TECHNICAL EVALUATION
&
PRELIMINARY DETERMINATION

APPLICANT

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

Cottondale Wood Pellet Plant
Facility ID No. 0630058

PROJECT

Project No.0630058-011-AC
Application for Title V Source Air Construction Permit
Pellet Plant Expansion

COUNTY

Jackson, Florida

PERMITTING AUTHORITY

Florida Department of Environmental Protection
Air Resource Section
Northwest District Office
160 W. Government Street, Suite 308
Pensacola, Florida 32502-5740

July 17, 2012

1. GENERAL PROJECT INFORMATION

Air Pollution Regulations

Projects at stationary sources with the potential to emit air pollution are subject to the applicable environmental laws specified in Section 403 of the Florida Statutes (F.S.). The statutes authorize the Department of Environmental Protection (Department) to establish regulations regarding air quality as part of the Florida Administrative Code (F.A.C.), which includes the following applicable chapters: 62-4 (Permits); 62-204 (Air Pollution Control - General Provisions); 62-210 (Stationary Sources - General Requirements); 62-212 (Stationary Sources - Preconstruction Review); 62-213 (Operation Permits for Major Sources of Air Pollution); 62-296 (Stationary Sources - Emission Standards); and 62-297 (Stationary Sources - Emissions Monitoring). Specifically, air construction permits are required pursuant to Rules 62-4, 62-210 and 62-212, F.A.C.

In addition, the U. S. Environmental Protection Agency (EPA) establishes air quality regulations in Title 40 of the Code of Federal Regulations (CFR). Part 60 specifies New Source Performance Standards (NSPS) for numerous industrial categories. Part 61 specifies National Emission Standards for Hazardous Air Pollutants (NESHAP) based on specific pollutants. Part 63 specifies NESHAP based on the Maximum Achievable Control Technology (MACT) for numerous industrial categories. The Department adopts these federal regulations on a quarterly basis in Rule 62-204.800, F.A.C.

Glossary of Common Terms

Because of the technical nature of the project, the permit contains numerous acronyms and abbreviations, which are defined in Appendix A of this permit.

Facility Description and Location

Green Circle Bio Energy Inc. is an existing facility which processes wood chips into wood fuel pellets. It is categorized under Standard Industrial Classification Code No. 2499, Wood Products, Not Elsewhere Classified. The Cottondale Wood Pellet Facility is located in Jackson County at 2500 Green Circle Parkway in Cottondale, Florida. The UTM coordinates of the existing facility are Zone 16, 653.89 km East, and 3401.68 km North. This site is in an area that is in attainment (or designated as unclassifiable) for all air pollutants subject to state and federal Ambient Air Quality Standards (AAQS).

Facility Regulatory Categories

- The facility is not a major source of hazardous air pollutants (HAP
- The facility has no units subject to the acid rain provisions of the Clean Air Act.
- The facility is a Title V major source of air pollution in accordance with Chapter 213, F.A.C.
- The facility is not a major stationary source in accordance with Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality.

Project Description

Green Circle proposes to increase hourly and annual wood pellet production from 88 tons per hour and 610,000 tons per year to 121 tons per hour and 827,000 tons per year. To accomplish this, woodyard truck traffic will increase from 180 trucks per day on a rolling monthly average to 305 trucks per day on rolling monthly average, and a green Chip Screening and Sizing Operation, a new dryer line, a dry chip silo, up to ten new horizontal hammermills, three new pellet mills and new pneumatic transfer systems will be constructed. This construction permit includes NSPS 40 CFR 60 Subpart Db requirements for the dryer lines' steam generators.

Processing Schedule

April 18, 2012	Received the application for a minor source air pollution construction permit.
May 7, 2012	Requested additional information.

May 14, 2012 Received additional information; application complete.

