



REPORT

COMPLIANCE MONITORING PLAN/COMPLIANCE ASSURANCE MONITORING PLAN

Green Circle Bio Energy, Inc.
Cottondale Wood Pellet Plant
Jackson County, Florida

Prepared For: Green Circle Bio Energy, Inc.
2500 Green Circle Parkway
Cottondale, Florida 32431

Submitted To: Florida Department of Environmental Protection
Northwest District Office, Pensacola, Florida

Submitted By: Golder Associates Inc.
6026 NW 1st Place
Gainesville, FL 32607 USA

Distribution: 4 Copies – Florida Department of Environmental Protection
2 Copies – Green Circle Bio Energy, Inc.
1 Copy – Golder Associates Inc.

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1.0 INTRODUCTION

Green Circle Bio Energy, Inc. (Green Circle) owns and operates a wood pelletizing operation located south of Cottondale, Jackson County, Florida. The address of this facility is 2500 Green Circle Parkway, Cottondale, Florida. The Florida Department of Environmental Protection (FDEP) issued an Air Construction Permit (Permit No. 0630058-001-AC) to Green Circle for construction and initial operation of the facility. Permit No. 0630058-001-AC requires submittal of a Compliance Monitoring Plan (CMP) detailing the procedures that would be used to demonstrate compliance with the production and emission limits in the permit. The initial CMP was submitted to FDEP in July 2008.

This CMP indicated that some of the operational parameters intended to be used to specify compliance would be determined during initial compliance testing. However, Green Circle was unable to perform the required testing due to a number of issues affecting their ability to operate at or near full capacity, including insufficient hammer mill capacity and ineffective aspiration systems needed to remove excess moisture from the chip and pellet conveyance equipment. In September 2008, FDEP issued Air Construction Permit No. 0630058-002-AC to Green Circle for installation of seven new hammer mills to determine if additional hammer mill capacity alone could alleviate the production issue. Unfortunately, excess moisture continued to limit the production capacity of the facility. Accordingly, in February 2009, Green Circle submitted an Air Construction Permit application to FDEP describing several facility modifications intended to increase production capacity, including installation of a green wood chip grinder, ventilation of the grinding and chip storage silos, installation of additional hammer mills, and enhancement of the aspiration systems serving the grinding and pelletizing lines.

The permit for these modifications (Permit No. 0630058-003-AC) was issued by FDEP in July 2009.

The facility receives raw pine logs or sawmill residuals (chips, sawdust, and shavings) and processes the wood into wood pellets to be sold as product. Permit No. 0630058-003-AC includes the following emission unit (EU) designations (production limits set by the air construction permit are included in parentheses):

- EU 001 Wood Fiber Receiving and Storage Area [180 incoming trucks per day (monthly average)]
- EU 002 Dryer Line No. 1 [80,220 pounds per hour (lb/hr) dry wood (maximum hourly) and 125 million British thermal units per hour (MMBtu/hr) daily average]
- EU 003 Dryer Line No. 2 [80,220 lb/hr dry wood (maximum hourly), 125 MMBtu/hr (daily average)]
- EU 004 Pelletizing Line No. 1 [23.7 tons per hour (TPH) pellets]
- EU 005 Pelletizing Line No. 2 (29.6 TPH pellets)
- EU 006 Pelletizing Line No. 3 (23.7 TPH pellets)
- EU 007 Pellet Load-out Area (77 TPH pellets)
- EU 008 Unregulated Emissions Unit – 2,000-gallon diesel storage tank
- EU 009 Green Wood Chip Grinding System

This Air Construction Permit includes emission limits for the following units:

- EU 002 – Dryer Line No. 1
 - Nitrogen Oxides (NO_x) = 122.65 tons per year (TPY) (12-month rolling total)
 - Particulate Matter (PM) = 0.2 pound per million British thermal units (lb/MMBtu) = 19.90 TPY (12-month rolling total)
 - Volatile Organic Compounds (VOCs) = 24.10 TPY (12-month rolling total)
- EU 003 – Dryer Line No. 2
 - NO_x = 122.65 TPY (12-month rolling total)
 - PM = 0.2 lb/MMBtu = 19.90 TPY (12-month rolling total)
 - VOC = 24.10 TPY (12-month rolling total)
- EU 004 – Pelletizing Line No. 1
 - PM = 59.77 TPY (12-month rolling total)
- EU 005 – Pelletizing Line No. 2
 - PM = 59.77 TPY (12-month rolling total)
- EU 006 – Pelletizing Line No. 3
 - PM = 59.77 TPY (12-month rolling total)
- EU 004, 005, 006 – Pelletizing Lines
 - VOC = 177.10 TPY (12-month rolling total)

Some sources at the facility are subject to the U.S. Environmental Protection Agency (EPA) Compliance Assurance Monitoring (CAM) regulations, codified as part of EPA's Clean Air Act, and located in Title 40, Part 64 of the Code of Federal Regulations (40 CFR 64). The regulations in 40 CFR 64 have been adopted by the state of Florida in Rule 62-204, Florida Administrative Code. The CAM rule is applicable to emission units, on a pollutant-by-pollutant basis, at major sources that meet the following criteria:

- The pre-control device emissions from the emission unit are greater than major source thresholds
- The emission unit is subject to emission limits or standards
- Pollution control equipment is used to meet emission limits or standards
- The emission unit is not subject to a post-1990 New Source Performance Standard or National Emission Standard for Hazardous Air Pollutants for a given pollutant
- The control equipment is not inherent to the process

Green Circle has made the following conclusions regarding the various emission sources at the site with regard to CAM applicability:

- The wood fiber receiving and storage area (EU 001) does not have permitted emissions limits or a control device to achieve compliance. Therefore, the wood fiber receiving and storage area is not subject to CAM.

- Dryer Line Nos. 1 and 2 (EU 002 and EU 003) are subject to air emission limits for NO_x, PM, and VOC. In addition, the dryer lines use control devices [wet electrostatic precipitator (WESP) and regenerative thermal oxidizer (RTO)] to achieve compliance with the permitted limits. The dryer lines are therefore subject to CAM for PM and VOCs.
- Pelletizing Line Nos. 1, 2, and 3 (EU 004, EU 005, and EU 006) are subject to permitted emissions limits for PM and use control devices to achieve compliance with the permitted limits (fabric filters and cyclones). The pelletizing lines are therefore subject to CAM for PM.
- The Pellet Load-out Area (EU 007) does not have permitted emissions limits to achieve compliance. Therefore, the pellet load-out area is not subject to CAM.
- There is no pollution control equipment or emission limits associated with the Green Wood Chip Grinding System (EU 009); therefore, it is not subject to CAM.

The facility has developed this CMP in anticipation of satisfying CAM requirements for PM and VOCs. Compliance with NO_x emission standards will be based on the development of emission factors during initial compliance tests.

In general, Green Circle intends to perform emissions stack testing during initial operations to establish correlations between monitored and recorded control parameters and stack emission rates. Data collected during stack testing will be used to support the use of specific control parameters, control parameter ranges, and recordkeeping procedures as indicators of compliance with permitted emissions limits. The following sections describe compliance monitoring procedures to be used during the initial stack testing. In addition, general operating condition restrictions/limitations, as described in the construction permit, are addressed in the following sections. These monitoring conditions and operating conditions may change based on stack testing results. Any changes to the plan will be addressed in the air operations permit application.

A summary of the compliance monitoring parameters is included as Table 1.

2.0 COMPLIANCE MONITORING PLAN PARAMETERS

2.1 Wood Fiber Receiving and Storage Area

Wood fiber (pulpwood logs or sawmill residuals) is unloaded and stored on-site. Logs are chipped and stored. The bark is hammer-milled, screened, and stored as fuel supply. All trucks entering the facility and carrying a delivery of wood fiber must be weighed on scales located at the facility scale house. Scale house personnel will maintain daily, monthly, and year-to-date records of the number of trucks that enter the facility. The current Air Construction Permit limits the number of incoming trucks to 180 per day on a monthly average basis, which is equivalent to 5,400 trucks per month for a 30-day month. To provide sufficient notification, the scale house personnel will notify the Wood Yard Manager if the number of trucks entering the facility for a given month exceeds 5,000 so that appropriate measures can be taken.

The facility will maintain the paved and unpaved roads at the facility in good working condition. Precautions will be taken by the facility to prevent emissions of unconfined PM, including the application of water or other dust suppressants to the roads when necessary. Any actions to suppress dust being generated by the unpaved roads will be documented and recorded.

In the unlikely event that the quantity of bark in the bark storage pile becomes low, the facility will receive bark from outside sources to replenish the fuel supply. Sources of fuel will include the hog fuel (chips and bark) from local chip-n-saw mills and the like only. No treated lumber will be accepted. No municipal yard waste will be accepted.

2.2 Dryer Lines

Two rotary drum dryers (EU 002 and EU 003) are used to reduce the moisture content of the wood chips to approximately 9 percent in preparation for grinding and pelletizing. Heat for the dryers is provided by two 125-MMBtu/hr bark-fired furnaces. High-humidity exhaust gases from the dryers are returned to the secondary combustion chamber of the bark fuel combustors to temper the combustion within the chamber and control the generation of NO_x. Gases from the secondary combustion chamber are drawn through a 6,900-lb/hr steam generator. Up to 50 percent of the dryer gases leaving the dryer are re-circulated to the dryer inlet. The remaining gases are directed to a WESP for PM emissions control and an RTO to control VOC emissions.

The WESP inlet gases are quenched with a recirculating water system. Gas exiting the WESP is routed to the RTO, where exhaust gas VOC emissions are reduced by 95 percent. Propane gas is used as a supplemental fuel to maintain RTO efficiency.

Exhaust gas from each RTO is vented to the atmosphere through a stack (one stack for each RTO). Each dryer includes two additional stacks used during bypass operations. Bypass operations include periods during startup and during process malfunctions. Bypass operations during malfunctions are limited in the Air Construction Permit to 50 hours per year (hr/yr) for each dryer bypass stack and each

furnace bypass stack. The permit allows the bypass stack for each furnace to operate for 1,500 hours in "idle mode," defined as operation up to a maximum heat input rate of 5 MMBtu/hr. If at any time during normal operations the exhaust gases to either RTO are routed to a bypass stack, the facility will record the reason for the bypass conditions; the period of time when the bypass stack was used; in the case of the furnace stack, the operating mode (malfunction or idle); and the corrective action performed, if applicable.

