From: Air.Pollution Control
To: APC Permitting
Subject: FW: [EXTERNAL] APC 100, 101, and 102 submissions
Date: Friday, April 8, 2022 9:58:45 AM
Attachments: APC 100 Strickland Wood Kiln-signed.pdf
APC 101 Emission Point Strickland-signed.pdf
APC 102 Process or Fuel Burning Strickland-signed.pdf
S&S Firewood LLC - Wood Kiln Data.xlsx

From: S&S Firewood, LLC <sandsfirewoodllc@gmail.com>
Sent: Thursday, April 7, 2022 6:00 PM
To: Air.Pollution Control <Air.Pollution.Control@tn.gov>
Subject: [EXTERNAL] APC 100, 101, and 102 submissions

Good afternoon,
I have attached the APC 100, 101, 102, and calculations of data. Please let me know if there is anything further needed to process. Have a wonderful afternoon!

Thanks,

--

Megan Strickland
S&S Firewood, LLC | Office Manager
phone: 931.691.9191
245 Red Hawk Ln Winchester, TN 37398
w: https://www.sandsfirewood.com/
e: sandsfirewoodllc@gmail.com
fb: https://www.facebook.com/sandsfirewood/

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor, Nashville, TN 37243
Telephone: (615) 532-0554, Email: Air.Pollution.Control@TN.gov

NON-TITLE V PERMIT APPLICATION
FACILITY IDENTIFICATION

Type or print and submit. Attach appropriate source description forms.

SITE INFORMATION

1. Organization's legal name and SOS control number [as registered with the TN Secretary of State (SOS)]
S&S Firewood LLC - 001276137

2. Site name (if different from legal name)
S&S Firewood LLC

3. Is a construction permit application fee being submitted? Yes ☐ No ☐
(see instructions for appropriate fee to submit)

4. Site address (St./Rd./Hwy.)		County name
245 Red Hawk Lane		Franklin
City	Zip code	**5.** NAICS or SIC code
Winchester	37398	321999

6. Site location (in lat. /long.)	Latitude	Longitude
	35.180810	-86.209170

CONTACT INFORMATION (RESPONSIBLE PERSON)

7. Responsible person/Authorized contact			Phone number with area code
James Michael Strickland			931-446-6525
Mailing address (St./Rd./Hwy.)			Fax number with area code
245 Red Hawk Lane			N/A
City	State	Zip code	Email address
Winchester	TN	37398	mstrickland2208@gmail.com

CONTACT INFORMATION (TECHNICAL)

8. Principal technical contact			Phone number with area code
Christopher Strickland			931-691-9313
Mailing address (St./Rd./Hwy.)			Fax number with area code
245 Red Hawk Lane			N/A
City	State	Zip code	Email address
Winchester	TN	37398	sweetandsunnyfarms@gmail.com

CONTACT INFORMATION (BILLING)

9. Billing contact			Phone number with area code
Megan Strickland			931-691-9191
Mailing address (St./Rd./Hwy.)			Fax number with area code
245 Red Hawk Lane			N/A
City	State	Zip code	Email address
Winchester	TN	37398	sandsfirewoodllc@gmail.com

AIR CONTAMINANT SOURCE(S) INFORMATION

10. Description of air contaminant source(s) and Unique Source ID(s). List, identify, and briefly describe process emission sources, fuel burning installations, and incinerators that are contained in this application and include a Unique Source ID for each source. The Unique Source ID is a name/number/letter, which uniquely identifies the air contaminant source(s), like Boiler #1, Paint Line #1, Engine #1, etc. (see instructions for more details)

Wood-fired kiln for drying of wood for firewood as a product. Provides radiant heat via hot water radiant piping to buildings for drying wood.

