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ENVIRONMENT & HEALTH

North Carolina Department of Environment Quality
Fayetteville Regional Office
Division of Air Quality
Mr. Steven Vozzo
Regional Supervisor
225 Green Street, Suite 714
Fayetteville, NC 28301-5095

RECEIVED
SEP 29 2017
DEQ-FAYETTEVILLE REGIONAL OFFICE

Re: Initial Title V Permit Application
Enviva Pellets Sampson, LLC
Sampson County, North Carolina
Permit No.: 10386R03
Facility ID No.: 8200152

Dear Mr. Vozzo:

Date September 28, 2017

Ramboll Environ
6 Davis Drive
Suite 139
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NC 27709
USA

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Enclosed please find a North Carolina Department of Environment Quality, Division of Air Quality (NC DAQ) permit application package for an initial Title V permit for the Enviva Pellets Sampson, LLC (Enviva) wood pellet processing plant in Sampson County, North Carolina. The Sampson plant is a major source with respect to the Title V Operating Permit Program because facility-wide emissions of one or more criteria pollutants exceed the major source threshold of 100 tons per year (tpy). Additionally, the plant is considered a major source of hazardous air pollutants (HAP) due to total HAP emissions exceeding the major source threshold of 25 tpy. Enviva is submitting this application to obtain an initial Title V permit for the Sampson plant pursuant to 15A North Carolina Administrative Code (NCAC) 02Q .0507(a) which requires that an application be submitted within 12 months from the date a source begins operation. This permit application incorporates all equipment permitted for construction under Enviva's Prevention of Significant Deterioration (PSD) permit with the exception of the eight (8th) hammermill. Enviva only installed seven (7) of the eight (8) hammermills permitted under PSD Permit No. 10386R03.

The permit application package includes seven (7) copies of the following documents:

- Application for Initial Title V Air Permit
- Appendix A – Area Map
- Appendix B – Process Flow Diagram
- Appendix C – Potential Emissions Calculations

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- Appendix D – Permit Application Forms

If you have any questions regarding this permit application, please contact Joe Harrell, Corporate EHS Manager at Enviva, at (252) 209-6032 or joe.harrell@envivabiomass.com, or me at (225) 408-2691 or mcarbon@environcorp.com.

Yours sincerely,

Michael Carbon
Managing Principal

Enclosures: Permit Application including Appendices

cc: Joe Harrell, Enviva

Prepared for
Enviva Pellets Sampson, LLC
Sampson County, North Carolina

Prepared By
Ramboll Environ US Corporation
Research Triangle Park, North Carolina

Project Number
2638130F

Date
September 2017

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SEP 29 2017
DEQ-FAYETTEVILLE REGIONAL OFFICE

APPLICATION FOR INITIAL TITLE V AIR PERMIT

ENVIVA PELLETS SAMPSON, LLC

Received
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Air Permits Section

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CONTENTS

APPENDIX

ACRONYMS AND ABBREVIATIONS

AAL	Acceptable Ambient Level
AP-42	Compilation of Air Pollutant Emission Factors
BMP	Best Management Practice
CAA	Clean Air Act
CAM	Compliance Assurance Monitoring
CFR	Code of Federal Regulations
CI	Compression Ignition
CO	Carbon Monoxide
DAQ	Division of Air Quality
DENR	Department of Environment and Natural Resources
EPA	U.S. Environmental Protection Agency
FSC	Forest Stewardship Council
g	gram
HAP	Hazardous Air Pollutant
hp	horsepower
ICE	Internal Combustion Engine
lb	Pound
kW	kilowatt
MACT	Maximum Achievable Control Technology
MMBtu	Million British thermal units
NAAQS	National Ambient Air Quality Standards
NCAC	North Carolina Administrative Code
NESHAP	National Emission Standards for Hazardous Air Pollutants
NMHC	Non-methane Hydrocarbons
NNSR	Nonattainment New Source Review
NO_X	Nitrogen Oxides ($NO + NO_2$)
NSPS	New Source Performance Standards
NSR	New Source Review
ODT	Oven Dried Tons
PEFC	Programme for the Endorsement of Forest Certifications
PM	Particulate Matter

$PM_{2.5}$	Particulate Matter Less Than 2.5 Micrometers in Aerodynamic Diameter
PM_{10}	Particulate Matter Less Than 10 Micrometers in Aerodynamic Diameter
ppmw	parts per million by weight
PSD	Prevention of Significant Deterioration
PSEU	Pollutant Specific Emission Unit
RICE	Reciprocating Internal Combustion Engine
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
SFI	Sustainable Forestry Initiative
TAP	Toxic Air Pollutant
tph	tons per hour
tpy	tons per year
USEPA	US Environmental Protection Agency
VOC	Volatile Organic Compounds
WESP	Wet Electrostatic Precipitator

1. INTRODUCTION

Enviva Pellets Sampson, LLC (Enviva) constructed a wood pellets manufacturing plant (the "Facility") in Sampson County, North Carolina under the authorization of Prevention of Significant Deterioration (PSD) Permit No. 10386R00 issued by the North Carolina Department of Environment and Natural Resources (DENR), Division of Air Quality (now the NC Department of Environmental Quality, Division of Air Quality or "DAQ") on November 17, 2014 January 6, 2015.[1] The plant began operation on October 3, 2016. The plant is permitted to produce up to 537,625 oven-dried tons (ODT) per year of wood pellets utilizing up to 75% softwood on a 12-month rolling total basis. The plant consists of a log chipper, green wood hammermills, bark hog, rotary dryer, hammermills, pellet presses and coolers, production loading operations and other ancillary activities.

The Sampson plant is a major source with respect to the Title V Operating Permit Program because facility-wide emissions of one or more criteria pollutants exceed the major source threshold of 100 tons per year (tpy). Additionally, the plant is considered a major source of hazardous air pollutants (HAP) due to total HAP emissions exceeding the major source threshold of 25 tpy. Enviva is submitting this application to obtain an initial Title V permit for the Sampson plant pursuant to 15A North Carolina Administrative Code (NCAC) 02Q.0507(a) which requires that an application be submitted within one year from the date a source begins operation. This permit application incorporates all equipment permitted for construction under Enviva's PSD permit with the exception of the eight (8th) hammermill. Enviva only installed seven (7) of the eight (8) hammermills permitted under PSD Permit No. 10386R03.

A description of the process and methodologies used to quantify potential emissions is provided in Section 2. Section 3 describes the applicability of federal and state permitting programs. Section 4 includes a detailed applicability analysis of both federal and state regulations.

[1] Permit Nos. 10386R01, 10386R02 and 10386R03 were subsequently issued on January 6, 2015, January 27, 2016 and April 7, 2017.

2. PROCESS DESCRIPTION AND POTENTIAL EMISSIONS QUANTIFICATION

Enviva manufactures wood pellets for use as a renewable fuel for energy generation and industrial customers. Enviva's customers use wood pellets in place of coal, significantly reducing emissions of pollutants such as carbon dioxide, mercury, arsenic and lead. The company is dedicated to improving the environmental profile of energy generation while promoting sustainable forestry in the southeastern United States. Enviva holds certifications from the Forest Stewardship Council (FSC), Sustainable Forestry Initiative (SFI) and the Programme for the Endorsement of Forest Certifications (PEFC). Enviva requires that all suppliers adhere to state-developed "Best Management Practices" (BMPs) in their activities to protect water quality and sensitive ecosystems. In addition, Enviva is implementing an industry leading "track and trace" system to further ensure that all fiber resources come from responsible harvests. Enviva pays particular attention to: land use change, use and effectiveness of BMPs, wetlands, biodiversity, and certification status. All of this combined ensures that Enviva's forestry activities contribute to healthy forests both today and in the future. The following sections describe each of the emission sources at the Sampson plant and the methodologies used to calculate their potential emissions. An area map and process flow diagram are provided in Appendices A and B, respectively.

2.1 Green Wood Handling and Storage

"Green" (i.e., wet) wood is delivered to the plant via trucks as either pre-chipped wood or unchipped low grade wood fiber, tops, limbs, and logs from commercial thinning for on-site chipping. Pre-chipped wood is screened and oversized chips undergo additional chipping. Unchipped wood is debarked and chipped to specification for drying in the on-site electric-powered debarker (IES-DEBARK-1), chipper (ES-CHIP-1), and three (3) green wood hammermills (ES-GHM-1 through ES-GHM-3) as required. A more detailed description of these process operations is included in Section 2.2 below. Chipped wood for drying is conveyed to a chipped wood storage pile while bark is conveyed to a bark fuel storage pile (IES-GWFB).

Green wood and bark contain a high moisture content approaching 50 percent water by weight. Therefore, green wood handling and sizing have insignificant particulate matter (PM) emissions. Representative drop point emission calculations for green wood handling and sizing based on AP-42 Section 13.2.4 *Aggregate Handling and Storage Piles* are included in Appendix C.[2] Per 15A NCAC 02Q .0503, green wood handling (IES-GWHS) and dried wood (bark) handling (IES-DWHS) are included on the insignificant activities list because potential PM emissions are less than 5 tons per year (tpy) when uncontrolled.

Emission calculations for fugitive PM from chipped wood storage piles are also provided in Appendix C. Emission factors were developed based on the surface area of the storage piles in accordance with U.S. Environmental Protection Agency (EPA) guidance for active storage pile fugitive emissions.[3] These factors provide estimates of PM emissions due to wind erosion at the surface of each storage pile based on the annual frequency of high wind speeds (> 12 miles per hour).

[2] U.S. EPA AP-42 Section 13.2.3 *Aggregate Handling and Storage Piles*, (11/06).

[3] U.S. EPA *Control of Open Fugitive Dust Sources*, Research Triangle Park, North Carolina, EPA-450/3-88-008. September 1988.

In addition to PM emissions, volatile organic compounds (VOC) are also emitted from the storage piles. Emission factors were obtained from a National Council for Air and Stream Improvement (NCASI) document for the calculation of fugitive VOC emissions from woody biomass storage piles. Emission factors range from 1.6 to 3.6 pounds (lb) VOC as carbon/acre-day; however, emissions were conservatively based on the maximum emission factor. Detailed calculations are included in Appendix C. Per 15A NCAC 02Q .0503, these sources are also insignificant and are listed as insignificant activities IES-GWSP-1 and -2.

2.2 Debarking, Chipping, Green Wood Hammermills, and Bark Hog

Bark is removed from unchipped wood prior to chipping in the rotary drum debarker. There are currently no AP-42 emission factors or other emission factors available for debarkers, and visual observations of these units in operation indicate that emissions are negligible due to the high moisture content of bark and containment of emissions provided by the drums.

Emission estimates for the chipper and bark hog are based on limited emission factors available for wood chipping. As shown in Appendix C, VOC emissions from these sources are calculated using emission factors from AP-42 Section 10.6.3 *Medium Density Fiberboard Manufacturing* for hardwood chipping.[4] Methanol emissions are also calculated using emission factors from AP-42 Sections 10.6.3 and 10.6.4 *Hardboard and Fiberboard*.[5] PM emissions are negligible from the chipper (ES-CHIP-1) and the bark hog (ES-BARKHOG) because the exhaust is directed downward towards the ground.

VOC emission estimates for the green wood hammermills (ES-GHM 1, 2, and 3) are derived from Enviva's Wiggins, MS plant stack test emission factors and the green wood hammermill throughput. PM emissions from the green wood hammermills are based on air flow rate and a bin vent outlet PM grain loading factor of 0.004 gr/ft^3.

2.3 Dryer

Green wood is conveyed to a single rotary dryer system (ES-DRYER). Direct contact heat is provided to the system via a 250.4 million British thermal unit per hour (MMBtu/hr) total heat input burner system using bark and wood chips as fuel. Emissions are controlled by four (4) identical cyclones which capture bulk PM. Emissions from each of the cyclones are combined into a common duct and are routed to a wet electrostatic precipitator (WESP) for additional particulate, metallic HAP, and hydrogen chloride removal.

Criteria pollutant emissions are calculated using a combination of AP-42 emission factors from Section 1.6 *Wood Residue Combustion in Boilers*[6] and existing stack testing results from Enviva's Ahoskie and Wiggins facilities. Refer to Appendix C for details regarding specific emission factors.

HAP and toxic air pollutant (TAP) emissions from combustion of wood in the dryer are calculated based on emission factors from AP-42 Section 1.6 and consider control of metallic HAP emissions by the WESP. In addition to HAP and TAP emissions from combustion of wood in the dryer, HAPs and TAPs are also released during the drying of wood. Emission factors for green, direct wood-fired softwood are based on results from Enviva's Wiggins, MS plant stack

[4] U.S. EPA AP-42 Section 10.6.3 *Medium Density Fiberboard Manufacturing*, (8/02).

[5] U.S. EPA AP-42 Section 10.6.4 *Hardboard and Fiberboard*, (10/02).

[6] U.S. EPA AP-42 Section 1.6 *Wood Residue Combustion in Boilers*, (9/03).

testing results from 2013. Refer to Appendix C for detailed documentation of emission factors.

2.4 Dried Wood Handling

Dried materials are transferred from the dryer via conveyors to screening operations that remove smaller size wood particles prior to transfer into hammermills for further size reduction prior to pelletization. Smaller particles passing through the screens are diverted to the hammermill discharge conveyor, while oversized wood is diverted to the hammermills. Dust generated from transfer operations around the screening operation is diverted to the hammermill area filtration system, which is described in the following subsection. There are several other transfer points comprising emission source ES-DWH that are located between the dryer and hammermills. These sources are completely enclosed with only two (2) emission points that are controlled by individual bin vents. The bin vent PM emissions are calculated using a manufacturer-guaranteed grain loading factor for the wood particulates and the maximum nominal flow rate.

2.5 Hammermills

Prior to pelletization, dried wood is reduced to the appropriate size using seven (7) hammermills operating in parallel (ES-HM1 through ES-HM7). A conveyor system receives the ground wood from the hammermills and sends it to the pellet mill feed silo (ES-PMFS).

Particulate emissions from each of the seven (7) hammermills are controlled using seven (7) individual cyclones, which are subsequently controlled by seven (7) individual fabric filters. Appendix C summarizes the emissions from each hammermill bagfilter system.[7] PM emissions from each bagfilter are calculated using a manufacturer-guaranteed exit grain loading rate and the maximum nominal exhaust flow rate.

VOC, HAP, and TAP emissions are calculated based on Enviva's Wiggins, MS and Amory, MS plant stack testing data as shown in Appendix C.

2.6 Hammermill Area

An induced draft fan is used to transfer dust generated from a number of enclosed transfer/handling sources around the hammermill to the pellet fines bin (ES-PFB) which is then controlled by a bagfilter (CD-PFB-BV). Sources controlled by the bagfilter on the pellet fines bin include, but are not limited to, the following:

- Hammermills infeed and distribution transfer;
- Hammermills cyclone and bagfilter drop out;
- Pellet cooler transfer (particulate emissions from pellet cooler cyclones large enough to drop out of entrainment) and pellet screening;
- Hammermill pre-screen feeder emissions;
- Pellet screen fines cyclone; and
- Pellet fines bin emissions.

[7] Note, Enviva's decision to install only seven (7) rather than eight (8) permitted hammermills results in slightly lower potential PM emissions and no change in VOC or HAP emissions, as these were based on permitted production.

Emissions from this bagfilter are calculated assuming a manufacturer guaranteed exit grain loading rate and the maximum nominal exhaust flow rate.

2.7 Pellet Mill Feed Silo

Sized wood from the hammermills is transported by a set of conveyors to the pellet mill feed silo (ES-PMFS) prior to pelletization. Particulate emissions from the pellet mill feed silo bin vent filter (CD-PMFS-BV) are calculated assuming a manufacturer-guaranteed exit grain loading rate and the maximum nominal exhaust flow rate.

2.8 Pellet Press System Pellet Coolers

Dried ground wood is mechanically compacted in the presence of water in several screw presses in the Pellet Press System. Exhaust from the Pellet Press System and Pellet Presses conveyors are vented through the cooler aspiration cyclones and then to the atmosphere. No chemical binding agents are needed for pelletization.

Formed pellets are discharged into one of six (6) pellet coolers. Cooling air is passed through the pellets. At this point, the pellets contain a small amount of wood fines which are swept out with the cooling air and are controlled utilizing six (6) cyclones operating in parallel prior to discharge to the atmosphere. The recirculation exhaust on the pellet coolers (ES-PCLR1 through ES-PCLR6) is routed to a bin vent that collects the fines from the cyclones so it can be transferred to be reused in the process.

PM emissions from each cyclone and the recirculation bin vent are calculated assuming a maximum exit grain loading rate and the maximum nominal exhaust flow rate. VOC, HAP, and TAP emissions are calculated using Enviva's Wiggins, MS plant stack testing data. Refer to Appendix C for detailed documentation.

2.9 Pellet Sampling Transfer Bin

Pelletized wood is transferred from the pellet coolers to the truck loadout operations via conveyor. The pellet sampling transfer bin vent filter (ES-PSTB) controls emissions from that conveyor. Particulate emissions from the pellet sampling transfer bin vent filter are calculated assuming a manufacturer guaranteed exit grain loading rate and the maximum nominal exhaust flow rate.

2.10 Finished Product Handling and Loadout

Final product is conveyed to truck loadout pellet bins (ES-PB1 and ES-PB2) that feed truck loadout operations (ES-PL) or trucks, if needed. Emissions from the Pellet Loadout Bins are controlled by a bagfilter. Pellet loadout is accomplished by gravity feed of the pellets through a covered chute to reduce emissions. Emissions to the atmosphere from pellet loadout are minimal because dried wood fines have been removed in the pellet screener, and a slight negative pressure is maintained in the loadout building as a fire prevention measure to prevent any buildup of dust on surfaces within the building. Slight negative pressure is produced via an induced draft fan that exhausts to the same bagfilter (CDFPH) that controls minor dust emissions from loading of the Pellet Loadout Bins.

Particulate emissions from finished product handling and loadout are calculated assuming a manufacturer-guaranteed exit grain loading rate and the maximum nominal exhaust flow rate for the bagfilter.

2.11 Emergency Generator and Fire Water Pump Fuel Oil Storage Tanks

The plant includes a 536 brake horsepower (hp) diesel-fired emergency generator (ES-EG) for emergency operations and a 131 brake hp diesel-fired fire water pump engine (ES-FWP). Aside from maintenance and readiness testing, the generator and fire water pump engines are only utilized for emergency operations. Criteria pollutant emissions from the engines are calculated based on applicable emission limits from 40 Code of Federal Regulations (CFR) Subpart 60 New Source Performance Standards (NSPS) Subpart IIII, *Stationary Compression Ignition Internal Combustion Engines*. HAP emissions are calculated based on emission factors from AP-42 Section 3.3 *Gasoline and Diesel Industrial Engines*.[8]

Diesel for the emergency generator is stored in a storage tank of up to 2,500 gallons capacity (TK1) and diesel for the fire water pump is stored in a storage tank of up to 1,000 gallons capacity (TK2). Emissions from both storage tanks are estimated to be 1.6 pounds per year and are listed as insignificant sources in the permit. VOC emissions from the diesel storage tanks were calculated using EPA's TANKS software.

[8] U.S. EPA Section 3.3 *Gasoline and Industrial Engines*, (10/96).

3. STATE AND FEDERAL PERMITTING APPLICABILITY

The Enviva Sampson plant is subject to federal and state air quality permitting requirements. The following sections summarize potentially applicable federal and state permitting programs.

3.1 Federal Permitting Programs

The federal New Source Review (NSR) permitting program includes requirements for construction of new sources and modifications to existing sources while the Title V Operating Permit Program includes requirements for operation of facilities considered major sources. The following sections discuss applicability of these federal permitting programs to the Sampson plant.

3.1.1 New Source Review

Construction of new emission sources and modifications to existing emission sources are subject to requirements under NSR if a significant net emissions increase will occur as a result of a proposed project. The NSR permitting program is comprised of two separate permitting programs that apply depending on whether the facility is located in an area designated as attainment or nonattainment with the National Ambient Air Quality Standards (NAAQS). Prevention of Significant Deterioration (PSD) potentially applies if the facility is located in an attainment area and Nonattainment NSR (NNSR) is potentially applicable for facilities located in nonattainment areas. The federal NSR permitting program is implemented in North Carolina in 15A NCAC 2D.0530.

The Sampson plant is located in Sampson County which is currently classified as attainment or unclassifiable for all pollutants.[9] The Sampson plant is an existing major source with respect to the PSD permitting program because facility-wide potential emissions of one or more regulated pollutants exceed the major source threshold of 250 tpy. Any future changes at the plant will need to undergo a PSD applicability analysis. No changes are proposed as part of this submittal.

This permit application incorporates all equipment permitted for construction under Enviva's PSD permit with the exception of the eight (8^{th}) hammermill. Enviva only installed seven (7) of the eight (8) hammermills permitted under PSD Permit No. 10386R03. As discussed above, installation of only seven (7) of the eight (8) permitted hammermills results in slightly lower potential PM emissions and no change in VOC or HAP emissions, as these were based on permitted production. As such, installation of only seven (7) hammermills results is no impact to past PSD modeling or BACT analyses.

3.1.2 Title V Operating Permit Program

The federal Title V Operating Permit program is set forth in 40 Code of Federal Regulations (CFR) Part 70 and is implemented in North Carolina via 15A NCAC 2Q.0500. The Sampson plant is a major source with respect to the Title V Operating Permit Program because facility-wide emissions of one or more criteria pollutants exceed the major source threshold of 100 tpy. Additionally, the plant is considered a major source of HAP due to total HAP emissions exceeding the major source threshold of 25 tpy. Enviva is submitting this application for an

[9] https://www3.epa.gov/airquality/greenbook/anayo_nc.html

initial Title V permit pursuant to 15A NCAC 02Q.0507(a) which requires that an application be submitted within one year from the date a source begins operation.

3.2 North Carolina Permitting Program

15A NCAC 02Q.0300 and 02Q.500 include specific requirements for permitting of construction and operation of new and modified sources in accordance with North Carolina's State Implementation Plan (SIP). Enviva is subject to the Title V procedures under 15A NCAC 02Q.0500 and is thus submitting this application to NC DAQ. The required application forms are included as Appendix D.

4. REGULATORY APPLICABILITY

The Sampson plant is subject to federal and state air quality regulations. The following addresses all potentially applicable regulations.

4.1 New Source Performance Standards

New Source Performance Standards (NSPS) apply to new and modified sources and require sources to control emissions in accordance with standards set forth at 40 CFR Part 60. NSPS standards in 40 CFR Part 60 have been incorporated by reference in 15A NCAC 02D.0524.

4.1.1 40 CFR 60 Subpart A – General Provisions

All sources subject to a NSPS are subject to the general requirements under Subpart A unless excluded by the source-specific subpart. Subpart A includes requirements for initial notification, performance testing, recordkeeping, monitoring, and reporting. Subpart A is applicable because the emergency generator and fire water pump are subject to NSPS Subpart IIII.

4.1.2 40 CFR 60 Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

NSPS Subpart IIII applies to owners or operators of compression ignition (CI) internal combustion engines (ICE) manufactured after April 1, 2006 that are not fire pump engines, and fire pump engines manufactured after July 1, 2006. The 536 hp emergency generator and 131 hp fire pump at the Sampson plant are subject to NSPS Subpart IIII.

Under NSPS Subpart IIII, owners and operators of emergency generators manufactured in calendar year 2007 or later with a maximum engine power greater than or equal to 50 hp are required to comply with the emission limits in §60.4205(b). These limits are as follow for a 536 hp engine: 0.20 grams per kilowatt (g/kW) for PM, 3.5 g/kW for carbon monoxide (CO), and 4 g/kW for oxides of nitrogen (NO_x) + nonmethane hydrocarbons (NMHC).

Enviva purchased an engine certified to meet the referenced emission limits in accordance with §60.4211(c) and complies with the applicable emission limits by operating the emergency generator as instructed in the manufacturer's operating manual in accordance with §60.4211(a). The engine is equipped with a non-resettable hour meter in accordance with §60.4209(a). Emergency and readiness testing of the unit is limited to 100 hours per year.

In accordance with NSPS Subpart IIII, owners and operators of fire pump engines manufactured after July 1, 2006 must comply with the emission limits in Table 4 of NSPS Subpart IIII, which are organized based on the size of the unit. These limits are as follow: 0.30 g/kW for PM, 5.0 g/kW for CO, and 4 g/kW for NO_x + NMHC.

Enviva purchased an engine certified to meet the referenced emission limits in accordance with §60.4211(b) and complies with these emission limits by operating the fire pump as instructed in the manufacturer's operating manual in accordance with §60.4211(a). The engine is equipped with a non-resettable hour meter in accordance with §60.4209(a). Emergency and readiness testing of the fire pump engine is limited to 100 hours per year.

The emergency generator and fire pump are required to comply with the fuel requirements in §60.4175.3, which limits sulfur to a maximum of 15 parts per million by weight (ppmw) and a cetane index of at least 40.

4.2 National Emission Standards for Hazardous Air Pollutants

National Emission Standards for Hazardous Air Pollutants (NESHAP) regulate HAP emissions and are applicable to certain major and area sources of HAP. NESHAP can be found in 40 CFR Part 63 and have been incorporated by reference in 15A NCAC 02D.1111. As previously discussed, the Sampson plant is considered a major source of HAP due to facility-wide HAP emissions exceeding 25 tpy for total HAP.

4.2.1 40 CFR 63 Subpart A – General Provisions

All sources subject to a NESHAP are subject to the general requirements under Subpart A unless excluded by the source-specific subpart. Subpart A includes requirements for initial notification, performance testing, recordkeeping, monitoring, and reporting. Since the emergency generator and fire pump are subject to Subpart ZZZZ, Subpart A is also applicable to these sources.

4.2.2 40 CFR 63 Subpart B – Requirements for Control Technology Determinations for Major Sources in Accordance with Clean Air Act Sections 112(g) and 112(j)

As previously described, the Sampson plant is a major source of HAP emissions. Clean Air Act (CAA) Section 112(g) requires that any new stationary source that does not belong to a regulated "source category" for which a NESHAP has been promulgated must control emissions to levels that reflect "maximum achievable control technology" (MACT). Because Wood Pellet Manufacturing Plants are not a regulated source category, the Sampson plant is subject to 112(g) and underwent case-by-case MACT as part of the PSD construction permitting process. NC DAQ concluded that case-by-case MACT for the Dryer is use of lower emitting materials (i.e., limitation on softwood) and process design. Metals and metallic HAP emissions associated with combustion of wood fuel in the dryer furnace are well-controlled through use of the WESP.

Other sources of HAP emissions at the plant include the following:

- Green wood hammermills (ES-GHM1 through ES-GHM3) with bin vent control,
- Seven (7) hammermills (ES-HM1 through ES-HM7) and hammermill area (ES-HMA) controlled by bagfilters, and ,
- Twelve (12) wood pellet presses and six (6) pellet coolers controlled by cyclones (ES-CLR1 through ES-CLR6).

For these sources, MACT was determined to be use of PM control technologies and maintenance of equipment in accordance with manufacturer's specifications and/or standard industry practices.

