
Categories	Unit 4-1	Unit 5-1	Unit 6-1	Project Total	Facility Total
Prioritization Score	1.04	1.04	1.04	3.12	>1
Acute Hazard Index	0.00	0.00	0.00	0.00	0.00
Chronic Hazard Index	0.00	0.00	0.00	0.00	0.00
Maximum Individual Cancer Risk	1.02E-08	9.91E-09	9.42E-09	2.95E-08	2.95E-08
T-BACT Required?	No	No	No		
Special Permit Conditions?	Yes	Yes	Yes		

<sup>1</sup>The project passed on prioritization with a score less than 1.0; therefore, no further analysis is necessary.

<sup>2</sup>There was no increase in emissions associated with this unit; therefore, this unit is not included in the analysis.

The acute and chronic indices are below 1.0; and the maximum individual cancer risk associated with the project is 2.95E-08, which is less than the 1 in a million threshold. In accordance with the District's Risk Management Policy, the project is approved without Toxic Best Available Control Technology (T-BACT). To ensure that human health risks will not exceed District allowable levels; the following permit conditions must be included in permits N-8234-2, 5-2, & 6-2:

- All exhaust stacks shall vent vertically upward. The vertical exhaust flows shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]

- Total NOx emissions from the operations covered under this permit shall not exceed 0.471 pounds per hour. [District Rules 2201 and 4102]
- Total VOC emissions from the operations covered under this permit shall not exceed 1.529 pounds per hour. [District Rule 4102]

In addition, to ensure the proper operation of each cold plasma injection system, Diamond has proposed to establish the parameters shown the condition below:

- The owner or operator shall continuously monitor and record the following parameters for each cold plasma injection system: (1) date, (2) pressure drop across pre-filter (DP3), (3) pressure drop across high efficiency filter (DP2), (4) pressure drop across cold plasma reactor (DP1), (5) plasma air velocity (AV1) after the cold plasma reactor, and (6) variable frequency drive (VFD) signal (ON/OFF). The set point for each parameter shall be as follows: DP3 < 400 Pa, DP2 < 400 Pa, DP1 < 4,000 Pa, AV1 > 2 m/sec, and VFD signal in ON status. These parameters shall be recorded at least once every 15-minutes. The recorded parameters (except for VFD signal) shall be averaged over 60-minute blocks and compared with the established acceptable set points. Upon detecting any excursion, the owner or operator shall investigate the excursion and take corrective action to minimize odorous emissions and prevent recurrence of the excursion as expeditiously as practical, but no longer than 1 hour of operation after detection. If the monitoring equipment continues to show non-conformity with the established parameter(s) after 1 hour of operation following detection, the permittee shall notify the District within the following 1 hour and conduct a thorough inspection, and repair of the cold plasma injection system within 24 hours of the first exceedance. In lieu of conducting a thorough inspection and repair of the cold plasma injection system, the owner or operator may stipulate a violation that is subject to enforcement action has occurred. The owner or operator must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the excursions are the result of a qualifying breakdown condition pursuant to Rule 1100, the owner or operator may fully comply with Rule 1100 in lieu of performing the notification required by this condition. [District Rule 4102]

Compliance is expected with this Rule.

#### **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-8234-4-2, '5-2 and '6-2

The following equation is used to estimate the grain loading factor for each of the PM emitting unit under these permits:

$$PM \left( \frac{gr}{dscf} \right) = \frac{\left( E \frac{lb-PM}{hr} \right) \left( 7,000 \frac{gr-PM}{lb-PM} \right)}{\left( F \frac{ft^3}{min} \right) \left( \frac{60 min}{hr} \right)}$$

Unit	Emissions (E, lb/hr)*	Flow rate (F, dscfm)	PM (gr/dscf)	Expect Compliance (Yes/No)
Extruder served by Horizon HT-68 cyclone	0.346	6,232	0.0085	Yes
Dryer served by MAC HE-60 cyclone	0.796	14,602	0.0084	Yes
Dryer cooler served by MAC cyclone	0.538	16,107	0.0039	Yes
Vertical cooler served by MAC HE-52 cyclone	0.308	8,645	0.0042	Yes

\*Hourly emissions are taken from the application review under project N-1130470.

The following condition will be listed in each permit:

- Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]

Compliance is expected with this Rule.

**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:

$$E_{Max} = 3.59 P^{0.62} \text{ for Process weight (P) less than or equal to 30 tons/hr}$$

$$E_{Max} = 17.31 P^{0.16} \text{ for Process weight (P) greater than 30 tons/hr}$$

Permit #	Total PM <sub>10</sub> (lb/hr)	Process Rate (tons/hr)	E <sub>Proposed</sub> (lb-PM/hr)	E <sub>Max</sub> (lb-PM/hr)	Expect Compliance (Yes/No)
N-8234-4-2, '5-2, '6-2	1.988	32.5	1.988	30.2	Yes

The proposed PM emission rate ( $E_{\text{Proposed}}$ ) is not greater than the maximum allowable PM emission rate ( $E_{\text{max}}$ ) for each permit unit. Therefore, compliance is expected with this Rule.

#### **Rule 4301 Fuel Burning Equipment**

Section 3.1 of the rule defines fuel burning equipment as any furnace, boiler, apparatus, stack, and all appurtenances thereto, used in the process of burning fuel for the primary purpose of producing heat or power by indirect heat transfer.

The dryers under permits N-8234-4, '5 and '6 are direct-fired heat transfer systems. Therefore, this rule is not applicable to these units.

#### **Rule 4309 Dryers, Dehydrators, and Ovens**

This rule is applicable to dryers, dehydrator and oven that are rated at total heat input rating of 5.0 MMBtu/hr or greater. Each of the proposed dryers is rated at 10.0 MMBtu/hr. Therefore, these dryers are subject to the requirements of this Rule.

Section 5.2 requires the permittee to meet 4.3 ppmvd  $\text{NO}_x$  @ 19%  $\text{O}_2$  (or 4.3 ppmvd, if stack  $\text{O}_2 > 19\% \text{O}_2$ ) and 42 ppmvd CO @ 19%  $\text{O}_2$  (or 42 ppmvd, if stack  $\text{O}_2 > 19\% \text{O}_2$ ) using gaseous fuel. The applicant has proposed to achieve 2.1 ppmvd  $\text{NO}_x$  @ 19%  $\text{O}_2$  and 16.5 ppmvd @ 19%  $\text{O}_2$ . Therefore, compliance is expected with these limits.

Section 5.4 requires the permittee to install and maintain APCO-approved CEMS for  $\text{NO}_x$  and  $\text{O}_2$  or other alternative emissions monitoring method. The applicant has proposed to utilize portable analyzer to measure  $\text{NO}_x$ , CO and  $\text{O}_2$  concentrations. This monitoring scheme satisfies the requirements of this section. The compliance determination is required to be performed in accordance with Section 5.5 of this Rule.

Section 6.1.2 requires the permittee to keep records of total hours of operation, type and quantity of fuel used during the operation, measurement for each surrogate parameter, and range of allowed values for each surrogate parameter. The permittee has proposed to use portable analyzer to measure  $\text{NO}_x$ , CO and  $\text{O}_2$  concentrations. No surrogate parameter is being established. The permittee will be required to keep records of total hours of operation and type and quantity of fuel used on daily basis.

Section 6.1.6 requires the permittee to keep all records on-site for a period of five years. The applicant will be required to keep all records for a period of at least five years.

Section 8.3.2 requires the permittee to perform initial source test to determine compliance with NO<sub>x</sub> and CO emission limits. The permittee will be required to perform initial test within 60 days of startup under this permit and at least once every 24 months thereafter.

Compliance is expected with this Rule.

#### 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 (SO<sub>2</sub>) at the point of discharge on a dry basis averaged over 15 consecutive minutes.

This rule applies to the dryers under permits N-8234-4, '-5 and '-6. For natural gas combustion at a reference state of 60°F, the Rule 4801 limit of 2,000 ppmvd is equivalent to:

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

The expected SO<sub>x</sub> emissions are 0.00285 lb/MMBtu significantly less than 2.9 lb-SO<sub>x</sub>/MMBtu allowed by this Rule. Therefore, compliance is expected with the requirements of this Rule.

#### California Environmental Quality ACT (CEQA)

The California Environmental Quality Act (CEQA) requires each public agency to adopt objectives, criteria, and specific procedures consistent with CEQA Statutes and the CEQA Guidelines for administering its responsibilities under CEQA, including the orderly evaluation of projects and preparation of environmental documents. The San Joaquin Valley Unified Air Pollution Control District (District) adopted its *Environmental Review Guidelines* (ERG) in 2001. The basic purposes of CEQA are to:

- Inform governmental decision-makers and the public about the potential, significant environmental effects of proposed activities.
- Identify the ways that environmental damage can be avoided or significantly reduced.
- Prevent significant, avoidable damage to the environment by requiring

changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible.

- o Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

The City of Ripon (City) is the public agency having principal responsibility for approving the project. As such, the City served as the Lead Agency (CCR §15367). In approving the project, the Lead Agency prepared and adopted a Negative Declaration. The Lead agency filed a Notice of Determination, stating that the environmental document was adopted pursuant to the provisions of CEQA and concluding that the project would not have a significant effect on the environment.

The District is a Responsible Agency for the project because of its discretionary approval power over the project via its Permits Rule (Rule 2010) and New Source Review Rule (Rule 2201), (CCR §15381). As a Responsible Agency the District complies with CEQA by considering the environmental document prepared by the Lead Agency, and by reaching its own conclusion on whether and how to approve the project (CCR §15096).

The District has considered the Lead Agency's environmental document. Furthermore, the District has conducted an engineering evaluation of the project, this document, which demonstrates that Stationary Source emissions from the project would be below the District's thresholds of significance for criteria pollutants. Thus, the District finds that through a combination of project design elements, compliance with applicable District rules and regulations, and compliance with District air permit conditions, project specific stationary source emissions will have a less than significant impact on air quality. The District does not have authority over any of the other project impacts and has, therefore, determined that no additional findings are required (CEQA Guidelines §15096(h)).