As indicated in the Air Construction Permit, the facility is required to demonstrate compliance with PM, VOC, and NO_x emission limits established for the facility dryer lines (Dryer Nos. 1 and 2).

2.2.1 Production Factor Development

Green Circle will perform at least two dryer capacity tests during the compliance test to demonstrate that the dryer is operating within 90 percent of its capacity of 80,220 lb/hr of dried wood chips. These tests will involve directing the entire capacity of the dryer to the fire dump for at least one 10-minute period and weighing the dried chips.

Chips are fed to each dryer using infeed screws. For each dryer there are three sets of three infeed screws. Each infeed screw set is driven by a variable frequency drive (VFD). The frequency to the VFD will be measured and controlled by the facility and from this the revolutions per minute (RPM) of each screw set will be determined. During the capacity tests, Green Circle will record the number of revolutions of the infeed screw sets and calculate a production factor in units of pounds of dried chips per revolution of each infeed screw set using the following formula:

$$\begin{aligned} &\text{Pounds of wood chips dried/infeed screw set revolution (lb/rev)} = \\ &\quad \text{the weight of wood chips measured during the 10 minute capacity test (lb)} / \text{the number of infeed} \\ &\quad \text{screw set revolutions recorded during the capacity test (revolutions)} \end{aligned}$$

From this production factor, Green Circle will then be able to quantify the amount of wood chips dried in each dryer by using the following formula:

$$\begin{aligned} &\text{Pounds of wood chips dried per hour} = \\ &\quad \text{number of revolutions of each screw set per hour (rev/hr)} \times \text{production factor (lb/rev)} \end{aligned}$$

Using the above procedure during the compliance tests, Green Circle determined the hourly production rates for Dryer Nos. 1 and 2 to be 77,160 and 77,760 lb/hr of chips dried to 9 percent moisture, respectively. During testing of Dryer No. 1 the number of screw set revolutions was recorded to be 101 revolutions for each of the three screw sets feeding each of the dryers, for a total of 303 revolutions per hour. The same information was recorded during testing of Dryer No. 2. Based on this information, average production factors of 255 and 257 pounds of wood chips produced per screw set revolution were calculated for Dryer No. 1 and Dryer No. 2, respectively (for Dryer No. 1: 77,160 lb/hr / 101 revolutions

per screw set / 3 screw sets). For this CMP, Green Circle will assume the average production factor of 256 lb/screw set revolution. Using this factor and the maximum permitted capacity of the dryer of 80,220 lb/hr (dried to approximately 9 percent moisture). the maximum speed of the feed system was calculated to be 313.4 revolutions per hour. The facility will record the number of revolutions of each of the three infeed screw sets, add them together, and compare the total to the established maximum of 313.4 revolutions per hour to demonstrate compliance with the maximum permitted production rate of 80,220 lb/hr of wood chips for each of the dryers.

2.2.2 Dryer Heat Input Value

A second production parameter the facility intends to record will be the heat input of each dryer line. As previously mentioned, each dryer line is limited to a heat input of 125 MMBtu/hr, averaged over a 24-hour period. Using an average heating value for southern yellow pine of 4,600 British thermal units per pound (Btu/lb) of fuel, as specified by FDEP, this heat input rate equates to approximately 13.6 TPH of bark fuel. In order to demonstrate compliance, the facility will monitor and record the fuel delivery parameters specified in the following paragraph.

Each of the bark fuel combustors, manufactured by Teaford, has a hydraulic ram feeder that pushes the bark fuel into the furnace. Each “stroke” of the hydraulic ram equals approximately 20 cubic feet (cf) of bark fuel. The weight of the fuel delivered to each combustor was calculated using an estimation of the bulk density for green southern yellow pine bark and chips. For the purpose of this report, bulk density calculations of the fuel supply are based on a bulk density of wood waste/bark of 11 pounds per cubic foot (lb/cf).

The number of strokes of the hydraulic ram needed to attain the maximum permitted heat input rate to the dryers of 125 MMBtu/hr is calculated as follows:

$$\begin{aligned}\text{Strokes per hour} &= 125 \text{ MMBtu/hr} / 4,600 \text{ Btu/lb} / 528.6 \text{ lb/stroke} \\ &= 51 \text{ strokes per hour}\end{aligned}$$

The facility will monitor the number of strokes of the hydraulic ram feeder per hour, and will determine an average hourly rate for each day. From this the tons per hour of bark fuel will be calculated and recorded, and a heat input in MMBtu/hr determined.

2.2.3 Wet Electrostatic Precipitators

In an electrostatic precipitator (ESP), electric fields are established by applying a direct-current voltage across a pair of electrodes: a discharge electrode and a collection electrode. PM suspended in the gas stream is electrically charged by passing through the electric field around each discharge electrode (the negatively charged electrode). The negatively charged particles then migrate toward the positively charged collection electrodes (collection plates). The PM is separated from the gas stream by retention on the collection plates. The WESP control device uses a quench water spray to cool and saturate dryer

exhaust gases prior to their entry into the electrical fields of the WESP. As particles accumulate on the collector plates of the WESP, the plates are cleaned by a spray of water.

The primary indicators of WESP performance include opacity, secondary voltage, secondary current, and secondary corona power. Other indicators of WESP performance include the spark rate, primary current, primary voltage, inlet gas temperature, gas flow rate, inlet water flow rate, solids content of flush water, and field operations.

The secondary voltage on the collector plates drops when a malfunction, such as grounded electrodes, occurs in the WESP. When the secondary voltage drops, fewer particles are charged and collected. Also, the secondary voltage can remain high but fail to perform its function if the collection plates are not cleaned. If the collection plates are not cleaned, the current drops. Since power is the product of voltage and current, monitoring the power input will provide a reasonable assurance that the WESP is functioning properly. The manufacturer of the WESP provided the following secondary voltage and current design parameters.

- Minimum secondary voltage (24-hour average): 30 kilovolts (kV)
- Minimum secondary current (24-hour average): 250 milliamps (mA)

The values for these parameters will be verified during initial compliance testing. During normal drying operations, Green Circle will monitor the secondary voltage and secondary current. The monitoring system will consist of a voltmeter and an ammeter, parts of the WESP instrumentation.

For the WESP to operate within design parameters, the gas stream needs to be cooled in order for some of the pollutants to condense. High quench inlet temperatures can indicate the quench water spray prior to the electrostatic field is not functioning as designed. In addition, high WESP outlet temperatures can indicate that the gas stream has not been sufficiently saturated to provide for efficient particle removal. High outlet temperatures could be the result of plugged nozzles, malfunctioning pumps, or broken or plugged piping.

The manufacturer of the WESP provided the following WESP inlet and outlet quench temperatures:

- Maximum inlet quench temperature: 210 degrees Fahrenheit (°F)
- Maximum outlet quench temperature: 210°F

The values for these parameters will be verified during initial compliance testing. Green Circle will measure the WESP quench inlet temperature and the WESP outlet temperature to demonstrate continuous operation of the WESP in accordance with design parameters.

2.2.4 Regenerative Thermal Oxidizer

The facility RTO is used to control VOC emissions in the dryer exhaust gas streams by combusting emissions to carbon dioxide (CO₂) and water. Important design factors of the RTO include maintaining high enough temperatures within the RTO to ignite the organic constituents of the exhaust gas stream, residence time to allow the combustion reaction to occur, and turbulence or mixing of the combustion air with the exhaust gas stream. The rate at which VOCs are oxidized is affected by temperature; the higher the temperature, the faster the oxidation reaction proceeds. Thermal destruction of most organics occurs at combustion temperatures between 800°F and 2,000°F.

For VOC control, the primary indicators of RTO performance include the outlet VOC concentration and outlet or combustion chamber temperature. Other indicators include the outlet carbon monoxide (CO) concentration, outlet CO₂ concentration, outlet oxygen concentration, exhaust gas flow rate, and auxiliary fuel line pressure.

From normal drying operations, Green Circle has established a minimum combustion chamber temperature of 1,440°F. Green Circle will verify this temperature during initial compliance testing. The monitoring system will consist of a thermocouple device installed in the thermal oxidizer chamber as part of the RTO instrumentation. A second thermocouple device will verify accuracy of the primary thermocouple.

In addition, it will be necessary to ensure a proper residence time to allow temperatures within the RTO to ignite the organic constituents of the exhaust gas stream. The RTO manufacturer's design residence time in the combustion chamber is approximately 1.39 seconds at the design gas flow rate. Each of the two RTO combustion chambers is approximately 3,377 cf in volume. The design gas flow rate through the RTO is approximately 92,797 actual cubic feet per minute (acfm) at 176°F.

2.2.5 Nitrogen Oxide Emissions Control

As previously stated, up to 50 percent of the exhaust gases from the dryers are returned to the secondary combustion chamber of the bark fuel combustor, tempering the combustion and controlling the generation of NO_x. During initial stack emissions testing, Green Circle intends to collect data to demonstrate the effectiveness of this process, and to make a correlation between actual NO_x emissions from the RTO exhaust stacks and the heat input rate, in pounds of NO_x emissions per ton of wood combusted in the furnace. Emission factors will be used to account for NO_x emissions during malfunction and idle mode use of the bypass stacks.

To demonstrate compliance with annual emission limits, the facility will record the monthly heat input rate of each furnace. Using the NO_x emission factor developed during initial compliance testing, 0.331 lb NO_x per ton of dry chips (approximately 9 percent moisture, by weight) and the appropriate emission factors for malfunction and idle mode operation (those used in the permit application), Green Circle will calculate a

monthly NO_x emissions rate and add it to the previous 11 months' emissions for comparison to the annual emission limit.

2.2.6 Bypass Stacks

As previously mentioned, the bypass stacks are used during periods of startup and during process malfunctions. The number of hours the bypass stacks can be used are limited by the Air Construction Permit to 50 hours for malfunction operation of the dryer and furnace bypass stack and 1,500 hours of operation for the furnace bypass stack during idle mode.

