ORIGINAL

Florida Crushed Stone Company Brooksville South Cement Plant's

Steam Electric Generating Plant (PA82-17)

Air Construction Permit

Facility ID No. 0530021

Submitted by:
CEMEX Construction Materials Florida LLC
and
Florida Power Development, LLC

September 2011

Golder Associates

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DIVISION OF AIR RESOURCE MANAGEMENT

September 23, 2011

11389534

Jeff Koerner, Program Administrator
Division of Air Resource Management
Office of Permitting and Compliance
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

RE: APPLICATION FOR A MINOR SOURCE AIR CONSTRUCTION PERMIT FLORIDA CRUSHED STONE COMPANY BROOKSVILLE SOUTH CEMENT PLANT'S STEAM ELECTRIC GENERATING PLANT (FACILITY ID NO. 053-0021/PA82-17)

Dear Mr. Koerner: Project NO: 0530021-036-AC

On behalf of Florida Power Development LLC and CEMEX Construction Materials Florida LLC, we are pleased to submit to the Florida Department of Environmental Protection (FDEP) an application for a minor source air construction permit for the Florida Crushed Stone Company Brooksville South Cement Plant's Steam Electric Generating Plant, pursuant to section 403.516, Florida Statutes and Rule 62-17.211, Florida Administrative Code.

A coal-fired electrical power plant (which is currently owned and operated by Central Power & Lime, Inc [dba Florida Power Development LLC]) which is located within a portion of the Brooksville South Facility (currently owned by CEMEX Construction Materials Florida LLC) has been in operation at this site since 1984. The Brooksville South Facility also contains other facilities owned by CEMEX including the Gregg Plant limestone processing facility, the Chemical Lime Hydrating Plant, a waste tire processing facility, and a Cement Plant, all of which are not affected by this application.

Florida Power Development LLC submits this application to allow for the existing 125-megawatt coal-fired electrical generating unit to be converted to a 70 to 80 megawatt biomass-fired electrical generating unit (Proposed Project). In an associated action, a Petition will also be filed with the Siting Office seeking to Transfer the Site Certification for the electrical power plant to Florida Power Development LLC as a co-licensee. CEMEX Construction Materials Florida LLC will continue to operate other facilities that it owns and operates within the certified site. This attached air application will also be included in that filing as Appendix 10.2.1.

On behalf of Florida Power Development LLC, thank you in advance for your consideration and timely processing of the attached application package. Please don't hesitate to contact me at (813) 287-1717 if you should have any questions or comments.

GOLDER ASSOCIATES INC.

Scott Osbourn, P.E.
Associate and Tampa Operations Manager

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SO/KJK

AIR CONSTRUCTION PERMIT APPLICATION

Florida Crushed Stone Company Brooksville South Cement Plant's Steam Electric Generating Plant, Hernando County

Submitted To: Florida Department of Environmental Protection
2600 Blair Stone Rd.
Tallahassee, FL 32399-2400

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SEP 26 2011
DIVISION OF AIR RESOURCE MANAGEMENT

On Behalf Of: Florida Power Development, LLC
10311 Cement Plant Road
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Submitted By: Golder Associates Inc.
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Distribution: 4 Copies — Florida Department of Environmental Protection
1 Copy — Florida Power Development, LLC
1 Copy — Golder Associates Inc.

September 2011

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1.0 INTRODUCTION

To improve domestic energy sources and to address global climate change issues, the State of Florida is encouraging the expanded use of biomass-based energy, both for transportation needs and electrical generation. Biomass (which is a broad term covering various types of non-fossil organic material, such as agricultural crops and byproducts, landscape and yard trimmings, logging and lumber mill residues, untreated wood materials, etc.) is relatively abundant in Florida as well as the southeastern U.S., and is a proven, reliable source of renewable energy which can be considered carbon-neutral.

Florida Power Development, LLC (FPD), is proposing to convert the fuel supply for the Florida Crushed Stone Company Brooksville South Cement Plant's Steam Electric Generating Plant (existing power plant) located in unincorporated Hernando County from coal to biomass (the Project). As modified, the proposed biomass-fueled electrical generating unit will have a capacity of 70-80 megawatts gross (MWg). The Project will also include new fuel storage and handling system and the construction of new and independent emissions control equipment, including an electrostatic precipitator (ESP) and multi-pollutant control system with a new and independent exhaust stack.

The existing power plant was constructed in accordance with the conditions of certification by Florida Crushed Stone in 1984 and consists of a pulverized coal/fluidized bed combustion boiler that produces electrical power (125-MWg), and is integrated with a separately-permitted cement plant. The interrelated activities combined the electrical power generation and manufacturing processes to conserve natural raw material resources and energy, and produces aggregate and cement. In the future, the operating components at the facility will continue to share limited administrative infrastructure, common water treatment facilities, sanitary treatment, recirculating cooling ponds, transmission system, and access roads. FPD will operate the electric generating unit independently from the CEMEX.

The existing power plant is located in unincorporated Hernando County, Florida. The city of Brooksville is located approximately 2.5 miles southeast of the existing power plant. The existing power plant is situated on approximately 125 acres under an easement in perpetuity between CEMEX and FPD and is located at 10311 Cement Plant Road, Brooksville, Florida.

By converting the existing electrical generating unit fuel supply from coal to biomass, FPD will eliminate its need for coal, which will reduce fuel costs, allow for continued commercial operation of the power plant, and reduce overall emissions of regulated air pollutants by several thousand tons per year, and offer the opportunity to supply renewable power to Florida utilities. The Project will also assist in improving the use of renewable domestic energy sources and result in a carbon-neutral project.

Florida Crushed Stone Company obtained authorization under the Public Utility Regulatory Policy Act, from the Florida Department of Environmental Regulation, for the construction and operation of the steam

electric power plant on March 12, 1984. The power plant has operated in accordance with the Siting Board's Certification Order and the conditions of certification (PA82-17).

This application contains the information required by Florida Department of Environmental Protection (FDEP) Form No. 62-210.900(1), Effective: 03/11/2011, Application for Air Permit — Long Form. This air application report is divided into the following major sections:

- Section 1.0 provides the Project introduction;
- Section 2.0 presents a description of the Project;
- Section 3.0 provides a description of individual emission units and controls;
- Section 4.0 provides a review of the air requirements applicable to the Project;
- Section 5.0 provides the results of the Project's air quality impact analysis; and
- FDEP Form No. 62-210.900(1), Application for Air Permit — Long Form.

2.0 PROJECT DESCRIPTION

FPD is proposing to convert the fuel supply of the existing power plant from coal to biomass. The existing electrical generating unit boiler and associated steam turbine generator have a nominal generating capacity of 125 MWg of electric power. The boiler will be modified to fire biomass, resulting in a boiler design capable of approximately 70 to 80 MWg of electrical power generation. The project design incorporates the existing steam turbine generator.

The existing project site also contains a Portland cement manufacturing plant, a mill, a coal yard, and support and ancillary facilities. The cement kiln(s), mill, and clinker cooler currently share a common baghouse fabric filter system and stack with the electrical generating unit. Dry limestone injection is used to control sulfur dioxide (SO_2) emissions from the electrical generating unit boiler. Coal is delivered to the project site by the existing rail spur, stored in the coal yard and transported to the electric generating unit by an elevated conveyor system. Coal is also transported for use in the cement kilns by the conveyor system. Coal ash from the electric generating unit is used by the cement plant as a raw material.

The existing 500-kilowatt (kW) emergency generator and the existing 250-kW emergency ditch pump engine will continue to provide emergency operations to the power plant. No changes to this equipment are proposed as part of the Project. These units will be fueled exclusively with ultra low sulfur distillate (ULSD) fuel oil, and are estimated to operate for less than 500 and 250 hours per year (hr/yr), respectively. Diesel fuel for the emergency generator and the emergency ditch pump engine will be delivered to the site by truck on an as-needed basis, and stored in the mobile equipment storage tank with secondary containment located onsite.

The Project will require internal structural modifications to the existing boiler and the electrical generating unit building. The Project will include new fuel storage and handling system and the construction of new and independent emissions control systems, including an ESP, a multi-pollutant control system (MPCS) and a new and independent exhaust stack. The existing stack will continue to be used by the cement plant.

2.1 Description of Emission Units

The following sections provide a more detailed discussion of the processes and emission units associated with the Project. The Project location and site layout is provided in Figures 1, 2A and 2B, respectively. A process schematic of the modified generating unit is provided in Figure 3. Figures 4 and 5 provide more in-depth diagrams of the material handling operations.

2.1.1 Material Handling System Description

The biomass fuel (i.e., feedstock) will be locally sourced and will be delivered by truck to the project site generally on a 5-7-day-per-week, 12-hour-per-day schedule. At the project site, the fuel will be unloaded

by trucks with a self-unloading, walking floor design, to three receiving hoppers, each with a capacity rate of 150 tons per hour (TPH). Fuel trucks will have an average net load of 25 tons of biomass. The fuel will then be conveyed, via an enclosed conveying system, to the fuel storage pile. The fuel storage pile will be designed to accommodate about 40,000 tons of storage. The fuel pile will be managed with the use of mobile equipment, such as frontend loaders. From the fuel storage pile, the fuel will be unloaded by two reclaim hoppers, and conveyed to a magnetic separator, sizing screen, and mill, for reduction of oversize biomass. The fuel will then be transferred, via enclosed conveyors, to the day-bins within the boiler structure. The primary fuel used by the boiler will be clean processed biomass fuel. Either ULSD fuel oil or natural gas will be used as a start-up fuel. The biomass fuel would typically originate from:

- Trunks, needles, leaves, stalks, and other woody parts that are grown in forests; urban and suburban environments; utility rights-of-way (ROWs); woodlands; rangeland environment; or tree or agricultural crop farms;
- Sawdust, as a by-product of forest and forest product operations;
- Hogged fuel, which comprises land clearing debris that has either been pre-processed, run through a tub grinder, or a horizontal mill at a specific forest clearing site;
- Butt cuts, which are untreated round residues that are either oversized or undersized non-process materials from post or pole manufacturers; or
- Fuel crop, which consist of vegetative product specifically grown for energy use or a waste product of agricultural operations (e.g., corn stover, peanut hulls).

The biomass fuel would also be non-treated, non-painted, clean vegetative matter that is considered clean biomass that may be collected and processed through state registered yard waste facilities and is processed prior to delivery as biomass fuel. This processed biomass will only consist of these sources:

- Lumber (e.g., untreated, leftovers);
- Tree and shrub parts, including branches, brush, limbs, trunks, and stumps;
- Vegetative matter;
- Land clearing debris;
- Utility line clearance vegetation;
- Utility ROW maintenance vegetation;
- Non-putrescible organic matter;
- Vegetative matter from urban and suburban environments—specifically including grass, clippings, palm fronds, trees, leaves, and pine needles; or
- Untreated pallets, wooden crates, wooden cribbing, sawdust, slab wood, and wood truss parts.

The biomass fuel will be chipped to size and screened at a remote location. The offsite fuel preparation process will be owned and operated by others. There will also be onsite sizing equipment in the event that any oversize biomass is delivered to the project site. Typical properties of the biomass fuel are

provided in Appendix A. The heating value is estimated at 5,352 British thermal units per pound (Btu/lb) on an as-received basis, estimated to be an average of approximately 35 percent moisture content.

If the coal receiving and storage area is no longer required, based on operation practices of CEMEX, then FPD reserves the option to relocate the proposed biomass handling and storage area to the existing coal receiving and storage area.

2.1.1.1 Biomass Stackout

The feedstock material handling process associated with fuel stack-out is depicted in Figure 4.

The clean woody biomass will be collected by the Project's contract fuel processors at off-site locations, where the fuel will be air-dried, then chipped to approximately minus 4 inches before being trucked to the project site.

Incoming fuel trucks will enter the truck scale station with a secure facility identification card, and then proceed to the self-unloading area. Fuel trucks will have an average net load of 25 tons of wood chips. The trucks are of a self-unloading, walking floor-type design. They will unload onto three receiving hoppers, each with a capacity rate of 150 TPH and then the feedstock will be transferred to a collecting conveyor, which will unload the fuel onto the storage pile. The fuel storage pile will be managed with the use of mobile equipment such as frontend loaders. The fuel storage pile provides conveyance of about 40,000 tons of storage. The average height of the fuel pile will be approximately 40 feet (ft).