**IX. RECOMMENDATION**

issuance of ATC permits is recommended after addressing comments from the applicant, ARB and the public.

**X. BILLING INFORMATION**

Permit #	Fee Schedule	Description	Previous Fee Schedule
N-8234-4-2, '-5-2, or '-6-2	3020-02 G	10.0 MMBtu/hr	None

**APPENDICES**

Appendix I:	Draft ATC Permits
Appendix II:	Top-Down BACT Analysis and BACT Guidelines
Appendix III:	Summary of Risk Management Review and AAQA Analyses

**Appendix I**  
**Draft ATC Permits**

San Joaquin Valley  
Air Pollution Control District

**AUTHORITY TO CONSTRUCT**

ISSUANCE DATE: DRAFT  
**DRAFT**

PERMIT NO: N-8234-4-2

LEGAL OWNER OR OPERATOR: DIAMOND PET FOOD PROCESSORS OF RIPON  
MAILING ADDRESS: 942 SOUTH STOCKTON AVENUE  
RIPON, CA 95366

LOCATION: 942 SOUTH STOCKTON AVENUE  
RIPON, CA 95366

**EQUIPMENT DESCRIPTION:**

MODIFICATION OF: PET FOOD PROCESSING LINE #1: TO ESTABLISH A COMBINED NOX EMISSION LIMIT OF 0.471 LB/HR AND RE-ESTABLISH VOC EMISSION FACTOR TO 0.047 LB/TON OF FINISHED PRODUCT

**CONDITIONS**

1. This Authority to Construct (ATC) permit cancels and replaces the ATC N-8234-4-1. [District Rule 2201]
2. Material Dispensing, Kibble Manufacturing, and Conveying Systems: The material from the extruder surge bin is dispensed into an extruder bin from where the material is transferred into an EXTRU-TECH 24X144 steam-conditioner system. The material is extruded to form kibbles. The kibbles are pneumatically conveyed using HEPA filtered air into a dryer receiving chamber using HORIZON SYSTEMS HT-68 high volume cyclone with a static sock filter. The owner or operator shall install, maintain, and operate Uniqa'r's, 6kW, 6 plasma cylinders, cold plasma injection system to abate odors in the air stream from the wet cyclone (Horizon HT-68) prior to its discharge into the atmosphere. [District Rules 2201 and 4102]
3. Dryer System: The system consists of an EXTRU-TECH 1053-2P-AF11, 10 MMBtu/hr (total) direct-fired natural gas fired dryer with five drying sections, each section is equipped with an ECLIPSE WINNOX WX0200 burner with a maximum heat input rate of 2.0 MMBtu/hr. The dryer exhaust is vented to a MAC HE60 high efficiency cyclone. The owner or operator shall install, maintain, and operate Uniqa'r's, 15kW, 15 plasma cylinders, cold plasma injection system to abate odors in the air stream from the dryer cyclone (MAC HE60) prior to its discharge into the atmosphere. [District Rules 2201 and 4102]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (209) 557-6400 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director, APCCO

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Arnaud Marjollet, Director of Permit Services  
N-8234-4-2, Jan 12, 2018 11:30AM - KAHLOM - Joint Inspection NOT Required

4. Cooler and Conveying System: The system consists of three cooler sections, all vented to a MAC high efficiency cyclone, a discharge conveyor for the transfer of dried kibbles into a hopper. The material from the hopper is pneumatically conveyed to an enclosed shaker screener. The owner or operator shall install, maintain, and operate Uniqair's, 9 kW, 9 plasma cylinders, cold plasma injection system to abate odors in the air stream from the dryer cooler cyclone (MAC) prior to its discharge into the atmosphere. [District Rules 2201 and 4102]
5. Fines Collection and Conveying System: This system collects fines from two locations in the dryer, the dryer cyclone discharge, and the cooler cyclone discharge, and vents these fines to a HORIZON SYSTEMS 285 WRDL8 baghouse. This baghouse is vented indoors. [District Rule 2201]
6. Screening and Conveying System. The system consists of an enclosed shaker screener, an enclosed surge bin, and an enclosed weigh belt. The fines (rejects) are conveyed to the totes in the basement. The surge bin shall be vented to a HORIZON SYSTEMS MODEL 21VFTC6 cartridge dust collector system. Each tote shall have a tight-fitting lid with a static sock filter. [District Rule 2201]
7. Coating and Conveying System: The system consists of a hopper where material from a weight belt is sprayed with chicken fat and canola oil (or other similar ingredients) and a coating reel where dry dog/cat digest and probiotics (or other similar ingredients) are sprinkled to be absorbed into the kibbles. The kibbles are then conveyed pneumatically to a vertical cooler system using a filter receiver system with a static sock filter. [District Rule 2201]
8. Vertical Cooler and Conveying System: A vertical cooler vented to a MAC HE52 high efficiency cyclone. The dried material falls on a vibratory pan on sliding rails. The material (accepts) from the vibratory pan drops into a hopper from where the dried kibbles are pneumatically conveyed to 14 finished product bins. Each bin shall be vented to a HORIZON SYSTEMS MODEL 21VFTC6 cartridge dust collector system. The fines (rejects) from MAC HE52 cyclone discharge and vibratory pan are conveyed to the totes in the basement. Each tote shall have a tight-fitting lid with a static sock filter. The owner or operator shall install, maintain, and operate Uniqair's, 3 kW, 3 plasma cylinders, cold plasma injection system to abate odors in the air stream from the vertical cooler cyclone (MAC HE52) prior to its discharge into the atmosphere. [District Rules 2201 and 4102]
9. Each reactor of the plasma injector system shall be installed, operated, and maintained per the manufacturer's (vendor) recommendations. A copy of manufacturer's recommendations shall be kept on site at all times. [District Rule 2201]
10. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
11. Particulate matter, at the exhaust of each dust collector system (baghouse, cartridge dust collector, cyclone etc.), shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
12. All exhaust stacks under this permit 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]
13. {15} 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]
14. Visible emissions, at the exhaust of each dust collector system (baghouse, cartridge dust collector, cyclone etc.) shall not equal or exceed 5% opacity for a period or periods aggregating more than three minutes in any one hour. [District Rule 2201]
15. PM10 emissions from the operations covered under this permit shall not exceed 0.0612 pounds per ton of finished material produced. [District Rule 2201]
16. VOC emissions from the operations covered under this permit shall not exceed 0.047 pounds per ton of finished material produced. [District Rule 2201]
17. Total NOx emissions from the operations covered under this permit shall not exceed 0.471 pounds per hour. [District Rules 2201 and 4102]
18. Total VOC emissions from the operations covered under this permit shall not exceed 1.529 pounds per hour. [District Rule 4102]
19. No more than 36 tons of ground meat shall be injected into the steam-conditioner in any one day. [District Rule 2201]
20. The amount of finished product produced under this line shall not exceed 780 tons in any one day. [District Rule 2201]

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CONDITIONS CONTINUE ON NEXT PAGE

21. The combined amount of finished product produced through all pet food manufacturing lines (N-8234-4, '-5 and '-6) shall not exceed 780 tons in any one day. [District Rule 2201]
22. The dryer shall only be fired on PUC-quality natural gas. [District Rule 2201]
23. Emissions from the dryer shall not exceed any of the following limits: 2.1 ppmvd NOx @ 19% O2 (0.024 lb-NOx/MMBtu), 16.5 ppmvd CO @ 19% O2 (0.112 lb-CO/MMBtu) and 0.00285 lb-SOx/MMBtu. [District Rules 2201 and 4309]
24. {33} Sampling facilities for source testing shall be provided in accordance with the provisions of Rule 1081 (Source Sampling). [District Rule 1081]
25. {109} 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]
26. 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 4309. [District Rules 2201 and 4309]
27. 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 2201 and 4309]
28. Source testing to determine NOx and CO emissions from the dryer at the exhaust stack of the MAC HE60 cyclone by obtaining samples upstream of the plasma injection system shall be conducted at least once every 24 months. [District Rule 4309]
29. {3718} NOx emissions for source test purposes shall be determined using EPA Method 7E or ARB Method 100 on a ppmv basis. [District Rule 4309]
30. {3719} CO emissions for source test purposes shall be determined using EPA Method 10 or ARB Method 100. [District Rule 4309]
31. {3720} Stack gas oxygen (O2) shall be determined using EPA Method 3 or 3A or ARB Method 100. [District Rule 4309]
32. All dryer test results for NOx and CO shall be reported in ppmv @ 19% O2 (or no correction if measured above 19% O2), corrected to dry stack conditions. [District Rule 4309]
33. Stack gas velocity or volumetric flow rate shall be determined using EPA Methods 2, 2A, or 2D. [District Rule 2201]
34. A sellable pet food product, containing at least 3% (by weight) of ground meat, shall be produced during VOC source testing and odor control efficiency testing. [District Rules 2201 and 4102]
35. The District may, at its discretion, require VOC source testing and odor panel testing at any time should conditions at the facility or the surrounding area warrant such testing. [District Rules 2201 and 4201]
36. The amount of ground meat injected into the steam-conditioner, finished product produced, and all other applicable parameters (exhaust flow rate, temperature, pressure, etc.), shall be recorded during VOC source testing and odor panel testing. [District Rules 2201 and 4102]
37. {3721} The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]
38. The permittee shall monitor and record the stack concentration of NOx and O2 downstream of each plasma injection system, within 60 days of startup under this permit, using a portable emission monitor that meets District specifications. The results shall be converted into hourly NOx emissions (lb/hour) using exhaust flow rate (dscfm) from the latest source test report, where exhaust flow rates were estimated. [District Rule 2201]

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CONDITIONS CONTINUE ON NEXT PAGE