Green Circle will monitor the use of the bypass stacks and will record the reason for the bypass conditions, the period of time and duration when the bypass stack was used, the operating mode during the time the bypass stack was operating, and the corrective action performed, if applicable.

2.3 Pelletizing Lines

Dry wood chips (approximately 9 percent moisture, by weight), stored in the Grinding Storage Bin, are conveyed to the Grinding Building along three incline conveyors. Note that this CMP does not include information for the aspiration system for these incline conveyors as described in the permit application and permit, as Green Circle has determined that it will likely not be necessary to install this system to attain permitted production rates. From the incline conveyors, the wood chips are metered to three grinding infeed conveyors that feed the three hammer mill lines. The aspiration systems for these infeed conveyors consist of spot filters mounted directly on the conveyors. These three spot filters are vented to a common stack. The three conveyors exiting the hammer mill lines each have separate aspiration systems to remove excess moisture and separate baghouses. These three outfeed conveyors transport the ground wood to the three Pelleting Storage Bins. Note that this CMP does not include information for the aspiration system for these outfeed conveyors as described in the permit application and permit, as Green Circle has determined it will likely not be necessary to install these systems to attain permitted production rates.

Three incline conveyors are used to transport ground wood from the Pelleting Storage Bins to the Pelleting Building. Note that this CMP does not include information for the aspiration system for these incline conveyors servicing the Pelleting processes as described in the permit application and permit, as Green Circle has determined that it will likely not be necessary to install this system to attain permitted production rates. From the incline conveyors, the ground wood is transferred to three conveyors that feed the three Pelletizing Lines. The aspiration systems for these three infeed conveyors are three spot filters mounted directly on the conveyors exhausting to one common stack. Three conveyors are used to transport the pellets from the Pelletizing Lines to a bucket elevator. Each bucket elevator is used to transfer the pellets to the top of a counter current flow Pellet Cooler. PM emissions from each cooler are controlled by two parallel high-efficiency cyclones. From the Pellet Coolers, the flows of pellets merge and are fed to a single bucket elevator and vibrating screen. From the vibrating screens the pellets are

transferred to the railcar loading system. Note that this CMP does not include information for the aspiration system for the second bucket elevator and vibrating screen as described in the permit application and permit, as Green Circle has determined that it will likely not be necessary to install this system to attain permitted production rates.

2.3.1 Production Quantities

Pelletizing Line Nos. 1 and 3 are limited in the Air Construction Permit to 23.7 TPH of pellets produced (24-hour average). Pelletizing Line No. 2 is limited to 29.6 TPH of pellets produced (24-hour average). Pelletizing Line Nos. 1 and 3 include four pellet mills each, and Pelletizing Line No. 2 is equipped with five pellet mills (13 total pellet mills). Each pellet mill will utilize a control system that monitors the infeed screw operations to each mill and calculates a tonnage of pellets produced based on the infeed screw parameters.

During initial stack testing, the weigh scale in the bulk load out system was used to determine the pellet production rate. As the bulk load out system is common to the three pelleting lines, each pelleting line was run separately during the test so that the number of infeed screw revolutions recorded during the test could be directly compared to the pellet production rate measured by the bulk load out system. From this information, the number of screw revolutions could be correlated to the pellet production rate as follows:

Tons of pellets produced/infeed screw revolution (ton/rev) = tons of pellets produced / number of screw revolutions

From this production factor the facility will then be able to quantify the amount of pellets produced in each line using the following formula:

Tons of pellets produced per hour = number of revolutions of infeed screw (rev/hr) × production factor (lb/rev)

Using the above procedure during the compliance tests, Green Circle determined the hourly production rates for Pellet Line Nos. 1, 2, and 3 to be 21.7, 24.2, and 20.6 TPH (average of three test runs for each pellet line), respectively, and the corresponding number of screw revolutions to be 78.0, 101.1, and 71.0 (average of three test runs for each pellet line), respectively. Using this information, a production factor of 0.268 ton of pellets per revolution was calculated by dividing the production rate by the number of screw revolutions and averaging the results.

The facility will record the number of revolutions of each infeed screw on an hourly basis and use this information and the established production factor of 0.268 ton/revolution to calculate hourly pellet line production. Production quantities will be recorded on an hourly basis and a total production amount calculated and recorded for each pelletizing line on a daily basis. From this a daily average will be calculated and recorded for each pelletizing line and compared to permitted rates.

2.3.2 Aspiration Fabric Filters

The best indicators of fabric filter performance are the outlet PM concentration and a filter leak detection system. Other indicators include the pressure differential across each filter, the inlet temperature, and the exhaust gas flow rate.

For the CMP, Green Circle is monitoring differential pressures ranges for normal operation of the baghouses and spot filters based on operational experience and as provided by their manufacturers. Although the manufacturers were able to provide a range of pressure differentials for normal operation when handling dry products, their experience when handling wet products, as is the case for the aspiration systems, is limited. Accordingly, it was necessary for Green Circle to use their operational experience to supplement the information provided by the manufacturer's of the baghouses and spot filters to establish acceptable pressure differential ranges. This information is summarized in Table 1. Green Circle confirmed that the pressure differential ranges presented in Table 1 were suitable during initial compliance testing.

During normal operations, the facility will measure and record the pressure differential across the inlet and outlet of the filter chambers daily. A reading below the lower end of the range may indicate a malfunction of the filter system (broken bag) or a decrease in filter permeability. A reading in excess of the upper end of the range indicates the filter bags need to be either cleaned or changed. Green Circle has established action values requiring inspection of the baghouses and spot filters when the pressure differential is observed within 1 millibar of either the minimum or maximum compliance values. This information is also presented in Table 1.

2.3.3 Pellet Cooler High-Efficiency Cyclones

The exhaust from the coolers is routed to two high-efficiency cyclones for each line. Cyclone control efficiency is a function of the inlet velocity. As the velocity within the cyclone increases, the inertial forces acting on particles in the gas stream increase, separating the particles from the stream. As the particles impact the cyclone walls, they are collected in a hopper or storage bin. As velocity increases, turbulence forms within the gas stream and disrupts gas flow.

For the cyclones, Green Circle established an acceptable pressure differential range of 1 to 4 inches of water (in. H₂O), based on operational experience and manufacturer's recommendations. This information is included in Table 1. The suitability of this range was confirmed during initial stack testing.

The pressure differential across the cyclones is primarily a function of the inlet velocity. During normal operations, the facility will measure and record the pressure differential across the inlet and outlet of each cyclone. Any measurement outside of the established range will indicate potential inefficiency in the cyclone system in removing PM from the exhaust gas stream.

Again, Green Circle has established action values requiring inspection of the cyclones if the observed pressure differential for the cyclones is less than 1.5 in. H₂O or above 3.5 in. H₂O as summarized in Table 1.

2.3.4 Volatile Organic Compound Emissions

Green Circle intends to establish an emission factor for VOCs in units of pounds of VOC emissions per ton of pellets produced during the initial compliance testing. This factor will be used to calculate monthly VOC emissions, which will be added to the previous 11 months' emissions for comparison to the emission limit of 177.1 TPY on a rolling 12-month total basis.

2.4 Bulk Load-Out Area

Pellets are transported to two sets of storage bins, each set with a capacity of 94 tons, and located above the rail car loading area. The bins provide up to approximately 2 hours of pellet storage and uniformly meter the pellets out for rail car loading. The pellet conveyors are sealed and equipped with continuous air aspiration for dust control. All aspirated air is drawn through dust filters that are designed with an air-to-cloth ratio less than 15 actual cubic feet per minute per square foot (acfm/sf).

2.4.1 Production Quantities

The maximum rate of pellets processed by the Load-Out Area is limited in the facility's Air Construction Permit to 77 TPH (24-hour average). The load-out area is equipped with two load-out lines; each line is equipped with four storage bins. In addition, each line includes a scale. One line at a time will receive pellets for load-out. Once the four bins are filled, the load-out equipment switches to the second line and starts filling the second four bins. The filled bins are weighed before discharging into the rail car. Once the weight has been recorded, the scales are reset to zero. The facility will record the weight of each load-out bin and at the end of the day will compute an hourly average to ensure compliance with the conditions of the permit.