Wood-fired Kiln #1

11. Is the air contaminant source(s) in a nonattainment area? If "Yes", then minor source BACT must be addressed. Yes ☐ No ☑

12. Normal operation:	Hours/Day 9	Days/Week 6	Weeks/Year 50	Days/Year 300
13. Percent annual throughput	Dec. – Feb. 30%	March – May 20%	June – August 20%	Sept. – Nov. 30%

TYPE OF PERMIT REQUESTED (check appropriate box)

14. Operating permit ☐	Date construction started	Date completed	Date of ownership change (if applicable)
	Last permit number(s)	Emission Source Reference Number(s)	
Construction permit ☑	Last permit number(s)	Emission Source Reference Number(s)	

If you chose Construction permit above, then choose either New Construction, Modification, or Location Transfer

New Construction ☑	Starting date	Completion date
Modification ☐	Date modification started or will start	Date completed or will complete
Location Transfer ☐	Transfer date	Address of last location

15. Describe changes that have been made to this equipment or operation(s) since the last construction or operating permit application:

New application. Application being submitted due to request of APC and per complaint investigation. Source emissions as calculated indicate source is an insignificant source of air emissions. However, as it can be considered a wood-fire boiler, 40 CFR 63 Subpart JJJJJ National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers.

16. Comments

Source is used for heating water which is piped into greenhouse style building for providing radiant heat for heat treatment of wood for use as firewood. Firewood and used pallets are burned in the wood-fired kiln. All wood used is pine (listed as white pine per Engineering Toolbox options). Source averages 1/3 rick/day with a maximum of 1/2 rick/day. Due to wood being planned to be used as firewood, size of wood would average 16 inches in length in order to best fit in fireplaces. As such, rick would be considered a face cord and less than the 128 cubic feet of wood within a full cord which is a 4 feet high, 8 feet long, and 4 feet deep stack of wood. A face cord is approximately 1/3 of a full cord.

Emission factors from AP-42 Chapter 1.6 and considered as no controls. Emission calculations indicate source should be considered an insignificant source of air emissions. However, it can be considered a wood-fire boiler, 40 CFR 63 Subpart JJJJJ National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers.

SIGNATURE

Based upon information and belief formed after a reasonable inquiry, I, as the responsible person of the above mentioned facility, certify that the information contained in this application is accurate and true to the best of my knowledge. As specified in TCA Section 39-16-702(a)(4), this declaration is made under penalty of perjury.

17. Signature (application must be signed before it will be processed)		**Date**
		04/07/2022
Signer's name (type or print)	**Title**	**Phone number with area code**
James Michael Strickland	CEO	931-446-6525

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NON-TITLE V PERMIT APPLICATION
EMISSION POINT DESCRIPTION

Type or print and submit for each stack or air contaminant source. Submit with the APC 100.

GENERAL IDENTIFICATION AND DESCRIPTION

1. Organization's legal name and SOS control number [as registered with the TN Secretary of State (SOS)]
S&S Firewood LLC - 001276137

2. Unique Source ID (name/number/letter which uniquely identifies this air contaminant source, like Boiler #1)
Wood-fired Kiln #1

3. Unique Emission Point ID (name/number/letter which uniquely identifies this emission point, like Stack #1)
Wood-fired Kiln #1

4. Brief description of air contaminant source (Attach a diagram if appropriate):
Wood-fired kiln for drying of wood for firewood as a product. Provides radiant heat via hot water radiant piping to buildings for drying wood.

5. Emission point location	Latitude	Longitude	**6. Distance to nearest property line (Ft.)**
	35.180810	-86.209170	70ft

STACK AND EMISSION DATA

7. Stack or emission point data: →	Height above grade (Ft.)	Diameter (Ft.)	Temperature (°F)	% of time over 125°F	Direction of exit (Up, down or horizontal)
	35ft	1ft			Up

Data at exit conditions: →	Flow (actual $Ft.^3$/Min.)	Velocity (Ft. /Sec.)	Moisture ($Grains/Ft.^3$)	Moisture (Percent)

Data at standard conditions: →	Flow (Dry std. $Ft.^3$/Min.)	Velocity (Ft. /Sec.)	Moisture ($Grains/Ft.^3$)	Moisture (Percent)

8. Monitoring device and recording instrument (check all that apply):

Opacity monitor	SO_2 monitor	NO_X monitor	Strip chart	Electronic data logger	Other (specify in comments)	No monitor (none)
☐	☐	☐	☐	☐	☐	☑

9. Control device. Description of proposed monitoring, recordkeeping, and reporting to assure compliance with emission limits. Include operating parameters of control device (flow rate, temperature, pressure drop, etc.).
Currently just monitoring the heat of water inside the boiler with thermocuplers and probes, as well as with the aquastat on the boiler itself.