4.2.3 40 CFR 63 Subpart ZZZZ – NESHAP for Stationary Reciprocating Internal Combustion Engines

Subpart ZZZZ applies to reciprocating internal combustion engines (RICE) located at a major or area source of HAP emissions. Emergency power and limited use units are subject to requirements under §63.6590(b)(i) and §63.6590(b)(ii). Emergency stationary RICE are defined in §63.6675 as any stationary RICE that operates in an emergency situation. These situations include engines used for power generation when power from the local utility is interrupted, or when engines are used to pump water in the case of fire or flood.

The Sampson plant emergency generator and emergency fire pump are classified as emergency stationary RICE under Subpart ZZZZ and comply with the requirements of Subpart ZZZZ by complying with NSPS Subpart IIII per §63.6590(c).

4.3 Compliance Assurance Monitoring

Compliance Assurance Monitoring (CAM) under 40 CFR 64 is applicable to emission units located at a Title V major source that use a control device to achieve compliance with an emission limit and whose pre-controlled emissions exceed the major source thresholds. A CAM plan is required to be submitted with the Initial Title V operating permit application for emission units whose post-controlled emissions exceed the major source thresholds (i.e., large pollutant-specific emission units [PSEU]).[10] For emission units with post-controlled emissions below the major source thresholds, a CAM plan must be submitted with the first Title V permit renewal application.[11]

The Dryer is subject to a PM emission limit under 15A NCAC 02D .0515 and emissions are controlled by four (4) cyclones and a WESP; however, post-controlled PM emissions are below the major source threshold. As such, a CAM plan for the Dryer is not required to be submitted until the first Title V permit renewal application is submitted. A control device is not utilized to meet the Dryer's CO, VOC, or NO_X emission limits.

All other emission units at the Sampson plant have pre-controlled emissions below the major source threshold and/or do not use a control device as defined in §64.1. For those with control devices, the post-controlled emissions are below the major source threshold and thus, if CAM is applicable, it will not need to be addressed until the first Title V permit renewal application.

4.4 North Carolina Administrative Code

The Sampson plant sources are subject to regulations contained within 15A NCAC 02D and 02Q. Potentially applicable regulations are addressed below.

4.4.1 15A NCAC 02D .0515 Particulates from Miscellaneous Industrial Processes

PM emissions from all emission sources subject to permitting are regulated under 15A NCAC 02D .0515. This regulation limits particulate emissions based on process throughput using the equation $E = 4.10 \times P^{0.67}$, for process rates (P) less than 30 tons per hour (tph) and $E=55 \times P^{0.11}-40$ for process rates greater than 30 tph.

All emissions from PM sources at the Sampson plant are either negligible or controlled by cyclones, bahouses, or filters.

4.4.2 15A NCAC 02D .0516 Sulfur Dioxide Emissions from Combustion Sources

Emissions of SO_2 from combustion sources cannot exceed 2.3 pounds of SO_2 per MMBtu input. The emergency generator and fire pump fire low sulfur diesel and the dryer combusts bark and wood chips, resulting in SO_2 emissions well below the limit of 2.3 lb/MMBtu.

4.4.3 15A NCAC 02D .0521 Control of Visible Emissions

For sources manufactured after July 1, 1971, visible emissions cannot exceed 20 percent opacity when averaged over a six-minute period except under the following conditions:

- No six-minute period exceeds 87 percent opacity,

[10] §64.5(a)
[11] §64.5(b)

- No more than one six-minute period exceeds 20 percent opacity in any hour, and
- No more than four six-minute periods exceed 20 percent opacity in any 24-hour period.

This rule applies to all processes that may have visible emissions.

4.4.4 15A NCAC 02D .0540 Particulate from Fugitive Dust Emission Sources

15A NCAC 02D .0540 requires a fugitive dust control plan be prepared if ambient monitoring or air dispersion modeling show violation or a potential for a violation of the PM NAAQS, or if NC DAQ observes excess fugitive dust emissions from the facility beyond the property boundary for six (6) minutes in any one hour using EPA Method 22. Previous dispersion modeling for the Sampson plant does not show a violation or the potential for a violation of the PM_{10} or $PM_{2.5}$ NAAQS. As such, a fugitive dust control plan is not required at this time.

4.4.5 15A NCAC 02D .1100 Control of Toxic Air Pollutant Emissions

A TAP permit application is required to include an evaluation of the TAP emissions from a facility's sources, excluding exempt sources listed under 15A NCAC 02Q .0702(a)(18). This regulation outlines the procedures that must be followed if modeling is required under 15A NCAC 02Q .0700. Previously, toxics modeling was conducted for the PSD construction permit "as an informative conservative exercise". Per 15A NCAC 02Q.0702(27)(B) and (C), sources subject to 40 CFR 63 or case-by-case MACT are exempt from the requirement to obtain a permit to emit TAP. All sources of TAP emissions at the Sampson plant are subject to 40 CFR 63 or have undergone case-by-case MACT. As such, no modeling for TAPs is required. Previous modeling submittals for arsenic, benzo(a)pyrene, cadmium, chlorine, formaldehyde, hexachlorodibenzo-p-dioxin 1,2,3,6,7,8, hydrochloric acid, manganese and compounds, and vinyl chloride have demonstrated that modeled TAP impacts from the Sampson plant are well below the Acceptable Ambient Levels (AAL). Because TAP modeling is not required as a case-by-case MACT source, no further TAP modeling is warranted for this application.

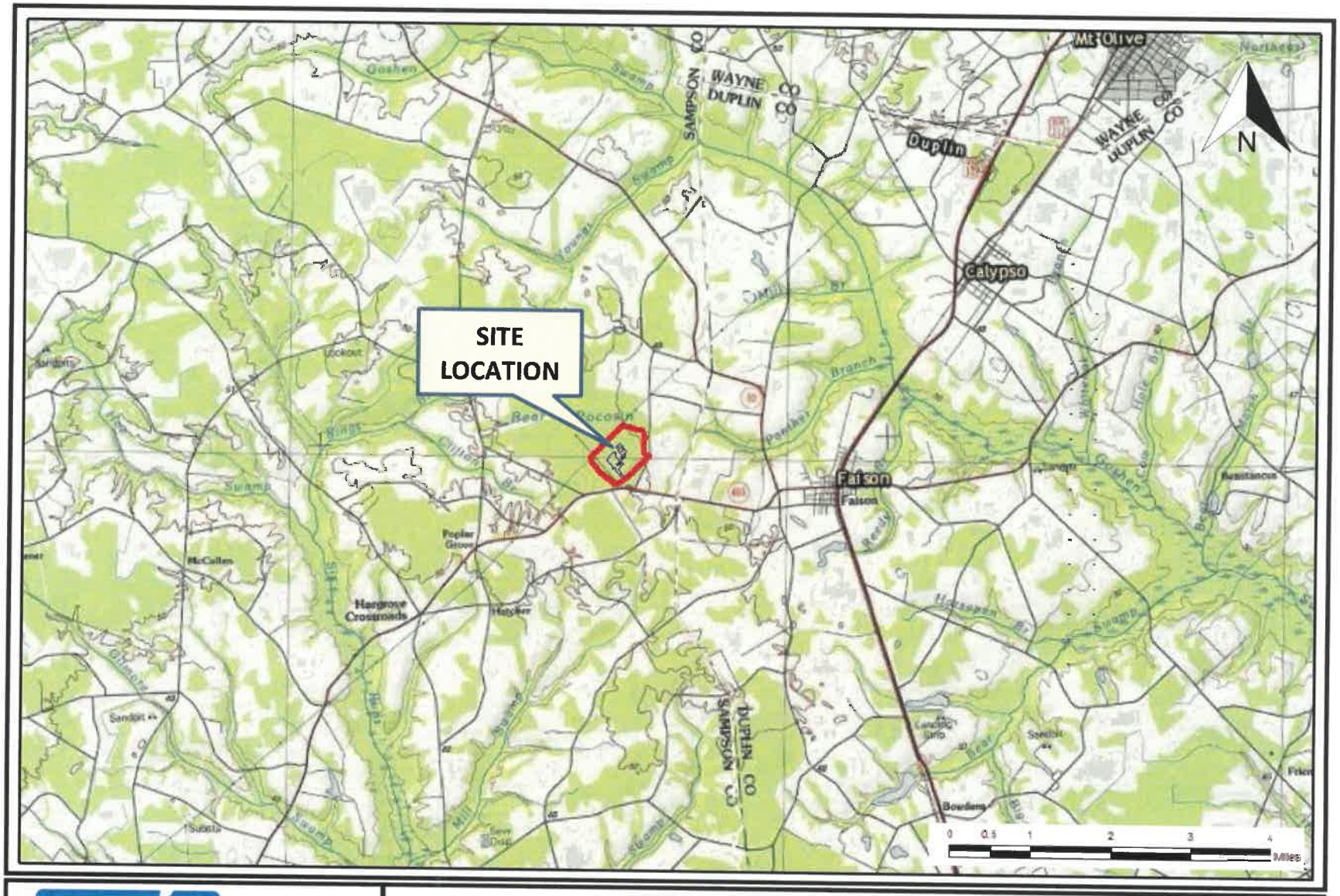
4.4.6 15A NCAC 02Q .0700 Toxic Air Pollutant Procedures

This regulation requires that certain new and modified sources of toxic air pollutants with emissions exceeding specified de minimis values apply for an air toxics permit. Previous modeling of the Sampson plant demonstrated that the plant will not present an unacceptable risk. No changes are proposed as part of this application; therefore, no further TAP modeling is warranted as part of this submittal.

4.4.7 15A NCAC 2Q .0702 Air Toxics Exemption

As discussed above, 15A NCAC 02Q .0702 exempts Part 63 NESHAP-affected sources from NC air toxics requirements. Because Enviva is subject to NESHAP Subpart B, 112(g) §63.40-§63.44 for the Sampson plant, and the emergency engine and fire pump are subject to Subpart ZZZZ, *NESHAP for Stationary Reciprocating Internal Combustion Engines*, all sources are exempt from air toxics review. For informational purposes, Enviva previously evaluated compliance with NC air toxics limits and determined through dispersion modeling that all AALs as listed in 15A NCAC 02D.1100 are met (see Section 4.4.5). As such, Enviva has demonstrated that there is no unacceptable risk associated with the Sampson plant. No changes are requested as part of the application; therefore, no TAP modeling is included with this submittal.

APPENDIX A
AREA MAP



RAMBOLL ENVIRON

DRAFTED BY: FXP

DATE: 9/13/2017

SITE LOCATION MAP

ENVIVA PELLETS SAMPSON, LLC

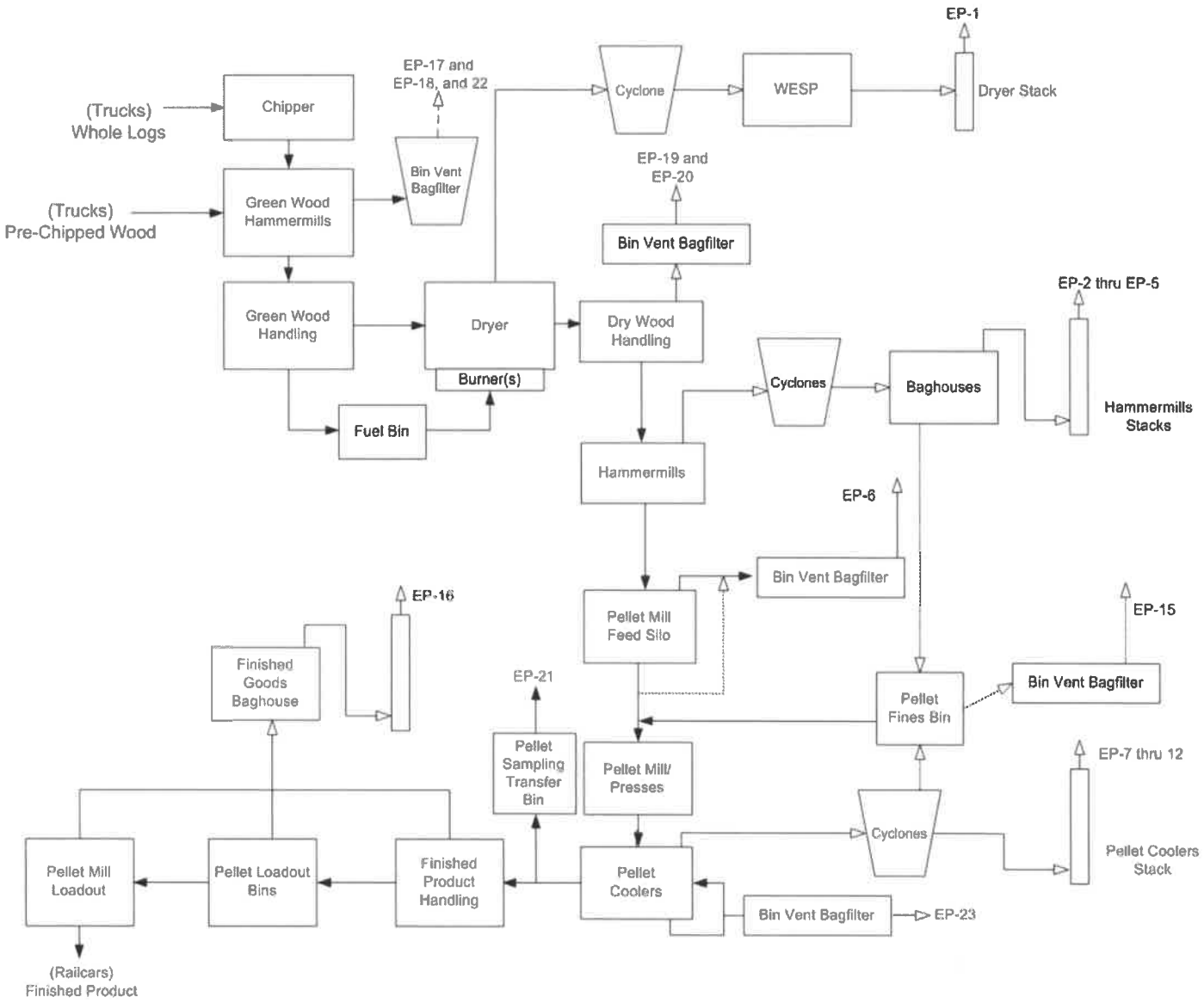
SAMPSON COUNTY, NORTH CAROLINA

FIGURE **1**

PROJECT: 26-38130F

APPENDIX B
PROCESS FLOW DIAGRAM

Process Flow Diagram



APPENDIX C
POTENTIAL EMISSIONS CALCULATIONS

TABLE C-1
FACILITY-WIDE EMISSIONS SUMMARY
ENVIVA PELLET SAMPSON, LLC

Source Description	Unit ID	CO (tpy)	NO_X (tpy)	TSP (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	SO_2 (tpy)	VOC (tpy)	Pb (tpy)	CO_{2e} (tpy)	$CO_{2e\ biomass\ deferral}$ [1] (tpy)
Dryer System	ES-DRYER	230	219	51.5	51.5	51.5	27.4	288	0.00E+00	229,828	3,064
Emergency Generator	ES-EG	0.77	0.88	0.04	0.04	0.04	0.0005	0.88	-	143	143
Fire Water Pump	ES-FWP	0.27	0.22	0.02	0.02	0.02	0.0001	0.22	-	35	35
Hammermills	ES-HM-1 thru 7	-	-	15.8	15.8	0.27	-	34.4	-	-	-
Pellet Mill Feed Silo	ES-PMFS	-	-	0.37	0.37	0.37	-	-	-	-	-
Pellet Mill Fines Bin/ Hammermill Area	ES-PFB, ES-HMA	-	-	0.47	0.47	0.47	-	-	-	-	-
Pellet Presses and Coolers	ES-CLR1 thru -6	-	-	74.3	19.4	2.37	-	228	-	-	-
Log Bark Hog	ES-BARKHOG							0.37			
Log Chipping	ES-CHIP-1	-	-	-	-	-	-	1.25	-	-	-
Green Wood Hammermills	ES-GHM-1, ES-GHM-2, ES-GHM-3	-	-	6.76	6.76	6.76	-	72.2	-	-	-
Finished Product Handling/ Pellet Loadout Bins/ Pellet Loadout Area	ES-FPH/ ES-PL/ ES-PB-1 & 2	-	-	1.28	1.16	0.02	-	-	-	-	-
Paved Roads		-	-	2.42	0.48	0.12	-	-	-	-	-
Dried Wood Handling	ES-DWH			0.30	0.30	0.30					
Pellet Sampling Transfer Bin	ES-PSTB			0.15	0.15	0.15					
Pellet Cooler Recirculation	ES-PCR			0.15	0.15	0.15					
Green Wood Sizing & Handling	IES-GWH	-	-	0.016	0.008	0.001	-	-	-	-	-
Green Wood Storage Piles	IES-GWSP1 & 2	-	-	4.01	2.00	0.30	-	2.93	-	-	-
Diesel Storage Tanks	TK1 & TK2	-	-	-	-	-	-	4.00E-03	-	-	-
Total Emissions		**231**	**220**	**158**	**98.6**	**62.9**	**27.4**	**628**	**0.00E+00**	**230,006**	**3,242**

1. CO_{2e} does not include CO_2 from biomass combustion.

TABLE C-2
FACILITY-WIDE HAP EMISSIONS SUMMARY
ENVIVA PELLET SAMPSON, LLC

Description	ES-DRYER (tpy)	ES-EG (tpy)	ES-FWP (tpy)	ES-HM-1 through 7 (tpy)	ES-CLR-1 through 6 (tpy)	ES-BARKHOG (tpy)	ES-CHIP-1 (tpy)	ES-GHM-1 & 2 (tpy)	Total (tpy)
1,3-Butadiene	-	3.67E-05	8.96E-06	-	-	-	-	-	0.00
Acetaldehyde	6.520	7.19E-04	1.76E-04	0.645	2.075	-	-	1.853	11.09
Acetophenone	0.000	-	-	-	-	-	-	-	0.00
Acrolein	0.000	8.68E-05	2.12E-05	0.000	0.000	-	-	0.000	0.00
Antimony & Compounds	0.001	-	-	-	-	-	-	-	0.00
Arsenic & Compounds	0.002	-	-	-	-	-	-	-	0.00
Benzene		8.75E-04	2.14E-04			-	-	-	0.00
Beryllium metal (un-reacted) (Also include in BEC`	0.000	-	-	-	-	-	-	-	0.00
Cadmium Metal (elemental un-reacted) - (Add w/CDC)	0.000	-	-	-	-	-	-	-	0.00
Carbon tetrachloride	0.049	-	-	-	-	-	-	-	0.05
Chlorine	0.866	-	-	-	-	-	-	-	0.87
Chlorobenzene	0.036	-	-	-	-	-	-	-	0.04
Chromium--Other compds (add w/chrom acid to get CRC)	0.001	-	-	-	-	-	-	-	0.00
Cobalt compounds	0.001	-	-	-	-	-	-	-	0.00
Chloroform		-	-			-	-	-	0.00
Cumene		-	-			-	-	-	0.00
Dinitrophenol, 2,4-	0.000	-	-	-	-	-	-	-	0.00
Di(2-ethylhexyl)phthalate (DEHP`	0.000	-	-	-	-	-	-	-	0.00
Ethyl benzene	0.034	-	-	-	-	-	-	-	0.03
Ethylene dichloride (1,2-dichloroethane`	0.032	-	-	-	-	-	-	-	0.03
Formaldehyde	16.597	1.11E-03	2.71E-04	1.017	1.355	-	-	1.104	20.07
Hydrogen chloride (hydrochloric acid`	2.084	-	-	-	-	-	-	-	2.08
Lead and Lead compounds	0.004	-	-	-	-	-	-	-	0.00
m-,p-Xylene		2.67E-04	6.53E-05			-	-	-	0.00
Manganese & compounds	0.127	-	-	-	-	-	-	-	0.13
Mercury, vapor (Include in Mercury&Compds`	0.000	-	-	-	-	-	-	-	0.00
Methanol	35.643	-	-	0.484	2.098	0.079	0.269	0.821	39.39
Methyl bromide (bromomethane`	0.016	-	-	-	-	-	-	-	0.02
Methyl chloride (chloromethane`	0.025	-	-	-	-	-	-	-	0.03
Methyl chloroform (1,1,1 trichloroethane`	0.034	-	-	-	-	-	-	-	0.03
Methyl ethyl ketone	0.006	-	-	-	-	-	-	-	0.01
Methyl isobutyl ketone		-	-			-	-	-	0.00
Methylene chloride		-	-			-	-	-	0.00
Nickel metal (Component of Nickel & Compounds)	0.003	-	-	-	-	-	-	-	0.00
Nitrophenol, 4-	0.000	-	-	-	-	-	-	-	0.00
o-Xylene		-	-			-	-	-	0.00
Pentachlorophenol	0.000	-	-	-	-	-	-	-	0.00
Perchloroethylene (tetrachloroethylene`	0.042	-	-	-	-	-	-	-	0.04
Phenol	0.000	-	-	0.000	0.000	-	-	0.000	0.00
Phosphorus Metal, Yellow or White	0.002	-	-	-	-	-	-	-	0.00
Polychlorinated biphenyls	0.000	-	-	-	-	-	-	-	0.00
Propionaldehyde	8.840	-	-	0.430	0.406	-	-	0.269	9.94
Propylene dichloride (1,2 dichloropropane`	0.036	-	-	-	-	-	-	-	0.04
Selenium compounds	0.000	-	-	-	-	-	-	-	0.00
Styrene		-	-			-	-	-	0.00
Tetrachlorodibenzo-p-dioxin, 2,3,7,8-	0.000	-	-	-	-	-	-	-	0.00
Toluene		3.84E-04	9.38E-05			-	-	-	0.00
Total PAH (POM)	0.137	1.58E-04	3.85E-05	-	-	-	-	-	0.14
Trichloroethylene	0.033	-	-	-	-	-	-	-	0.03
Trichlorophenol, 2,4,6-	0.000	-	-	-	-	-	-	-	0.00
Vinyl chloride	0.020	-	-	-	-	-	-	-	0.02
TOTAL HAPs	**71.19**	**3.63E-03**	**8.88E-04**	**2.58**	**5.93**	**0.08**	**0.27**	**4.05**	**84.10**
MAX INDIVIDUAL HAP	**Formaldehyde**	**Formaldehyde**	**Formaldehyde**	**Methanol**	**Methanol**	**Methanol**	**Methanol**	**Methanol**	**Methanol**
MAX INDIVIDUAL HAP VALUE	**35.64**	**1.11E-03**	**2.71E-04**	**1.02**	**2.10**	**0.08**	**0.27**	**1.85**	**39.39**

Total HAP

TABLE C-3
ROTARY DRYER -CRITERIA POLLUTANT EMISSIONS
ENVIVA PELLET SAMPSON, LLC

Dryer Inputs

Dryer Throughput (@ Dryer Exit)	575,000	tons/year @ 6.5% moisture
Annual Dried Wood Throughput of Dryer	537,625	ODT/year
Hourly Dried Wood Throughput of Dryer	71.71	ODT/hr
Flow rate =	180,000	ACFM
Exit Temperature =	355.40	deg K
Standard flow rate =	148,472	SCFM
Annual Utilization Factor	100%	
Burner Heat Input	250.4	MMBtu/hr
Annual Burner Heat Input at Annual Utilization	2,193,504.0	MMBtu/yr
Percent Hardwood	25%	
Percent Softwood	75%	

Criteria Pollutant Calculations:

Pollutant	Baseline Emission Factors			Proposed BACT Emission Factor			Baseline Emissions		Total Controlled Potential Emissions	
	Uncontrolled Biomass Emission Factor	Units	Emission Factor Source	Controlled Biomass Emission Factor	Units	Emission Factor Source	(lb/hr)	(tpy)	(lb/hr)	(tpy)
CO	0.210	lb/MMBtu	Note 1	0.210	lb/MMBtu	Baseline	52.61	230.5	52.61	230.5
NO_X	0.200	lb/MMBtu	Note 6	0.200	lb/MMBtu	Note 6	50.08	219.4	50.08	219.4
$PM/PM_{10}/PM_{2.5}$ Condensible Fraction	0.017	lb/MMBtu	AP-42 Section 1.6	0.017	lb/MMBtu	AP-42 Section 1.6	4.26	18.6	4.26	18.6
TSP (Filterable)	2.092	lb/ODT	Note 6	0.030	lb/MMBtu	NSPS emission limit	150.00	562.3	7.51	32.9
Total TSP (Filterable + Condensible)							154.26	580.9	11.77	51.5
PM_{10} (Filterable)	2.092	lb/ODT	Note 6	0.030	lb/MMBtu	NSPS emission limit	150.00	562.3	7.51	32.9
Total PM_{10} (Filterable + Condensible)							154.26	580.9	11.77	51.5
$PM_{2.5}$ (Filterable)	2.092	lb/ODT	Note 6	0.030	lb/MMBtu	NSPS emission limit	150.00	562.3	7.51	32.9
Total $PM_{2.5}$ (Filterable + Condensible)							154.26	580.9	11.77	51.5
SO_2	0.025	lb/MMBtu	AP-42, Section 1.6 [3]	0.025	lb/MMBtu	AP-42, Section 1.6 [3]	6.26	27.4	6.26	27.4
VOC	1.07	lb/ODT	Note 2	1.07	lb/ODT	Baseline	76.90	288.3	76.90	288
Lead	0.00	N/A	N/A	0.00	N/A	N/A	0.00	0.0	0.00	0.0

[1] CO emissions are based on stack testing conducted at Ahsokie, NC facility on June 7, 2012 with a conservative safety margin on CO due to the significant variability that is possible with this pollutant.

[2] VOC emissions emission factor based on Vendor guarantee of 0.95 lb/ODT as propane converted to alpha -pinene and Enviva Wiggins October 2013 Stack Test Data as Total VOC as alpha-pinene using OTM 26.

[3] Although the vendor estimated emissions to include condensibles, additional condensibles from wood combustion AP-42, Section 1.6 were included. The vendor only provided the filterable fraction of particulate matter in the emission factors. Enviva has conservatively calculated the condensible fraction based upon the heat input of the dryer burners using an emission factor for wood combustion from AP-42, Section 1.6.

[4] 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 upon the heat input of the dryer burners using an emission factor for wood combustion from AP-42, Section 1.6.

[5] Controlled filterable particulate matter emissions based on NSPS Subpart Db limit of 0.03 lb/MMBtu, which is equivalent to 0.105 lb/ODT.

[6] NO_x and filterable PM/PM_{10} emissions based on TSI guanrantee on 7/15/14. The $PM_{2.5}$ filterable emission factor is assumed to be the same as PM and PM_{10}.

TABLE C-4
ROTARY DRYER - HAP AND TAP EMISSIONS
ENVIVA PELLET SAMPSON, LLC

Calculation Inputs:

Annual Composition and Throughput

Throughput ODT/yr	537,625
Hardwood Composition	25%
Softwood Composition	75%

Short Term Composition and Throughput

ODT/hr	71.71
Hardwood Composition	25%
Softwood Composition	75%

Emission Calculations:

Pollutant	CAS Number	HAP (Yes/No)	NC TAP (Yes/No)	VOC (Yes/No)	Emission Factor		Potential Emissions	
					Stack Tests			
					Emission Factor (lb/ODT)	Reference	(lb/hr)	(tpy)
Acetaldehyde	75-07-0	Yes	Yes	Yes	0.024	[1]	1.74	6.52
Acrolein	107-02-8	Yes	Yes	Yes	0.000	[1]	0.00	0.00
Formaldehyde	50-00-0	Yes	Yes	Yes	0.062	[1]	4.43	16.6
Methanol	67-56-1	Yes	No	Yes	0.133	[1]	9.51	35.6
Phenol	108-95-2	Yes	Yes	Yes	0.000	[1]	0.00	0.00
Propionaldehyde	123-38-6	Yes	No	Yes	0.033	[1]	2.36	8.84
							18.0	**67.6**

[1] HAP emissions from Enviva Wiggins October 2013 Stack Testing on Dryer No. 2.