TABLES

TABLE 1
COMPLIANCE MONITORING PLAN SUMMARY
GREEN CIRCLE BIO ENERGY, INC., COTTONDALE WOOD PELLET PLANT

Emission Unit No.	Emission Unit Name	Permit Condition No.	Permit Condition	CAM Applicable? (Y/N)	Monitored Parameter	Compliance Value	Action Value	Action Response	Comment
001	Wood Fiber Receiving and Storage Area	A.1.	The maximum allowable process rate is 180 incoming trucks per day on a rolling monthly average to be calculated monthly.	NA	Record number of trucks entering the facility.	5,400 trucks per month (180 trucks per day multiplied by 30 days per month) on a daily average basis	5,000 trucks per month recorded at gate.	Front gate notifies the Wood Yard Manager that allowable number of trucks is being approached.	
002	Dryer Line No. 1	B.1.	The maximum operation rate for each Dryer Line shall not exceed 80,220 lb/hr of dry wood (9% moisture or less).	NA	Production rate as determined by the RPM of the three infeed screw sets.	Total of 313.4 revolutions per hour total (104.4 revolutions per hour per each of three screw sets) based on a production factor of 256 pounds of wood chips (9% moisture) produced per revolution.	Maximum hourly rate of 300 revolutions per hour.	Operations Manager notified that continued hourly operation at this rate will approach permit limits for production.	An average production factor of 256 pound of wood chips per revolution of each screw set was measured during compliance testing for the infeed screws. Compliance is demonstrated when the result of multiplying the production factor by the total hourly number of revolutions of the three screw sets is 80,220 pounds or less.
		B.2.	The maximum operation capacity for each Dryer Line combustor shall not exceed 125 MMBtu/hr heat input averaged over a 24-hour period.	NA	Number of strokes of hydraulic ram feeder to combustor.	51 strokes/hr on a daily average basis.	51 strokes on an hourly basis.	Operations Manager notified that continued operation at or above this rate may exceed allowable heat input limit of 125 MMBtu calculated on a daily average basis.	Based on 4,600 Btu per pound of wood 2.43 MMBtu/stroke as determined during compliance testing. Compliance is demonstrated when the result of dividing the daily number of strokes by 24 hours is less than or equal to 51 strokes.
		B.5.	NO _x emissions in each Dryer Line shall not exceed 122.65 tons per 12-month rolling total.	N	Monthly chip production, hours of the operation of the bypass stacks at full capacity and in idle mode.	12-month rolling total NO _x emission rate of 122.65 TPY or less (see comment).	12-month rolling total NO _x emission rate in excess of 100 TPY (see comment).	Operations Manager notified that 12-month rolling total NO _x emissions are approaching permit limit.	In accordance with Rule 62-210.370, F.A.C., a NO _x emissions factor of 0.331 lb NO _x lb ton of wood chips was developed from stack test results at normal operating mode. For malfunction modes, the emission factors 26.3 lb/hr for the Dryer Bypass Stack Operation, and 0.22 lb/MMBtu furnace bypass stack operation (while operating at either full capacity or in idle mode), as presented in the permit application, will be used. Compliance is demonstrated when annual NO _x emissions on a 12-month rolling total basis from the RTO stack, Dryer Bypass Stack, and the Furnace Bypass Stack, at each operating mode, are 122.65 tons, or less.
		B.6.	PM emissions from each Dryer Line shall not exceed 0.2 lb/MMBtu or 19.9 TPY on a 12-month rolling total calculated monthly.	Y	Stack testing to demonstrate compliance with 0.2 lb/MMBtu limit. WESP Secondary voltage, secondary current, and quench inlet and outlet temperature.	Secondary Voltage: minimum of 30 kV (1-hr avg.) Secondary Current: minimum of 250 mA (1-hr avg.) Quench Inlet Temperature: Maximum of 210°F Quench Outlet Temperature: Maximum of 210°F	Secondary Voltage: minimum of 40 kV (1-hr avg.) Secondary Current: minimum of 325 mA (1-hr avg.) Quench Inlet Temperature: Maximum of 200°F Quench Outlet Temperature: Maximum of 200°F	Operations Manager notified that WESP operating parameters are approaching design limits for proper operation. Should consider increased unit flushing, cleaning, and inspection of the flow line.	Compliance demonstrated when indicated parameters are within the specified ranges.
		B.7.	VOC emissions from each Dryer Line shall not exceed 24.10 TPY per 12-month rolling total.	Y	Temperature of RTO chamber, flow rate through the RTO chamber (fan speed), back pressure, and residence time.	Temperature: Minimum of 1,440°F (when operating); Fan Speed: >99% with corresponding back pressure of less than 10 inches of water (1-hour average).	Temperature: Minimum of 1,475°F (when operating); Fan Speed: >95% with corresponding back pressure of less than 8 inches of water (1-hour average).	Operations Manager notified that RTO operating parameters are approaching design limits for proper operation. Should consider checking the quench water flow, RTO fan speed, propane supply, dryer recirculation rate and the thermocouple used to measure quench water temperature.	The RTO is designed for 1.39 second residence time at 100% fan speed. At stated fan speeds, back pressures in excess of those presented can indicate plugging of RTO chambers and require investigation. Compliance is demonstrated when the temperature of the RTO chamber is greater than 1,440°F, the fan speed and corresponding back pressures are within the specified parameters, which indicate the minimum residence time is met.
		B.11.	Excess emissions resulting from startup, shutdown, or malfunctions, using the Dryer Line and furnace bypass stacks shall be permitted provided that best operational practices to minimize emissions are adhered to and the duration of excess emissions shall be minimized but in no case exceed 2 hours in any 24-hour period, nor exceed 50 hours per 12-month rolling total for each Dryer Line.	N	Number of hours of operation where dryer and furnace bypass stacks are utilized, and for the furnace, whether the bypass stack is being used during malfunction or idle mode operation.	Dryer Bypass Stack: 50 hours Furnace Bypass Stack (malfunction): 50 hours Furnace Bypass Stack (idle mode): 1,500 hours	Dryer Bypass Stack: 12-month rolling total exceeds 40 hours Furnace Bypass Stack (malfunction): 12-month rolling total exceeds 40 hours Furnace Bypass Stack (idle mode): 12-month rolling total exceeds 1,400 hours	Operations Manager notified that permit limits are being approached for operation of the bypass stacks.	Compliance is demonstrated when the dryer bypass stack are used 50 hours or less on a 12-month rolling total basis, and the furnace bypass stack are used no more than 50 hours at full capacity, or no more than 1,500 hours in idle mode.



TABLE 1
COMPLIANCE MONITORING PLAN SUMMARY
GREEN CIRCLE BIO ENERGY, INC., COTTONDALE WOOD PELLET PLANT

Emission Unit No.	Emission Unit Name	Permit Condition No.	Permit Condition	CAM Applicable? (Y/N)	Monitored Parameter	Compliance Value	Action Value	Action Response	Comment
003	Dryer Line No. 2	B.1.	The maximum operation rate for each Dryer Line shall not exceed 80,220 lb/hr of dry wood (9% moisture or less).	NA	Production rate as determined by the RPM of the three infeed screw sets.	Total of 313.4 revolutions per hour total (104.4 revolutions per hour per each of three screw sets) based on a production factor of 256 pounds of wood chips (9% moisture) produced per revolution	Maximum hourly rate of 300 revolutions per hour.	Operations Manager notified that continued hourly operation at this rate will approach permit limits for production.	An average production factor of 256 pound of wood chips per revolution of each screw set was measured during compliance testing for the infeed screws. Compliance is demonstrated when the result of multiplying the production factor by the total hourly number of revolutions of the three screw sets is 80,220 pounds or less.
		B.2.	The maximum operation capacity for each Dryer Line combustor shall not exceed 125 MMBtu/hr heat input averaged over a 24-hour period.	NA	Number of strokes of hydraulic ram feeder to combustor.	51 strokes/hr on a daily average basis.	51 strokes on an hourly basis.	Operations Manager notified that continued operation at or above this rate may exceed allowable heat input limit of 125 MMBtu calculated on a daily average basis.	Based on 4,600 Btu per pound of wood 2.43 MMBtu/stroke as determined during compliance testing. Compliance is demonstrated when the result of dividing the daily number of strokes by 24 hours is less than or equal to 51 strokes.
		B.5.	NO _x emissions in each Dryer Line shall not exceed 122.65 tons per 12-month rolling total.	N	Monthly chip production, hours of the operation of the bypass stacks at full capacity and in idle mode.	12-month rolling total NO _x emission rate of 122.65 TPY or less (see comment).	12-month rolling total NO _x emission rate in excess of 100 TPY (see comment).	Operations Manager notified that 12-month rolling total NO _x emissions are approaching permit limit.	In accordance with Rule 62-210.370, a NO _x emissions factor of 0.331 lb NO _x lb ton of wood chips was developed from stack test results at normal operating mode. For malfunction modes, the emission factors 26.3 lb/hr for the Dryer Bypass Stack Operation, and 0.22 lb/MMBtu furnace bypass stack operation (while operating at either full capacity or in idle mode), as presented in the permit application, will be used. Compliance is demonstrated when annual NO _x emissions on a 12-month rolling total basis from the RTO stack, Dryer Bypass Stack, and the Furnace Bypass Stack, at each operating mode, are 122.65 tons, or less.
		B.6.	PM emission from each Dryer Line shall not exceed 0.2 lb/MMBtu or 19.9 TPY on a 12-month rolling total calculated monthly.	Y	Stack testing to demonstrate compliance with 0.2 lb/MMBtu limit. WESP Secondary voltage, secondary current, and quench inlet and outlet temperature.	Secondary Voltage: minimum of 30 kV (1-hr avg.) Secondary Current: minimum of 250 mA (1-hr avg.) Quench Inlet Temperature: Maximum of 210°F Quench Outlet Temperature: Maximum of 210°F	Secondary Voltage: minimum of 40 kV (1-hr avg.) Secondary Current: minimum of 325 mA (1-hr avg.) Quench Inlet Temperature: Maximum of 200°F Quench Outlet Temperature: Maximum of 200°F	Operations Manager notified that WESP operating parameters are approaching design limits for proper operation. Should consider increased unit flushing, cleaning, and inspection of the flow line.	Compliance demonstrated when indicated parameters are within the specified ranges.
		B.7.	VOC emissions from each Dryer Line shall not exceed 24.10 TPY per 12-month rolling total.	Y	Temperature of RTO chamber, flow rate through the RTO chamber (fan speed), back pressure, and residence time.	Temperature: Minimum of 1,440°F (when operating); Fan Speed: >99% with corresponding back pressure of less than 10 inches of water (1-hour average).	Temperature: Minimum of 1,475°F (when operating); Fan Speed: >95% with corresponding back pressure of less than 8 inches of water (1-hour average).	Operations Manager notified that RTO operating parameters are approaching design limits for proper operation. Should consider checking the quench water flow, RTO fan speed, propane supply, dryer recirculation rate and the thermocouple used to measure quench water temperature.	The RTO is designed for 1.39 second residence time at 100% fan speed. At stated fan speeds, back pressures in excess of those presented can indicate plugging of RTO chambers and require investigation. Compliance is demonstrated when the temperature of the RTO chamber is greater than 1,440°F, the fan speed and corresponding back pressures are within the specified parameters, which indicate the minimum residence time is met.
		B.11.	Excess emissions resulting from startup, shutdown, or malfunctions, using the Dryer Line and furnace bypass stacks shall be permitted provided that best operational practices to minimize emissions are adhered to and the duration of excess emissions shall be minimized but in no case exceed 2 hours in any 24-hour period, nor exceed 50 hours per 12-month rolling total for each Dryer Line.	N	Number of hours of operation where dryer and furnace bypass stacks are utilized, and for the furnace, whether the bypass stack is being used during malfunction or idle mode operation.	Dryer Bypass Stack: 50 hours Furnace Bypass Stack (malfunction): 50 hours Furnace Bypass Stack (idle mode): 1,500 hours	Dryer Bypass Stack: 12-month rolling total exceeds 40 hours Furnace Bypass Stack (malfunction): 12-month rolling total exceeds 40 hours Furnace Bypass Stack (idle mode): 12-month rolling total exceeds 1,400 hours	Operations Manager notified that daily production limits are being approached.	Compliance is demonstrated when the dryer bypass stack are used 50 hours or less on a 12-month rolling total basis, and the furnace bypass stack are used no more than 50 hours at full capacity, or no more than 1,500 hours in idle mode.