2.1.1.2 Biomass Reclaim System

The feedstock material handling process associated with fuel reclaim is depicted in Figure 5.

From the storage pile, fuel will be loaded by frontend loaders into two reclaim hoppers, each with a capacity rate of 100 TPH, and conveyed to a magnetic separator, sizing screen, and hog mill for reduction of oversized biomass. These components are mounted in a tower, which is equipped with dust collection hoods at transfer points. Separated ferrous metal will be discharged by chute to a collection bin at grade for recycling. The combined streams from the sizing screen and the hog mill will then be sent by covered conveyors to the boiler fuel metering bins.

Additionally, an enclosed bypass chute between the screening tower and the reclaim conveyor enables the fuel sizing equipment to undergo routine maintenance without shutting down the boiler. The transfer points to and from this conveyor are covered by the same hoods and extraction systems that control dust from the screening tower. All conveyors will be enclosed to reduce fugitive emissions.

2.1.1.3 Best Management Practices (BMP) Plan for Fuel Pile

The wood-handling industry is well aware of the tendency of an unmanaged pile of wood waste to overheat and result in spontaneous combustion. Accordingly, a best management practices (BMP) plan will be established to manage the fuel pile and will have as its goals:

- Avoidance of conditions giving rise to spontaneous combustion, supported by the fire control systems to be provided after approval by state and insurance entities, which specifically will provide fuel pile fire control.
- Minimization of fugitive dust emissions, also using fuel pile fire protection facilities for dust suppression as required.
- Blending of the various fuels received to ensure reasonably consistent fuel properties as delivered to the boiler.

The following preliminary BMP for fuel-handling dust control is subject to the provision of further detail and adjustment during the Project's detailed design phase to reflect final equipment selection:

Measures to Minimize Spontaneous Combustion

- There will be daily inspections for fire hazards.
- The stack-out/reclaim plan will ensure reclaim of older material to avoid accumulation of fuel with a significant age. The first-in, first-out (FIFO) procedure will be slightly modified to ensure blending of older and newer fuel for consistent fuel properties.
- Fire water cannons that are mounted on elevated structures, together with mobile equipment, will be used to rapidly extinguish any smoldering materials found.
- The size of the fuel storage pile will not exceed the design value—this is a primary control measure that is based on the limited onsite fuel storage of about 40,000 tons of live storage.

Measures to Minimize Fugitive Dust

- Conveyor transfer points will be enclosed or partially enclosed.
- Drop points to the fuel storage areas will be designed to minimize the exposed drop height.
- Transfer points and fuel bins will be equipped with vent filters.
- Under-pile fuel reclaimers will not generate fugitive dust.
- Fuel-handling equipment will be observed daily for proper operation and for maintenance requirements.
- Plant fuel-handling personnel will implement a procedure for observing and controlling unplanned fugitive dust emissions, including truck handling and unloading, and dirt or fuel on roads.
- Plant personnel will spray, scrape, or otherwise remove dirt or spilled fuel from access roadways.

Storage Pile Management

- Operational plans will recognize conditions such as high winds that are likely to result in excessive fugitive dust and will curtail movement of fuel by mobile equipment under such conditions.
- Mobile equipment will be used to maintain the pile's design shape and to ensure adherence to FIFO in reclaim operations.

2.1.1.4 Material Handling of Ash

The combustion of biomass in the proposed boiler will result in the formation of bottom ash and fly ash. The resultant amount of ash is a reflection of the ash in the fuel. Bottom ash will be collected from the boiler by a submerged drag-chain conveyor, which will deliver a wet material to the ash silo. The fly ash is the entrained exhaust particulate matter (PM) captured by the ESP. An enclosed conveyor or similar configuration will be used to transport the fly ash from the ESP to the existing ash storage silos. The storage silos are equipped with a fabric filter for minimizing any PM emissions from the transfer operation. Ash from the storage silo will then be used by the adjacent cement plant.

2.1.2 Power Generation

2.1.2.1 Biomass Fired-Boiler

Steam energy will be generated by a woody biomass-fired boiler. The boiler will be rated at a nominal 900 million British thermal units per hour (MMBtu/hr) and an annual heat input of 7,884,000 million British thermal units per year (MMBtu/yr) (based on 100 percent operating capacity). The average heat content of the biomass fuel is estimated at approximately 5,352 million British thermal units per pound (MMBtu/lb) high heating value (HHV).

The boiler will generate 490,000 pounds per hour (lb/hr) of steam at 1,887 pounds per square inch (psi) and 950°F in conventional waterwall boiler tubes. The boiler will be equipped with start-up ignition burners using ULSD fuel oil or natural gas. The existing boiler is a top-mounted unit in which the boiler pressure parts are suspended from a steel structure and support grid. The boiler and turbine generators are enclosed by an existing steel frame building.

The Proposed Project will require internal structural modifications to the existing boiler and the electrical generating unit building, which will include:

- Removal of lower boiler ash hopper and modification to allow installation of a new water-cooled stoker grate, and an associated ash conveyor
- Removal of existing pulverized coal burners and installation of new biomass fuel distributors, fuel metering bins, and fuel conveyor

The Proposed Project will maintain and re-use the following electrical generating unit components:

- Existing boiler furnace and convection pass, including primary and secondary super-heaters, re-heater, and economizer
- Existing air heaters, dust collectors, and forced and induced draft fans
- Existing continuous emissions monitoring (CEM) equipment to be relocated to a new steel stack
- All balance of plant feed water heating, de-aerator pumps, and condensate collection equipment
- Existing main steam piping and reheat piping
- Existing high-pressure, intermediate-pressure, and low-pressure turbine generator
- Existing control room and plant distributed control system (DCS) equipment
- Existing power plant site boiler and turbine buildings and administration facility
- Existing condenser and cooling water circulation piping

A new approximate 150-ft exhaust stack will be located downstream of the final heat recovery equipment and emissions control equipment. The stack will be adjacent to the existing boiler building structure (see Figure 2-A) and will include a dedicated platform for stack testing. Detailed boiler design parameters, which include design data for operating loads of 100 percent (base load), 90 percent, and 70 percent are provided in Appendix B. Because the fixed capital costs associated with the biomass conversion do not exceed 50 percent of the fixed capital cost that would be required to construct a comparable new source, the unit would be considered an existing source and not a reconstructed source.

Either ULSD or natural gas will be used as start-up fuel. The duration of total startup time on natural gas and ULSD is estimated at approximately 100 hr/yr. Typical properties of ULSD and natural gas is provided in Appendix A. The typical heat content of ULSD is 19,500 Btu/lb HHV with a maximum sulfur content of 0.0015 percent by weight. The typical heat content of natural gas is about 1,020 British thermal units per standard cubic foot (Btu/scf) HHV with a maximum sulfur content of 2 grains per 100 standard cubic feet (gr/100 scf) of gas.

ULSD will be delivered to the site by truck and will be stored on-site in the existing 150,000-gallon aboveground storage tank (AST). The AST is contained within a concrete containment area. Natural gas would be delivered to the site via a natural gas pipeline to be provided by others in the future. No on-site natural gas storage will be provided.

2.1.2.2 Steam Turbine

The steam cycle consists of an existing dual cross-compound steam turbine generator that has six extraction points at which steam at different pressures is extracted for regenerative heating of the boiler feed water, as well as stripping the feed water of dissolved oxygen in the de-aerator section to minimize corrosion. Feed water to the boiler economizer is designed to be supplied at 348°F.

The low-pressure steam turbine has a radial exhaust. The steam turbine generator has a dedicated lube oil system, automatic governors for speed and load control, vibration monitoring sensors to protect bearings and rotating blades, and safety monitoring equipment. The existing steam turbine generator drives a close-coupled electrical generator that shares the turbine's lube oil system. The existing generator is hydrogen cooled.

Turbine exhaust steam enters the condenser, where its heat is rejected to the cooling water via a dual flow tube and shell condenser. From the condenser, turbine condensate is pumped through multiple heat exchangers, including a de-aerator to high pressure boiler feed water pumps and a high-pressure crossover heater, to the boiler economizer and steam drum to complete the cycle.

Electrical power output from the generator terminals is generated at 13.8 kV and then is stepped up to 115 kV in the main transformer before being sent by overhead lines to the nearby substation (approximately 4 miles west of the project site). A fenced switchyard encloses this transformer, as well as the necessary circuit breaker, lightning arrestors, manual switches, and revenue metering enclosure.

Electrical power from the generators is also sent to the power plant's auxiliary transformers and electrical distribution system, where the voltage is transformed for use throughout the power plant.

3.0 SOURCE EMISSIONS AND CONTROLS

By converting the existing electrical generating unit fuel supply from coal to biomass, FPD will eliminate its need for coal, which will reduce fuel costs, allow for extended commercial operation of the electrical generating unit and ancillary facilities, and reduce overall emissions of regulated air pollutants by several thousand tons per year, and offer the opportunity to supply renewable power to Florida utilities. The Proposed Project will also assist in improving the use of renewable domestic energy sources and result in a carbon-neutral project.

The Proposed Project will utilize combustion controls and air pollution control measures to minimize air emissions and ensure compliance with applicable emission-limiting standards. Using clean fuels will minimize emissions of PM, nitrogen oxide (NOx), SO_2, and other fuel-bound contaminants.

Estimated maximum hourly emissions, annual emissions and proposed control technology information representative of each emission unit during normal operation are provided in the following sections. Table 3-1 provides a summary of total project emissions, including hazardous air pollutants (HAPs). Individual process units were described in detail in Section 2.0 of this report. The following is a summary listing of the process units considered in this emissions evaluation:

- Boiler; and
- Material Handling (i.e., feedstock and sorbent delivery, conveying and storage of feedstock; fly ash and sorbent storage).

The above-listed emission units can be located on Figure 2A and 2B (Site Layout).

In addition to the Proposed Project emissions, Table 3-1 also provides a summary of historical emissions which are the basis for the netting calculations used to determine PSD applicability. Emissions from the modified unit will be offset by a reduction in actual emissions associated with the firing of coal. The following table provides a summary of the highest two-year average actual emissions from the existing coal fired unit during the last five-year period.

Summary of the Highest Two-Year Average Existing Boiler Emissions

Pollutant		Highest Two-Year Average[a]	
		Coal (TPY)	Years
Volatile Organic Compounds	VOCs	10.9	2006-2007
Sulfur Dioxide	SO_2	2,129	2009-2010
Nitrogen Oxides	NO_x	2,392	2006-2007
Carbon Monoxide	CO	91.0	2006-2007
PM—Total	PM	53.0	2006-2007
PM_{10}	PM_{10}	45.1	2006-2007
$PM_{2.5}$	$PM_{2.5}$	29.3	2006-2007

Lead	Pb	9.5E-03	2006-2007
Sulfuric Acid Mist	SAM	5.7	2007-2008
Greenhouse Gases[b]	CO_2e	751,569	2006-2007

Note: [a] Based on actual emissions for the existing coal-fired unit reported in annual operating report from 2006 through 2010.
[b] CO_2 emissions estimated based on Tier 1 methodology. Tier 1 uses annual fuel usage, default fuel heat content, and default emission factors to estimate CO_2 emissions.

Table 3-1 presents the net emission changes, resulting from the conversion of the existing coal-fired boiler to a biomass-fired boiler, compared to the PSD significant emission rate (SER) thresholds. PSD review is required for emissions of a pollutant greater than the listed PSD SER thresholds. As shown in the table, the net emission changes for the Proposed Project are less than the PSD SERs for all pollutants. Therefore, PSD review is not required for the Proposed Project.

3.1 Boiler

A summary of emission from the boiler are summarized in Table 3-2. Emission estimates for sulfuric acid mist (SAM) and hazardous air pollutant (HAP) acid gases are summarized in Tables 3-3 and 3-4. Emission estimates for organic and metal HAPs are summarized in Tables 3-5 and 3-6, respectively. Factors for HAPs were evaluated based on EPA's AP-42 and the MACT database.