39. Total NOx emissions (lb/hour) shall include NOx emissions from the following release points by taking portable analyzer measurements according to the manufacturer recommended procedures, or by conducting a District-approved source test, downstream of the cold plasma injection system serving: (1) Hot kibble conveying cyclone (HT-68), (2) dryer cyclone (MAC HE60), (3) dryer cooler cyclone (MAC), and (4) vertical cooler cyclone (MAC HE-52). [District Rule 2201]
40. The permittee shall maintain records of: (1) date and time of NOx and O2 measurements, (2) identification of the stack (e.g., hot kibble conveying cyclone (HT-68), dryer cyclone (MAC HE60), etc.) (3) O2 concentration in percent and the measured NOx concentrations, (4) exhaust flow rate (dscfm) in the latest NOx and CO source testing report, (5) NOx emissions (lb/hour), (6) total NOx emissions (lb/hour) from the operations covered under this permit unit, (7) make and model of exhaust gas analyzer, and (8) exhaust gas analyzer calibration records. [District Rule 2201]
41. 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 2201 and 4309]
42. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 of the dryer (at the exhaust stack of the MAC HE60 cyclone, upstream of the plasma injection system), 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 Rule 4309]
43. If either the dryer NOx or CO concentrations corrected to 19% O2 (or no correction if measured above 19% 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 performing the notification and testing required by this condition. [District Rule 4309]
44. {3744} The permittee shall maintain records of: (1) the date and time of NOx, CO, and O2 measurements, (2) the O2 concentration in percent and the measured NOx and CO concentrations corrected to 19% O2 (or no correction if measured above 19% 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 Rule 4309]

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CONDITIONS CONTINUE ON NEXT PAGE

45. The owner or operator shall continuously monitor and record the following parameters for each cold plasma injection system: (1) date, (2) pressure drop across pre-filter (DP3), (3) pressure drop across high efficiency filter (DP2), (4) pressure drop across cold plasma reactor (DP1), (5) plasma air velocity (AV1) after the cold plasma reactor, and (6) variable frequency drive (VFD) signal (ON/OFF). The set point for each parameter shall be as follows: DP3 < 400 Pa, DP2 < 400 Pa, DP1 < 4,000 Pa, AV1 > 2 m/sec, and VFD signal in ON status. These parameters shall be recorded at least once every 15-minutes. The recorded parameters (except for VFD signal) shall be averaged over 60-minute blocks and compared with the established acceptable set points. Upon detecting any excursion, the owner or operator shall investigate the excursion and take corrective action to minimize odorous emissions and prevent recurrence of the excursion as expeditiously as practical, but no longer than 1 hour of operation after detection. If the monitoring equipment continues to show non-conformity with the established parameter(s) after 1 hour of operation following detection, the permittee shall notify the District within the following 1 hour and conduct a thorough inspection, and repair of the cold plasma injection system within 24 hours of the first exceedance. In lieu of conducting a thorough inspection and repair of the cold plasma injection system, the owner or operator may stipulate a violation that is subject to enforcement action has occurred. The owner or operator must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the excursions are the result of a qualifying breakdown condition pursuant to Rule 1100, the owner or operator may fully comply with Rule 1100 in lieu of performing the notification required by this condition. [District Rule 4102].
46. The owner or operator shall maintain records of the date, the ground meat injection rate into the steam conditioner (tons/day), amount of finished product produced by this line (tons/day), and the combined amount of finished product produced by all pet manufacturing lines (N-8234-4, '-5 and '-6, tons/day). The combined amount of finished product produced by all pet manufacturing lines (N-8234-4, '-5 and '-6, tons/day) may be used to demonstrate compliance with the amount of finished product produced by this line (tons/day). [District Rule 2201]
47. The owner or operator shall maintain all records of maintenance for cold plasma injector systems including any cold plasma reactor replacements. [District Rule 4102]
48. All records shall be maintained and retained on-site for minimum of five years, and shall be made available for District inspection upon request. [District Rules 1070, 2201 and 4309]

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San Joaquin Valley  
Air Pollution Control District

**AUTHORITY TO CONSTRUCT**

ISSUANCE DATE: DRAFT  
**DRAFT**

PERMIT NO: N-8234-5-2

LEGAL OWNER OR OPERATOR: DIAMOND PET FOOD PROCESSORS OF RIPON  
MAILING ADDRESS: 942 SOUTH STOCKTON AVENUE  
RIPON, CA 95368

LOCATION: 942 SOUTH STOCKTON AVENUE  
RIPON, CA 95368

**EQUIPMENT DESCRIPTION:**

MODIFICATION OF: PET FOOD PROCESSING LINE #2: TO ESTABLISH A COMBINED NOX EMISSION LIMIT OF 0.471 LB/HR AND RE-ESTABLISH VOC EMISSION FACTOR TO 0.047 LB/TON OF FINISHED PRODUCT

**CONDITIONS**

1. This Authority to Construct (ATC) permit cancels and replaces the ATC N-8234-5-1. [District Rule 2201]
2. Material Dispensing, Kibble Manufacturing, and Conveying Systems: The material from the extruder surge bin is dispensed into an extruder bin from where the material is transferred into an EXTRU-TECH 24X144 steam-conditioner system. The material is extruded to form kibbles. The kibbles are pneumatically conveyed using HEPA filtered air into a dryer receiving chamber using HORIZON SYSTEMS HT-68 high volume cyclone with a static sock filter. The owner or operator shall install, maintain, and operate Uniqair's, 6kW, 6 plasma cylinders, cold plasma injection system to abate odors in the air stream from the wet cyclone (Horizon HT-68) prior to its discharge into the atmosphere. [District Rules 2201 and 4102]
3. Dryer System: The system consists of an EXTRU-TECH 1053-2P-AF11, 10 MMBtu/hr (total) direct-fired natural gas fired dryer with five drying sections, each section is equipped with an ECLIPSE WINNOX WX0200 burner with a maximum heat input rate of 2.0 MMBtu/hr. The dryer exhaust is vented to a MAC HE60 high efficiency cyclone. The owner or operator shall install, maintain, and operate Uniqair's, 15kW, 15 plasma cylinders, cold plasma injection system to abate odors in the air stream from the dryer cyclone (MAC HE60) prior to its discharge into the atmosphere. [District Rules 2201 and 4102]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (209) 557-6400 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2060, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Sayed Sadredin, Executive Director, APCO

**Arnaud Marjolle, Director of Permit Services**  
N-8234-5-2 Jan 13 2018 11:54AM - NAKLONU - Joint Inspection NOT Required

4. **Cooler and Conveying System:** The system consists of three cooler sections, all vented to a MAC high efficiency cyclone, a discharge conveyor for the transfer of dried kibbles into a hopper. The material from the hopper is pneumatically conveyed to an enclosed shaker screener. The owner or operator shall install, maintain, and operate Uniqair's, 9 kW, 9 plasma cylinders, cold plasma injection system to abate odors in the air stream from the dryer cooler cyclone (MAC) prior to its discharge into the atmosphere. [District Rules 2201 and 4102]
5. **Fines Collection and Conveying System:** This system collects fines from two locations in the dryer, the dryer cyclone discharge, and the cooler cyclone discharge, and vents these fines to a HORIZON SYSTEMS 285 WRDL8 baghouse. This baghouse is vented indoors. [District Rule 2201]
6. **Screening and Conveying System.** The system consists of an enclosed shaker screener, an enclosed surge bin, and an enclosed weigh belt. The fines (rejects) are conveyed to the totes in the basement. The surge bin shall be vented to a HORIZON SYSTEMS MODEL 21VFTC6 cartridge dust collector system. Each tote shall have a tight-fitting lid with a static sock filter. [District Rule 2201]
7. **Coating and Conveying System:** The system consists of a hopper where material from a weight belt is sprayed with chicken fat and canola oil (or other similar ingredients) and a coating reel where dry dog/cat digest and probiotics (or other similar ingredients) are sprinkled to be absorbed into the kibbles. The kibbles are then conveyed pneumatically to a vertical cooler system using a filter receiver system with a static sock filter. [District Rule 2201]
8. **Vertical Cooler and Conveying System:** A vertical cooler vented to a MAC HE52 high efficiency cyclone. The dried material falls on a vibratory pan on sliding rails. The material (accepts) from the vibratory pan drops into a hopper from where the dried kibbles are pneumatically conveyed to 14 finished product bins. Each bin shall be vented to a HORIZON SYSTEMS MODEL 21VFTC6 cartridge dust collector system. The fines (rejects) from MAC HE52 cyclone discharge and vibratory pan are conveyed to the totes in the basement. Each tote shall have a tight-fitting lid with a static sock filter. The owner or operator shall install, maintain, and operate Uniqair's, 3 kW, 3 plasma cylinders, cold plasma injection system to abate odors in the air stream from the vertical cooler cyclone (MAC HE52) prior to its discharge into the atmosphere. [District Rules 2201 and 4102]
9. Each reactor of the plasma injector system shall be installed, operated, and maintained per the manufacturer's (vendor) recommendations. A copy of manufacturer's recommendations shall be kept on site at all times. [District Rule 2201]
10. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
11. Particulate matter, at the exhaust of each dust collector system (baghouse, cartridge dust collector, cyclone etc.), shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
12. All exhaust stacks under this permit 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]
13. {15} 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]
14. Visible emissions, at the exhaust of each dust collector system (baghouse, cartridge dust collector, cyclone etc.) shall not equal or exceed 5% opacity for a period or periods aggregating more than three minutes in any one hour. [District Rule 2201]
15. PM10 emissions from the operations covered under this permit shall not exceed 0.0612 pounds per ton of finished material produced. [District Rule 2201]
16. VOC emissions from the operations covered under this permit shall not exceed 0.047 pounds per ton of finished material produced. [District Rule 2201]
17. Total NOx emissions from the operations covered under this permit shall not exceed 0.471 pounds per hour. [District Rules 2201 and 4102]
18. Total VOC emissions from the operations covered under this permit shall not exceed 1.529 pounds per hour. [District Rule 4102]
19. No more than 36 tons of ground meat shall be injected into the steam-conditioner in any one day. [District Rule 2201]
20. The amount of finished product produced under this line shall not exceed 780 tons in any one day. [District Rule 2201]

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CONDITIONS CONTINUE ON NEXT PAGE