2. PSD APPLICABILITY

General PSD Applicability

For areas currently in attainment with the state and federal AAQS or areas otherwise designated as unclassifiable, the Department regulates major stationary sources of air pollution in accordance with Florida's PSD preconstruction review program as defined in Rule 62-212.400, F.A.C. Under preconstruction review, the Department first must determine if a project is subject to the PSD requirements ("PSD applicability review") and, if so, must conduct a PSD preconstruction review. A PSD applicability review is required for projects at new and existing major stationary sources. In addition, proposed projects at existing minor sources are subject to a PSD applicability review to determine whether potential emissions *from the proposed project itself* will exceed the PSD major stationary source thresholds. A facility is considered a major stationary source with respect to PSD if it emits or has the potential to emit:

- 250 tons per year or more of any regulated air pollutant; or
- 100 tons per year or more of any regulated air pollutant and the facility belongs to one of the following 28 PSD-major facility categories: fossil fuel-fired steam electric plants of more than 250 million British thermal units per hour heat input, coal cleaning plants (with thermal dryers), Kraft pulp mills, portland cement plants, primary zinc smelters, iron and steel mill plants, primary aluminum ore reduction plants, primary copper smelters, municipal incinerators capable of charging more than 250 tons of refuse per day, hydrofluoric, sulfuric, and nitric acid plants, petroleum refineries, lime plants, phosphate rock processing plants, coke oven batteries, sulfur recovery plants, carbon black plants (furnace process), primary lead smelters, fuel conversion plants, sintering plants, secondary metal production plants, chemical process plants, fossil fuel boilers (or combinations thereof) totaling more than 250 million British thermal units per hour heat input, petroleum storage and transfer units with a total storage capacity exceeding 300,000 barrels, taconite ore processing plants, glass fiber processing plants and charcoal production plants.

Once it is determined that a project is subject to PSD preconstruction review, the project emissions are compared to the "significant emission rates" defined in Rule 62-210.200, F.A.C. for the following pollutants: carbon monoxide (CO); nitrogen oxides (NO_X); sulfur dioxide (SO_2); particulate matter (PM); particulate matter with a mean particle diameter of 10 microns or less (PM_{10}); volatile organic compounds (VOC); lead (Pb); fluorides (Fl); sulfuric acid mist (SAM); hydrogen sulfide (H_2S); total reduced sulfur (TRS), including H_2S; reduced sulfur compounds, including H_2S; municipal waste combustor organics measured as total tetra- through octa-chlorinated dibenzo-p-dioxins and dibenzofurans; municipal waste combustor metals measured as particulate matter; municipal waste combustor acid gases measured as SO_2 and hydrogen chloride (HCl); municipal solid waste landfills emissions measured as non-methane organic compounds (NMOC); and mercury (Hg). In addition, significant emissions rate also means any emissions rate or any net emissions increase associated with a major stationary source or major modification which would construct within 10 kilometers of a Class I area and have an impact on such area equal to or greater than 1 $\mu g/m^3$, 24-hour average.

If the potential emission exceeds the defined significant emissions rate of a PSD pollutant, the project is considered "significant" for the pollutant and the applicant must employ the Best Available Control Technology (BACT) to minimize the emissions and evaluate the air quality impacts. Although a facility or project may be *major* with respect to PSD for only one regulated pollutant, it may be required to install BACT controls for several "significant" regulated pollutants.

<u>PSD Applicability for Project</u>

As provided in the application, the following table summarizes potential emissions and PSD applicability for the project.

Table A. Potential Emissions (Tons/Year) and PSD Applicability

Pollutant (TPY)	Pre-Project Potential Emissions	Contempo-raneous Emissions	Post Project Potential Emissions	Total Emissions Change	Significant Emissions Rate	Subject to PSD
CO	22.20	N.A.	33.30	11.10	100	N.A.
NO_X	245.30	N.A.	367.95	122.65	40	N.A.
PM/PM_{10}	216.91	N.A.	358.10	141.19	25/15	N.A.
SO_2	0.34	N.A.	0.51	0.17	40	N.A.
VOC	243.20	N.A.	336.50	93.30	40	N.A.