TABLE C-5
HAMMERMILLS - VOC, HAP, AND TAP EMISSIONS
ENVIVA PELLET SAMPSON, LLC

Calculation Inputs:

Total Plant Throughput ODT/yr	537,625
% of Total Throughput to the Hammermills	53.3%

Based on 53.3% sent through Enviva Northampton site

Annual Composition and Throughput

Hammermills Throughput ODT/yr	286,554
Hardwood Composition	25%
Softwood Composition	75%

Short Term Composition and Throughput

ODT/hr	38.22
Hardwood Composition	25%
Softwood Composition	75%

Emission Calculations:

Pollutant	CAS Number	HAP (Yes/No)	NC TAP (Yes/No)	VOC (Yes/No)	Emission Factor		Potential Emissions	
					Stack Tests			
					Emission Factor (lb/ODT)	Reference	(lb/hr)	(tpy)
Total VOC	**N/A**	**N/A**	**N/A**	**N/A**	**0.240**	[1]	**9.17**	**34.4**
Acetaldehyde	75-07-0	Yes	Yes	Yes	0.005	[1]	0.17	0.64
Acrolein	107-02-8	Yes	Yes	Yes	0.000	[1]	0.0	0.0
Formaldehyde	50-00-0	Yes	Yes	Yes	0.007	[1]	0.27	1.02
Methanol	67-56-1	Yes	No	Yes	0.0034	[2]	0.13	0.48
Phenol	108-95-2	Yes	Yes	Yes	0.000	[1]	0.0	0.0
Propionaldehyde	123-38-6	Yes	No	Yes	0.003	[1]	0.11	0.43
							9.17	**34.4**
							0.69	**2.58**

[1] HAP emissions from Enviva Wiggins October 2013 Stack Testing with a throughput of 62.5% softwood.

[2] Total VOC emissions from Enviva Amory October 2013 Stack Testing with a throughput of 60% softwood.

TABLE C-6
PELLET PRESSES AND COOLERS - VOC, HAP, AND TAP EMISSIONS
ENVIVA PELLET SAMPSON, LLC

Calculation Inputs:

Annual Composition and Throughput

Throughput ODT/yr	537,625
Hardwood Composition	25%
Softwood Composition	75%

Short Term Composition and Throughput

ODT/hr	71.71
Hardwood Composition	25%
Softwood Composition	75%

Emission Calculations:

Pollutant	CAS Number	HAP (Yes/No)	NC TAP (Yes/No)	VOC (Yes/No)	Emission Factor		Potential Emissions	
					Stack Tests			
					Emission Factor (lb/ODT)	Reference	(lb/hr)	(tpy)
Total VOC	**N/A**	**N/A**	**N/A**	**N/A**	**0.85**	[1]	**60.7**	**228**
Acetaldehyde	75-07-0	Yes	Yes	Yes	7.72E-03	[1]	0.55	2.08
Acrolein	107-02-8	Yes	Yes	Yes	0.00E+00	[1]	0	0
Formaldehyde	50-00-0	Yes	Yes	Yes	5.04E-03	[1]	0.36	1.35
Methanol	67-56-1	Yes	No	Yes	7.80E-03	[1]	0.56	2.10
Phenol	108-95-2	Yes	Yes	Yes	0.00E+00	[1]	0	0
Propionaldehyde	123-38-6	Yes	No	Yes	1.51E-03	[1]	0.11	0.41
							60.7	**228**
							1.58	**5.93**

[1] HAP emissions from Enviva Wiggins October 2013 Stack Testing with a throughput of 62.5% softwood.

TABLE C-7
BAGFILTER AND CYCLONE EMISSIONS
ENVIVA PELLET SAMPSON, LLC

Emission Unit	Emission Source ID	Filter, Vent -or- Cyclone ID	Flowrate[1]	Pollutant Loading[2]	Annual Operation	% PM that is			Potential Emissions					
									PM		PM_{10}[3]		$PM_{2.5}$[3]	
			(cfm)	(gr/cf)	(hours)	PM_{10}	$PM_{2.5}$	Reference	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Green Wood Hammermills	ES-GHM-1	CD-GHM-BV1	15,000	0.004	8,760	100.0%	100.0%		0.51	2.25	0.51	2.25	0.514	2.25
Green Wood Hammermills	ES-GHM-2	CD-GHM-BV2	15,000	0.004	8,760	100.0%	100.0%		0.51	2.25	0.51	2.25	0.514	2.25
Green Wood Hammermills	ES-GHM-3	CD-GHM-BV3	15,000	0.004	8,760	100.0%	100.0%		0.51	2.25	0.51	2.25	0.514	2.25
Hammermills Bagfilter 1	ES-HM-1	CD-HM-BF1	15,000	0.004	8,760	100.0%	1.70%	4, 6	0.51	2.25	0.51	2.25	0.009	0.04
Hammermills Bagfilter 2	ES-HM-2	CD-HM-BF2	15,000	0.004	8,760	100.0%	1.70%	4, 6	0.51	2.25	0.51	2.25	0.009	0.04
Hammermills Bagfilter 3	ES-HM-3	CD-HM-BF3	15,000	0.004	8,760	100.0%	1.70%	4, 6	0.51	2.25	0.51	2.25	0.009	0.04
Hammermills Bagfilter 4	ES-HM-4	CD-HM-BF4	15,000	0.004	8,760	100.0%	1.70%	4, 6	0.51	2.25	0.51	2.25	0.009	0.04
Hammermills Bagfilter 5	ES-HM-5	CD-HM-BF5	15,000	0.004	8,760	100.0%	1.70%	4, 6	0.51	2.25	0.51	2.25	0.009	0.04
Hammermills Bagfilter 6	ES-HM-6	CD-HM-BF6	15,000	0.004	8,760	100.0%	1.70%	4, 6	0.51	2.25	0.51	2.25	0.009	0.04
Hammermills Bagfilter 7	ES-HM-7	CD-HM-BF7	15,000	0.004	8,760	100.0%	1.70%	4, 6	0.51	2.25	0.51	2.25	0.009	0.04
Dry Wood Handling	Dryer Out Conv. #1	CD-DC-BV1	1,000	0.004	8,760	100%	100%	4	0.03	0.15	0.03	0.15	0.034	0.15
Dry Wood Handling	Dryer Out Conv. #2	CD-DC-BV2	1,000	0.004	8,760	100%	100%	4	0.03	0.15	0.03	0.15	0.034	0.15
Pellet Sampling Transfer Bin	ES-PSTB	CD-DC-BV3	1,000	0.004	8,760	100%	100%	4	0.03	0.15	0.03	0.15	0.034	0.15
Pellet Mill Feed Silo Bin Vent Baghouse	ES-PMFS	CD-PMFS-BV	2,444	0.004	8,760	100%	100%	4	0.08	0.37	0.08	0.37	0.084	0.37
Pellet Mill Fines Bin & Hammermill Filter	ES-PFB, ES-HMA	CD-PFB-BV	3,102	0.004	8,760	100%	100%	4	0.11	0.47	0.11	0.47	0.106	0.47
Pellet Cooler Recirculation Filter	ES-PCR	CD-PCR-BV	1,000	0.004	8,760	100%	100%	4	0.03	0.15	0.03	0.15	0.034	0.15
Pellet Coolers Cyclone 1	ES-CLR-1	CD-CLR-1	15,000	0.022	8,760	26.1%	3.2%	3	2.83	12.39	0.74	3.23	0.090	0.40
Pellet Coolers Cyclone 2	ES-CLR-2	CD-CLR-2	15,000	0.022	8,760	26.1%	3.2%	3	2.83	12.39	0.74	3.23	0.090	0.40
Pellet Coolers Cyclone 3	ES-CLR-3	CD-CLR-3	15,000	0.022	8,760	26.1%	3.2%	3	2.83	12.39	0.74	3.23	0.090	0.40
Pellet Coolers Cyclone 4	ES-CLR-4	CD-CLR-4	15,000	0.022	8,760	26.1%	3.2%	3	2.83	12.39	0.74	3.23	0.090	0.40
Pellet Coolers Cyclone 5	ES-CLR-5	CD-CLR-5	15,000	0.022	8,760	26.1%	3.2%	3	2.83	12.39	0.74	3.23	0.090	0.40
Pellet Coolers Cyclone 6	ES-CLR-6	CD-CLR-6	15,000	0.022	8,760	26.1%	3.2%	3	2.83	12.39	0.74	3.23	0.090	0.40
Pellet Loadout Bin Vent	ES-FPH, ES-PL, ES-PB-1 & 2	CD-FPH-BF	8,500	0.004	8,760	91%	1.70%	5, 6	0.29	1.28	0.27	1.16	0.005	0.02
								TOTAL	**22.73**	**99.57**	**10.16**	**44.49**	**2.48**	**10.85**

[1] Filter, Vent, and Cyclone inlet flow rate (cfm) provided by design engineering firm (Mid-South Engineering Co.).

[2] Pollutant Loading (gr/cf) provided by Aircon, a control device vendor.

[3] Based on September 2013 Enviva Northampton Engineering Tests

[4] No speciation data is available for PM_{10}. Therefore, it is assumed $PM=PM_{10}$.

[5] Finished product handling PM_{10} speciation based on AP-42 factors for wet wood combustion (Section 1.6) controlled by a mechanical separator. Since 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.

[6] Dry Hammermills and Finished product handling $PM_{2.5}$ speciation based on April 2014 Enviva Southampton $PM_{2.5}$ speciation tests.

TABLE C-8
ELECTRIC POWERED CHIPPER EMISSIONS
ENVIVA PELLET SAMPSON, LLC

Chipper Throughput 537,625 tons dry wood

Pollutant	Emission Factors (lb/dry wood tons)	Emissions[3]	
		(lb/yr)	(tpy)
PM[3]	N/A	0.00E+00	0.00
THC as Carbon[1]	0.0041	2.20E+03	1.10
THC as alpha-pinene [2]	0.0047	2.50E+03	1.25
Methanol[1]	0.0010	5.38E+02	0.27

[1] Emission factor obtained from available emissions factors for chippers in AP-42 Section 10.6.3, Table 7 and Section 10.6.4, Tables 7 and 9. Emission factors for THC and Methanol are the same across all three tables.

[2] Emission factor converted from as carbon to as alpha-pinene by multiplying by 1.14.

[3] PM emission factor is not applicable as emissions are routed downward to the ground.

TABLE C-9
ELECTRIC POWERED BARKHOG EMISSIONS
ENVIVA PELLET SAMPSON, LLC

Hog Throughput 157,680 tons dry wood
Based on max hourly design throughput of 30 tph

Pollutant	Emission Factors (lb/dry wood tons)	Emissions[3]	
		(lb/yr)	(tpy)
PM[3]	N/A	0.00E+00	0.00
THC as Carbon[1]	0.0041	6.46E+02	0.32
THC as alpha-pinene [2]	0.0047	7.34E+02	0.37
Methanol[1]	0.0010	1.58E+02	0.08

[1] Emission factor obtained from available emissions factors for chippers in AP-42 Section 10.6.3, Table 7 and Section 10.6.4, Tables 7 and 9. Emission factors for THC and Methanol are the same across all three tables.
[2] Emission factor converted from as carbon to as alpha-pinene by multiplying by 1.14.
[3] PM emission factor is not applicable as emissions are routed downward to the ground.

TABLE C-10
GREEN HAMMERMILLS - VOC, HAP, AND TAP EMISSIONS
ENVIVA PELLET SAMPSON, LLC

Calculation Inputs:

Total Plant Throughput ODT/yr	537,625
% of Total Throughput to the Green Hammermills	100.0%

Annual Composition and Throughput

Green Hammermills Throughput ODT/yr	537,625
Hardwood Composition	25%
Softwood Composition	75%

Short Term Composition and Throughput

ODT/hr	71.71
Hardwood Composition	25%
Softwood Composition	75%

Emission Calculations:

Pollutant	CAS Number	HAP (Yes/No)	NC TAP (Yes/No)	VOC (Yes/No)	Emission Factor – Stack Tests		Potential Emissions [4]	
					Emission Factor (lb/ODT)	Reference	(lb/hr)	(tpy)
Total VOC	**N/A**	**N/A**	**N/A**	**N/A**	**0.27**	[5]	**19.3**	**72.2**
Acetaldehyde	75-07-0	Yes	Yes	Yes	0.007	[5]	0.49	1.85
Acrolein	107-02-8	Yes	Yes	Yes	0.000	[5]	0	0
Formaldehyde	50-00-0	Yes	Yes	Yes	0.004	[5]	0.29	1.10
Methanol	67-56-1	Yes	No	Yes	0.003	[5]	0.22	0.82
Phenol	108-95-2	Yes	Yes	Yes	0.000	[5]	0	0
Propionaldehyde	123-38-6	Yes	No	Yes	0.001	[5]	0.07	0.27
							19.3	**72.2**
							1.08	**4.05**

[1] HAP & TAP emission factors for "Rotary Dryer, green, direct wood-fired, (inlet moisture content >50%, dry basis) softwood were obtained from AP-42, Section 10.6.2, Table 10.6.2-3.

[2] To account for hardwood emissions since no HAP/TAP emission factors are given for direct hardwood-fired, factors were conservatively calculated by multiplying AP-42 Section 10.6.2-3 HAP factors for green, direct softwood fired by the ratio of the VOC emission factors for hardwood to softwood drying (0.24/4.7).

[3] Both AP-42 hardwood and softwood factor emissions from dryers were adjusted to represent the hammermills by multiplying the emission facotr time the ratio of the VOC from hammermills to dryers based on engineering testing conducted at the Enviva Wiggins facility (19.8%).

[4] Short-term emissions were calculated based upon a worst-case scenario of 25% softwood firing on an hourly basis.
Annual emissions were calculated based on the Annual average % Hardwood and Softwood Composition.

[5] HAP emissions from Enviva Wigginis October 2013 Stack Testing with a throughput of 62.5% softwood.

[6] Total VOC emissions from Enviva Amory October 2013 Stack Testing with a throughput of 60% softwood.

TABLE C-11
EMERGENCY GENERATOR AND FIRE PUMP EMISSIONS
ENVIVA PELLET SAMPSON, LLC

Emergency Generator Emissions (ES-EG)

Equipment and Fuel Characteristics

Engine Output	0.40	MW
Engine Power	536	hp (brake)
Hours of Operation	500	hr/yr[1]
Heating Value of Diesel	19,300	Btu/lb
Power Conversion	2,545	Btu/hr/hp

Criteria Pollutant Emissions

Pollutant	Category	Emission Factor	Units	Potential Emissions	
				lb/hr	tpy
TSP	PSD	0.20	g/KW-hr	0.18	0.04
PM_{10}	PSD	0.20	g/KW-hr	0.18	0.04
$PM_{2.5}$	PSD	0.20	g/KW-hr	0.18	0.04
NO_x	PSD	4.00	g/KW-hr	3.52	0.88
SO_2	PSD	15.00	ppmw (3)	2.12E-03	5.30E-04
CO	PSD	3.50	g/KW-hr	3.08E+00	7.70E-01
VOC (NMHC)	PSD	4.00	g/KW-hr	3.52E+00	8.80E-01
Toxic/Hazardous Air Pollutant Emissions					
Acetaldehyde	HAP/TAP	5.37E-06	lb/hp-hr (4)	2.88E-03	7.19E-04
Acrolein	HAP/TAP	6.48E-07	lb/hp-hr (4)	3.47E-04	8.68E-05
Benzene	HAP/TAP	6.53E-06	lb/hp-hr (4)	3.50E-03	8.75E-04
Benzo(a)pyrene[6]	HAP/TAP	1.32E-09	lb/hp-hr (4)	7.05E-07	1.76E-07
1,3-Butadiene	HAP/TAP	2.74E-07	lb/hp-hr (4)	1.47E-04	3.67E-05
Formaldehyde	HAP/TAP	8.26E-06	lb/hp-hr (4)	4.43E-03	1.11E-03
Total PAH (POM)	HAP	1.18E-06	lb/hp-hr (4)	6.30E-04	1.58E-04
Toluene	HAP/TAP	2.86E-06	lb/hp-hr (4)	1.53E-03	3.84E-04
Xylene	HAP/TAP	2.00E-06	lb/hp-hr (4)	1.07E-03	2.67E-04
Highest HAP (Formaldehyde)		8.26E-06	lb/hp-hr (4)	4.43E-03	1.11E-03
Total HAPs				1.45E-02	3.63E-03

[1] NSPS allows for only 100 hrs/yr of non-emergency operation of these engines (not the 500 hours shown). The PTE for the emergency generator is based on 500 hr/yr, though, because the regs allow non-emergency operation and EPA guidance is 500 hr/yr for emergency generators.

[2] Emissions factors from NSPS Subpart IIII (or 40 CFR 89.112 where applicable) in compliance with post-2010 construction.

[3] Sulfur content in accordance with Year 2013 standards of 40 CFR 80.510(a) as required by NSPS Subpart IIII.

[4] Emission factor obtained from AP-42 Section 3.3, Tables 3.3-1 Table 3.3-2.

[5] Emission factor for NOx is listed as NOx and NMHC (Non-Methane Hydrocarbons or VOC) in Table 4 of NSPS Subpart IIII. Conservatively assumed entire limit attributable to NOx and VOC.

[6] Benzo(a)pyrene is included as a HAP in Total PAH.

TABLE C-11
EMERGENCY GENERATOR AND FIRE PUMP EMISSIONS
ENVIVA PELLET SAMPSON, LLC

Firewater Pump Emissions (ES-FWP)

Equipment and Fuel Characteristics

Engine Output	0.10	MW
Engine Power	131	hp
Hours of Operation	500	hr/yr[1]
Heating Value of Diesel	19,300	Btu/lb
Power Conversion	2,545	Btu/hr/hp

Criteria Pollutant Emissions

Pollutant	Category	Emission Factor	Units	Potential Emissions	
				lb/hr	tpy
TSP	PSD	0.30	g/KW-hr	0.06	0.02
PM_{10}	PSD	0.30	g/KW-hr	0.06	0.02
$PM_{2.5}$	PSD	0.30	g/KW-hr	0.06	0.02
NO_x	PSD	4.00	g/KW-hr	0.86	0.22
SO_2	PSD	15.00	ppmw (3)	5.18E-04	1.30E-04
CO	PSD	5.00	g/KW-hr	1.08E+00	2.69E-01
VOC (NMHC)	PSD	4.00	g/KW-hr	8.61E-01	2.15E-01
Toxic/Hazardous Air Pollutant Emissions					
Acetaldehyde	HAP/TAP	5.37E-06	lb/hp-hr (4)	7.03E-04	1.76E-04
Acrolein	HAP/TAP	6.48E-07	lb/hp-hr (4)	8.48E-05	2.12E-05
Benzene	HAP/TAP	6.53E-06	lb/hp-hr (4)	8.56E-04	2.14E-04
Benzo(a)pyrene[6]	HAP/TAP	1.32E-09	lb/hp-hr (4)	1.72E-07	4.31E-08
1,3-Butadiene	HAP/TAP	2.74E-07	lb/hp-hr (4)	3.59E-05	8.96E-06
Formaldehyde	HAP/TAP	8.26E-06	lb/hp-hr (4)	1.08E-03	2.71E-04
Total PAH (POM)	HAP	1.18E-06	lb/hp-hr (4)	1.54E-04	3.85E-05
Toluene	HAP/TAP	2.86E-06	lb/hp-hr (4)	3.75E-04	9.38E-05
Xylene	HAP/TAP	2.00E-06	lb/hp-hr (4)	2.61E-04	6.53E-05
Highest HAP (Formaldehyde)		8.26E-06	lb/hp-hr (4)	1.08E-03	2.71E-04
Total HAPs				3.55E-03	8.88E-04

[1] NSPS allows for only 100 hrs/yr of non-emergency operation of these engines (not the 500 hours shown). The PTE for the emergency generator is based on 500 hr/yr, though, because the regs allow non-emergency operation and EPA guidance is 500 hr/yr for emergency generators.

[2] Emissions factors from NSPS Subpart IIII (or 40 CFR 89.112 where applicable) in compliance with post-2009 construction.

[3] Sulfur content in accordance with Year 2010 standards of 40 CFR 80.510(a) as required by NSPS Subpart IIII.

[4] Emission factor obtained from AP-42 Section 3.3, Tables 3.3-1 Table 3.3-2.

[5] Emission factor for NOx is listed as NOx and NMHC (Non-Methane Hydrocarbons or VOC) in Table 4 of NSPS Subpart IIII. Conservatively assumed entire limit attributable to NOx and VOC.

[6] Benzo(a)pyrene is included as a HAP in Total PAH.

TABLE C-12
GREEN WOOD HANDLING DROP POINT EXAMPLE EMISSIONS
ENVIVA PELLET SAMPSON, LLC

ID	Emission Source Group	Transfer Activity	Type of Operation	Number of Drop Points	PM Particle Size Multiplier (dimensionless)	PM_{10} Particle Size Multiplier (dimensionless)	$PM_{2.5}$ Particle Size Multiplier (dimensionless)	Mean Wind Speed (U) (mph)	Material Moisture Content (M)[1] (%)	PM Emission Factor[2] (lb/ton)	PM_{10} Emission Factor[2] (lb/ton)	$PM_{2.5}$ Emission Factor[2] (lb/ton)	Potential Throughput (tpy)	Potential PM Emissions (tpy)	Potential PM_{10} Emissions (tpy)	Potential $PM_{2.5}$ Emissions (tpy)
GDP1	ES-GWH	Purchased Bark Transfer to Outdoor Storage Area	Batch Drop	1	0.74	0.35	0.053	7.9	48%	4.97E-05	2.35E-05	3.56E-06	13,733	8.63E-05	4.08E-05	6.18E-06
GDP1	ES-GWH	Drop Points via Conveying from Bark Pile to Dryer	Batch Drop	4	0.74	0.35	0.053	7.9	42%	5.92E-05	2.80E-05	4.24E-06	13,733	4.11E-04	1.95E-04	2.95E-05
GDP2	ES-GWH	Transfer Purchased Wood Chips (Wet) to Outdoor Storage	Batch Drop	1	0.74	0.35	0.053	7.9	49%	4.78E-05	2.26E-05	3.42E-06	140,600	8.50E-04	4.02E-04	6.08E-05
GDP2	ES-GWH	Drop Points via Conveying from Chip Pile to Dryer	Batch Drop	5	0.74	0.35	0.053	6.0	41%	4.36E-05	2.06E-05	3.12E-06	530,451	1.46E-02	6.91E-03	1.05E-03
		Total Emissions												**1.60E-02**	**7.55E-03**	**1.14E-03**

[1] Average moisture content for logs, bark, and wood chips (wet) based on material balance provided by design engineering firm (Mid-South Engineering).

[2] Emission factor calculation based on formula from AP-42, Section 13.2.4 - Aggregate Handling and Storage Piles, Equation 13.2.1, (11/06).

where: E = emission factor (lb/ton)

k = particle size multiplier (dimensionless) for PM	0.74
k = particle size multiplier (dimensionless) for PM_{10}	0.35
k = particle size multiplier (dimensionless) for $PM_{2.5}$	0.053
U = mean wind speed (mph)	7.9
M = material moisture content (%)	

[3] PM_{10} control efficiency of 74.7% applied for three-sided enclosed structure with 50% porosity per Sierra Research *"Final BACM Technological and Economic Feasibility Analysis"* , report prepared for the San Joaquin Valley Unified Air Pollution Control District (3/03). The control efficiency is assumed equivalent for PM_{10} and $PM_{2.5}$ emissions.

[4] These green wood handling emissions are representative of the fugitive emissions at the site. Note there may be multiple drop points for each type but as shown these emissions will be negligible.

TABLE C-13
GREEN WOOD STORAGE PILES FUGITIVE EMISSIONS
ENVIVA PELLET SAMPSON, LLC

Emission Unit ID	Description	TSP Emission Factor [1] (lb/day/acre)	TSP Emission Factor [1] (lb/hr/ft²)	VOC Emission Factor [3] (lb/day/acre)	VOC Emission Factor [3] (lb/hr/ft²)	Width (ft)	Length (ft)	Height (ft)	Outer Surface Area of Storage Pile (ft²)	PM Emissions (lb/hr)	PM Emissions (tpy)	PM_{10} Emissions (lb/hr)	PM_{10} Emissions (tpy)	$PM_{2.5}$ Emissions (lb/hr)	$PM_{2.5}$ Emissions (tpy)	VOC as Carbon Emissions (lb/hr)	VOC as Carbon Emissions (tpy)	VOC as alpha-Pinene Emissions[4] (lb/hr)	VOC as alpha-Pinene Emissions[4] (tpy)
GWSP1	Green Wood Pile No. 1	5.61	5.37E-06	3.60	3.44E-06	100	400	10	60,000	0.322	1.410	0.161	0.705	0.0242	0.106	0.21	0.90	0.24	1.03
GWSP2	Green Wood Pile No. 2	5.61	5.37E-06	3.60	3.44E-06	200	400	10	110,400	0.593	2.595	0.296	1.298	0.0444	0.195	0.38	1.67	0.43	1.90
Total										**0.915**	**4.006**	**0.457**	**2.003**	**0.0686**	**0.300**	**0.59**	**2.57**	**0.67**	**2.93**

[1] TSP emission factor based on U.S. EPA *Control of Open Fugitive Dust Sources*. Research Triangle Park, North Carolina, EPA-450/3-88-008. September 1988, Page 4-17.

$$E = 1.7\left(\frac{s}{1.5}\right)\left(\frac{(365-p)}{235}\right)\left(\frac{f}{15}\right) \text{ (lb / day /acre)}$$

where:

s, silt content of wood chips (%):	4.8	s - silt content(%) for lumber sawmills (minimum), from AP-42 Table 13.2.2-1
p, number of days with rainfall greater than 0.01 inch:	120	Based on AP-42, Section 13.2.2, Figure 13.2.1-2.
f (time that wind exceeds 5.36 m/s - 12 mph) (%):	14.8	Based on meteorological data averaged for 2007-2011 for Sampson, NC.
PM_{10}/TSP ratio:	50%	PM_{10} is assumed to equal 50% of TSP based on U.S. EPA *Control of Open Fugitive Dust Sources*, Research Triangle Park, North Carolina, EPA-450/3-88-008. September 1988.
$PM_{2.5}$/TSP ratio:	7.5%	$PM_{2.5}$ is assumed to equal 7.5 % of TSP U.S. EPA Background Document for Revisions to Fine Fraction Ratios Used for AP-42 Fugitive Dust Emission Factors. November 2006.

[2] The surface area is calculated as [2*H*L+2*W*H+L*W] + 20% to consider the sloping pile edges. Length and width based on proposed site design with a conservative height.