TABLE 1
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GREEN CIRCLE BIO ENERGY, INC., COTTONDALE WOOD PELLET PLANT

Emission Unit No.	Emission Unit Name	Permit Condition No.	Permit Condition	CAM Applicable? (Y/N)	Monitored Parameter	Compliance Value	Action Value	Action Response	Comment
004	Pelletizing Line No. 1	C.1.	The maximum process rate for Pelletizing Line 3 is 23.7 tons of pellets per hour on a 24-hour average basis calculated daily.	NA	Production rate as determined by the RPM of infeed screws.	88.4 revolutions per hour calculated on a 24-hour average basis based on a production factor of 0.268 tons per revolution.	Maximum hourly rate of 88.4 revolutions per hour.	Operations Manager notified that continued hourly operation at this rate will approach permit limits for production.	An average production factor of 0.268 tons of pellets per revolution was measured during compliance testing for the infeed screws. Compliance is demonstrated when the result of multiplying the production factor by the daily number of revolutions of the screw conveyor divided by 24 hours is 23.7 tons or less.
		C.3.	PM emissions from Pellet Line 1 shall not exceed 59.77 TPY based on a 12-month rolling total.	Y	Monitor pressure differential for the Grinding Infeed Conveyor Aspiration System spot filter (common stack for all three grinding lines), for the Grinding Aspiration System baghouse, for the Pelleting Infeed Conveyor Aspiration System spot filter (common stack for all three pelletizing lines), and for the Pelleting Outfeed Conveyor/Pre Cooler Bucket Elevator Aspiration System baghouse.	Grinding Infeed Conveyor Aspiration System spot filters - 2.0 to 8.0 mb Grinding Aspiration System baghouse - 1.0 to 10.0 mb Pelleting Infeed Conveyor Aspiration System spot filters - 1.0 to 7.0 mb Pelleting Outfeed Conveyor Aspiration System baghouse - 0.5 to 6.0 mb Cyclones - 1.0 to 4.0 inches of water	Grinding Infeed Conveyor Aspiration System spot filters - 3.0 to 7.0 mb Grinding Aspiration System baghouse - 2.0 to 9.0 mb Pelleting Infeed Conveyor Aspiration System spot filters - 2.0 to 6.0 mb Pelleting Outfeed Conveyor Aspiration System baghouse - 1.5 to 5.0 mb Cyclones - 1.5 to 3.5 inches of water	Operations Manager notified that baghouses and/or spot filters are approaching design limits for proper operation.	Compliance values based on vendor design information for proper operation of the control device. Compliance is demonstrated when pressure differentials are measured within the range specified.
		C.5.	VOC emissions from all Pelletizing Lines shall not exceed 177.10 TPY on a 12-month rolling total.	N	Monthly pellet production.	Pellet production of 554,303 TPY (total all three lines) on a 12-month rolling total basis.	Pellet production of 500,000 TPY (total all three lines) on a 12-month rolling total basis.	Operations Manager notified that annual production limits are being approached.	An emission factor of 0.639 pounds of VOCs per ton of pellets produced was determined during stack testing. Compliance will be demonstrated when annual VOC emissions are calculated by multiplying the monthly number of tons of pellets produced by the established emission factor and the result added to the previous total for the previous 12 months and the 12-month rolling total is 177.10 tons or less.
005	Pelletizing Line No. 2	C.1.	The maximum process rate for Pelletizing Line 2 is 29.6 tons of pellets per hour on a 24-hour average basis calculated daily.	NA	Production rate as determined by the RPM of infeed screws.	110.4 revolutions per hour calculated on a 24-hour average basis based on a production factor of 0.268 tons per revolution.	Maximum hourly rate of 110.4 revolutions per hour.	Operations Manager notified that continued hourly operation at this rate will approach permit limits for production.	An average production factor of 0.268 tons of pellets per revolution was measured during compliance testing for the infeed screws. Compliance is demonstrated when the result of multiplying the production factor by the daily number of revolutions of the screw conveyor divided by 24 hours is 29.6 tons or less.
		C.3.	PM emissions from Pellet Line 2 shall not exceed 59.77 TPY based on a 12-month rolling total.	Y	Monitor pressure differential for the Grinding Infeed Conveyor Aspiration System spot filter (common stack for all three grinding lines), for the Grinding Aspiration System baghouse, for the Pelleting Infeed Conveyor Aspiration System spot filter (common stack for all three pelletizing lines), and for the Pelleting Outfeed Conveyor/Pre Cooler Bucket Elevator Aspiration System baghouse.	Grinding Infeed Conveyor Aspiration System spot filters - 2.0 to 8.0 mb Grinding Aspiration System baghouse - 1.0 to 10.0 mb Pelleting Infeed Conveyor Aspiration System spot filters - 1.0 to 7.0 mb Pelleting Outfeed Conveyor Aspiration System baghouse - 0.5 to 6.0 mb Cyclones - 1.0 to 4.0 inches of water	Grinding Infeed Conveyor Aspiration System spot filters - 3.0 to 7.0 mb Grinding Aspiration System baghouse - 2.0 to 9.0 mb Pelleting Infeed Conveyor Aspiration System spot filters - 2.0 to 6.0 mb Pelleting Outfeed Conveyor Aspiration System baghouse - 1.5 to 5.0 mb Cyclones - 1.5 to 3.5 inches of water	Operations Manager notified that baghouses and/or spot filters are approaching design limits for proper operation.	Compliance values based on vendor design information for proper operation of the control device. Compliance is demonstrated when pressure differentials are measured within the range specified.
		C.5.	VOC emissions from all Pelletizing Lines shall not exceed 177.10 TPY on a 12-month rolling total.	N	Annual pellet production.	Pellet production of 554,303 TPY (total all three lines) on a 12-month rolling total basis.	Pellet production of 500,000 TPY (total all three lines) on a 12-month rolling total basis.	Operations Manager notified that annual production limits are being approached.	An emission factor of 0.639 pounds of VOCs per ton of pellets produced was determined during stack testing. Compliance will be demonstrated when annual VOC emissions are calculated by multiplying the monthly number of tons of pellets produced by the established emission factor and the result added to the previous total for the previous 12 months and the 12-month rolling total is 177.10 tons or less.



TABLE 1
COMPLIANCE MONITORING PLAN SUMMARY
GREEN CIRCLE BIO ENERGY, INC., COTTONDALE WOOD PELLET PLANT

Emission Unit No.	Emission Unit Name	Permit Condition No.	Permit Condition	CAM Applicable? (Y/N)	Monitored Parameter	Compliance Value	Action Value	Action Response	Comment
006	Pelletizing Line No. 3	C.1.	The maximum process rate for Pelletizing Line 3 is 23.7 tons of pellets per hour on a 24-hour average basis calculated daily.	NA	Production rate as determined by the RPM of infeed screws.	88.4 revolutions per hour calculated on a 24-hour average basis based on a production factor of 0.268 tons per revolution.	Maximum hourly rate of 88.4 revolutions per hour.	Operations Manager notified that continued hourly operation at this rate will approach permit limits for production.	An average production factor of 0.268 tons of pellets per revolution was measured during compliance testing for the infeed screws. Compliance is demonstrated when the result of multiplying the production factor by the daily number of revolutions of the screw conveyor divided by 24 hours is 23.7 tons or less.
		C.3.	PM emissions from Pellet Line 3 shall not exceed 59.77 TPY based on a 12-month rolling total.	Y	Monitor pressure differential for the Grinding Infeed Conveyor Aspiration System spot filter (common stack for all three grinding lines), for the Grinding Aspiration System baghouse, for the Pelleting Infeed Conveyor Aspiration System spot filter (common stack for all three pelletizing lines), and for the Pelleting Outfeed Conveyor/Pre Cooler Bucket Elevator Aspiration System baghouse.	Grinding Infeed Conveyor Aspiration System spot filters - 2.0 to 8.0 mb Grinding Aspiration System baghouse - 1.0 to 10.0 mb Pelleting Infeed Conveyor Aspiration System spot filters - 1.0 to 7.0 mb Pelleting Outfeed Conveyor Aspiration System baghouse - 0.5 to 6.0 mb Cyclones - 1.0 to 4.0 inches of water	Grinding Infeed Conveyor Aspiration System spot filters - 3.0 to 7.0 mb Grinding Aspiration System baghouse - 2.0 to 9.0 mb Pelleting Infeed Conveyor Aspiration System spot filters - 2.0 to 6.0 mb Pelleting Outfeed Conveyor Aspiration System baghouse - 1.5 to 5.0 mb Cyclones - 1.5 to 3.5 inches of water	Operations Manager notified that baghouses and/or spot filters are approaching design limits for proper operation.	Compliance values based on vendor design information for proper operation of the control device. Compliance is demonstrated when pressure differentials are measured within the range specified.
		C.5.	VOC emissions from all Pelletizing Lines shall not exceed 177.10 TPY on a 12-month rolling total.	N	Annual pellet production.	Pellet production of 554,303 TPY (total all three lines) on a 12-month rolling total basis.	Pellet production of 500,000 TPY (total all three lines) on a 12-month rolling total basis.	Operations Manager notified that annual production limits are being approached.	An emission factor of 0.639 pounds of VOCs per ton of pellets produced was determined during stack testing. Compliance will be demonstrated when annual VOC emissions are calculated by multiplying the monthly number of tons of pellets produced by the established emission factor and the result added to the previous total for the previous 12 months and the 12-month rolling total is 177.10 tons or less.
007	Bulk Load-Out Area	D.1.	The maximum process rate for bulk load out is 77 tons of pellets per hour on a daily average basis.	N	Weight of each load-out storage bin discharge, and record cumulative amount each day.	77 TPH on a daily average basis calculated daily.	70 TPH on a daily average basis calculated daily.	Operations Manager notified that daily production limits are being approached.	Compliance is demonstrated when the result of dividing the daily amount of pellets loaded by 24 hours is 77 tons or less.