This facility is currently not considered a major stationary source with respect to PSD, because existing potential emissions do not exceed the 250 tons per year threshold for this type of facility. The facility is not a listed major stationary source in the "List of 28" so the 100 tons per year threshold does not apply.

The facility applied for the initial construction permit on March 29, 2007 and started up on May 1, 2008. There have been ten additional construction permits submitted since that time, including the most recent permit 0630058-011-AC, received on April 18, 2012, with emissions greater then 330 TPY for PM, NO_X and VOC.

Permit ID#	Key Date	Emissions (TPY)				
		PM/PM_{10}	NO_X	CO	VOC*	SO_2
0630058-001-AC	Effective July 13, 2007	220.78	247.96	25.61	226.20	0.32
0630058-011-AC	Received April 18, 2012	358.10	367.95	33.30	336.50	0.51
Emissions Increases		137.32	119.99	7.69	110.30	0.19

* permit 0630058-001-AC emissions corrected to the number provided with permit 0630058-003-AC

There could be a perception of "project splitting" if one were to look only at the times from the original permit application, 0630058-001-AC, March 29, 2007, the original permit effective date of July 13, 2007, the original permit startup date of May 1, 2008, and the receipt of the permit application 0630058-011-AC on April 18, 2012, with emissions increases over 330 TPY each, for PM, NO_X, and VOC within a five-year period. However, the facility project history does not seem to indicate phased construction or project splitting. The original vertical hammer mills could not deal with southern pine as easily as with Scandinavian spruce and the facility was unable to reach permitted production rates. Projects following the original AC permit experimented by adding more hammer mills and a horizontal hammer mill. The facility now proposes a drastic makeover by installing a new grinding building with horizontal hammer mills and retiring the vertical hammer mills in the original grinding building.

Source Obligation Rule, 62-212.400(12)(b), FAC, is not deemed applicable in this case because, although a number of emissions units' emissions and operational limits are being increased, the resulting emissions increases can also be ascribed to increasing the facility annual production rate and not solely by relaxing any emissions and operational limits.

The emissions increases from this project do not trigger a PSD preconstruction review because the potential emissions increases from the proposed project alone are less than the PSD major stationary source threshold for this type of facility. After this project is completed, Green Circle will be categorized as a major stationary source with respect to PSD and new source review. Background information supporting this discussion is given below.

Permit and Emissions History:

Permit ID#	Key Date	Emissions (TPY)				
		PM/PM_{10}	NO_X	CO	VOC*	SO_2
0630058-001-AC	Effective 7/13/2007	220.78	247.96	25.61	49.06	0.32
0630058-002-AC	Effective 9/29/2008	220.78	247.96	25.61	49.06	0.32
0630058-003-AC	Effective 7/13/2009	220.30	245.30	22.30	226.20	0.34
0630058-004-AC	Effective 6/14/2010	229.45	245.30	22.30	226.20	0.34
0630058-005-AV	Effective 3/16/2011	-	-	-	-	-
0630058-006-AC	Effective 1/4/2011	229.45	245.30	22.30	177.10	0.34
0630058-007-AC	Withdrawn	-	-	-	-	-
0630058-008-AC	Effective 4/12/2011	226.54	245.20	22.20	225.30	0.34
0630058-009-AC	Effective 7/14/2011	230.14	245.20	22.20	225.30	0.34
0630058-010-AC	Effective 3/23/2012	228.71	245.20	22.20	243.10	0.34
0630058-011-AC	Received 4/18/2012	358.10	367.95	33.30	336.50	0.51
0630058-012-AV	Received 5/16/2012	-	-	-	-	-

* permit 0630058-001-AC VOC emissions corrected with permit 0630058-003-AC

Permit and Projects History:

