

STATEMENT OF BASIS

For the issuance of Draft Air Permit # 2058-AR-6 AFIN: 75-00051

1. PERMITTING AUTHORITY:

Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, Arkansas 72118-5317

2. APPLICANT:

Pet Solutions, LLC
10511 Gauge Road
Danville, Arkansas 72833

3. PERMIT WRITER:

Patty Campbell, PE

4. PROCESS DESCRIPTION AND NAICS CODE:

NAICS Description: Rendering and Meat Byproduct Processing
NAICS Code: 311613

5. SUBMITTALS:

6/30/2011, 07/06/2011, 08/22/2011, 09/08/2011 and 10/17/2011

6. REVIEWER'S NOTES:

Pet Solutions, LLC (Pet) is a protein conversion facility located at 10511 Gauge Road Danville, Yell County, Arkansas 72833, southwest of Centerville and north of Ola. Pet is planning significant changes which include an expansion and re-organization of the existing physical facility. This permitting action is necessary to:

1. Remove landfill gas as alternative fuel at Boiler SN-05. Re-calculate NO_x emissions with AP-42 natural gas NO_x emission factor and reduce NO_x emission rate at SN-05;
2. Remove requirement to stack test SN-05 while combusting landfill gas;
3. Install new 73.6 MMBtu/hr natural gas-fired, ultra-low NO_x burners, Boiler SN-10;
4. Permit SN-05, 10, 11 and 14 for natural gas combustion only, Specific Condition (SC) #6;

5. Add applicable provisions of 40 CFR 60, Subpart Dc - *Standards of Performance for Small Industrial- Commercial-Institutional Steam Generating Units* for existing SN-05 and SN-06 and new SN-10, SC #7, #8, #9 and #14;
6. Add initial performance test (IPT) for CO and NO_x hourly emissions at SN-10, SC #10;
7. Install a new 5.0 MMBtu/hr natural gas-fired Regenerative Thermal Oxidizer (RTO) (SN-11);
8. Install a new 10.9 MMBtu/hr natural gas-fired RTO (SN-14);
9. Limit SN-06 operating hours to not to exceed 7,488 hours per rolling 12 months and add operating hour recordkeeping, SC #11 and #12;
10. Add IPT for PM, PM₁₀, CO and NO_x hourly emissions at SN-06, combusting wood material only, SC #13;
11. Clarify measurement choices of fuel usage in SN-06, SC #15;
12. Add a requirement to operate the multiple cyclone (multi-clone) fly ash arrestor (cyclone system) at all times that SN-06 is operating, SC #19;
13. Remove start-up notification of SN-06, as this requirement is complete;
14. Add applicable provisions of 40 CFR 63, Subpart JJJJJ - *National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers at Area Source Facilities* for existing industrial biomass Boiler SN-06, SC #21;
15. Add a work practice or management practice standard initial tune-up no later than March 21, 2012, plus biennially thereafter and keep records for Boiler SN-06, SC #22 and #23;
16. Obtain a one-time energy assessment performed by a qualified energy assessor no later than March 21, 2014 for Boiler SN-06, SC #22;
17. Add SN-06 recordkeeping requirements of the Notification of Compliance Status and annual compliance certification report, SC #24;
18. Remove the meal aspirator from SN-07;
19. Revise emissions for Meal Handling based on increased throughput limit, SC #25;
20. Add new Load Out, Shipping and eleven Silos (SN-13) (Load-out silos have recirculating air baghouse);
21. Add new Meal Handling (SN-13 and 15) with a throughput limit of 70,080 meal tons per rolling 12 month period, SC #26;
22. Install three new wet Scrubbers (SN-12A, 12B and 12C) and add continuous monitored operating parameters for ORP, inlet gas temperature and pH scrubbing solution and recordkeeping;
23. Add a one-time VOC stack test of either Scrubber SN-12A, 12B or 12C, SC #32;
24. Revise VOC emissions for existing Scrubbers SN-03 and SN-08 and add continuous monitoring of ORP with failure alarm, after installation of new scrubbers;
25. Add a one-time VOC stack test for Scrubbers SN-03, SC #33;
26. Clarify requirement to maintain negative pressure within the building, SC #34;
27. Clarify that multiple tests are required to demonstrate negative pressure throughout all areas of the expanded plant, SC #35;

- 28. Add two new batch cookers which are heated by steam jackets and discs. VOC emissions are routed to an RTO;
- 29. Add Blood/Feather Meal Process and an edible Protein Processing Process. Pet Solutions will expand the existing building and reduce the number of cookers from twelve to nine feather Hydrolyzers and Dryers SN-09. The dryers are not direct fired and emissions are routed to an RTO; and
- 30. Change the 290 gallon Gasoline Storage Tank from IA to SN-16 and incorporate the requirements of 40 CFR 63 Subpart CCCCCC for SN-16, SC #36 through #39.