NA = not applicable.



TABLE 1
COMPLIANCE MONITORING PLAN SUMMARY
GREEN CIRCLE BIO ENERGY, INC., COTTONDALE WOOD PELLET PLANT

Emission Unit No.	Emission Unit Name	Permit Condition No.	Permit Condition	CAM Applicable? (Y/N)	Monitored Parameter	Compliance Value	Action Value	Action Response	Comment
001	Wood Fiber Receiving and Storage Area	A.1.	The maximum allowable process rate is 180 incoming trucks per day on a rolling monthly average to be calculated monthly.	NA	Record number of trucks entering the facility.	5,400 trucks per month (180 trucks per day multiplied by 30 days per month) on a daily average basis	5,000 trucks per month recorded at gate.	Front gate notifies the Wood Yard Manager that allowable number of trucks is being approached.	
002	Dryer Line No. 1	B.1.a., B.1.b.	The maximum operation rate for each Dryer Line shall not exceed 80,220 lb/hr of dry wood (9% moisture or less).	NA	Production rate as determined by the RPM of the three infeed screw sets.	Total of 313.4 revolutions per hour total (104.4 revolutions per hour per each of three screw sets) based on a production factor of 256 pounds of wood chips (9% moisture) produced per revolution.	Maximum hourly rate of 300 revolutions per hour.	Operations Manager notified that continued hourly operation at this rate will approach permit limits for production.	An average production factor of 256 pound of wood chips per revolution of each screw set was measured during compliance testing for the infeed screws. Compliance is demonstrated when the result of multiplying the production factor by the total hourly number of revolutions of the three screw sets is 80,220 pounds or less.
		B.2.a., B.2.b.	The maximum operation capacity for each Dryer Line combustor shall not exceed 125 MMBtu/hr heat input averaged over a 24-hour period.	NA	Number of strokes of hydraulic ram feeder to combustor.	51 strokes/hr on a daily average basis.	51 strokes on an hourly basis.	Operations Manager notified that continued operation at or above this rate may exceed allowable heat input limit of 125 MMBtu calculated on a daily average basis.	Based on 4,600 Btu per pound of wood 2.43 MMBtu/stroke as determined during compliance testing. Compliance is demonstrated when the result of dividing the daily number of strokes by 24 hours is less than or equal to 51 strokes.
		B.7.	NO _x emissions in each Dryer Line shall not exceed 122.65 tons per 12-month rolling total.	N	Monthly chip production, hours of the operation of the bypass stacks at full capacity and in idle mode.	12-month rolling total NO _x emission rate of 122.65 TPY or less (see comment).	12-month rolling total NO _x emission rate in excess of 100 TPY (see comment).	Operations Manager notified that 12-month rolling total NO _x emissions are approaching permit limit.	In accordance with Rule 62-210.370, F.A.C., a NO _x emissions factor of 0.331 lb NO _x lb ton of wood chips was developed from stack test results at normal operating mode. For malfunction modes, the emission factors 26.3 lb/hr for the Dryer Bypass Stack Operation, and 0.22 lb/MMBtu furnace bypass stack operation (while operating at either full capacity or in idle mode), as presented in the permit application, will be used. Compliance is demonstrated when annual NO _x emissions on a 12-month rolling total basis from the RTO stack, Dryer Bypass Stack, and the Furnace Bypass Stack, at each operating mode, are 122.65 tons, or less.
		B.8.	PM emissions from each Dryer Line shall not exceed 0.2 lb/MMBtu or 19.9 TPY on a 12-month rolling total calculated monthly.	Y	Stack testing to demonstrate compliance with 0.2 lb/MMBtu limit. WESP Secondary voltage, secondary current, and quench inlet and outlet temperature.	Secondary Voltage: minimum of 30 kV (1-hr avg.) Secondary Current: minimum of 250 mA (1-hr avg.) Quench Inlet Temperature: Maximum of 210°F Quench Outlet Temperature: Maximum of 210°F	Secondary Voltage: minimum of 40 kV (1-hr avg.) Secondary Current: minimum of 325 mA (1-hr avg.) Quench Inlet Temperature: Maximum of 200°F Quench Outlet Temperature: Maximum of 200°F	Operations Manager notified that WESP operating parameters are approaching design limits for proper operation. Should consider increased unit flushing, cleaning, and inspection of the flow line.	Compliance demonstrated when indicated parameters are within the specified ranges.
		B.9.	VOC emissions from each Dryer Line shall not exceed 24.10 TPY per 12-month rolling total.	Y	Temperature of RTO chamber, flow rate through the RTO chamber (fan speed), back pressure, and residence time.	Temperature: Minimum of 1,440°F (when operating); Fan Speed: >99% with corresponding back pressure of less than 10 inches of water (1-hour average).	Temperature: Minimum of 1,475°F (when operating); Fan Speed: >95% with corresponding back pressure of less than 8 inches of water (1-hour average).	Operations Manager notified that RTO operating parameters are approaching design limits for proper operation. Should consider checking the quench water flow, RTO fan speed, propane supply, dryer recirculation rate and the thermocouple used to measure quench water temperature.	The RTO is designed for 1.39 second residence time at 100% fan speed. At stated fan speeds, back pressures in excess of those presented can indicate plugging of RTO chambers and require investigation. Compliance is demonstrated when the temperature of the RTO chamber is greater than 1,440°F, the fan speed and corresponding back pressures are within the specified parameters, which indicate the minimum residence time is met.
		B.14.	Excess emissions resulting from startup, shutdown, or malfunctions, using the Dryer Line and furnace bypass stacks shall be permitted provided that best operational practices to minimize emissions are adhered to and the duration of excess emissions shall be minimized but in no case exceed 2 hours in any 24-hour period, nor exceed 50 hours per 12-month rolling total for each Dryer Line.	N	Number of hours of operation where dryer and furnace bypass stacks are utilized, and for the furnace, whether the bypass stack is being used during malfunction or idle mode operation.	Dryer Bypass Stack: 50 hours Furnace Bypass Stack (malfunction): 50 hours Furnace Bypass Stack (idle mode): 1,500 hours	Dryer Bypass Stack: 12-month rolling total exceeds 40 hours Furnace Bypass Stack (malfunction): 12-month rolling total exceeds 40 hours Furnace Bypass Stack (idle mode): 12-month rolling total exceeds 1,400 hours	Operations Manager notified that permit limits are being approached for operation of the bypass stacks.	Compliance is demonstrated when the dryer bypass stack are used 50 hours or less on a 12-month rolling total basis, and the furnace bypass stack are used no more than 50 hours at full capacity, or no more than 1,500 hours in idle mode.



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Emission Unit No.	Emission Unit Name	Permit Condition No.	Permit Condition	CAM Applicable? (Y/N)	Monitored Parameter	Compliance Value	Action Value	Action Response	Comment
003	Dryer Line No. 2	B.1.a., B.1.b.	The maximum operation rate for each Dryer Line shall not exceed 80,220 lb/hr of dry wood (9% moisture or less).	NA	Production rate as determined by the RPM of the three infeed screw sets.	Total of 313.4 revolutions per hour total (104.4 revolutions per hour per each of three screw sets) based on a production factor of 256 pounds of wood chips (9% moisture) produced per revolution	Maximum hourly rate of 300 revolutions per hour.	Operations Manager notified that continued hourly operation at this rate will approach permit limits for production.	An average production factor of 256 pound of wood chips per revolution of each screw set was measured during compliance testing for the infeed screws. Compliance is demonstrated when the result of multiplying the production factor by the total hourly number of revolutions of the three screw sets is 80,220 pounds or less.
		B.2.a., B.2.b.	The maximum operation capacity for each Dryer Line combustor shall not exceed 125 MMBtu/hr heat input averaged over a 24-hour period.	NA	Number of strokes of hydraulic ram feeder to combustor.	51 strokes/hr on a daily average basis.	51 strokes on an hourly basis.	Operations Manager notified that continued operation at or above this rate may exceed allowable heat input limit of 125 MMBtu calculated on a daily average basis.	Based on 4,600 Btu per pound of wood 2.43 MMBtu/stroke as determined during compliance testing. Compliance is demonstrated when the result of dividing the daily number of strokes by 24 hours is less than or equal to 51 strokes.
		B.7.	NO _x emissions in each Dryer Line shall not exceed 122.65 tons per 12-month rolling total.	N	Monthly chip production, hours of the operation of the bypass stacks at full capacity and in idle mode.	12-month rolling total NO _x emission rate of 122.65 TPY or less (see comment).	12-month rolling total NO _x emission rate in excess of 100 TPY (see comment).	Operations Manager notified that 12-month rolling total NO _x emissions are approaching permit limit.	In accordance with Rule 62-210.370, a NO _x emissions factor of 0.331 lb NO _x lb ton of wood chips was developed from stack test results at normal operating mode. For malfunction modes, the emission factors 26.3 lb/hr for the Dryer Bypass Stack Operation, and 0.22 lb/MMBtu furnace bypass stack operation (while operating at either full capacity or in idle mode), as presented in the permit application, will be used. Compliance is demonstrated when annual NO _x emissions on a 12-month rolling total basis from the RTO stack, Dryer Bypass Stack, and the Furnace Bypass Stack, at each operating mode, are 122.65 tons, or less.
		B.8.	PM emission from each Dryer Line shall not exceed 0.2 lb/MMBtu or 19.9 TPY on a 12-month rolling total calculated monthly.	Y	Stack testing to demonstrate compliance with 0.2 lb/MMBtu limit. WESP Secondary voltage, secondary current, and quench inlet and outlet temperature.	Secondary Voltage: minimum of 30 kV (1-hr avg.) Secondary Current: minimum of 250 mA (1-hr avg.) Quench Inlet Temperature: Maximum of 210°F Quench Outlet Temperature: Maximum of 210°F	Secondary Voltage: minimum of 40 kV (1-hr avg.) Secondary Current: minimum of 325 mA (1-hr avg.) Quench Inlet Temperature: Maximum of 200°F Quench Outlet Temperature: Maximum of 200°F	Operations Manager notified that WESP operating parameters are approaching design limits for proper operation. Should consider increased unit flushing, cleaning, and inspection of the flow line.	Compliance demonstrated when indicated parameters are within the specified ranges.
		B.9.	VOC emissions from each Dryer Line shall not exceed 24.10 TPY per 12-month rolling total.	Y	Temperature of RTO chamber, flow rate through the RTO chamber (fan speed), back pressure, and residence time.	Temperature: Minimum of 1,440°F (when operating); Fan Speed: >99% with corresponding back pressure of less than 10 inches of water (1-hour average).	Temperature: Minimum of 1,475°F (when operating); Fan Speed: >95% with corresponding back pressure of less than 8 inches of water (1-hour average).	Operations Manager notified that RTO operating parameters are approaching design limits for proper operation. Should consider checking the quench water flow, RTO fan speed, propane supply, dryer recirculation rate and the thermocouple used to measure quench water temperature.	The RTO is designed for 1.39 second residence time at 100% fan speed. At stated fan speeds, back pressures in excess of those presented can indicate plugging of RTO chambers and require investigation. Compliance is demonstrated when the temperature of the RTO chamber is greater than 1,440°F, the fan speed and corresponding back pressures are within the specified parameters, which indicate the minimum residence time is met.
		B.14.	Excess emissions resulting from startup, shutdown, or malfunctions, using the Dryer Line and furnace bypass stacks shall be permitted provided that best operational practices to minimize emissions are adhered to and the duration of excess emissions shall be minimized but in no case exceed 2 hours in any 24-hour period, nor exceed 50 hours per 12-month rolling total for each Dryer Line.	N	Number of hours of operation where dryer and furnace bypass stacks are utilized, and for the furnace, whether the bypass stack is being used during malfunction or idle mode operation.	Dryer Bypass Stack: 50 hours Furnace Bypass Stack (malfunction): 50 hours Furnace Bypass Stack (idle mode): 1,500 hours	Dryer Bypass Stack: 12-month rolling total exceeds 40 hours Furnace Bypass Stack (malfunction): 12-month rolling total exceeds 40 hours Furnace Bypass Stack (idle mode): 12-month rolling total exceeds 1,400 hours	Operations Manager notified that daily production limits are being approached.	Compliance is demonstrated when the dryer bypass stack are used 50 hours or less on a 12-month rolling total basis, and the furnace bypass stack are used no more than 50 hours at full capacity, or no more than 1,500 hours in idle mode.