[3] Emission factors obtained from NCASI document provided by SC DHEC for the calculation of fugitive VOC emissions from Douglas Fir wood storage piles. Emission factors ranged from 1.6 to 3.6 lb C/acre-day. Enviva chose to employ the maximum emission factor for purposes of conservatism.

[4] Emissions are calculated in tons of carbon per year by the following formula:

*tons C/year = 5 acres * 365 days * 1.6 lb C/acre-day / 2000 lb/ton*

Emission factor converted from as carbon to as alpha-pinene by multiplying by 1.14.

TABLE C-14
TANKS EMISSIONS
ENVIVA PELLET SAMPSON, LLC

Tank ID	Tank Description	Volume[1] (gal)	Tank Dimensions		Orientation	Throughput (gal/yr)	Turnovers	TANKS 4.0 VOC Emissions	
			Diameter (ft)	Height/Length (ft)				(lb/yr)	(tpy)
TK01	Emergency Generator Fuel Oil Tank[2]	2,500	6	12	Vertical	12,000	4.80	0.37	3.57E-03
TK02	Fire Water Pump Fuel Oil Tank[2]	1,000	5	9	Horizontal	10,300	10.30	0.86	4.30E-04
							TOTAL	**1.23**	**4.00E-03**

[1] Conservative design specifications.

[2] Throughput based on fuel consumption and 500 hours of operation per year.

TABLE C-15
PAVED ROAD POTENTIAL FUGITIVE PM EMISSIONS
ENVIVA PELLET SAMPSON, LLC

Transfer Activity	Distance Traveled per Round Trip[1] (ft)	Trips Per Day	Miles Traveled per Day)	Events Per Year (Days)	Truck Weight (Empty) lbs	Truck Weight (Loaded) lbs	Average Weight (W) (tons)	Vehicle Miles Traveled (VMT/yr)	Emission Factor[2] (lb/VMT) PM	PM_{10}	$PM_{2.5}$	Potential Emissions[3] PM (lb/hr)	(tpy)	Potential Emissions[3] PM_{10} (lb/hr)	(tpy)	Potential Emissions[3] $PM_{2.5}$ (lb/hr)	(tpy)
Logs Delivery to Crane	12,800	47	113.94	365	40,480	102,540	35.8	41,588	0.25	0.05	0.012	0.12	0.51	0.02	0.10	5.7E-03	2.5E-02
Logs Delivery to Log Storage Area	11,200	47	99.70	365	40,480	102,540	35.8	36,389	0.25	0.05	0.012	0.10	0.45	0.02	0.09	5.0E-03	2.2E-02
Chips Delivery	16,000	66	199.39	365	40,960	101,440	35.6	72,779	0.24	0.05	0.012	0.20	0.89	0.04	0.18	1.0E-02	4.4E-02
Hog Fuel Delivery	16,000	28	85.45	365	40,960	101,440	35.6	31,191	0.24	0.05	0.012	0.09	0.38	0.02	0.08	4.3E-03	1.9E-02
Pellet Delivery	3,200	66	39.92	365	40,960	101,440	35.6	14,570	0.24	0.05	0.012	0.04	0.18	0.01	0.04	2.0E-03	8.7E-03
Employee Car Parking	4,000	75	56.8	365	4,000	4,000	2.0	20,739	0.01	0.00	0.001	0.00	0.01	0.00	0.00	1.5E-04	6.6E-04
Total Paved Road Emissions												**0.55**	**2.42**	**0.11**	**0.48**	**0.03**	**0.12**

[1] Distance traveled per round trip was estimated based on truck route and site layout.

[2] Paved road emission factors based on emission estimation Equation 2 from AP-42, Section 13.2.1 (1/11) for paved roads.

Where:

$$E = \left[k(sL)^{0.91}(W)^{1.02}\right]\left[1 - \frac{P}{4*365}\right] \quad \text{(lb/VMT)}$$

	TSP	PM_{10}	$PM_{2.5}$
E = particulate emission factor (lb/VMT)			
k - particle size multiplier from AP-42 Table 13.2.1-1	0.011	0.0022	0.00054
sL - road surface silt loading from AP-42 Table 13.2.1-2 for ADT <500	0.6		
W = mean vehicle weight (ton)			
P - No. days with rainfall greater than 0.01 inch. Per AP-42, Section 13.2.1, Figure 13.2.1-2 (Sampson Count	110		

[3] Potential emissions calculated from appropriate emission factor times vehicle miles traveled with control efficiency of 90% for water / dust suppression activities followed by sweeping.
Per Table 5 in Chapter 4 of the Air Pollution Engineering Manual, Air and Waste Management Association, page 141.
Control efficiency (%) = 96-0.263*V, where V is the number of vehicle passes since application of water.

TABLE C-16
POTENTIAL GHG EMISSIONS FROM COMBUSTION SOURCES
ENVIVA PELLET SAMPSON, LLC

Potential GHG Emissions

Operating Data:

Dryer Heat Input	250.40 MMBtu/hr
Operating Schedule	8,760 hrs/yr
Emergency Generator Output	536 bhp
Operating Schedule	500 hrs/yr
No. 2 Fuel Input	25.5 gal/hr[1]
Energy Input	3.495 MMBtu/hr[2]
Fire Water Pump Output	131 bhp
Operating Schedule	500 hrs/yr
No. 2 Fuel Input	6.2 gal/hr[1]
Energy Input	0.854 MMBtu/hr[2]

Emission Unit ID	Fuel Type	Emission Factors from Table C-1 (kg/MMBtu)[3]			Emissions (tons)				
		CO_2	CH_4	N_2O	CO_2	CH_4	N_2O	Total CO_2e	Total CO_2e[5]
ES-DRYER	Wood and Wood Residuals	9.38E+01	7.20E-03	3.60E-03	226,798.97	17	9	229,828	3,064
ES-EG	No. 2 Fuel Oil (Distillate)	7.40E+01	3.00E-03	6.00E-04	142	5.78E-03	1.16E-03	143	143
ES-FWP	No. 2 Fuel Oil (Distillate)	7.40E+01	3.00E-03	6.00E-04	35	1.41E-03	2.83E-04	35	35

[1] Fuel consumption calculated using a factor of 0.0476 gal/hr-hp. Advanced Environmental Interface, Inc. (1998). General Permits for Emergency Engines. INSIGHTS, 98-2, 3.

[2] Energy calculated on a fuel consumption basis, using an energy factor of 0.137 MMBtu/gal.

[3] Emission factors from Table C-1 and C-2 of GHG Reporting Rule. Emission factors for methane and N_2O already multiplied by their respective GWPs of 25 and 298.

[4] As per NC DAQ Biomass Deferral Rule 15A NCAC 02D .0544, CO_2 emissions from bioenergy and other biogeneic sources are not applicable towards PSD and Title V permitting.

[5] CO_{2e} reflects the biomass defferral which does not add in CO_2 from biomass combustion.

APPENDIX D
PERMIT APPLICATION FORMS

FORM A
GENERAL FACILITY INFORMATION

REVISED 09/22/16 — NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate — A

NOTE- APPLICATION WILL NOT BE PROCESSED WITHOUT THE FOLLOWING:

- ☐ Local Zoning Consistency Determination (new or modification only)
- ☑ Appropriate Number of Copies of Application
- ☐ Application Fee (if required)
- ☑ Responsible Official/Authorized Contact Signature
- ☐ P.E. Seal (if required)

GENERAL INFORMATION

Legal Corporate/Owner Name:	**Enviva Pellets Sampson, LLC**
Site Name:	**Enviva Pellets Sampson, LLC**
Site Address (911 Address) Line 1:	**5 Connector Road**
Site Address Line 2:	
City: **Faison**	State: **North Carolina**
Zip Code: **28341**	County: **Sampson**

CONTACT INFORMATION

Responsible Official/Authorized Contact:	***Invoice Contact:***
Name/Title: **Jason Ansley, Plant Manager**	Name/Title: **Joe Harrell, Corporate EHS Manager**
Mailing Address Line 1: **5 Connector Road, US 117**	Mailing Address Line 1: **142 NC Route 561 East**
Mailing Address Line 2:	Mailing Address Line 2:
City: **Faison** State: **NC** Zip Code: **24341**	City: **Ahoskie** State: **NC** Zip Code: **27910**
Primary Phone No.: **910-375-6365** Fax No.:	Primary Phone No.: **(252) 209-6032** Fax No.:
Secondary Phone No.:	Secondary Phone No.:
Email Address: **Jason.Ansley@envivabiomass.com**	Email Address: **Joe.Harrell@envivabiomass.com**
Facility/Inspection Contact:	***Permit/Technical Contact:***
Name/Title: **William Simon, EHS Manager**	Name/Title: **Joe Harrell, Corporate EHS Manager**
Mailing Address Line 1: **5 Connector Road, US 117**	Mailing Address Line 1: **142 N.C. Route 561 East**
Mailing Address Line 2:	Mailing Address Line 2:
City: **Faison** State: **NC** Zip Code: **28341**	City: **Ahoskie** State: **NC** Zip Code: **27910**
Primary Phone No.: **910-375-6365** Fax No.:	Primary Phone No.: **(252) 209-6032** Fax No.:
Secondary Phone No.:	Secondary Phone No.:
Email Address: **William.Simon@envivabiomass.com**	Email Address: **Joe.Harrell@envivabiomass.com**

APPLICATION IS BEING MADE FOR

- ☐ New Non-permitted Facility/Greenfield
- ☑ Modification of Facility (permitted)
- ☐ Renewal Title V
- ☐ Renewal Non-Title V
- ☐ Name Change
- ☐ Ownership Change
- ☐ Administrative Amendment
- ☐ Renewal with Modification

FACILITY CLASSIFICATION AFTER APPLICATION (Check Only One)

- ☐ General
- ☐ Small
- ☐ Prohibitory Small
- ☐ Synthetic Minor
- ☑ Title V

FACILITY (Plant Site) INFORMATION

Describe nature of (plant site) operation(s):
Wood pellet manufacturing facility

	Facility ID No. **8200152**
Primary SIC/NAICS Code: **2499 (Wood Products, not elsewhere classified)**	Current/Previous Air Permit No. **10386R02** Expiration Date: **10/31/2019**
Facility Coordinates: Latitude: **35 degrees, 7 minutes, 19.8 seconds**	Longitude: **78 degrees, 10 minutes, 59.7 seconds**
Does this application contain confidential data? ☐ YES ☑ NO	***If yes, please contact the DAQ Regional Office prior to submitting this application.*** (See Instructions)

PERSON OR FIRM THAT PREPARED APPLICATION

Person Name: **Rachel Velthuisen**	Firm Name: **Ramboll Environ US Corp.**
Mailing Address Line 1: **6 Davis Drive, Suite 139**	Mailing Address Line 2: **P.O. Box 13441**
City: **Research Triangle Park** State: **NC**	Zip Code: **27709** County: **Durham**
Phone No.: **(919) 765-8027** Fax No.:	Email Address: **rvelthuisen@ramboll.com**

SIGNATURE OF RESPONSIBLE OFFICIAL/AUTHORIZED CONTACT

Name (typed): **Jason Ansley**	Title: **Plant Manager**
X Signature(Blue Ink):	Date: 9/25/17

Attach Additional Sheets As Necessary

Received
OCT 2 2017
Air Permits Section

FORM A (continued, page 2 of 2)
GENERAL FACILITY INFORMATION

REVISED 09/22/16 | **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** | A

SECTION AA1 - APPLICATION FOR NON-TITLE V PERMIT RENEWAL

_____ (Company Name) hereby formally requests renewal of Air Permit No. _____

There have been no modifications to the originally permitted facility or the operations therein that would require an air permit since the last permit was issued.

Is your facility subject to 40 CFR Part 68 "Prevnetion of Accidental Releases" - Section 112(r) of the Clean Air Act? ☐ YES ☐ NO

If yes, have you already submitted a Risk Manage Plan (RMP) to EPA? ☐ YES ☐ NO Date Submitted: _____

Did you attach a current emissions inventory? ☐ YES ☐ NO

If no, did you submit the inventory via AERO or by mail? ☐ Via AERO ☐ Mailed Date Mailed: _____

SECTION AA2- APPLICATION FOR TITLE V PERMIT RENEWAL

In accordance with the provisions of Title 15A 2Q .0513, the responsible official of _____ (Company Name) hereby formally requests renewal of Air Permit No. _____ (Air Permit No.) and further certifies that:

(1) The current air quality permit identifies and describes all emissions units at the above subject facility, except where such units are exempted under the North Carolina Title V regulations at 15A NCAC 2Q .0500;

(2) The current air quality permit cits all applicable requirements and provides the method or methods for determing compliance with the applicable requirements;

(3) The facility is currently in compliance, and shall continue to comply, with all applicable requiremetns. (Note: As provided under 15A NCAC 2Q .0512 compliance with the conditions of the permit shall be deemed compliance with the applicable requirements specifically identified in the permit);

(4) For applicable requirements that become effective during the term of the renewed permit that the facility shall comply on a timely basis;

(5) The facility shall fulfill applicable enhanced monitoring requirements and submit a compliance certification as required by 40 CFR Part 64.

The responsible official (signature on page 1) certifies under the penalty of law that all information and statements provided above, based on information and belief formed after reasonable inquiry, are true, accurate, and complete.

SECTION AA3- APPLICATION FOR NAME CHANGE

New Facility Name: _____

Former Facility Name: _____

An official facility name change is requested as described above for the air permit mentioned on page 1 of this form. Complete the other sections if there have been modifications to the originally premitted facility that would requie an air quality permit since the last permit was issued and if ther has been an ownership change associated with this name change.

SECTION AA4- APPLICATION FOR AN OWNERSHIP CHANGE

By this application we hereby request transfer of Air Quality Permit No. _____ from the former owner to the new owner as described below.

The transfer of permit responsibility, coverage and liability shall be effective _____ (immediately or insert date.) The legal ownership of the facility described on page 1 of this form has been or will be transferred on _____ (date). There have been no modifications to the originally permitted facility that would require an air quality permit since the last permit was issued.

Signature of New (Buyer) Responsible Official/Authorized Contact (as typed on page 1):

X Signature (Blue Ink): _____

Date:

New Facility Name:

Former Facility Name:

Signature of Former (Seller) Responsible Official/Authorized Contact:

Name (typed or print):

Title:

X Signature (Blue Ink): _____

Date:

Former Legal Corporate/Owner Name:

In lieu of the seller's signature on this form, a letter may be submitted with the seller's signature indicating the ownership change

SECTION AA5- APPLICATION FOR ADMINISTRATIVE AMENDMENT

Describe the requested administrative amendment here (attach additional documents as necessary):

Attach Additional Sheets As Necessary

FORMs A2, A3

EMISSION SOURCE LISTING FOR THIS APPLICATION - A2

112r APPLICABILITY INFORMATION - A3

REVISED 09/22/16

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

A2

EMISSION SOURCE LISTING: New, Modified, Previously Unpermitted, Replaced, Deleted

EMISSION SOURCE ID NO.	EMISSION SOURCE DESCRIPTION	CONTROL DEVICE ID NO.	CONTROL DEVICE DESCRIPTION
Equipment To Be ADDED By This Application (New, Previously Unpermitted, or Replacement)			
ES-CHIP-1	Log Chipping	N/A	N/A
ES-GHM-1 through 3	Green Wood Hammermills	CD-GHM-BV1 through 3	Bin Vent Baghouse
ES-BARKHOG	Bark Hog	N/A	N/A
ES-DRYER	Green Wood Direct-Fired Rotary Dryer System	CD-DC1 through CD-DC4	Four (4) Simple Cyclones (routed to CD-WESP)
		CD-WESP	Wet Electrostatic Precipitator
ES-HM-1 through 7	Seven (7) Hammermills	CD-HM-CYC-1 CD-HM-BF-1	Simple Cyclone, Bagfilter
		CD-HM-CYC-2 CD-HM-BF-2	Simple Cyclone, Bagfilter
		CD-HM-CYC-3 CD-HM-BF-3	Simple Cyclone, Bagfilter
		CD-HM-CYC-4 CD-HM-BF-4	Simple Cyclone, Bagfilter
		CD-HM-CYC-5 CD-HM-BF-5	Simple Cyclone, Bagfilter
		CD-HM-CYC-6 CD-HM-BF-6	Simple Cyclone, Bagfilter
		CD-HM-CYC-7 CD-HM-BF-7	Simple Cyclone, Bagfilter
ES-HMA	Hammermill Area	CD-PFB-BF	Bin Vent Baghouse
ES-PFB	Pellet Fines Bin		
ES-PMFS	Pellet Mill Feed Silo	CD-PMFS-BV	Bin Vent Bagfilter
ES-CLR-1 through 6	Six (6) Pellet Coolers	CD-CLR-1 through 6	Six (6) Pellet Cooler Cyclones
ES-FPH	Finished Product Handling	CD-FPH-BF	Finished Product Handling Bagfilter
ES-PB-1 through 4	Four (4) Pellet Loadout Bins		
ES-PL-1 and 2	Pellet Mill Loadout 1 and 2		
ES-GN	Emergency Generator (536 bhp)	N/A	N/A
ES-FWP	Fire Water Pump (131 bhp)	N/A	N/A
ES-PSTB	Pellet Sampling Transfer Bin	CD-DC-BV3	Bin Vent Bagfilter
ES-PCR	Pellet Cooler Recirculation	CD-PCR-BF	Bin Vent Bagfilter
Existing Permitted Equipment To Be MODIFIED By This Application			
Equipment To Be DELETED By This Application			

112(r) APPLICABILITY INFORMATION

A 3

Is your facility subject to 40 CFR Part 68 "Prevention of Accidental Releases" - Section 112(r) of the Federal Clean Air Act? ☐ Yes ☑ No

If No, please specify in detail how your facility avoided applicability: **The Sampson plant does not store any regulated substances in excess of their respecti threshold quantities, as determined under §68.115.**

If your facility is Subject to 112(r), please complete the following:

A. Have you already submitted a Risk Management Plan (RMP) to EPA Pursuant to 40 CFR Part 68.10 or Part 68.150?

☐ Yes ☐ No Specify required RMP submittal date: _____ If submitted, RMP submittal date: _____

B. Are you using administrative controls to subject your facility to a lesser 112(r) program standard?

☐ Yes ☐ No If yes, please specify: _____

C. List the processes subject to 112(r) at your facility:

PROCESS DESCRIPTION	PROCESS LEVEL (1, 2, or 3)	HAZARDOUS CHEMICAL	MAXIMUM INTENDED INVENTORY (LBS)

Attach Additional Sheets As Necessary

FORM D1

FACILITY-WIDE EMISSIONS SUMMARY

REVISED 09/22/16 — **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** — D1

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION - FACILITY-WIDE

AIR POLLUTANT EMITTED	EXPECTED ACTUAL EMISSIONS (AFTER CONTROLS / LIMITATIONS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITATIONS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITATIONS) tons/yr
PARTICULATE MATTER (PM)	See Emission Calculations in Appendix C		
PARTICULATE MATTER < 10 MICRONS (PM_{10})			
PARTICULATE MATTER < 2.5 MICRONS ($PM_{2.5}$)			
SULFUR DIOXIDE (SO_2)			
NITROGEN OXIDES (NOx)			
CARBON MONOXIDE (CO)			
VOLATILE ORGANIC COMPOUNDS (VOC)			
LEAD			
GREENHOUSE GASES (GHG) (SHORT TONS)			
OTHER			

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION - FACILITY-WIDE

HAZARDOUS AIR POLLUTANT EMITTED	CAS NO.	EXPECTED ACTUAL EMISSIONS (AFTER CONTROLS / LIMITATIONS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITATIONS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITATIONS) tons/yr
		See Emission Calculations in Appendix C		

TOXIC AIR POLLUTANT EMISSIONS INFORMATION - FACILITY-WIDE

INDICATE REQUESTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS. EMISSIONS ABOVE THE TOXIC PERMIT EMISSION RATE (TPER) IN 15A NCAC 2Q .0711 MAY REQUIRE AIR DISPERSION MODELING. USE NETTING FORM D2 IF NECESSARY.

TOXIC AIR POLLUTANT EMITTED	CAS NO.	lb/hr	lb/day	lb/year	Modeling Required ? Yes	No
		See Emission Calculations in Appendix C				

COMMENTS:

Attach Additional Sheets As Necessary

FORM D4

EXEMPT AND INSIGNIFICANT ACTIVITIES SUMMARY

REVISED 09/22/16 NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate **D4**

ACTIVITIES EXEMPTED PER 2Q .0102 OR
INSIGNIFICANT ACTIVITIES PER 2Q .0503 FOR TITLE V SOURCES

DESCRIPTION OF EMISSION SOURCE	SIZE OR PRODUCTION RATE	BASIS FOR EXEMPTION OR INSIGNIFICANT ACTIVITY
1. Green Wood Handling and Sizing Operations IES-GWHS	N/A	15A NCAC 02Q .0503(8)-low emissions, see Appendix C
2. Dried Wood Handling and Sizing Operations UES-DWHS	N/A	15A NCAC 02Q .0503(8) -negligible emissions, See Appendix C
3. Emergency Generator Diesel Fuel Storage Tank TK-1	Up to 2,500 gallons	15A NCAC 02Q .0503(8)
4. Firewater Pump Diesel Fuel Storage Tank TK-2	Up to 1,000 gallons	15A NCAC 02Q .0503(8)
5. Mobile Fuel Diesel Tank TK-3	Up to 2,500 gallons	15A NCAC 02Q .0503(8)
6. Green Wood Storage Piles IES-GWSP1 and IES-GWSP2	N/A	15A NCAC 02Q .0503(8) -low emissions, see Appendix C
7. Debarker IES-DEBARK-1	N/A	15A NCAC 02Q .0503(8) -negligible emissions
8. Green Wood Fuel Bin IES-GWFB	13.93 ODT/hr	15A NCAC0 2Q .0503(8) -no quantifiable emissions
9. IES-EG	536 HP	15A NCAC 02Q .0503(8)
10. IES-FWP	131 HP	15A NCAC 02Q .0503(8)

Attach Additional Sheets As Necessary

FORM E1
TITLE V GENERAL INFORMATION

REVISED 06/01/16 | NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate | E1

IF YOUR FACILITY IS CLASSIFIED AS "MAJOR" FOR TITLE V YOU MUST COMPLETE THIS FORM AND ALL OTHER REQUIRED "E" FORMS (E2 THROUGH E5 AS APPLICABLE)

Indicate here if your facility is subject to Title V by: ☑ EMISSIONS ☐ OTHER

If subject to Title V by "OTHER", specify why: ☐ NSPS ☐ NESHAP (MACT) ☐ TITLE IV ☐ OTHER (specify)

If you are or will be subject to any maximum achievable control technology standards (MACT) issued pursuant to section 112(d) of the Clean Air Act, specify below:

EMISSION SOURCE ID	EMISSION SOURCE DESCRIPTION	MACT
ES-EG, ES-FWP	Emergency Generator and Firepump	Subpart ZZZZ
ES-DRYER	Green Wood Direct-Fired Dryer System	40 CFR 63 Subpart B, [112(g)]
ES-GHM1 through 3	Three (3) Green Wood Hammermills	40 CFR 63 Subpart B, [112(g)]
ES-HM1 through ES-HM7	Seven (7) Hammermills	40 CFR 63 Subpart B, [112(g)]
ES-HMA	Hammermill Area	40 CFR 63 Subpart B, [112(g)]
ES-CLR1 through 6	Twelve (12) Wood Pellet Presses and Six (6) Pellet Coolers	40 CFR 63 Subpart B, [112(g)]

List any additional regulation which are requested to be included in the shield and provide a detailed explanation as to why the shield should be granted:

REGULATION	EMISSION SOURCE (Include ID)	EXPLANATION
40 CFR 63 Subpart DDDD as incorporated in 15A NCAC 2D .1111	All sources at site	Wood pellet manufacturing does not meet the definition of a plywood ar composite wood products (PCWP) manufacturing facility as defined in § Thus this regulations is not applicable to the Sampson plant.

