**IN THE UNITED STATES DISTRICT COURT**
**FOR THE EASTERN DISTRICT OF TEXAS**
**LUFKIN DIVISION**

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| SIERRA CLUB<br>and DUSTIN STAFFORD, | §<br>§<br>§ | |
| Plaintiffs, | §<br>§ | Civil Action No. |
| v. | §<br>§ | |
| WOODVILLE PELLETS, LLC, | §<br>§ | JURY DEMANDED |
| Defendant. | §<br>§ | |

**COMPLAINT**

Sierra Club and Dustin Stafford (collectively, "Plaintiffs") file this Original Complaint (the "Complaint") against Woodville Pellets, LLC ("Woodville Pellets" or "Defendant") and in support show the following:

## I. NATURE OF ACTION

1. Plaintiffs bring this action against Woodville Pellets under the citizen suit provision of the Federal Clean Air Act, as amended, 42 U.S.C. § 7401 *et seq.* (the "Clean Air Act" or the "Act"). 42 U.S.C. § 7604.

2. This suit relates to continuing and past violations of the Clean Air Act at Woodville Pellets' wood pellet manufacturing facility at 164 County Road 1040, Woodville, Texas 75979 (the "Facility").

3. As a necessary byproduct of wood pellet production, the Facility emits large amounts of volatile organic compounds ("VOCs"), particulate matter ("PM"), hazardous air pollutants

("HAPs"), nitrogen oxides, sulfur dioxide, and carbon monoxide. These emissions are subject to regulation under State Implementation Plan ("SIP") Permit No. 98014.

4. The Facility has been out of compliance with the Clean Air Act and Texas' federally enforceable SIP each day it has operated since it began operating in 2013, primarily because key units emit more than 500 tons of unpermitted VOCs and dozens of tons of unpermitted HAPs per year when operating. The previous owner acknowledged the excess VOC emissions in 2015 and, in 2018, agreed to install additional air pollution control technology to remedy the noncompliance. Instead of bringing the plant into compliance as quickly as possible after acquiring the plant on June 18, 2019, however, Woodville Pellets will not even *begin* construction of the air pollution controls needed to achieve compliance with VOC and HAP limits until April 2022. Further, Woodville Pellets has not committed to a firm date for when the control will be installed and operating. Without that additional control technology installed and operating, the Facility continues to violate the Clean Air Act and the Texas SIP each day it operates.

5. As a separate issue, since acquiring the Facility, Woodville Pellets has utilized "bypass stacks" on dozens of occasions to circumvent existing and effective air pollution controls that reduce emissions from the Facility's furnaces and wood dryers. The Facility's SIP Permit does not authorize use of these bypass stacks. When Woodville Pellets uses the bypass stacks, it emits large amounts of PM, VOCs, HAPs, nitrogen dioxides, carbon monoxide, sulfur dioxide, smoke, and soot from the Facility's furnaces and wood dryers directly to the atmosphere. These releases from uncontrolled and unpermitted bypass events often last many hours, harming the health and welfare of the surrounding community.

6. By this suit, Plaintiffs seek injunctive relief, imposition of civil penalties, and associated costs of the litigation (including court costs, attorney's fees, and expert witness fees and costs) for

the Defendant's repeated violations of emissions standards in its permit issued pursuant to Sections 110 and 112 of the Clean Air Act. 42 U.S.C. §§ 7610, 7412.

## II. PARTIES

### A. PLAINTIFFS

7. Plaintiff Sierra Club sues on behalf of its members. The Sierra Club is a non-profit public interest organization organized under the laws of the State of California, with its principal offices in San Francisco, California. The Lone Star Chapter is dedicated to protecting Texas' natural resources, the health of its people, and preserving the state's many beautiful and unique natural landscapes. In this matter, the Sierra Club seeks to protect the air quality in and around Woodville to protect its members' health and their ability to safely pursue and enjoy outdoor activities in the Woodville area.

8. Dustin Stafford is an individual and resident of the State of Texas, who lives and resides at 888 Country Road 4260, Woodville, Texas, 75979, located in Tyler County, Texas. Stafford is a "citizen" and a person as defined under the Clean Air Act, Section 302(e). 42 U.S.C. § 7602(e). Dustin Stafford is also a member of the Sierra Club.

9. In addition to Dustin Stafford, Sierra Club has multiple other members who live or spend significant time in close proximity (less than 3.5 miles) to Woodville Pellets (hereafter, "Sierra Club's members"), including several who live close enough that the visible plume from the facility frequently passes over their homes.

10. The individual citizen and Sierra Club's members reside, own property, breathe the air, and/or use areas near the Facility in Woodville, Texas. They use and enjoy the benefits of natural resources into which Defendant has emitted, and continues to emit air pollutants, including substantial levels of unpermitted PM, VOCs, HAPs, smoke, soot, and wood dust. The interests of

the individual citizen and Sierra Club's members have been, are being, and will be adversely affected by Defendant's emission of pollutants into the air in violation of its SIP Permit and of federally enforceable air pollution standards.

**B. DEFENDANT**

11. Defendant Woodville Pellets, LLC is a limited liability company organized under the laws of the State of Delaware. Woodville Pellets, LLC may be served with process through its registered agent for service of process, C.T. Corporation System, at 1999 Bryan St., Ste. 900, Dallas, Texas 75201-3136. Since June 18, 2019, Woodville Pellets has owned and operated the wood pellet manufacturing facility at issue after it purchased the Facility from the previous owner and operator, German Pellets Texas, LLC ("German Pellets").

12. Woodville Pellets is a "person" within the meaning of Section 302(e) of the Clean Air Act. 42 U.S.C. § 7602(e).

**C. SERVICE TO OTHER REQUIRED PARTIES**

13. The U.S. Attorney General and the U.S. EPA Administrator will be served with a copy of this Complaint as required by the citizen suit provisions of the Clean Air Act. 42 U.S.C. § 7604(c)(3).

**D. EFFECTS OF WOODVILLE PELLETS' UNPERMITTED AIR POLLUTION ON PLAINTIFFS**

14. Woodville Pellets operates its Facility in Woodville, Texas, which has an estimated population of 2,614 and covers approximately 3.21 square miles for its city limits.

15. The Facility is the only regulated facility in the Woodville area that emits significant quantities of PM, VOCs, HAPs, nitrogen oxides, and carbon monoxide.

16. Woodville Pellets is subject to regulatory limitations imposed by SIP Permit No. 98014 which lists the type and amount of air pollutants the Facility is allowed to release, while establishing that any air contaminant not named in the permit, or those in excess of the limits

established therein or from emission points other than those authorized therein, are strictly prohibited from being emitted in any volume. These emission restrictions mitigate the potential adverse health and environmental impacts of the Facility's air pollution on the surrounding community.

17. VOCs are gases which may adversely affect the health of those exposed to them in the short and long-term. VOCs combine with nitrogen oxides and sunlight to create ground level ozone and smog; breathing ground level ozone is harmful for any person, but especially for the elderly, children, and those with health issues like asthma. VOCs also directly cause breathing difficulty and irritation to the respiratory system. Finally, VOCs also encompass many harmful toxic or carcinogenic pollutants that are also regulated as HAPs, discussed below.

18. Defendant's unlawful emissions of excess VOCs into the air contributes to elevated levels of VOCs, ground level ozone, and smog in the area surrounding Defendant's Facility, including greater Woodville. The individual citizen and Sierra Club's members have repeatedly and intermittently suffered injury from the Facility's unlawful VOC pollution since it began operating in 2013 and since Defendant acquired the Facility in June 2019.

19. HAPs, also known as air toxics, are those substances which are known or suspected to cause cancer, or other serious health side effects such as birth defects. Specifically, HAPs are pollutants that Congress has listed as toxic or carcinogenic even in small qualities. HAPs emitted from wood pellet processing facilities include acetaldehyde, acrolein, formaldehyde, hydrochloric acid, methanol, phenol, and propionaldehyde.

20. The Facility's current SIP Permit limits emissions of any single HAP to no more than 10 tons per year and limits total HAP emissions to no more than 25 tons per year. The purpose of these limits is to restrict the Facility's emissions to below the "major source" level set forth in

Clean Air Act § 112(a)(1), 42 U.S.C. § 7412(a)(1), thereby enabling the Facility to avoid more stringent HAP control requirements. The Facility is currently exceeding these emission limits on HAPs.

21. These excess emissions of HAPs into the air contribute to elevated levels of HAPs in the area surrounding the Facility. The individual citizen and Sierra Club's members have repeatedly and intermittently suffered injury from the Facility's unlawful HAP pollution since the facility began operating in 2013 and since Defendant acquired the Facility in June 2019.

22. However, neither Woodville Pellets, nor the prior owner German Pellets, have conducted any emissions testing to demonstrate compliance with limits on HAP emissions.

23. The most reliable testing from this industry indicates that the Facility has the potential to emit HAPs at rates far higher than the 10 and 25 ton per year limits. Specifically, Enviva, the largest pellet company in the world, released information based on stack tests at numerous comparable pellet plants that indicate a facility the size of Woodville Pellets' would likely emit around 130 tons of total HAPs per year, including 83 tons per year of methanol, 21 tons per year of acrolein, 14 tons of formaldehyde, and many other HAPs at lower rates.

24. Based on Enviva's comparable emissions data, the Facility has exceeded the applicable limits of 10 tons per year of any individual HAP and 25 tons per year of total HAP on a regular basis and will continue to do so until it installs additional control technology.

25. Dustin Stafford is an individual plaintiff. He has lived within one mile of the Facility since 2013. Mr. Stafford lives, works, recreates, and conducts other activities in Woodville, Texas in proximity to the Facility.

26. Since the Facility began operating in 2013, Mr. Stafford has seen adverse effects on the environment and on the health of himself and members of his community. The Facility produces

both visible air pollution, in the form of smoke, soot, and dust, as well as odors, which impact Mr. Stafford at his home.

27. Since Defendant acquired the facility on June 18, 2019, Mr. Stafford and Sierra Club's members have personally witnessed and documented many "bypass" events when Woodville Pellets emits air pollution directly from its furnaces and wood dryers rather than sending emissions to existing air pollution controls, in violation of the Facility's SIP Permit.

28. When these bypass events occur, visible emissions of PM, smoke, soot, and wood dust from the facility often migrate into the surrounding community, including the homes and properties of Mr. Stafford and Sierra Club's members.

29. Mr. Stafford and Sierra Club's members are able to smell odors from the Facility during these bypass events.

30. Woodville Pellets' unauthorized emissions threaten Mr. Stafford's health and that of his family members. Specifically, Mr. Stafford fears for his own health and that of his family members and pets.

31. Likewise, Woodville Pellets' unauthorized emissions threaten the health of Sierra Club's members, and those members fear for their own health and that of their families.

32. Mr. Stafford, his family, and Sierra Club's members have experienced serious health issues likely related to the Facility's violations of its SIP Permit, the Texas SIP, and the Act. These health issues include both allergies and respiratory problems.

33. In addition to harm to Mr. Stafford, the Facility's permit violations have harmed and will continue to harm his seven-year-old son and Mr. Stafford's mother, who lives next door to Mr. Stafford.

34. Over the winter of 2019-2020, Mr. Stafford developed breathing issues, including a constant runny nose, and a sore, itchy throat. These symptoms persist to the present day and are unlike anything Mr. Stafford has experienced previously.

35. Mr. Stafford has visited a doctor who confirmed he is not suffering from any infection or other identifiable illness. Mr. Stafford believes air pollution from Woodville Pellets causes or aggravates these symptoms.

36. Dustin Stafford has also considered moving away from the Facility because of the impact on both his property values and his health.

37. The Plaintiffs have, with the aid of environmental monitoring organizations, placed air monitors manufactured by Purple Air around the Facility and have also used handheld monitors manufactured by Atmotube to assess the air quality near the Facility. These air monitors have indicated the presence of PM pollution and VOCs in the area and increases in measured rates of PM and VOC that correlate to visible emissions during observed bypass events.

38. Plaintiffs have been injured by Woodville Pellets' unpermitted and uncontrolled release of pollution into the atmosphere. These injuries include, but are not limited to, pollution of their real and personal property, exposure to unhealthy air quality, and fear that the Facility's unlawful pollution is and will adversely impact their health and the health of their family members and pets. Sometimes the conditions are created by the Facility are severe enough that Plaintiffs refrain from outdoor activities.

39. Mr. Stafford and Sierra Club's members near the plant have an interest in seeing the Facility's violations of its SIP Permit, the Texas SIP, and the Act prosecuted so as to preserve their right to the enjoyment of their homes and land without interference and to safeguard their health. Mr. Stafford also has an interest in protecting the health of his son and mother.

40. Based on the authority provided under the Clean Air Act for the Court to issue injunctive relief to prevent emissions in excess of permitted limits, a favorable decision by this Court will force Woodville Pellets to cease, desist, and abate unpermitted air pollution from its Woodville, Texas Facility. Imposition of civil penalties would likewise discourage Woodville Pellets from engaging in future activities that result in the Facility's release of unpermitted air pollution.

## III. AUTHORITY TO BRING SUIT, JURISDICTION, AND VENUE

41. Plaintiffs' action against Woodville Pellets arises under the Clean Air Act for past and ongoing violations of its SIP Permit, the Texas SIP, and the Act. Plaintiffs' action is related to Woodville Pellet's operation of a wood pellet manufacturing facility in Woodville, Texas, which is regulated by the Texas Commission on Environmental Quality ("TCEQ").

42. Plaintiffs have authority to bring the specific claims alleged below under 42 U.S.C. § 7604. Specifically, 42 U.S.C. § 7604(a)(1) authorizes civil action against "any person . . . who is alleged to have violated (if there is evidence that the alleged violation has been repeated) or to be in violation of . . . an emission standard or limitation under this chapter."

43. The Clean Air Act's citizen suit provision defines "emission standard or limitation under this chapter" as to include an "emission limitation, standard of performance or emission standard." 42 U.S.C. § 7604(f)(1). The Act additionally defines "emission standard or limitation under this chapter" to include "any other standard, limitation, or schedule established under any permit issued pursuant to subchapter V [Title V] or under any applicable State implementation plan approved by the Administrator, any permit term or condition." 42 U.S.C. § 7604(f)(4).

44. The specific claims alleged below arise from repeated and ongoing violations of emission limits and standards set forth in SIP Permit No. 98014 issued pursuant to Texas' federally-

approved SIP, and these violations are therefore enforceable under 42 U.S.C. § 7604(f)(1) and (f)(4).

45. Additionally, Woodville Pellets is subject to a Title V operating permit, Federal Operating Permit No. O3609, issued September 17, 2015, which requires that the "[p]ermit holder shall comply the requirements of New Source Review authorizations issued or claimed by the permit holder for the permitted area, including permits," and that requirements of such New Source Review permits "are incorporated by reference into this [Title V] permit as applicable requirements." Federal Operating Permit No. O3609, Condition 7 (Sep. 17, 2015). SIP Permit 98014 is a New Source Review permit that has been incorporated into Federal Operating Permit No. O3609, and therefore violations of the conditions of SIP Permit 98014 are also enforceable through Title V pursuant to 42 U.S.C. § 7604(f)(4).

46. This Court has jurisdiction over the subject matter of this action pursuant to 28 U.S.C. § 1331 (federal question jurisdiction) and 42 U.S.C. § 7604(a) (Clean Air Act jurisdiction). An actual, justiciable controversy exists between Plaintiffs and Defendant Woodville Pellets.

47. The citizen suit provision of the Clean Air Act grants jurisdiction to United States District Courts to issue an injunction remedying violations of the Clean Air Act, to impose appropriate civil penalties for violations of the Clean Air Act, and to award costs of litigation (including reasonable attorney and expert witness fees).

48. Venue is properly vested in the Eastern District of Texas, Lufkin Division, pursuant to Section 304(c)(1) of the Clean Air Act, 42 U.S.C. § 7604(c)(1), as Woodville Pellets' Facility is located in this District.

## IV. NOTICE

49. On May 5, 2020, Plaintiffs Sierra Club and Dustin Stafford (individual) gave notice by certified mail to Woodville Pellets of the violations alleged in this complaint and their intent to sue under the Clean Air Act as required by 42 U.S.C. 7604(b). Plaintiffs also sent copies of the notice letter by certified mail to the United States Environmental Protection Agency ("EPA"), the Regional Administrator of EPA, Region 6, the Director of the TCEQ, and the Attorney General of Texas. A copy of the Notice Letter is attached to the Complaint as Exhibit A and incorporated by reference herein. Certified mail receipts are attached to the Complaint as Exhibit B.

50. The notice letter provided sufficient information to allow Woodville Pellets to identify and attempt to correct its violations of its federally enforceable SIP Permit, the Texas SIP, and the Act.

51. More than sixty days have elapsed since the notice described in the preceding paragraph was properly served, and neither EPA nor TCEQ has commenced diligent prosecution of a civil or criminal action in a court to address the violations.

52. Woodville Pellets has done nothing to stop or reduce its continuing discharge of unpermitted VOCs and HAPs that occur each day the plant operates.

53. The Facility has likewise continued to utilize its unauthorized bypass stacks to emit PM, VOCs, HAPs, nitrogen oxides, carbon monoxide, and sulfur dioxide, smoke, soot, and dust.

54. Finally, Woodville Pellets has not responded to Plaintiffs' invitation to discuss the allegations or possible remedies for the violations identified in the notice letter.

## V. STATUTORY AND REGULATORY BACKGROUND

55. A central purpose of the Clean Air Act is "to protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare and the productive capacity of its population." 42 U.S.C. § 7401(b)(1).

56. To achieve this and other purposes, the states bear primary responsibility under the Clean Air Act for regulating sources of air pollution and attaining ambient air quality standards. *See, e.g.,* 42 U.S.C. §§ 7401 (state responsibility) and 7410 (state implementation plan).

57. Under Section 110(a) of the Clean Air Act, 42 U.S.C. § 7410(a), states implement many of the regulatory requirements of the Clean Air Act under SIPs. SIP provisions must satisfy the requirements of the Clean Air Act before they are approved by EPA. 42 U.S.C. § 7410(k).

58. Section 110 of the Act, 42 U.S.C. § 7410, provides that each state shall adopt and submit for EPA approval a SIP. The SIP is intended to implement, maintain, and enforce national primary and secondary air quality standards with respect to the specific needs of each state. *See, e.g.,* 42 U.S.C. § 7410(a)(2)(C) (explaining that each SIP shall provide for the "regulation of the modification and construction of any stationary source . . . to assure that national ambient air quality standards are achieved.").

59. In general, SIPs consist of state laws, regulations, and permits and must provide for attainment and maintenance of the National Ambient Air Quality Standards. Once approved by EPA, SIPs become federal law and are enforceable by the state, EPA and citizens under the Clean Air Act. 42 U.S.C. § 7410 (approval of SIPs); 42 U.S.C. § 7604(f)(4) (enforceability of SIPs).

60. Texas regulations that have been approved by EPA as part of the state's federally enforceable SIP are identified at 40 C.F.R. § 52.2270. Texas issues permits to new and modified sources of air pollution pursuant to 30 Tex. Admin. Code Chapter 116, which has been approved by EPA into Texas' SIP. 40 C.F.R. § 52.2270(c).

61. In addition to the SIP program, the Clean Air Act's Title V provisions require major stationary sources of air pollution to obtain and periodically renew operating permits which must incorporate all applicable requirements, including those contained in SIP permits. 42 U.S.C. §§

7661-7661f. Conditions of Title V permits are enforceable by citizens under 42 U.S.C. § 7604(f)(4).

62. Section 304(a) of the Clean Air Act, 42 U.S.C. §7604(a), authorizes citizens to bring suit for violation of any "emission standard or limitation" which is in effect under the Act.

63. Section 304(f) of the Act, 42 U.S.C. §7604(f), defines "emission standard or limitation," to include any standard or limitation which is applicable under an approved SIP, any standard or limitation established under Title V, and any requirement under section 112 relating to HAPs.

64. Pursuant to SIP rule 30 Tex. Admin. Code § 116.115, TCEQ issued SIP Permit No. 98014 to the Facility on February 1, 2012. TCEQ most recently amended SIP Permit No. 98014 on March 30, 2020.