The boiler will be designed to accommodate either ULSD or natural gas for boiler startup. The maximum estimated emission rates during startup are provided in detail in Tables 3-7 and 3-8 for natural gas and ULSD, respectively. These tables illustrate that the maximum project emissions and impacts will occur during normal operation and not during startup and shutdown periods. Hourly emission rates during startup and shutdown periods for all pollutants are less than during normal operation, in spite of the fact that the emissions during these period are assumed to be uncontrolled. Therefore, worst-case emissions and impacts are based on biomass firing for 8,760 hours per year.

The proposed boiler will utilize a multi-pollutant control system (MPCS), encompassing a combination of state-of-the-art control devices/techniques to minimize potential emissions of regulated air pollutants. The MPCS will be comprised of a dry sorbent injection system for acid gas control [i.e., SO_2, hydrochloric acid (HCl), and hydrogen fluoride (HF)]; an ESP for particulate matter (PM) control; an oxidation catalyst (OXC) for control of carbon monoxide (CO), volatile organic compounds (VOCs) and organic HAPs; and a selective catalytic reduction (SCR) system for NOx control. These devices/techniques, along with the air pollutants being controlled, are discussed below.

3.1.1 Dry-Sorbent Injection System

A dry in-duct sorbent injection system, which may utilize hydrated lime or other similar product as the injection sorbent material, will be used at the fuel-converted electrical generating unit to control acid gas

emissions. The sorbent will be stored in a silo with a bin vent for loading. The sorbent will be withdrawn from the bin and pneumatically conveyed to the flue duct upstream of the ESP. The flue gas temperature at this point will be approximately 600°F. The sorbent will mix with the flue gas and absorb SO_2, HCl and HF.

The design fuel analysis is provided in Appendix A. The design fuel assumes a sulfur content of approximately 0.02 percent and a chlorine content of approximately 0.027 percent. The conversion from coal to biomass will result in a significant reduction of SO_2 emissions and there is no regulatory driver that requires additional SO_2 control. In fact, the acid gas control system capabilities will be designed for the required maximum HCl control. Based on the design fuel and other project parameters, it is estimated that approximately 33 percent control will be required to achieve the HCl standard for existing sources under 40 CFR Part 63 Subpart DDDDD that would be applicable (see section on regulatory applicability). Therefore the controlled HCl emission rate is equal to 31 lb/hr and 137 tons per year (TPY) based on 100 percent capacity factor. At the proposed HCl control efficiency, the SO_2 emission rate will vary with the corresponding fuel sulfur content; however, controlled emissions will not exceed 135 lb/hr (0.15 lb/MMBtu or 591.3 TPY).

Hydrogen Fluoride (HF) emissions are also controlled by the sorbent injection system. The estimated controlled emissions of HF are equal to 4.8 lb/hr and 21 TPY. Details of the HCl and HF emission estimates are provided in Table 3-4.

3.1.2 Electrostatic Precipitator

An ESP will be utilized to control PM emissions. Ash components such as sodium (Na), potassium (K), magnesium (Mg) and calcium (Ca), are more abundant in wood ash than coal ash. These components have a potential to poison both the oxidation catalysts (OXCs) and the selective catalytic reduction (SCR) catalysts, reducing their service life. Therefore, the ESP will be a "hot ESP" and placed prior to the SCR and oxidation catalyst. The ESP will be designed to achieve a PM/PM_{10} emission rate equal to 0.013 lb/MMBtu or 12 lb/hr, based on US Environmental Protection Agency (USEPA) Method 5 testing.

The inorganic matter contains a number of metal HAPs, the most abundant of which is manganese (Mn). Based on AP-42, Table 1.6-4, the total inorganic HAP emissions after the ESP are anticipated to be 0.08 lb/hr (0.34 TPY). The highest individual metal HAP is lead, which is not assumed to be controlled by the ESP and is estimated to be equal to 0.04 lb/hr and 0.19 TPY.

3.1.3 Oxidation Catalyst

Combustion of biomass results in the emissions of CO and VOCs. CO and VOCs, as well as organic HAP emissions, will be controlled by use of an OXC. CO emissions will be controlled to an emission level equal to 0.045 lb/MMBtu, resulting in a Project increase of less than the CO significant emission rate

(SER) threshold of 100 TPY. Uncontrolled organic HAPs are based on AP-42, Table 1.6-3 and the MACT database. The OXC control system will achieve a control efficiency of equal to or greater than 75 percent for CO, VOCs and organic HAPs.

3.1.4 Selective Catalytic Nitrogen Oxide Reduction

An SCR system will be utilized to reduce NOx emissions to levels significantly lower than the existing power generation facility. Ammonia (NH_3) will be injected into the cavity upstream of the SCR where it can mix with the flue gas prior to passing through the SCR catalyst. The NH_3 will be delivered as aqueous ammonia (19 percent). The SCR catalyst will be designed to achieve 0.15 lb/MMBtu with less than 10 parts per million (ppm) ammonia slip.

3.2 Material Handling System Description

The fugitive emission estimates from material handling, including biomass, lime and ash delivery and conveying, are summarized in Table 3-9. Detailed emission tables, including controls and control efficiency, are provided in Tables C-1 through C-5 (see Appendix C). Detailed process flow diagrams of the material handling systems, showing fugitive particulate emission drop points, are presented in Figures 4 and 5.

As previously mentioned, woody biomass feedstock preparation will occur at a remote site that will be owned and operated by others. A detailed description of the material handling system is provided in Section 2.1.1. Any oversized materials will be directed to a magnetic separator, sizing screen, and hog mill for reduction of oversize. The hog and ancillary conveyors will be supported in a common tower with applicable chute work and baghouse dust collection. Fugitive emissions are primarily associated with the transport and storage of the biomass feedstock on the site. The feedstock storage pile will utilize water suppression to control fugitive emissions. The feedstock received will have associated moisture content, minimizing the potential for fugitive dust. In addition, all conveying systems will be enclosed.

Fugitive emissions for the various material handling operations were estimated in accordance with current EPA methods as presented in AP-42 (EPA, 1995), Fugitive Dust Background and Technical Document for Best Available Control Measures (EPA, 1992), and other historical EPA emission factors and equipment design information.

For batch drop operations, such as conveyor transfer points, the total suspended PM (TSP), PM_{10} and $PM_{2.5}$ emission factors are defined in Section 13.2.4 of AP-42 by the equation:

$$E = [k(0.0032)\ (U/5)^{1.3}/(M/2)^{1.4}]$$

where: E = emission factor, lb/ton

k = particle size multiplier

U = mean wind speed [miles per hour (mph)]

M = material moisture content (percent)

The particle size multiplier, k, was based on the recommended multipliers of 0.74, 0.35 and 0.053 in developing the PM (TSP), PM_{10} and $PM_{2.5}$ emission estimates, respectively. Mean wind speed was obtained from the Local Climatological Data (2006 - 2010) from Tampa FAA, which was 7.3 miles per hour. The material moisture content was estimated to be approximately 35 percent.

Screen and hog mill emissions were based on factors for screening and tertiary crushing presented in AP-42, Table 11.19.2-2. Emission estimates for the ash and lime silo handling system were based on emission rates of different particle size multipliers from the AP-42 Chapter 13.2.4 batch drop equation, and on maximum allowable limits in Permit No. 0530021-021-AV.

A control efficiency for each source was based on EPA's Fugitive Dust Background and Technical Document for Best Available Control Measures (EPA, 1992), and information about the source. Historically, EPA emission factors tended to account for factors potentially affecting emissions. For example, the current EPA emission factor included drop height in the equation. Specifically, emissions were a direct relationship of H/10 where H was the height in feet in the equation: UEF (lb/ton) = k x (0.0018) x ((s/5) x (U / 5) x (H/10))/[(M / 2)2]. A source that had a 10 foot drop would have 10 times the emissions than a source that had a 1 foot drop. While this is no longer used in the current EPA emission factors, the height of the drop does influence the amount of potential fugitive emissions. In its background document, EPA still recognizes drop height as a mitigating factor (see Table 3-6 in EPA, 1992). In addition, the consideration for control of the various methods is judgmental based on the configuration of the source. For example, a total enclosed source would likely have no fugitive emissions. With larger openings, the potential for fugitive dust increases especially where a tunneling effect can occur. These factors were considered in assigning controls.

Fugitive emissions were also estimated for the fuel and lime delivery trucks traveling on paved roads from the entrance of the site to the unloading area. The emission estimates were based on the total suspended PM (TSP), PM_{10} and $PM_{2.5}$ emission factors from paved roads at industrial sites, as defined in Section 13.2.1 of AP-42 by the equation:

$$E = k \times (sl)^a \times (w)^b$$

where: k, a, and b are empirical constants

E = size-specific emission factor [pounds per vehicle miles travelled (lb/VMT)]

sl = road surface silt loading (percent)

w = average weight of truck traveling the road (tons)

The empirical constants, k, a, and b were based on the recommended multipliers of 0.91, 1.02 and 0.011 in developing the PM (TSP); 0.91, 1.02 and 0.0022 in developing the PM_{10}; and 0.91, 1.02 and 0.00054 in developing the $PM_{2.5}$ emission estimates, respectively. The mean vehicle weight was estimated to be 25 tons and the surface material silt content to be 1-percent based on Golder's 2001 Port Transportation Study.

Fugitive emissions were also estimated for the front-end loaders moving material around the pile area. The emission estimates were based on the total suspended PM (TSP), PM_{10} and $PM_{2.5}$ emission factors from unpaved roads at industrial sites, as defined in Section 13.2.2 of AP-42 by the equation:

$$E = k \times (s/12)^a \times (W/3)^b$$

where: k, a, and b are empirical constants

E = size-specific emission factor (lb/VMT)

s = surface material silt content (percent)

W = mean vehicle weight (tons)

The empirical constants, k, a, and b were based on the recommended multipliers of 0.7, 0.45 and 4.9 in developing the PM (TSP); 0.9, 0.45 and 1.5 in developing the PM_{10}; and 0.9, 0.45 and 0.15 in developing the $PM_{2.5}$ emission estimates, respectively.

Dust emissions generated by wind erosion of the open storage pile were calculated for this Project. TSP emissions from wind erosion of active (frequently disturbed) storage piles, are based on the following AP-42 emission factor equation:

$$eTSP = k \times 1.7 \times (s/1.5) \times ((365 - p)/235) \times (f/15)$$

where: eTSP = total suspended particulate emission factor (lb/day/acre)

k = particle size multiplier

s = material silt content (percent)

p = number of days with ~ 0.25 mm (0.01 in.) of precipitation per year

f = percentage of time that the unobstructed wind speed exceeds 5.4 m/s (12 mph) at the mean pile height

The particle size multiplier, k, was based on the recommended multipliers of 1.0, 0.5 and 0.075 in developing the PM (TSP), PM_{10} and $PM_{2.5}$ emission estimates, respectively.

3.3 Site Layout, Structures, and Stack Sampling Facilities

The Project's site layout is depicted in Figures 2A and 2B. The approximate dimensions of the buildings and structures are further discussed in Section 5-5 and presented in Table 5-5. Stack sampling facilities will be constructed in accordance with Rule 62-297.310(6), F.A.C.

4.0 AIR QUALITY REVIEW REQUIREMENTS AND APPLICABILITY

The following discussion pertains to the federal, state, and local air regulatory requirements and their applicability to the Project. These requirements must be satisfied before the proposed facility can begin construction and/or operation.

The FDEP regulations require any new source to obtain an air permit prior to construction. New sources must meet the appropriate requirements and obtain the required permits and approvals for air pollution sources, including PSD (if major), applicable new source performance standards (NSPS), applicable national emission standards for hazardous air pollutants (NESHAP), Permit to Construct, and Permit to Operate. The requirements for construction permits and approvals are contained in Rules 62-4.030, 62-4.050, 62-4.210, 62-210.300(1), and 62-212.400, F.A.C. Specific emission standards are set forth in Chapter 62-296, F.A.C., and 40 Code of Federal Regulations (CFR) Parts 60, 61, and 63.

FDEP has nonattainment provisions (Rule 62-212.500, F.A.C.) that apply to all major new facilities located in a nonattainment area. In addition, for major facilities that are located in an attainment or unclassifiable area, the nonattainment review procedures apply if the source or modification is located within the area of influence of a nonattainment area. The Project is located in Hernando County, which is classified as an attainment area for all criteria pollutants. Therefore, nonattainment new source requirements are not applicable. There are currently no local air quality regulations more stringent than those at the state level.