Comments:

Attach Additional Sheets As Necessary

FORM E2

EMISSION SOURCE APPLICABLE REGULATION LISTING

REVISED 09/22/16

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

E2

EMISSION SOURCE ID NO.	EMISSION SOURCE DESCRIPTION	OPERATING SCENARIO INDICATE PRIMARY (P) OR ALTERNATIVE (A)	POLLUTANT	APPLICABLE REGULATION
ES 1	Coal/Wood Boiler	P - Coal	PM	NCAC 2D .0503
		A - Wood	PM	NCAC 2D .0504
See attached table following Form E3 for a summary of regulatory requirements and associated compliance requirements				

Attach Additional Sheets As Necessary

FORM E3
EMISSION SOURCE COMPLIANCE METHOD

REVISED 09/22/16

NCDEQ/Division Of Air Quality - Application for Air Permit to Construct/Operate E3

Emission Source ID NO. **ES-DRYER. See attached table following Form E3 for a summary of regulatory requirements and**	Regulated Pollutant **Particulate Matter**
Alternative Operating Scenario (AOS) NO:	Applicable Regulation **15 NCAC 02D .0515**

ATTACH A SEPARATE PAGE TO EXPAND ON ANY OF THE BELOW COMMENTS

MONITORING REQUIREMENTS

Is Compliance Assurance Monitoring (CAM) 40 CFR Part 64 Applicable? ☑ YES ☐ NO

If yes, is CAM Plan Attached (if applicable, CAM plan must be attached)? ☐ YES ☑ NO

Describe Monitoring Device Type:

Describe Monitoring Location:

Other Monitoring Methods (Describe In Detail): **Post-controlled PM emissions are below the major source threshold. As s plan for the Dryer is not required to be submitted until the first Title V permit renewal application is submitted. A control device is not u Dryer's CO, VOC, or NOx emission limits.**

Describe the frequency and duration of monitoring and how the data will be recorded (i.e., every 15 minutes, 1 minute instantaneous readings taken to produce an hourly average):

RECORDKEEPING REQUIREMENTS

Data (Parameter) being recording:

Frequency of recordkeeping (How often is data recorded?):

REPORTING REQUIREMENTS

Generally describe what is being reported:

Frequency: ☐ MONTHLY ☐ QUARTERLY ☐ EVERY 6 MONTHS ☐ OTHER (DESCRIBE):

TESTING

Specify proposed reference test method:

Specify reference test method rule and citation:

Specify testing frequency:

NOTE - Proposed test method subject to approval and possible change during the test protocol process

Attach Additional Sheets As Necessary

Summary of Regulatory Requirements and Associated Compliance Requirements
Enviva Pellets Sampson, LLC

Emission Source Description	ID No.	Pollutant	Regulation	Final Control Device	Monitoring Method/Frequency/Duration	Recordkeeping	Reporting
Wood-fired Dryer	ES-Dryer	$PM/PM_{10}/PM_{2.5}$	15A NCAC 02D .0515	Cyclones & WESP	PM emissions shall be controlled by an ESP. To assure compliance, daily monitoring of primary voltage and current. Monthly visual inspection of the ductwork and material collection units. Every 24 months internal inspect of the structural integrity.	Written or electronic log of date and time of each inspection, results of inspection and maintenance, and variance from manufacturer's recommendation.	Any maintenance performed on the ESP within 30 days of a written request by DAQ. Semi-annual progress report and annual compliance certification.
		SO_2	15A NCAC 02D .0516	WESP	None required because inherently low sulfur content of wood fuel achieves compliance		
		HAPs	Section 112(g) Case-by-Case MACT	WESP	Initial source testing conducted following issuance of PSD permit.	N/A	N/A
		Opacity	15A NCAC 02D .0521		Monthly visible observation for "normal". If above normal, correct action or Method 9 observation required.	Written or electronic log of date/time/result of each observation, results of each non-compliant observation and actions taken to correct, and results of corrective action.	Semi-annual progress report and annual compliance certification.
Green Hammermills	ES-GHM-1 to -3	$PM/PM_{10}/PM_{2.5}$	15A NCAC 02D .0515	Bagfilters	Inspections and maintenance, including monthly inspection of ductwork and material collection unit for leaks, and annual internal inspection of control device/bagfilter integrity.	Written or electronic log of date and time of each inspection, results of inspection and maintenance, and variance from manufacturer's recommendation.	Any maintenance performed on the cyclones/bagfilters/bin vent filters within 30 days of a written request by DAQ. Semi-annual progress report and annual compliance certification.
		HAPs	Section 112(g) Case-by-Case MACT		Use of PM control technologies and maintenance of equipment in accordance with manufacturer's specifications and/or standard industry practices.	N/A	N/A
		Opacity	15A NCAC 02D .0521		Monthly visible observation for "normal". If above normal, correct action or Method 9 observation required.	Written or electronic log of date/time/result of each observation, results of each non-compliant observation and actions taken to correct, and results of corrective action.	Semi-annual progress report and annual compliance certification.
Hammermills	ES-HM-1 to -7	$PM/PM_{10}/PM_{2.5}$	15A NCAC 02D .0515	Cyclones & Bagfilters	Inspections and maintenance, including monthly inspection of ductwork and material collection unit for leaks, and annual internal inspection of control device/bagfilter integrity.	Written or electronic log of date and time of each inspection, results of inspection and maintenance, and variance from manufacturer's recommendation.	Any maintenance performed on the cyclones/bagfilters/bin vent filters within 30 days of a written request by DAQ. Semi-annual progress report and annual compliance certification.
		HAPs	Section 112(g) Case-by-Case MACT		Use of PM control technologies and maintenance of equipment in accordance with manufacturer's specifications and/or standard industry practices.	N/A	N/A
		Opacity	15A NCAC 02D .0521		Monthly visible observation for "normal". If above normal, correct action or Method 9 observation required.	Written or electronic log of date/time/result of each observation, results of each non-compliant observation and actions taken to correct, and results of corrective action.	Semi-annual progress report and annual compliance certification.
Pellet Mill Feed Silo	ES-PMFS	$PM/PM_{10}/PM_{2.5}$	15A NCAC 02D .0515	Bin vent filter	Inspections and maintenance, including monthly inspection of ductwork and material collection unit for leaks, and annual internal inspection of control device/bagfilter integrity.	Written or electronic log of date and time of each inspection, results of inspection and maintenance, and variance from manufacturer's recommendation.	Any maintenance performed on the cyclones/bagfilters/bin vent filters within 30 days of a written request by DAQ. Semi-annual progress report and annual compliance certification.
		Opacity	15A NCAC 02D .0521		Monthly visible observation for "normal". If above normal, correct action or Method 9 observation required.	Written or electronic log of date/time/result of each observation, results of each non-compliant observation and actions taken to correct, and results of corrective action.	Semi-annual progress report and annual compliance certification.

Summary of Regulatory Requirements and Associated Compliance Requirements
Enviva Pellets Sampson, LLC

Emission Source Description	ID No.	Pollutant	Regulation	Final Control Device	Monitoring Method/Frequency/Duration	Recordkeeping	Reporting
Pellet Fins Bin & Hammermill Area	ES-PFB & ES-HMA	$PM/PM_{10}/PM_{2.5}$	15A NCAC 02D .0515	ES-PFB & ES-HMA	Inspections and maintenance, including monthly inspection of ductwork and material collection unit for leaks, and annual internal inspection of control device/bagfilter integrity.	Written or electronic log of date and time of each inspection, results of inspection and maintenance, and variance from manufacturer's recommendation.	Any maintenance performed on the cyclones/bagfilters/bin vent filters within 30 days of a written request by DAQ. Semi-annual progress report and annual compliance certification.
		HAPs	Section 112(g) Case-by-Case MACT		Use of PM control technologies and maintenance of equipment in accordance with manufacturer's specifications and/or standard industry practices.	N/A	N/A
		Opacity	15A NCAC 02D .0521		Monthly visible observation for "normal". If above normal, correct action or Method 9 observation required.	Written or electronic log of date/time/result of each observation, results of each non-compliant observation and actions taken to correct, and results of corrective action.	Semi-annual progress report and annual compliance certification.
Finished Product Handling	ES-FPH, ES-PB-1 to -4, ES-PL-1 to -2	$PM/PM_{10}/PM_{2.5}$	15A NCAC 02D .0515	Bagfilter	Inspections and maintenance, including monthly inspection of ductwork and material collection unit for leaks, and annual internal inspection of control device/bagfilter integrity.	Written or electronic log of date and time of each inspection, results of inspection and maintenance, and variance from manufacturer's recommendation.	Any maintenance performed on the cyclones/bagfilters/bin vent filters within 30 days of a written request by DAQ. Semi-annual progress report and annual compliance certification.
		Opacity	15A NCAC 02D .0521		Monthly visible observation for "normal". If above normal, correct action or Method 9 observation required.	Written or electronic log of date/time/result of each observation, results of each non-compliant observation and actions taken to correct, and results of corrective action.	Semi-annual progress report and annual compliance certification.
Pellet Presses & Coolers	ES-CLR-1 to -6	$PM/PM_{10}/PM_{2.5}$	15A NCAC 02D .0515	Cyclones	Inspections and maintenance, including monthly inspection of ductwork and material collection unit for leaks, and annual internal inspection of control device/bagfilter integrity.	Written or electronic log of date and time of each inspection, results of inspection and maintenance, and variance from manufacturer's recommendation.	Any maintenance performed on the cyclones/bagfilters/bin vent filters within 30 days of a written request by DAQ. Semi-annual progress report and annual compliance certification.
		HAPs	Section 112(g) Case-by-Case MACT		Use of PM control technologies and maintenance of equipment in accordance with manufacturer's specifications and/or standard industry practices.	N/A	N/A
		Opacity	15A NCAC 02D .0521		Monthly visible observation for "normal". If above normal, correct action or Method 9 observation required.	Written or electronic log of date/time/result of each observation, results of each non-compliant observation and actions taken to correct, and results of corrective action.	Semi-annual progress report and annual compliance certification.
Pellet Cooler Recirculation	ES-PCR	$PM/PM_{10}/PM_{2.5}$	15A NCAC 02D .0515	Bin vent filter	Inspections and maintenance, including monthly inspection of ductwork and material collection unit for leaks, and annual internal inspection of control device/bagfilter integrity.	Written or electronic log of date and time of each inspection, results of inspection and maintenance, and variance from manufacturer's recommendation.	Any maintenance performed on the cyclones/bagfilters/bin vent filters within 30 days of a written request by DAQ. Semi-annual progress report and annual compliance certification.
		Opacity	15A NCAC 02D .0521		Monthly visible observation for "normal". If above normal, correct action or Method 9 observation required.	Written or electronic log of date/time/result of each observation, results of each non-compliant observation and actions taken to correct, and results of corrective action.	Semi-annual progress report and annual compliance certification.

Summary of Regulatory Requirements and Associated Compliance Requirements
Enviva Pellets Sampson, LLC

Emission Source Description	ID No.	Pollutant	Regulation	Final Control Device	Monitoring Method/Frequency/Duration	Recordkeeping	Reporting
Pellet Sampling Transfer Bin	ES-PSTB	$PM/PM_{10}/PM_{2.5}$	15A NCAC 02D .0515	Bin vent filter	Inspections and maintenance, including monthly inspection of ductwork and material collection unit for leaks, and annual internal inspection of control device/bagfilter integrity.	Written or electronic log of date and time of each inspection, results of inspection and maintenance, and variance from manufacturer's recommendation.	Any maintenance performed on the cyclones/bagfilters/bin vent filters within 30 days of a written request by DAQ. Semi-annual progress report and annual compliance certification.
		Opacity	15A NCAC 02D .0521		Monthly visible observation for "normal". If above normal, correct action or Method 9 observation required.	Written or electronic log of date/time/result of each observation, results of each non-compliant observation and actions taken to correct, and results of corrective action.	Semi-annual progress report and annual compliance certification.
Emergency Generator	IES-ES	PM, CO, NO_x, NMHC, SO_2	40 CFR Part 60 Subpart IIII	N/A	All requirement are outlined in the regulation, including the following: use certified emergency engines, operate according to manufacturers procedures, use fuel oil with fuel content of no more than 15 ppmw sulfur and cetane index of at least 40, install non-resettable hour meter.	Maintain records of engine certification, fuel certifications and hours/year of operate of each engine.	Annual Compliance Certification
		SO_2	15A NCAC 02D .0516	N/A	Non required because inherently low sulfur content of fuel achieves compliance		
		Opacity	15A NCAC 02D .0521	N/A	N/A	N/A	N/A
		HAPs	40 CFR Part 63 Subpart ZZZZ	N/A	Comply with the NSPS requirements above and no other requirements apply.	Comply with the NSPS requirements above and no other requirements apply.	Annual Compliance Certification
Fire Water Pump	IES-FWP	PM, CO, NO_x, NMHC, SO_2	40 CFR Part 60 Subpart IIII	N/A	All requirement are outlined in the regulation, including the following: use certified emergency engines, operate according to manufacturers procedures, use fuel oil with fuel content of no more than 15 ppmw sulfur and cetane index of at least 40, install non-resettable hour meter.	Maintain records of engine certification, fuel certifications and hours/year of operate of each engine.	Annual Compliance Certification
		SO_2	15A NCAC 02D .0516	N/A	Non required because inherently low sulfur content of fuel achieves compliance		
		Opacity	15A NCAC 02D .0521	N/A	N/A	N/A	N/A
		HAPs	40 CFR Part 63 Subpart ZZZZ	N/A	Comply with the NSPS requirements above and no other requirements apply.	Comply with the NSPS requirements above and no other requirements apply.	Annual Compliance Certification

FORM E4

EMISSION SOURCE COMPLIANCE SCHEDULE

REVISED 09/22/16 — **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** — **E4**

COMPLIANCE STATUS WITH RESPECT TO ALL APPLICABLE REQUIREMENTS

Will each emission source at your facility be in compliance with all applicable requirements at the time of permit issuance and continue to comply with these requirements?

☑ YES ☐ NO **If NO**, complete **A** through **F** below for each requirement for which compliance is not achieved.

Will your facility be in compliance with all applicable requirements taking effect during the term of the permit and meet such requirements on a timely basis?

☑ YES ☐ NO **If NO**, complete **A** through **F** below for each requirement for which compliance is not achieved.

If this application is for a modification of existing emissions source(s), is each emission source currently in compliance with all applicable requirements?

☐ YES ☐ NO **If NO**, complete **A** through **F** below for each requirement for which compliance is not achieved.

A. Emission Source Description (Include ID NO.) _____

B. Identify applicable requirement for which compliance is not achieved:

_____

_____

_____

_____

C. Narrative description of how compliance will be achieved with this applicable requirements:

_____

_____

_____

_____

_____

D. Detailed Schedule of Compliance:

Step(s)	Date Expected
_____	_____
_____	_____
_____	_____
_____	_____

E. Frequency for submittal of progress reports (6 month minimum): _____

F. Starting date of submittal of progress reports: _____

Attach Additional Sheets As Necessary

FORM E5

TITLE V COMPLIANCE CERTIFICATION (Required)

REVISED 09/22/16

NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate

E5

In accordance with the provisions of Title 15A NCAC 2Q .0520 and .0515(b)(4) the responsible company official of:

SITE NAME: Enviva Pellets Sampson, LLC

SITE ADDRESS: 5 Connector Road

CITY, NC : Faison, NC

COUNTY: Sampson

PERMIT NUMBER : N/A

CERTIFIES THAT (Check the appropriate statement(s):

- [x] The facility is in compliance with all applicable requirements
- [ ] In accordance with the provisions of Title 15A NCAC 2Q .0515(b)(4) the responsible company official certifies that the proposed minor modification meets the criteria for using the procedures set out in 2Q .0515 and requests that these procedures be used to process the permit application.
- [ ] The facility is not currently in compliance with all applicable requirements
  If this box is checked, you must also complete Form E4 "Emission Source Compliance Schedule"

The undersigned certifies under the penalty of law, that all information and statements provided in the application, based on information and belief formed after reasonable inquiry, are true, accurate, and complete.

Signature of responsible company official (REQUIRED, USE BLUE INK) **Date:** 9/25/17

Jason Ansley, Plant Manager

Name, Title of responsible company official (Type or print)

Attach Additional Sheets As Necessary

Received
OCT 2 2017
Air Permits Section

FORM B

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16 — NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate — B

EMISSION SOURCE DESCRIPTION: **Log Chipping**	EMISSION SOURCE ID NO: **ES-CHIP-1**
OPERATING SCENARIO 1 OF 1	CONTROL DEVICE ID NO(S): **N/A**
	EMISSION POINT (STACK) ID NO(S): **N/A**

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
Pre-chipped green wood is screened and oversized chips undergo additional chipping as required. Unchipped wood is chipped to specification after being debarked.

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

- ☐ Coal,wood,oil, gas, other burner (Form B1)
- ☐ Int.combustion engine/generator (Form B2)
- ☐ Liquid storage tanks (Form B3)
- ☐ Woodworking (Form B4)
- ☐ Coating/finishing/printing (Form B5)
- ☐ Storage silos/bins (Form B6)
- ☐ Manuf. of chemicals/coatings/inks (Form B7)
- ☐ Incineration (Form B8)
- ☑ Other (Form B9)

START CONSTRUCTION DATE:	DATE MANUFACTURED:
MANUFACTURER / MODEL NO.: **Andritz Inc./ HQ Chipper Model XL-16I**	EXPECTED OP. SCHEDULE: **24** HR/DAY **7** DAY/WK **52** WK/YR
IS THIS SOURCE SUBJECT TO? ☐ NSPS (SUBPARTS?):	☐ NESHAP (SUBPARTS?):
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB **25%** MAR-MAY **25%** JUN-AUG **25%** SEP-NOV **25%**	

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)	**See Emission Calculations in Appendix C**						
PARTICULATE MATTER<10 MICRONS (PM_{10})							
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
		See Emission Calculations in Appendix C						

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS lb/hr	lb/day	lb/yr
		See Emission Calculations in Appendix C			

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE

Attach Additional Sheets As Necessary

FORM B9
EMISSION SOURCE (OTHER)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B9**

EMISSION SOURCE DESCRIPTION: **Log Chipping**	EMISSION SOURCE ID NO: **ES-CHIP-1**
	CONTROL DEVICE ID NO(S): **N/A**
OPERATING SCENARIO: __1__ OF _____1_____	EMISSION POINT (STACK) ID NO(S): **N/A**

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):
Pre-chipped green wood is screened and oversized chips will undergo additional chipping as required. Unchipped wood is chipped to specification after being debarked.

MATERIALS ENTERING PROCESS - CONTINUOUS PROCESS		MAX. DESIGN CAPACITY (UNIT/HR)	REQUESTED CAPACITY LIMITATION(UNIT/HR)
TYPE	UNITS		
Green Wood	**ODT**	**71.71**	

MATERIALS ENTERING PROCESS - BATCH OPERATION		MAX. DESIGN CAPACITY (UNIT/BATCH)	REQUESTED CAPACITY LIMITATION (UNIT/BATCH)
TYPE	UNITS		

MAXIMUM DESIGN (BATCHES / HOUR):	
REQUESTED LIMITATION (BATCHES / HOUR):	(BATCHES/YR):
FUEL USED: **N/A**	TOTAL MAXIMUM FIRING RATE (MILLION BTU/HR): **N/A**
MAX. CAPACITY HOURLY FUEL USE: **N/A**	REQUESTED CAPACITY ANNUAL FUEL USE: **N/A**

COMMENTS:

Attach Additional Sheets as Necessary

FORM B

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16 — NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate — B

EMISSION SOURCE DESCRIPTION: **Green Wood Hammermills**

EMISSION SOURCE ID NO: **ES-GHM-1, 2, 3**

CONTROL DEVICE ID NO(S): **CD-GHM-BF1, 2 and 3**

EMISSION POINT (STACK) ID NO(S): **EP-17 & EP-18 and EP-22**

OPERATING SCENARIO 1 OF 1

DESCRIBE IN DETAIL THE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
Green wood chips are screened and oversized chips undergo additional chipping as required.

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

- ☐ Coal,wood,oil, gas, other burner (Form B1)
- ☐ Int.combustion engine/generator (Form B2)
- ☐ Liquid storage tanks (Form B3)
- ☐ Woodworking (Form B4)
- ☐ Coating/finishing/printing (Form B5)
- ☐ Storage silos/bins (Form B6)
- ☐ Manuf. of chemicals/coatings/inks (Form B7)
- ☐ Incineration (Form B8)
- ☑ Other (Form B9)

START CONSTRUCTION DATE: DATE MANUFACTURED:

MANUFACTURER / MODEL NO.: **West Salem Machinery #4888SP** EXPECTED OP. SCHEDULE: **24** HR/DAY **7** DAY/WK **52** WK/YR

IS THIS SOURCE SUBJECT TO? ☐ NSPS (SUBPARTS?): ☑ NESHAP (SUBPARTS **Supbart B, Section 112(g)**

PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB **25%** MAR-MAY **25%** JUN-AUG **25%** SEP-NOV **25%**

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)	See Emission Calculations in Appendix C						
PARTICULATE MATTER<10 MICRONS (PM_{10})							
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
		See Emission Calculations in Appendix C						

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS lb/hr	lb/day	lb/yr
		See Emission Calculations in Appendix C			

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE

Attach Additional Sheets As Necessary

FORM B9
EMISSION SOURCE (OTHER)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B9**

EMISSION SOURCE DESCRIPTION: **Green Wood Hammermills**	EMISSION SOURCE ID NO: **ES-GHM-1, 2, 3**
	CONTROL DEVICE ID NO(S): **CD-GHM-BF1, 2, and 3**
OPERATING SCENARIO: __1__ OF __1__	EMISSION POINT (STACK) ID NO(S): **EP-17 & EP-18, and EP-22**

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):
Green wood chips are screened and oversized chips will undergo additional chipping as required.

MATERIALS ENTERING PROCESS - CONTINUOUS PROCESS		MAX. DESIGN CAPACITY (UNIT/HR)	REQUESTED CAPACITY LIMITATION(UNIT/HR)
TYPE	UNITS		
Green Wood	**ODT**	**71.71**	

MATERIALS ENTERING PROCESS - BATCH OPERATION		MAX. DESIGN CAPACITY (UNIT/BATCH)	REQUESTED CAPACITY LIMITATION (UNIT/BATCH)
TYPE	UNITS		

MAXIMUM DESIGN (BATCHES / HOUR):	
REQUESTED LIMITATION (BATCHES / HOUR):	(BATCHES/YR):
FUEL USED: **N/A**	TOTAL MAXIMUM FIRING RATE (MILLION BTU/HR): **N/A**
MAX. CAPACITY HOURLY FUEL USE: **N/A**	REQUESTED CAPACITY ANNUAL FUEL USE: **N/A**

COMMENTS:

Attach Additional Sheets as Necessary

FORM C1
CONTROL DEVICE (FABRIC FILTER)

REVISED 09/22/16 — NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate — C1

CONTROL DEVICE ID NO: **CD-GHM-BF1, 2, 3**	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): **ES-GHM-1, 2, 3**
EMISSION POINT (STACK) ID NO(S): **EP-17, EP-18, EP-22**	POSITION IN SERIES OF CONTROLS NO. **1** OF **1** UNITS
OPERATING SCENARIO: _1___ OF __1__	P.E. SEAL REQUIRED (PER 2q .0112)? ☐ YES ☑ NO

DESCRIBE CONTROL SYSTEM:
A bin vent filter is used to create a slight negative pressure on each green hammermill. The bin vent collects dust from the air volume present in the hammermill. The bin vent is sized to offset the air displacement created by the material feed to the hammermill.

POLLUTANTS COLLECTED:	PM	PM-10	PM-2.5	
BEFORE CONTROL EMISSION RATE (LB/HR):				
CAPTURE EFFICIENCY:	%	%	%	%
CONTROL DEVICE EFFICIENCY:	~99.9 %	~99.9 %	~99.9 %	%
CORRESPONDING OVERALL EFFICIENCY:	%	%	%	%
EFFICIENCY DETERMINATION CODE:				
TOTAL AFTER CONTROL EMISSION RATE (LB/HR):				

PRESSURE DROP (IN H_20): MIN: MAX: **4"** GAUGE? ☑ YES ☐ NO	
BULK PARTICLE DENSITY (LB/FT^3): **1.43E-06**	INLET TEMPERATURE (°F): **Ambient**
POLLUTANT LOADING RATE: ☐ LB/HR ☑ GR/FT^3	OUTLET TEMPERATURE (°F) **Ambient**
INLET AIR FLOW RATE (ACFM):	FILTER OPERATING TEMP (°F): **N/A**
NO. OF COMPARTMENTS: **1** / NO. OF BAGS PER COMPARTMENT: **1**	LENGTH OF BAG (IN.): **120**
NO. OF CARTRIDGES: / FILTER SURFACE AREA PER CARTRIDGE (FT^2): **377**	DIAMETER OF BAG (IN.): **5.875**
TOTAL FILTER SURFACE AREA (FT^2): / AIR TO CLOTH RATIO: 6	
DRAFT TYPE: ☑ INDUCED/NEGATIVE ☑ FORCED/POSITIVE	FILTER MATERIAL: ☐ WOVEN ☑ FELTED

DESCRIBE CLEANING PROCEDURES

- ☑ AIR PULSE
- ☐ REVERSE FLOW
- ☐ MECHANICAL/SHAKER
- ☐ OTHER:
- ☐ SONIC
- ☐ SIMPLE BAG COLLAPSE
- ☐ RING BAG COLLAPSE

PARTICLE SIZE DISTRIBUTION

SIZE (MICRONS)	WEIGHT % OF TOTAL	CUMULATIVE %
0-1	**Unknown**	
1-10		
10-25		
25-50		
50-100		
>100		
	TOTAL = 100	

DESCRIBE INCOMING AIR STREAM:
The air stream will contain wood dust particulate emissions.

ON A SEPARATE PAGE, ATTACH A DIAGRAM SHOWING THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S):

COMMENTS:

Attach Additional Sheets As Necessary

FORM B

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16 — NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate — B

EMISSION SOURCE DESCRIPTION: **Barkhog**

EMISSION SOURCE ID NO: **ES-BARKHOG**

CONTROL DEVICE ID NO(S): **N/A**

EMISSION POINT (STACK) ID NO(S): **N/A**

OPERATING SCENARIO 1 OF 1

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):

Green wood bark fuel is sent to the bark hog to break up bark into smaller pieces prior to the dryer.

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

- ☐ Coal,wood,oil, gas, other burner (Form B1)
- ☐ Int.combustion engine/generator (Form B2)
- ☐ Liquid storage tanks (Form B3)
- ☐ Woodworking (Form B4)
- ☐ Coating/finishing/printing (Form B5)
- ☐ Storage silos/bins (Form B6)
- ☐ Manuf. of chemicals/coatings/inks (Form B7)
- ☐ Incineration (Form B8)
- ☑ Other (Form B9)

START CONSTRUCTION DATE: DATE MANUFACTURED:

MANUFACTURER / MODEL NO.: **West Salem Machinery #4048BP** EXPECTED OP. SCHEDULE: **24** HR/DAY **7** DAY/WK **52** WK/YR

IS THIS SOURCE SUBJECT TO? ☐ NSPS (SUBPARTS?): ☐ NESHAP (SUBPARTS?):

PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB **25%** MAR-MAY **25%** JUN-AUG **25%** SEP-NOV **25%**

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)	See Emission Calculation in Appendix C						
PARTICULATE MATTER<10 MICRONS (PM_{10})							
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
		See Emission Calculation in Appendix C						

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS lb/hr	lb/day	lb/yr
		See Emission Calculation in Appendix C			

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE

Attach Additional Sheets As Necessary

FORM B9
EMISSION SOURCE (OTHER)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B9**

EMISSION SOURCE DESCRIPTION: **Bark hog**	EMISSION SOURCE ID NO: **ES-BARKHOG**
	CONTROL DEVICE ID NO(S): **N/A**
OPERATING SCENARIO: 1 OF 1	EMISSION POINT (STACK) ID NO(S): **N/A**

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):
Green wood bark fuel is sent to the bark hog to break up bark into smaller pieces prior to the dryer.

MATERIALS ENTERING PROCESS - CONTINUOUS PROCESS		MAX. DESIGN CAPACITY (UNIT/HR)	REQUESTED CAPACITY LIMITATION(UNIT/HR)
TYPE	UNITS		
Green Wood	**ODT**	**30**	

MATERIALS ENTERING PROCESS - BATCH OPERATION		MAX. DESIGN CAPACITY (UNIT/BATCH)	REQUESTED CAPACITY LIMITATION (UNIT/BATCH)
TYPE	UNITS		

MAXIMUM DESIGN (BATCHES / HOUR):	
REQUESTED LIMITATION (BATCHES / HOUR):	(BATCHES/YR):
FUEL USED: **N/A**	TOTAL MAXIMUM FIRING RATE (MILLION BTU/HR): **N/A**
MAX. CAPACITY HOURLY FUEL USE: **N/A**	REQUESTED CAPACITY ANNUAL FUEL USE: **N/A**

COMMENTS:

Attach Additional Sheets as Necessary

FORM B

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16 — NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate — B

EMISSION SOURCE DESCRIPTION: **Green Wood Direct-Fired Rotary Dryer System**	EMISSION SOURCE ID NO: **ES-DRYER**
	CONTROL DEVICE ID NO(S): **CD-DC1- through CD-DC4, CD-WESP**
OPERATING SCENARIO __1__ OF __1__	EMISSION POINT (STACK) ID NO(S): **EP-1**

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
Green wood is conveyed to a rotary dryer system. Direct contact heat is provided to the system via a 250.4 MMBtu/hr burner system. Air emissions are controlled by cyclones for bulk particulate removal and additional particulate is removed utilizing a wet electrostatic precipitator (WESP) operating after the cyclones.