10. Air contaminants. Emission estimates for each air contaminant emitted from this point should be based on stack sampling results or engineering calculations. Calculations should be attached on a separate sheet. (see instructions for more details)

Air contaminants	Average Emissions (Lbs./Hr.)	Maximum Emissions (Lbs./Hr.)	Concen-tration	Average Emissions (Ton/Yr.)	Potential Emissions (Ton/Yr.)	Emissions Estimation Method Code *	Control Devices *	Control Effi-ciency %
Particulate matter (PM)	0.1342	0.20	**	0.18	0.89	3		
Sulfur dioxide (SO_2)	0.0084	0.01	***	0.01	0.06	3		
Carbon monoxide (CO)	0.2013	0.31	PPM	0.27	1.34	3		
Volatile organic compounds (VOC)	0.0057	0.01	PPM	0.01	0.04	3		
Nitrogen oxides (NO_X)	0.1644	0.25	PPM	0.22	1.09	3		
Hydrogen fluoride (HF)								
Hydrogen chloride (HCl)								
Lead (Pb)								
Greenhouse gases (CO_2 equivalents)								
Hazardous air pollutant (specify) Formaldehyde	0.0015	0.0022		0.0020	0.0098	3		
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Other (specify)								
Other (specify)								
Other (specify)								
Other (specify)								

11. Comments

Source is used for heating water which is piped into greenhouse style building for providing radiant heat for heat treatment of wood for use as firewood. Firewood and used pallets are burned in the wood-fired kiln. All wood used is pine (listed as white pine per Engineering Toolbox options). Source averages 1/3 rick/day with a maximum of 1/2 rick/day. Due to wood being planned to be used as firewood, size of wood would average 16 inches in length in order to best fit in fireplaces. As such, rick would be considered a face cord and less than the 128 cubic feet of wood within a full cord which is a 4 feet high, 8 feet long, and 4 feet deep stack of wood. A face cord is approximately 1/3 of a full cord.

Emission factors from AP-42 Chapter 1.6 and considered as no controls. Emission calculations indicate source should be considered an insignificant source of air emissions. However, it can be considered a wood-fire boiler, 40 CFR 63 Subpart JJJJJJ National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers.

SIGNATURE

If this form is being submitted at the same time as an APC 100 form, then a signature is not required on this form. Date this form regardless of whether a signature is provided. If this form is NOT being submitted at the same time as an APC 100 form, then a signature is required.

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12. Signature		**Date**
		04/07/2022
Signer's name (type or print)	**Title**	**Phone number with area code**
James Michael Strickland	CEO	931-446-6525

* Refer to the tables in the instructions for estimation method and control device codes.

** Exit gas particulate matter concentration units: Process – Grains/Dry Standard Ft^3 (70^0F), Wood fired boilers - Grains/Dry Standard Ft^3 (70^0F), all other boilers – Lbs. /Million BTU heat input.

*** Exit gas sulfur dioxide concentrations units: Process – PPM by volume, dry bases, and boilers – Lbs. /Million BTU heat input

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NON-TITLE V PERMIT APPLICATION
PROCESS OR FUEL BURNING SOURCE DESCRIPTION

Type or print. Submit with the APC 100.

GENERAL IDENTIFICATION AND DESCRIPTION

1. **Organization's legal name and SOS control number** [as registered with the TN Secretary of State (SOS)]	2. **Emission Source Reference Number**
S&S Firewood LLC - 001276137	

3. Is this air contaminant source subject to an NSPS or NESHAP rule? Yes ☑ No ☐
If Yes, list rule citation, including Part, Subpart, and applicable Sections:

40 CFR 63 Subpart JJJJJJ NESHAP for Industrial, Commercial, and Institutional Boilers

4. **Unique Source ID** (see instructions)	5. **Unique Emission Point ID** (see instructions)
Wood-fired Kiln #1	Wood-fired Kiln #1

6. Description of air contaminant source

Wood-fired kiln for drying of wood for firewood as a product. Provides radiant heat via hot water radiant piping to buildings for drying wood.