4.1 New Source Review

Table 3-1 presents the net emission changes, resulting from the conversion of the existing coal-fired boiler to a biomass-fired boiler, compared to the PSD significant emission rate (SER) thresholds. PSD review is required for emissions of a pollutant greater than the listed PSD SER thresholds. As shown in the table, the net emission changes for the Proposed Project are less than the PSD SERs for all pollutants. Therefore, PSD review is not required for the Proposed Project.

4.2 New Source Performance Standards

The new source performance standards (NSPS) are national emission standards, found in 40 CFR 60, that apply to specific categories of new emission sources. As stated in the 1977 Clean Air Act (CAA) Amendments, these standards "shall reflect the degree of emission limitation and the percentage reduction achievable through application of the best technological system of continuous emission reduction the Administrator determines has been adequately demonstrated."

The following NSPS regulations were reviewed for their applicability to the Project:

- NSPS Subpart A – *General Provisions*;

- NSPS Subpart Da – *Electric Utility Steam Generating Units for which Construction is Commenced after September 18, 1978* ;
- NSPS Subparts Eb - *Municipal Waste Combustors Constructed after September 20, 1994* and CCCC - *Commercial and Industrial Solid Waste Incineration Units for which Construction is Commenced after November 30, 1999 or for which Modification or Reconstruction is Commenced on or after June 1, 2001.*

4.2.1 NSPS 40 CFR 60 Subpart Da

The biomass-fired boiler will be equipped with start-up ignition burners using ULSD fuel oil or natural gas. However, the heat input from fossil fuel (i.e., ULSD and natural gas) will be designed for a capacity of 90 MMBtu/hr, which is below the 250 MMBtu/hr applicability threshold. Therefore, NSPS Subpart Da is not applicable to the Project.

4.2.2 NSPS Subparts Eb and CCCC

Subparts Eb and CCCC (as well as Subpart AAAA, which is applicable to smaller units) could apply if the feedstock can be categorized as municipal solid waste (e.g., yard clippings). However, an exemption is available if the Project is a "qualifying small power production facility" under section 3(17)(C) of the Federal Power Act. The rule (18 CFR 292.203 and 292.204) provides that a small power production facility is a qualifying facility if it does not exceed 80 MW and its primary energy source is biomass, waste, renewable resources, geothermal resources, or any combination thereof, and 75 percent or more of the total energy input is from these sources. "Any primary energy source which, on the basis of its energy content, is 50 percent or more biomass shall be considered biomass." (The use of fossil fuel for start-up, testing, flame stabilization, etc., is allowed). The Project will apply to the Federal Energy Regulatory Commission (FERC, Form 556) to be certified as a "Qualifying small power production facility"; therefore, the Project is exempt from NSPS Subparts Eb and CCCC.

4.3 National Emission Standards for Hazardous Air Pollutants

The following NESHAP regulations, also known as the maximum achievable control technology (MACT) rules, were reviewed for their applicability to the Project:

- NESHAP Subpart DDDDD – Industrial, Commercial, and Institutional Boilers and Process Heaters (Major Source Boiler MACT)
- NESHAP Subpart JJJJJJ—Industrial, Commercial, and Institutional Boilers and Process Heaters (Area Source Boiler MACT)

4.3.1 NESHAP Subpart DDDDD (a.k.a. Major Source Boiler MACT)

EPA has established MACT standards for industrial/commercial/institutional boilers at major sources, although the effectiveness of the standards has been delayed. [76 Fed. Reg. 15608 (Mar. 21, 2011) (Final rule to be codified in 40 CFR 63 Subpart DDDDD); 76 Fed. Reg. 28662 (May 18, 2011) (Delay in

effectiveness)]. As noted above, the existing unit is a major source of HAPs. Because original construction occurred before June 4, 2010, and the fixed capital costs associated with the biomass conversion do not exceed 50 percent of the fixed capital cost that would be required to construct a comparable new source, the unit would be considered an existing source under the Boiler MACT standards (40 C.F.R. §§ 63.2 and 63.7490). Therefore, the standards for existing sources under 40 CFR Part 63 Subpart DDDDD would be applicable and are reflected in the proposed emission limits for the converted unit.

4.3.2 (NESHAP) Subpart JJJJJJ (a.k.a. Area Source Boiler MACT)

The MACT standards for units at area sources are codified in 40 CFR 63 Subpart JJJJJJ. Because the converted unit will be a major source of HAPs, the area sources standards do not apply.

4.4 Florida Rules

Florida has adopted the new source review (NSR) program requirements, NSPS, and NESHAP by reference. Therefore, the Facility is required to meet the same emissions, performance testing, monitoring, reporting, and recordkeeping requirements as those described in the previous sections, to the extent that they have been adopted by the FDEP and are applicable to the project.

4.4.1 Rule 62-296.410, F.A.C., Carbonaceous Fuel Burning Equipment

Carbonaceous fuel is defined in the Department's rules as solid materials composed primarily of vegetative matter such as tree bark, wood waste, or bagasse. The Project boiler is subject Rule 62-296.410, F.A.C. The following emission limits are applicable to the boiler:

- Opacity is limited to 30 percent, except that 40 percent is permissible for not more than two minutes in any one hour.
- PM is limited to 0.2 lb/MMBtu of heat input.

The Project will meet the emission limitations of Rule 62-296.410, FAC.

4.4.2 Rule 62-296.416, F.A.C., Waste-to-Energy

The Department's rules define the term "waste-to-energy facility" as a facility that uses controlled combustion to thermally break down solid, liquid, or gaseous combustible solid waste to an ash residue that contains little or no combustible material and that produces electricity, steam, or other energy as a result. The term does not include facilities that primarily burn fuels other than solid waste, even if the facilities also burn some solid waste as a fuel supplement. The term also does not include facilities that burn vegetative, agricultural, or silvicultural wastes, bagasse, clean dry wood, methane or other landfill gas, wood fuel derived from construction or demolition debris, or waste tires, alone or in combination with fossil fuel [Rule 62-210.200(331), F.A.C.]. Therefore this rule will not apply to the Project.

4.5 Other Clean Air Act Requirements

4.5.1 The Acid Rain Program

Because of its status as a qualifying facility (QF), the Project is not subject to the Acid Rain Program. The 1990 CAA Amendments established the Acid Rain Program to reduce the release of acidic deposition precursors, SO_2 and NO_X. EPA's final regulations were promulgated on January 11, 1993, and included permit provisions (Part 72), allowance system (Part 73), continuous emission monitoring (Part 75), excess emission procedures (Part 77), and appeal procedures (Part 78).

4.5.2 Regional Haze

The Project does not trigger the Department's Best Available Retrofit Technology (BART) rule. The BART rule applies to facilities in existence on August 7, 1977, and that have the potential to emit 250 TPY or more of any air pollutant (Rule 62-296.340, FAC).

Similarly, the Department's Reasonable Further Progress rule applies to units in existence as of August 30, 1999. Therefore, this rule is applicable to the Project (Rule 62-296.341, FAC).

4.5.3 Cross-State Air Pollution Rule

On July 6, 2011, the USEPA finalized a rule that seeks to help states reduce air pollution and attain clean air standards. This rule, known as the Cross-State Air Pollution Rule (CSAPR), requires 27 states to significantly improve air quality by reducing power plant emissions that contribute to ozone and/or fine particle pollution in other states.

This rule replaces a 2005 rule known as the Clean Air Interstate Rule (CAIR). A December 2008 court decision kept the requirements of CAIR in place temporarily but directed EPA to issue a new rule to implement the Clean Air Act requirements concerning the transport of air pollution across state boundaries. The CSAPR is designed to implement these Clean Air Act requirements and respond to the court's concerns. It takes effect on January 1, 2012; CAIR will be implemented through the 2011 compliance periods and then replaced by the CSAPR.

Like CAIR, CSAPR is a cap-and-trade program for SO_2 and NOx promulgated to help downwind states attain or maintain NAAQS for fine particulate matter and ozone. The program applies to stationary boilers and combustion turbines that fire any amount of fossil fuel at any time and serve a generator with a nameplate capacity of more than 25 MW, producing electricity for sale. Since the nameplate capacity of the boiler and the steam turbine for the Project is greater than 25 MW, the CSAPR program is applicable to the Proposed Project.

4.5.4 Greenhouse Gas Rulemaking

4.5.4.1 Greenhouse Gas Tailoring Rule

On June 3, 2010, the USEPA published the *Tailoring Rule* extending PSD and Title V (TV) programs to greenhouse gas (GHG) emissions. The GHGs are defined as CO_2, methane (CH_4), nitrous oxide (N_2O), and certain fluorinated gases.

The first step in determining whether PSD applies under the Tailoring Rule is to determine whether the Project's GHG emissions are "subject to regulation." During Tailoring Rule Step 1, sources can only be subject to regulation if they are an "anyway source" or "anyway modification" (*i.e.,* a source or modification, respectively, that is subject to PSD "anyway" due to its emissions of non-GHG pollutants). During Tailoring Rule Step 2 (*i.e.,* on or after July 1, 2011), however, sources and modifications can become subject to PSD based solely on their GHG emissions. These are referred to as non-anyway sources and non-anyway modifications. For a new non-anyway source, GHGs are subject to regulation if the potential to emit (PTE) of the source is at least 100,000 TPY carbon dioxide equivalent (CO_2e). In the case of non-anyway modifications, GHG emissions are subject to regulation at an existing stationary source (that is not an "anyway source") if the source undertakes a modification that is projected to increase emissions by at least 75,000 TPY CO_2e.

Assuming that you exceed the threshold in the first step, the second step is to determine whether the source also has a PTE that is at or above the CAA *mass-based* major source threshold (*i.e.,* either 100 or 250 TPY) for GHGs. If it does, then both the source and the modification are treated as "major" for GHGs and must go through PSD review for GHGs. The non-GHG pollutant(s) at the source will also become subject to PSD if the modification results in an emissions increase at or above the significance level for that non-GHG pollutant. Thus, EPA's longstanding "major for one, major for all" PSD policy also applies to GHG-only major sources, but only after GHGs are determined to be subject to regulation for the modification.

The Tailoring Rule requirements described above originally applied to all CO_2, including biogenic CO_2. In July of 2010, however, EPA issued a request for information to assist it in considering whether and how biogenic CO_2 should be addressed under the Tailoring Rule. On August 3, 2010, the National Association of Forest Owners (NAFO) petitioned EPA to stay the implementation of the Tailoring Rule based on concerns about biogenic CO_2. In response, on January 12, 2011, EPA granted NAFO's petition and on March 21, 2011 published a proposed rule, deferring GHG permitting requirements for biogenic CO_2 for three years.

On July 20, 2011, the EPA published in the Federal Register *[76 FR 139, pp. 43490-43508] "Deferral for CO_2 Emissions from Bioenergy and Other Biogenic Sources under the Prevention of Significant*

Deterioration (PSD) and Title V Programs; Final Rule," which is the final rule deferring, for three years, the applicability of PSD and Title V programs to biogenic CO_2. During these three years, the EPA will study the issues related to biogenic CO_2 emissions and then undertake a rulemaking specifying how biogenic CO_2 emissions should be treated in PSD and Title V permitting. The deferral does not apply to other GHGs, such as CH_4, and N_2O.

Based on the information contained in the Tailoring Rule described above, GHG emissions were estimated for the Project and are detailed in Table 4-1. The GHG increase emissions due to the modification of the existing boiler are below the threshold level of 75,000 tons CO_2e/yr. Therefore, PSD and Title V programs do not apply to the Project

5.0 AIR QUALITY IMPACT ANALYSIS

The emission reductions resulting from the modification of the existing boiler classify the Project as a minor modification; thus, not subject to Prevention of Significant Deterioration (PSD) review. Air dispersion modeling is generally not required for minor sources. Nonetheless, an air quality impact analysis is provided to demonstrate compliance with the national and State of Florida ambient air quality standards (AAQS).

The following sections present a summary of the air quality modeling methodologies and results of the air quality impact analyses performed for the Project. Documentation of the air quality impact modeling analysis is provided in Appendix D.