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

- [x] Coal,wood,oil, gas, other burner (Form B1)
- [ ] Int.combustion engine/generator (Form B2)
- [ ] Liquid storage tanks (Form B3)
- [ ] Woodworking (Form B4)
- [ ] Coating/finishing/printing (Form B5)
- [ ] Storage silos/bins (Form B6)
- [ ] Manuf. of chemicals/coatings/inks (Form B7)
- [ ] Incineration (Form B8)
- [ ] Other (Form B9)

START CONSTRUCTION DATE:	DATE MANUFACTURED:
MANUFACTURER / MODEL NO.: **Teal Sales Inc. 24' x 80' Single Pass Drum Dryer**	EXPECTED OP. SCHEDULE: **_24_** HR/DAY **_7_** DAY/WK **_52_** WK/YR
IS THIS SOURCE SUBJECT TO? [ ] NSPS (SUBPARTS?):	[x] NESHAP (SUBPARTS **Subpart B, Section 112(g)**

PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB **25%** MAR-MAY **25%** JUN-AUG **25%** SEP-NOV **25%**

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)	**See Emission Calculations in Appendix C**						
PARTICULATE MATTER<10 MICRONS (PM_{10})							
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
		See Emission Calculations in Appendix C						

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS lb/hr	lb/day	lb/yr
		See Emission Calculations in Appendix C			

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE

Attach Additional Sheets As Necessary

FORM B1

EMISSION SOURCE (WOOD, COAL, OIL, GAS, OTHER FUEL-FIRED BURNER)

REVISED 09/22/16 — NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate — B1

EMISSION SOURCE DESCRIPTION: Green Wood Direct-Fired Rotary Dryer System

EMISSION SOURCE ID NO: ES-DRYER

CONTROL DEVICE ID NO(S): CD-DC1 through CD-DC4, CD-WESP

EMISSION POINT (STACK) ID NO(S): EP-1

OPERATING SCENARIO: 1 OF 1

DESCRIBE USE: ☑ PROCESS HEAT ☐ SPACE HEAT ☐ ELECTRICAL GENERATION ☐ CONTINUOUS USE ☐ STAND BY/EMERGENCY ☐ OTHER (DESCRIBE):

HEATING MECHANISM: ☐ INDIRECT ☑ DIRECT

MAX. FIRING RATE (MMBTU/HOUR): 250.4

WOOD-FIRED BURNER

WOOD TYPE: ☐ BARK ☑ WOOD/BARK ☐ WET WOOD ☐ DRY WOOD ☐ OTHER (DESCRIBE):

PERCENT MOISTURE OF FUEL: 20 to 50%

☐ UNCONTROLLED ☐ CONTROLLED WITH FLYASH REINJECTION ☑ CONTROLLED W/O REINJECTION

FUEL FEED METHOD: N/A

HEAT TRANSFER MEDIA: ☐ STEAM ☑ AIR ☐ OTHER (DESCRIBE)

COAL-FIRED BURNER

TYPE OF BOILER — IF OTHER DESCRIBE:

PULVERIZED	OVERFEED STOKER	UNDERFEED STOKER	SPREADER STOKER	FLUIDIZED BED
☐ WET BED ☐ DRY BED	☐ UNCONTROLLED ☐ CONTROLLED	☐ UNCONTROLLED ☐ CONTROLLED	☐ UNCONTROLLED ☐ FLYASH REINJECTION ☐ NO FLYASH REINJECTION	☐ CIRCULATING ☐ RECIRCULATING

OIL/GAS-FIRED BURNER

TYPE OF BOILER: ☐ UTILITY ☐ INDUSTRIAL ☐ COMMERCIAL ☐ INSTITUTIONAL

TYPE OF FIRING: ☐ NORMAL ☐ TANGENTIAL ☐ LOW NOX BURNERS ☐ NO LOW NOX BURNER

OTHER FUEL-FIRED BURNER

TYPE(S) OF FUEL:

TYPE OF BOILER: ☐ UTILITY ☐ INDUSTRIAL ☐ COMMERCIAL ☐ INSTITUTIONAL

TYPE OF FIRING: TYPE(S) OF CONTROL(S) (IF ANY):

FUEL USAGE (INCLUDE STARTUP/BACKUP FUELS)

FUEL TYPE	UNITS	MAXIMUM DESIGN CAPACITY (UNIT/HR)	REQUESTED CAPACITY LIMITATION (UNIT/HR)
Bark/Wet Wood	tons	29.8	

FUEL CHARACTERISTICS (COMPLETE ALL THAT ARE APPLICABLE)

FUEL TYPE	SPECIFIC BTU CONTENT	SULFUR CONTENT (% BY WEIGHT)	ASH CONTENT (% BY WEIGHT)
Bark/Wet Wood	Nominal 4,200 BTU/lb	0.011	

SAMPLING PORTS, COMPLIANT WITH EPA METHOD 1 WILL BE INSTALLED ON THE STACKS ☑ YES ☐ ☐ NO

COMMENTS:

Attach Additional Sheets As Necessary

FORM C2

CONTROL DEVICE (Electrostatic Precipitator)

REVISED 09/22/16 — NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate — **C2**

CONTROL DEVICE ID NO: **CD-WESP**	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): **ES-DRYER**
EMISSION POINT (STACK) ID NO(S): **EP-1**	POSITION IN SERIES OF CONTROL NO. **2** OF **2** UNITS
MANUFACTURER: **Teal Sales, Inc.**	MODEL NO.
OPERATING SCENARIO:	
OPERATING SCENARIO: **1** OF **1**	P.E. SEAL REQUIRED (PER 2Q .0112)? ☐ YES ☑ NO

DESCRIBE CONTROL SYSTEM:
Emissions from the Dryer are initially controlled by four identical cyclones which then route to the WESP through a common duct for additional PM, metallic HAP, and HCL removal.

EQUIPMENT SPECIFICATIONS	GAS DISTRIBUTION GRIDS: ☑ YES ☐ NO
TYPE: ☑ WET ☐ DRY	☑ SINGLE-STAGE ☐ TWO-STAGE
TOTAL COLLECTION PLATE AREA (FT^2): **29,904**	NO. FIELDS **2** NO. COLLECTOR PLATES PER FIELD: **567 tubes**
COLLECTOR PLATE SIZE (FT): LENGTH: WIDTH:	SPACING BETWEEN COLLECTOR PLATES (INCHES): **12" hextube**
TOTAL DISCHARGE ELECTRODE LENGTH (FT): **19"-0"**	GAS VISCOSITY (POISE): **2.054E-04 Poise**
NUMBER OF DISCHARGE ELECTRODES: **567**	NUMBER OF COLLECTING ELECTRODE RAPPERS: **none**
MAXIMUM INLET AIR FLOW RATE (ACFM): **117,000**	PARTICLE MIGRATION VELOCITY (FT/SEC): **0.234**
MINIMUM GAS TREATMENT TIME (SEC): **2.3**	BULK PARTICLE DENSITY (LB/FT^3): **45 lb/cr. Ft.**
FIELD STRENGTH (VOLTS) CHARGING: **83kVA** COLLECTING: **N/A**	CORONA POWER (WATTS/1000 CFM): **4000**
ELECTRICAL USAGE (KW/HOUR): **141.5**	
CLEANING PROCEDURES: ☐ RAPPING ☐ PLATE VIBRATING ☑ WASHING ☐ OTHER	WARNING ALARM? ☐ YES ☑ NO
OPERATING PARAMETERS PRESSURE DROP (IN. H20): MIN **2"** MAX **2"**	GAS CONDITIONING ☑ YES ☐ NO TYPE OF AGENT (IF YES):
RESISTIVITY OF POLLUTANT (OHM-CM): **N/A**	OUTLET GAS TEMPERATURE (°F): **180 °F Nominal**
INLET GAS TEMPERATURE (°F): **240 °F nominal**	INLET MOISTURE PERCENT: MIN **40%** MAX **50%**
VOLUME OF GAS HANDLED (ACFM): **117,000**	

POWER REQUIREMENTS — IS AN ENERGY MANAGEMENT SYSTEM USED? ☐ YES ☐ NO

FIELD NO.	NO. OF SETS	CHARGING	EACH TRANSFORMER (kVA)	EACH RECTIFIER Kv Ave/Peak Ma Dc
1	1		118	83 / 1265
2	1		118	83 / 1265

POLLUTANT(S) COLLECTED:	PM / PM_{10} / $PM_{2.5}$			
BEFORE CONTROL EMISSION RATE (LB/HR):	150			
CAPTURE EFFICIENCY:	%	%	%	%
CONTROL DEVICE EFFICIENCY:	%	%	%	%
CORRESPONDING OVERALL EFFICIENCY:	%	%	%	%
EFFICIENCY DETERMINATION CODE:				
TOTAL AFTER CONTROL EMISSION RATE (LB/HR)	**See calculations in Appendix C**			

PARTICLE SIZE DISTRIBUTION

SIZE (MICRONS)	WEIGHT % OF TOTAL	CUMULATIVE %
0-1		
1-10		
10-25		
25-50		
50-100		
>100		
	TOTAL = 100	

DESCRIBE STARTUP PROCEDURES:
Refer to previous submittal.

DESCRIBE MAINTENANCE PROCEDURES:
Refer to previous submittal.

DESCRIBE ANY AUXILIARY MATERIALS INTRODUCED INTO THE CONTROL SYSTEM

DESCRIBE ANY MONITORING DEVICES, GAUGES, OR TEST PORTS AS ATTACHMENTS: **PLC**

COMMENTS:

ATTACH A DIAGRAM OF THE TOP VIEW OF THE ESP WITH DIMENSIONS (include at a minimum the plate spacing and wire spacing and indicate the electrode type), AND THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S):

Attach Additional Sheets As Necessary

FORM C4

CONTROL DEVICE (CYCLONE, MULTICYCLONE, OR OTHER MECHANICAL)

REVISED 09/22/16 — NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate — C4

CONTROL DEVICE ID NO: **CD-DC1 through CD-DC4**	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): **ES-DRYER**
EMISSION POINT (STACK) ID NO(S): **EP-1**	POSITION IN SERIES OF CONTROLS NO. **1** OF **2** UNITS
OPERATING SCENARIO:	
1 OF 1	P.E. SEAL REQUIRED (PER 2Q .0112)? ☐ YES ☑ NO

DESCRIBE CONTROL SYSTEM:
Four identical simple cyclones are equipped to the discharge of the rotary dryer system to capture bulk PM emissions. Emissions from each of the cyclones are combined into a common duct and are routed to the WESP. The parameters presented here are per each cyclone.

	PM	PM_{10}	$PM_{2.5}$	
POLLUTANT(S) COLLECTED:				
BEFORE CONTROL EMISSION RATE (LB/HR):				
CAPTURE EFFICIENCY:	98.5 %	98.5 %	98.5 %	%
CONTROL DEVICE EFFICIENCY:	%	%	%	%
CORRESPONDING OVERALL EFFICIENCY:	%	%	%	%
EFFICIENCY DETERMINATION CODE:				
TOTAL AFTER CONTROL EMISSION RATE (LB/HR):				

PRESSURE DROP (IN. H_2O): MIN **6.0"** MAX	
INLET TEMPERATURE (°F): MIN MAX **Nominal 400**	OUTLET TEMPERATURE (°F): MIN MAX **Nominal 400**
INLET AIR FLOW RATE (ACFM): **117,000**	BULK PARTICLE DENSITY (LB/FT^3): **3.43E-05**
POLLUTANT LOADING RATE (GR/FT^3): **0.24**	

SETTLING CHAMBER	CYCLONE			MULTICYCLONE
LENGTH (INCHES):	INLET VELOCITY (FT/SEC): **95**		☑ CIRCULAR ☐ RECTANGLE	NO. TUBES:
WIDTH (INCHES):	*DIMENSIONS (INCHES) See instructions*		*IF WET SPRAY UTILIZED*	DIAMETER OF TUBES:
HEIGHT (INCHES):	H:	Dd:	LIQUID USED:	HOPPER ASPIRATION SYSTEM?
VELOCITY (FT/SEC.):	W:	Lb: **156"**	FLOW RATE (GPM):	☐ YES ☑ NO
NO. TRAYS:	De: **79"**	Lc: **312"**	MAKE UP RATE (GPM):	LOUVERS?
NO. BAFFLES:	D: **132"**	S:		☐ YES ☑ NO
	TYPE OF CYCLONE ☑ CONVENTIONAL		☐ HIGH EFFICIENCY	☐ OTHER

DESCRIBE MAINTENANCE PROCEDURES: **Periodic inspection of mechanical integrity during plant outages as specified by manufacturer.**

DESCRIBE INCOMING AIR STREAM: **The flue gas from the dryer will be split and distributed through a set of four cyclones before entering the WESP. After the cyclones, the gas stream will be combined into a single duct and directed to the WESP inlet point.**

PARTICLE SIZE DISTRIBUTION

SIZE (MICRONS)	WEIGHT % OF TOTAL	CUMULATIVE %
0-1	**Unknown**	
1-10		
10-25		
25-50		
50-100		
>100		
	TOTAL = 100	

DESCRIBE ANY MONITORING DEVICES, GAUGES, TEST PORTS, ETC:
None

ON A SEPARATE PAGE, ATTACH A DIAGRAM OF THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S):

Attach Additional Sheets As Necessary

FORM B

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16 — NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate — B

EMISSION SOURCE DESCRIPTION: **Seven (7) Hammermills**	EMISSION SOURCE ID NO: **ES-HM-1 through 7**
OPERATING SCENARIO **1** OF **1**	CONTROL DEVICE ID NO(S): **CD-HM-CYC-1 through 7**
	EMISSION POINT (STACK) ID NO(S): **EP-2 through 5**

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
Dried materials are reduced to the appropriate size needed for pelletization using seven hammermills.

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

- ☐ Coal,wood,oil, gas, other burner (Form B1)
- ☐ Int.combustion engine/generator (Form B2)
- ☐ Liquid storage tanks (Form B3)
- ☐ Woodworking (Form B4)
- ☐ Coating/finishing/printing (Form B5)
- ☐ Storage silos/bins (Form B6)
- ☐ Manuf. of chemicals/coatings/inks (Form B7)
- ☐ Incineration (Form B8)
- ☑ Other (Form B9)

START CONSTRUCTION DATE:	DATE MANUFACTURED:
MANUFACTURER / MODEL NO.: **West Salem Machinery Model #4460S**	EXPECTED OP. SCHEDULE: **24** HR/DAY **7** DAY/WK **52** WK/YR
IS THIS SOURCE SUBJECT TO? ☐ NSPS (SUBPARTS?):	☑ NESHAP (SUBPART **Subpart B, Section 112(g)**
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB **25%** MAR-MAY **25%** JUN-AUG **25%** SEP-NOV **25%**	

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)	**See Emission Calculations in Appendix C**						
PARTICULATE MATTER<10 MICRONS (PM_{10})							
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
		See Emission Calculations in Appendix C						

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS lb/hr	lb/day	lb/yr
		See Emission Calculations in Appendix C			

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE

Attach Additional Sheets As Necessary

FORM B9
EMISSION SOURCE (OTHER)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B9**

EMISSION SOURCE DESCRIPTION: **Seven (7) Hammermills**	EMISSION SOURCE ID NO: **ES-HM-1 thru 7**
	CONTROL DEVICE ID NO(S): **CD-HM-CYC-1 through 7**
	CD-HM-BF1 through 7
OPERATING SCENARIO: __1_____ OF ___1_____	EMISSION POINT (STACK) ID NO(S): **EP-2 through 5**

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):
Dried materials are reduced to the appropriate size needed for pelletization using seven hammermills.

MATERIALS ENTERING PROCESS - CONTINUOUS PROCESS		MAX. DESIGN	REQUESTED CAPACITY
TYPE	UNITS	CAPACITY (UNIT/HR)	LIMITATION(UNIT/HR)
Dried Wood	**ODT**	**71.71**	

MATERIALS ENTERING PROCESS - BATCH OPERATION		MAX. DESIGN	REQUESTED CAPACITY
TYPE	UNITS	CAPACITY (UNIT/BATCH)	LIMITATION (UNIT/BATCH)

MAXIMUM DESIGN (BATCHES / HOUR):	
REQUESTED LIMITATION (BATCHES / HOUR):	(BATCHES/YR):
FUEL USED: **N/A**	TOTAL MAXIMUM FIRING RATE (MILLION BTU/HR): **N/A**
MAX. CAPACITY HOURLY FUEL USE: **N/A**	REQUESTED CAPACITY ANNUAL FUEL USE: **N/A**

COMMENTS:

Attach Additional Sheets as Necessary

FORM C4

CONTROL DEVICE (CYCLONE, MULTICYCLONE, OR OTHER MECHANICAL)

REVISED 09/22/16 — NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate — C4

CONTROL DEVICE ID NO: **CD-HM-CYC-1 through -7**	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): **ES-HM-1 through 7**
EMISSION POINT (STACK) ID NO(S): **EP-2 through 5**	POSITION IN SERIES OF CONTROLS NO. 1 OF 2 UNITS
OPERATING SCENARIO: 1 OF 1	P.E. SEAL REQUIRED (PER 2Q .0112)? ☐ YES ☑ NO

DESCRIBE CONTROL SYSTEM : **One cyclone is equipped for each hammermill to capture bulk PM emissions. The emissions from the cyclone are then routed to a dedicated bagfilter per cyclone and hammermill.**

	PM	PM_{10}	$PM_{2.5}$	
POLLUTANT(S) COLLECTED:				
BEFORE CONTROL EMISSION RATE (LB/HR):	See calculations in Appendix C			
CAPTURE EFFICIENCY:	98 %	98 %	98 %	%
CONTROL DEVICE EFFICIENCY:	%	%	%	%
CORRESPONDING OVERALL EFFICIENCY:	%	%	%	%
EFFICIENCY DETERMINATION CODE:				
TOTAL AFTER CONTROL EMISSION RATE (LB/HR):	See calculations in Appendix C			

PRESSURE DROP (IN. H_2O): MIN	6.0" MAX
INLET TEMPERATURE (°F): MIN	MAX Ambient
OUTLET TEMPERATURE (°F): MIN	MAX Ambient
INLET AIR FLOW RATE (ACFM):	15,000 each cycline
BULK PARTICLE DENSITY (LB/FT³):	1.43E-03
POLLUTANT LOADING RATE (GR/FT³):	10 gr/cf inlet

SETTLING CHAMBER	CYCLONE			MULTICYCLONE
LENGTH (INCHES):	INLET VELOCITY (FT/SEC): 114.65		☑ CIRCULAR ☐ RECTANGLE	NO. TUBES:
WIDTH (INCHES):	*DIMENSIONS (INCHES) See instructions*		*IF WET SPRAY UTILIZED*	DIAMETER OF TUBES:
HEIGHT (INCHES):	H: 60	Dd: 20	LIQUID USED:	HOPPER ASPIRATION SYSTEM? ☐ YES ☐ NO
VELOCITY (FT/SEC.):	W: 32.25	Lb: 60	FLOW RATE (GPM):	
NO. TRAYS:	De: 45	Lc: 120	MAKE UP RATE (GPM):	LOUVERS? ☐ YES ☐ NO
NO. BAFFLES:	D: 96	S: 64.75		
	TYPE OF CYCLONE ☑ CONVENTIONAL		☐ HIGH EFFICIENCY	☐ OTHER

DESCRIBE MAINTENANCE PROCEDURES:
Periodic inspection of mechanical integrity during plant outages as specified by manufacturer.

DESCRIBE INCOMING AIR STREAM:
The material is pulled through the cyclone under negative pressure. The cyclone separates the material from the air stream and the air discharges to an associated bag filter prior to being discharged to the atmosphere via a discharge stack common to all filters in this area.

PARTICLE SIZE DISTRIBUTION		
SIZE (MICRONS)	WEIGHT % OF TOTAL	CUMULATIVE %
0-1		Unknown
1-10		
10-25		
25-50		
50-100		
>100		
		TOTAL = 100

DESCRIBE ANY MONITORING DEVICES, GAUGES, TEST PORTS, ETC
None

ON A SEPARATE PAGE, ATTACH A DIAGRAM OF THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S):

Attach Additional Sheets As Necessary

FORM C1
CONTROL DEVICE (FABRIC FILTER)

REVISED 09/22/16 — NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate — C1

CONTROL DEVICE ID NO: **CD-HM-BF-1 through 7**	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): **ES-HM-1 through 7**
EMISSION POINT (STACK) ID NO(S): **EP-2 through 5**	POSITION IN SERIES OF CONTROLS NO. **2** OF **2** UNITS
OPERATING SCENARIO:	
__1__ OF __1__	P.E. SEAL REQUIRED (PER 2q .0112)? ☐ YES ☑ NO

DESCRIBE CONTROL SYSTEM:
Seven (7) bagfilters are utilized for emission control on the seven hammermill cyclones. Two bagfilters share a common stack, so there are 4 hammermill bagfilter stacks. ES-HM7 exhausts to its own stack since ES-HM8 was not installed. All 4 stacks are identical.

	PM	PM-10	PM-2.5	
POLLUTANTS COLLECTED:	PM	PM-10	PM-2.5	
BEFORE CONTROL EMISSION RATE (LB/HR):	See calculations in Appendix C			
CAPTURE EFFICIENCY:	~99.9 %	~99.9 %	~99.9 %	%
CONTROL DEVICE EFFICIENCY:	%	%	%	%
CORRESPONDING OVERALL EFFICIENCY:	%	%	%	%
EFFICIENCY DETERMINATION CODE:				
TOTAL AFTER CONTROL EMISSION RATE (LB/HR):	See calculations in Appendix C			

PRESSURE DROP (IN H_2O): MIN: MAX: **6"**	GAUGE? ☑ YES ☐ NO	
BULK PARTICLE DENSITY (LB/FT^3): **1.43E-05**	INLET TEMPERATURE (°F): **120**	
POLLUTANT LOADING RATE: 0.1 gr/cf in ☐ LB/HR ☑ GR/FT^3	OUTLET TEMPERATURE (°F) **100**	
INLET AIR FLOW RATE (ACFM): 15,000	FILTER OPERATING TEMP (°F): **N/A**	
NO. OF COMPARTMENTS: **1**	NO. OF BAGS PER COMPARTMENT: **144**	LENGTH OF BAG (IN.): **120**
NO. OF CARTRIDGES:	FILTER SURFACE AREA PER CARTRIDGE (FT^2):	DIAMETER OF BAG (IN.): **5.75**
TOTAL FILTER SURFACE AREA (FT^2): **2,168**	AIR TO CLOTH RATIO: **6.90**	
DRAFT TYPE: ☑ INDUCED/NEGATIVE ☐ FORCED/POSITIVE	FILTER MATERIAL: ☐ WOVEN ☑ FELTED	

DESCRIBE CLEANING PROCEDURES:

- ☐ AIR PULSE
- ☑ REVERSE FLOW
- ☐ MECHANICAL/SHAKER
- ☐ OTHER:
- ☐ SONIC
- ☐ SIMPLE BAG COLLAPSE
- ☐ RING BAG COLLAPSE

DESCRIBE INCOMING AIR STREAM:
The air stream contains wood dust particles. Larger particles are removed by the upstream cyclone.

PARTICLE SIZE DISTRIBUTION

SIZE (MICRONS)	WEIGHT % OF TOTAL	CUMULATIVE %
0-1	Unknown	
1-10		
10-25		
25-50		
50-100		
>100		
	TOTAL = 100	

ON A SEPARATE PAGE, ATTACH A DIAGRAM SHOWING THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S):

COMMENTS:

Attach Additional Sheets As Necessary

FORM B

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16 — NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate — B

EMISSION SOURCE DESCRIPTION: **Pellet Coolers**

EMISSION SOURCE ID NO: **ES-CLR1 through 6**

CONTROL DEVICE ID NO(S): **CD-CLR-1 through 6**

EMISSION POINT (STACK) ID NO(S): **EP-7 through 12**

OPERATING SCENARIO **1** OF **1**

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):

Six (6) Pellet Coolers follow the pellet presses to cool the newly formed pellets down to an acceptable storage temperature.

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

- ☐ Coal,wood,oil, gas, other burner (Form B1)
- ☐ Int.combustion engine/generator (Form B2)
- ☐ Liquid storage tanks (Form B3)
- ☐ Woodworking (Form B4)
- ☐ Coating/finishing/printing (Form B5)
- ☐ Storage silos/bins (Form B6)
- ☐ Manuf. of chemicals/coatings/inks (Form B7)
- ☐ Incineration (Form B8)
- ☑ Other (Form B9)

START CONSTRUCTION DATE: — DATE MANUFACTURED:

MANUFACTURER / MODEL NO.: **Bliss 14-393-6A Cooler** — EXPECTED OP. SCHEDULE: **24** HR/DAY **7** DAY/WK **52** WK/YR

IS THIS SOURCE SUBJECT TO? ☐ NSPS (SUBPARTS?): ☑ NESHAP (SUBPART: **Subpart B, Section 112(g)**

PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB **25%** MAR-MAY **25%** JUN-AUG **25%** SEP-NOV **25%**

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)	See Emission Calculations in Appendix C						
PARTICULATE MATTER<10 MICRONS (PM_{10})							
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
		See Emission Calculations in Appendix C						

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS lb/hr	lb/day	lb/yr
		See Emission Calculations in Appendix C			

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE

Attach Additional Sheets As Necessary

FORM B9
EMISSION SOURCE (OTHER)

REVISED 09/22/16 **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** **B9**

EMISSION SOURCE DESCRIPTION:	EMISSION SOURCE ID NO: **ES-CLR1 through 6**
Pellet Coolers	CONTROL DEVICE ID NO(S): **CD-CLR-1 through 6**
OPERATING SCENARIO: ____1____ OF _____1_____	EMISSION POINT (STACK) ID NO(S): **EP-7 through 12**

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):
Six (6) Pellet Coolers follow the pellet presses to cool the newly formed pellets down to an acceptable storage temperature.

MATERIALS ENTERING PROCESS - CONTINUOUS PROCESS		MAX. DESIGN	REQUESTED CAPACITY
TYPE	UNITS	CAPACITY (UNIT/HR)	LIMITATION(UNIT/HR)
Dried Wood	**ODT**	**71.71**	

MATERIALS ENTERING PROCESS - BATCH OPERATION		MAX. DESIGN	REQUESTED CAPACITY
TYPE	UNITS	CAPACITY (UNIT/BATCH)	LIMITATION (UNIT/BATCH)

MAXIMUM DESIGN (BATCHES / HOUR):	
REQUESTED LIMITATION (BATCHES / HOUR):	(BATCHES/YR):
FUEL USED: **N/A**	TOTAL MAXIMUM FIRING RATE (MILLION BTU/HR): **N/A**
MAX. CAPACITY HOURLY FUEL USE: **N/A**	REQUESTED CAPACITY ANNUAL FUEL USE: **N/A**

COMMENTS:

Attach Additional Sheets as Necessary

FORM C4

CONTROL DEVICE (CYCLONE, MULTICYCLONE, OR OTHER MECHANICAL)

REVISED 09/22/16 — NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate — C4

CONTROL DEVICE ID NO: **CD-CLR-1 through 6**	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): **ES-CLR 1 through 6**
EMISSION POINT (STACK) ID NO(S): **EP-7 through 12**	POSITION IN SERIES OF CONTROLS NO. **1** OF **1** UNITS
OPERATING SCENARIO:	
1 OF **1**	P.E. SEAL REQUIRED (PER 2Q .0112)? ☐ YES ☑ NO

DESCRIBE CONTROL SYSTEM:
Six (6) identical high efficiency cyclones are used to capture bulk PM emissions from six (6) pellet coolers. Each cooler vents to one dedicated cyclone. The cyclones operate under negative pressure.