TABLE 1
COMPLIANCE MONITORING PLAN SUMMARY
GREEN CIRCLE BIO ENERGY, INC., COTTONDALE WOOD PELLET PLANT

Emission Unit No.	Emission Unit Name	Permit Condition No.	Permit Condition	CAM Applicable? (Y/N)	Monitored Parameter	Compliance Value	Action Value	Action Response	Comment
004	Pelletizing Line No. 1	C.1.a.	The maximum process rate for Pelletizing Line 3 is 23.7 tons of pellets per hour on a 24-hour average basis calculated daily.	NA	Production rate as determined by the RPM of infeed screws.	88.4 revolutions per hour calculated on a 24-hour average basis based on a production factor of 0.268 tons per revolution.	Maximum hourly rate of 88.4 revolutions per hour.	Operations Manager notified that continued hourly operation at this rate will approach permit limits for production.	An average production factor of 0.268 tons of pellets per revolution was measured during compliance testing for the infeed screws. Compliance is demonstrated when the result of multiplying the production factor by the daily number of revolutions of the screw conveyor divided by 24 hours is 23.7 tons or less.
		C.3.	PM emissions from Pellet Line 1 shall not exceed 58.80 TPY based on a 12-month rolling total.	Y	Monitor pressure differential for the Grinding Infeed Conveyor Aspiration System spot filter (common stack for all three grinding lines), for the Grinding Aspiration System baghouse, for the Pelleting Infeed Conveyor Aspiration System spot filter (common stack for all three pelletizing lines), and for the Pelleting Outfeed Conveyor/Pre Cooler Bucket Elevator Aspiration System baghouse.	Grinding Infeed Conveyor Aspiration System spot filters - 2.0 to 8.0 mb Grinding Aspiration System baghouse - 1.0 to 10.0 mb Pelleting Infeed Conveyor Aspiration System spot filters - 1.0 to 7.0 mb Pelleting Outfeed Conveyor Aspiration System baghouse - 0.5 to 6.0 mb Cyclones - 1.0 to 4.0 inches of water	Grinding Infeed Conveyor Aspiration System spot filters - 3.0 to 7.0 mb Grinding Aspiration System baghouse - 2.0 to 9.0 mb Pelleting Infeed Conveyor Aspiration System spot filters - 2.0 to 6.0 mb Pelleting Outfeed Conveyor Aspiration System baghouse - 1.5 to 5.0 mb Cyclones - 1.5 to 3.5 inches of water	Operations Manager notified that baghouses and/or spot filters are approaching design limits for proper operation.	Compliance values based on vendor design information for proper operation of the control device. Compliance is demonstrated when pressure differentials are measured within the range specified.
		C.5.	VOC emissions from all Pelletizing Lines shall not exceed 177.10 TPY on a 12-month rolling total.	N	Monthly pellet production.	Pellet production of 554,303 TPY (total all three lines) on a 12-month rolling total basis.	Pellet production of 500,000 TPY (total all three lines) on a 12-month rolling total basis.	Operations Manager notified that annual production limits are being approached.	An emission factor of 0.639 pounds of VOCs per ton of pellets produced was determined during stack testing. Compliance will be demonstrated when annual VOC emissions are calculated by multiplying the monthly number of tons of pellets produced by the established emission factor and the result added to the previous total for the previous 12 months and the 12-month rolling total is 177.10 tons or less.
005	Pelletizing Line No. 2	C.1.a.	The maximum process rate for Pelletizing Line 2 is 29.6 tons of pellets per hour on a 24-hour average basis calculated daily.	NA	Production rate as determined by the RPM of infeed screws.	110.4 revolutions per hour calculated on a 24-hour average basis based on a production factor of 0.268 tons per revolution.	Maximum hourly rate of 110.4 revolutions per hour.	Operations Manager notified that continued hourly operation at this rate will approach permit limits for production.	An average production factor of 0.268 tons of pellets per revolution was measured during compliance testing for the infeed screws. Compliance is demonstrated when the result of multiplying the production factor by the daily number of revolutions of the screw conveyor divided by 24 hours is 29.6 tons or less.
		C.3.	PM emissions from Pellet Line 2 shall not exceed 58.80 TPY based on a 12-month rolling total.	Y	Monitor pressure differential for the Grinding Infeed Conveyor Aspiration System spot filter (common stack for all three grinding lines), for the Grinding Aspiration System baghouse, for the Pelleting Infeed Conveyor Aspiration System spot filter (common stack for all three pelletizing lines), and for the Pelleting Outfeed Conveyor/Pre Cooler Bucket Elevator Aspiration System baghouse.	Grinding Infeed Conveyor Aspiration System spot filters - 2.0 to 8.0 mb Grinding Aspiration System baghouse - 1.0 to 10.0 mb Pelleting Infeed Conveyor Aspiration System spot filters - 1.0 to 7.0 mb Pelleting Outfeed Conveyor Aspiration System baghouse - 0.5 to 6.0 mb Cyclones - 1.0 to 4.0 inches of water	Grinding Infeed Conveyor Aspiration System spot filters - 3.0 to 7.0 mb Grinding Aspiration System baghouse - 2.0 to 9.0 mb Pelleting Infeed Conveyor Aspiration System spot filters - 2.0 to 6.0 mb Pelleting Outfeed Conveyor Aspiration System baghouse - 1.5 to 5.0 mb Cyclones - 1.5 to 3.5 inches of water	Operations Manager notified that baghouses and/or spot filters are approaching design limits for proper operation.	Compliance values based on vendor design information for proper operation of the control device. Compliance is demonstrated when pressure differentials are measured within the range specified.
		C.5.	VOC emissions from all Pelletizing Lines shall not exceed 177.10 TPY on a 12-month rolling total.	N	Annual pellet production.	Pellet production of 554,303 TPY (total all three lines) on a 12-month rolling total basis.	Pellet production of 500,000 TPY (total all three lines) on a 12-month rolling total basis.	Operations Manager notified that annual production limits are being approached.	An emission factor of 0.639 pounds of VOCs per ton of pellets produced was determined during stack testing. Compliance will be demonstrated when annual VOC emissions are calculated by multiplying the monthly number of tons of pellets produced by the established emission factor and the result added to the previous total for the previous 12 months and the 12-month rolling total is 177.10 tons or less.