5.1 General Modeling Approach

The AAQS analysis performed for the Project is a source impact analysis that evaluates whether the predicted concentrations from air emission sources will comply with the AAQS. The general modeling approach for the AAQS analysis followed EPA and FDEP modeling guidelines. The AAQS analysis was performed for the following criteria pollutants: CO, $PM_{2.5}$, PM_{10}, SO_2, and NO_X to determine whether the Proposed Project's emission sources, given their stack configuration and other modeling inputs, will result in predicted impacts that are in excess of the AAQS.

For the detailed analysis, the maximum predicted impacts due to the Project were added to a determined non-modeled background concentration from existing air quality measurements (see Section 5.7) to obtain a total concentration that was compared to the AAQS.

5.1.1 AAQS Analysis

The AAQS analysis evaluates whether the total air quality impact, based on the sum of all modeled sources plus a representative non-modeled background concentration will comply with the AAQS. The background concentration accounts for sources that are not explicitly included in the modeling analysis.

In general, when five years of meteorological data are used in the analysis, the highest annual and lower ranking (i.e., 2nd, 4th, 6th, or 8th-highest) short-term concentrations, are compared to the applicable AAQS, depending on the pollutant modeled, as follows:.

- For determining compliance with the 1-hour and 8-hour CO AAQS, the highest 2nd-highest (H2H) predicted concentration in five years was added to the second-highest measured (i.e., background) concentration.
- For determining compliance with the 24-hour $PM_{2.5}$ AAQS, the 5-year average of the highest predicted 24-hour concentration was added to the 3-year average 98th-percentile background concentration.

- For determining compliance with the 24-hour PM_{10} AAQS, the highest, 6th-highest (H6H) predicted concentration in five years was added to the second-highest background concentration.
- For determining compliance with the 1-hour SO_2 AAQS the highest, 4th-highest (H4H) predicted concentration in five years was added to the 3-year average of the 99th-percentile background concentration.
- For determining compliance with the 3-hour and 24-hour SO_2 AAQS the highest predicted concentration in five years was added to the second-highest background concentration.
- For determining compliance with the 1-hour NO_2 AAQS, the highest, 8th-highest (H8H) predicted concentration in five years was added to the 3-year average of the 98th-percentile background concentration. The Tier 2 Ambient Ratio Method (ARM) of 0.80 was used for the NO_X-to-NO_2 conversion.

5.2 Model Selection

The air modeling analysis was performed using the American Meteorological Society (AMS)/EPA Regulatory Model (AERMOD, Version 11103) to predict concentrations in the vicinity of the Project site location. The modeling analysis is based on predicting impacts within 50 km of the Project. The EPA regulatory default options were used to predict all maximum impacts. These options include:

- Use of elevated terrain algorithms;
- Stack-tip downwash (except for building downwash cases);
- Use of missing data processing routines;
- Use of calm wind processing routines; and
- Use of 4-hour half life for exponential decay of SO_2 for urban sources.

AERMOD calculates hourly concentrations based on hourly meteorological data, which is further detailed in Section 5.3.

5.3 Meteorological Data

Meteorological data used in the AERMOD model to determine air quality impacts associated with the Project site consisted of a concurrent 5-year period of hourly surface weather observations and upper air sounding data collected from the nearest National Weather Station (NWS) to the Project Site. The 5-year meteorological data was collected from the stations located at Tampa's International Airport (TPA) and Tampa-Ruskin (TBW) from 2006 through 2010 and was provided to us by the Air Resource Management Division of the FDEP. A listing of AERMOD features is presented in Table 5-2.

5.4 Emission Inventory

A summary of the source location and parameter data for the Project is presented in Table 5-3. Per general modeling guidance the boiler was modeled as a point source; the material handling transfer points were modeled as volume sources; the fuel and lime delivery truck routes were modeled as line

sources; and the storage pile and truck unloading areas were modeled as poly-area and area sources, respectively. A summary of emission rates for the Project's sources is presented in Table 5-4.

5.5 Building Downwash Effects

All proposed point sources were evaluated for determining compliance with Good Engineering Practice (GEP) regulations and the potential influence of nearby buildings and structures that could cause building downwash. The proposed height for the boiler stack is 150 ft above grade. For each stack that is below the GEP height, such as the boiler stack, direction-specific building heights and maximum projected widths were determined using the Building Profile Input Program (BPIP, Version 04274), which incorporates the Plume Rise Model Enhancement (PRIME) downwash algorithm developed by the Electric Power Research Institute (EPRI). The direction-specific building information output by BPIP was directly input to AERMOD for processing.

A summary of the proposed facility's solid building structures used in the BPIP analysis are presented in Table 5-5.

5.6 Receptors

Concentrations were predicted at receptors located in detailed receptor grids centered on the proposed boiler unit, the modeling origin, and extended from CEMEX's restricted property boundary out 7 kilometers (km). Receptors were placed along CEMEX's restricted property boundary (i.e., fence line) and beyond the fence line according to the following receptor spacing.

- Along the property boundary or fence line at 50 meters (m) spacing;
- A 100 m spaced receptor grid extending out to 2 km;
- A 250 m spaced receptor grid extending out to 5 km; and
- A 500 m spaced receptor grid extending out to 7 km.

The receptor grids and elevation data were developed using AERMOD's terrain preprocessing program, AERMAP (Version 11103) and U. S. Geological Survey Digital Elevation Model (DEM) 7.5 minute data files.

5.7 Background Concentrations

Background concentrations are defined as concentrations due to sources (natural and anthropogenic) other than those specifically included in the modeling analysis. For all pollutants, the background concentration represents the air quality impact of all emission sources that are not explicitly included in the modeling analysis. The maximum measured criteria pollutant concentrations from monitoring data, representative of air quality near the Project site are presented in Table 5-6. As shown in the table, the nearest two monitoring stations were located at 1167 North Dover Road, Valrico (ID: 12-057-3002) and

5121 Gandy Boulevard, Tampa (ID: 12-057-1065), both in Hillsborough County. These data were added to the modeled source concentrations to obtain total concentrations for comparison to the AAQS.

5.8 Modeling Results

As shown in Table 5-1, the predicted maximum total modeled air quality impacts from the Project are in compliance with the national and Florida AAQS for all criteria pollutants. The results of the air modeling analyses demonstrate that the Project will comply with all applicable AAQS, and will not have an adverse effect on human health or welfare.

APPLICATION FORMS
FDEP FORM NO. 62 210.900(1), APPLICATION FOR AIR PERMIT — LONG FORM.

Department of Environmental Protection

Division of Air Resource Management

APPLICATION FOR AIR PERMIT - LONG FORM

I. APPLICATION INFORMATION

Air Construction Permit – Use this form to apply for an air construction permit:

- For any required purpose at a facility operating under a federally enforceable state air operation permit (FESOP) or Title V air operation permit;
- For a proposed project subject to prevention of significant deterioration (PSD) review, nonattainment new source review, or maximum achievable control technology (MACT);
- To assume a restriction on the potential emissions of one or more pollutants to escape a requirement such as PSD review, nonattainment new source review, MACT, or Title V; or
- To establish, revise, or renew a plantwide applicability limit (PAL).

Air Operation Permit – Use this form to apply for:

- An initial federally enforceable state air operation permit (FESOP); or
- An initial, revised, or renewal Title V air operation permit.

To ensure accuracy, please see form instructions.

Identification of Facility

1. Facility Owner/Company Name: **Florida Power Development, LLC**	
2. Site Name: **Brooksville Power Plant**	
3. Facility Identification Number: **0530021**	
4. Facility Location... Street Address or Other Locator: **10311 Cement Plant Road** City: **Brooksville** County: **Hernando** Zip Code: **34601**	
5. Relocatable Facility? ☐ Yes ☒ No	6. Existing Title V Permitted Facility? ☒ Yes ☐ No

Application Contact

1. Application Contact Name: **Daniel A Hopkins**
2. Application Contact Mailing Address... Organization/Firm: **Florida Power Development, LLC** Street Address: **700 Louisiana Suite 1000** City: **Houston** State: **TX** Zip Code: **34601**
3. Application Contact Telephone Numbers... Telephone: **(713) 236-3046** ext. Fax: **(713) 250-3005**
4. Application Contact E-mail Address: **tony.d.hopkins@jpmorgan.com**

Application Processing Information (DEP Use)

1. Date of Receipt of Application: 9-26-11	3. PSD Number (if applicable):
2. Project Number(s): 0530021-036-AC	4. Siting Number (if applicable):

APPLICATION INFORMATION

Purpose of Application

This application for air permit is being submitted to obtain: (Check one)

Air Construction Permit

[X] Air construction permit.

[ ] Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL).

[ ] Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL), and separate air construction permit to authorize construction or modification of one or more emissions units covered by the PAL.

Air Operation Permit

[ ] Initial Title V air operation permit.

[ ] Title V air operation permit revision.

[ ] Title V air operation permit renewal.

[ ] Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is required.

[ ] Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is not required.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit (Concurrent Processing)

[ ] Air construction permit and Title V permit revision, incorporating the proposed project.

[ ] Air construction permit and Title V permit renewal, incorporating the proposed project.

Note: By checking one of the above two boxes, you, the applicant, are requesting concurrent processing pursuant to Rule 62-213.405, F.A.C. In such case, you must also check the following box:

[ ] I hereby request that the department waive the processing time requirements of the air construction permit to accommodate the processing time frames of the Title V air operation permit.

Application Comment

This application is for an air construction permit to modify the existing boiler and associated equipment at the Brooksville Power Plant, to convert the fuel supply from coal to biomass. The conversion would be sized to supply 70-80 megawatts (MW) of biomass-fired electrical power generation, using the existing steam turbine generator.

The current facility is operating in accordance with a Certification Order under the Florida Electrical Power Plant Siting Act (PPSA) (Certification No. PA82-17).

APPLICATION INFORMATION

Scope of Application

Emissions Unit ID Number	Description of Emissions Unit	Air Permit Type	Air Permit Processing Fee
018	Boiler	AC1B	N/A
	Material Handling	AC1E	N/A

Application Processing Fee

Check one: ☐ Attached - Amount: $_____ ☒ Not Applicable

APPLICATION INFORMATION

Owner/Authorized Representative Statement

Complete if applying for an air construction permit or an initial FESOP.

1. Owner/Authorized Representative Name : **Daniel A Hopkins**

2. Owner/Authorized Representative Mailing Address...
   Organization/Firm: **Florida Power Development, LLC**
   Street Address: **700 Louisiana Suite 1000**
   City: **Houston** State: **TX** Zip Code: **34601**

3. Owner/Authorized Representative Telephone Numbers...
   Telephone: **(713) 236-3046** ext. Fax: **(713) 250-3005**

4. Owner/Authorized Representative E-mail Address: **tony.d.hopkins@jpmorgan.com**

5. Owner/Authorized Representative Statement:

   I, the undersigned, am the owner or authorized representative of the corporation, partnership, or other legal entity submitting this air permit application. To the best of my knowledge, the statements made in this application are true, accurate and complete, and any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department.

Signature

9/22/2011
Date

APPLICATION INFORMATION

Application Responsible Official Certification – N/A

Complete if applying for an initial, revised, or renewal Title V air operation permit or concurrent processing of an air construction permit and revised or renewal Title V air operation permit. If there are multiple responsible officials, the "application responsible official" need not be the "primary responsible official."

1. Application Responsible Official Name:

2. Application Responsible Official Qualification (Check one or more of the following options, as applicable):

- ☐ For a corporation, the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit under Chapter 62-213, F.A.C.
- ☐ For a partnership or sole proprietorship, a general partner or the proprietor, respectively.
- ☐ For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official.
- ☐ The designated representative at an Acid Rain source or CAIR source.

3. Application Responsible Official Mailing Address...
Organization/Firm:
Street Address:
City: State: Zip Code:

4. Application Responsible Official Telephone Numbers...
Telephone: ext. Fax:

5. Application Responsible Official E-mail Address:

6. Application Responsible Official Certification:

I, the undersigned, am a responsible official of the Title V source addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other applicable requirements identified in this application to which the Title V source is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit. Finally, I certify that the facility and each emissions unit are in compliance with all applicable requirements to which they are subject, except as identified in compliance plan(s) submitted with this application.