Total permitted annual emission rate limit changes associated with this modification are: 4.4 tons per year (tpy) PM, -0.5 tpy PM₁₀, 0.1 tpy SO₂, -0.9 tpy VOC, 6.3 tpy CO, -25.4 tpy NO_x, 0.09 tpy acetaldehyde, 0.43 tpy acrolein, 0.05 tpy arsenic, 0.49 tpy benzene, 0.05 tpy cadmium, 0.09 tpy chlorine, 0.05 tpy formaldehyde, 0.05 tpy hexavalent chromium, 2.03 tpy hydrogen chloride, 0.05 tpy lead, 0.22 tpy manganese, -0.08 tpy POM/PAH, 0.21 tpy styrene and -0.62 tpy Total HAPs.

7. COMPLIANCE STATUS:

The following summarizes the current compliance of the facility including active/pending enforcement actions and recent compliance activities and issues.

There is a pending CAO for incomplete recordkeeping of the scrubbers SN-03 and SN-08 ORP parameters.

8. PSD APPLICABILITY:

- a. Did the facility undergo PSD review in this permit (i.e., BACT, Modeling, etc.)? N
- b. Is the facility categorized as a major source for PSD? N
Single pollutant ≥ 100 tpy and on the list of 28 or single pollutant ≥ 250 tpy and not on list?

If yes, explain why this permit modification is not PSD?

9. SOURCE AND POLLUTANT SPECIFIC REGULATORY APPLICABILITY:

Source	Pollutant	Regulation (NSPS, NESHAP or PSD)
05, 06, 10, 11 & 14	Natural gas fuel use only.	NSPS Subpart Dc
06	HAPs	NESHAP Subpart JJJJJ
16	HAPs	NESHAP Subpart CCCCC

10. EMISSION CHANGES AND FEE CALCULATION:

See emission change and fee calculation spreadsheet in Appendix A.

11. MODELING:

Criteria Pollutants

Examination of the source type, location, plot plan, land use, emission parameters, and other available information indicate that modeling is not warranted at this time.

Non-Criteria Pollutants:

1st Tier Screening (PAER)

Estimated hourly emissions from the following sources were compared to the Presumptively Acceptable Emission Rate (PAER) for each compound. The Department has deemed the PAER to be the product, in lb/hr, of 0.11 and the Threshold Limit Value (mg/m^3), as listed by the American Conference of Governmental Industrial Hygienists (ACGIH).

Pollutant	TLV (mg/m^3)	PAER (lb/hr) = $0.11 \times \text{TLV}$	Proposed lb/hr	Pass?
Acetaldehyde	45.04	4.9544	0.0237	Yes
Acrolein	0.2293	0.0252	0.114	No
Arsenic	0.2293	0.0252	0.00065112	Yes
Benzene	1.60	0.176	0.1200327	Yes
Cadmium	0.01	0.0011	0.00024969	Yes
Chlorine	1.45	0.1595	0.0225	Yes
Chromium, hexavalent	0.05	0.0055	0.00026866	Yes
Formaldehyde	1.50	0.165	0.134049	Yes
Hydrogen Chloride	2.984	0.328	0.542	No
Lead	0.05	0.0055	0.00143029	Yes

Pollutant	TLV (mg/m ³)	PAER (lb/hr) = 0.11 × TLV	Proposed lb/hr	Pass?
Manganese	0.20	0.022	0.04564582	No
POM/PAH	52.43	5.7673	0.0008014075	Yes
Styrene	85.2	9.372	0.0542	Yes

2nd Tier Screening (PAIL)

AERMOD air dispersion modeling was performed on the estimated hourly emissions from the following sources, in order to predict ambient concentrations beyond the property boundary. The Presumptively Acceptable Impact Level (PAIL) for each compound has been deemed by the Department to be one one-hundredth of the Threshold Limit Value as listed by the ACGIH.

Pollutant	PAIL (µg/m ³) = 1/100 of Threshold Limit Value	Modeled Concentration (µg/m ³)	Pass?
Acrolein	2.293	0.338	Yes
Hydrogen Chloride	29.9	1.6047	Yes
Manganese	2.0	0.138	Yes

Other Modeling: None

Odor: There is an unpleasant odor. The facility is located in a sparsely populated area.