TABLE 1
COMPLIANCE MONITORING PLAN SUMMARY
GREEN CIRCLE BIO ENERGY, INC., COTTONDALE WOOD PELLET PLANT

Emission Unit No.	Emission Unit Name	Permit Condition No.	Permit Condition	CAM Applicable? (Y/N)	Monitored Parameter	Compliance Value	Action Value	Action Response	Comment
006	Pelletizing Line No. 3	C.1.a.	The maximum process rate for Pelletizing Line 3 is 23.7 tons of pellets per hour on a 24-hour average basis calculated daily.	NA	Production rate as determined by the RPM of infeed screws.	88.4 revolutions per hour calculated on a 24-hour average basis based on a production factor of 0.268 tons per revolution.	Maximum hourly rate of 88.4 revolutions per hour.	Operations Manager notified that continued hourly operation at this rate will approach permit limits for production.	An average production factor of 0.268 tons of pellets per revolution was measured during compliance testing for the infeed screws. Compliance is demonstrated when the result of multiplying the production factor by the daily number of revolutions of the screw conveyor divided by 24 hours is 23.7 tons or less.
		C.3.	PM emissions from Pellet Line 3 shall not exceed 58.80 TPY based on a 12-month rolling total.	Y	Monitor pressure differential for the Grinding Infeed Conveyor Aspiration System spot filter (common stack for all three grinding lines), for the Grinding Aspiration System baghouse, for the Pelletizing Infeed Conveyor Aspiration System spot filter (common stack for all three pelletizing lines), and for the Pelletizing Outfeed Conveyor/Pre Cooler Bucket Elevator Aspiration System baghouse.	Grinding Infeed Conveyor Aspiration System spot filters - 2.0 to 8.0 mb Grinding Aspiration System baghouse - 1.0 to 10.0 mb Pelletizing Infeed Conveyor Aspiration System spot filters - 1.0 to 7.0 mb Pelletizing Outfeed Conveyor Aspiration System baghouse - 0.5 to 6.0 mb Cyclones - 1.0 to 4.0 inches of water	Grinding Infeed Conveyor Aspiration System spot filters - 3.0 to 7.0 mb Grinding Aspiration System baghouse - 2.0 to 9.0 mb Pelletizing Infeed Conveyor Aspiration System spot filters - 2.0 to 6.0 mb Pelletizing Outfeed Conveyor Aspiration System baghouse - 1.5 to 5.0 mb Cyclones - 1.5 to 3.5 inches of water	Operations Manager notified that baghouses and/or spot filters are approaching design limits for proper operation.	Compliance values based on vendor design information for proper operation of the control device. Compliance is demonstrated when pressure differentials are measured within the range specified.
		C.5.	VOC emissions from all Pelletizing Lines shall not exceed 177.10 TPY on a 12-month rolling total.	N	Annual pellet production.	Pellet production of 554,303 TPY (total all three lines) on a 12-month rolling total basis.	Pellet production of 500,000 TPY (total all three lines) on a 12-month rolling total basis.	Operations Manager notified that annual production limits are being approached.	An emission factor of 0.639 pounds of VOCs per ton of pellets produced was determined during stack testing. Compliance will be demonstrated when annual VOC emissions are calculated by multiplying the monthly number of tons of pellets produced by the established emission factor and the result added to the previous total for the previous 12 months and the 12-month rolling total is 177.10 tons or less.
007	Bulk Load-Out Area	D.1.	The maximum process rate for bulk load out is 77 tons of pellets per hour on a daily average basis.	N	Weight of each load-out storage bin discharge, and record cumulative amount each day.	77 TPH on a daily average basis calculated daily.	70 TPH on a daily average basis calculated daily.	Operations Manager notified that daily production limits are being approached.	Compliance is demonstrated when the result of dividing the daily amount of pellets loaded by 24 hours is 77 tons or less.

NA = not applicable.



Wet Electrostatic Precipitator				
	Indicator No. 1	Indicator No. 2	Indicator No. 3	Indicator No. 4
Indicator	Secondary Voltage.	Secondary Current.	Quench Water Inlet Temperature.	Quench Water Outlet Temperature.
Measurement Approach	Continuous measurement of secondary voltage.	Continuous measurement of secondary current.	Continuous measurement of the quench water inlet temperature.	Continuous measurement of the quench water outlet temperature.
Indicator Range	An excursion is defined as an average measured secondary voltage for the three chambers of less than 30 kilovolts (1-hr avg.). Excursions trigger an inspection, corrective action, and a reporting requirement.	An excursion is defined as an average measured secondary current of less than 250 milliamps (1-hr avg.). Excursions trigger an inspection, corrective action, and a reporting requirement.	An excursion is defined as a measured water temperature greater than 210 deg. F (1-hr avg.). Excursions trigger an inspection, corrective action, and a reporting requirement.	An excursion is defined as a measured water temperature greater than 210 deg. F (1-hr avg.). Excursions trigger an inspection, corrective action, and a reporting requirement.
Data Representativeness	The secondary voltage is measured using a volt meter.	The secondary current is measured using an amp meter	The inlet quench water temperature is measured with a thermocouple.	The outlet quench water temperature is measured with a thermocouple.
Verification of Operational Status	NA	NA	NA	NA
QA/QC Practices and Criteria	Confirm the volt meter reads zero when the unit is not operating. Calibrate unit annually.	Confirm the amp meter reads zero when the unit is not operating. Calibrate unit annually.	Calibrate the thermocouple unit annually.	Calibrate the thermocouple unit annually.
Monitoring Frequency	The voltage will be measured every 5 seconds.	The current will be measured every 5 seconds.	The temperature will be measured every 5 seconds.	The temperature will be measured every 5 seconds.
Data Collection Procedures	Hourly averages are computed for each chamber from readings every hour and then averaged together.	Hourly averages are computed for each chamber from readings every hour and then averaged together.	Hourly averages are computed from readings every hour.	Hourly averages are computed from readings every hour.
Averaging Period	1-hour block average.	1-hour block average.	1-hour block average.	1-hour block average.

Regenerative Thermal Oxidizer		
	Indicator No. 1	Indicator No. 2
Indicator	Combustion Chamber Temperature.	Fan Speed
Measurement Approach	Continuous measurement of the combustion chamber temperature.	Continuous measurement of fan speed as a percent (1-hr avg.) with a corresponding measurement of back pressure as an indicator that the proper residence time for the RTO of 1.39 seconds is maintained by not exceeding the design air flow.
Indicator Range	An excursion is defined as an average temperature for the four combustion chambers of less than 1,440 deg. F (1-hr avg.). Excursions trigger an inspection, corrective action, and a reporting requirement.	An excursion is defined as a measured fan speed greater than 99% (1-hr avg.) with a corresponding back pressure of less than 10 inches of waters (1-hr avg.). Excursions trigger an inspection, corrective action, and a reporting requirement.
Data Representativeness	The combustion chamber temperature is measured with a thermocouple.	The frequency of the variable frequency drive of the fan is measured, where 60 hertz is equivalent to 100% fan speed. The back pressure the RTO is also simultaneously measured with a pressure transmitter as a back pressure greater than 10 inches of water, could incorrectly indicate that the fan is operating at >99%, but in actuality the fan is unable to overcome the back pressure to pull sufficient air through the RTO to result in a drop in residence time.
Verification of Operational Status	NA	NA
QA/QC Practices and Criteria	Calibrate the thermocouple unit annually.	Calibrate the variable frequency drive and pressure transmitter annually.
Monitoring Frequency	The temperature is measured every 5 seconds.	The fan capacity will be measured every 5 seconds.
Data Collection Procedures	Measure temperature continually recorded hourly.	1-hour averages are computed from readings every hour.
Averaging Period	1-hour block average.	1-hour block average.

Cyclones	
	Indicator No. 1
Indicator	Pressure Differential
Measurement Approach	Once per shift measurement of the cyclone pressure differential.
Indicator Range	An excursion is defined as a measured pressure differential outside the range of 1.0 to 4.0 inches of water. Excursions trigger an inspection, corrective action, and a reporting requirement.
Data Representativeness	The pressure differential is measured by a magnehelic.
Verification of Operational Status	NA
QA/QC Practices and Criteria	Verify magnehelic unit reads zero when not operating and calibrate the magnehelic annually.
Monitoring Frequency	The pressure differential is measured once per shift.
Data Collection Procedures	The pressure differential is recorded once per shift.
Averaging Period	No averaging period.

Grinding Infeed Conveyor Aspiration System Spot Filters	
	Indicator No. 1
Indicator	Pressure Differential
Measurement Approach	Once per shift measurement of the baghouse pressure differential.
Indicator Range	An excursion is defined as a measured pressure differential outside the range of 2.0 to 8.0 millibars. Excursions trigger an inspection, corrective action, and a reporting requirement.
Data Representativeness	The pressure differential is measured by a magnehelic.
Verification of Operational Status	NA
QA/QC Practices and Criteria	Verify magnehelic unit reads zero when not operating and calibrate the magnehelic annually.
Monitoring Frequency	The pressure differential is measured once per shift.
Data Collection Procedures	The pressure differential is recorded once per shift.
Averaging Period	No averaging period.

Grinding Aspiration System Baghouses	
	Indicator No. 1
Indicator	Pressure Differential
Measurement Approach	Once per shift measurement of the baghouse pressure differential.
Indicator Range	An excursion is defined as a measured pressure differential outside the range of 1.0 to 10.0 millibars. Excursions trigger an inspection, corrective action, and a reporting requirement.
Data Representativeness	The pressure differential is measured by a magnehelic.
Verification of Operational Status	NA
QA/QC Practices and Criteria	Verify magnehelic unit reads zero when not operating and calibrate the magnehelic annually.
Monitoring Frequency	The pressure differential is measured once per shift.
Data Collection Procedures	The pressure differential is recorded once per shift.
Averaging Period	No averaging period.

Pelleting Infeed Conveyor Aspiration System Spot Filters	
	Indicator No. 1
Indicator	Pressure Differential
Measurement Approach	Once per shift measurement of the baghouse pressure differential.
Indicator Range	An excursion is defined as a measured pressure differential outside the range of 1.0 to 7.0 millibars. Excursions trigger an inspection, corrective action, and a reporting requirement.
Data Representativeness	The pressure differential is measured by a magnehelic.
Verification of Operational Status	NA
QA/QC Practices and Criteria	Verify magnehelic unit reads zero when not operating and calibrate the magnehelic annually.
Monitoring Frequency	The pressure differential is measured once per shift.
Data Collection Procedures	The pressure differential is recorded once per shift.
Averaging Period	No averaging period.

Pelleting Outfeed Conveyor/Pre Cooler Bucket Elevator Aspiration System Baghouses	
	Indicator No. 1
Indicator	Pressure Differential
Measurement Approach	Once per shift measurement of the baghouse pressure differential.
Indicator Range	An excursion is defined as a measured pressure differential outside the range of 0.5 to 6.0 millibars. Excursions trigger an inspection, corrective action, and a reporting requirement.
Data Representativeness	The pressure differential is measured by a magnehelic.
Verification of Operational Status	NA
QA/QC Practices and Criteria	Verify magnehelic unit reads zero when not operating and calibrate the magnehelic annually.
Monitoring Frequency	The pressure differential is measured once per shift.
Data Collection Procedures	The pressure differential is recorded once per shift.
Averaging Period	No averaging period.