Permit ID#	Comments
0630058-001-AC	Initial AC permit.
0630058-002-AC	Could not achieve production rate. Southern pine much harder to process than Scandinavian spruce. Construction permit application requested adding seven vertical hammer mills.
0630058-003-AC	Construction permit application requested several process changes. Facility tested VOC emissions from pelletizing lines and found estimates for VOC emissions in permit application 0630058-001-AC were incorrect. Corrected VOC emissions and included additional emissions due to changes in this modification.
0630058-004-AC	Construction permit application requested a horizontal hammer mill trial.
0630058-005-AV	Initial TV permit.
0630058-006-AC	Construction permit application requested limiting wood pellet production to 554,304 TPY to remain in compliance with pelletizer VOC emissions limit of 177.1 TPY (from testing for permit 0630058-003-AC). Facility-wide potential emissions of CO, NO_X, PM/PM_{10}, SO_2 and VOC do not change.
0630058-007-AC	Construction permit application requested permission to change RTO heat-exchange media. Construction permit not required. Application withdrawn.
0630058-008-AC	Construction permit application requesting several process changes including adding two additional pellet mills and removal of horizontal hammer mill operating hours restriction.
0630058-009-AC	Construction permit application to increase the maximum railcar loading rate for the Bulk Loadout to match previously increased production rate.
0630058-010-AC	Construction permit application to increase wood pellet production from 554,304 TPY to 610,000 TPY and several process changes.

0630058-011-AC	Construction permit application requesting an increase in hourly and annual wood pellet production from 88 TPH and 610,000 TPY to 121 TPH and 827,000 TPY, and adding a new green chip screening and sizing system, a new dryer line, a new dry chip silo, up to ten new horizontal hammer mills, three new pellet mills and new pneumatic transfer systems.
0630058-012-AC	Title V permit revision application (revision to permit 0630058-005-AV) to incorporate permits 0630058-008-AC, 0630058-009-AC and 0630058-010-AC.

3. APPLICATION REVIEW

Application Fee

Title V Facility - no application fee.

Discussion of Emissions

The post project emissions by process areas are as follows:

	ESTIMATED POLLUTANTS (TPY)				
PROCESS AREA	**PM/PM_{10}**	**NO_X**	**CO**	**VOC**	**SO_2**
Wood Fiber Receiving & Storage Area[2]	256.8/50.1	NA	NA	NA	NA
Dryer Line 1[4, 1]	19.90	122.65	11.10	24.10	0.17
Dryer Line 2[4, 1]	19.90	122.65	11.10	24.10	0.17
Dryer Line 3[4, 1]	19.90	122.65	11.10	24.10	0.17
Pelletizing Line 1	99.23	NA	NA	88.1	NA
Pelletizing Line 2	99.23	NA	NA	88.1	NA
Pelletizing Line 3	99.23	NA	NA	88.1	NA
Bulk Load-out Area[3]	0.71	NA	NA	NA	NA
TOTAL (w/o fugitives from Wood Fiber)	358.1	367.95	33.3	336.5	0.51

[1] SO_2 potential emission estimates are based on wood firing.
[2] Wood Fiber Receiving & Storage Area PM/PM_{10} estimated emissions are fugitive emissions.
[3] PM estimated emissions from Bulk Load-out do not increase based on manufacturers guarantee dated April 16, 2012.
[4] Dryer Line VOC estimated emissions include 0.46 TPY uncontrolled from allowed bypass stack use.

Previous permits have not addressed HAPs known to be present in the uncontrolled VOC exuded when grinding and pressing the pellets. Green wood is estimated to contain approximately 0.0214 tons formaldehyde per ton VOC and 0.0327 tons methanol per ton VOC. With the proposed uncontrolled VOC emissions rate of 264.2 tons per year for Pelletizing Line 1, 2, and 3, the uncontrolled HAP emissions could be as high as 6 tons per year of formaldehyde and 8.6 tons per year of methanol. With a facility-wide VOC emissions rate of 336 tons per year, the HAP emissions rates could reach 7 tons per year of formaldehyde and 11 tons per year of methanol. Because the facility is undergoing such a major change in some of its process configurations, testing for VOC will be required at the grinding, pelletizing and cooler emissions points.