Signature Date

APPLICATION INFORMATION

Professional Engineer Certification

1. Professional Engineer Name: **Scott H. Osbourn**
   Registration Number: **57557**
2. Professional Engineer Mailing Address...
   Organization/Firm: **Golder Associates Inc. ****
   Street Address: **5100 West Lemon Street, Suite 208**
   City: **Tampa** State: **FL** Zip Code: **33609**
3. Professional Engineer Telephone Numbers...
   Telephone: **(813) 287-1717** ext.**53304** Fax: **(813) 287-1716**
4. Professional Engineer E-mail Address: **sosbourn@golder.com**
5. Professional Engineer Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

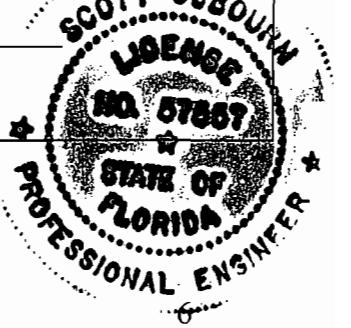
(3) If the purpose of this application is to obtain a Title V air operation permit (check here ☐, if so), I further certify that each emissions unit described in this application for air permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance plan and schedule is submitted with this application.

(4) If the purpose of this application is to obtain an air construction permit (check here ☒, if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here ☐, if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

(5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here , if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

Signature 9/23/11 Date

(seal)



* Attach any exception to certification statement.
**** Board of Professional Engineers Certificate of Authorization #00001670**

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates... Zone **17** East (km) **360.0** North (km) **3162.5**		2. Facility Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
3. Governmental Facility Code: **0**	4. Facility Status Code: **A**	5. Facility Major Group SIC Code: **32**	6. Facility SIC(s): **3241**
7. Facility Comment :			

Facility Contact

1. Facility Contact Name: **Daniel A Hopkins**
2. Facility Contact Mailing Address... Organization/Firm: **Florida Power Development, LLC** Street Address: **700 Louisiana Suite 1000** City: **Houston** State: **TX** Zip Code: **34601**
3. Facility Contact Telephone Numbers: Telephone: **713-236-3046** ext. Fax: **713-250-3005**
4. Facility Contact E-mail Address:

Facility Primary Responsible Official – N/A

Complete if an "application responsible official" is identified in Section I that is not the facility "primary responsible official."

1. Facility Primary Responsible Official Name:
2. Facility Primary Responsible Official Mailing Address... Organization/Firm: Street Address: City: State: Zip Code:
3. Facility Primary Responsible Official Telephone Numbers... Telephone: ( ) - ext. Fax: ( ) -
4. Facility Primary Responsible Official E-mail Address:

FACILITY INFORMATION

Facility Regulatory Classifications

Check all that would apply *following* completion of all projects and implementation of all other changes proposed in this application for air permit. Refer to instructions to distinguish between a "major source" and a "synthetic minor source."

1. ☐ Small Business Stationary Source	☐ Unknown
2. ☐ Synthetic Non-Title V Source	
3. [X] Title V Source	
4. [X] Major Source of Air Pollutants, Other than Hazardous Air Pollutants (HAPs)	
5. ☐ Synthetic Minor Source of Air Pollutants, Other than HAPs	
6. [X] Major Source of Hazardous Air Pollutants (HAPs)	
7. ☐ Synthetic Minor Source of HAPs	
8. ☐ One or More Emissions Units Subject to NSPS (40 CFR Part 60)	
9. ☐ One or More Emissions Units Subject to Emission Guidelines (40 CFR Part 60)	
10. [X] One or More Emissions Units Subject to NESHAP (40 CFR Part 61 or Part 63)	
11. ☐ Title V Source Solely by EPA Designation (40 CFR 70.3(a)(5))	
12. Facility Regulatory Classifications Comment:	
NESHAP Subpart DDDDD is applicable to the modified Boiler (EU ID 018).	

FACILITY INFORMATION

List of Pollutants Emitted by Facility

1. Pollutant Emitted	2. Pollutant Classification	3. Emissions Cap [Y or N]?
CO	A	N
NOx	A	N
PM/PM_{10}	A	N
$PM_{2.5}$	A	N
SO2	A	N
VOC	A	N
HAPs	A	N
SAM	A	N
Lead	A	N
HCl	A	N
HF	A	N
CO_2e	A	N

B. EMISSIONS CAPS

Facility-Wide or Multi-Unit Emissions Caps

1. Pollutant Subject to Emissions Cap	2. Facility-Wide Cap [Y or N]? (all units)	3. Emissions Unit ID's Under Cap (if not all units)	4. Hourly Cap (lb/hr)	5. Annual Cap (ton/yr)	6. Basis for Emissions Cap

7. Facility-Wide or Multi-Unit Emissions Cap Comment:

C. FACILITY ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1.	Facility Plot Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) [X] Attached, Document ID: **See Report** [ ] Previously Submitted, Date:_____
2.	Process Flow Diagram(s): (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) [X] Attached, Document ID: **See Report** [ ] Previously Submitted, Date:_____
3.	Precautions to Prevent Emissions of Unconfined Particulate Matter: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) [X] Attached, Document ID: **See Report** [ ] Previously Submitted, Date:_____

Additional Requirements for Air Construction Permit Applications

1.	Area Map Showing Facility Location: [X] Attached, Document ID: **See Report** [ ] Not Applicable (existing permitted facility)
2.	Description of Proposed Construction, Modification, or Plantwide Applicability Limit (PAL): [X] Attached, Document ID: **See Report**
3.	Rule Applicability Analysis: [X] Attached, Document ID: **See Report**
4.	List of Exempt Emissions Units: [ ] Attached, Document ID:_____ [X] Not Applicable (no exempt units at facility)
5.	Fugitive Emissions Identification: [X] Attached, Document ID: **See Report** [ ] Not Applicable
6.	Air Quality Analysis (Rule 62-212.400(7), F.A.C.): [X] Attached, Document ID: **See Report** [ ] Not Applicable
7.	Source Impact Analysis (Rule 62-212.400(5), F.A.C.): [X] Attached, Document ID: **See Report** [ ] Not Applicable
8.	Air Quality Impact since 1977 (Rule 62-212.400(4)(e), F.A.C.): [X] Attached, Document ID: **See Report** [ ] Not Applicable
9.	Additional Impact Analyses (Rules 62-212.400(8) and 62-212.500(4)(e), F.A.C.): [X] Attached, Document ID: **See Report** [ ] Not Applicable
10.	Alternative Analysis Requirement (Rule 62-212.500(4)(g), F.A.C.): [ ] Attached, Document ID:_____ [X] Not Applicable

C. FACILITY ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for FESOP Applications – N/A

1. List of Exempt Emissions Units:
   ☐ Attached, Document ID:_____ ☐ Not Applicable (no exempt units at facility)

Additional Requirements for Title V Air Operation Permit Applications – N/A

1. List of Insignificant Activities: (Required for initial/renewal applications only)
   ☐ Attached, Document ID:_____ ☐ Not Applicable (revision application)

2. Identification of Applicable Requirements: (Required for initial/renewal applications, and for revision applications if this information would be changed as a result of the revision being sought)
   ☐ Attached, Document ID:_____
   ☐ Not Applicable (revision application with no change in applicable requirements)

3. Compliance Report and Plan: (Required for all initial/revision/renewal applications)
   ☐ Attached, Document ID:_____
   Note: A compliance plan must be submitted for each emissions unit that is not in compliance with all applicable requirements at the time of application and/or at any time during application processing. The department must be notified of any changes in compliance status during application processing.

4. List of Equipment/Activities Regulated under Title VI: (If applicable, required for initial/renewal applications only)
   ☐ Attached, Document ID:_____
   ☐ Equipment/Activities Onsite but Not Required to be Individually Listed
   ☐ Not Applicable

5. Verification of Risk Management Plan Submission to EPA: (If applicable, required for initial/renewal applications only)
   ☐ Attached, Document ID:_____ ☐ Not Applicable

6. Requested Changes to Current Title V Air Operation Permit:
   ☐ Attached, Document ID:_____ ☐ Not Applicable

C. FACILITY ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Facilities Subject to Acid Rain, CAIR, or Hg Budget Program

1. Acid Rain Program Forms:

   Acid Rain Part Application (DEP Form No. 62-210.900(1)(a)):
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☒ Not Applicable (not an Acid Rain source)

   Phase II NO_X Averaging Plan (DEP Form No. 62-210.900(1)(a)1.):
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☒ Not Applicable

   New Unit Exemption (DEP Form No. 62-210.900(1)(a)2.):
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☒ Not Applicable

2. CAIR Part (DEP Form No. 62-210.900(1)(b)):
   ☒ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Not Applicable (not a CAIR source)

Additional Requirements Comment

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for an initial, revised or renewal Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for an air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application – Where this application is used to apply for both an air construction permit and a revised or renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes, and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit addressed in this application that is subject to air construction permitting and for each such emissions unit that is a regulated or unregulated unit for purposes of Title V permitting. (An emissions unit may be exempt from air construction permitting but still be classified as an unregulated unit for Title V purposes.) Emissions units classified as insignificant for Title V purposes are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

EMISSIONS UNIT INFORMATION
Section [1] of [2]
Boiler

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

   [X] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

   [ ] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

   [X] This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

   [ ] This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

   [ ] This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section: **Boiler**

3. Emissions Unit Identification Number: **018**

4. Emissions Unit Status Code: **C**	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code: **49**

8. Federal Program Applicability: (Check all that apply)

   [ ] Acid Rain Unit

   [ ] CAIR Unit

9. Package Unit:
   Manufacturer: Model Number:

10. Generator Nameplate Rating: **70-80 MW gross**

11. Emissions Unit Comment:

Emissions Unit Control Equipment/Method: Control 1 of 4

1. Control Equipment/Method Description:
   Hot ESP

2. Control Device or Method Code: **128**

Emissions Unit Control Equipment/Method: Control 2 of 4

1. Control Equipment/Method Description:
   Dry Limestone Injection

2. Control Device or Method Code: **041**

Emissions Unit Control Equipment/Method: Control 3 of 4

1. Control Equipment/Method Description:
   Catalytic Oxidizer

2. Control Device or Method Code: **109**

Emissions Unit Control Equipment/Method: Control 4 of 4

1. Control Equipment/Method Description:
   Selective Catalytic Reduction (SCR)

2. Control Device or Method Code: **139**

B. EMISSIONS UNIT CAPACITY INFORMATION
(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate: **70-80 MW gross**	
2. Maximum Production Rate:	
3. Maximum Heat Input Rate: **900 million Btu/hr**	
4. Maximum Incineration Rate: pounds/hr tons/day	
5. Requested Maximum Operating Schedule:	
24 hours/day	**7** days/week
52 weeks/year	**8,760** hours/year

6. Operating Capacity/Schedule Comment:

The boiler will be rated at a nominal 900 million British thermal units per hour (MMBtu/hr) and an annual heat input of 7,884,000 million British thermal units per year (MMBtu/yr) (based on 100 percent operating capacity). The average heat content of the biomass fuel is estimated at approximately 5,352 million British thermal units per pound (MMBtu/lb) high heating value (HHV).