65. The Facility's current Title V Operating Permit, Federal Operating Permit No. O3609, issued September 17, 2015, incorporates by reference SIP Permit No. 98014.

66. Woodville Pellets' SIP Permit specifies the volume and type of emissions allowed to be emitted by the Facility. The SIP Permit specifies that any emission in excess of permit limits, from emission points other than those identified in the permit and/or containing contaminants not listed in the permit are violations of the permit.

## VI. FACTS

### A. THE FACILITY AND ITS EMISSIONS

67. Woodville Pellets manufactures wood pellets that are exported overseas to be burned as fuel in power plants.

68. Woodville Pellets is designed to produce approximately 72 tons of pellets per hour and is authorized to operate continuously for 8,000 hours per year.

69. The Facility's annual production capacity is approximately 576,000 tons per year.

70. The Woodville Pellets Facility was constructed by German Pellets beginning in 2012 and began operating in 2013. Woodville Pellets LLC, a subsidiary of Estonia-based Graanul Invest, acquired the facility on June 18, 2019.

71. The manufacturing process involves four main steps, each of which is a significant source of air pollution. First, wood is processed in green (or "wet") hammermills to produce small chips; second, the chips are dried in two large wood dryers heated by two industrial, wood-burning furnaces; third, the chips are again reduced in size in dry hammermills, producing "microchips;" finally, the microchips are pelletized in pellet presses, which raises the temperature of the wood significantly, requiring the use of pellet coolers.

72. From the time the plant was constructed to the present, the Facility has operated several air pollution controls on the various units: the green hammermills, dry hammermills, and pellet coolers each are equipped with cyclones or baghouses for control of PM; these units have no controls to reduce VOC and HAP emissions. The furnaces and dryers vent emissions to a wet electrostatic precipitator for PM control and a regenerative thermal oxidizer ("RTO") for control of VOCs and HAPs.

73. When German Pellets designed and constructed this facility in 2011 and 2012, the industrial wood pellet industry was less than a decade old, and knowledge of emissions, especially VOCs (and by extension, HAPs, because most HAPs at issue are also VOCs), was limited. German Pellets estimated the entire facility would emit just 64 tons of VOCs per year, and therefore sought and received a "minor" New Source Review permit pursuant to 30 Tex. Admin. Code §§ 116.110-116.128 rather than a "major" New Source Review permit pursuant to 30 Tex. Admin. Code §§ 116.160-169. The emissions threshold for triggering major New Source Review applicability for

this type of facility is 250 tons per year of any New-Source-Review-regulated air pollutant, which includes VOCs.

74. In 2014, German Pellets began an audit of its emissions after testing at similar plants showed much higher than expected VOC emissions. In 2015, German Pellets admitted to TCEQ that the Facility actually emitted at least 580 tons of VOCs per year at full production. The additional 516 tons of VOCs were due to previously unknown emissions from the dry hammermills and pellet coolers. These units are frequently referred to as "post-dryer" units because they follow the dryer in the manufacturing process.

75. As a result of the excess VOC emissions, German Pellets and TCEQ recognized that the Facility was emitting vastly higher levels of VOCs than permitted and also that the Facility should have been permitted as a major rather than minor source under the applicable New Source Review provisions.

76. To remedy the noncompliance due to excess VOC emissions, German Pellets agreed to install an additional RTO control on the post-dryer units—the dry hammermills and pellet coolers—but had not begun construction of this control prior to selling the plant to Woodville Pellets.

77. RTOs typically reduce VOC and HAP emissions from dry hammermills and pellet coolers by at least 95%. Accordingly, installation of an RTO on the post-dryer units would reduce Facility-wide VOC emissions to below the 250 ton-per-year major New Source Review threshold, enabling the Facility to avoid complying with major New Source Review requirements.

78. As originally designed and as currently operated, each of the four dry hammermills and each of the two pellet coolers exhaust through individual stacks. With the proposed new RTO, all

of these stacks will be combined and controlled by the new RTO and emitted through a single new RTO stack.

79. Woodville Pellets has not begun construction of the new RTO, but continues to operate the facility.

**B. PERMITTING HISTORY**

80. As the owner and operator of the Facility, Woodville Pellets LLC is in possession of permits issued by TCEQ which authorize a limited release of VOCs, HAPs, and other pollutants.

81. Woodville Pellets is subject to the conditions of SIP Permit No. 98014, first issued in 2012 and most recently amended March 30, 2020.

82. From the initial issuance of the SIP Permit until an April 5, 2019 permit amendment, the SIP Permit did not authorize any VOC or HAP emissions from the green hammermills, dry hammermills, and pellet coolers.

83. The April 5, 2019 permit amendment authorized the construction of the new RTO, incorporated VOC limits for the new RTO, and implemented a facility-wide HAP limit. Neither the April 5, 2019 permit amendment nor the March 30, 2020 amendment authorize the individual dry hammermills and pellet coolers, nor the green hammermills, to emit any VOCs or HAPs.

**C. PROHIBITIONS ON EXCESS EMISSIONS**

84. Special Condition No. 1 of the SIP Permit states that "[t]his permit covers only those sources of emissions listed in the attached table entitled "Emission Sources—Maximum Allowable Emission Rates."

85. General Condition 8 of the SIP Permit states that "[t]he total emissions of air contaminants from any of the sources of emissions must not exceed the values stated on the table attached to the permit entitled "Emission Sources—Maximum Allowable Emission Rates."

86. Texas' federally-approved and federally-enforceable SIP provides that "[t]he total emissions of air contaminants from any of the sources of emissions at a facility must not exceed the values stated on the table attached to the permit." 30 Tex. Admin. Code § 116.115(b)(2)(F), most recently approved by EPA at 77 Fed. Reg. 65,119 (Oct. 25, 2012).

87. In short, any emission of a contaminant that is (a) not listed in the Maximum Allowable Emission Rates ("MAER") table, (b) from a source not identified on the MAER table, or (c) in excess of the rates listed on the MAER table violates the SIP Permit and Texas' SIP. As set forth below, Woodville Pellet's emission of numerous air contaminants has exceeded and continues to exceed the authorized emissions set forth in the MAER table attached to Woodville Pellets' SIP Permit.

## D. WOODVILLE PELLETS' EXCESS EMISSIONS

### *1. Post-Dryer VOC Limits and Emissions.*

88. The MAER table in the current version of the SIP Permit, as amended April 5, 2019 and March 30, 2020, only authorizes a combined VOC emission rate for the dry hammermills and pellet coolers—as controlled by the future RTO—of 6.55 lb/hr and 26.25 tons per year ("tpy") (on a 12-month rolling basis).

89. That limit applies specifically to the new RTO stack, which has not yet been installed.

90. The MAER table in the current version of the SIP Permit does not authorize any VOC emissions from the existing stacks that vent directly from the dry hammermills and pellet coolers.

91. These units in fact emit substantial amounts of VOCs when in operation.

92. Woodville Pellets, in response to a TCEQ investigation, recently referenced stack testing conducted in February 2015, which produced an emission factor of 1.491 lb/ton of pellets. With that emission factor, hourly and annual post-dryer emissions at maximum capacity are 107 lb/hr and 429 tpy, respectively.

93. Alternatively, after German Pellets conducted its audit in 2014 and 2015, the company reported to TCEQ that the post-dryer emission rates from operations at full capacity are as follows:

| Post-Dryer VOC Emissions | | |
|---|---|---|
| Source | Pounds Per Hour | Tons Per Year |
| Dry Mill Ia | 4.32 lb/hr | 17.27 tpy |
| Dry Mill Ib | 4.32 lb/hr | 17.27 tpy |
| Dry Mill Ic | 4.32 lb/hr | 17.27 tpy |
| Dry Mill Id | 4.32 lb/hr | 17.27 tpy |
| Cooler IIa | 55.77 lb/hr | 223.08 tpy |
| Cooler Iib | 55.77 lb/hr | 223.08 tpy |
| Total Emissions: | 128.82 lb/hr | 515.24 tpy |

94. The rates reported by German Pellets to TCEQ are approximately 20% higher than the rates Woodville Pellets reported from the 2015 stack test.

***2. Green Hammermill VOC Limits and Emissions.***

95. Woodville Pellets operates seven green hammermills, permitted as Emission Points No. IIIa through IIIg. The SIP Permit has never authorized any VOC emissions from these units, including the most recently amended version of the permit.

96. Information from other wood pellet plants demonstrates that green hammermills are a significant source of VOC emissions.

97. For instance, most pellet plants that operate green hammermills and are permitted as synthetic minor sources for major New Source Review avoidance (i.e. pellet plants that must limit facility-wide VOC emissions to less than 250 tpy) utilize RTOs to control VOCs from their green hammermills.

98. Based on information and belief, each facility that has conducted stack testing on their green hammermills has shown significant emission rates, as shown below:

| Stack Test Results for VOC Emissions for Green Hammermills | | | |
|---|---|---|---|
| Facility | Emission Factor (lb/oven dried ton) | Emissions at Woodville Pellets Assuming 72 tons/hour Production Rate and 8,000 hours/year | |
| | | Hourly | Annual |
| MRE Crossville | 0.58 | 41.8 lb/hr | 167 tpy |
| Enviva Amory | 0.29 | 20.9 lb/hr | 84 tpy |
| Enviva Sampson | 0.203 | 14.6 lb/hr | 58 tpy |
| Enviva Wiggins | 0.2 | 14.4 lb/hr | 58 tpy |

99. There is no evidence in the permitting record for this Facility that Woodville Pellets' green hammermills operate any differently from or emit fewer VOCs than those at other plants, nor is there any plausible claim that Woodville Pellets' green hammermills emit zero VOCs.

***3. HAP Emissions and Limits***

100. The 2019 amendment to the SIP Permit included, for the first time, facility-wide limits on HAP emissions in the MAER table, limiting emissions of any individual HAP to less than 10 tpy and limiting the total HAP emissions to less than 25 tpy.

101. Prior to the 2019 amendment, the SIP Permit only contained HAP limits for the dryer outlet RTO stack, meaning no other units were authorized to emit any HAPs.

102. Neither German Pellets nor Woodville Pellets have conducted any emissions testing to demonstrate compliance with limits on HAP emissions.

103. The most comprehensive set of emission factors for this industry, however, show that Woodville Pellets' HAP emissions greatly exceed the 10 and 25 tpy limits in the 2019 SIP Permit.

104. Enviva, the largest wood pellet manufacturing company in the world with eight existing plants, has developed emission factors for pellet plants comparable to the Woodville Pellets Facility based on numerous tests at its various facilities.

105. Enviva recently reported, based on those emission factors, that a pellet plant comparable to Woodville Pellets emits 149 tpy of total HAPs.

106. Specifically, applying the Enviva emission factors to Woodville Pellets' operations (at full capacity) show the following emission rates:

| Woodville Pellets Facility-Wide HAP Emissions | | |
|---|---|---|
| Pollutant | Emission Factor (lb/oven dried ton) | Annual Emissions at Full Capacity (576,000 tpy) |
| Total HAPs | 0.454 | 130 tpy |
| Methanol | 0.252 | 72.8 tpy |
| Acrolein | 0.064 | 18.4 tpy |
| Formaldehyde | 0.043 | 12.3 tpy |
| Phenol | 0.033 | 9.6 tpy |
| Propionaldehyde | 0.029 | 8.4 tpy |
| Acetaldehyde | 0.022 | 6.3 tpy |

***4. Dryer and Furnace Bypass Emissions and Limitations***

107. Woodville Pellets' two furnaces and two wood dryers each feature a bypass stack (for a total of four bypass stacks) that, when used, emit air contaminants directly to the atmosphere rather than to the existing pollution controls and the authorized emission point (the authorized emission point is permitted as Emission Point IV, "Dryers 1 and 2 WESP and RTO Stack").

108. None of the four bypass stacks is listed in the MAER table as an authorized emission point, and therefore emissions of any pollutants from these stacks are unauthorized.

109. When Woodville Pellets utilizes the bypass stacks, the Facility emits VOCs, HAPs, PM, nitrogen oxides, carbon monoxide, and sulfur dioxide through the bypass stacks rather than through the existing, effective pollution control technology installed on the furnaces and dryers.

110. Without the use of the pollution control technology, emissions of VOCs and HAPs from the furnaces and dryers are approximately 20 times higher than normal operations, and PM emissions are approximately 100 times higher than normal operations.

111. Woodville Pellets has utilized its bypass stacks on dozens of occasions since acquiring the Facility.

### E. WOODVILLE PELLETS' OPERATING AND PRODUCTION INFORMATION

112. The precise quantity of Woodville Pellets' excess emissions (other than from bypass events) is dependent on the facility's production rate, in that higher production rates directly cause higher emissions.

113. Woodville Pellets has not made the facility's actual production rates public, other than one report to TCEQ wherein Woodville Pellets states that between April 5, 2019 and January 31, 2020, the facility produced 341,388 tons of pellets. This number was not broken down into hourly, daily, or monthly rates, but works out to an average of 34,501 tons per month, 1,134 tons per day, and 47 tons per hour.

114. Separately, German Pellets reported emission rates to TCEQ covering the period between November 2018 (when the plant restarted operations after being idled for more than a year) and April 2019 indicating the facility had produced approximately 117,155 tons of pellets during that period.

115. Although Plaintiffs do not have access to more refined production rates, those records are maintained by Woodville Pellets.

## VII. CAUSES OF ACTION

### COUNT ONE: VIOLATIONS OF FEDERAL AND STATE PERMITTING REQUIREMENTS FOR UNAUTHORIZED VOC EMISSIONS FROM THE DRY HAMMERMILL AND PELLET COOLER UNITS

116. The Plaintiffs hereby reallege and incorporate by reference each and every allegation set forth in paragraphs 1 through 115, as if the same were repeated verbatim herein.

#### *1. The Facility is not authorized to emit any VOCs from the Hammermill and Pellet Cooler Units.*

117. The April 5, 2019 SIP Permit Amendment authorizing VOC emissions from the post-dryer units applies only to the RTO emission point; this emission point does not yet exist.

118. No version of the SIP Permit, including the April 9, 2019 SIP Permit nor the most recent March 30, 2020 SIP Permit, has ever authorized the four individual dry hammermills and two pellet cooler stacks to emit VOCs.

119. Accordingly, all VOC emissions from the dry hammermills and pellet coolers are unauthorized and constitute violations of Special Condition No. 1 and General Condition No. 8 of Permit 98014 and the Texas SIP, 30 Tex. Admin. Code § 116.115(b)(2)(F).

120. As discussed above in paragraphs 91-93, both the dry hammermills and pellet coolers in fact emit significant amounts of VOCs. At the full production capacity of 72 tons per hour, the pellet coolers and dry hammermills emit 2,574 pounds of VOCs per day based on the emission factor from the 2015 stack test.

121. Each day Woodville Pellets has operated any of the four dry hammermills (permitted as Emission Point Nos. Ia, Ib, Ic, and Id, and alternatively as Source Name: Dry Mill Filter No. 1 through 4 Baghouse Stacks) since acquiring the plant on June 18, 2019, and each day Woodville Pellets continues to operate any of these dry hammermill units, is an individual violation. Operation of each individual dry hammermill is an individual violation.

122. Each day Woodville Pellets has operated either or both of the two pellet coolers (permitted as Emission Point Nos. IIa and IIb, and alternatively as Source Name: Cooler Air Aspiration Filter No. 1 and No.2 Baghouse Stack) since acquiring the plant on June 18, 2019, and each day Woodville Pellets continues to operate either or both of these pellet cooler units, is an individual violation. Operation of each individual pellet cooler is an individual violation.

123. Although Plaintiffs do not have access to precise production data, at a minimum Woodville Pellets reported to TCEQ that the facility produced 341,388 tons of pellets between April 5, 2019 and January 31, 2020, which equates to an average pellet production rate of 1,134 tons per day.

124. Upon information and belief, Woodville Pellets has operated these post-dryer units on a continuing basis since January 31, 2020.

125. Upon discovery of the specific operating information for these post-dryer units, known to Woodville Pellets, Plaintiffs will be able to determine the dates that these specific violations have occurred.

***2. In the alternative, if the new RTO Stack limits apply, the Facility has exceeded its VOC emission limits for the Hammermill and Pellet Cooler Units on numerous occasions.***

126. Alternatively, if the MAER limits applicable to the yet-to-be-constructed RTO stack set forth in the in the April 2019 version of the Facility's SIP Permit – an hourly limit of 6.55 lb/hr and annual limit of 26.25 tpy (on a 12-month rolling basis) – are considered applicable to emissions vented directly from the Facility's dry hammermill and pellet cooler stacks, Woodville Pellets has exceeded these limits and will continue to do so if the Facility continues operating.

***a. The Facility has exceeded its annual limit for the post-dryer units if the RTO Stack limits apply.***

127. Based on the emission factors reported from the 2015 stack testing, each month the Facility's rolling 12-month pellet production rate exceeds or has exceeded 35,212 tons, Woodville Pellets emits and has emitted VOCs in quantities that exceed the annual MAER VOC limit of 26.25 tpy.

128. Specifically, the 2015 stack testing produced an emission factor for all of the post-dryer units of 1.491 pounds of VOC emissions for every ton of pellets produced. Therefore, when the facility produces 35,212 tons of pellets in a 12-month period, the post-dryer units emit 26.25 tons of VOCs.

129. Based on emissions information provided by German Pellets to TCEQ, when Woodville Pellets acquired the plant in June 2019, the facility's rolling 12-month production rate was at least 117,244 tons based on production between November 2018 and April 2019.

130. The facility then produced 341,388 tons of pellets between April 5, 2019 and January 31, 2020, an average of 34,501 tons per month.

131. Upon information and belief, Woodville Pellets has continued to operate at similar or higher production rates since January 31, 2020.

132. Based upon the foregoing, Woodville Pellets' 12-month rolling production rate has vastly exceeded 35,212 tons in each month since Woodville Pellets acquired the plant on June 18, 2019.

133. Therefore, Woodville Pellets has violated the annual MAER VOC limit each month since acquiring the plant and will continue to violate the annual MAER VOC limit each month the facility's 12-month rolling production rate exceeds the 35,212 tpy threshold.

***b. The Facility has routinely exceeded its hourly limit for both post-dryer units if the RTO Stack limits apply.***

134. Based on the emission factors from the 2015 stack test, each day that the post-dryer units produce or have produce more than 4.39 tons in any single hour, Woodville Pellets' post-dryer VOC emissions exceed the 6.55 lb/hour limit on VOCs emissions.

135. Specifically, the 2015 stack testing produced an emission factor for all of the post-dryer units of 1.491 pounds of VOC emissions for every ton of pellets produced. Therefore, whenever the post-dryer units produce 4.39 tons of pellets in one hour, the post-dryer units emit 6.55 pounds of VOCs.

136. Based on information and belief, the Facility produces far more than 4.39 tons of pellets per hour every hour that it operates under normal circumstances. For instance, the average hourly

production rate between April 5, 2019 and January 31, 2019 was 47 tons per hour, and the facility has the capacity to produce up to 72 tons per hour.

137. As a result, between acquiring the plant and the date of filing, Woodville Pellets has violated the hourly emission limit for VOCs in SIP Permit No. 98014 for thousands of hours based on its operations of the Dry Hammermill and Pellet Cooler Units.

138. Each day the Facility has operated these units at a production rate greater than 4.39 tons per hour is an individual violation.

139. Woodville Pellets has not publicly reported the actual tonnage of pellets the facility has produced on an hourly basis since acquiring the plant, therefore Plaintiffs are unable to provide each specific date of violation.

140. However, upon discovery of the operating information, known to Woodville Pellets, Plaintiffs will be able to determine the dates that these specific violations have occurred.

***3. Relief requested to redress Count One (applicable to each asserted claim under this Count, including the alternative claim)***

141. As described above, Woodville Pellets has repeatedly exceeded the hourly and annual emission standards for VOCs in the Facility's SIP Permit based on its operations of the Dry Hammermill and Pellet Cooler Units. These exceedances violate SIP Permit No. 98014.

142. Defendant's violations of its SIP Permit, the Texas SIP, and the Act are continuing and/or intermittent.

143. Because of this extensive history of violations, Plaintiffs believe and allege that, without the appropriate civil penalties and the issuance of an injunction, Woodville Pellets will continue to violate its SIP Permit, the Texas SIP, and the Act.