State Requirements

Rules 62-4.070(3), 62-210.200(PTE) and 62-297.310(2), F.A.C.

Federal NSPS Provisions

It was determined that 40 CFR 60 Subpart Db is applicable to each of the Dryer Lines (EU 002, EU 003 and the new dryer line) because a portion (11 MMBTUH of the heat generated in each dryer line's bark furnace (maximum 125 MMBTUH) is routed to the line's steam generator. EPA has determined that the definition of a "steam generating unit" does not require the bark burners to be used "primarily" to heat a "heat transfer medium." This places a PM limit for wood firing of 0.030 pounds per million Btu, except during periods of startup, shutdown and malfunction. Visible emissions shall not exceed 20 percent opacity (6-minute average), except for one 6-minute period per hour of not more than 27 percent opacity.

Federal NESHAP Provisions

The Department has determined that with this expansion and increase in production Green Circle will become a major stationary source for HAP based on widely-accepted, conservative emissions factors for HAP and facility-specific VOC emissions factors based on previous testing. Furthermore, the Department has determined that 40 CFR 63 DDDDD or JJJJJJ do not apply based on the following.

The Green Circle dryer/steam generator system is typical to wood fuel pellet manufacturing and similar to veneer dryers. The bark combustors' hot gases are split, with a portion going into a steam generator. The commonality with veneer dryers is that the portion of combustion gases used to dry the wood, chips or veneer, is blended with air recirculated from the dryer and steam generator for tempering and is then passed over the wood chips or veneer before eventually venting to control devices. Because the blended combustion gases have direct contact with the wood chips or veneer in the drying process, the exhaust air contains much more than just "boiler" emissions. Comments and EPA responses (Plum Creek Timber Company's veneer dryer, Vol. 1 p. 1265 of 1797) on the revised Boiler MACT (NESHAP 40 CFR 63 Subpart DDDDD) rule issued on March 21, 2011, identify that these types of heat energy systems at wood product facilities were not included in the emissions performance data utilized to establish MACT emission limits for the revised Boiler MACT. The response from EPA regarding these comments was that data from this type of burner system was not used in establishing the MACT floor, which is calculated from the top 12 percent ranking sources. Since the EPA did not include systems such as Plum Creek Timber Company's veneer dryer burner system in developing 40 CFR 63 Subpart DDDDD, and the steam generating/drying process at Green Circle is similar to the heat energy systems at the Plum Creek Timber Company, the Department believes that 40 CFR 63 Subpart DDDDD and similarly 40 CFR 63 Subpart JJJJJJ (Boiler GACT) were not intended to regulate, and are not applicable to, the dryer/steam generator systems at Green Circle.

Other Draft Permit Requirements

The facility is to undergo substantial changes in equipment configuration as well as an increase in production. Testing for PM, NOx and VOC is being required for the dryers for reasonable assurance that emissions estimates are correct and that the project's emissions increases do not exceed the 250 TPY PSD threshold for this type of facility. VOC testing will be required for the grinding, pelletizing and coolers emissions points. Emissions limits from previous permits to keep the facility from being classified as a major stationary source for PSD have been removed as the facility will be a major stationary source after construction is complete.

4. PRELIMINARY DETERMINATION

The Department makes a preliminary determination that the proposed project will comply with all applicable state and federal air pollution regulations as conditioned by the draft permit. This determination is based on a technical review of the complete application, reasonable assurances provided by the applicant, and the conditions specified in the draft permit. Rick Prusa is the project engineer responsible for reviewing the application and drafting the permit. Additional details of this analysis may be obtained by contacting the project engineer at 850/595-0634 or rick.prusa@dep.state.fl.us.