21. The combined amount of finished product produced through all pet food manufacturing lines (N-8234-4, '-5 and '-6) shall not exceed 780 tons in any one day. [District Rule 2201]
22. The dryer shall only be fired on PUC-quality natural gas. [District Rule 2201]
23. Emissions from the dryer shall not exceed any of the following limits: 2.1 ppmvd NOx @ 19% O2 (0.024 lb-NOx/MMBtu), 16.5 ppmvd CO @ 19% O2 (0.112 lb-CO/MMBtu) and 0.00285 lb-SOx/MMBtu. [District Rules 2201 and 4309]
24. {33} Sampling facilities for source testing shall be provided in accordance with the provisions of Rule 1081 (Source Sampling). [District Rule 1081]
25. {109} 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]
26. 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 4309. [District Rules 2201 and 4309]
27. 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 2201 and 4309]
28. Source testing to determine NOx and CO emissions from the dryer at the exhaust stack of the MAC HE60 cyclone by obtaining samples upstream of the plasma injection system shall be conducted at least once every 24 months. [District Rule 4309]
29. {3718} NOx emissions for source test purposes shall be determined using EPA Method 7E or ARB Method 100 on a ppmv basis. [District Rule 4309]
30. {3719} CO emissions for source test purposes shall be determined using EPA Method 10 or ARB Method 100. [District Rule 4309]
31. {3720} Stack gas oxygen (O2) shall be determined using EPA Method 3 or 3A or ARB Method 100. [District Rule 4309]
32. All dryer test results for NOx and CO shall be reported in ppmv @ 19% O2 (or no correction if measured above 19% O2), corrected to dry stack conditions. [District Rule 4309]
33. Stack gas velocity or volumetric flow rate shall be determined using EPA Methods 2, 2A, or 2D. [District Rule 2201]
34. A sellable pet food product, containing at least 3% (by weight) of ground meat, shall be produced during VOC source testing and odor control efficiency testing. [District Rules 2201 and 4102]
35. The District may, at its discretion, require VOC source testing and odor panel testing at any time should conditions at the facility or the surrounding area warrant such testing. [District Rules 2201 and 4201]
36. The amount of ground meat injected into the steam-conditioner, finished product produced, and all other applicable parameters (exhaust flow rate, temperature, pressure, etc.), shall be recorded during VOC source testing and odor panel testing. [District Rules 2201 and 4102]
37. {3721} The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]
38. The permittee shall monitor and record the stack concentration of NOx and O2 downstream of each plasma injection system, within 60 days of startup under this permit, using a portable emission monitor that meets District specifications. The results shall be converted into hourly NOx emissions (lb/hour) using exhaust flow rate (dscfm) from the latest source test report, where exhaust flow rates were estimated. [District Rule 2201]

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CONDITIONS CONTINUE ON NEXT PAGE

39. Total NOx emissions (lb/hour) shall include NOx emissions from the following release points by taking portable analyzer measurements according to the manufacturer recommended procedures, or by conducting a District-approved source test, downstream of the cold plasma injection system serving: (1) Hot kibble conveying cyclone (HT-68), (2) dryer cyclone (MAC HE60), (3) dryer cooler cyclone (MAC), and (4) vertical cooler cyclone (MAC HE-52). [District Rule 2201]
40. The permittee shall maintain records of: (1) date and time of NOx and O2 measurements, (2) identification of the stack (e.g., hot kibble conveying cyclone (HT-68), dryer cyclone (MAC HE60), etc.) (3) O2 concentration in percent and the measured NOx concentrations, (4) exhaust flow rate (dscfm) in the latest NOx and CO source testing report, (5) NOx emissions (lb/hour), (6) total NOx emissions (lb/hour) from the operations covered under this permit unit, (7) make and model of exhaust gas analyzer, and: (8) exhaust gas analyzer calibration records. [District Rule 2201]
41. 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 2201 and 4309]
42. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 of the dryer (at the exhaust stack of the MAC HE60 cyclone, upstream of the plasma injection system), 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 Rule 4309]
43. If either the dryer NOx or CO concentrations corrected to 19% O2 (or no correction if measured above 19% 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 performing the notification and testing required by this condition. [District Rule 4309]
44. {3744} The permittee shall maintain records of: (1) the date and time of NOx, CO, and O2 measurements, (2) the O2 concentration in percent and the measured NOx and CO concentrations corrected to 19% O2 (or no correction if measured above 19% 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 Rule 4309]

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CONDITIONS CONTINUE ON NEXT PAGE

45. The owner or operator shall continuously monitor and record the following parameters for each cold plasma injection system: (1) date, (2) pressure drop across pre-filter (DP3), (3) pressure drop across high efficiency filter (DP2), (4) pressure drop across cold plasma reactor (DP1), (5) plasma air velocity (AV1) after the cold plasma reactor, and (6) variable frequency drive (VFD) signal (ON/OFF). The set point for each parameter shall be as follows: DP3 < 400 Pa, DP2 < 400 Pa, DP1 < 4,000 Pa, AV1 > 2 m/sec, and VFD signal in ON status. These parameters shall be recorded at least once every 15-minutes. The recorded parameters (except for VFD signal) shall be averaged over 60-minute blocks and compared with the established acceptable set points. Upon detecting any excursion, the owner or operator shall investigate the excursion and take corrective action to minimize odorous emissions and prevent recurrence of the excursion as expeditiously as practical, but no longer than 1 hour of operation after detection. If the monitoring equipment continues to show non-conformity with the established parameter(s) after 1 hour of operation following detection, the permittee shall notify the District within the following 1 hour and conduct a thorough inspection, and repair of the cold plasma injection system within 24 hours of the first exceedance. In lieu of conducting a thorough inspection and repair of the cold plasma injection system, the owner or operator may stipulate a violation that is subject to enforcement action has occurred. The owner or operator must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the excursions are the result of a qualifying breakdown condition pursuant to Rule 1100, the owner or operator may fully comply with Rule 1100 in lieu of performing the notification required by this condition. [District Rule 4102]
46. The owner or operator shall maintain records of the date, the ground meat injection rate into the steam conditioner (tons/day), amount of finished product produced by this line (tons/day), and the combined amount of finished product produced by all pet manufacturing lines (N-8234-4, '-5 and '-6, tons/day). The combined amount of finished product produced by all pet manufacturing lines (N-8234-4, '-5 and '-6, tons/day) may be used to demonstrate compliance with the amount of finished product produced by this line (tons/day). [District Rule 2201]
47. The owner or operator shall maintain all records of maintenance for cold plasma injector systems including any cold plasma reactor replacements. [District Rule 4102]
48. All records shall be maintained and retained on-site for minimum of five years, and shall be made available for District inspection upon request. [District Rules 1070, 2201 and 4309]

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San Joaquin Valley  
Air Pollution Control District

**AUTHORITY TO CONSTRUCT**

**DRAFT**  
ISSUANCE DATE: DRAFT

PERMIT NO: N-8234-6-2

LEGAL OWNER OR OPERATOR: DIAMOND PET FOOD PROCESSORS OF RIPON  
MAILING ADDRESS: 842 SOUTH STOCKTON AVENUE  
RIPON, CA 95366

LOCATION: 842 SOUTH STOCKTON AVENUE  
RIPON, CA 95366

**EQUIPMENT DESCRIPTION:**

MODIFICATION OF: PET FOOD PROCESSING LINE #3: TO ESTABLISH A COMBINED NOX EMISSION LIMIT OF 0.471 LB/HR AND RE-ESTABLISH VOC EMISSION FACTOR TO 0.047 LB/TON OF FINISHED PRODUCT

**CONDITIONS**

1. This Authority to Construct (ATC) permit cancels and replaces the ATC N-8234-6-1. [District Rule 2201]
2. Material Dispensing, Kibble Manufacturing, and Conveying Systems: The material from the extruder surge bin is dispensed into an extruder bin from where the material is transferred into an EXTRU-TECH 24X144 steam-conditioner system. The material is extruded to form kibbles. The kibbles are pneumatically conveyed using HEPA filtered air into a dryer receiving chamber using HORIZON SYSTEMS HT-68 high volume cyclone with a static sock filter. The owner or operator shall install, maintain, and operate Uniqair's, 6kW, 6 plasma cylinders, cold plasma injection system to abate odors in the air stream from the wet cyclone (Horizon HT-68) prior to its discharge into the atmosphere. [District Rules 2201 and 4102]
3. Dryer System: The system consists of an EXTRU-TECH 1053-2P-AF11, 10 MMBtu/hr (total) direct-fired natural gas fired dryer with five drying sections, each section is equipped with an ECLIPSE WINNOX WX0200 burner with a maximum heat input rate of 2.0 MMBtu/hr. The dryer exhaust is vented to a MAC HE60 high efficiency cyclone. The owner or operator shall install, maintain, and operate Uniqair's, 15kW, 15 plasma cylinders, cold plasma injection system to abate odors in the air stream from the dryer cyclone (MAC HE60) prior to its discharge into the atmosphere. [District Rules 2201 and 4102]

**CONDITIONS CONTINUE ON NEXT PAGE**

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (209) 557-6400 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director, APCD

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Arnaud Marjolle, Director of Permit Services  
N-8234-6-2 - Jan 13 2016 11:30AM - KAK/ONU Joint Inspection NOT Required