144. Woodville Pellets is subject to an injunction ordering it to cease its violations of its SIP Permit, the Texas SIP, and the Act.

145. Woodville Pellets is subject to an assessment of civil penalties for its violations of its SIP Permit, the Texas SIP, and the Act, pursuant to Sections 113(e) and 304(a) and (g), 42 U.S.C. §§ 7413(e) and 7604(a) and (g).

146. For the purpose of assessing the maximum penalty for which Woodville Pellets may be liable, each instance of Woodville Pellets' violation of its SIP Permit, the Texas SIP, and the Act, constitutes a separate violation of Section 304 pursuant to Sections 304(a), 113(b), and 113(e)(2) of the Act, 42 U.S.C. §§ 7604(a), 7413(b)(1) and 7413(e)(2), for each day on which it has occurred, and is presumed to continue for each day and every day on and after the giving of Plaintiffs' notice of intent to sue.

**COUNT TWO: UNLAWFUL VOC EMISSIONS FROM THE GREEN HAMMERMILL UNITS**

147. The Plaintiffs hereby reallege and incorporate by reference each and every allegation set forth in paragraphs 1 through 146, as if the same were repeated verbatim herein.

148. The SIP permit does not authorize any VOC emissions from the seven green hammermills.

149. Because the green hammermills are a significant source of VOCs as described in paragraphs 96-99, each day the plant has operated or operates the green hammermills, Woodville Pellets violates and has violated Special Condition No. 1 and General Condition No. 8 of the SIP Permit and the Texas SIP itself, 30 Tex. Admin Code § 116.115(b)(2)(F).

150. Operation of each of the seven green hammermills (permitted as Emission Point Nos. IIIa through IIIg, and alternatively as Source Name: Wet Mill Aspiration Cyclone No. 1 through 7 Stacks) is an individual violation.

151. Defendant's violations of its SIP Permit, the Texas SIP, and the Act are continuing and/or intermittent.

152. Because of this extensive history of violations, Plaintiffs believe and allege that, without the appropriate civil penalties and the issuance of an injunction, Woodville Pellets will continue to violate its SIP Permit, the Texas SIP and the Act.

153. Woodville Pellets is subject to an injunction ordering Woodville Pellets to cease its violations of its SIP Permit, the Texas SIP, and the Act.

154. Woodville Pellets is subject to an assessment of civil penalties for its violations of its SIP Permit, the Texas SIP, and the Act, pursuant to Sections 113(e) and 304(a) and (g), 42 U.S.C. §§ 7413(e) and 7604(a) and (g).

155. For the purpose of assessing the maximum penalty for which Woodville Pellets may be liable each instance of Woodville Pellets' violation of its SIP Permit, the Texas SIP, and the Act, constitutes a separate violation of Section 304 pursuant to Sections 304(a), 113(b), and 113(e)(2) of the Act, 42 U.S.C. §§ 7604(a), 7413(b)(1) and 7413(e)(2), for each day on which it has occurred, and is presumed to continue for each day and every day on and after the giving of Plaintiffs' notice of intent to sue.

## COUNT THREE: VIOLATIONS OF PERMIT LIMITS ON FACILITY-WIDE HAP EMISSIONS

156. The Plaintiffs hereby reallege and incorporate by reference each and every allegation set forth in paragraphs 1 through 155, as if the same were repeated verbatim herein.

### *1. The Facility has exceeded its Facility-wide HAP emission limits.*

157. The April 5, 2019 SIP Permit Amendment instituted facility-wide limits on total HAP emissions (25 tpy) and individual HAP emissions (10 tpy) for the purpose of restricting the Facility's emissions to below the "major source" level set forth in Clean Air Act § 112(a)(1), 42 U.S.C. § 7412(a)(1).

158. These limits apply facility-wide and on a 12-month rolling basis.

159. Using the Enviva emission factors discussed above in paragraphs 104-106, based on information and belief, Woodville Pellets exceeds the 25 tpy total HAP limits whenever it produces 111,000 tons of pellets or more in a 12-month period.

160. Based on the same Enviva emission factors, the Facility also exceeds the individual HAP limit of 10 tpy whenever 12-month production rates equal or exceed the following amounts: methanol emissions exceed 10 tpy at a production rate of 80,000 tpy, acrolein emissions exceed 10 tpy at a production rate of 315,000 tpy, and formaldehyde emissions exceed 10 tpy at a production rate of 475,000 tpy.

161. Each month the Facility's rolling 12-month production of pellets exceeds or has exceeded any of these production rates, Woodville Pellets violates and has violated the total and/or individual annual HAP limits in Permit 98014, Special Condition No. 1 and General Condition No. 8 of the SIP Permit, and 30 Tex. Admin. Code § 116.115(b)(2)(F).

162. As noted above, Woodville Pellets has a production capacity of approximately 576,000 tpy.

163. While Plaintiffs do not have access to precise production rates, production records submitted to the TCEQ by Woodville Pellets for the period of April 5, 2019 through January 31, 2020 (wherein the facility produced a total of 341,388 tons of pellets during that period) show that, at a minimum, Woodville Pellets has exceeded the MAER limit on total HAPs and the individual HAP limit for methanol and acrolein.

164. Upon information and belief, the Facility has continued operating and producing pellets each month since January 31, 2020.

165. Upon information and belief, the Facility's 12-month rolling production has exceeded 111,000 tons in each month from April 2019 (inclusive) to the present.

166. Upon information and belief, the Facility's total HAP emissions has exceeded the 25 tpy limit on total HAP in each month from June 2019 (inclusive) to the present.

167. Upon discovery of more specific operating information and production rates for the Facility, known to Woodville Pellets, Plaintiffs will be able to identify the specific dates of Defendant's violations of the facility-wide HAP limits for individual HAPs.

***2. In the Alternative, if the Facility-Wide HAP limits do not apply, the Facility has exceeded its HAP Emission Limits for the Green Hammermill, Dry Hammermills, and Pellet Cooler Units.***

168. Alternatively, if the facility-wide 10 tpy and 25 tpy limits do not apply under the theory that those limits are premised on the installation of the new RTO control, then the green hammermills, dry hammermills, and pellet coolers are not authorized to emit *any* amount of HAPs.

169. Each of the units listed in the previous paragraph emit significant amounts of individual HAPs, specifically acetaldehyde, acrolein, formaldehyde, methanol, phenol, and propionaldehyde.

170. Because each of these units in fact emits significant levels of the individual HAPs listed in previous paragraph, each day Woodville Pellets operates and has operated these units it violates and has violated Special Condition No. 1 and General Condition 8 of the SIP Permit and the Texas SIP, 30 Tex. Admin. Code § 116.115(b)(2)(F).

171. Emissions of each individual HAP from each individual unit is an individual violation.

***3. Relief requested to redress Count Three (applicable to each asserted claim under this count, including the alternative claim)***

172. Because of this extensive history of violations, Plaintiffs believe and allege that, without the appropriate civil penalties and the issuance of an injunction, Woodville Pellets will continue to violate its SIP Permit, the Texas SIP, and the Act.

173. Woodville Pellets is subject to an injunction ordering Woodville Pellets to cease its violations of its SIP Permit, the Texas SIP, and the Act.

174. Woodville Pellets is subject to an assessment of civil penalties for its violations of its SIP Permit, the Texas SIP, and the Act, pursuant to Sections 113(e) and 304(a) and (g), 42 U.S.C. §§ 7413(e) and 7604(a) and (g).

175. For the purpose of assessing the maximum penalty for which Woodville Pellets may be liable, each instance of Woodville Pellets' violation of its SIP Permit, the Texas SIP, and the Act, constitutes a separate violation of Section 304 pursuant to Sections 304(a), 113(b), and 113(e)(2) of the Act, 42 U.S.C. §§ 7604(a), 7413(b)(1) and 7413(e)(2), for each day on which it has occurred, and is presumed to continue for each day and every day on and after the giving of Plaintiffs' notice of intent to sue.

**COUNT FOUR: VIOLATIONS OF THE SIP PERMIT RELATED TO UNAUTHORIZED RELEASE OF POLLUTANTS THROUGH THE BYPASS STACKS**

176. The Plaintiffs hereby reallege and incorporate by reference each and every allegation set forth in paragraphs 1 through 175, as if the same were repeated verbatim herein.

177. Woodville Pellets is in violation of Special Condition No. 1 and General Condition No. 8 of the SIP Permit and the Texas SIP itself, 30 Tex. Admin Code § 116.115(b)(2)(F) each time it utilizes and has utilized the dryer and furnace bypass stacks to release emissions.

178. Based on information and belief, these releases have occurred on or about the dates specified in the table below with a designation of which type of bypass stack Woodville Pellets utilized:

| **Date (on or about)** | **Dryer Bypass Stack Utilized** | **Furnace Bypass Stack Utilized** |
|---|---|---|
| July 5, 2019 | X | |
| July 6, 2019 | X | |
| July 9, 2019 | X | |
| July 13, 2019 | | X |

| **Date (on or about)** | **Dryer Bypass Stack Utilized** | **Furnace Bypass Stack Utilized** |
|---|---|---|
| July 15, 2019 | | X |
| July 24, 2019 | X | |
| July 25, 2019 | X | |
| July 31, 2019 | X | |
| August 2, 2019 | X | |
| August 5, 2019 | X | |
| August 6, 2019 | X | |
| August 9, 2019 | X | |
| September 19, 2019 | X | X |
| September 20, 2019 | X | X |
| September 22, 2019 | | X |
| October 18, 2019 | X | X |
| November 11, 2019 | | X |
| December 29, 2019 | X | X |
| January 3, 2020 | X | |
| January 6, 2020 | X | X |
| January 7, 2020 | | X |
| January 9, 2020 | X | X |
| January 10, 2020 | | X |
| January 21, 2020 | X | X |
| January 22, 2020 | X | |
| January 29, 2020 | | X |
| February 6, 2020 | X | X |
| February 7, 2020 | | X |
| February 9, 2020 | | X |
| February 10, 2020 | | X |
| February 16, 2020 | X | X |
| February 17, 2020 | | X |

| Date (on or about) | Dryer Bypass Stack Utilized | Furnace Bypass Stack Utilized |
|---|---|---|
| February 18, 2020 | X | |
| March 1, 2020 | X | |
| March 16, 2020 | X | X |
| March 17, 2020 | X | |
| March 21, 2020 | X | |
| April 28, 2020 | | X |
| May 24, 2020 | X | X |
| June 11, 2020 | X | X |
| June 8, 2020 | | X |
| July 6, 2020 | X | |
| August 14, 2020 | X | |

179. Upon discovery of more specific operating information for the Facility, known to Woodville Pellets, Plaintiffs will be able to determine additional dates which indicate release of emissions via the dryer or furnace bypass stacks.

180. Because of this extensive history of violations, Plaintiffs believe and allege that, without the appropriate civil penalties and the issuance of an injunction, Woodville Pellets will continue to violate its SIP Permit, the Texas SIP, and the Act.

181. Woodville Pellets is subject to an injunction ordering Woodville Pellets to cease its violations of its SIP Permit, the Texas SIP, and the Act by utilizing the dryer bypass stack or the furnace bypass stack.

182. Woodville Pellets is subject to an assessment of civil penalties for its violations of its SIP Permit, the Texas SIP, and the Act, pursuant to Sections 113(e) and 304(a) and (g), 42 U.S.C. §§ 7413(e) and 7604(a) and (g).

183. For the purpose of assessing the maximum penalty for which Woodville Pellets may be liable each instance of Woodville Pellets' violation of its SIP Permit, the Texas SIP, and the Act, constitutes a separate violation of Section 304 pursuant to Sections 304(a), 113(b), and 113(e)(2) of the Act, 42 U.S.C. §§ 7604(a), 7413(b)(1) and 7413(e)(2), for each day on which it has occurred, and is presumed to continue for each day and every day on and after the giving of Plaintiffs' notice of intent to sue.

**COUNT FIVE: VIOLATION OF SIP RULE 30 TEX. ADMIN. CODE § 101.4 RELATED TO BYPASS STACK RELEASES**

184. The Plaintiffs hereby reallege and incorporate by reference each and every allegation set forth in paragraphs 1 through 183, as if the same were repeated verbatim herein.

185. The Texas SIP, as approved by the EPA, states:

> No person shall discharge from any source whatsoever one or more air contaminants . . . in such concentration and of such duration as are or may tend to be injurious to or to adversely affect human health or welfare, animal life, vegetation or property, or as to interfere with the normal use and enjoyment of animal life, vegetation, or property.

30 Tex. Admin. Code § 101.4, approved by EPA into Texas' SIP at 37 Fed. Reg. 10,895 (May 31, 1972).

186. Since it acquired the Facility in June 2019, when Woodville Pellets uses the Facility's bypass stacks, it emits PM, smoke, soot, and wood dust into the surrounding community. These emissions "adversely affect" human health and welfare and interfere with normal use and enjoyment of nearby properties, including Stafford's property

187. On the dates listed above in Paragraph 178 the Facility emitted PM, smoke, soot, and wood dust from the bypass stacks which interfered with neighbors' normal use and enjoyment of their property and adversely affected human health and welfare.

188. Discovery into Defendants' operating records may reveal additional dates in which the Facility utilized its bypass stacks – either the furnace bypass stacks or dryer bypass stacks – thereby adversely affecting human health and welfare and interfering with the normal use an enjoyment of nearby properties.

189. Residents have documented visible smoke on their property during these events and have ceased recreating outdoors during such events to avoid breathing harmful emissions.

190. Additionally, residents' properties have been repeatedly coated in dust and soot from these events.

191. Further, Residents reasonably believe that their property values will be substantially impacted if these events continue to occur with the frequency and duration observed in the past year.

192. These harms constitute a violation of the SIP's prohibition of emitting air pollution that is "injurious to or to adversely affect human health or welfare, animal life, vegetation or property, or as to interfere with the normal use and enjoyment of animal life, vegetation, or property." 30 Tex. Admin. Code § 101.4.

193. All of these interferences cannot be dismissed as "trifles" or "petty annoyances" but rather must be understood to destroy the comfort of persons owning and occupying neighboring properties. Under these circumstances, these interferences with the use and enjoyment of Plaintiffs' land are unreasonable.

194. As a direct result of these interferences, Plaintiff Stafford and Sierra Club's Members have sustained actual damages as a result of the injury to them individually and their ability to use and enjoy their property.

195. Moreover, despite the Facility's existence since 2012, Woodville Pellets' operation of the Facility beginning in the Summer of 2019 is a change in ownership that constitutes a change in conditions at the Facility.

196. Further, based on information and belief, the prior operator, German Pellets was not utilizing the bypass stacks in this manner in a way that was injurious to or adversely affected human health or welfare, animal life, vegetation or property and interfered with the normal use and enjoyment of animal life, vegetation, or property in violation of Texas SIP Rule, 30 Tex. Admin. Code § 101.4.

## VIII. EXHIBITS

197. Plaintiffs attach and incorporate by reference the following exhibits identified in this Complaint:

Exhibit A Notice of Intent to Sue

Exhibit B Certified Mail Receipts for Notice of Intent to Sue

## IX. JURY DEMAND

198. Plaintiffs, by and through the undersigned, hereby demand a trial by jury on all issues triable under law.

## X. PRAYER FOR RELIEF

**WHEREFORE**, the Plaintiffs pray for judgment against Defendant based on the following prayer:

(a) Declare that Defendant has violated and is in continuing violation of its SIP Permit No. 98014, the Texas SIP, and the Clean Air Act and its applicable regulations;

(b) Permanently enjoin Defendant from operating its Facility in Woodville, Texas in such a manner that will result in further violations its SIP Permit, the Texas SIP, and the Clean Air Act and its applicable regulations;

(c) Order Woodville Pellets to comply with all emission standards and limitations of its SIP Permit, the Texas SIP, and the Clean Air Act and its applicable regulations;

(d) Order the Defendant to take appropriate actions to remedy, mitigate or offset the harm to public health and the environment caused by the violations of the Clean Air Act and its applicable regulations alleged above;

(e) Assess a civil penalty against Defendant of up to $101,430 per day for each violation of its SIP Permit, the Texas SIP, and the Clean Air Act and its applicable regulations, as provided by 42 U.S.C. §§ 7413(e) and 7604(a) and (g), and the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 and 40 C.F.R. § 19.4;

(f) Order Defendants to pay Plaintiffs' reasonable attorney's fees and costs (including expert witness fees and costs) as provided by 42 U.S.C. § 7604(d);

(g) Award Plaintiffs their costs of suit as provided by 42 U.S.C. § 7604(d);

(h) Award pre- and post-judgment interest at the highest rates recoverable under applicable law; and

(i) Grant Plaintiffs any such other and further relief as the Court deems just and proper.

Dated: August 18, 2020.

Respectfully submitted,

*/s/ Patrick J. Anderson*
Patrick J. Anderson (Lead)
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*/s/ Amy Catherine Dinn*
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**LEAD ATTORNEY FOR PLAINTIFF DUSTIN STAFFORD**

# Exhibit A

May 5, 2020

*Via Certified Mail, Return Receipt Requested*

Mr. Raul Kirjanen
CEO and Responsible Official
Woodville Pellets, LLC
164 County Road 1040
Woodville, Texas 75979

Administrator Andrew Wheeler
U.S. Environmental Protection Agency
Mail Code 1101A
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Mr. Bryan Davis
Plant Manager
Woodville Pellets, LLC
164 County Road 1040
Woodville, Texas 75979

Toby Baker
Executive Director
Texas Commission on Environmental Quality
Mail Code 109
P.O. Box 13087
Austin, Texas 78711

**Re: Notice of Intent to Sue for Clean Air Act Violations at Woodville Pellets**

Dear Mr. Kirjanen, Mr. Davis, Administrator Wheeler, and Executive Director Baker:

Pursuant to 42 U.S.C. § 7604(b), we are writing on behalf of the Environmental Integrity Project, the Sierra Club, and Dustin Stafford (the "Citizens") to provide you with notice of intent to file suit for significant, repeated, and ongoing violations of the Clean Air Act at the Woodville Pellets manufacturing facility, located at 164 County Road 1040, Woodville, Texas. Woodville Pellets, LLC owns and operates the facility and is responsible for these violations.

The facility holds Air Permit No. 98014 issued pursuant to Texas' federally approved and federally enforceable state implementation plan (hereafter, the "SIP permit"), as well as Federal Operating Permit No. 03609. The most recent version of the SIP permit establishes hourly and annual limits on emissions of volatile organic compounds ("VOCs") on specified emission units, as well as facility-wide annual limits on hazardous air pollutants ("HAPs"). For sources not subject to an emission limit, the permit does not authorize any emissions.

As discussed below, the Woodville Pellets facility has exceeded these limits and emitted substantial amounts of unauthorized emissions since it was constructed and continues to do so each day the plant operates. Further, the facility has frequently utilized unauthorized bypass stacks which bypass existing pollution controls, sending smoke and other harmful air pollution directly into neighboring communities.

**Background**

When this facility was constructed in 2012, it was limited to just 64 tons of VOC emissions per year. In 2014 and 2015, the prior owners of the plant, German Pellets, began an audit under Texas' Environmental, Health, and Safety Audit Privilege Act,[1] the results of which showed the facility actually emits 580 tons of VOCs per year when operated at the plant's intended production rate. The excess emissions, totaling 515 tons of VOCs per year, were from units known as the dry hammermills and pellet coolers that follow the wood dryers in the manufacturing process (hereafter, the "post-dryer" units). As a result of these emissions, German Pellets conceded the facility as built should have been permitted as a major source subject to Prevention of Significant Deterioration (PSD), rather than minor source permitting.

Five years later, nothing has changed at the plant to reduce these unlawful emissions (nor has the facility obtained a major source PSD permit), although the Texas Commission on Environmental Quality ("TCEQ") has directed the installation of a new pollution control (a regenerative thermal oxidizer, or "RTO") to bring the plant into compliance. Woodville Pellets submitted the winning bid to purchase the facility in May 2019 with full knowledge of this issue (and likely at a discounted price to account for the cost of the new control).[2] Despite that, the company then requested a delay until April 2022 (nearly three years after bidding on the plant) to *begin* installation of the new pollution control and has indicated to TCEQ that it may be seeking to avoid the installation altogether.[3] TCEQ granted this request in March 2020. Notably, many, if not most, of Woodville Pellets' competitors have installed this same control, and in a much faster timeframe.[4] In the meantime, Woodville Pellets continues to operate, and each day the plant operates it emits substantial amounts of unpermitted VOCs from its post-dryer units.