C. EMISSION POINT (STACK/VENT) INFORMATION

(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **See Report**		2. Emission Point Type Code: **1**
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:		
5. Discharge Type Code:	6. Stack Height: feet	7. Exit Diameter: feet
8. Exit Temperature: °F	9. Actual Volumetric Flow Rate: acfm	10. Water Vapor: %
11. Maximum Dry Standard Flow Rate: dscfm		12. Nonstack Emission Point Height: feet
13. Emission Point UTM Coordinates... Zone: East (km): North (km):		14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)
15. Emission Point Comment: **See Table 5-3 in Report for stack parameter information.**		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type):		
External Combustion Boilers, Electric Generation, Wood/Bark Waste, Wood/Bark Fired Boiler		
2. Source Classification Code (SCC): **1-01-009-02**	3. SCC Units: **Tons Combusted**	
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment: **See Table 3-2 and Appendix A in Report for fuel characteristics.**		

Segment Description and Rate: Segment __ of __

1. Segment Description (Process/Fuel Type):		
2. Source Classification Code (SCC):	3. SCC Units:	
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment:		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
CO			
NOX			
PM/PM10			
PM2.5			
SO2			
VOC			
HAPs			
SAM			
Lead			
H106 (HCl)			
H107 (HF)			
CO_2e			

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **CO**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **40.5** lb/hour **177.4** tons/year	4. Synthetically Limited? ☐ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code:
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **Report, Section 3.0, Table 3-2.**	
11. Potential, Fugitive, and Actual Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **NOx**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **135.0** lb/hour **591.3** tons/year	4. Synthetically Limited? ☐ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code:
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **Report, Section 3.0, Table 3-2.**	
11. Potential, Fugitive, and Actual Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **PM/PM$_{10}$**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **11.7** lb/hour **51.2** tons/year	4. Synthetically Limited? ☐ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code:
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **Report, Section 3.0, Table 3-2.**	
11. Potential, Fugitive, and Actual Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **$PM_{2.5}$**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **7.6** lb/hour **33.2** tons/year	4. Synthetically Limited? ☐ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code:
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **Report, Section 3.0, Table 3-2.**	
11. Potential, Fugitive, and Actual Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **SO_2**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **135** lb/hour **591.3** tons/year	4. Synthetically Limited? ☐ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code:
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **Report, Section 3.0, Table 3-2.**	
11. Potential, Fugitive, and Actual Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **VOC**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **9.0** lb/hour **39.4** tons/year	4. Synthetically Limited? ☐ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code:
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **Report, Section 3.0, Table 3-2.**	
11. Potential, Fugitive, and Actual Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **HAPs**	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour **172.6** tons/year	4. Synthetically Limited? ☐ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code:
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **Report, Section 3.0, Tables 3-4, 3-5 and 3-6.**	
11. Potential, Fugitive, and Actual Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **Sulfuric Acid Mist (SAM)**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **2.2** lb/hour **9.5** tons/year	4. Synthetically Limited? ☐ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code:
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **Report, Section 3.0, Table 3-3.**	
11. Potential, Fugitive, and Actual Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **Lead (Pb)**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **0.04** lb/hour **0.19** tons/year	4. Synthetically Limited? ☐ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code:
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **Report, Section 3.0, Table 3-6.**	
11. Potential, Fugitive, and Actual Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions __ of ___

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of ___

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of ___

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **H106 – Hydrogen Chloride (HCl)**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **31.3** lb/hour **137.1** tons/year	4. Synthetically Limited? ☐ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code:
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **Report, Section 3.0, Table 3-4.**	
11. Potential, Fugitive, and Actual Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions __ of ___

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of ___

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of ___

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **H107 – Hydrogen Fluoride (HF)**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **4.8** lb/hour **21.1** tons/year	4. Synthetically Limited? ☐ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code:
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **Report, Section 3.0, Table 3-4.**	
11. Potential, Fugitive, and Actual Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions __ of ___

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of ___

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of ___

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **CO_2e**	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour **25,459** tons/year	4. Synthetically Limited? ☐ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code:
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **Report, Section 4.0, Table 4-1.**	
11. Potential, Fugitive, and Actual Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

G. VISIBLE EMISSIONS INFORMATION

Complete Subsection G if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation **1** of **1**

1. Visible Emissions Subtype: **VE20**	2. Basis for Allowable Opacity: [X] Rule [ ] Other
3. Allowable Opacity: Normal Conditions: **20 %** Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: **EPA Reference Method 9.**	
5. Visible Emissions Comment:	

Visible Emissions Limitation: Visible Emissions Limitation __ of ____

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: [ ] Rule [ ] Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

H. CONTINUOUS MONITOR INFORMATION

Complete Subsection H if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor ___ of ___

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement: ☐ Rule ☐ Other	
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

Continuous Monitoring System: Continuous Monitor ___ of ___

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement: ☐ Rule ☐ Other	
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: **See Report** [ ] Previously Submitted, Date _____

2. Fuel Analysis or Specification: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: **See Report** [ ] Previously Submitted, Date _____

3. Detailed Description of Control Equipment: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: **See Report** [ ] Previously Submitted, Date _____

4. Procedures for Startup and Shutdown: (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [ ] Attached, Document ID: **See Report** [ ] Previously Submitted, Date _____
   [X] Not Applicable (construction application)

5. Operation and Maintenance Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [ ] Attached, Document ID: _____ [ ] Previously Submitted, Date _____
   [X] Not Applicable

6. Compliance Demonstration Reports/Records:
   [ ] Attached, Document ID: _____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   [ ] Previously Submitted, Date: _____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   [ ] To be Submitted, Date (if known): _____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   [X] Not Applicable
   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute:
   [X] Attached, Document ID: **See Report** [ ] Not Applicable

I. EMISSIONS UNIT ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)): [X] Attached, Document ID: **See Report** [ ] Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rules 62-212.400(4)(d) and 62-212.500(4)(f), F.A.C.): [X] Attached, Document ID: **See Report** [ ] Not Applicable
3. Description of Stack Sampling Facilities: (Required for proposed new stack sampling facilities only) [ ] Attached, Document ID: _____ [X] Not Applicable

Additional Requirements for Title V Air Operation Permit Applications – N/A

1. Identification of Applicable Requirements: [ ] Attached, Document ID: _____
2. Compliance Assurance Monitoring: [ ] Attached, Document ID: _____ [ ] Not Applicable
3. Alternative Methods of Operation: [ ] Attached, Document ID: _____ [ ] Not Applicable
4. Alternative Modes of Operation (Emissions Trading): [ ] Attached, Document ID: _____ [ ] Not Applicable

Additional Requirements Comment

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for an initial, revised or renewal Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for an air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application – Where this application is used to apply for both an air construction permit and a revised or renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes, and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit addressed in this application that is subject to air construction permitting and for each such emissions unit that is a regulated or unregulated unit for purposes of Title V permitting. (An emissions unit may be exempt from air construction permitting but still be classified as an unregulated unit for Title V purposes.) Emissions units classified as insignificant for Title V purposes are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

[X] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[ ] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

[X] This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:

Material Handling

3. Emissions Unit Identification Number:

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code: **49**

8. Federal Program Applicability: (Check all that apply)

[ ] Acid Rain Unit

[ ] CAIR Unit

9. Package Unit:
Manufacturer: Model Number:

10. Generator Nameplate Rating:

11. Emissions Unit Comment:

The material handling for feedstock is depicted in Figures 2B, 4, and 5 of the Report. Emissions estimates are presented in Table 3-9 and Appendix C of the Report.

Emissions Unit Control Equipment/Method: Control 1 of 3

1. Control Equipment/Method Description: **Baghouse control system.**
2. Control Device or Method Code: **017**

Emissions Unit Control Equipment/Method: Control 2 of 3

1. Control Equipment/Method Description: **Dust supression by water sprays.**
2. Control Device or Method Code: **061**

Emissions Unit Control Equipment/Method: Control 3 of 3

1. Control Equipment/Method Description: **Dust suppression – traffic control** **(watering and/or sweeping of paved facility roadways, as necessary)**
2. Control Device or Method Code: **108**

Emissions Unit Control Equipment/Method: Control ___ of ___

1. Control Equipment/Method Description:
2. Control Device or Method Code:

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate: **See Report, Section 3.2 and Appendix C.**	
2. Maximum Production Rate:	
3. Maximum Heat Input Rate: million Btu/hr	
4. Maximum Incineration Rate: pounds/hr tons/day	
5. Requested Maximum Operating Schedule:	
24 hours/day	**7** days/week
52 weeks/year	**8,760** hours/year
6. Operating Capacity/Schedule Comment:	

EMISSIONS UNIT INFORMATION
Section [2] of [2]
Material Handling

C. EMISSION POINT (STACK/VENT) INFORMATION

(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram:	2. Emission Point Type Code:	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: Biomass fuel unloading, processing (screening and sizing), handling, and storage.		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:		
5. Discharge Type Code:	6. Stack Height: feet	7. Exit Diameter: feet
8. Exit Temperature: °F	9. Actual Volumetric Flow Rate: acfm	10. Water Vapor: %
11. Maximum Dry Standard Flow Rate: dscfm	12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: East (km): North (km):	14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment: **The material handling operations are depicted in Figures 2B, 4, and 5 of the Report. Emissions point information is presented in Table 3-9 and Appendix C of the Report.**		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type):		
Miscellaneous Manufacturing Industries, Miscellaneous Industrial Processes – Material Handling		
2. Source Classification Code (SCC): **3-99-999-89**	3. SCC Units: **Tons**	
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment: **See Appendix C of the Report.**		

Segment Description and Rate: Segment __ of __

1. Segment Description (Process/Fuel Type):		
2. Source Classification Code (SCC):	3. SCC Units:	
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment:		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
PM	018		WP
PM_{10}	018		WP
$PM_{2.5}$	018		WP

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **PM**	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code:
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years

10. Calculation of Emissions:

See Report, Table 3-9 and appendix C for material handling PM emission estimates.

11. Potential, Fugitive, and Actual Emissions Comment:
Potential emissions are for receiving, storage, traffic, and wind erosion activities. Report, Section 3.0, Table 3-9.

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **PM_{10}**	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code:
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years

10. Calculation of Emissions:

See Report, Table 3-9 and appendix C for material handling PM emission estimates.

11. Potential, Fugitive, and Actual Emissions Comment:
Potential emissions are for receiving, storage, traffic, and wind erosion activities. Report, Section 3.0, Table 3-9.

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **$PM_{2.5}$**	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code:
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **See Report, Table 3-9 and appendix C for material handling PM emission estimates.**	
11. Potential, Fugitive, and Actual Emissions Comment: **Potential emissions are for receiving, storage, traffic, and wind erosion activities. Report, Section 3.0, Table 3-9.**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

G. VISIBLE EMISSIONS INFORMATION

Complete Subsection G if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation **1** of **1**

1. Visible Emissions Subtype: **VE20**	2. Basis for Allowable Opacity: [X] Rule [ ] Other
3. Allowable Opacity: Normal Conditions: **20 %** Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: **EPA Reference Method 9.**	
5. Visible Emissions Comment: **Rule 62-296.320(4)(b), F.A.C.**	

Visible Emissions Limitation: Visible Emissions Limitation __ of ____

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: [ ] Rule [ ] Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

H. CONTINUOUS MONITOR INFORMATION

Complete Subsection H if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor - **N/A**

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

Continuous Monitoring System: Continuous Monitor ___ of ___

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: **See Report** [ ] Previously Submitted, Date _____

2. Fuel Analysis or Specification: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [ ] Attached, Document ID: **N/A** [ ] Previously Submitted, Date _____

3. Detailed Description of Control Equipment: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [ ] Attached, Document ID: **N/A** [ ] Previously Submitted, Date _____

4. Procedures for Startup and Shutdown: (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [ ] Attached, Document ID: _____ [ ] Previously Submitted, Date _____
   [X] Not Applicable (construction application)

5. Operation and Maintenance Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [ ] Attached, Document ID: _____ [ ] Previously Submitted, Date _____
   [X] Not Applicable

6. Compliance Demonstration Reports/Records:
   [ ] Attached, Document ID: _____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   [ ] Previously Submitted, Date: _____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   [ ] To be Submitted, Date (if known): _____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   [X] Not Applicable
   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute:
   [X] Attached, Document ID: **See Report** [ ] Not Applicable

I. EMISSIONS UNIT ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)):
   [X] Attached, Document ID: **See Report** [ ] Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rules 62-212.400(4)(d) and 62-212.500(4)(f), F.A.C.):
   [ ] Attached, Document ID: _____ [X] Not Applicable
3. Description of Stack Sampling Facilities: (Required for proposed new stack sampling facilities only)
   [ ] Attached, Document ID: _____ [X] Not Applicable

Additional Requirements for Title V Air Operation Permit Applications – N/A

1. Identification of Applicable Requirements:
   [ ] Attached, Document ID: _____
2. Compliance Assurance Monitoring:
   [ ] Attached, Document ID: _____ [ ] Not Applicable
3. Alternative Methods of Operation:
   [ ] Attached, Document ID: _____ [ ] Not Applicable
4. Alternative Modes of Operation (Emissions Trading):
   [ ] Attached, Document ID: _____ [ ] Not Applicable

Additional Requirements Comment

TABLES

Table 3-1: Summary of Maximum Potential Emissions from the Project

Pollutant	Maximum Potential Annual Emissions (TPY)			Netting Calculations		Maximum 2-Year Average
	Biomass Boiler	Handling Operations	TOTAL	Maximum 2-Year Average from Existing Units [a] (TPY)	Change (TPY)	PSD Significant Emission Rate (TPY)
SO_2	591.3	NA	591.3	2,129.0	-1,538	40
PM	51.2	16.2	67.4	53.0	14	25
PM_{10}	51.2	6.4	57.6	45.1	12.6	15
$PM_{2.5}$	33.2	1.0	34.2	29.3	5.0	10
NO_x	591.3	NA	591.3	2,391.5	-1,800	40
CO	177.4	NA	177.4	91.0	86	100
VOC	39.4	NA	39.4	10.9	28	40
SAM	9.5	NA	9.5	5.7	3.8	7
Lead	0.2	NA	0.2	0.009	0.18	0.6
HF	21.1	NA	21.1	--	--	NA
HCl	137.1	NA	137.1	--	--	NA
$CO2_e$ [b]	25,459	NA	25,459	751,569.3	-726,111	75,000

Source: Golder, 2011.