7. Type of air contaminant source (Check only one option to the right)

Process Emission Source: For each process emission source, submit a separate application. (Check at right and complete lines 8, 9, and 14)	☐
Process Emission Source with in process fuel: Products of combustion contact materials heated. For each process emission source, submit a separate application. (Check at right and complete lines 8 through 14)	☐
Non-Process fuel burning source: Products of combustion do not contact materials heated. Complete this form for each boiler or fuel burner and complete a Non-Title V Emission Point Description Form (APC 101) for each stack. (Check at right and complete lines 10 through 14)	☑

PROCESS EMISSION SOURCE DESCRIPTION AND DATA

8. **Type of operation:** Continuous ☐ Batch ☑	Normal batch time 72 hours	Normal batches/day 1 per every 3 days

9. **Process material inputs and In-process solid fuels**	Diagram reference	Input rates (pounds/hour) Design	Actual
A. Wood			
B.			
C.			
D.			
E.			
F.			
G.			
Totals			

* A simple process flow diagram must be attached.

DESCRIPTION OF BOILER, BURNER, ENGINE, OR OTHER FUEL BURNING SOURCE

10. Boiler or burner data: (Complete lines 10 through 14 using a separate form for each boiler, burner, etc.)

Serial Number	Type of firing***
620037	wood (hast to be started by someone manually)

Rated horsepower	Rated input capacity (10^6 BTU/Hr.)	Other rating (specify capacity and units)
N/A	0.51 MMBTU/hr.	N/A

Date constructed	Date manufactured	Date of last modification (explain in comments below)
set in place where currently 01/01/2022	N/A	added longer stack 03/22/2022

** Source with a common stack will have the same stack number.

*** Cyclone, spreader (with or without reinjection), pulverized (wet or dry bottom, with or without reinjection), other stoker (specify type, hand fired, automatic, or other type (describe below in comments).

FUEL USED IN BOILER, BURNER, ENGINE, OR OTHER FUEL BURNING SOURCE

11. Fuel data: (Complete for a process emission source with in process fuel or a non-process fuel burning source)

Primary fuel type (specify) Wood — Standby fuel type(s) (specify)

Fuels used	Annual usage	Hourly usage		% Sulfur	% Ash	BTU value of fuel		(For APC use only) SCC code
		Design	Average					
Natural gas:	10^6 Cu. Ft.	Cu. Ft.	Cu. Ft.	////////// //////////	///// /////	1,000		
#2 Fuel oil:	10^3 Gal.	Gal.	Gal.		///// /////			
#5 Fuel oil:	10^3 Gal.	Gal.	Gal.		///// /////			
#6 Fuel oil:	10^3 Gal.	Gal.	Gal.		///// /////			
Coal:	Tons	Lbs.	Lbs.					
Wood:	Tons 638.55	Lbs. 79.63	Lbs. 52.56	////////// //////////	///// /////	6383/lb		
Liquid propane:	10^3 Gal.	Gal.	Gal.	//////// //////////	///// /////	85,000		
Other (specify type & units):								

12. If Wood is used as a fuel, specify types and estimate percent by weight of bark

0% bark

13. If Wood is used with other fuels, specify percent by weight of wood charged to the burner.

14. Comments

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15. Signature		**Date**
		04/07/2022
Signer's name (type or print) James Michael Strickland	**Title** CEO	**Phone number with area code** 931-446-6525

Company:	S&S Firewood LLC
System:	Wood fired boiler
Boiler #1	Wood kiln dryer
Material burned	Wood waste

Hours of operation	9.00	Hours/Day	Facility operates 10 hours/day, Boilers are run 24 hours/day. Boilers are interchangeably run in low fire hold, rotating on a monthly basis.
Hour of operation	2700.00	hours/year	Facility operates 6 days/week, 50 weeks/year
Avg. Rate of fuel consumption:	0.33	Rick/day	Max wood is 1/2 rick/day. Avg is 1/3 (ranges from 1/2 to 1/4 rick/day)
Rick to Cord conversion	0.33	cord per rick	A cord is 128 cubic feet of wood, usually 4 feet x 8 feet x 4 feet. A rick is usually 4 feet x 8 feet, but often only 16 inches deep so as to fit into a fireplace.
Avg. Rate of fuel consumption:	0.11	cord/day	
Avg. Rate of fuel consumption:	0.24	Ton/Day	Pine weighs 2.15 tons/cord.
Avg. Rate of fuel consumption:	0.03	Ton/hour	
Total yearly fuel usage:	638.55	tons of wood/year	
Wood Heating value	0.0064	MMBTU/lb.	Calculated with values from https://www.engineeringtoolbox.com/wood-combustion-heat-d_372.html
Boiler rating		hp	
Boiler rating	0.51	MMBTU/hr.	
Max wood usage	0.04	tons/hr.	Based on amount used and weight of pine/cord (https://www.revenue.nh.gov/mun-prop/property/documents/timber-conversion-formulas.pdf)