Aside from the facility's dry hammermills and pellet coolers, units known as green (or "wet") hammermills also emit large quantities of unpermitted VOCs. These units are not authorized to emit any VOCs, however emissions testing from numerous other pellet plants show green hammermills emit significant quantities of VOCs. In fact, most of Woodville Pellets' competitors in this industry operate VOC controls on these units due to their substantial VOC emissions (Woodville Pellets does not).

The facility is also currently exceeding emission limits on HAPs, which are pollutants that Congress has listed as toxic or carcinogenic even in small quantities. The facility's current SIP permit limits emissions of any single HAP to no more than 10 tons per year and limits total HAP emissions to no more than 25 tons per year. Notably, this facility has never conducted

[1] Tex. Health & Safety Code, Title 13, Ch. 1101.

[2] Filings in German Pellets' ongoing bankruptcy list a closing date of June 18, 2019.

[3] Woodville Pellets has informed TCEQ that they are looking at alternatives to installing the control required by TCEQ. Apparently the company wishes to utilize a new and unproven technique that involves cooling the wood chips prior to dry hammermilling. Such a control scheme does not exist in this industry in the U.S., nor to our knowledge anywhere else, and we are highly skeptical that such a technique will reduce emissions sufficient to bring the plant into compliance.

[4] For instance, Georgia Biomass came forward to admit excess post-dryer VOCs in June of 2012; Georgia issued a consent order requiring new post-dryer VOC controls in March 2013, and those controls (RTOs/RCOs) were installed and operating by October 2013. That's 15 months from the date of acknowledging the violation to the time the controls were in operation; for comparison, Woodville Pellets seeks to wait a total of 33 months from the date it acquired the plant—and 78 months after the facility acknowledged the noncompliance—to even begin construction on the new control. Further, there is no firm deadline to actually operate the controls thereafter.

compliance testing for HAPs; however, the most reliable testing from this industry indicates Woodville Pellets has the potential to emit more than 130 tons of HAPs per year, meaning the plant has almost certainly exceeded these emission limits on a regular basis and will continue to do so until it installs additional control technology.

Finally, on numerous occasions since acquiring the plant, Woodville Pellets has vented emissions from its furnaces and dryers through unauthorized bypass stacks rather than sending these emissions to the existing and effective pollution controls. When these bypass events occur, the facility sends large quantities of smoke and other harmful, uncontrolled pollution into the surrounding neighborhoods, creating a nuisance condition and impacting the health of numerous individuals.

## I. Woodville Pellets' Emissions and Applicable Emission Standards and Limitations.

Woodville Pellets is subject to the conditions of SIP Permit No. 98014, and Special Condition No. 1 of that permit states that "[t]his permit covers only those sources of emissions listed in the attached table entitled 'Emission Sources – Maximum Allowable Emission Rates,' and those sources are limited to the emission rates and other conditions in the table."[5] General Condition 8 of the SIP permit provides a similar condition.[6] Additionally, Texas' federally-approved and federally-enforceable SIP provides that "[t]he total emissions of air contaminants from any of the sources of emissions [at a facility] must not exceed the values stated on the table attached to the permit." 30 Tex. Admin. Code § 116.115(b)(2)(F), approved by EPA at 77 Fed. Reg. 65,119 (Oct. 25, 2012).

In short, any emissions not listed in the Maximum Allowable Emission Rates ("MAER") table, or emissions that exceed the rates listed therein, are violations of the SIP permit and Texas' SIP. As set out below, Woodville Pellets' emissions of numerous pollutants has exceeded and continue to exceed the authorized emissions in the MAER table attached to Woodville Pellets' SIP permit.

Woodville Pellets is also subject to SIP provision 30 Tex. Admin. Code § 101.4, approved by EPA at 37 Fed. Reg. 10,895 (May 31, 1972), which prohibits emitting air pollution in sufficient quantities to interfere with human health and enjoyment of property. When Woodville Pellets utilizes its bypass stacks, it sends smoke, soot, and air pollution into neighboring communities, violating this provision of the SIP.

### A. Post-Dryer VOC Limits and Emissions.

The MAER table in the current version of the SIP permit, as amended April 5, 2019, only authorizes a combined VOC emission rate for the dry hammermills and pellet coolers of 6.55 lb/hr and 26.25 tpy (on a 12-month rolling basis).[7] That limit applies specifically to the new RTO stack, which has not yet been installed.[8] Prior to that permit amendment, no version of the SIP

[5] TCEQ, Air Permit No. 98014, Special Condition 1 (Issued Feb. 1, 2012, most recently amended Apr. 5, 2019) (hereafter, the "April 2019 SIP Permit").
[6] General Condition 8, "Maximum Allowable Emission Rates," provides that "[t]he total emissions of air contaminants from any of the sources of emissions must not exceed the values stated on the table attached to the permit entitled 'Emission Sources—Maximum Allowable Emission Rates.'"
[7] April 2019 SIP Permit, MAER Table, Emission Point No. Ia-IIb.
[8] *Id.*

permit listed an emission limit for VOCs from the dry hammermills and pellet coolers; thus no VOC emissions were authorized for these units.

After German Pellets conducted its audit in 2014 and 2015, the company quantified the post-dryer emission rates from operations at full capacity as follows:[9]

| Post-Dryer VOC Emissions | | |
|---|---|---|
| Source | Pounds Per Hour | Tons Per Year[10] |
| Dry Mill Ia | 4.32 lb/hr | 17.27 tpy |
| Dry Mill Ib | 4.32 lb/hr | 17.27 tpy |
| Dry Mill Ic | 4.32 lb/hr | 17.27 tpy |
| Dry Mill Id | 4.32 lb/hr | 17.27 tpy |
| Cooler IIa | 55.77 lb/hr | 223.08 tpy |
| Cooler Iib | 55.77 lb/hr | 223.08 tpy |
| Total Emissions: | 128.82 lb/hr | 515.24 tpy |
| MAER Limit in 2019 Amended SIP Permit: | 6.55 lb/hr | 26.25 tpy |

Based on these hourly emission rates, we calculate an emission factor of 1.79 lb/ton of pellets produced by the post-dryer units. This emission factor is based on the hourly emission rates from German Pellets (128.82 lb/hr) divided by an hourly pellet production rate of 72 tons/hour.[11] Because German Pellets considered the production information for its Texas plant to be confidential, this hourly production rate is derived from German Pellets' application for its sister facility, German Pellets Louisiana, which the company labelled as "identical" and which was not covered by confidentiality.[12]

Alternatively, Woodville Pellets, in response to a TCEQ investigation, recently referenced stack testing conducted in February 2015, which produced an emission factor of 1.45 lb/ton of

[9] German Pellets Texas, PSD Application, Appendix A, Emission Calculations, Summary of Hourly Emissions (Oct. 3, 2016).
[10] Assumes 8,000 hours/year per Special Condition 8 of SIP Permit No. 98014.
[11] This emission factor is based on the hourly emission rates from German Pellets (128.82 lb/hr) divided by an hourly pellet production rate of 72 tons/hour. Because German Pellets considered the production information for its Texas plant to be confidential, this hourly production rate is derived from German Pellets' application for its sister facility, German Pellets Louisiana, which the company labelled as "identical" and which was not covered by confidentiality. If the hourly production rate utilized by German Pellets to calculate the above emission rates is lower, then the emission factor would be higher and exceedances of the emission limits would occur at lower production rates.
[12] German Pellets Louisiana, LDEQ Prevention of Significant Deterioration Initial Permit Application (Dec. 2012).

pellets.[13] With that emission factor, hourly and annual emissions at maximum capacity are 105 lb/hr and 419 tpy, respectively.[14]

### B. Green Hammermill VOC Limits and Emissions.

Woodville Pellets operates seven green hammermills, permitted as Emission Points No. IIIa through IIIg. The SIP Permit has never authorized any VOC emissions from these units, including the most recently amended version of the permit.[15] The wood pellet industry as a whole now understands that green hammermills are a significant source of VOC emissions. For instance, most pellet plants that operate green hammermills and are permitted as synthetic minor sources for PSD avoidance (i.e. pellet plants that must limit facility-wide VOC emissions to less than 250 tpy) utilize regenerative thermal oxidizers to control VOCs and HAPs from their green hammermills.[16] Additionally, each facility we are aware of that has conducted stack testing on their green hammermills has shown significant emission rates, as shown below:

| Stack Test Results for VOC Emissions for Green Hammermills | | | |
|---|---|---|---|
| Facility | Emission Factor (lb/oven dried ton) | Emissions at Woodville Pellets Assuming 72 tons/hour Production Rate | |
| | | Hourly | Annual[17] |
| MRE Crossville[18] | 0.31 | 22.3 lb/hr | 89 tpy |
| Enviva Amory[19] | 0.29 | 20.9 lb/hr | 84 tpy |
| Enviva Sampson[20] | 0.203 | 14.6 lb/hr | 58 tpy |
| Enviva Wiggins[21] | 0.2 | 14.4 lb/hr | 58 tpy |

[13] In response to a TCEQ investigation into post-dryer VOC emissions, Woodville Pellets self-reported emission factors from testing conducted February 18, 2015. Email from Sarah Stephens, EHS Manager, Woodville Pellets, to Jillian Layton (Feb. 7, 2020). Based on those emission factors, which sum to 1.421 lb/metric ton of pellets produced, Woodville Pellets exceeds the hourly emission limit when it produces 4.85 tons of pellets per hour, and the annual emission limit when it has produced 38,801 tons of pellets in any 12-month period.

[14] Based on an hourly capacity of 72 tons/hr and an annual capacity of 576,000 tpy.

[15] April 2019 SIP Permit, MAER Table. Note that the MAER table *does* authorize particulate matter emissions, but no other pollutants.

[16] For instance, the following pellet mills control (or are adding controls) for green hammermills VOC emissions: Drax's LaSalle BioEnergy (Louisiana, installed), Enviva Southampton (Virginia, under construction), Enviva Sampson (North Carolina, installed), Enviva Hamlet (North Carolina, installed), Enviva Northampton (North Carolina, under construction), Enviva Greenwood (South Carolina, installed), Enviva Lucedale (Mississippi, under construction), Enviva Epes, under construction).

[17] Assumes 8,000 hours/year per Air Permit No. 98014, Special Condition 8.

[18] Alliance Source Testing, Source Test Report, MRE Crossville (Test Dates July 30 – Aug. 1, 2019), available by searching under Master Id. No. 37531 on Alabama Department of Environmental Management's eFile database, uploaded Oct. 19, 2019. (Excerpt attached as Exhibit A). Emission factor calculated by dividing hourly emission rate of 4.4 lb/hr by average production rate on day of testing, 14.19 tons/hour.

[19] Air Control Techniques, Air Emission Test Report, Enviva Amory (Oct. 31, 2013), available at: https://files.nc.gov/ncdeq/Air%20Quality/permits/files/Wood_Pellets_Industry/Sampson/2017_Enviva_Pellets_Sampson_Cont.pdf. (Excerpt attached as Exhibit B).

[20] Air Control Techniques, Emission Test Report, Enviva Sampson (May 30, 2017), available at: https://drive.google.com/file/d/1ys-nArQySH1zJTiz46juksqfleMVfOed/view?usp=sharing. (Excerpt attached as Exhibit C).

[21] Air Control Techniques, Air Emission Test Report, Enviva Wiggins (Oct. 31, 2013), available at: https://drive.google.com/file/d/1MYejf1j4r603Ts0SBstYeuhV4fmNL13B/view?usp=sharing (Excerpt attached as Exhibit D).

There is no evidence in the permitting record for this facility that Woodville Pellets' green hammermills operate any differently from or emit fewer pollutants than those at other plants, nor is there any plausible claim that Woodville Pellets' green hammermills emit zero VOCs.

### C. HAP Emissions and Limits

The 2019 amendment to the SIP permit implemented, for the first time, facility-wide limits on HAP emissions in the MAER table, limiting emissions of any individual HAP to less than 10 tpy and limiting the total HAP emissions to less than 25 tpy.[22] Prior to the 2019 amendment, the SIP permit only contained HAP limits for the dryer outlet RTO stack, meaning no other units were authorized to emit any HAPs.[23] Neither German Pellets nor Woodville Pellets has ever conducted compliance testing for HAP emissions. The most comprehensive set of emission factors for this industry, however, show that Woodville Pellets' HAP emissions greatly exceed the 10 and 25 tpy limits in the 2019 SIP permit. Enviva, the largest pellet company in the world with eight existing plants, has developed emission factors for pellet plants comparable to Woodville Pellets based on numerous tests at its various facilities.[24] Enviva recently reported, based on those emission factors, that a pellet plant comparable to Woodville Pellets emits 149 tpy of total HAPs (as a result, North Carolina regulators required the company to retroactively conduct a new MACT determination and add new controls).[25] In terms of individual HAP emissions, Enviva calculated that its mill emits 83 tpy of methanol, 21 tpy of acrolein, and 14 tons of formaldehyde, in addition to emissions of many other individual HAPs.[26] The Enviva facility is essentially identical to Woodville Pellets in that it only controls the dryers for VOCs and HAPs; dry hammermills and pelletizers at both plants are uncontrolled.

While the Enviva plant is about 10% larger than Woodville Pellets, these emission factors demonstrate that Woodville Pellets cannot comply with the 10 tpy and 25 tpy unless it severely restricts production far below nameplate capacity. Specifically, applying the Enviva emission factors to Woodville Pellets' operations (at full capacity) show the following emission rates:[27]

[22] April 2019 SIP Permit, MAER Table, "Site-Wide HAPs."
[23] *See, e.g.* the MAER table attached to SIP Permit 98014 as issued June 5, 2015.
[24] Enviva Sampson, PSD Permit Modification for the Softwood Expansion Project, Appendix C, Potential Emission Calculations (Mar. 16, 2018) (hereafter, "Enviva Sampson PSD Application), available at https://files.nc.gov/ncdeq/Air%20Quality/permits/files/Wood_Pellets_Industry/Sampson/Enviva_Sampson_PSD_Application_March_19_2018.pdf. (Excerpt attached as Exhibit E). Enviva has utilized essentially the same emission factors for its Enviva Lucedale application (Mississippi) and Enviva Epes application (Alabama), although the post-dryer units at these two plants are controlled by RTOs/RCOs, so total emission rates are reduced by 95%.
[25] *Id.*; *see also*, Letter from William Willets, Division of Air Quality, North Carolina DEQ, to Steven Schaar, Plant Manager, Enviva Pellets Sampson (Mar. 1, 2019) (Explaining that because the facility originally estimated just 5.93 tpy of HAPs from its pellet coolers but now quantified 120 tpy, the initial case-by-case MACT determination was flawed and that Enviva must redo its initial case-by-case MACT determination).
[26] Enviva Sampson PSD Application., *supra*, note 24, Table 3.
[27] Emission factors calculated by dividing the facility-wide HAP emission rate from the Enviva Sampson PSD Application, *supra*, note 24, by Enviva Sampson's production capacity of 657,000 tpy.

| Woodville Pellets Facility-Wide HAP Emissions | | |
|---|---|---|
| Pollutant | Emission Factor (lb/oven dried ton) | Annual Emissions at Full Capacity (576,000 tpy) |
| Total HAPs | 0.453 | 130 tpy |
| Acrolein | 0.064 | 18.4 tpy |
| Formaldehyde | 0.043 | 12.2 tpy |
| Methanol | 0.253 | 72.8 tpy |

### D. Dryer and Furnace Bypass Emissions and Limitations

Woodville Pellets' two furnaces and two wood dryers each feature a bypass stack (for a total of four bypass stacks) that, when used, emit pollutants directly to the atmosphere rather than to the pollution controls and the authorized emission point (the authorized emission point is permitted as Emission Point IV, "Dryers 1 and 2 WESP and RTO Stack"). None of the four bypass stacks is listed in the MAER table as an authorized emission point, and therefore emissions of any pollutants from these stacks are unauthorized.[28] When Woodville Pellets utilizes the bypass stacks, the facility emits VOCs, HAPs, particulate matter, nitrogen oxides, carbon monoxide, and sulfur dioxide through the bypass stacks.

### E. Texas SIP Condition 30 Tex. Admin. Code § 101.4

The Texas SIP provides the following anti-nuisance provision:

> No person shall discharge from any source whatsoever one or more air contaminants . . . in such concentration and of such duration as are or may tend to be injurious to or to adversely affect human health or welfare, animal life, vegetation or property, or as to interfere with the normal use and enjoyment of animal life, vegetation, or property.

30 Tex. Admin. Code § 101.4, approved by EPA at 37 FR 10895 (May 31, 1972). As discussed below, when Woodville Pellets uses its bypass stacks, it emits smoke, soot, and other pollutants into the surrounding community. These emissions "adversely affect" human health and welfare and interfere with the normal use of neighbors' property.

## II. Specific Violations

### Claim 1: Hourly and Annual VOC Violations at Woodville Pellets' Dry Hammermill and Pellet Cooler Units.

As discussed above, the dry hammermills and pellet coolers emit substantial amounts of VOCs—515 tons per year at full production rates, according to German Pellets' emission quantifications. Woodville Pellets does not hold any permit, including the SIP permit, that authorizes these emissions, or at least not in excess of the MAER limits in the 2019 version of the SIP permit.

[28] TCEQ noted in a recent investigation that these stacks do "not have any authorizations or permits that allow for the release of emissions to the atmosphere," and that "all the emissions [from these stacks] are unauthorized." *See* TCEQ Investigation Report No. 1550259, Track No. 707288 (Mar. 26, 2019).

Because Woodville Pellets has not yet installed the new RTO listed in the 2019 permit, and because the RTO outlet is the specific emission point subject to the MAER VOC limits in that permit, we believe all VOC emissions from the dry hammermills and pellet coolers are unauthorized and constitute violations of Special Condition No. 1 and General Condition No. 8 of Permit 98014 and the Texas SIP, 30 Tex. Admin. Code § 116.115(b)(2)(F). In particular, each day Woodville Pellets has operated these post-dryer units since acquiring the facility on June 18, 2019, and each day the company continues to operate these post-dryer units, are individual violations.

Alternatively, if the MAER limits on the post-dryer units set forth in the most recently-amended version of the SIP permit do apply—6.55 lb/hr and 26.25 tons in any 12-month period—Woodville Pellets has exceeded these limits and will continue to do so if the plant continues operating. Specifically, based on the emission factors from the 2015 stack test,[29] each day that pellet production exceeds or has exceeded 4.85 tons in any single hour, Woodville Pellets violates and has violated the hourly MAER limits on VOCs. Likewise, each month the plant's rolling 12-month pellet production exceeds or has exceeded 38,801 tons, Woodville Pellets violates and has violated the annual MAER limits on VOCs.[30] In fact, Woodville Pellets' 12-month rolling production has exceeded this threshold each month since the company acquired the plant on June 18, 2019 and has therefore violated the annual MAER limits each month since then—as of April 30, 2020, Woodville Pellets' 12-month production rates could be no lower than 341,388 tons.[31] Finally, we note that the emission factors from the 2015 stack test are lower than the emission rates quantified by German Pellets, and therefore exceedances of the MAER limits may occur at even lower production rates.[32]

Because Woodville Pellets has not publicly reported the actual tonnage of pellets the facility has produced on a daily or monthly basis since acquiring the plant, the Citizens are unable to provide each specific date of violations. However, that operating information is known to Woodville Pellets, and the notice provided herein is sufficient for Woodville Pellets to determine the dates that the specific violations alleged in Claim 1 occurred.[33]

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[29] *See*, *supra*, note 13.

[30] Specifically, each day during such month represents an individual violation.