	PM	PM_{10}	$PM_{2.5}$	
POLLUTANT(S) COLLECTED:				
BEFORE CONTROL EMISSION RATE (LB/HR):	See Emissions Calculations in Appendix C			
CAPTURE EFFICIENCY:	90+ %	90+ %	90+ %	%
CONTROL DEVICE EFFICIENCY:	%	%	%	%
CORRESPONDING OVERALL EFFICIENCY:	%	%	%	%
EFFICIENCY DETERMINATION CODE:				
TOTAL AFTER CONTROL EMISSION RATE (LB/HR):	See Emissions Calculations in Appendix C			

PRESSURE DROP (IN. H_2O): MIN **6.0"** MAX	
INLET TEMPERATURE (°F): MIN MAX **Ambient**	OUTLET TEMPERATURE (°F): MIN MAX **Ambient**
INLET AIR FLOW RATE (ACFM): **21,000 each**	BULK PARTICLE DENSITY (LB/FT^3): **2.86E-05**
POLLUTANT LOADING RATE (GR/FT^3): **0.2**	

SETTLING CHAMBER	**CYCLONE**			**MULTICYCLONE**
LENGTH (INCHES):	INLET VELOCITY (FT/SEC): **94.75**		☐ CIRCULAR ☐ RECTANGLE	NO. TUBES:
WIDTH (INCHES):	*DIMENSIONS (INCHES) See instructions*		*IF WET SPRAY UTILIZED*	DIAMETER OF TUBES:
HEIGHT (INCHES):	H: **38**	Dd: **22**	LIQUID USED:	HOPPER ASPIRATION SYSTEM? ☐ YES ☐ NO
VELOCITY (FT/SEC.):	W: **25**	Lb: **74.25**	FLOW RATE (GPM):	
NO. TRAYS:	De: **32**	Lc: **84.5**	MAKE UP RATE (GPM):	LOUVERS? ☐ YES ☐ NO
NO. BAFFLES:	D: **54**	S: **44.38**		
	TYPE OF CYCLONE ☐ CONVENTIONAL		☑ HIGH EFFICIENCY	☐ OTHER

DESCRIBE MAINTENANCE PROCEDURES:
Periodic inspection of mechanical integrity during plant outages as specified by manufacturer.

DESCRIBE INCOMING AIR STREAM:
The cyclones used for particulate capture the pellet coolers are ducted to a discharge stack. The stack is common to all cooler aspiration systems.

PARTICLE SIZE DISTRIBUTION

SIZE (MICRONS)	WEIGHT % OF TOTAL	CUMULATIVE %
0-1	**Unknown**	
1-10		
10-25		
25-50		
50-100		
>100		
	TOTAL = 100	

DESCRIBE ANY MONITORING DEVICES, GAUGES, TEST PORTS, ETC:
None

ON A SEPARATE PAGE, ATTACH A DIAGRAM OF THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S):

Attach Additional Sheets As Necessary

FORM B

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16 — NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate — B

EMISSION SOURCE DESCRIPTION: **Pellet Mill Feed Silo**

EMISSION SOURCE ID NO: **ES-PMFS**

CONTROL DEVICE ID NO(S): **CD-PMFS-BV**

EMISSION POINT (STACK) ID NO(S): **EP-6**

OPERATING SCENARIO ___1___ OF ___1___

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):

A pellet press silo stores dried ground wood prior to transport to the pellet presses.

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

- ☐ Coal,wood,oil, gas, other burner (Form B1)
- ☐ Int.combustion engine/generator (Form B2)
- ☐ Liquid storage tanks (Form B3)
- ☐ Woodworking (Form B4)
- ☐ Coating/finishing/printing (Form B5)
- ☑ Storage silos/bins (Form B6)
- ☐ Manuf. of chemicals/coatings/inks (Form B7)
- ☐ Incineration (Form B8)
- ☐ Other (Form B9)

START CONSTRUCTION DATE: — DATE MANUFACTURED:

MANUFACTURER / MODEL NO.: **Mast Lepley** — EXPECTED OP. SCHEDULE: **24** HR/DAY **7** DAY/WK **52** WK/YR

IS THIS SOURCE SUBJECT TO? ☐ NSPS (SUBPARTS?): ☐ NESHAP (SUBPARTS?):

PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB **25%** MAR-MAY **25%** JUN-AUG **25%** SEP-NOV **25%**

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)	**See Emission Calculations in Appendix C**						
PARTICULATE MATTER<10 MICRONS (PM_{10})							
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
N/A								

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS lb/hr	lb/day	lb/yr
N/A					

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE

Attach Additional Sheets As Necessary

FORM B6
EMISSION SOURCE (STORAGE SILO/BINS)

REVISED 09/22/16 — NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate — **B6**

EMISSION SOURCE DESCRIPTION: **Pellet Mill Feed Silo**	EMISSION SOURCE ID NO: **ES-PMFS**
	CONTROL DEVICE ID NO(S): **CD-PMFS-BV**
OPERATING SCENARIO: _____ OF _____	EMISSION POINT(STACK) ID NO(S): **EP-6**

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):
A pellet press silo stores dried ground wood prior to transport to the pellet presses.

MATERIAL STORED: **Dried ground wood**				DENSITY OF MATERIAL (LB/FT3): **40**	
CAPACITY	CUBIC FEET:			TONS:	
DIMENSIONS (FEET)	HEIGHT: **70**	DIAMETER: **46.6**	***(OR)***	LENGTH:	WIDTH: HEIGHT:
ANNUAL PRODUCT THROUGHPUT (TONS)	ACTUAL:			MAXIMUM DESIGN CAPACITY:	

PNEUMATICALLY FILLED	MECHANICALLY FILLED	FILLED FROM
☐ BLOWER	☐ SCREW CONVEYOR	☐ RAILCAR
☐ COMPRESSOR	☑ BELT CONVEYOR	☐ TRUCK
☐ OTHER:	☐ BUCKET ELEVATOR	☐ STORAGE PILE
	☐ OTHER:	☑ OTHER:

NO. FILL TUBES:
MAXIMUM ACFM:

MATERIAL IS UNLOADED TO: **Pellet Mill/Presses**

BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO?

MAXIMUM DESIGN FILLING RATE OF MATERIAL (TONS/HR): **105**

MAXIMUM DESIGN UNLOADING RATE OF MATERIAL (TONS/HR): **105**

COMMENTS:

Attach Additional Sheets As Necessary

FORM C1
CONTROL DEVICE (FABRIC FILTER)

REVISED 09/22/16 — NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate — C1

CONTROL DEVICE ID NO: **CD-PMFS-BV**	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): **ES-PMFS**
EMISSION POINT (STACK) ID NO(S): **EP-6**	POSITION IN SERIES OF CONTROLS NO. **1** OF **1** UNITS
OPERATING SCENARIO:	
1 OF **1**	P.E. SEAL REQUIRED (PER 2q .0112)? ☐ YES ☑ NO

DESCRIBE CONTROL SYSTEM:
A bin vent filter is used to create a slight negative pressure on the Pellet Mill Feed Silo. The bin vent collects dust from the air volume present in the silo. The bin vent is sized to offset the air displacement created by the material feed to the silo.

	PM	PM-10	PM-2.5	
POLLUTANTS COLLECTED:				
BEFORE CONTROL EMISSION RATE (LB/HR):				
CAPTURE EFFICIENCY:	%	%	%	%
CONTROL DEVICE EFFICIENCY:	**~99.9** %	**~99.9** %	**~99.9** %	%
CORRESPONDING OVERALL EFFICIENCY:	%	%	%	%
EFFICIENCY DETERMINATION CODE:				
TOTAL AFTER CONTROL EMISSION RATE (LB/HR):	**See calculations in Appendix C**			

PRESSURE DROP (IN H_2O): MIN: MAX: **4"** GAUGE? ☑ YES ☐ NO	
BULK PARTICLE DENSITY (LB/FT^3): **1.43E-06**	INLET TEMPERATURE (°F): **Ambient**
POLLUTANT LOADING RATE: **0.1** ☐ LB/HR ☑ GR/FT^3	OUTLET TEMPERATURE (°F) **Ambient**
INLET AIR FLOW RATE (ACFM):	FILTER OPERATING TEMP (°F): **N/A**
NO. OF COMPARTMENTS: **1** / NO. OF BAGS PER COMPARTMENT: **1**	LENGTH OF BAG (IN.): **120**
NO. OF CARTRIDGES: / FILTER SURFACE AREA PER CARTRIDGE (FT^2):	DIAMETER OF BAG (IN.): **5.875**
TOTAL FILTER SURFACE AREA (FT^2): **377** / AIR TO CLOTH RATIO: **6**	
DRAFT TYPE: ☑ INDUCED/NEGATIVE ☑ FORCED/POSITIVE	FILTER MATERIAL: ☐ WOVEN ☑ FELTED

DESCRIBE CLEANING PROCEDURES

- ☑ AIR PULSE
- ☐ REVERSE FLOW
- ☐ MECHANICAL/SHAKER
- ☐ OTHER:
- ☐ SONIC
- ☐ SIMPLE BAG COLLAPSE
- ☐ RING BAG COLLAPSE

PARTICLE SIZE DISTRIBUTION

SIZE (MICRONS)	WEIGHT % OF TOTAL	CUMULATIVE %
0-1	**Unknown**	
1-10		
10-25		
25-50		
50-100		
>100		
	TOTAL = 100	

DESCRIBE INCOMING AIR STREAM:
The air stream contains wood dust particulate emissions.

ON A SEPARATE PAGE, ATTACH A DIAGRAM SHOWING THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S):

COMMENTS:

Attach Additional Sheets As Necessary

FORM B

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16 — NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate — B

EMISSION SOURCE DESCRIPTION: **Pellet Fines Bin**

EMISSION SOURCE ID NO: **ES-PFB**

CONTROL DEVICE ID NO(S): **CD-PFB-BV**

EMISSION POINT (STACK) ID NO(S): **EP-15**

OPERATING SCENARIO ___1___ OF ___1___

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):

Fine pellet material from hammermill pollution control system and screening operation is collected in the pellet fines bin which is controlled by a bin vent filter.

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

- ☐ Coal,wood,oil, gas, other burner (Form B1)
- ☐ Int.combustion engine/generator (Form B2)
- ☐ Liquid storage tanks (Form B3)
- ☐ Woodworking (Form B4)
- ☐ Coating/finishing/printing (Form B5)
- ☑ Storage silos/bins (Form B6)
- ☐ Manuf. of chemicals/coatings/inks (Form B7)
- ☐ Incineration (Form B8)
- ☐ Other (Form B9)

START CONSTRUCTION DATE: — DATE MANUFACTURED:

MANUFACTURER / MODEL NO.: **Western Pneumatics Inc.** — EXPECTED OP. SCHEDULE: **24** HR/DAY **7** DAY/WK **52** WK/YR

IS THIS SOURCE SUBJECT TO? ☐ NSPS (SUBPARTS?): ☐ NESHAP (SUBPARTS?):

PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB **25%** MAR-MAY **25%** JUN-AUG **25%** SEP-NOV **25%**

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)	**See Emission Calculations in Appendix C**						
PARTICULATE MATTER<10 MICRONS (PM_{10})							
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
N/A								

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS lb/hr	lb/day	lb/yr
N/A					

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE

Attach Additional Sheets As Necessary

FORM B6
EMISSION SOURCE (STORAGE SILO/BINS)

REVISED 09/22/16 | NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate | B6

EMISSION SOURCE DESCRIPTION: **Pellet Fines Bin**	EMISSION SOURCE ID NO: **ES-PFB**
	CONTROL DEVICE ID NO(S): **CD-PFB-BV**
OPERATING SCENARIO: ___1___ OF _____1_____	EMISSION POINT(STACK) ID NO(S): **EP-15**

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):
Fine pellet material from hammermill pollution control system and screening operation is collected in the pellet fines bin which is controlled by a bin vent filter.

MATERIAL STORED: **Fine pellet material**				DENSITY OF MATERIAL (LB/FT3): **40**	
CAPACITY	CUBIC FEET: **2200**			TONS:	
DIMENSIONS (FEET)	HEIGHT:	DIAMETER: **12**	***(OR)***	LENGTH:	WIDTH: HEIGHT:
ANNUAL PRODUCT THROUGHPUT (TONS)	ACTUAL:			MAXIMUM DESIGN CAPACITY: **6 tph**	

PNEUMATICALLY FILLED	MECHANICALLY FILLED	FILLED FROM
☐ BLOWER	☐ SCREW CONVEYOR	☐ RAILCAR
☐ COMPRESSOR	☑ BELT CONVEYOR	☐ TRUCK
☐ OTHER:	☐ BUCKET ELEVATOR	☐ STORAGE PILE
	☐ OTHER:	☑ OTHER: **Conveyor**

NO. FILL TUBES:
MAXIMUM ACFM:

MATERIAL IS UNLOADED TO:

BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO?

MAXIMUM DESIGN FILLING RATE OF MATERIAL (TONS/HR):

MAXIMUM DESIGN UNLOADING RATE OF MATERIAL (TONS/HR):

COMMENTS:

Attach Additional Sheets As Necessary

FORM C1
CONTROL DEVICE (FABRIC FILTER)

REVISED 09/22/16 | NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate | C1

CONTROL DEVICE ID NO: **CD-PFB-BV**	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): **ES-HMA, ES-PFB**
EMISSION POINT (STACK) ID NO(S): **EP-15**	POSITION IN SERIES OF CONTROLS NO. **2** OF **2** UNITS
OPERATING SCENARIO: __1__ OF __1__	P.E. SEAL REQUIRED (PER 2q .0112)? ☐ YES ☑ NO

DESCRIBE CONTROL SYSTEM:
The bin vent baghouse collects dust from when wood enters or exits the fines bin and displaces air and also provides control from hammermill area clean up air.

POLLUTANTS COLLECTED:	PM	PM-10	PM-2.5	
BEFORE CONTROL EMISSION RATE (LB/HR):	See calculation in Appendix C			
CAPTURE EFFICIENCY:	~99.9 %	~99.9 %	~99.9 %	%
CONTROL DEVICE EFFICIENCY:			%	%
CORRESPONDING OVERALL EFFICIENCY:	%	%	%	%
EFFICIENCY DETERMINATION CODE:				
TOTAL AFTER CONTROL EMISSION RATE (LB/HR):	See calculation in Appendix C			

PRESSURE DROP (IN H_2O): MIN: MAX: **6"** GAUGE? ☑ YES ☐ NO	
BULK PARTICLE DENSITY (LB/FT^3): **1.43E-05**	INLET TEMPERATURE (°F): **120**
POLLUTANT LOADING RATE: **0.1** ☐ LB/HR ☑ GR/FT^3	OUTLET TEMPERATURE (°F) **100**
INLET AIR FLOW RATE (ACFM): **9,800**	FILTER OPERATING TEMP (°F): **N/A**
NO. OF COMPARTMENTS: **1**	NO. OF BAGS PER COMPARTMENT: **100** / LENGTH OF BAG (IN.): **120**
NO. OF CARTRIDGES:	FILTER SURFACE AREA PER CARTRIDGE (FT^2): / DIAMETER OF BAG (IN.): **5.75**
TOTAL FILTER SURFACE AREA (FT^2): **1,520**	AIR TO CLOTH RATIO: **6.45**
DRAFT TYPE: ☐ INDUCED/NEGATIVE ☐ FORCED/POSITIVE	FILTER MATERIAL: ☐ WOVEN ☑ FELTED

DESCRIBE CLEANING PROCEDURES:

- ☑ AIR PULSE
- ☐ REVERSE FLOW
- ☐ MECHANICAL/SHAKER
- ☐ OTHER:
- ☐ SONIC
- ☐ SIMPLE BAG COLLAPSE
- ☐ RING BAG COLLAPSE

DESCRIBE INCOMING AIR STREAM:
The air stream contains wood dust particules. Larger particles are removed by the upstream cyclone. The filters discharge to a common stack.

PARTICLE SIZE DISTRIBUTION

SIZE (MICRONS)	WEIGHT % OF TOTAL	CUMULATIVE %
0-1	Unknown	
1-10		
10-25		
25-50		
50-100		
>100		
	TOTAL = 100	

ON A SEPARATE PAGE, ATTACH A DIAGRAM SHOWING THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S):

COMMENTS:

Attach Additional Sheets As Necessary

FORM B

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16 — **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** — B

EMISSION SOURCE DESCRIPTION: **Hammermill Area**	EMISSION SOURCE ID NO: **ES-HMA**
	CONTROL DEVICE ID NO(S): **CD-PFB-BV**
OPERATING SCENARIO ____1____ OF _____1_____	EMISSION POINT (STACK) ID NO(S): **EP-15**

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
Hammermill area dust from the hammermill and screening operations is vented to the pellet fines bin bin vent filter (CD-PFB-BV) to control particulate matter emissions.

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

- ☐ Coal,wood,oil, gas, other burner (Form B1)
- ☐ Int.combustion engine/generator (Form B2)
- ☐ Liquid storage tanks (Form B3)
- ☐ Woodworking (Form B4)
- ☐ Coating/finishing/printing (Form B5)
- ☐ Storage silos/bins (Form B6)
- ☐ Manuf. of chemicals/coatings/inks (Form B7)
- ☐ Incineration (Form B8)
- ☑ Other (Form B9)

START CONSTRUCTION DATE:	DATE MANUFACTURED:
MANUFACTURER / MODEL NO.: **Western Pneumatics Inc.**	EXPECTED OP. SCHEDULE: **24** HR/DAY **7** DAY/WK **52** WK/YR
IS THIS SOURCE SUBJECT TO? ☐ NSPS (SUBPARTS?):	☐ NESHAP (SUBPARTS?):
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB **25%** MAR-MAY **25%** JUN-AUG **25%** SEP-NOV **25%**	

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)	**See Emission Calculations in Appendix C**						
PARTICULATE MATTER<10 MICRONS (PM_{10})							
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
N/A								

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS lb/hr	lb/day	lb/yr
N/A					

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE

Attach Additional Sheets As Necessary

FORM B9
EMISSION SOURCE (OTHER)

REVISED 09/22/16 — NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate — **B9**

EMISSION SOURCE DESCRIPTION: **Hammermill Area**	EMISSION SOURCE ID NO: **ES-HMA**
	CONTROL DEVICE ID NO(S): **CD-PFB-BV**
OPERATING SCENARIO: 1 OF 1	EMISSION POINT (STACK) ID NO(S): **EP-15**

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):
Hammermill area dust from the hammermill and screening operations is vented to the pellet fines bin vent filter (CD-PFB-BV) to control particulate matter emissions.

MATERIALS ENTERING PROCESS - CONTINUOUS PROCESS		MAX. DESIGN CAPACITY (UNIT/HR)	REQUESTED CAPACITY LIMITATION(UNIT/HR)
TYPE	UNITS		
Dried Wood	**ODT**	**71.71**	

MATERIALS ENTERING PROCESS - BATCH OPERATION		MAX. DESIGN CAPACITY (UNIT/BATCH)	REQUESTED CAPACITY LIMITATION (UNIT/BATCH)
TYPE	UNITS		

MAXIMUM DESIGN (BATCHES / HOUR):	
REQUESTED LIMITATION (BATCHES / HOUR):	(BATCHES/YR):
FUEL USED: **N/A**	TOTAL MAXIMUM FIRING RATE (MILLION BTU/HR): **N/A**
MAX. CAPACITY HOURLY FUEL USE: **N/A**	REQUESTED CAPACITY ANNUAL FUEL USE: **N/A**

COMMENTS:

Attach Additional Sheets as Necessary

FORM B

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16 — NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate — B

EMISSION SOURCE DESCRIPTION: **Finished Product Handling/Pellet Loadout Bins/Pellet Loadout**	EMISSION SOURCE ID NO: **ES-FPH, ES-PB1 thru 4** **ES-PL1 and 2**
	CONTROL DEVICE ID NO(S): **CD-FPH-BF**
OPERATING SCENARIO 1 OF 1	EMISSION POINT (STACK) ID NO(S): **EP-16**

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
Pelletized product is conveyed to 4 pellet loadout bins (PB-1, 2, 3, 4) that feed two pellet loadout operations (ES-PL-1, -2). Emissions from the Pellet Loadout Bins are controlled by a bagfilter. Pellet Loadout is accomplished by gravity feed of the pellets into trucks through a covered shoot that automatically telescopes upward during the loadout process to maintain constant contact with product as it is loaded to prevent emissions. Although emissions to the atmosphere from conveyance from the storage bins are minimal because of dried wood fines have been removed in the pellet coolers, a slight negative pressure is maintained in the loadout building a fire prevention measure to prevent any buildup of dust on surfaces within the building. The slight negative pressure is produced via an induced draft fan that exhausts to the same bagfilter that controls minor dust emissions from loading of the pellet press silo.
Trucks are covered immediately after loading.

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

- ☐ Coal,wood,oil, gas, other burner (Form B1)
- ☐ Int.combustion engine/generator (Form B2)
- ☐ Liquid storage tanks (Form B3)
- ☐ Woodworking (Form B4)
- ☐ Coating/finishing/printing (Form B5)
- ☐ Storage silos/bins (Form B6)
- ☐ Manuf. of chemicals/coatings/inks (Form B7)
- ☐ Incineration (Form B8)
- ☑ Other (Form B9)

START CONSTRUCTION DATE: DATE MANUFACTURED:

MANUFACTURER / MODEL NO.: **Agra Industries Inc.** EXPECTED OP. SCHEDULE: **24** HR/DAY **7** DAY/WK **52** WK/YR

IS THIS SOURCE SUBJECT TO? ☐ NSPS (SUBPARTS?): NESHAP (SUBPARTS?):

PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB **25%** MAR-MAY **25%** JUN-AUG **25%** SEP-NOV **25%**

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)	**See Emission Calculations in Appendix C**						
PARTICULATE MATTER<10 MICRONS (PM_{10})							
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
N/A								

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS lb/hr	lb/day	lb/yr
N/A					

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE

Attach Additional Sheets As Necessary

FORM B9
EMISSION SOURCE (OTHER)

REVISED 09/22/16 | NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate | B9

EMISSION SOURCE DESCRIPTION: **Finished Product Handling**	EMISSION SOURCE ID NO: **ES-FPH**
	CONTROL DEVICE ID NO(S): **CD-FPH-BF**
OPERATING SCENARIO: ____1_____ OF _____1_____	EMISSION POINT (STACK) ID NO(S): **EP-16**

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):
Collection of transfer points, pellet screening operations, and pellet conveying.

MATERIALS ENTERING PROCESS - CONTINUOUS PROCESS		MAX. DESIGN CAPACITY (UNIT/HR)	REQUESTED CAPACITY LIMITATION(UNIT/HR)
TYPE	UNITS		
Dried Wood	**ODT**	**74.94**	

MATERIALS ENTERING PROCESS - BATCH OPERATION		MAX. DESIGN CAPACITY (UNIT/BATCH)	REQUESTED CAPACITY LIMITATION (UNIT/BATCH)
TYPE	UNITS		

MAXIMUM DESIGN (BATCHES / HOUR):	
REQUESTED LIMITATION (BATCHES / HOUR):	(BATCHES/YR):
FUEL USED: **N/A**	TOTAL MAXIMUM FIRING RATE (MILLION BTU/HR): **N/A**
MAX. CAPACITY HOURLY FUEL USE: **N/A**	REQUESTED CAPACITY ANNUAL FUEL USE: **N/A**

COMMENTS:

Attach Additional Sheets as Necessary

FORM B6

EMISSION SOURCE (STORAGE SILO/BINS)

REVISED 09/22/16 — NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate — **B6**

EMISSION SOURCE DESCRIPTION: **Four (4) Pellet Loadout Bins**	EMISSION SOURCE ID NO: **ES-PB1 through 4**
	CONTROL DEVICE ID NO(S): **CD-FPH-BF**
OPERATING SCENARIO: 1 OF 1	EMISSION POINT(STACK) ID NO(S): **EP-16**

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):
Pellet loadout bins are used to store pellets for shipping. Pellets are then loaded from the bins into trucks/train in either of the two pellet loadout areas.

MATERIAL STORED: **Pellet Product**				DENSITY OF MATERIAL (LB/FT3): **40**	
CAPACITY	CUBIC FEET:			TONS: 1,200 (total for all four bins)	
DIMENSIONS (FEET)	HEIGHT:	DIAMETER: **12**	***(OR)***	LENGTH:	WIDTH: HEIGHT:
ANNUAL PRODUCT THROUGHPUT (TONS)	ACTUAL:			MAXIMUM DESIGN CAPACITY: **71.19 ODT/hr**	

PNEUMATICALLY FILLED	MECHANICALLY FILLED	FILLED FROM
☐ BLOWER	☐ SCREW CONVEYOR	☐ RAILCAR
☐ COMPRESSOR	☑ BELT CONVEYOR	☐ TRUCK
☐ OTHER:	☐ BUCKET ELEVATOR	☐ STORAGE PILE
	☐ OTHER:	☑ OTHER: Conveyor

NO. FILL TUBES:

MAXIMUM ACFM: **750 each**

MATERIAL IS UNLOADED TO:

BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO?

MAXIMUM DESIGN FILLING RATE OF MATERIAL (TONS/HR):

MAXIMUM DESIGN UNLOADING RATE OF MATERIAL (TONS/HR):

COMMENTS:

Attach Additional Sheets As Necessary

FORM B9
EMISSION SOURCE (OTHER)

REVISED 09/22/16 | NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate | **B9**

EMISSION SOURCE DESCRIPTION: **Pellet Loadout 1 and 2**	EMISSION SOURCE ID NO: **ES-PL-1 and PL-2**
	CONTROL DEVICE ID NO(S): **CD-FPH-BF**
OPERATING SCENARIO: 1 OF 1	EMISSION POINT (STACK) ID NO(S): **EP-16**

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):
Final product is loaded into trucks in either of the two (2) pellet loadout areas.

MATERIALS ENTERING PROCESS - CONTINUOUS PROCESS		MAX. DESIGN CAPACITY (UNIT/HR)	REQUESTED CAPACITY LIMITATION(UNIT/HR)
TYPE	UNITS		
Dried Wood	**ODT**	**70.83**	

MATERIALS ENTERING PROCESS - BATCH OPERATION		MAX. DESIGN CAPACITY (UNIT/BATCH)	REQUESTED CAPACITY LIMITATION (UNIT/BATCH)
TYPE	UNITS		

MAXIMUM DESIGN (BATCHES / HOUR):	
REQUESTED LIMITATION (BATCHES / HOUR):	(BATCHES/YR):
FUEL USED: **N/A**	TOTAL MAXIMUM FIRING RATE (MILLION BTU/HR): **N/A**
MAX. CAPACITY HOURLY FUEL USE: **N/A**	REQUESTED CAPACITY ANNUAL FUEL USE: **N/A**

COMMENTS:

Attach Additional Sheets as Necessary

FORM C1
CONTROL DEVICE (FABRIC FILTER)

REVISED 09/22/16 — NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate — C1

CONTROL DEVICE ID NO: **CD-FBH-BF**	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): **ES-FPH, ES-PB-1 through 12, ES-PL1 and 2**
EMISSION POINT (STACK) ID NO(S): **EP-16**	POSITION IN SERIES OF CONTROLS NO. 1 OF 1 UNITS
OPERATING SCENARIO: ___1___ OF __1____	P.E. SEAL REQUIRED (PER 2q .0112)? ☐ YES ☑ NO

DESCRIBE CONTROL SYSTEM:
This bagfilter controls particulate from the finished product handling pellet conveyers and screens, as well as the pellet load out operation consisting of loading finished product from the bins into the trucks.