4. **Cooler and Conveying System:** The system consists of three cooler sections, all vented to a MAC high efficiency cyclone, a discharge conveyor for the transfer of dried kibbles into a hopper. The material from the hopper is pneumatically conveyed to an enclosed shaker screener. The owner or operator shall install, maintain, and operate Uniqair's, 9 kW, 9 plasma cylinders, cold plasma injection system to abate odors in the air stream from the dryer cooler cyclone (MAC) prior to its discharge into the atmosphere. [District Rules 2201 and 4102]
5. **Fines Collection and Conveying System:** This system collects fines from two locations in the dryer, the dryer cyclone discharge, and the cooler cyclone discharge, and vents these fines to a HORIZON SYSTEMS 285 WRDL8 baghouse. This baghouse is vented indoors. [District Rule 2201]
6. **Screening and Conveying System.** The system consists of an enclosed shaker screener, an enclosed surge bin, and an enclosed weigh belt. The fines (rejects) are conveyed to the totes in the basement. The surge bin shall be vented to a HORIZON SYSTEMS MODEL 21VFTC6 cartridge dust collector system. Each tote shall have a tight-fitting lid with a static sock filter. [District Rule 2201]
7. **Coating and Conveying System:** The system consists of a hopper where material from a weight belt is sprayed with chicken fat and canola oil (or other similar ingredients) and a coating reel where dry dog/cat digest and probiotics (or other similar ingredients) are sprinkled to be absorbed into the kibbles. The kibbles are then conveyed pneumatically to a vertical cooler system using a filter receiver system with a static sock filter. [District Rule 2201]
8. **Vertical Cooler and Conveying System:** A vertical cooler vented to a MAC HE52 high efficiency cyclone. The dried material falls on a vibratory pan on sliding rails. The material (accepts) from the vibratory pan drops into a hopper from where the dried kibbles are pneumatically conveyed to 14 finished product bins. Each bin shall be vented to a HORIZON SYSTEMS MODEL 21VFTC6 cartridge dust collector system. The fines (rejects) from MAC HE52 cyclone discharge and vibratory pan are conveyed to the totes in the basement. Each tote shall have a tight-fitting lid with a static sock filter. The owner or operator shall install, maintain, and operate Uniqair's, 3 kW, 3 plasma cylinders, cold plasma injection system to abate odors in the air stream from the vertical cooler cyclone (MAC HE52) prior to its discharge into the atmosphere. [District Rules 2201 and 4102]
9. Each reactor of the plasma injector system shall be installed, operated, and maintained per the manufacturer's (vendor) recommendations. A copy of manufacturer's recommendations shall be kept on site at all times. [District Rule 2201]
10. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
11. Particulate matter, at the exhaust of each dust collector system (baghouse, cartridge dust collector, cyclone etc.), shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
12. All exhaust stacks under this permit 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]
13. {15} 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]
14. Visible emissions, at the exhaust of each dust collector system (baghouse, cartridge dust collector, cyclone etc.) shall not equal or exceed 5% opacity for a period or periods aggregating more than three minutes in any one hour. [District Rule 2201]
15. PM10 emissions from the operations covered under this permit shall not exceed 0.0612 pounds per ton of finished material produced. [District Rule 2201]
16. VOC emissions from the operations covered under this permit shall not exceed 0.047 pounds per ton of finished material produced. [District Rule 2201]
17. Total NOx emissions from the operations covered under this permit shall not exceed 0.471 pounds per hour. [District Rules 2201 and 4102]
18. Total VOC emissions from the operations covered under this permit shall not exceed 1.529 pounds per hour. [District Rule 4102]
19. No more than 36 tons of ground meat shall be injected into the steam-conditioner in any one day. [District Rule 2201]
20. The amount of finished product produced under this line shall not exceed 780 tons in any one day. [District Rule 2201]

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CONDITIONS CONTINUE ON NEXT PAGE

21. The combined amount of finished product produced through all pet food manufacturing lines (N-8234-4, '-5 and '-6) shall not exceed 780 tons in any one day. [District Rule 2201]
22. The dryer shall only be fired on PUC-quality natural gas. [District Rule 2201]
23. Emissions from the dryer shall not exceed any of the following limits: 2.1 ppmvd NO<sub>x</sub> @ 19% O<sub>2</sub> (0.024 lb-NO<sub>x</sub>/MMBtu), 16.5 ppmvd CO @ 19% O<sub>2</sub> (0.112 lb-CO/MMBtu) and 0.00285 lb-SO<sub>x</sub>/MMBtu. [District Rules 2201 and 4309]
24. {33} Sampling facilities for source testing shall be provided in accordance with the provisions of Rule 1081 (Source Sampling). [District Rule 1081]
25. {109} 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]
26. 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 4309. [District Rules 2201 and 4309]
27. 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 2201 and 4309]
28. Source testing to determine NO<sub>x</sub> and CO emissions from the dryer at the exhaust stack of the MAC HE60 cyclones by obtaining samples upstream of the plasma injection system shall be conducted at least once every 24 months. [District Rule 4309]
29. {3718} NO<sub>x</sub> emissions for source test purposes shall be determined using EPA Method 7E or ARB Method 100 on a ppmv basis. [District Rule 4309]
30. {3719} CO emissions for source test purposes shall be determined using EPA Method 10 or ARB Method 100. [District Rule 4309]
31. {3720} Stack gas oxygen (O<sub>2</sub>) shall be determined using EPA Method 3 or 3A or ARB Method 100. [District Rule 4309]
32. All dryer test results for NO<sub>x</sub> and CO shall be reported in ppmv @ 19% O<sub>2</sub> (or no correction if measured above 19% O<sub>2</sub>), corrected to dry stack conditions. [District Rule 4309]
33. Stack gas velocity or volumetric flow rate shall be determined using EPA Methods 2, 2A, or 2D. [District Rule 2201]
34. A sellable pet food product, containing at least 3% (by weight) of ground meat, shall be produced during VOC source testing and odor control efficiency testing. [District Rules 2201 and 4102]
35. The District may, at its discretion, require VOC source testing and odor panel testing at any time should conditions at the facility or the surrounding area warrant such testing. [District Rules 2201 and 4201]
36. The amount of ground meat injected into the steam-conditioner, finished product produced, and all other applicable parameters (exhaust flow rate, temperature, pressure, etc.), shall be recorded during VOC source testing and odor panel testing. [District Rules 2201 and 4102]
37. {3721} The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]
38. The permittee shall monitor and record the stack concentration of NO<sub>x</sub> and O<sub>2</sub> downstream of each plasma injection system, within 60 days of startup under this permit, using a portable emission monitor that meets District specifications. The results shall be converted into hourly NO<sub>x</sub> emissions (lb/hour) using exhaust flow rate (dsocfm) from the latest source test report, where exhaust flow rates were estimated. [District Rule 2201]

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CONDITIONS CONTINUE ON NEXT PAGE

39. Total NOx emissions (lb/hour) shall include NOx emissions from the following release points by taking portable analyzer measurements according to the manufacturer recommended procedures, or by conducting a District-approved source test, downstream of the cold plasma injection system serving: (1) Hot kibble conveying cyclone (HT-68), (2) dryer cyclone (MAC HE60), (3) dryer cooler cyclone (MAC), and (4) vertical cooler cyclone (MAC HE-52). [District Rule 2201]
40. The permittee shall maintain records of: (1) date and time of NOx and O2 measurements, (2) identification of the stack (e.g., hot kibble conveying cyclone (HT-68), dryer cyclone (MAC HE60), etc.) (3) O2 concentration in percent and the measured NOx concentrations, (4) exhaust flow rate (dscfm) in the latest NOx and CO source testing report, (5) NOx emissions (lb/hour), (6) total NOx emissions (lb/hour) from the operations covered under this permit unit, (7) make and model of exhaust gas analyzer, and (8) exhaust gas analyzer calibration records. [District Rule 2201]
41. 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 2201 and 4309]
42. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 of the dryer (at the exhaust stack of the MAC HE60 cyclone, upstream of the plasma injection system), 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 Rule 4309]
43. If either the dryer NOx or CO concentrations corrected to 19% O2 (or no correction if measured above 19% 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 performing the notification and testing required by this condition. [District Rule 4309]
44. {3744} The permittee shall maintain records of: (1) the date and time of NOx, CO, and O2 measurements, (2) the O2 concentration in percent and the measured NOx and CO concentrations corrected to 19% O2 (or no correction if measured above 19% 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 Rule 4309]

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CONDITIONS CONTINUE ON NEXT PAGE

45. The owner or operator shall continuously monitor and record the following parameters for each cold plasma injection system: (1) date, (2) pressure drop across pre-filter (DP3), (3) pressure drop across high efficiency filter (DP2), (4) pressure drop across cold plasma reactor (DP1), (5) plasma air velocity (AV1) after the cold plasma reactor, and (6) variable frequency drive (VFD) signal (ON/OFF). The set point for each parameter shall be as follows: DP3 < 400 Pa, DP2 < 400 Pa, DP1 < 4,000 Pa, AV1 > 2 m/sec, and VFD signal in ON status. These parameters shall be recorded at least once every 15-minutes. The recorded parameters (except for VFD signal) shall be averaged over 60-minute blocks and compared with the established acceptable set points. Upon detecting any excursion, the owner or operator shall investigate the excursion and take corrective action to minimize odorous emissions and prevent recurrence of the excursion as expeditiously as practical, but no longer than 1 hour of operation after detection. If the monitoring equipment continues to show non-conformity with the established parameter(s) after 1 hour of operation following detection, the permittee shall notify the District within the following 1 hour and conduct a thorough inspection, and repair of the cold plasma injection system within 24 hours of the first exceedance. In lieu of conducting a thorough inspection and repair of the cold plasma injection system, the owner or operator may stipulate a violation that is subject to enforcement action has occurred. The owner or operator must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the excursions are the result of a qualifying breakdown condition pursuant to Rule 1100, the owner or operator may fully comply with Rule 1100 in lieu of performing the notification required by this condition. [District Rule 4102]
46. The owner or operator shall maintain records of the date, the ground meat injection rate into the steam conditioner (tons/day), amount of finished product produced by this line (tons/day), and the combined amount of finished product produced by all pet manufacturing lines (N-8234-4, '-5 and '-6, tons/day). The combined amount of finished product produced by all pet manufacturing lines (N-8234-4, '-5 and '-6, tons/day) may be used to demonstrate compliance with the amount of finished product produced by this line (tons/day). [District Rule 2201]
47. The owner or operator shall maintain all records of maintenance for cold plasma injector systems including any cold plasma reactor replacements. [District Rule 4102]
48. All records shall be maintained and retained on-site for minimum of five years, and shall be made available for District inspection upon request. [District Rules 1070, 2201 and 4309]

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**Appendix II**  
**Top-Down BACT Analysis and BACT Guidelines**

**San Joaquin Valley  
Unified Air Pollution Control District**

**Best Available Control Technology (BACT) Guideline 5.2.6\***

Last Update 2/22/1999

**Feed Mill - High Moisture Grain Pelletizing & Drying Operation**

Pollutant	Achieved in Practice or contained in the SIP	Technologically Feasible	Alternate Basic Equipment
NOx	64.2 ppmv @ 3% O2 (0.077 lb/MMBtu/hr ) Natural gas burner	20 ppmv @ 3% O2 (0.024 lb/MMBtu/hr ) Natural gas burner	
PM10	High Efficiency Cyclone and High Moisture Feed (0.02 lb PM10/ton of product dried.)		
VOC	Natural gas firing		

BACT is the most stringent control technique for the emissions unit and class of source. Control techniques that are not achieved in practice or contained in a state implementation plan must be cost effective as well as feasible. Economic analysis to demonstrate cost effectiveness is required for all determinations that are not achieved in practice or contained in an EPA approved State Implementation Plan.