[31] Although the public does not have access to actual production records for individual days or months, emissions records produced by German Pellets for the months of November 2018 through April 2019 show the plant produced approximately 117,155 tons of pellets during that period. This is based on back-calculating production rates by dividing reported emissions of CO, NOx, and SO2 and the emission factors used to report these emissions. Specific months' production rates were approximately as follows: November 2018: 15,010 tons; December 2018: 22,300 tons; January 2019: 14,230 tons; February 2019: 12,047 tons; March 2019: 23,080 tons; April 2019: 30,487 tons. Additionally, Woodville Pellets itself stated that it produced 309,702 metric tons (341,388 short tons) of pellets between April 5, 2019, and January 31, 2020. *See* Email from Sarah Stephens, EHS Manager, Woodville Pellets, to Jillian Layton (Feb. 7, 2020). As such, the rolling 12-month production rate through April 31, 2020 could be no lower than 341,388 tons, and that would not account for any pellets produced after January 31, 2020.

[32] *See supra*, note 9. Based on the German Pellets emission rates as quantified in its PSD application, which sum to 1.79 lb/ton of pellets produced, Woodville Pellets exceeds the hourly emission limit when it produces 3.7 tons of pellets per hour, and exceeds the annual emission limit when it has produced 29,500 tons of pellets in any 12-month period.

[33] This letter provides notice of violations that occurred after Woodville Pellets acquired the plant on approximately June 18, 2019. However, violations of the 12-month rolling emission limits incorporate emissions from the 12 months of operations prior to Woodville Pellets' acquisition.

**Claim 2: VOC Violations at Woodville Pellets' Green Hammermills Units.**

As discussed above, the SIP permit does not authorize *any* VOC emissions from the seven green hammermills. Because green hammermills are in fact significant sources of VOCs, each day the plant has operated or operates the green hammermills Woodville Pellets violates and has violated Special Condition No. 1 and General Condition No. 8 of the SIP permit and the Texas SIP itself, 30 Tex. Admin. Code § 116.115(b)(2)(F). Citizens do not have access to Woodville Pellets' operating records and thus cannot provide each specific date of violations. However, that operating information is known to Woodville Pellets, and the notice provided herein is sufficient for Woodville Pellets to determine the specific dates of the violations alleged in Claim 2.

**Claim 3: Facility-Wide HAP Violations at Woodville Pellets.**

As currently permitted, Woodville Pellets is subject to a 25 tpy emission limit for total HAP emissions and 10 tpy emission limit for any individual HAP emission (both limits are on a 12-month rolling basis).[34] These limits apply facility-wide.[35] Using the Enviva emission factors discussed above, we calculate that Woodville Pellets exceeds the 25 tpy total HAP limits whenever it produces 111,000 tons of pellets or more in a 12-month period.[36] The facility also exceeds the individual HAP limit of 10 tpy whenever 12-month production rates equal or exceed the following amounts: methanol emissions exceed 10 tpy at a production rate of 80,000 tpy, acrolein emissions exceed 10 tpy at a production rate of 315,000 tpy, and formaldehyde emissions exceed 10 tpy at a production rate of 475,000 tpy.[37] Each month the plant's rolling 12-month production of pellets exceeds or has exceeded any of these production rates, Woodville Pellets violates and has violated the total and/or individual annual HAP limits in Permit 98014, Special Condition No. 1 and General Condition No. 8 of the SIP permit, and 30 Tex. Admin. Code § 116.115(b)(2)(F).[38]

While Citizens do not have access to precise production rates, production records submitted by Woodville Pellets for the period of April 5, 2019 through January 30, 2020 (wherein the facility produced 341,388 tons of pellets) show that, at a minimum, Woodville Pellets has exceeded the MAER limit on total HAPs and the individual HAP limit for methanol and acrolein.[39] More specific production and operating information is known to Woodville Pellets, and the notice provided herein is sufficient for Woodville Pellets to determine the specific dates of the violations alleged in Claim 3.

Alternatively, if the facility-wide 10 tpy and 25 tpy limits do not apply under the theory that those limits are premised on the installation of the new regenerative thermal oxidizer control, then the green hammermills, dry hammermills, and pellet coolers are not authorized to emit *any*

[34] April 2019 SIP Permit, MAER Table, "Site-Wide HAPs."
[35] *Id.*
[36] For emission factors, s*ee supra,* note 27. At a production rate of 111,000 tpy, the Enviva emission factor results in a facility-wide emission rate of 25.2 tpy of total HAPs.
[37] *Id.* At a production rate of 80,000 tpy, methanol emissions are 10.1 tpy; at a production rate of 315,000 tpy, acrolein emissions are 10.1 tpy; at a production rate of 475,000 tpy, formaldehyde emissions are 10.1 tpy.
[38] I.e., if the facility's 12-month production rate in a given month is 500,000 tons, then the facility has violated the 25 tpy limit on total HAPs, as well as the individual 10 tpy limit for methanol, acrolein, and formaldehyde emissions, and each pollutant represents separate violations. For every month emissions violate these limits, each day is an individual violation.
[39] *Supra* note 31, explaining that Woodville Pellets itself reported a total pellet production of 341,388 short tons between April 5, 2019 and January 31, 2020.

amount of HAPs.[40] Because each of these units in fact emits significant levels of HAPs,[41] each day Woodville Pellets operates and has operated these units it violates and has violated Special Condition No. 1 and General Condition 8 of the SIP permit and the Texas SIP, 30 Tex. Admin. Code § 116.115(b)(2)(F).

**Claim 4: Woodville Pellets' Unauthorized Release of Pollutants Through its Bypass Stacks Violates its SIP Permit and SIP Rule 30 Tex. Admin. Code § 116.115(b)(2)(F).**

On numerous instances since acquiring the facility, Woodville Pellets has vented furnace and dryer emissions through bypass stacks directly to the atmosphere, bypassing pollution controls designed to reduce particulate matter, VOC, and HAP emissions by 95% or more, and that likely also reduce carbon monoxide emissions significantly. Woodville Pellets' use of these bypass stacks frequently lasts hours and blankets the surrounding community in smoke and other pollutants.

None of these four bypass stacks is listed in the MAER table as an authorized emission point.[42] Therefore each day the plant emits pollutants (specifically, any or all of the following: particulate matter, VOCs, HAPs, nitrogen oxides, carbon monoxide and sulfur dioxide) from these stacks Woodville Pellets violates Special Condition No. 1 and General Condition No. 8 of the SIP permit and the Texas SIP, 30 Tex. Admin. Code § 116.115(b)(2)(F). Because each of these pollutants is regulated separately by TCEQ and by Permit 98014, each unauthorized emission of each pollutant is a separate violation of the permit. Specific alleged violations have occurred on the following dates:[43]

1. On or about July 5 and July 6, 2019 (dryer bypass stacks utilized).

2. On or about July 9, 2019 (dryer bypass stacks utilized).

3. On or about July 13, 2019 (furnace bypass stacks utilized).

4. On or about July 15, 2019 (furnace bypass stacks utilized).

5. On or about July 24, 2019 (dryer bypass stacks utilized).

6. On or about December 29, 2019 (furnace and dryer bypass stacks utilized),

7. On or about January 3, 2020 (dryer bypass stacks utilized),

[40] This is because, prior to the April 2019 amendment, the SIP permit's MAER table only authorized HAP emissions from the dryer outlet stack (EP N. IV); the MAER table attached to prior versions of the SIP permit did not authorize any other units to emit HAPs.

[41] For dry hammermills and pellet coolers, *see* Enviva Sampson PSD Application, *supra*, note 24. For green hammermill HAP emissions, *see* Enviva Wiggins Stack Test Report, *supra*, note 21.

[42] TCEQ noted in a recent investigation that these stacks do "not have any authorizations or permits that allow for the release of emissions to the atmosphere," and that "all the emissions [from these stacks] are unauthorized." *See* TCEQ Investigation Report No. 1550259, Track No. 707288 (Mar. 26, 2019).

[43] Dates of bypass events one through five are from Woodville Pellets' Federal Operating Permit Deviation Report for the period of Mar. 17, 2019 through Oct. 16, 2019. Bypass events six through 19 are based on eyewitness reports.

8. On or about January 7, 2020 (furnace bypass stacks utilized),
9. On or about January 9, 2020 (dryer bypass stacks utilized),
10. On or about January 22, 2020 (dryer bypass stacks utilized),
11. On or about January 29, 2020 (furnace bypass stacks utilized),
12. On or about February 10, 2020 (furnace bypass stacks utilized),
13. On or about February 16, 2020 (furnace and dryer bypass stacks utilized),
14. On or about February 17, 2020 (furnace bypass stacks utilized),
15. On or about February 18, 2020 (dryer bypass stacks utilized),
16. On or about March 16, 2020 (furnace bypass stacks utilized),
17. On or about March 17, 2020 (dryer bypass stacks utilized),
18. On or about March 21, 2020 (dryer bypass stacks utilized),
19. On or about April 28, 2020 (furnace bypass stacks utilized),
20. Any other dates when Woodville Pellets' operating records show the facility emitted pollutants through the furnace or dryer bypass stacks.

**Claim 5: Woodville Pellets' Bypass Stack Releases Violate SIP Rule 30 Tex. Admin. Code § 101.4.**

The Texas SIP provides the following anti-nuisance provision:

> No person shall discharge from any source whatsoever one or more air contaminants . . . in such concentration and of such duration as are or may tend to be injurious to or to adversely affect human health or welfare, animal life, vegetation or property, or as to interfere with the normal use an enjoyment of animal life, vegetation, or property.

30 Tex. Admin. Code § 101.4, approved by EPA at 37 Fed. Reg. 10,895 (May 31, 1972). On the dates listed above under Claim 4, smoke, soot, dust, VOCs, HAPs, and other pollutants emitted from the bypass stacks interfered with neighbors' normal use and enjoyment of their property and adversely affected human health and welfare. Residents have documented visible smoke on their property during these events and have ceased recreating outdoors during such events to avoid breathing harmful emissions. Additionally, residents' properties have been repeatedly coated in dust and soot from these events. Further, residents reasonably believe that their property values will be substantially impacted if these events continue to occur with the

frequency and duration observed in recent months. These harms constitute a violation of the SIP's prohibition of creating a nuisance condition under 30 Tex. Admin. Code § 101.4.

**III. Authority to Bring Suit**

Section 304 of the Clean Air Act authorizes citizens to sue for violations of an "emission standard or limitation under this chapter." 42 U.S.C. § 7604(a)(1). That section defines "emission standard or limitation under this chapter" in relevant part as any "any permit term or condition . . . which is in effect . . . under an applicable implementation plan." *Id.* § 7604(f)(4). As set out above, Woodville Pellets has repeatedly violated and continues to violate Special Condition No. 1 and General Condition 8 of SIP Permit 98014, as well as the SIP rule 30 Tex. Admin. Code § 116.115(b)(2)(F). Those permit conditions and the SIP provision establish that only emissions listed in the MAER table are authorized, and emission rates that exceed the limits therein are violations of the permit and the SIP. Additionally, the unauthorized emissions have caused nuisance conditions in violation of the SIP's anti-nuisance provision, 30 Tex. Admin. Code § 101.4. Each of these provisions is federally enforceable—and therefore subject to citizen suit enforcement—under the Clean Air Act.

Additional information that the Citizens have not been able to obtain before sending this letter, including information in the possession of Woodville Pellets and the most recent deviation reports, may reveal additional details about the violations described above and may reveal additional similar violations of the Clean Air Act at the Woodville Pellets Facility. This letter covers all such violations.

Citizens intend to file suit seeking injunctive relief to require Woodville Pellets to prevent the violations discussed above from continuing to occur, civil penalties, recovery of costs of litigation and attorney's fees, and other appropriate relief as allowed by Clean Air Act § 304. At least 60 days before filing suit, § 304 requires a citizen-suit plaintiff to provide notice of the violation of emission limitations. 42 U.S.C. § 7604(b)(1)(A). This letter is that notice.

Please direct all communication regarding this notice letter to the undersigned. We are happy to discuss any aspect of the allegations in this letter and would like to know if you believe any of the above information is incorrect or if you are interested in discussing a resolution of the violations described in this letter prior to our filing suit.

Respectfully,

/s/ Patrick Anderson

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# Exhibit A

Excerpt of Stack Testing on Green Hammermills at MRE Crossville.

## 2.0 Summary of Results

AST conducted compliance testing at the MRE facility in Crossville, Alabama from July 30 – August 1, 2019. Testing consisted of determining the emission rates of PM and THC at the exhausts of one (1) Green Side Hammermill, one (1) Dry Side Hammermill, and the Dryer System. Testing also included determining the emission rate of THC at the exhaust of the Hammer Hog Cyclone and the combined exhausts for the Pellet Mills and Cooler.

Table 2-1 through Table 2-5 provide summaries of the emission testing results with comparisons to the applicable ADEM permit limits. Any difference between the summary results listed in the following tables and the detailed results contained in appendices is due to rounding for presentation.

**Table 2-1**
**Summary of Results – Green Side Hammermill**

| **Run Number** | **Run 1** | **Run 2** | **Run 3** | **Average** |
|---|---|---|---|---|
| **Date** | **7/31/19** | **7/31/19** | **7/31/19** | **--** |
| **Particulate Matter Data** | | | | |
| Individual Green Side Hammermill Emission Rate, lb/hr | 0.14 | 0.14 | 0.13 | 0.14 |
| Combined Green Side Hammermill Emission Rate, lb/hr | -- | -- | -- | 0.28 |
| **Total Hydrocarbons Data** | | | | |
| Individual Green Side Hammermill Emission Rate, lb/hr | 2.6 | 2.1 | 1.9 | 2.2 |
| Combined Green Side Hammermill Emission Rate, lb/hr | -- | -- | -- | 4.4 |
| ADEM Emission Limit, lb/hr | -- | -- | -- | 3.83 |
| **Percent of Limit, %** | -- | -- | -- | **>100** |

**Table 2-2**
**Summary of Results – Dry Side Hammermill**

| **Run Number** | **Run 1** | **Run 2** | **Run 3** | **Average** |
|---|---|---|---|---|
| **Date** | **8/1/19** | **8/1/19** | **8/1/19** | **--** |
| **Particulate Matter Data** | | | | |
| Individual Dry Side Hammermill Emission Rate, lb/hr | 0.073 | 0.063 | 0.074 | 0.070 |
| Combined Dry Side Hammermill Emission Rate, lb/hr | -- | -- | -- | 0.14 |
| **Total Hydrocarbons Data** | | | | |
| Individual Dry Side Hammermill Emission Rate, lb/hr | 3.8 | 5.1 | 5.3 | 4.7 |
| Combined Dry Side Hammermill Emission Rate, lb/hr | -- | -- | -- | 9.4 |
| ADEM Emission Limit, lb/hr | -- | -- | -- | 3.62 |
| **Percent of Limit, %** | -- | -- | -- | **> 100** |

| Pellet Mill Production | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hopper #1 | Hopper #2 | Hopper #3 | HW Percentage | SW Percentage | PM #1 | PM #2 | PM #3 | PM #4 | Pellet Production |
| Date | Time | Hardwood Dust | Pine Chips | Pine Dust | | | Feed Rate | Feed Rate | Feed Rate | Feed Rate | Rate (tons/hr) |
| 7/30/2019 | 8:00 | 30 | 100 | 20 | 20% | 80% | 55 | 55 | 50 | N/A | 11.16 |
| | 8:30 | 30 | 100 | 20 | 20% | 80% | 60 | 55 | 50 | 50 | 14.9 |
| | 9:00 | 30 | 100 | 20 | 20% | 80% | 55 | 50 | 50 | 50 | 14.28 |
| | 9:30 | 30 | 100 | 20 | 20% | 80% | 55 | 55 | 50 | N/A | 11.16 |
| | 10:00 | 30 | 100 | 20 | 20% | 80% | 55 | 50 | 50 | N/A | 10.8 |
| | 10:30 | 30 | 100 | 20 | 20% | 80% | 55 | 50 | 50 | 50 | 14.28 |
| | 11:00 | 30 | 100 | 20 | 20% | 80% | 50 | 50 | 50 | 50 | 13.92 |
| | 11:30 | 30 | 100 | 20 | 20% | 80% | 50 | 50 | 50 | 50 | 13.92 |
| | 12:00 | 30 | 100 | 20 | 20% | 80% | 65 | 65 | 55 | N/A | 12.64 |
| | 12:30 | 30 | 100 | 20 | 20% | 80% | 50 | 50 | 50 | 50 | 13.92 |
| | 13:00 | 30 | 100 | 20 | 20% | 80% | 50 | 50 | 50 | 50 | 13.92 |
| | **AVG** | | | | **20%** | **80%** | | | | | **13.17** |
| 7/31/2019 | 8:00 | 26 | 52 | 52 | 20% | 80% | 60 | 55 | 55 | 50 | 15.26 |
| | 8:30 | 26 | 52 | 52 | 20% | 80% | 50 | 60 | 60 | 50 | 15.78 |
| | 9:00 | 26 | 52 | 52 | 20% | 80% | 50 | 50 | 50 | 50 | 13.92 |
| | 9:30 | 26 | 52 | 52 | 20% | 80% | 50 | 50 | 50 | 50 | 13.92 |
| | 10:00 | 26 | 52 | 52 | 20% | 80% | 50 | 50 | 50 | 50 | 13.92 |
| | 10:30 | 26 | 52 | 52 | 20% | 80% | 50 | 50 | 50 | 50 | 13.92 |
| | 11:00 | 26 | 52 | 52 | 20% | 80% | 50 | 50 | 50 | 50 | 13.92 |
| | 11:30 | 26 | 52 | 52 | 20% | 80% | 50 | 50 | 50 | 50 | 13.92 |
| | 12:00 | 26 | 52 | 52 | 20% | 80% | 50 | 50 | 50 | 50 | 13.92 |
| | 12:30 | 26 | 52 | 52 | 20% | 80% | 50 | 50 | 50 | 50 | 13.92 |
| | 13:00 | 26 | 52 | 52 | 20% | 80% | 50 | 50 | 50 | 50 | 13.92 |
| | 13:30 | 26 | 52 | 52 | 20% | 80% | 50 | 50 | 50 | 50 | 13.92 |
| | **AVG** | | | | **20%** | **80%** | | | | | **14.19** |
| 8/1/2019 | 8:00 | 26 | 52 | 52 | 20% | 80% | 50 | 50 | 50 | 45 | 13.44 |
| | 8:30 | 26 | 52 | 52 | 20% | 80% | 50 | 50 | 50 | 45 | 13.44 |
| | 9:00 | 35 | 95 | 55 | 19% | 81% | 50 | 50 | 50 | 45 | 13.44 |
| | 9:30 | 35 | 95 | 55 | 19% | 81% | 50 | 50 | 50 | 50 | 13.92 |
| | 10:00 | 35 | 95 | 55 | 19% | 81% | 50 | 50 | 50 | 50 | 13.92 |
| | 10:30 | 40 | 100 | 60 | 20% | 80% | 50 | 50 | 50 | 50 | 13.92 |
| | 11:00 | 42 | 100 | 68 | 20% | 80% | 50 | 50 | 50 | 50 | 13.92 |
| | 11:30 | 42 | 100 | 68 | 20% | 80% | 50 | 50 | 50 | 50 | 13.92 |
| | 12:00 | 42 | 100 | 68 | 20% | 80% | 50 | 50 | 50 | 50 | 13.92 |
| | 12:30 | 42 | 100 | 68 | 20% | 80% | 50 | 50 | 50 | 50 | 13.92 |
| | 13:00 | 42 | 100 | 68 | 20% | 80% | 50 | 50 | 50 | 50 | 13.92 |
| | 13:30 | 42 | 100 | 68 | 20% | 80% | 50 | 50 | 50 | 50 | 13.92 |
| | 14:00 | 42 | 100 | 68 | 20% | 80% | 50 | 50 | 50 | 50 | 13.92 |
| | **AVG** | | | | **20%** | **80%** | | | | | **13.81** |