H₂S Modeling:

A.C.A. §8-3-103 requires hydrogen sulfide emissions to meet specific ambient standards. Many sources are exempt from this regulation, refer to the Arkansas Code for details.

Is the facility exempt from the H₂S Standards Y/N

If exempt, explain: _____

Pollutant	Threshold value	Modeled Concentration (ppb)	Pass?
H ₂ S	20 parts per million (5-minute average*)	N/A	
	80 parts per billion (8-hour average)	N/A	

Pollutant	Threshold value	Modeled Concentration (ppb)	Pass?
	residential area		
	100 parts per billion (8-hour average) nonresidential area	N/A	

12. CALCULATIONS:

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
03, 08, 12A/B/C	Estimate by Pet Solution accepted by ADEQ in 12/ 2003	0.1 lb/hr VOC 0.4 tpy VOC	N/A	N/A	Wet Scrubbers – “Odor abatement only” @8760 hrs/yr
04 & 13 Silos Loadout Shipping	AP-42 Table 9.9.1-2 (3/03) Grain Processing Facility – <u>Animal Feed Mills</u> – Feed Shipping	<u>lb/ton meal</u> PM = 0.0033 PM ₁₀ = 0.0008	None	None	@8,760 hrs/yr SN-04 @ <u>63,948 tons</u> meal produced/yr & 7.3 tons/hr max SN-13 @ <u>70,080 tons/yr</u> & 8.0 tons/hr max 4 silos w/baghouse routed to SN-03 5 loadout silos all routed to RTO 6 meal silos equipped w/ baghouse re-routed back to silos.
07, 15	AP-42 Table 9.9.1-1 (3/03) Grain Elevator – Headhouse and grain handling	<u>lb/ton meal</u> PM = 0.061 PM ₁₀ = 0.034	None	None	Meal Handling –@8,760 hrs/yr SN-07 @ <u>63,948 tons</u> meal produced/yr & 7.3 tons/hr max SN-15 @ <u>70,080 tons</u> meal produced /yr & 8.0 tons/hr max

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
05, 10, 11, 14	AP-42 Tables 1.4-1 & 1.4-2* (07/98) +HAPs <u>SN-10 Vendor Guarantee for NO_x & CO EF</u> http://boilerspec.com/specification/fire_pdf/csi/2006/Section%20E/E-Emissions.pdf ^d	lb/MMscf PM/PM ₁₀ – 7.6 SO ₂ – 0.6 VOC – 5.5 *CO – 84 *NO _x – 100 SN-10 Ultra Low NO _x Burners CO – 50 ppm = 36.72 lb/MMscf NO _x – 30 ppm = 40.8 lb/MMscf	SN-10 has Ultra Low NO _x Burners SN-11 & 14 (RTO) are control devices for VOCs	N/A	Natural gas is <u>only</u> fuel used @ 8,760 hrs/yr SN-05 Boiler = 33.48 MMBtu/hr SN-10 Boiler ¹ = 73.6 MMBtu/hr SN-11 RTO = 5.0 MMBtu/hr SN-14 RTO = 10.9 MMBtu/hr ¹ from Cleaver-Brooks manual 50 ppm CO / 1370 ¹ = 0.036 lb/MMBtu * (MMBtu/1000000 btu) * 1020 BTU/scf = 0.00003672 lb/scf * 1000000 scf/MMscf = <u>36.72 lb/MMscf</u> 30 ppm NO _x / 850 ¹ = 0.0176 lb/MMBtu (vendor doubled) 0.02 = 0.040 lb/MMBtu * (MMBtu/1000000 btu) * 1020 BTU/scf = 0.000041 lb/scf * 1000000 scf/MMscf = <u>40.8 lb/MMscf</u>
06	AP-42 Table 1.6-1* (9/03) Table 1.6-2** (9/03) Tables 1.6-3*** & -4 (HAPs) (9/03)	<u>lb/MMBtu/hr</u> *PM – 0.35 *PM ₁₀ – 0.32 **SO ₂ – 0.025 ***VOC – 0.017 **CO – 0.60 **NO _x – 0.22	Mechanical Collector Fly Ash Re-injector	Is included in EF	Wood-fired Boilers NAME Boiler = <u>28.5 MMBtu/hr</u> EF – Emission factor Restricted Hours = 7,488 hrs/rolling 12-months An IPT will be performed to confirm
16	TANKS 4.0.9d	1 turnover/wk	N/A	N/A	Gasoline Storage Tank 290 gallon capacity

13. TESTING REQUIREMENTS:

The permit requires testing of the following sources.