	PM	PM-10	PM-2.5	
POLLUTANTS COLLECTED:				
BEFORE CONTROL EMISSION RATE (LB/HR):	**See calculation in Appendix C**			
CAPTURE EFFICIENCY:	**~99.9** %	**~99.9** %	**~99.9** %	%
CONTROL DEVICE EFFICIENCY:			%	%
CORRESPONDING OVERALL EFFICIENCY:	%	%	%	%
EFFICIENCY DETERMINATION CODE:				
TOTAL AFTER CONTROL EMISSION RATE (LB/HR):	**See calculation in Appendix C**			

PRESSURE DROP (IN H_2O): MIN: MAX: **6"** GAUGE? ☑ YES ☐ NO — Warning Alarm ☑ Yes ☐ No

BULK PARTICLE DENSITY (LB/FT^3): **1.43E-05**

POLLUTANT LOADING RATE: **0.1** ☐ LB/HR ☑ GR/FT^3

INLET AIR FLOW RATE (ACFM): **35,500**

INLET TEMPERATURE (°F): **120**

OUTLET TEMPERATURE (°F) **100**

FILTER OPERATING TEMP (°F): **N/A**

NO. OF COMPARTMENTS: **1**

NO. OF BAGS PER COMPARTMENT:

LENGTH OF BAG (IN.): **144**

NO. OF CARTRIDGES:

FILTER SURFACE AREA PER CARTRIDGE (FT^2):

DIAMETER OF BAG (IN.): **5.75**

TOTAL FILTER SURFACE AREA (FT^2): **4,842**

AIR TO CLOTH RATIO: **7.30**

DRAFT TYPE: ☐ INDUCED/NEGATIVE ☑ FORCED/POSITIVE

FILTER MATERIAL: ☐ WOVEN ☑ FELTED

DESCRIBE CLEANING PROCEDURES

- ☐ AIR PULSE
- ☑ REVERSE FLOW
- ☐ MECHANICAL/SHAKER
- ☐ OTHER:
- ☐ SONIC
- ☐ SIMPLE BAG COLLAPSE
- ☐ RING BAG COLLAPSE

PARTICLE SIZE DISTRIBUTION

SIZE (MICRONS)	WEIGHT % OF TOTAL	CUMULATIVE %
0-1	**Unknown**	
1-10		
10-25		
25-50		
50-100		
>100		
	TOTAL = 100	

DESCRIBE INCOMING AIR STREAM:
The air stream contains wood dust particules.

ON A SEPARATE PAGE, ATTACH A DIAGRAM SHOWING THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S):

COMMENTS:

Attach Additional Sheets As Necessary

FORM B

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16 — NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate — B

EMISSION SOURCE DESCRIPTION: **Pellet Cooler Recirculation**

EMISSION SOURCE ID NO: **ES-CLR 1 through 6**

CONTROL DEVICE ID NO(S): **CD-PCR-BV**

EMISSION POINT (STACK) ID NO(S): **EP-23**

OPERATING SCENARIO ___1___ OF ___1___

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):

Six (6) Pellet Coolers follow the pellet presses to cool the newly formed pellets down to an acceptable storage temperature. The recirculation for the pellet coolers is controlled by a bin vent filter.

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

- ☐ Coal,wood,oil, gas, other burner (Form B1)
- ☐ Int.combustion engine/generator (Form B2)
- ☐ Liquid storage tanks (Form B3)
- ☐ Woodworking (Form B4)
- ☐ Coating/finishing/printing (Form B5)
- ☐ Storage silos/bins (Form B6)
- ☐ Manuf. of chemicals/coatings/inks (Form B7)
- ☐ Incineration (Form B8)
- ☑ Other (Form B9)

START CONSTRUCTION DATE: — DATE MANUFACTURED:

MANUFACTURER / MODEL NO.: **Western Pneumatics Inc.** — EXPECTED OP. SCHEDULE: **24** HR/DAY **7** DAY/WK **52** WK/YR

IS THIS SOURCE SUBJECT TO? ☐ NSPS (SUBPARTS?): ☐ NESHAP (SUBPARTS?):

PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB **25%** MAR-MAY **25%** JUN-AUG **25%** SEP-NOV **25%**

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)	**See Emission Calculations in Appendix C**						
PARTICULATE MATTER<10 MICRONS (PM_{10})							
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
N/A								

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS lb/hr	lb/day	lb/yr
N/A					

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE

Attach Additional Sheets As Necessary

FORM B9
EMISSION SOURCE (OTHER)

REVISED 09/22/16 | **NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate** | **B9**

EMISSION SOURCE DESCRIPTION: **Pellet Cooler Recirculation**	EMISSION SOURCE ID NO: **ES-PCR**
	CONTROL DEVICE ID NO(S): **CD-PCR-BV**
OPERATING SCENARIO: ____1_____ OF _____1_____	EMISSION POINT (STACK) ID NO(S): **EP-23**

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):
Six (6) Pellet Coolers follow the pellet presses to cool the newly formed pellets down to an acceptable storage temperature. The recirculation for the pellet coolers is controlled by a bin vent filter.

MATERIALS ENTERING PROCESS - CONTINUOUS PROCESS		MAX. DESIGN CAPACITY (UNIT/HR)	REQUESTED CAPACITY LIMITATION(UNIT/HR)
TYPE	UNITS		
Pellet Cooler Exhaust		**1,000 CFM**	

MATERIALS ENTERING PROCESS - BATCH OPERATION		MAX. DESIGN CAPACITY (UNIT/BATCH)	REQUESTED CAPACITY LIMITATION (UNIT/BATCH)
TYPE	UNITS		

MAXIMUM DESIGN (BATCHES / HOUR):	
REQUESTED LIMITATION (BATCHES / HOUR):	(BATCHES/YR):
FUEL USED: **N/A**	TOTAL MAXIMUM FIRING RATE (MILLION BTU/HR): **N/A**
MAX. CAPACITY HOURLY FUEL USE: **N/A**	REQUESTED CAPACITY ANNUAL FUEL USE: **N/A**

COMMENTS:

Attach Additional Sheets as Necessary

FORM C1
CONTROL DEVICE (FABRIC FILTER)

REVISED 09/22/16 — NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate — C1

CONTROL DEVICE ID NO: **CD-PCR-BV**	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): **ES-PCR**
EMISSION POINT (STACK) ID NO(S): **EP-23**	POSITION IN SERIES OF CONTROLS NO. **1** OF **1** UNITS
OPERATING SCENARIO: **1** OF **1**	P.E. SEAL REQUIRED (PER 2q .0112)? ☐ YES ☑ NO

DESCRIBE CONTROL SYSTEM:
A bin vent filter is used to create a slight negative pressure on the Pellet Cooler Recirculation. The bin vent collects dust from the air volume present in the pellet cooler recirculation.

POLLUTANTS COLLECTED:	PM	PM-10	PM-2.5	
BEFORE CONTROL EMISSION RATE (LB/HR):	See calculation in Appendix C			
CAPTURE EFFICIENCY:	~99.9 %	~99.9 %	~99.9 %	%
CONTROL DEVICE EFFICIENCY:			%	%
CORRESPONDING OVERALL EFFICIENCY:	%	%	%	%
EFFICIENCY DETERMINATION CODE:				
TOTAL AFTER CONTROL EMISSION RATE (LB/HR):	See calculation in Appendix C			

PRESSURE DROP (IN H_2O): MIN: MAX: **4"**	GAUGE? ☑ YES ☐ NO	
BULK PARTICLE DENSITY (LB/FT^3): **1.43E-05**	INLET TEMPERATURE (°F): **Ambient**	
POLLUTANT LOADING RATE: **0.004** ☐ LB/HR ☑ GR/FT^3	OUTLET TEMPERATURE (°F) **Ambient**	
INLET AIR FLOW RATE (ACFM): **1,000**	FILTER OPERATING TEMP (°F): **N/A**	
NO. OF COMPARTMENTS: **1**	NO. OF BAGS PER COMPARTMENT: **1**	LENGTH OF BAG (IN.): **120**
NO. OF CARTRIDGES:	FILTER SURFACE AREA PER CARTRIDGE (FT^2):	DIAMETER OF BAG (IN.): **5.875**
TOTAL FILTER SURFACE AREA (FT^2): **942**	AIR TO CLOTH RATIO: **6**	
DRAFT TYPE: ☑ INDUCED/NEGATIVE ☐ FORCED/POSITIVE	FILTER MATERIAL: ☐ WOVEN ☑ FELTED	

DESCRIBE CLEANING PROCEDURES:
- ☑ AIR PULSE
- ☐ REVERSE FLOW
- ☐ MECHANICAL/SHAKER
- ☐ OTHER:
- ☐ SONIC
- ☐ SIMPLE BAG COLLAPSE
- ☐ RING BAG COLLAPSE

DESCRIBE INCOMING AIR STREAM:
The air stream contains wood dust particulate emissions.

PARTICLE SIZE DISTRIBUTION

SIZE (MICRONS)	WEIGHT % OF TOTAL	CUMULATIVE %
0-1	Unknown	
1-10		
10-25		
25-50		
50-100		
>100		
	TOTAL = 100	

ON A SEPARATE PAGE, ATTACH A DIAGRAM SHOWING THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S):

COMMENTS:

Attach Additional Sheets As Necessary

FORM B

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16 — NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate — B

EMISSION SOURCE DESCRIPTION: **Emergency Generator (536 bhp)**	EMISSION SOURCE ID NO: **IES-EG**
	CONTROL DEVICE ID NO(S): **N/A**
OPERATING SCENARIO ____1____ OF ____1____	EMISSION POINT (STACK) ID NO(S): **EP-13**

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
Diesel-fired internal combustion generator to provide power in the case of an emergency.

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

- ☐ Coal,wood,oil, gas, other burner (Form B1)
- ☑ Int.combustion engine/generator (Form B2)
- ☐ Liquid storage tanks (Form B3)
- ☐ Woodworking (Form B4)
- ☐ Coating/finishing/printing (Form B5)
- ☐ Storage silos/bins (Form B6)
- ☐ Manuf. of chemicals/coatings/inks (Form B7)
- ☐ Incineration (Form B8)
- ☐ Other (Form B9)

START CONSTRUCTION DATE:	DATE MANUFACTURED:
MANUFACTURER / MODEL NO.: **Catepillar DM8151**	EXPECTED OP. SCHEDULE: **24** HR/DAY **7** DAY/WK **52** WK/YR
IS THIS SOURCE SUBJECT TO? ☑ NSPS (SUBPARTS?): **IIII**	☑ NESHAP (SUBPARTS?): _____ **MACT (SUBPART): ZZZZ**

PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB **25%** MAR-MAY **25%** JUN-AUG **25%** SEP-NOV **25%**

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)	See Emission Calculations in Appendix C						
PARTICULATE MATTER<10 MICRONS (PM_{10})							
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
		See Emission Calculations in Appendix C						

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS lb/hr	lb/day	lb/yr
		See Emission Calculations in Appendix C			

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE

Attach Additional Sheets As Necessary

FORM B2

EMISSION SOURCE (INTERNAL COMBUSTION ENGINES/TURBINES/GENERATORS)

REVISED 09/22/16 — NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate — B2

EMISSION SOURCE DESCRIPTION: **Emergency Generator (536 bhp)**

EMISSION SOURCE ID NO: **IES-EG**

CONTROL DEVICE ID NO(S): **N/A**

EMISSION POINT (STACK) ID NO(S): **EP-13**

OPERATING SCENARIO: 1 OF 1

ENGINE SERVICE (CHECK ALL THAT APPLY): ☑ EMERGENCY ☐ PEAK SHAVER ☐ SPACE HEAT ☐ OTHER (DESCRIBE): ☐ ELECTRICAL GENERATION

GENERATOR OUTPUT (KW):

ANTICIPATED ACTUAL HOURS OF OPERATION (HRS/YR):

ENGINE OUTPUT (HP):

TYPE ICE: ☐ GASOLINE ENGINE ☑ **DIESEL ENGINE UP TO 600 HP** ☐ DIESEL ENGINE GREATER THAN 600 HP ☐ DUAL FUEL ENGINE

☐ OTHER (DESCRIBE): (complete below)

ENGINE TYPE ☐ RICH BURN ☐ LEAN BURN ☑ **N/A**

EMISSION REDUCTION MODIFICATIONS ☐ INJECTION TIMING RETARD ☐ PREIGNITION CHAMBER COMBUSTION ☐ OTHER

OR STATIONARY GAS TURBINE (complete below)

FUEL: ☐ NATURAL GAS ☐ OIL ☐ OTHER (DESCRIBE):

CYCLE: ☐ COGENERATION ☐ SIMPLE ☐ REGENERATIVE ☐ COMBINED

CONTROLS: ☐ WATER-STEAM INJECTION ☐ UNCONTROLLED ☐ LEAN-PREMIX ☐ OTHER (SPECIFY):

NATURAL GAS PIPELINE COMPRESSOR OR TURBINE (complete below)

ENGINE TYPE: ☐ 2-CYCLE LEAN BURN ☐ 4-CYCLE LEAN ☐ TURBINE ☐ 4-CYCLE RICH BURN ☐ OTHER (DESCRIBE):

CONTROLS: ☐ COMBUSTION MODIFICATIONS (DESCRIBE): ☐ NONSELECTIVE CATALYTIC REDUCTION ☐ SELECTIVE CATALYTIC REDUCTION ☐ CLEAN BURN AND PRECOMBUSTION CHAMBER ☐ UNCONTROLLED

FUEL USAGE (INCLUDE STARTUP/BACKUP FUEL)

FUEL TYPE	UNITS	MAXIMUM DESIGN CAPACITY (UNIT/HR)	REQUESTED CAPACITY LIMITATION (UNIT/HR)
No. 2 Fuel Oil	**gal**	**31.9**	**31.9**

FUEL CHARACTERISTICS (COMPLETE ALL THAT ARE APPLICABLE)

FUEL TYPE	BTU/UNIT	UNITS	SULFUR CONTENT (% BY WEIGHT)
No. 2 Fuel Oil	**19,300**	**lb**	**<15 ppmw**

MANUFACTURER'S SPECIFIC EMISSION FACTORS (IF AVAILABLE)

POLLUTANT	NOX	CO	PM	PM10	VOC	OTHER
EMISSION FACTOR LB/UNIT						
UNIT						

DESCRIBE METHODS TO MINIMIZE VISIBLE EMISSIONS DURING IDLING, OR LOW LOAD OPERATIONS:

Periodic equipment maintenance will minimize opacity by following manufacturers specification or common industry practices.

COMMENTS:

Attach Additional Sheets As Necessary

FORM B

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16 — NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate — B

EMISSION SOURCE DESCRIPTION: **Fire Water Pump (131 bhp)**

EMISSION SOURCE ID NO: **IES-FWP**

CONTROL DEVICE ID NO(S): **N/A**

OPERATING SCENARIO 1 OF 1

EMISSION POINT (STACK) ID NO(S): **EP-14**

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):

Diesel-fired internal combustion pump to provide water in case of an emergency.

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

- ☐ Coal,wood,oil, gas, other burner (Form B1)
- ☑ Int.combustion engine/generator (Form B2)
- ☐ Liquid storage tanks (Form B3)
- ☐ Woodworking (Form B4)
- ☐ Coating/finishing/printing (Form B5)
- ☐ Storage silos/bins (Form B6)
- ☐ Manuf. of chemicals/coatings/inks (Form B7)
- ☐ Incineration (Form B8)
- ☐ Other (Form B9)

START CONSTRUCTION DATE: DATE MANUFACTURED:

MANUFACTURER / MODEL NO.: **Xylem, Inc. 10x8x17F - 8100 Series**

EXPECTED OP. SCHEDULE: 24 HR/DAY 7 DAY/WK 52 WK/YR

IS THIS SOURCE SUBJECT TO? ☑ NSPS (SUBPARTS?): IIII ☑ NESHAP (SUBPARTS?): ____ **MACT (SUBPART): ZZZZ**

PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB **25%** MAR-MAY **25%** JUN-AUG **25%** SEP-NOV **25%**

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)	See Emission Calculations in Appendix C						
PARTICULATE MATTER<10 MICRONS (PM_{10})							
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
		See Emission Calculations in Appendix C						

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS lb/hr	lb/day	lb/yr
		See Emission Calculations in Appendix C			

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE

Attach Additional Sheets As Necessary

FORM B2
EMISSION SOURCE (INTERNAL COMBUSTION ENGINES/TURBINES/GENERATORS)

REVISED 09/22/16 — NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate — **B2**

EMISSION SOURCE DESCRIPTION: **Fire Water Pump (131 bhp)**

EMISSION SOURCE ID NO: **IES-FWP**

CONTROL DEVICE ID NO(S): **N/A**

EMISSION POINT (STACK) ID NO(S): **EP-14**

OPERATING SCENARIO: 1 OF 1

ENGINE SERVICE (CHECK ALL THAT APPLY): ☑ **EMERGENCY** ☐ PEAK SHAVER ☐ SPACE HEAT ☐ OTHER (DESCRIBE): ☐ ELECTRICAL GENERATION

GENERATOR OUTPUT (KW):

ANTICIPATED ACTUAL HOURS OF OPERATION (HRS/YR):

ENGINE OUTPUT (HP):

TYPE ICE: ☐ GASOLINE ENGINE ☑ **DIESEL ENGINE UP TO 600 HP** ☐ DIESEL ENGINE GREATER THAN 600 HP (complete below) ☐ DUAL FUEL ENGINE

OTHER (DESCRIBE):

ENGINE TYPE ☐ RICH BURN ☐ LEAN BURN ☑ **N/A**

EMISSION REDUCTION MODIFICATIONS ☐ INJECTION TIMING RETARD ☐ PREIGNITION CHAMBER COMBUSTION ☐ OTHER

OR ☐ STATIONARY GAS TURBINE (complete below) ☐ NATURAL GAS PIPELINE COMPRESSOR OR TURBINE (complete below)

FUEL: ☐ NATURAL GAS ☐ OIL ☐ OTHER (DESCRIBE):

CYCLE: ☐ COGENERATION ☐ SIMPLE ☐ REGENERATIVE ☐ COMBINED

CONTROLS: ☐ WATER-STEAM INJECTION ☐ UNCONTROLLED ☐ LEAN-PREMIX ☐ OTHER (SPECIFY):

ENGINE TYPE: ☐ 2-CYCLE LEAN BURN ☐ 4-CYCLE LEAN ☐ TURBINE ☐ 4-CYCLE RICH BURN ☐ OTHER (DESCRIBE):

CONTROLS: ☐ COMBUSTION MODIFICATIONS (DESCRIBE): ☐ NONSELECTIVE CATALYTIC REDUCTION ☐ SELECTIVE CATALYTIC REDUCTION ☐ CLEAN BURN AND PRECOMBUSTION CHAMBER ☐ UNCONTROLLED

FUEL USAGE (INCLUDE STARTUP/BACKUP FUEL)

FUEL TYPE	UNITS	MAXIMUM DESIGN CAPACITY (UNIT/HR)	REQUESTED CAPACITY LIMITATION (UNIT/HR)
No. 2 Fuel Oil	**gal**	**10.6**	**10.6**

FUEL CHARACTERISTICS (COMPLETE ALL THAT ARE APPLICABLE)

FUEL TYPE	BTU/UNIT	UNITS	SULFUR CONTENT (% BY WEIGHT)
No. 2 Fuel Oil	**19,300**	**lb**	**<15 ppmw**

MANUFACTURER'S SPECIFIC EMISSION FACTORS (IF AVAILABLE)

POLLUTANT	NOX	CO	PM	PM10	VOC	OTHER
EMISSION FACTOR LB/UNIT						
UNIT						

DESCRIBE METHODS TO MINIMIZE VISIBLE EMISSIONS DURING IDLING, OR LOW LOAD OPERATIONS:
Periodic equipment maintenance will minimize opacity by following manufacturers specification or common industry practices.

COMMENTS:

Attach Additional Sheets As Necessary

FORM B

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16 — NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate — B

EMISSION SOURCE DESCRIPTION: **Pellet Sampling Transfer Bin**	EMISSION SOURCE ID NO: **ES-PSTB**
	CONTROL DEVICE ID NO(S): **CD-DC-BV3**
OPERATING SCENARIO ___1___ OF ___1___	EMISSION POINT (STACK) ID NO(S): **EP-21**

DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):
Sized wood from the hammermills is transported to the pellet mill feed silo and the pellet sampling transfer bin prior to pelletization.

TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES):

- ☐ Coal,wood,oil, gas, other burner (Form B1)
- ☐ Int.combustion engine/generator (Form B2)
- ☐ Liquid storage tanks (Form B3)
- ☐ Woodworking (Form B4)
- ☐ Coating/finishing/printing (Form B5)
- ☑ Storage silos/bins (Form B6)
- ☐ Manuf. of chemicals/coatings/inks (Form B7)
- ☐ Incineration (Form B8)
- ☐ Other (Form B9)

START CONSTRUCTION DATE: DATE MANUFACTURED:

MANUFACTURER / MODEL NO.: EXPECTED OP. SCHEDULE: **24** HR/DAY **7** DAY/WK **52** WK/YR

IS THIS SOURCE SUBJECT TO? ☐ NSPS (SUBPARTS?): ☐ NESHAP (SUBPARTS?):

PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB **25%** MAR-MAY **25%** JUN-AUG **25%** SEP-NOV **25%**

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

AIR POLLUTANT EMITTED	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
PARTICULATE MATTER (PM)	**See Emission Calculations in Appendix C**						
PARTICULATE MATTER<10 MICRONS (PM_{10})							
PARTICULATE MATTER<2.5 MICRONS ($PM_{2.5}$)							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							

HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

HAZARDOUS AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION FACTOR	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) lb/hr	EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr
N/A								

TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE

TOXIC AIR POLLUTANT	CAS NO.	SOURCE OF EMISSION	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS lb/hr	lb/day	lb/yr
N/A					

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE

Attach Additional Sheets As Necessary

FORM B6
EMISSION SOURCE (STORAGE SILO/BINS)

REVISED 09/22/16 — NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate — **B6**

EMISSION SOURCE DESCRIPTION: **Pellet Sampling Transfer Bin**	EMISSION SOURCE ID NO: **ES-PSTB**
	CONTROL DEVICE ID NO(S): **CD-DC-BV3**
OPERATING SCENARIO: ___1___ OF ___1___	EMISSION POINT(STACK) ID NO(S): **EP-21**

DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):
Sized wood from the hammermills is transported to the pellet mill feed silo and the pellet sampling transfer bin prior to pelletization.

MATERIAL STORED: **Fine pellet material**				DENSITY OF MATERIAL (LB/FT3): **40**
CAPACITY	CUBIC FEET:			TONS:
DIMENSIONS (FEET)	HEIGHT:	DIAMETER: **12**	***(OR)***	LENGTH: WIDTH: HEIGHT:
ANNUAL PRODUCT THROUGHPUT (TONS)	ACTUAL:			MAXIMUM DESIGN CAPACITY: **6 tph**

PNEUMATICALLY FILLED	MECHANICALLY FILLED	FILLED FROM
☐ BLOWER	☐ SCREW CONVEYOR	☐ RAILCAR
☐ COMPRESSOR	☑ BELT CONVEYOR	☐ TRUCK
☐ OTHER:	☐ BUCKET ELEVATOR	☐ STORAGE PILE
	☐ OTHER:	☑ OTHER: Conveyor

NO. FILL TUBES:
MAXIMUM ACFM:

MATERIAL IS UNLOADED TO:

BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO?

MAXIMUM DESIGN FILLING RATE OF MATERIAL (TONS/HR): **105**

MAXIMUM DESIGN UNLOADING RATE OF MATERIAL (TONS/HR): **105**

COMMENTS:

Attach Additional Sheets As Necessary

FORM C1
CONTROL DEVICE (FABRIC FILTER)

REVISED 09/22/16 | NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate | C1

CONTROL DEVICE ID NO: **CD-DC-BV3**	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): **ES-PSTB**		
EMISSION POINT (STACK) ID NO(S): **EP-21**	POSITION IN SERIES OF CONTROLS	NO. 1 OF	1 UNITS
OPERATING SCENARIO:			
1 OF 1	P.E. SEAL REQUIRED (PER 2q .0112)?	☐ YES	☑ NO

DESCRIBE CONTROL SYSTEM:
A bin vent filter is used to create a slight negative pressure on the Pellet Sampling Transfer Bin. The bin vent collects dust from the air volume present in the silo. The bin vent is sized to offset the air displacement created by the material feed to the silo.

POLLUTANTS COLLECTED:	PM	PM-10	PM-2.5	
BEFORE CONTROL EMISSION RATE (LB/HR):	**See calculation in Appendix C**			
CAPTURE EFFICIENCY:	**~99.9** %	**~99.9** %	**~99.9** %	%
CONTROL DEVICE EFFICIENCY:			%	%
CORRESPONDING OVERALL EFFICIENCY:	%	%	%	%
EFFICIENCY DETERMINATION CODE:				
TOTAL AFTER CONTROL EMISSION RATE (LB/HR):	**See calculation in Appendix C**			

PRESSURE DROP (IN H_2O): MIN: MAX: **6"**	GAUGE? ☑ YES ☑ NO	
BULK PARTICLE DENSITY (LB/FT^3): **1.43E-05**	INLET TEMPERATURE (°F): **Ambient**	
POLLUTANT LOADING RATE: **0.004** ☐ LB/HR ☑ GR/FT^3	OUTLET TEMPERATURE (°F) **Ambient**	
INLET AIR FLOW RATE (ACFM): **1,000**	FILTER OPERATING TEMP (°F): **N/A**	
NO. OF COMPARTMENTS: **1**	NO. OF BAGS PER COMPARTMENT: **100**	LENGTH OF BAG (IN.): **120**
NO. OF CARTRIDGES:	FILTER SURFACE AREA PER CARTRIDGE (FT^2):	DIAMETER OF BAG (IN.): **5.875**
TOTAL FILTER SURFACE AREA (FT^2): **377**	AIR TO CLOTH RATIO: **6**	
DRAFT TYPE: ☑ INDUCED/NEGATIVE ☐ FORCED/POSITIVE	FILTER MATERIAL: ☐ WOVEN ☑ FELTED	

DESCRIBE CLEANING PROCEDURES:

- ☑ AIR PULSE
- ☐ REVERSE FLOW
- ☐ MECHANICAL/SHAKER
- ☐ OTHER:
- ☐ SONIC
- ☐ SIMPLE BAG COLLAPSE
- ☐ RING BAG COLLAPSE

DESCRIBE INCOMING AIR STREAM:
The air stream contains wood dust particules.

PARTICLE SIZE DISTRIBUTION

SIZE (MICRONS)	WEIGHT % OF TOTAL	CUMULATIVE %
0-1	**Unknown**	
1-10		
10-25		
25-50		
50-100		
>100		
	TOTAL = 100	

ON A SEPARATE PAGE, ATTACH A DIAGRAM SHOWING THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S):

COMMENTS:

Attach Additional Sheets As Necessary