**\*This is a Summary Page for this Class of Source**

# Top-Down BACT Analysis for NOx

## Dryers (N-8234-4, '-5, and '-6)

BACT Guideline 5.2.6, feed mill – high moisture grain pelletizing and drying operation, lists the following control technologies:

### **Step 1: Identify All Possible Control Technologies**

#### Achieved-in-Practice:

The achieved-in-practice limit is 64.2 ppmvd @ 3% O<sub>2</sub> (0.077 lb/MMBtu). This limit is less stringent than 4.3 ppmvd @ 19% O<sub>2</sub> (0.048 lb/MMBtu) limit in the District Rule 4309. Therefore, the rule limit is an achieved-in-practice limit for the proposed dryers.

4.3 ppmvd NO<sub>x</sub> @ 19% O<sub>2</sub>

#### Technologically Feasible:

20 ppmvd @ 3% O<sub>2</sub>, equivalent to 2.1 ppmvd @ 19% O<sub>2</sub>

Per dryer supplier, Extru-Tech, it is technically feasible to install a burner that can achieve 9.0 ppmv NO<sub>x</sub> @ 3% O<sub>2</sub> after making design changes to the dryer. Thus, this option is deemed technically feasible for the proposed dryers.

9 ppmvd @ 3% O<sub>2</sub>, equivalent to 1.1 ppmvd @ 19% O<sub>2</sub>

#### Alternate Basic Equipment:

None

### **Step 2: Eliminate Technologically Infeasible Options**

All control options listed in step 1 are technologically feasible.

### **Step 3: Rank Remaining Control Technologies by Control Effectiveness**

1. 1.1 ppmvd @ 19% O<sub>2</sub> (0.012 lb/MMBtu) - Technologically Feasible
2. 2.1 ppmvd @ 19% O<sub>2</sub> (0.024 lb/MMBtu) - Technologically Feasible
3. 4.3 ppmvd @ 19% O<sub>2</sub> (0.048 lb/MMBtu) - Achieved-in-Practice

### **Step 4: Cost Effectiveness Analysis**

#### Option 1: 1.1 ppmvd @ 19% O<sub>2</sub>

During project N-1103242, the dryer vendor, Extru-Tech Inc, has given the following costs "in addition" to the base model. Note that equipment costs have not changed over the past three years. Therefore, these cost numbers are reasonably accurate.

Item	Total (\$)	Comments
Burner Cost	\$180,420	This cost is to replace Eclipse's WINNOx burners with Eclipse's MINNOx burners in all five compartments in each dryer
External ducting arrangement	\$67,800	Burner design will require a complete external combustion chamber located adjacent to dryer/cooler; ducting to and from external combustion chamber to dryer/cooler
Internal ducting arrangement	\$12,700	Modified from the standard arrangement
Engineering re-design time	\$10,640	76 hours @ \$140/hr
Factory acceptance test	\$5,100	Required due to proto-type design, complete assembly of unit electrical and gas plumbing to validate process
Total Cost:	\$276,660	--
Tax (8.00%):	\$22,133	City of Ripon, San Joaquin County, California
Total Cost:	\$298,793	--

TC is annualized over 10 years assuming 10% interest. The following formula is used to determine the annualized cost:

$$A = (P) \left[ \frac{(i)(1+i)^n}{(1+i)^n - 1} \right]$$

Where:

- A: Annualized Cost
- P: Present Cost
- i: Interest rate (District policy is to use 10%)
- n: Equipment life (District policy is to use 10 years)

$$A = (\$298,793) \left[ \frac{(0.1)(1+0.1)^{10}}{(1+0.1)^{10} - 1} \right] = \frac{\$48,627}{\text{yr}}$$

In determining the cost of reduction, typically the District uses the emission reduction that can be achieved from the current "industry standard". Rule 4309 limit of 4.3 ppmvd @ 19% O<sub>2</sub> (0.048 lb/MMBtu) is assumed to be the "industry standard". Therefore, the reduction from the "industry standard" would be 3,154 lb-NOx/yr [(0.048-0.012 lb/MMBtu)(10 MMBtu/hr)(8,760 hr/yr)].

Cost of Reduction (\$/ton):

$$= \frac{\left( \frac{\$48,627}{\text{year}} \right) \left( 2,000 \frac{\text{lb}}{\text{ton}} \right)}{\left( 3,154 \frac{\text{lb} - \text{NO}_x}{\text{year}} \right)} = \frac{\$30,835}{\text{ton}}$$

The cost of reduction of NO<sub>x</sub> emissions is greater than the threshold limit of \$24,500/ton; therefore, the Eclipse's MINNO<sub>x</sub> burner technology is not cost effective, and is not required at this time.

Option 2: 2.1 ppmvd @ 19% O<sub>2</sub>

The applicant has proposed to achieve 20 ppmvd NO<sub>x</sub> @ 3% O<sub>2</sub>, equivalent to 2.1 ppmvd @ 19% O<sub>2</sub>. Therefore, cost-effectiveness analysis is not performed for this option.

Option 3: 4.3 ppmvd @ 19% O<sub>2</sub>

This is an achieved-in-practice option. Therefore, cost-effectiveness analysis is not performed.

**Step 5: Select BACT**

BACT requirement is to achieve 2.1 ppmvd NO<sub>x</sub> @ 19% O<sub>2</sub> or less concentrations.

## **Top-Down BACT Analysis for PM<sub>10</sub>**

### **Drying Process Emissions (N-8234-4, '-5, and '-6)**

#### **Step 1: Identify All Possible Control Technologies**

BACT Guideline 5.2.6, Feed Mill - High Moisture Grain Pelletizing & Drying Operation, lists the following control technologies:

##### Achieved-in-Practice:

High efficiency cyclone and high moisture feed (0.02 lb-PM<sub>10</sub>/ton of product dried)

##### Technologically Feasible:

None

##### Alternate Basic Equipment:

None

#### **Step 2 - Eliminate Technologically Infeasible Options**

There is no technologically feasible listed in Step 1.

#### **Step 3 - Rank Remaining Control Technologies by Control Effectiveness**

1. High efficiency cyclone and high moisture feed (achieved-in-practice)

The emission factor, 0.02 lb-PM<sub>10</sub>/ton of product, is not included in the above option because this factor has not been demonstrated via source testing. The project file N980668 and the associated ATCs were reviewed to arrive at this conclusion.

#### **Step 4 - Cost Effectiveness Analysis**

There is no technologically feasible option in Step 3. Therefore, cost-effectiveness analysis is not required.

#### **Step 5 - Select BACT**

BACT to reduce PM<sub>10</sub> emissions would be to vent the contaminated air stream from the dryer to a high efficiency cyclone and to maintain high moisture in the product. Diamond is proposing to achieve the required BACT standard. Therefore, BACT requirements are satisfied.

**San Joaquin Valley  
Unified Air Pollution Control District**

**Best Available Control Technology (BACT) Guideline 5.2.7\***

Last Update 3/12/1998

**Grain Cooler - Feed Mill, Steam Softened for Grain Rolling or  
Pelletizing Operations**

<b>Pollutant</b>	<b>Achieved in Practice or contained in the SIP</b>	<b>Technologically Feasible</b>	<b>Alternate Basic Equipment</b>
PM10	Enclosed conveyors, grain cooler vented to 1D-3D cyclones		

BACT is the most stringent control technique for the emissions unit and class of source. Control techniques that are not achieved in practice or contained in a state implementation plan must be cost effective as well as feasible. Economic analysis to demonstrate cost effectiveness is required for all determinations that are not achieved in practice or contained in an EPA approved State Implementation Plan.

\*This is a Summary Page for this Class of Source

## **Vertical Coolers (N-8234-4, '-5, and '-6)**

### **Step 1: Identify All Possible Control Technologies**

BACT Guideline 5.2.7, Grain Cooler - Feed Mill, Steam Softened for Grain Rolling or Pelletizing Operations, lists the following control technologies:

#### **Achieved-In-Practice:**

Enclosed conveyors, grain cooler vented to 1D-3D cyclone

#### **Technologically Feasible:**

None

#### **Alternate Basic Equipment:**

None

### **Step 2 - Eliminate Technologically Infeasible Options**

There is no technologically feasible listed in Step 1.

### **Step 3 - Rank Remaining Control Technologies by Control Effectiveness**

1. Enclosed conveyors, grain cooler vented to 1D-3D cyclone (achieved-in-practice)

### **Step 4 - Cost Effectiveness Analysis**

There is no technologically feasible option in Step 3. Therefore, cost-effectiveness analysis is not required.

### **Step 5 - Select BACT**

BACT to reduce PM<sub>10</sub> emissions would be to vent the contaminated air stream from the coolers to 1D-3D cyclone (or equivalent) and use enclosed conveyors. Diamond is proposing to achieve the required BACT standard via using high efficiency cyclones. Therefore, BACT requirements are satisfied.