SN	Pollutants	Test Method	Test Interval	Justification
06	PM PM ₁₀	Method 5 Method 201A	Once with wood only	§19.702

SN	Pollutants	Test Method	Test Interval	Justification
	CO NO _x	Method 10 Method 7E		
06	PM PM ₁₀ CO NO _x	Method 1- 5 Method 201 or 201A Method 10 Method 7E	Once with Balcones Fuel Cubes	§19.702
10	CO NO _x	Method 10 - CO Method 7E - NO _x	Once	§19.702
3	VOC	Method 25A	Once	§19.702
12A, 12B or 12C	VOC	Method 25A	One once	§19.702

14. MONITORING OR CEMS

The permittee must monitor the following parameters with CEMS or other monitoring equipment (temperature, pressure differential, etc.)

SN	Parameter or Pollutant to be Monitored	Method (CEM, Pressure Gauge, etc.)	Frequency	Report (Y/N)
Facility-wide	Differential Air Pressure (Maintain Negative Pressure inside Process Building)	Smoke test, anemometer, Differential Air Gauge or other approved method	Monthly	N
03, 08	Oxidation Reduction Potential	ORP Monitoring Equipment	Every 8 hours until Continuous monitor is installed	N
03, 08, 12A/B/C	Oxidation Reduction Potential	ORP Monitoring Equipment	Continuous	N

SN	Parameter or Pollutant to be Monitored	Method (CEM, Pressure Gauge, etc.)	Frequency	Report (Y/N)
12A, 12B, 12C	Inlet Gas Temperature	Temperature Gauge	Continuously, sound alarm if temp exceeded	N
	pH Scrubbing Liquid	pH device	Continuously, sound alarm if pH out of range	N

15. RECORDKEEPING REQUIREMENTS:

The following are items (such as throughput, fuel usage, VOC content, etc.) that must be tracked and recorded.

SN	Recorded Item	Permit Limit	Frequency	Report* (Y/N)
03	Pressure Drop	6.9 inches of H ₂ O	On-going	N
03, 08	ORP	Minimum 200 mV	On-going	N
12A-C Wet Scrubbers	Oxidant Solution Flow Rate	SN-03 = 787 gal/min SN-08 = 240 g/m SN-12A-B = 394 g/m ea	On-going	N
	ORP	Minimum 200 mV	On-going	N
	pH Maintain MSDS or equivalent documentation of oxidizing agent	8 to 9	On-going	N
	Failure/alarm on as-occurred basis and include scrubber, date, time, cause(s), method(s) of resolution and op name/initial.	N/A	As-occurs	N

SN	Recorded Item	Permit Limit	Frequency	Report* (Y/N)
06 Wood Boiler	Combustible Material Type & Throughput & Recordkeeping provisions of 60 Subpart Dc	Wood Waste = max of source <u>Max Tons per Day</u> Cardboard =15.8 Poultry Fat = 1.9 Poultry Meal = 4.8 Sludge = 11.3 Balcones Fuel Cubes = 12.0	Record Daily, Summarize Monthly & rolling 12 month Totals	N
	Work Practice or Management Practice Standard Biennial Tune-up	1. Concentration of CO in the effluent stream in ppm, by v, and O in v percent, measured before and after the tune-up of the boiler; 2. Description of any corrective actions taken as a part of the tune-up; and 3. Type and amount of fuel used over 12 mo. prior to biennial tune-up	Initial Tune-up no later than 3/21/2012 & Once every 25 months thereafter	N, unless requested
	Energy Assessment performed by a qualified Energy Assessor	One-time only 1. Visual inspection of boiler; 2. Evaluation of facility operating characteristics, specs of energy using systems, operating and maintenance procedures, and unusual op constraints; 3. Inventory of major systems consuming energy from SN-06; 4. Review architectural and engineering plans, facility op and maintenance. procedures / logs, & fuel usage; 5. List of major energy conservation measures; 6. List of potential energy savings due to conservation measures identified; and 7. Comprehensive Report detailing ways to improve efficiency, cost specific improvements, benefits, and time frame to recoup investments.		Y