| Dry Side Hammermill (Hammermills 3 & 4) | | | | | | | |
|---|---|---|---|---|---|---|---|
| Date | Time | Speed (Hammermill #3) | Amperage (Hammermill #3) | Hammermill 3 Material Throughput (%) | Speed (Hammermill #4) | Amperage (Hammermill #4) | Hammermill 4 Material Throughput (%) |
| 8/1/2019 | 8:00 | 60 | 353 | 46% | 70 | 705 | 54% |
| 8/1/2019 | 8:30 | 60 | 387 | 46% | 70 | 308 | 54% |
| 8/1/2019 | 9:00 | 75 | 534 | 47% | 85 | 246 | 53% |
| 8/1/2019 | 9:30 | 75 | 554 | 60% | 50 | 431 | 40% |
| 8/1/2019 | 10:00 | 80 | 445 | 55% | 65 | 422 | 45% |
| 8/1/2019 | 10:30 | 90 | 468 | 50% | 90 | 281 | 50% |
| 8/1/2019 | 11:00 | 90 | 515 | 50% | 90 | 431 | 50% |
| 8/1/2019 | 11:30 | 90 | 412 | 50% | 90 | 325 | 50% |
| 8/1/2019 | 12:00 | 90 | 407 | 50% | 90 | 343 | 50% |
| 8/1/2019 | 12:30 | 90 | 477 | 50% | 90 | 379 | 50% |
| 8/1/2019 | 13:00 | 90 | 508 | 50% | 90 | 405 | 50% |
| 8/1/2019 | 13:30 | 90 | 512 | 50% | 90 | 343 | 50% |
| 8/1/2019 | 14:00 | 90 | 565 | 50% | 90 | 396 | 50% |
| **AVG** | | | | **50%** | | | **50%** |

| Green Side Hammermill (Hammermills 1 & 2) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Date | Time | Speed (Hammermill #1) | Amperage (Hammermill #1) | Hammermill 3 Material Throughput (%) | Speed (Hammermill #2) | Amperage (Hammermill #2) | Hammermill 4 Material Throughput (%) |
| 7/31/2019 | 8:00 | 55 | 170 | 50% | 55 | 160 | 50% |
| 7/31/2019 | 8:30 | 55 | 174 | 50% | 55 | 162 | 50% |
| 7/31/2019 | 9:00 | 55 | 182 | 50% | 55 | 167 | 50% |
| 7/31/2019 | 9:30 | 52 | 174 | 50% | 52 | 166 | 50% |
| 7/31/2019 | 10:00 | 52 | 178 | 50% | 52 | 162 | 50% |
| 7/31/2019 | 10:30 | 57 | 181 | 50% | 57 | 165 | 50% |
| 7/31/2019 | 11:00 | 60 | 188 | 50% | 60 | 164 | 50% |
| 7/31/2019 | 11:30 | 60 | 178 | 50% | 60 | 164 | 50% |
| 7/31/2019 | 12:00 | 60 | 187 | 50% | 60 | 156 | 50% |
| 7/31/2019 | 12:30 | 60 | 180 | 50% | 60 | 160 | 50% |
| 7/31/2019 | 13:00 | 60 | 185 | 50% | 60 | 158 | 50% |
| 7/31/2019 | 13:30 | 60 | 173 | 50% | 60 | 163 | 50% |
| **AVG** | | | | **50%** | | | **50%** |

| | Production in Tons per Hour | | |
|---|---|---|---|
| Time | 7/30/2019 | 7/31/2019 | 8/1/2019 |
| 6:00 | -- | 10.44 | -- |
| 6:30 | 11.16 | 15 | -- |
| 7:00 | -- | 15 | 13.92 |
| 7:30 | 11.16 | 15 | 13.92 |
| 8:00 | 11.16 | 15.26 | 13.44 |
| 8:30 | 14.9 | 15.78 | 13.44 |
| 9:00 | 14.28 | 13.92 | 13.44 |
| 9:30 | 11.16 | 13.92 | 13.92 |
| 10:00 | 10.8 | 13.92 | 13.92 |
| 10:30 | 14.28 | 13.92 | 13.92 |
| 11:00 | 13.92 | 13.92 | 13.92 |
| 11:30 | 13.92 | 13.92 | 13.92 |
| 12:00 | 12.64 | 13.92 | 13.92 |
| 12:30 | 13.92 | 13.92 | 13.92 |
| 13:00 | 13.92 | 13.92 | 13.92 |
| 13:30 | 13.92 | 13.92 | 13.92 |
| 14:00 | 13.92 | -- | 13.92 |
| 14:30 | 14.28 | -- | 13.92 |
| 15:00 | -- | 14.28 | -- |

# Exhibit B

Excerpt of Stack Testing on Green Hammermills at Enviva Amory.

| Table 3-3. Green Hammermill[1] Emission Test Results | | | | |
|---|---|---|---|---|
| Parameter | Run 1 | Run 2 | Run 3 | Average |
| Date | 10/15/2013 | 10/15/2013 | 10/15/2013 | N/A |
| Start | 9:11 | 10:22 | 11:40 | N/A |
| Stop | 10:11 | 11:22 | 12:40 | N/A |
| Throughput, tons/hour | 9.9 | 9.9 | 9.9 | 9.9 |
| Moisture Content Outlet, %wt. | 48 | 48 | 48 | 48.0 |
| Throughput, ODT/hour | 5.148 | 5.148 | 5.148 | 5.1 |
| ACFM | 12,277 | 12,367 | 12,326 | 12,323 |
| DSCFM | 11,630 | 11,634 | 11,490 | 11,585 |
| Stack Temperature, °F | 87.4 | 87.5 | 88.4 | 87.8 |
| $O_2$, % | 20.9 | 20.9 | 20.9 | 20.9 |
| % Moisture | 2.25 | 2.92 | 3.64 | 2.94 |
| VOC, ppmvd as Propane | 17.9 | 21.8 | 28.2 | 22.6 |
| VOC, ppmvd as C1 | 53.6 | 65.5 | 84.7 | 67.9 |
| VOC, lbs/hour as C1 | 1.16 | 1.42 | 1.82 | 1.47 |
| VOC, lbs/ODT | 0.23 | 0.28 | 0.35 | 0.29 |
| Methanol, ppmvd | 2.68 | 2.77 | 2.79 | 2.74 |
| Acetaldehyde, ppmvd | 0.89 | 0.89 | 0.90 | 0.00 |
| Acrolein, ppmvd | 2.74 | 2.76 | 2.78 | 0.00 |
| Formaldehyde, ppmvd | 0.21 | 0.21 | 0.21 | 0.00 |
| Phenol, ppmvd | 3.73 | 3.76 | 3.79 | 0.00 |
| Propionaldehyde, ppmvd | 0.57 | 0.57 | 0.58 | 0.00 |
| Methanol, lbs/hour | 0.16 | 0.16 | 0.16 | 0.159 |
| Acetaldehyde, lbs/hour | 0.00 | 0.00 | 0.00 | 0.00 |
| Acrolein, lbs/hour | 0.00 | 0.00 | 0.00 | 0.00 |
| Formaldehyde, lbs/hour | 0.00 | 0.00 | 0.00 | 0.00 |
| Phenol, lbs/hour | 0.00 | 0.00 | 0.00 | 0.00 |
| Propionaldehyde, lbs/hour | 0.00 | 0.00 | 0.00 | 0.00 |
| Methanol, lbs/ODT | 0.030 | 0.031 | 0.031 | 0.031 |
| Acetaldehyde, lbs/ODT | 0.000 | 0.000 | 0.000 | 0.000 |
| Acrolein, lbs/ODT | 0.000 | 0.000 | 0.000 | 0.000 |
| Formaldehyde, lbs/ODT | 0.000 | 0.000 | 0.000 | 0.000 |
| Phenol, lbs/ODT | 0.000 | 0.000 | 0.000 | 0.000 |
| Propionaldehyde, lbs/ODT | 0.000 | 0.000 | 0.000 | 0.000 |

1. Note: Shaded area indicates a calculated minimum detection limit. Emissions were calculated based on zero for non-detect values.

# Exhibit C

Excerpt of Stack Testing on Green Hammermills at Enviva Sampson.

### 3.2.2 Green Hammermill and Pellet Cooler Emissions

The VOC emissions were measured in accordance with Methods 25A and 320. The VOC emissions in units of pounds alpha pinene per ODT were calculated in accordance with the procedures specified in OTM 26.

**Green Hammermill #2**—Air Control Techniques, P.C. conducted the VOC emission tests on the Green Hammermill 2 stack on March 14, 2017. The test program included three one-hour test runs. Table 3-5 provides a summary of the process operating rates and the test results.

**Table 3-5. Test Results Summary, Green Hammermill #2**

| Parameter | GHM-VOC-1 | GHM-VOC-2 | GHM-VOC-3 | Average |
|---|---|---|---|---|
| Test date | 3/14/17 | 3/14/17 | 3/14/17 | NA |
| Test time | 11:37 | 13:04 | 15:05 | NA |
| Stop time | 12:37 | 14:04 | 16:04 | NA |
| Process Rate, ODT/hour | 40.1 | 40.5 | 40.5 | 40.37 |
| THC Concentration, ppmw (v/v) | 121.7 | 126.6 | 89.4 | 112.6 |
| Emission Rate, lb/hour (as propane) | 10.12 | 9.83 | 7.27 | 9.08 |
| **Pounds/ODT as Alpha Pinene (OTM 26 Basis)** | **0.227** | **0.219** | **0.162** | **0.203** |
| **Permit Limit, Pounds Alpha Pinene (OTM basis)/ODT** | | | | **0.270** |
| Flue gas flow, DSCFM | 11,850 | 11,107 | 11,551 | 11,503 |
| Flue gas flow, ACFM | 12,105 | 11,433 | 11,959 | 11,832 |
| Moisture Content, % | 2.45 | 1.77 | 2.43 | 2.11 |
| Saturation Moisture, % | 2.14 | 2.64 | 2.59 | 2.46 |
| Stack temperature, °F | 65.8 | 71.8 | 71.3 | 69.6 |

The measured VOC emission rate in pounds alpha pinene (OTM 26 basis) of 0.203 is below the permit required limit of 0.270. The ODT rate during the test was above the rated throughput of 35.86 ODT/hour for Green Hammermill #2.

The Green Hammermill tests were conducted in accordance with the test program protocol. There were no deviations from the EPA methods used in these tests.

# Exhibit D

Excerpt of Stack Testing on Green Hammermills at Enviva Wiggins.

| Table 3-2. Green Hammermill[1] Emission Test Results | | | | |
|---|---|---|---|---|
| Parameter | Run 1 | Run 2 | Run 3 | Average |
| Date | 10/10/2013 | 10/10/2013 | 10/10/2013 | N/A |
| Start | 9:17 | 10:36 | 11:50 | N/A |
| Stop | 10:17 | 11:36 | 12:50 | N/A |
| Throughput, tons/hour | 36 | 36 | 36 | 36.0 |
| Moisture Content Outlet, %wt. | 47.15 | 47.15 | 47.15 | 47.2 |
| Throughput, ODT/hour | 19.026 | 19.026 | 19.026 | 19.0 |
| ACFM | 27,642 | 27,273 | 27,189 | 27,368.0 |
| DSCFM | 25,184 | 24,803 | 25,031 | 25,006 |
| Stack Temperature, °F | 70.8 | 70.6 | 70.9 | 70.8 |
| $O_2$, % | 20.9 | 20.9 | 20.9 | 20.9 |
| % Moisture | 3.41 | 3.62 | 2.37 | 3.1 |
| VOC, ppmvd as Propane | 31.9 | 33.4 | 27 | 30.8 |
| VOC, ppmvd as C1 | 95.7 | 100.3 | 81.1 | 92.4 |
| VOC, lbs/hour as C1 | 4.5 | 4.7 | 3.8 | 4.3 |
| VOC, lbs/ODT | 0.24 | 0.25 | 0.20 | 0.2 |
| Methanol, ppmvd | 0.53 | 0.48 | 0.39 | 0.46 |
| Acetaldehyde, ppmvd | 0.79 | 0.75 | 0.74 | 0.76 |
| Acrolein, ppmvd | 1.17 | 1.25 | 1.18 | 1.20 |
| Formaldehyde, ppmvd | 0.77 | 0.65 | 0.57 | 0.66 |
| Phenol, ppmvd | 0.91 | 0.91 | 0.90 | 0.91 |
| Propionaldehyde, ppmvd | 0.24 | 0.24 | 0.26 | 0.247 |
| Methanol, lbs/hour | 0.066 | 0.060 | 0.049 | 0.058 |
| Acetaldehyde, lbs/hour | 0.136 | 0.129 | 0.127 | 0.131 |
| Acrolein, lbs/hour | 0.257 | 0.274 | 0.259 | 0.263 |
| Formaldehyde, lbs/hour | 0.090 | 0.077 | 0.068 | 0.078 |
| Phenol, lbs/hour | 0.000 | 0.000 | 0.000 | 0.000 |
| Propionaldehyde, lbs/hour | 0.000 | 0.000 | 0.058 | 0.019 |
| Methanol, lbs/ODT | 0.003 | 0.003 | 0.002 | 0.003 |
| Acetaldehyde, lbs/ODT | 0.007 | 0.007 | 0.006 | 0.007 |
| Acrolein, lbs/ODT | 0.013 | 0.014 | 0.013 | 0.013 |
| Formaldehyde, lbs/ODT | 0.005 | 0.004 | 0.003 | 0.004 |
| Phenol, lbs/ODT | 0.000 | 0.000 | 0.000 | 0.000 |
| Propionaldehyde, lbs/ODT | 0.000 | 0.000 | 0.003 | 0.001 |

1. Note: Shaded area indicates a calculated minimum detection limit. Emissions were calculated based on zero for non-detect values.

# Exhibit E

# Excerpt of Enviva Sampson PSD Application

# Emission Calculations

# APPENDIX C
# POTENTIAL EMISSIONS CALCULATIONS

**Table 1**
**Calculation Inputs**
**Enviva Pellets Sampson, LLC**
**Faison, Sampson County, North Carolina**

| Operational Data | |
|---|---|
| **Green Hammermills, Dryers, Pellet Coolers** | |
| Short-Term Throughput (ODT/hr) | 120 |
| Annual Throughput (ODT/yr) | 657,000 |
| Hours of Operation (Hr/yr) | 8,760 |
| Softwood Composition | 100% |
| **Dry Hammermills** | |
| Short-Term Throughput (ODT/hr) | 102 |
| Annual Throughput (ODT/yr)[1] | 558,450 |
| Hours of Operation (Hr/yr) | 8,760 |
| Softwood Composition | 100% |

**Notes:**
1. 85% of raw material is processed by the dry hammermills.

**Table 2**
**Summary of Facility-wide Potential Emissions**
**Enviva Pellets Sampson, LLC**
**Faison, Sampson County, North Carolina**

| Emission Unit ID | Source Description | Control Device ID | Control Device Description | CO (tpy) | $NO_x$ (tpy) | PM (tpy) | $PM_{10}$ (tpy) | $PM_{2.5}$ (tpy) | $SO_2$ (tpy) | VOC (tpy) | $CO_2e$ (tpy) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| IES-CHIP-1 | Log Chipping | -- | -- | -- | -- | -- | -- | -- | -- | 1.6 | -- |
| IES-BARKHOG | Bark Hog | -- | -- | -- | -- | 0.24 | 0.13 | 0.13 | -- | 0.30 | -- |
| ES-DRYER | 250.4 MMBtu/hr wood-fired direct heat drying system | CD-WESP CD-RTO | WESP; RTO | 219 | 219 | 33 | 33 | 33 | 27 | 51 | 256,230 |
| ES-GHM-1 through 3 | Three (3) Green Wood Hammermills | CD-WESP CD-RTO | WESP; RTO | | | | | | | | |
| ES-HM-1 through 8 | Eight (8) Dry Hammermills | CD-HM-BH1 through 8 | Eight (8) baghouses | -- | -- | 18 | 18 | 0.31 | -- | 168 | -- |
| ES-HMC | Hammermill Conveying System | CD-HMC-BH | One (1) baghouse | -- | -- | 0.23 | 0.23 | 0.23 | -- | -- | -- |
| ES-HMA | Hammermill Area | CD-PFB-BH | One (1) baghouse | -- | -- | 0.47 | 0.47 | 0.47 | -- | -- | -- |
| ES-PFB | Pellet Fines Bin | | | | | | | | | | |
| ES-PMFS | Pellet Mill Feed Silo | CD-PMFS-BH | One (1) baghouse | -- | -- | 0.37 | 0.37 | 0.37 | -- | -- | -- |
| ES-CLR-1 through 6 | Six (6) Pellet Coolers | CD-CLR-1 through 6 | Six (6) simple cyclones (one on each cooler) | -- | -- | 151 | 39 | 4.8 | -- | 572 | -- |
| ES-PCR | Pellet Cooler Recirculation | CD-PCR-BH | One (1) baghouse | -- | -- | 0.15 | 0.15 | 0.15 | -- | -- | -- |
| ES-PSTB | Pellet Sampling Transfer Bin | CD-PSTB-BH | One (1) baghouse | -- | -- | 0.15 | 0.15 | 0.15 | -- | -- | -- |
| ES-FPH | Finished Product Handling | CD-FPH-BH | One (1) baghouse | -- | -- | 1.3 | 1.2 | 0.02 | -- | -- | -- |
| ES-PB-1 through 4 | Four (4) Pellet Loadout Bins | | | | | | | | | | |
| ES-PL-1 and 2 | Two (2) Pellet Mill Loadouts | | | | | | | | | | |
| ES-DWH | Dried wood handling operations | CD-DWH-BH-1 through -2 | Two (2) baghouses | -- | -- | 0.30 | 0.30 | 0.30 | -- | 41 | -- |
| IES-GWH | Green wood handling operations | -- | -- | -- | -- | 0.08 | 0.04 | 0.006 | -- | -- | -- |
| IES-TK-1 | 2,500 gal diesel storage tank | -- | -- | -- | -- | -- | -- | -- | -- | 0.001 | -- |
| IES-TK-2 | 500 gal diesel storage tank | -- | -- | -- | -- | -- | -- | -- | -- | 0.0002 | -- |
| IES-TK-3 | 3,000 gal diesel storage tank | -- | -- | -- | -- | -- | -- | -- | -- | 0.002 | -- |
| IES-GWSP-1 through 4 | Green wood storage piles | -- | -- | -- | -- | 15 | 7.7 | 1.2 | -- | 6.9 | -- |
| IES-BFSP-1 and 2 | Bark fuel storage piles | -- | -- | -- | -- | 0.64 | 0.32 | 0.05 | -- | 0.29 | -- |
| IES-DRYSHAVE | Dry shavings material handling | -- | -- | -- | -- | 0.05 | 0.03 | 0.004 | -- | -- | -- |
| IES-DEBARK-1 | Debarker | -- | -- | -- | -- | 1.1 | 0.62 | 0.62 | -- | -- | -- |
| IES-BFB[1] | Bark fuel bin | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| IES-ADD[2] | Additive Handling | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| IES-EG | 689 hp diesel-fired emergency generator | -- | -- | 0.18 | 1.5 | 0.019 | 0.019 | 0.019 | 0.0019 | 0.02 | 195 |
| IES-FWP | 131 hp diesel-fired fire water pump | -- | -- | 0.07 | 0.18 | 0.009 | 0.009 | 0.009 | 0.0005 | 0.01 | 50 |
| -- | Paved Roads | -- | -- | -- | -- | 16 | 3.3 | 0.80 | -- | -- | -- |
| | | | **Total Emissions:** | **219** | **221** | **239** | **106** | **43** | **27** | **840** | **256,475** |
| | | | **Total Excluding Fugitives[3]:** | **219** | **221** | **205** | **93** | **40** | **27** | **831** | **256,475** |

**Notes:**

1. Bark fuel is transferred by walking floor to covered conveyors to fully enclosed bark fuel bin to pusher(s) into furnace. Therefore, there are no emissions expected from the bin.
2. Additive is added to a hopper within a warehouse. Once the additive is added to the enclosed feed conveyor, all transfers and subsequent conveyors to pellet presses are enclosed. Therefore, there are no emissions expected.
3. Fugitive emissions are not included in comparison against the major source threshold because the facility is not on the list of 28 source categories in 40 CFR 52.21.