## **Top-Down BACT Analysis for VOC emissions**

### **Step 1: Identify All Possible Control Technologies**

The District BACT clearinghouse does not have a specific guideline for pet food manufacturing operation. Therefore, a project specific analysis is prepared to address the VOC emissions from this project.

Per District Policy BACT 1-6, Section IX, "A top-down BACT analysis shall be performed as a part of the Application Review for each application subject to the BACT requirements pursuant to the District's NSR Rule." For source categories or classes covered in the BACT Clearinghouse, relevant information under each of the steps may be simply cited from the Clearinghouse without further analysis. However, in this case various databases are reviewed to determine the BACT for VOC emissions from pet food manufacturing operations.

EPA's RACT/BACT/LAER Clearinghouse (RBLC) database ([http://cfpub.epa.gov/rblc/index.cfm?action=Search\\_BasicSearch&lang=en](http://cfpub.epa.gov/rblc/index.cfm?action=Search_BasicSearch&lang=en)) was searched using SIC Code 2047 for Dog and Cat Food between 09/23/2002 and 09/23/2013. Only one facility was found with RBLC ID # IN-0163, which list, two dryers at Naturally Recycled Proteins of Indiana, LLC. These dryers are not equipped with any emissions control equipment.

CARB's BACT Clearinghouse database was searched using SIC Code 2047 for Dog and Cat Food. No relevant facility was found during this search.

Bay Area Air Quality Management District (BAAQMD) BACT Clearinghouse, Section 11 – Miscellaneous Sources was reviewed. No relevant guideline was found.

South Coast Air Quality Management District (SCAQMD) BACT Clearinghouse was searched. No relevant guideline was found.

San Diego Air Pollution Control District (SDAPCD) BACT Clearinghouse (<http://www.sdapcd.org/permits/BACTab/bact.pdf>, Section 3-1) was reviewed. No relevant BACT guideline was found.

The following table summarizes the facilities using control equipment at pet food manufacturing facilities. The facilities were required or installed control equipment to abate pet food odors.

Facility	Location	Control Device	Installed for BACT or Odor?	Still In Operation?
Champion Petfoods	Alberta, Canada	Plasma Injection	Odor Complaints	Yes
Nutro	Victorville, CA	RTO	Odor Complaints	Yes
American Nutrition	Ogden, UT	Scrubber	Odor Complaints	Yes
Doane Pet Care Co	Upper Macungie Township, PA	Biofilter	To avoid odor complaints (new development proposed nearby)	No
Friskies	South Whitehall, PA	Biofilters	Odor Complaints	Line that required biofilter was shutdown, rest of plant operating
*Purina Mills	St. Joseph, MO	Biofilters	Likely to reduce odors**	Yes
*Royal Canin	Guelph Ontario, Canada	Biofilters	Likely to reduce odors**	Yes**
Hill's Pet Nutrition, Inc.	Commerce, CA (SCAQMD)	RTO	Odor complaints	Yes
Nestle Purina Mills	Denver, CO	Plasma injection	Odor complaints	Yes

\*Information taken from the cost quote by Bloram Technologies, Inc.; \*\*Not verified.

The SJVAPCD District permits database (PAS) was searched. The primary purpose of the control devices mentioned in the table below is to reduce particulate matter emissions. The following pet food manufacturing facilities were found:

Company Name	Permit #	Emission Unit	Control Device
Diamond Pet Food	N-558-30-1, '31-1 and '32-1	Extruder	Cyclone
		Dryer	High efficiency cyclone
		Cooler	High efficiency cyclone
		Vertical Cooler	High efficiency cyclone
Mars Petcare US Inc.	N-290-2-1 and '3-2	Extruder	cyclone
		Dryer	cyclone
Perfection Food LLC	S-8001-3-0	Extruder	--
		Dryer cooler	--

Based on the above search, the following technologies are identified:

1. Regenerative thermal oxidizer (RTO)
2. VOC concentrator with RTO

3. Carbon adsorber
4. Biofiltration system

### **Step 2 - Eliminate Technologically Infeasible Options**

The options listed in Step 1 are technically feasible.

Note that VOC concentrator with RTO is conservatively presumed to be a technologically feasible option for the purpose of this project without further evaluating an argument from Diamond that the odorous streams contains methanol and ethanol which cannot be adsorbed into Zeolite material concentrators. Material other than Zeolite (such as carbon, other polymers) may be used in a concentrator to adsorb methanol and ethanol compounds<sup>2</sup>.

### **Step 3 - Rank Remaining Control Technologies by Control Effectiveness**

1. Regenerative thermal oxidizer (98% overall control)
2. Carbon adsorber (95% overall control)
3. VOC concentrator with RTO (93% overall control<sup>3</sup>)
4. Biofiltration (90% overall control)

### **Step 4 - Cost Effectiveness Analysis**

#### **1. Regenerative thermal oxidizer (98% overall control)**

Diamond Pet has three pet food manufacturing lines (N-8234-4, '5 and '6). Each line is identical and contains a hot kibble conveying cyclone (wet cyclone), a dryer, a cooler, and a vertical cooler. VOC emissions from each of these units are greater than 2.0 lb/day. Therefore, each unit triggers BACT.

Diamond contacted three RTO vendors, Adwest, Ship & Shore, and Durr to get the cost quotes for two configurations: (1) to vent each exhaust stream to an RTO, (2) to vent dryer and wet cyclone exhausts to the RTO. Since the BACT is triggered for each unit, cost quote for configuration 1 is used in the analysis.

#### ***Equipment Costs:***

Ship & Shore's cost was least of all three cost quotes, and is being used here in the analysis.

The cost to purchase and install one 60,000 scfm RTO would be \$651,250 (595,000 purchase + 56,250 installation). This capital cost is annualized over 10 years

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<sup>2</sup> Refer to the discussion in EPA's document "Choosing an adsorption system for VOC" # EPA 456/F-99-004 available at <http://www.epa.gov/ttn/catc/dir1/fadsorb.pdf>.

<sup>3</sup> A well designed concentrator system can achieve 95-98% control efficiency per page 16 of EPA's document "Choosing an adsorption system for VOC" # EPA 456/F-99-004 available at <http://www.epa.gov/ttn/catc/dir1/fadsorb.pdf>. If the adsorber is coupled with RTO, combined control efficiency is expected to be 93% (95% for adsorber x 98% for RTO)

assuming 10% interest. The following formula is used to determine the annualized cost:

$$A = (P) \left[ \frac{(i)(1+i)^n}{(1+i)^n - 1} \right]$$

Where:

A: Annualized Cost

P: Present Cost

i: Interest rate (District policy is to use 10%)

n: Equipment life (District policy is to use 10 years)

$$A = (\$651,250) \left[ \frac{(0.1)(1+0.1)^{10}}{(1+0.1)^{10} - 1} \right] = \frac{\$105,998}{\text{yr}}$$

#### *Operating Costs*

The natural gas and electric costs are estimated to be \$16.21/hr and \$12.53/hr, respectively<sup>4</sup>. Assuming 8,760 hr/yr operation, the annual operating cost would be:

$$\begin{aligned} &= (\$16.21/\text{hr} + \$12.53/\text{hr})(8,760 \text{ hr/yr}) \\ &= \$251,762/\text{yr} \end{aligned}$$

#### *Total Costs*

$$\begin{aligned} &= \$251,762/\text{yr} + \$105,998/\text{yr} \\ &= \$357,760/\text{yr} \end{aligned}$$

#### *VOC Emission Reductions*

Using worst-case operating scenario, one line can emit up to 13,396 lb-VOC/yr. Using 98% control efficiency, the reductions would be:

$$\begin{aligned} &= (0.98)(13,396 \text{ lb-VOC/yr}) \\ &= 13,128 \text{ lb-VOC/yr} \\ &= 6.564 \text{ tons/yr} \end{aligned}$$

#### *Cost of reductions (\$/ton)*

$$\begin{aligned} &= (\$357,760/\text{yr})/(6.564 \text{ ton/yr}) \\ &= \$54,503/\text{ton of VOC reduced} \end{aligned}$$

The cost to purchase, install and operate an RTO is greater than the VOC cost effectiveness threshold of \$17,500 per ton. Thus, the use of this technology is not cost effective.

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<sup>4</sup> The natural gas cost and electric costs are determined using the costs the Adwest's cost quote. Note that natural gas costs of \$5/MMBtu, and electric costs \$0.09/Kwh are used in this cost quote.

2. Carbon adsorber (95% control)

Diamond contacted two vendors for carbon adsorber system cost quotes, Siemens Industry, Inc and Prominent Systems, Inc.

*Carbon Cost:*

The annual carbon replacement cost are sufficient to conclude that the carbon adsorber system will not be cost-effective; therefore, costs to purchase and install a carbon adsorber system are not necessary.

Carbon adsorption occurs when air containing VOCs is blown through a carbon unit and the VOCs are adsorbed onto the surface of the cracks in the activated carbon particles. Assuming that the carbon will absorb 20% of its weight in VOCs, and a VOC control efficiency of 95%, the total amount of carbon required per year can be determined as follows:

$$\begin{aligned}\text{Carbon Required} &= 13,396 \text{ lb-VOC/year} \times 1 \text{ lb-Carbon}/0.2 \text{ lb-VOC} \\ &= 66,980 \text{ lb-Carbon/year}\end{aligned}$$

Per Prominent Systems, Inc, the change out service including disposal of non-hazardous carbon would be \$1.75/lb plus tax. The tax in City of Ripon is 8% effective October 1, 2013<sup>6</sup>. Thus, the replacement cost would be \$1.89/lb (1.08 x \$1.75/lb).

$$\begin{aligned}\text{Carbon cost} &= 66,980 \text{ lb-VOC/year} \times \$1.89/\text{lb} \\ &= \$126,592/\text{year}\end{aligned}$$

*VOC Emission Reductions*

Using worst-case operating scenario, one line can emit up to 13,396 lb-VOC/yr. Using 95% control efficiency, the reductions would be:

$$\begin{aligned}&= (0.95)(13,396 \text{ lb-VOC/yr}) \\ &= 12,726 \text{ lb-VOC/yr} \\ &= 6.363 \text{ tons/yr}\end{aligned}$$

*Cost of reductions (\$/ton)*

$$\begin{aligned}&= (\$126,592/\text{yr})/(6.363 \text{ ton/yr}) \\ &= \$19,895/\text{ton of VOC reduced}\end{aligned}$$

The cost of disposing/replacing the carbon for the carbon adsorption system alone is greater than the VOC cost effectiveness threshold of \$17,500 per ton. Thus, the use of a carbon adsorption system is not cost effective. The actual cost of reductions is expected to be considerably more than \$19,895/ton costs associated with the equipment, electricity, and maintenance are included in the above analysis.