Wood is logs or used pallets, no bark with a 8% moisture content. This is considered dry wood. Wood is Pine

Wood	Heating value MMBTU/cord	Weight/cord	Heating value MMBTU/lb.	Percentage of use	
Pine, White	14.3	2240	0.0064	100%	MMBTU/cord: https://www.engineeringtoolbox.com/wood-combustion-heat-d_372.html

Emissions (factors from AP-42 1.6 Wood Residue Combustion. Dry wood, no controls)

	Emission factor (lbs./MMBTU)	Emission Factor (lbs./ton of wood)	Average emission (lbs./hr.)	Average yearly emissions (tons/year)	Max Emissons (lbs./hr.)	Potential to Emit (Tons/year)
Particulates	0.400	5.1071	0.134204365	0.18	0.20	0.89
NOx	0.490	6.2563	0.164400347	0.22	0.25	1.09
SO2	0.025	0.3192	0.008387773	0.01	0.01	0.06
CO	0.600	7.6607	0.201306548	0.27	0.31	1.34
VOC	0.017	0.2171	0.005703686	0.01	0.01	0.04
CO2	195.000	2489.7321	65.42462798	88.32	99.13	434.18
Total Criteria pollutants				0.69		3.41

Hazardous Air Pollutants

	Emission factor (lbs./MMBTU)	Emission Factor (lbs./ton of wood)	Average emission (lbs./hr.)	Average yearly emissions (tons/year)	Max Emissons (lbs./hr.)	Potential to Emit (Tons/year)
Acetaldehyde	0.0008	0.0106	0.0003	0.0004	0.0004	0.0018
Acetophenone	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Acrolein	0.0040	0.0511	0.0013	0.0018	0.0020	0.0089
Benzene	0.0042	0.0536	0.0014	0.0019	0.0021	0.0094
Bis-(2-Ethylhexyl) phthalate	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Carbon tetrachloride	0.0000	0.0006	0.0000	0.0000	0.0000	0.0001
Chlorine	0.0008	0.0101	0.0003	0.0004	0.0004	0.0018
Chlorobenzene	0.0000	0.0004	0.0000	0.0000	0.0000	0.0001
Chloroform	0.0000	0.0004	0.0000	0.0000	0.0000	0.0001
2,4-Dinitrophenol	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Ethylbenzene	0.0000	0.0004	0.0000	0.0000	0.0000	0.0001
Formaldehyde	0.0044	0.0562	0.0015	0.0020	0.0022	0.0098
Ethyl dibromide	0.0001	0.0007	0.0000	0.0000	0.0000	0.0001
Naphthalene	0.0001	0.0012	0.0000	0.0000	0.0000	0.0002
Pentachlorophenol	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Phenol	0.0001	0.0007	0.0000	0.0000	0.0000	0.0001
Propionaldehyde	0.0001	0.0008	0.0000	0.0000	0.0000	0.0001
Styrene	0.0019	0.0243	0.0006	0.0009	0.0010	0.0042
Toluene	0.0009	0.0117	0.0003	0.0004	0.0005	0.0020
Methyl Chloroform	0.0000	0.0004	0.0000	0.0000	0.0000	0.0001
2,4,6 Trichlorophenol	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vinyl Chloride	0.0000	0.0002	0.0000	0.0000	0.0000	0.0000
Xylene	0.0000	0.0003	0.0000	0.0000	0.0000	0.0001
Arsenic	0.0000	0.0003	0.0000	0.0000	0.0000	0.0000
Beryllium	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Cadmium	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000
Chromium	0.0000	0.0003	0.0000	0.0000	0.0000	0.0000
Cobalt	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000
Lead	0.0000	0.0006	0.0000	0.0000	0.0000	0.0001
Manganese	0.0016	0.0204	0.0005	0.0007	0.0008	0.0036
Mercury	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Nickel	0.0000	0.0004	0.0000	0.0000	0.0000	0.0001
Antimony	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000
Selenium	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Formaldehyde is highest single HAP emitted
Potential to emit: 19.59 lbs.