SN	Recorded Item	Permit Limit	Frequency	Report* (Y/N)
	Notification of Compliance Status	1. This facility complies with the requirements in §63.11214(b) to conduct an initial tune-up of the boiler (SN-06) 2. This facility has had an energy assessment performed according to §63.11214(c.)” 3.No secondary materials that are solid waste were combusted in any affected unit.	No later than 120 days after the applicable compliance dates	Y
	Compliance Certificate	Annually 1. Company name and address. 2.Statement by a Responsible Official, with the official’s name, title, phone number, e-mail address, and original signature, certifying the truth, accuracy and completeness of the notification and a statement of whether the source has complied with all the relevant standards and other requirements of 40 CFR 63 Subpart JJJJJ. 3. If SN-06 experiences any deviations from the applicable requirements during the reporting period, include a description of deviations, the time periods during which the deviations occurred, and the corrective actions taken.		Y
	Recordkeeping provisions of 63 Subpart JJJJJ	Annually 1. Records of the occurrence and duration of each malfunction of the boiler, or of the associated air pollution control and monitoring equipment. 2.Records of actions taken during periods of malfunction to minimize emissions in accordance with the general duty to minimize emissions in §63.11205(a), including corrective actions to restore the malfunctioning boiler, air pollution control, or monitoring equipment to its normal or usual manner of operation.		N
Facility	Interior Pressure	Negative Interior Pressure	Monthly	N

SN	Recorded Item	Permit Limit	Frequency	Report* (Y/N)
		If positive pressure is detected, immediately take action to identify the cause, implement corrective action, and document corrective action	As-occurs	N
05 & 10	Quantity of natural gas consumed per boiler Recordkeeping provisions of 60 Subpart Dc	None	Monthly	N
10 & 14	Submit notification of the date of construction, anticipated startup, actual startup and designed heat input capacity of the fuel to be combusted	---	Once	Y
Facility	All Performance Tests	N/A	Keep for Life of Unit	Y
16	Gasoline usage	<input type="checkbox"/> 10,000 gallons /mo and <input type="checkbox"/> 15,000 gallons per rolling 12 months	Monthly	N

16. OPACITY:

SN	Opacity	Justification for limit	Compliance Mechanism
05, 10, 11, 14	5%	§18.501 and A.C.A.	Annual ADEQ Inspection
06	20%	§19.503 and A.C.A.	
04, 07, 13, 15	5%	§18.501 and A.C.A.	

17. DELETED CONDITIONS:

Former SC	Justification for removal
9 & 23	Landfill Gas will no longer be permitted as an alternative fuel in SN-06. [LFG was never used.]
15	Notification of SN-06 start-up in 2005 has been completed.
SN-06	Although there is no limit to the Wood Waste category, record keeping of the daily, monthly and annual quantity used is required.

18. GROUP A INSIGNIFICANT ACTIVITIES:

Source Name	A	Emissions (tpy)						
		PM/ PM ₁₀	SO ₂	VOC	CO	NO _x	HAPs	
							S	Tot
One 1,200 gallon diesel tank	A-3	-	-	0.0085	-	-	-	-
One 640 gallon diesel tank	A-3	-	-	0.00046	-	-	-	-
Ash bin/conveyor system on the wood-fired boiler	A-13	0.0002	-	-	-	-	-	-
Wood chip/sawdust storage piles	A-13	0.1650	-	-	-	-	-	-

19. VOIDED, SUPERSEDED, OR SUBSUMED PERMITS:

List all active permits voided/superseded/subsumed by the issuance of this permit.

Permit #
2058-AR-5

20. CONCURRENCE BY:

The following supervisor concurs with the permitting decision.

Paula Parker, P.E.

APPENDIX A – EMISSION CHANGES AND FEE CALCULATION

Fee Calculation for Minor Source

Revised 08-30-11

Facility Name: Pet Solutions, LLC

Permit Number: 2058-AR-6

AFIN: 75-00051

			Old Permit	New Permit
\$/ton factor	22.65	Permit Predominant Air Contaminant	83.3	57.9
Minimum Fee \$	400	Net Predominant Air Contaminant Increase	-25.4	
Minimum Initial Fee \$	500			
Check if Administrative Amendment	<input type="checkbox"/>	Permit Fee \$	400	
		Annual Chargeable Emissions (tpy)	57.9	

Pollutant (tpy)	Old Permit	New Permit	Change
PM	41.8	46.2	4.4
PM ₁₀	41.4	40.9	-0.5
SO ₂	3.2	3.3	0.1
VOC	8.6	7.7	-0.9
CO	87.5	93.8	6.3
NO _x	83.3	57.9	-25.4
Acetaldehyde	0	0.09	0.09
Acrolein	0	0.43	0.43
Arsenic	0	0.05	0.05
Benzene	0	0.49	0.49
Cadmium	0	0.05	0.05
Chlorine	0	0.09	0.09
Formaldehyde	0.49	0.54	0.05
Hexavalent Chromium	0	0.05	0.05
Hydrogen Chloride	0	2.03	2.03
Lead	0	0.05	0.05
Manganese	0	0.22	0.22
POM/PAH	0.13	0.05	-0.08
Styrene	0	0.21	0.21
pc 10/18/11	0	0	0