<sup>6</sup><http://www.boe.ca.gov/cgi-bin/rates.cgi?LETTER=R&LIST=CITY>

3. VOC Concentration and RTO system (93% overall system)

Per Yorke engineering, the capital cost of a VOC concentrator is about \$800,000. This capital cost is annualized over 10 years assuming 10% interest. The following formula is used to determine the annualized cost:

$$A = (P) \left[ \frac{(i)(1+i)^n}{(1+i)^n - 1} \right]$$

Where:

A: Annualized Cost

P: Present Cost

i: Interest rate (District policy is to use 10%)

n: Equipment life (District policy is to use 10 years)

$$A = (\$800,000) \left[ \frac{(0.1)(1+0.1)^{10}}{(1+0.1)^{10} - 1} \right] = \frac{\$130,196}{\text{yr}}$$

*VOC Emission Reductions*

Using worst-case operating scenario, one line can emit up to 13,396 lb-VOC/yr.

Using 93% control efficiency, the reductions would be:

$$= (0.93)(13,396 \text{ lb-VOC/yr})$$

$$= 12,458 \text{ lb-VOC/yr}$$

$$= 6.229 \text{ tons/yr}$$

*Cost of reductions (\$/ton)*

$$= (\$130,196/\text{yr})/(6.229 \text{ ton/yr})$$

$$= \$20,902/\text{ton of VOC reduced}$$

The equipment cost alone is greater than the VOC cost effectiveness threshold of \$17,500 per ton. Thus, the use of this technology is not cost effective. The actual cost of reductions is expected to be considerably more than \$20,902/ton should all costs associated with the electricity and natural gas are included in the above analysis.

4. Biofiltration (90% control)

Diamond contacted four vendors for cost quotes: Biorem Technologies Inc, Met-Pro Environmental Solutions, and Bohn Biofilter Company.

*Equipment Costs:*

Bohn Biofilter Company's cost was least of all three cost quotes, and is being used here in the analysis.

The budgetary price is \$1,370,000 for four systems each with a two-cell in-ground biofilter with one pipe manifold, liner, humidifier, irrigation and soil media sized for

61,300 cfm of foul air. This quote does not include the cooling equipment. The cost is annualized over 10 years assuming 10% interest. The following formula is used to determine the annualized cost:

$$A = (P) \left[ \frac{i(1+i)^n}{(1+i)^n - 1} \right]$$

Where:

A: Annualized Cost

P: Present Cost

i: Interest rate (District policy is to use 10%)

n: Equipment life (District policy is to use 10 years)

$$A = (\$1,370,000) \left[ \frac{(0.1)(1+0.1)^{10}}{(1+0.1)^{10} - 1} \right] = \frac{\$222,961}{\text{yr}}$$

#### *VOC Emission Reductions*

Using worst-case operating scenario, one line can emit up to 13,396 lb-VOC/yr. Using 90% control efficiency, the reductions would be:

$$\begin{aligned} &= (0.90)(13,396 \text{ lb-VOC/yr}) \\ &= 12,056 \text{ lb-VOC/yr} \\ &= 6.028 \text{ tons/yr} \end{aligned}$$

#### *Cost of reductions (\$/ton)*

$$\begin{aligned} &= (\$222,961/\text{yr}) / (6.028 \text{ ton/yr}) \\ &= \$36,988/\text{ton of VOC reduced} \end{aligned}$$

The equipment cost alone is greater than the VOC cost effectiveness threshold of \$17,500 per ton. Thus, the use of this technology is not cost effective. The actual cost of reductions is expected to be considerably more than \$36,988/ton should all costs associated with the electricity and cooling equipment are included in the above analysis.

### **Step 5 - Select BACT**

None of the above technologies are cost-effective. Therefore, none of these is required at this time.

**Appendix III**  
**Summary of Risk Management Review and AAQA Analyses**

## San Joaquin Valley Air Pollution Control District Risk Management Review

**To:** Jag Kahlon – Permit Services  
**From:** Cheryl Lawler – Technical Services  
**Date:** October 21, 2014  
**Facility Name:** Diamond Pet Food Processors of Ripon  
**Location:** 940 S. Stockton Avenue, Ripon  
**Application #(s):** N-8234-4-2, 5-2, & 6-2  
**Project #:** N-1143145

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### A. RMR SUMMARY

RMR Summary					
Categories	Pet Food Processing Line #1 (Unit 4-2)	Pet Food Processing Line #2 (Unit 5-2)	Pet Food Processing Line #3 (Unit 6-2)	Project Totals	Facility Totals
<b>Prioritization Score</b>	1.04	1.04	1.04	3.12	>1
<b>Acute Hazard Index</b>	0.00	0.00	0.00	0.00	0.00
<b>Chronic Hazard Index</b>	0.00	0.00	0.00	0.00	0.00
<b>Maximum Individual Cancer Risk (10<sup>-6</sup>)</b>	1.02E-08	9.91E-09	9.42E-09	2.95E-08	2.95E-08
<b>T-BACT Required?</b>	No	No	No		
<b>Special Permit Conditions?</b>	Yes	Yes	Yes		

### Proposed Permit Conditions

To ensure that human health risks will not exceed District allowable levels; the following permit conditions must be included for:

#### Units 4-2, 5-2, & 6-2

1. All exhaust stacks shall vent vertically upward. The vertical exhaust flows shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 2201]
2. NOX emissions are limited to 0.471 pounds per hour for each permit unit.
3. VOC emissions are limited to 1.529 pounds per hour for each permit unit.

**B. RMR REPORT**

**I. Project Description**

Technical Services received a request on October 13, 2014, to perform a Risk Management Review (RMR) and Ambient Air Quality Analysis (AAQA) for proposed modifications to a pet food manufacturing operation. The modifications consist of the following:

1. Establish a combined NOX emission limit of 0.471 pounds per hour for each permit unit. Via establishing this limit, the facility will incorporate NOX emissions from the natural gas combustion in the dryer and the cold plasma injection systems under each permit unit. Recently, the facility had installed cold plasma injection systems to abate pet food odors from a wet cyclone, dryer cyclone, dryer cooler cyclone, and a vertical cooler cyclone. Following this installation, they took NOX readings downstream of each plasma injector system and discovered that each injector system generates NOX emissions.
2. The facility had proposed to establish a VOC emission factor of 0.037 lb/ton of finished product produced under Project N-1130470 without realizing that there may be additional VOC emissions due to the cold plasma injection systems. The facility is proposing to re-establish this limit to 0.047 lb/ton of finished product.

**II. Analysis**

For the RMR, toxic emissions from the increased VOCs were calculated using facility provided lab results for the cold plasma injection systems and Ventura County emission factors for the natural gas external combustion from the dryers. In accordance with the District's *Risk Management Policy for Permitting New and Modified Sources* (APR 1905, March 2, 2001), risks from the project were prioritized using the procedures in the 1990 CAPCOA Facility Prioritization Guidelines and incorporated in the District's HEARTs database. The prioritization scores for the project were greater than 1.0 (see RMR Summary Table). Therefore, a refined Health Risk Assessment was required and performed for the project. AERMOD was used with point source parameters outlined below and concatenated 5-year meteorological data from Modesto to determine maximum dispersion factors at the nearest residential and business receptors. The dispersion factors were input into the HARP model to calculate the Chronic and Acute Hazard Indices and the Carcinogenic Risk for the project.

The following parameters were used for the review:

<b>Analysis Parameters (4 stacks for each unit)</b>			
<b>Stack Diameters (m)</b>	0.71, 0.38, 0.71, 0.81	<b>Stack Gas Temps. (K)</b>	380, 329, 309, 284
<b>Stack Heights (m)</b>	18.8, 17.7, 16.8, 3.05	<b>Stack Gas Velocities (m/sec)</b>	23.8, 31.2, 20.6, 14.3
<b>Closest Receptor (m)</b>	230	<b>Closest Receptor Type</b>	Business

Technical Services also performed revised modeling for the criteria pollutant NO<sub>x</sub>. The emission rates used for criteria pollutant modeling were provided by the project engineer.

The results from the Criteria Pollutant Modeling are as follows:

**Criteria Pollutant Modeling Results\***

	1 Hour	3 Hours	8 Hours	24 Hours	Annual
NO <sub>x</sub>	Pass <sup>1</sup>	X	X	X	Pass

\*Results were taken from the attached PSD spreadsheet.

<sup>1</sup>The project was compared to the 1-hour NO<sub>2</sub> National Ambient Air Quality Standard that became effective on April 12, 2010, using the District's approved procedures.

**III. Conclusions**

The emissions from the proposed equipment will not cause or contribute significantly to a violation of the State and National AAQS.

The acute and chronic indices are below 1.0; and the maximum individual cancer risk associated with the project is 2.95E-08, which is less than the 1 in a million threshold. In accordance with the District's Risk Management Policy, the project is approved without Toxic Best Available Control Technology (T-BACT).

To ensure that human health risks will not exceed District allowable levels; the permit conditions listed on Page 2 of this report must be included for these proposed units.

These conclusions are based on the data provided by the applicant and the project engineer. Therefore, this analysis is valid only as long as the proposed data and parameters do not change.

**Attachments**

- RMR Request Form & Attachments
- Project Emails
- RMR VOCs Speciation Worksheets
- Stack Parameters Calculations
- Prioritization Report
- Risk Results
- AAQA Results
- Facility Summary