**Abbreviations:**

ES - Emission Sources
IES - Insignificant Emission Source
CO - carbon monoxide
$CO_2e$ - carbon dioxide equivalent
$NO_x$ - nitrogen oxides
PM - particulate matter
$PM_{10}$ - particulate matter with an aerodynamic diameter less than 10 microns
$PM_{2.5}$ - particulate matter with an aerodynamic diameter of 2.5 microns or less
$SO_2$ - sulfur dioxide
tpy - tons per year
VOC - volatile organic compounds

**Table 3**
**Summary of Facility-wide HAP Emissions**
**Enviva Pellets Sampson, LLC**
**Faison, Sampson County, North Carolina**

| Pollutant | RTO[1] (tpy) | ES-HM-1 through 8 (tpy) | ES-CLR-1 through 6 (tpy) | IES-EG (tpy) | IES-FWP (tpy) | ES-DWH (tpy) | IES-CHIP-1 (tpy) | IES-BARKHOG (tpy) | Total HAP (tpy) |
|---|---|---|---|---|---|---|---|---|---|
| Acetaldehyde | 1.9 | 2.5 | 2.8 | 9.2E-04 | 1.8E-04 | -- | -- | -- | 7.2 |
| Acetophenone | 1.8E-07 | -- | -- | -- | -- | -- | -- | -- | 1.8E-07 |
| Acrolein | 1.1 | 3.0 | 17 | 1.1E-04 | 2.1E-05 | -- | -- | -- | 21 |
| Antimony & Compounds | 6.3E-04 | -- | -- | -- | -- | -- | -- | -- | 6.3E-04 |
| Arsenic & Compounds | 1.8E-03 | -- | -- | -- | -- | -- | -- | -- | 1.8E-03 |
| Benzo(a)pyrene | 1.4E-04 | -- | -- | 2.3E-07 | 4.3E-08 | -- | -- | -- | 1.4E-04 |
| Benzene | 0.33 | -- | -- | 1.1E-03 | 2.1E-04 | -- | -- | -- | 0.33 |
| Beryllium metal | 8.9E-05 | -- | -- | -- | -- | -- | -- | -- | 8.9E-05 |
| Butadiene, 1,3- | -- | -- | -- | 4.7E-05 | 9.0E-06 | -- | -- | -- | 5.6E-05 |
| Cadmium Metal | 4.8E-04 | -- | -- | -- | -- | -- | -- | -- | 4.8E-04 |
| Carbon tetrachloride | 2.5E-03 | -- | -- | -- | -- | -- | -- | -- | 2.5E-03 |
| Chlorine | 0.87 | -- | -- | -- | -- | -- | -- | -- | 0.87 |
| Chlorobenzene | 1.8E-03 | -- | -- | -- | -- | -- | -- | -- | 1.8E-03 |
| Chloroform | 1.5E-03 | -- | -- | -- | -- | -- | -- | -- | 1.5E-03 |
| Chromium VI | 2.8E-04 | -- | -- | -- | -- | -- | -- | -- | 2.8E-04 |
| Chromium-Other compds | 1.6E-03 | -- | -- | -- | -- | -- | -- | -- | 1.6E-03 |
| Cobalt compounds | 5.3E-04 | -- | -- | -- | -- | -- | -- | -- | 5.3E-04 |
| Dichlorobenzene | 1.6E-04 | -- | -- | -- | -- | -- | -- | -- | 1.6E-04 |
| Dichloroethane, 1,2- | 1.6E-03 | -- | -- | -- | -- | -- | -- | -- | 1.6E-03 |
| Dichloropropane, 1,2- | 1.8E-03 | -- | -- | -- | -- | -- | -- | -- | 1.8E-03 |
| Dinitrophenol, 2,4- | 9.9E-06 | -- | -- | -- | -- | -- | -- | -- | 9.9E-06 |
| Di(2-ethylhexyl)phthalate | 2.6E-06 | -- | -- | -- | -- | -- | -- | -- | 2.6E-06 |
| Ethyl benzene | 1.7E-03 | -- | -- | -- | -- | -- | -- | -- | 1.7E-03 |
| Formaldehyde | 1.2 | 2.2 | 10 | 1.4E-03 | 2.7E-04 | 0.28 | -- | -- | 14 |
| Hexane | 0.25 | -- | -- | -- | -- | -- | -- | -- | 0.25 |
| Hydrochloric acid | 2.1 | -- | -- | -- | -- | -- | -- | -- | 2.1 |
| Lead and Lead Compounds | 3.9E-03 | -- | -- | -- | -- | -- | -- | -- | 3.9E-03 |
| Manganese & Compounds | 0.13 | -- | -- | -- | -- | -- | -- | -- | 0.13 |
| Mercury, vapor | 3.1E-04 | -- | -- | -- | -- | -- | -- | -- | 3.1E-04 |
| Methanol | 2.2 | 1.4 | 79 | -- | -- | 0.64 | 0.33 | 6.0E-02 | 83 |
| Methyl bromide | 8.2E-04 | -- | -- | -- | -- | -- | -- | -- | 8.2E-04 |
| Methyl chloride | 1.3E-03 | -- | -- | -- | -- | -- | -- | -- | 1.3E-03 |
| Methylene chloride | 1.6E-02 | -- | -- | -- | -- | -- | -- | -- | 1.6E-02 |
| Naphthalene | 5.4E-03 | -- | -- | 1.0E-04 | 1.9E-05 | -- | -- | -- | 5.5E-03 |
| Nickel metal | 2.9E-03 | -- | -- | -- | -- | -- | -- | -- | 2.9E-03 |
| Nitrophenol, 4- | 6.0E-06 | -- | -- | -- | -- | -- | -- | -- | 6.0E-06 |
| Pentachlorophenol | 5.6E-05 | -- | -- | -- | -- | -- | -- | -- | 5.6E-05 |
| Perchloroethylene | 4.2E-02 | -- | -- | -- | -- | -- | -- | -- | 4.2E-02 |
| Phenol | 1.3 | 1.1 | 8.3 | -- | -- | -- | -- | -- | 11 |
| Phosphorus Metal, Yellow or White | 2.1E-03 | -- | -- | -- | -- | -- | -- | -- | 2.1E-03 |
| Polychlorinated Biphenyls | 4.5E-07 | -- | -- | -- | -- | -- | -- | -- | 4.5E-07 |
| Propionaldehyde | 0.48 | 5.3 | 3.5 | -- | -- | -- | -- | -- | 9.3 |
| Selenium Compounds | 2.3E-04 | -- | -- | -- | -- | -- | -- | -- | 2.3E-04 |
| Styrene | 0.10 | -- | -- | -- | -- | -- | -- | -- | 0.10 |
| Tetrachlorodibenzo-p-dioxin, 2,3,7,8- | 4.7E-10 | -- | -- | -- | -- | -- | -- | -- | 4.7E-10 |
| Toluene | 2.1E-03 | -- | -- | 4.9E-04 | 9.4E-05 | -- | -- | -- | 2.7E-03 |
| Total PAH (POM) | 0.14 | -- | -- | 2.0E-04 | 3.9E-05 | -- | -- | -- | 0.14 |
| Trichloroethane, 1,1,1- | 3.4E-02 | -- | -- | -- | -- | -- | -- | -- | 3.4E-02 |
| Trichloroethylene | 1.6E-03 | -- | -- | -- | -- | -- | -- | -- | 1.6E-03 |
| Trichlorophenol, 2,4,6- | 1.2E-06 | -- | -- | -- | -- | -- | -- | -- | 1.2E-06 |
| Vinyl Chloride | 9.9E-04 | -- | -- | -- | -- | -- | -- | -- | 9.9E-04 |
| Xylene | 1.4E-03 | -- | -- | 3.4E-04 | 6.5E-05 | -- | -- | -- | 1.8E-03 |
| **Total HAP Emissions[2] (tpy)** | **12** | **16** | **120** | **4.7E-03** | **8.9E-04** | **0.92** | **0.33** | **6.0E-02** | **149** |
| **Maximum Individual HAP (tpy)** | **Methanol** | **Propionaldehyde** | **Methanol** | **Formaldehyde** | **Formaldehyde** | **Methanol** | **Methanol** | **Methanol** | **Methanol** |
| **Maximum Individual HAP Emissions (tpy)** | **2.2** | **5.3** | **79** | **1.4E-03** | **2.7E-04** | **0.64** | **0.33** | **6.0E-02** | **83** |

**Notes:**
1. Includes emissions at outlet of RTO stack as well as the maximum HAP combustion emissions resulting from either propane or NG by the RTO burners. The RTO controls emissions from the dryer (ES-DRYER) and green hammermills (ES-GHM-1 through 3).
2. Because benzo(a)pyrene and naphthalene emissions were presented individually and as components of total PAH emissions, the total HAP emissions presented here do not match the sum of all pollutant emissions to avoid double counting benzo(a)pyrene and naphthalene emissions.

**Abbreviations:**
HAP - hazardous air pollutant
tpy - tons per year

**Table 4**
**Potential Emissions at Outlet of RTO Stack**
**ES-DRYER and ES-GHM-1 through 3**
**Enviva Pellets Sampson, LLC**
**Faison, Sampson County, North Carolina**

**Calculation Basis**

| | |
|---|---|
| Hourly Throughput | 120 ODT/hr |
| Annual Throughput | 657,000 ODT/yr |
| Hourly Heat Input Capacity | 250.4 MMBtu/hr |
| Annual Heat Input Capacity | 2,193,504 MMBtu/yr |
| Hours of Operation | 8,760 hr/yr |
| Number of RTO Burners | 4 burners |
| RTO Burner Rating | 8 MMBtu/hr |
| RTO Fuel Type | Natural Gas or Propane |
| RTO control efficiency | 95% |

**Potential Criteria Pollutant and Greenhouse Gas Emissions**

| Pollutant | Emission Factor | Units | Emissions at RTO Outlet[1] | |
|---|---|---|---|---|
| | | | (lb/hr) | (tpy) |
| CO | 50 | lb/hr[2] | 50 | 219 |
| $NO_x$ | 50 | lb/hr[2] | 50 | 219 |
| $SO_2$ | 0.025 | lb/MMBtu[3] | 6.3 | 27 |
| VOC | 0.15 | lb/ODT[4] | 18 | 51 |
| $PM/PM_{10}/PM_{2.5}$ (Filterable + Condensable) | 7.6 | lb/hr[2] | 7.6 | 33 |
| $CO_2$ | 780 | lb/ODT[5] | 93,600 | 256,230 |

**Notes:**

1. Exhaust from the dryer (ES-DRYER) and green hammermills (ES-GHM-1 through 3) are routed to a WESP and then RTO for control of VOC and particulates.
2. Emission rate based on data provided by RTO vendor (TSI).
3. No emission factor is provided in AP-42, Section 10.6.2 for $SO_2$ for rotary dryers. Enviva has conservatively calculated $SO_2$ emissions based on AP-42, Section 1.6 - Wood Residue Combustion in Boilers, 09/03.
4. VOC emission factor was derived based on data from stack testing conducted at Enviva and other similar wood pellet manufacturing facilities.
5. Emission factor for $CO_2$ from AP-42, Section 10.6.1 for rotary dryer with RTO control device. Enviva has conservatively calculated the $CO_2$ emissions using the hardwood emission factor because the dryer at Sampson uses a combination of hardwood and softwood and the hardwood emission factor is greater than the softwood emission factor.

**Table 4**
**Potential Emissions at Outlet of RTO Stack**
**ES-DRYER and ES-GHM-1 through 3**
**Enviva Pellets Sampson, LLC**
**Faison, Sampson County, North Carolina**

**Potential HAP and TAP Emissions**

| Pollutant | HAP | NC TAP | VOC | Emission Factor | Units | Footnote | Emissions at RTO Outlet | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | (lb/hr) | (tpy) |
| **Biomass Source** | | | | | | | | |
| Acetaldehyde | Y | Y | Y | 5.7E-03 | lb/ODT | 1 | 0.69 | 1.9 |
| Acrolein | Y | Y | Y | 3.2E-03 | lb/ODT | 1 | 0.39 | 1.1 |
| Formaldehyde | Y | Y | Y | 3.0E-03 | lb/ODT | 1 | 0.36 | 0.97 |
| Methanol | Y | N | Y | 6.6E-03 | lb/ODT | 1 | 0.79 | 2.2 |
| Phenol | Y | Y | Y | 4.1E-03 | lb/ODT | 1 | 0.49 | 1.3 |
| Propionaldehyde | Y | N | Y | 1.4E-03 | lb/ODT | 1 | 0.17 | 0.48 |
| Acetophenone | Y | N | Y | 3.2E-09 | lb/MMBtu | 2,3 | 4.0E-08 | 1.8E-07 |
| Antimony & Compounds | Y | N | N | 7.9E-06 | lb/MMBtu | 2,4 | 1.4E-04 | 6.3E-04 |
| Arsenic | Y | Y | N | 2.2E-05 | lb/MMBtu | 2,4 | 4.0E-04 | 1.7E-03 |
| Benzene | Y | Y | Y | 4.2E-03 | lb/MMBtu | 2,3 | 5.3E-02 | 0.23 |
| Benzo(a)pyrene | Y | Y | Y | 2.6E-06 | lb/MMBtu | 2,3 | 3.3E-05 | 1.4E-04 |
| Beryllium | Y | Y | N | 1.1E-06 | lb/MMBtu | 2,4 | 2.0E-05 | 8.7E-05 |
| Cadmium | Y | Y | N | 4.1E-06 | lb/MMBtu | 2,4 | 7.4E-05 | 3.3E-04 |
| Carbon tetrachloride | Y | Y | Y | 4.5E-05 | lb/MMBtu | 2,3 | 5.6E-04 | 2.5E-03 |
| Chlorine | Y | Y | N | 7.9E-04 | lb/MMBtu | 2 | 0.20 | 0.87 |
| Chlorobenzene | Y | Y | Y | 3.3E-05 | lb/MMBtu | 2,3 | 4.1E-04 | 1.8E-03 |
| Chloroform | Y | Y | Y | 2.8E-05 | lb/MMBtu | 2,3 | 3.5E-04 | 1.5E-03 |
| Chromium VI | -[5] | Y | N | 3.5E-06 | lb/MMBtu | 2,4,5 | 6.4E-05 | 2.8E-04 |
| Chromium-Other compds | Y | N | N | 1.8E-05 | lb/MMBtu | 2,4 | 3.2E-04 | 1.4E-03 |
| Cobalt compounds | Y | N | N | 6.5E-06 | lb/MMBtu | 2,4 | 1.2E-04 | 5.2E-04 |
| Dichloroethane, 1,2- | Y | Y | Y | 2.9E-05 | lb/MMBtu | 2,3 | 3.6E-04 | 1.6E-03 |
| Dichloropropane, 1,2- | Y | N | Y | 3.3E-05 | lb/MMBtu | 2,3 | 4.1E-04 | 1.8E-03 |
| Dinitrophenol, 2,4- | Y | N | Y | 1.8E-07 | lb/MMBtu | 2,3 | 2.3E-06 | 9.9E-06 |
| Di(2-ethylhexyl)phthalate | Y | Y | Y | 4.7E-08 | lb/MMBtu | 2,3 | 5.9E-07 | 2.6E-06 |
| Ethyl benzene | Y | N | Y | 3.1E-05 | lb/MMBtu | 2,3 | 3.9E-04 | 1.7E-03 |
| Hexachlorodibenzo-p-dioxin, 1,2,3,6,7,8- | N | Y | Y | 1.8E-11 | lb/MMBtu | 2,3 | 2.2E-10 | 9.8E-10 |
| Hydrochloric acid | Y | Y | N | 1.9E-02 | lb/MMBtu | 2,6 | 0.48 | 2.1 |
| Lead and Lead compounds | Y | N | N | 4.8E-05 | lb/MMBtu | 2,4 | 8.7E-04 | 3.8E-03 |
| Manganese & compounds | Y | Y | N | 1.6E-03 | lb/MMBtu | 2,4 | 2.9E-02 | 0.13 |
| Mercury, vapor | Y | Y | N | 3.5E-06 | lb/MMBtu | 2,4 | 6.4E-05 | 2.8E-04 |
| Methyl bromide | Y | N | Y | 1.5E-05 | lb/MMBtu | 2,3 | 1.9E-04 | 8.2E-04 |
| Methyl chloride | Y | N | Y | 2.3E-05 | lb/MMBtu | 2,3 | 2.9E-04 | 1.3E-03 |
| Methyl ethyl ketone | N | Y | Y | 5.4E-06 | lb/MMBtu | 2,3 | 6.8E-05 | 3.0E-04 |
| Methylene chloride | Y | Y | Y | 2.9E-04 | lb/MMBtu | 2,3 | 3.6E-03 | 1.6E-02 |
| Naphthalene | Y | N | Y | 9.7E-05 | lb/MMBtu | 2,3 | 1.2E-03 | 5.3E-03 |
| Nickel metal | Y | Y | N | 3.3E-05 | lb/MMBtu | 2,4 | 6.0E-04 | 2.6E-03 |
| Nitrophenol, 4- | Y | N | Y | 1.1E-07 | lb/MMBtu | 2,3 | 1.4E-06 | 6.0E-06 |
| Pentachlorophenol | Y | Y | N | 5.1E-08 | lb/MMBtu | 2 | 1.3E-05 | 5.6E-05 |
| Perchloroethylene | Y | Y | N | 3.8E-05 | lb/MMBtu | 2 | 9.5E-03 | 4.2E-02 |
| Phosphorus Metal, Yellow or White | Y | N | N | 2.7E-05 | lb/MMBtu | 2,4 | 4.9E-04 | 2.1E-03 |
| Polychlorinated biphenyls | Y | Y | Y | 8.2E-09 | lb/MMBtu | 2,3 | 1.0E-07 | 4.5E-07 |
| Polycyclic Organic Matter | Y | N | N | 1.3E-04 | lb/MMBtu | 2 | 3.1E-02 | 0.14 |
| Selenium compounds | Y | N | N | 2.8E-06 | lb/MMBtu | 2,4 | 5.1E-05 | 2.2E-04 |
| Styrene | Y | Y | Y | 1.9E-03 | lb/MMBtu | 2,3 | 2.4E-02 | 0.10 |
| Tetrachlorodibenzo-p-dioxin, 2,3,7,8- | Y | Y | Y | 8.6E-12 | lb/MMBtu | 2,3 | 1.1E-10 | 4.7E-10 |
| Toluene | Y | Y | Y | 3.0E-05 | lb/MMBtu | 2,3 | 3.8E-04 | 1.6E-03 |
| Trichloroethane, 1,1,1- | Y | Y | N | 3.1E-05 | lb/MMBtu | 2 | 7.8E-03 | 3.4E-02 |
| Trichloroethylene | Y | Y | Y | 3.0E-05 | lb/MMBtu | 2,3 | 3.8E-04 | 1.6E-03 |
| Trichlorofluoromethane | N | Y | Y | 4.1E-05 | lb/MMBtu | 2,3 | 5.1E-04 | 2.2E-03 |
| Trichlorophenol, 2,4,6- | Y | N | Y | 2.2E-08 | lb/MMBtu | 2,3 | 2.8E-07 | 1.2E-06 |
| Vinyl chloride | Y | Y | Y | 1.8E-05 | lb/MMBtu | 2,3 | 2.3E-04 | 9.9E-04 |
| Xylene | Y | Y | Y | 2.5E-05 | lb/MMBtu | 2,3 | 3.1E-04 | 1.4E-03 |
| **Total HAP Emissions (related to wood drying/biomass combustion)** | | | | | | | **3.7** | **12** |
| **Total TAP Emissions (related to wood drying/biomass combustion)** | | | | | | | **2.7** | **8.8** |

**Table 4**
**Potential Emissions at Outlet of RTO Stack**
**ES-DRYER and ES-GHM-1 through 3**
**Enviva Pellets Sampson, LLC**
**Faison, Sampson County, North Carolina**

| Pollutant | HAP | NC TAP | VOC | Emission Factor | Units | Footnote | Potential Emissions (lb/hr) | Potential Emissions (tpy) |
|---|---|---|---|---|---|---|---|---|
| **Natural Gas Source** | | | | | | | | |
| 2-Methylnaphthalene | Y | N | Y | 2.4E-05 | lb/MMscf | 7 | 7.5E-07 | 3.3E-06 |
| 3-Methylchloranthrene | Y | N | Y | 1.8E-06 | lb/MMscf | 7 | 5.6E-08 | 2.5E-07 |
| 7,12-Dimethylbenz(a)anthracene | Y | N | Y | 1.6E-05 | lb/MMscf | 7 | 5.0E-07 | 2.2E-06 |
| Acenaphthene | Y | N | Y | 1.8E-06 | lb/MMscf | 7 | 5.6E-08 | 2.5E-07 |
| Acenaphthylene | Y | N | Y | 1.8E-06 | lb/MMscf | 7 | 5.6E-08 | 2.5E-07 |
| Acetaldehyde | Y | Y | Y | 1.5E-05 | lb/MMscf | 7 | 4.8E-07 | 2.1E-06 |
| Acrolein | Y | Y | Y | 1.8E-05 | lb/MMscf | 7 | 5.6E-07 | 2.5E-06 |
| Ammonia | N | Y | N | 3.2 | lb/MMscf | 7 | 0.10 | 0.44 |
| Anthracene | Y | N | Y | 2.4E-06 | lb/MMscf | 7 | 7.5E-08 | 3.3E-07 |
| Arsenic | Y | Y | N | 2.0E-04 | lb/MMscf | 7 | 6.3E-06 | 2.7E-05 |
| Benz(a)anthracene | Y | N | Y | 1.8E-06 | lb/MMscf | 7 | 5.6E-08 | 2.5E-07 |
| Benzene | Y | Y | Y | 2.1E-03 | lb/MMscf | 7 | 6.6E-05 | 2.9E-04 |
| Benzo(a)pyrene | Y | Y | Y | 1.2E-06 | lb/MMscf | 7 | 3.8E-08 | 1.6E-07 |
| Benzo(b)fluoranthene | Y | N | Y | 1.8E-06 | lb/MMscf | 7 | 5.6E-08 | 2.5E-07 |
| Benzo(g,h,i)perylene | Y | N | Y | 1.2E-06 | lb/MMscf | 7 | 3.8E-08 | 1.6E-07 |
| Benzo(k)fluoranthene | Y | N | Y | 1.8E-06 | lb/MMscf | 7 | 5.6E-08 | 2.5E-07 |
| Beryllium | Y | Y | N | 1.2E-05 | lb/MMscf | 7 | 3.8E-07 | 1.6E-06 |
| Cadmium | Y | Y | N | 1.1E-03 | lb/MMscf | 7 | 3.5E-05 | 1.5E-04 |
| Chromium VI | Y | N | N | 1.4E-03 | lb/MMscf | 7 | 4.4E-05 | 1.9E-04 |
| Chrysene | Y | N | Y | 1.8E-06 | lb/MMscf | 7 | 5.6E-08 | 2.5E-07 |
| Cobalt | Y | N | N | 8.4E-05 | lb/MMscf | 7 | 2.6E-06 | 1.2E-05 |
| Dibenzo(a,h)anthracene | Y | N | Y | 1.2E-06 | lb/MMscf | 7 | 3.8E-08 | 1.6E-07 |
| Dichlorobenzene | Y | Y | Y | 1.2E-03 | lb/MMscf | 7 | 3.8E-05 | 1.6E-04 |
| Fluoranthene | Y | N | Y | 3.0E-06 | lb/MMscf | 7 | 9.4E-08 | 4.1E-07 |
| Fluorene | Y | N | Y | 2.8E-06 | lb/MMscf | 7 | 8.8E-08 | 3.8E-07 |
| Formaldehyde | Y | Y | Y | 7.5E-02 | lb/MMscf | 7 | 2.4E-03 | 1.0E-02 |
| Hexane | Y | Y | Y | 1.8 | lb/MMscf | 7 | 5.6E-02 | 0.25 |
| Indeno(1,2,3-cd)pyrene | Y | N | Y | 1.8E-06 | lb/MMscf | 7 | 5.6E-08 | 2.5E-07 |
| Lead | Y | N | N | 5.0E-04 | lb/MMscf | 7 | 1.6E-05 | 6.9E-05 |
| Manganese | Y | Y | N | 3.8E-04 | lb/MMscf | 7 | 1.2E-05 | 5.2E-05 |
| Mercury | Y | Y | N | 2.6E-04 | lb/MMscf | 7 | 8.2E-06 | 3.6E-05 |
| Naphthalene | Y | N | Y | 6.1E-04 | lb/MMscf | 7 | 1.9E-05 | 8.4E-05 |
| Nickel | Y | Y | N | 2.1E-03 | lb/MMscf | 7 | 6.6E-05 | 2.9E-04 |
| Phenanthrene | Y | N | Y | 1.7E-05 | lb/MMscf | 7 | 5.3E-07 | 2.3E-06 |
| Pyrene | Y | N | Y | 5.0E-06 | lb/MMscf | 7 | 1.6E-07 | 6.9E-07 |
| Selenium | Y | N | N | 2.4E-05 | lb/MMscf | 7 | 7.5E-07 | 3.3E-06 |
| Toluene | Y | Y | Y | 3.4E-03 | lb/MMscf | 7 | 1.1E-04 | 4.7E-04 |
| | | | | | | **Total HAP Emissions (related to natural gas)** | **5.9E-02** | **0.26** |
| | | | | | | **Total TAP Emissions (related to natural gas)** | **0.16** | **0.70** |

| Pollutant | HAP | NC TAP | VOC | Emission Factor | Units | Footnote | Potential Emissions (lb/hr) | Potential Emissions (tpy) |
|---|---|---|---|---|---|---|---|---|
| **Propane Source** | | | | | | | | |
| Benzene | Y | Y | Y | 7.1E-04 | lb/MMBtu | 8 | 2.3E-02 | 0.10 |
| Formaldehyde | Y | Y | Y | 1.5E-03 | lb/MMBtu | 8 | 4.8E-02 | 0.21 |
| PAHs | Y | Y | Y | 4.0E-05 | lb/MMBtu | 8 | 1.3E-03 | 5.6E-03 |
| | | | | | | **Total HAP Emissions (related to propane)** | **0.07** | **0.32** |
| | | | | | | **Total TAP Emissions (related to propane)** | **0.07** | **0.32** |

**Notes:**

1. Emission factor derived based on stack testing data from comparable Enviva facilities.
2. Emission factors (criteria and HAP/TAP) for wood combustion in a stoker boiler from NCDAQ Wood Waste Combustion Spreadsheet/AP-42, Fifth Edition, Volume 1, Chapter 1.6 - Wood Residue Combustion in Boilers, 09/03.
3. The control efficiency of 95% for the RTO is applied to all VOC hazardous and toxic pollutants for those emission factors that are not derived from Enviva stack test data.
4. The control efficiency of the wet electrostatic precipitator (WESP) for filterable particulate matter is applied to all metal hazardous and toxic pollutants. Actual design filterable efficiency is estimated to 96.4%, but 92.75% is assumed for toxics permitting.
5. Chromium VI is a subset of chrome compounds, which is accounted for separately as a HAP. As such, Chromium VI is only calculated as a TAP.
6. The WESP employs a caustic solution in its operation in which hydrochloric acid will have high water solubility. This caustic solution will neutralize the acid and effectively control it by 90%, per conversation on October 18, 2011 with Steven A. Jaasund, P.E. of Lundberg Associates, a manufacturer of WESPs.

**Table 4**
**Potential Emissions at Outlet of RTO Stack**
**ES-DRYER and ES-GHM-1 through 3**
**Enviva Pellets Sampson, LLC**
**Faison, Sampson County, North Carolina**

[7] Emission factors for natural gas combustion are from NCDAQ Natural Gas Combustion Spreadsheet and AP-42, Fifth Edition, Volume 1, Chapter 1.4 - Natural Gas Combustion, 07/98 for small boilers. The emission factors for acetaldehyde, acrolein, and ammonia are cited in the NCDAQ spreadsheet as being sourced from the USEPA's WebFIRE database.
[8] Emission factors for propane combustion from SCAQMD's AER Reporting Tool for external combustion equipment fired with LPG.

**Abbreviations:**

CAS - chemical abstract service
HAP - hazardous air pollutant
hr - hour
lb - pound
MMBtu - Million British thermal units
NC - North Carolina
$CH_4$ - methane
CO - carbon monoxide
CO2 - carbon dioxide
$CO_2e$ - carbon dioxide equivalent
kg - kilogram
$NO_X$ - nitrogen oxides
$N_2O$ - nitrous oxide
PAH - polycyclic aromatic hydrocarbon
RTO - regenerative thermal oxidizer
ODT - oven dried tons
TAP - toxic air pollutant
tpy - tons per year
VOC - volatile organic compound
WESP - wet electrostatic precipitator
PM - particulate matter
$PM_{10}$ - particulate matter with an aerodynamic diameter less than 10 microns
$PM_{2.5}$ - particulate matter with an aerodynamic diameter of 2.5 microns or less
$SO_2$ - sulfur dioxide
yr - year

**Table 5**
**Summary of Baghouse and Cyclone Potential Emissions**
**Enviva Pellets Sampson, LLC**
**Faison, Sampson County, North Carolina**

| Emission Unit ID | Source Description | Control Device ID | Control Device Description | Exhaust Flow Rate | Exit Grain Loading | Particulate Speciation | | Potential Emissions | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | PM | | $PM_{10}$ | | $PM_{2.5}$ | |
| | | | | (cfm) | (gr/cf) | $PM_{10}$ (% of PM) | $PM_{2.5}$ (% of PM) | (lb/hr) | (tpy) | (lb/hr) | (tpy) | (lb/hr) | (tpy) |
| ES-HM-1 | Dry Hammermill | CD-HM-BH1 | Baghouse[1, 2, 3] | 15,000 | 0.004 | 100% | 1.7% | 0.51 | 2.3 | 0.51 | 2.3 | 0.0087 | 0.038 |
| ES-HM-2 | Dry Hammermill | CD-HM-BH2 | Baghouse[1, 2, 3] | 15,000 | 0.004 | 100% | 1.7% | 0.51 | 2.3 | 0.51 | 2.3 | 0.0087 | 0.038 |
| ES-HM-3 | Dry Hammermill | CD-HM-BH3 | Baghouse[1, 2, 3] | 15,000 | 0.004 | 100% | 1.7% | 0.51 | 2.3 | 0.51 | 2.3 | 0.0087 | 0.038 |
| ES-HM-4 | Dry Hammermill | CD-HM-BH4 | Baghouse[1, 2, 3] | 15,000 | 0.004 | 100% | 1.7% | 0.51 | 2.3 | 0.51 | 2.3 | 0.0087 | 0.038 |
| ES-HM-5 | Dry Hammermill | CD-HM-BH5 | Baghouse[1, 2, 3] | 15,000 | 0.004 | 100% | 1.7% | 0.51 | 2.3 | 0.51 | 2.3 | 0.0087 | 0.038 |
| ES-HM-6 | Dry Hammermill | CD-HM-BH6 | Baghouse[1, 2, 3] | 15,000 | 0.004 | 100% | 1.7% | 0.51 | 2.3 | 0.51 | 2.3 | 0.0087 | 0.038 |
| ES-HM-7 | Dry Hammermill | CD-HM-BH7 | Baghouse[1, 2, 3] | 15,000 | 0.004 | 100% | 1.7% | 0.51 | 2.3 | 0.51 | 2.3 | 0.0087 | 0.038 |
| ES-HM-8 | Dry Hammermill | CD-HM-BH8 | Baghouse[1, 2, 3] | 15,000 | 0.004 | 100% | 1.7% | 0.51 | 2.3 | 0.51 | 2.3 | 0.0087 | 0.038 |
| ES-HMC | Hammermill Conveying System | CD-HMC-BH | Baghouse[2, 4, 5] | 1,500 | 0.004 | 100% | 100% | 0.051 | 0.23 | 0.05 | 0.23 | 0.051 | 0.23 |
| ES-HMA | Hammermill Area | CD-PFB-BH | Baghouse[1, 2, 4] | 3,102 | 0.004 | 100% | 100% | 0.11 | 0.47 | 0.11 | 0.47 | 0.11 | 0.47 |
| ES-PFB | Pellet Fines Bin | | | | | | | | | | | | |
| ES-PMFS | Pellet Mill Feed Silo | CD-PMFS-BH | Baghouse[1, 2, 4] | 2,444 | 0.004 | 100% | 100% | 0.084 | 0.37 | 0.084 | 0.37 | 0.084 | 0.37 |
| ES-CLR-1 | Pellet Cooler | CD-CLR-1 | Simple cyclone[6] | 16,746 | 0.04 | 26.1% | 3.2% | 5.7 | 25 | 1.5 | 6.6 | 0.18 | 0.80 |
| ES-CLR-2 | Pellet Cooler | CD-CLR-2 | Simple cyclone[6] | 16,746 | 0.04 | 26.1% | 3.2% | 5.7 | 25 | 1.5 | 6.6 | 0.18 | 0.80 |
| ES-CLR-3 | Pellet Cooler | CD-CLR-3 | Simple cyclone[6] | 16,746 | 0.04 | 26.1% | 3.2% | 5.7 | 25 | 1.5 | 6.6 | 0.18 | 0.80 |
| ES-CLR-4 | Pellet Cooler | CD-CLR-4 | Simple cyclone[6] | 16,746 | 0.04 | 26.1% | 3.2% | 5.7 | 25 | 1.5 | 6.6 | 0.18 | 0.80 |
| ES-CLR-5 | Pellet Cooler | CD-CLR-5 | Simple cyclone[6] | 16,746 | 0.04 | 26.1% | 3.2% | 5.7 | 25 | 1.5 | 6.6 | 0.18 | 0.80 |
| ES-CLR-6 | Pellet Cooler | CD-CLR-6 | Simple cyclone[6] | 16,746 | 0.04 | 26.1% | 3.2% | 5.7 | 25 | 1.5 | 6.6 | 0.18 | 0.80 |
| ES-PCR | Pellet Cooler Recirculation | CD-PCR-BH | Baghouse[1, 2, 4] | 1,000 | 0.004 | 100% | 100% | 0.034 | 0.15 | 0.034 | 0.15 | 0.034 | 0.15 |
| ES-PSTB | Pellet Sampling Transfer Bin | CD-PSTB-BH | Baghouse[1, 2, 4] | 1,000 | 0.004 | 100% | 100% | 0.034 | 0.15 | 0.034 | 0.15 | 0.034 | 0.15 |
| ES-FPH | Finished Product Handling | CD-FPH-BH | Baghouse[1, 3, 7] | 8,500 | 0.004 | 91% | 1.7% | 0.29 | 1.3 | 0.27 | 1.2 | 0.0050 | 0.022 |
| ES-PB-1 through 4 | Four (4) Pellet Loadout Bins | | | | | | | | | | | | |
| ES-PL-1 and 2 | Two (2) Pellet Mill Loadouts | | | | | | | | | | | | |
| ES-DWH | Dried wood handling operations (conveyors) | CD-DWH-BH-1 | Baghouse[1, 2, 4] | 1,000 | 0.004 | 100% | 100% | 0.034 | 0.15 | 0.034 | 0.15 | 0.034 | 0.15 |
| | | CD-DWH-BH-2 | Baghouse[1, 2, 4] | 1,000 | 0.004 | 100% | 100% | 0.034 | 0.15 | 0.034 | 0.15 | 0.034 | 0.15 |

**Notes:**

1. Control device flow rate (cfm) provided by design engineering firm (Mid-South Engineering Co.).
2. No speciation data is available for $PM_{10}$. Therefore, it is conservatively assumed to be equal to total PM.
3. Dry Hammermills and Finished product handling $PM_{2.5}$ speciation based on April 2014 Enviva Southampton $PM_{2.5}$ speciation tests.
4. No speciation data is available for $PM_{2.5}$. Therefore, it is conservatively assumed to be equal to total PM.
5. Exhaust flow rate provided by the vendor (WPI).
6. Exit grain loading rate (gr/cf) based on June 21, 2017 conference call and March 27, 2017 stack test parameters. Exhaust flow rate provided by Enviva (16,500 dcfm at 4.89% moisture).
7. Finished product handling $PM_{10}$ speciation based on emission factors for wet wood combustion controlled by a mechanical separator from AP-42, Section 1.6 - Wood Residue Combustion in Boilers, 09/03. Because the particle size of particulate matter from finished product handling is anticipated to be larger than flyash, this factor is believed to be a conservative indicator of speciation.

**Abbreviations:**

cf - cubic feet
cfm - cubic feet per minute
dcfm - dry cubic feet per minute
ES - Emission Sources
IES - Insignificant Emission Source
gr - grain
hr - hour
lb - pound
PM - particulate matter
$PM_{10}$ - particulate matter with an aerodynamic diameter less than 10 microns
$PM_{2.5}$ - particulate matter with an aerodynamic diameter of 2.5 microns or less
tpy - tons per year

**Table 6**
**Dry Hammermill Potential VOC and HAP Emissions**
**ES-HM-1 through -8**
**Enviva Pellets Sampson, LLC**
**Faison, Sampson County, North Carolina**

**Calculation Basis**

| | |
|---|---|
| Hourly Throughput | 102 ODT/hr |
| Annual Throughput | 558,450 ODT/yr |
| Hours of Operation | 8,760 hr/yr |

**Potential VOC and HAP Emissions**

| Pollutant | CAS No. | NC TAP | VOC | Emission Factor[1] | Potential Emissions | |
|---|---|---|---|---|---|---|
| | | | | (lb/ODT) | (lb/hr) | (tpy) |
| Acetaldehyde | 75-07-0 | Y | Y | 0.0091 | 0.93 | 2.5 |
| Acrolein | 107-02-8 | Y | Y | 0.0108 | 1.10 | 3.0 |
| Formaldehyde | 50-00-0 | Y | Y | 0.0080 | 0.82 | 2.2 |
| Methanol | 67-56-1 | N | Y | 0.0052 | 0.53 | 1.4 |
| Phenol | 108-95-2 | Y | Y | 0.0041 | 0.42 | 1.1 |
| Propionaldehyde | 123-38-6 | N | Y | 0.0188 | 1.9 | 5.3 |
| | | | **Total HAP Emissions** | | **5.7** | **16** |
| Total VOC | -- | -- | Y | 0.60 | 61 | 168 |

**Notes:**
1. Emission factors are based on stack testing data from comparable Enviva facilities.

**Abbreviations:**

CAS - chemical abstract service
HAP - hazardous air pollutant
hr - hour
lb - pound
NC - North Carolina
ODT - oven dried tons
TAP - toxic air pollutant
tpy - tons per year
VOC - volatile organic compound
yr - year

**Table 7**
**Pellet Cooler and Pellet Mill Potential VOC and HAP Emissions**
**ES-CLR-1 through 6**
**Enviva Pellets Sampson, LLC**
**Faison, Sampson County, North Carolina**

**Calculation Basis**

| | |
|---|---|
| Hourly Throughput | 120 ODT/hr |
| Annual Throughput | 657,000 ODT/yr |
| Hours of Operation | 8,760 hr/yr |

**Potential VOC and HAP Emissions**

| Pollutant | CAS No. | NC TAP | VOC | Emission Factor[1] | Potential Emissions | |
|---|---|---|---|---|---|---|
| | | | | (lb/ODT) | (lb/hr) | (tpy) |
| Acetaldehyde | 75-07-0 | Y | Y | 0.0084 | 1.01 | 2.8 |
| Acrolein | 107-02-8 | Y | Y | 0.0504 | 6.0 | 17 |
| Formaldehyde | 50-00-0 | Y | Y | 0.0312 | 3.7 | 10 |
| Methanol | 67-56-1 | N | Y | 0.24 | 29 | 79 |
| Phenol | 108-95-2 | Y | Y | 0.0252 | 3.0 | 8.3 |
| Propionaldehyde | 123-38-6 | N | Y | 0.0108 | 1.30 | 3.5 |
| | | | **Total HAP Emissions** | | **44** | **120** |
| Total VOC | -- | -- | Y | 1.74 | 209 | 572 |

**Notes:**
[1] Emission factors were derived based on stack testing data from comparable Enviva facilities.

**Abbreviations:**

CAS - chemical abstract service
HAP - hazardous air pollutant
hr - hour
lb - pound
NC - North Carolina
ODT - oven dried tons
TAP - toxic air pollutant
tpy - tons per year
VOC - volatile organic compound
yr - year

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