[a] Based on actual emissions from Annual Operating Reports from 2006-2010.

[b] On July 20, 2011, EPA promulgated the final rule deferring regulations on biogenic CO_2 emissions, Federal Register [FR 76 43490-43508]. In it, EPA finalizes changes to the PSD and Title V programs deferring, for three years, the application of those programs to biogenic CO_2 emissions. Thus, CO_2 emissions from the boiler are not included.
Note: NA= not applicable

Table 3-2: Proposed Boiler Maximum Emissions (Woody Biomass Firing)

		Heat Input		Maximum Emissions		
Pollutant	Reference	(MMBtu/hr)	(MMBtu/yr)	(lb/MMBtu)	(lb/hr)	(TPY)
SO_2	[a]	900	7,884,000	0.15	135.0	591.3
PM	[b, j]	900	7,884,000	0.013	11.7	51.2
PM_{10}	[b, j]	900	7,884,000	0.013	11.7	51.2
$PM_{2.5}$	[c, j]	900	7,884,000	0.008	7.6	33.2
NO_x	[d]	900	7,884,000	0.15	135.0	591.3
CO	[e]	900	7,884,000	0.045	40.5	177.4
VOC	[e]	900	7,884,000	0.01	9.0	39.4
SAM	[f]	900	7,884,000	0.0024	2.2	9.47
Lead	[g]	900	7,884,000	0.00005	0.0	0.19
HF	[h]	900	7,884,000	0.005	4.8	21.1
HCl	[i]	900	7,884,000	0.035	31.3	137.1

Notes:

[a] Emissions based on NSPS Subpart Da for sulfur dioxide.

[b] Emissions based on vendor data.

[c] Emissions based on vendor data and EPA AP-42, Table 1.6-1.

[d] Emissions based on NSPS Subpart Da for nitrogen dioxide.

[e] Maximum allowable in order not to trigger PSD.

[f] Controlled SAM (TPY) is based on design fuel sulfur content of 0.02% and heating value of 5,352 Btu/lb .

[g] Emission factor (lb/MMBtu) based on EPA AP-42, 1998, Table 1.6-4.

[h] Based on Wood Combustion HF Test Data from EPA Emission Database Supporting the NESHAP Industrial/Commercial/Institutional Boiler MACT (assumes controls).

[i] Based on design fuel and NESHAP Subpart DDDDD (Boiler MACT) "existing" biomass unit, 0.035 lb/MMBtu.

[j] Particulate matter is filterable.

TABLE 3-3: Sulfuric Acid Mist (SAM) Emission Estimates for the Boiler

Parameter	Units	Value
Fuel Sulfur Content	%	0.02
Fuel Heat Content (HHV)	Btu/lb	5,352
Heat Input	MMBtu/hr	900
	MMBtu/yr	7,884,000
Fuel Consumption	tons/hr	84
	TPY	736;547
Uncontrolled SO_2 Emissions [a]	lb/MMBtu	0.075
	lb/hr	67
	lb/year	55,048
I. SAM Manufactured from Combustion: E1(lb) = K x F1 x E2		
Conversion Factor: K [b]	lb/ton	3,063
Fuel Impact Factor: F1 [c]		0.04
SO_2 Emissions: E2	TPY	27.52
SAM Manuafactured: E1	lb	3,372
II. SAM Released from Combustion: E1'comb(lb) = E1 x F2 x F2		
SAM Manuafactured: E1	lb	3,372
Technology Impact Factor (Air Preheater): F2		0.50
Technology Impact Factor (Hot side ESP): F2		1
SAM Released: E1'	lb	1,686
III. SAM Manufactured from SCR and Oxidatoin Catalyst: SAM E1scr(lb) = K x S2 x fs X E2 x F3s		
Conversion Factor: K [b]	lb/ton	3,063
SCR SO_2 Oxidation Rate: S2[d]	percent	0.25
Operating Factor: fs		0.98
SO_2 Emissions: E2[e]	TPY	23.0
Technology Factor: F3s		1.0
SAM Manuafactured from SCR (E1scr)	lb	17,247
SAM Emissions (Sum of Parts II and III) - TOTAL	lb/yr	18,933
Heat Input	MMBtu/yr	7,884,000
	lb/MMBtu	0.0024
	lb/hr	**2.16**
	TPY	**9.5**

Notes:

[a] Based on ratio of SAM/SO_2 molecular weights (98/64) times 2,000 lb/ton

[b] Assumes 100% of sulfur converted to SO_2 for the purpose of calculating the amount of SAM produced

[c] 0.04 for alternative fuels (Southern Company, 2005, Table 1, Other Alternative Fuel).

[d] SO_2 oxidation rate estimated due to oxidation catalyst.

[e] Assumes reduction in SO_2 prior to SCR due to sorbent injection: 17-percent.

Source: Electric Power Research Institute (EPRI) Report on Estimating Total Sulfuric Acid Emissions from Stationary Power Plants, March 2007; Golder, 2011.

Table 3-4: HCl and HF Emission Estimates for the Boiler

Parameter	HCl	Parameter	SO_2	Parameter	HF
Based on:					
% Chlorine (Design Fuel)	0.027	% Sulfur (Design Fuel)	0.02	Heat Input (MMBtu/hr)	900
				MMBtu/yr	7,884,000
Heat Content (Btu/lb)	5,352	Heat Content (Btu/lb)	5,352		
				Uncontrolled Emissions (lb/MMBtu)[d]	0.008
Heat Input (BTU/hr)	900,000,000	Heat Input (BTU/hr)	900,000,000	Emissions (lb/hr)	7.2
lb/hr	168,161	lb/hr	168,161	Emissions (TPY)	32
mass fraction of chlorine	0.00027	mass fraction of sulfur	0.0002		
lb/hr of chlorine	45	lb/hr of sulfur	34	Control Efficiency (%)[e]	33
MW CL (g/mol)	35.5	MW S (g/mol)	32	Controlled Emissions (lb/MMBtu)	0.005
MW H	1.0	MW O	16	Emissions (lb/hr)	4.8
MW HCl	36.5	MW SO_2	64	Emissions (TPY)	21
Ratio of HCL/CL	1.03	Ratio of SO_2/S	2		
lb/hr HCl	46.7	lb/hr SO_2	67.3		
hours per year	8,760	hours per year	8,760		
Uncontrolled (TPY)	204.6	Uncontrolled (TPY)	294.6		
Uncontrolled lb/MMBtu	0.052	Uncontrolled lb/MMBtu	0.075		
Control Efficiency (%)[a]	33	Control Efficiency (%)[b]	17		
Controlled lb/MMBtu	0.035	Controlled lb/MMBtu[c]	0.062		
Controlled (lb/hr)	31.3	Controlled (lb/hr)	56.2		
Controlled (TPY)	137.1	Controlled (TPY)	246.0		

Notes:

[a] HCL control efficiency based on NESHAP Subpart DDDDD (Boiler MACT) "existing" biomass unit, 0.035 lb/MMBtu.

[b] SO_2 control efficiency conservatively estimated to be equal to 50% of the HCl control efficiency.

[c] Based on design fuel sulfur level of 0.02% for annual average SO_2 emissions. Proposing SO_2 limit of 0.015 lb/MMBtu to reflect variation in actual fuel.

[d] MACT Database - Obtained from 1CR Phase II test data used as basis for EPA proposed MACT.

[e] HF control level is assumed equal to HCl.

TABLE 3-5: Organic HAP Emission Estimates for the Boiler at 100% Load

Organic Compound	Emission Factor (lb/MMBtu)	Reference	Uncontrolled Emissions (lb/hr)	(TPY)	Control Device	(%)	Controlled Emissions (lb/hr)	(TPY)
Acetaldehyde	8.3E-04	AP-42 Wood	7.5E-01	3.3	OC	75	1.9E-01	8.2E-01
Acetophenone	3.2E-09	AP-42 Wood	2.9E-06	1.3E-05	OC	75	7.2E-07	3.2E-06
Acrolein	4.6E-03	MACT Stoker	4.1	18.1	OC	75	1.0	4.5
Benzene	2.4E-03	MACT Stoker	2.2	9.5	OC	75	5.4E-01	2.4
bis(2-Ethylhexyl)phthalate	7.0E-05	MACT Wood	6.3E-02	2.8E-01	OC	75	1.6E-02	6.9E-02
Bromomethane	1.5E-05	AP-42 Wood	1.4E-02	5.9E-02	OC	75	3.4E-03	1.5E-02
Carbazole	1.8E-06	AP-42 Wood	1.6E-03	7.1E-03	OC	75	4.1E-04	1.8E-03
Carbon tetrachloride	4.5E-05	AP-42 Wood	4.1E-02	1.8E-01	OC	75	1.0E-02	4.4E-02
Chlorine	7.0E-04	MACT W/B	6.3E-01	2.8	OC	75	1.6E-01	6.9E-01
Chlorobenzene	7.5E-06	MACT Wood	6.8E-03	3.0E-02	OC	75	1.7E-03	7.4E-03
Chloroform	2.8E-05	AP-42 Wood	2.5E-02	1.1E-01	OC	75	6.3E-03	2.8E-02
Chloromethane	2.3E-05	AP-42 Wood	2.1E-02	9.1E-02	OC	75	5.2E-03	2.3E-02
1,2-Dibromoethene	5.5E-05	AP-42 Wood	5.0E-02	2.2E-01	OC	75	1.2E-02	5.4E-02
Dibutylphthalate	6.8E-05	MACT Wood	6.1E-02	2.7E-01	OC	75	1.5E-02	6.7E-02
1,4-Dichlorobenzene	5.1E-05	MACT Wood	4.6E-02	2.0E-01	OC	75	1.1E-02	5.0E-02
1,2-Dichloroethane	2.9E-05	AP-42 Wood	2.6E-02	1.1E-01	OC	75	6.5E-03	2.9E-02
Dichloromethane	2.9E-04	AP-42 Wood	2.6E-01	1.1	OC	75	6.5E-02	2.9E-01
1,2-Dichloropropane	3.3E-05	AP-42 Wood	3.0E-02	1.3E-01	OC	75	7.4E-03	3.3E-02
2,4-Dinitrophenol	3.7E-05	MACT Wood	3.3E-02	1.4E-01	OC	75	8.2E-03	3.6E-02
Ethylbenzene	3.1E-05	AP-42 Wood	2.8E-02	1.2E-01	OC	75	7.0E-03	3.1E-02
Formaldehyde	2.6E-03	MACT Database	2.3	10.2	OC	75	5.9E-01	2.6
Naphthalene	9.7E-05	AP-42 Wood	8.7E-02	3.8E-01	OC	75	2.2E-02	9.6E-02
2-Nitrophenol	2.4E-07	AP-42 Wood	2.2E-04	9.5E-04	OC	75	5.4E-05	2.4E-04
4-Nitrophenol	3.5E-05	MACT Wood	3.2E-02	1.4E-01	OC	75	7.9E-03	3.4E-02
Pentachlorophenol	5.1E-08	AP-42 Wood	4.6E-05	2.0E-04	OC	75	1.1E-05	5.0E-05
Phenol	5.1E-05	AP-42 Wood	4.6E-02	2.0E-01	OC	75	1.1E-02	5.0E-02
Propionaldehyde	6.1E-05	AP-42 Wood	5.5E-02	2.4E-01	OC	75	1.4E-02	6.0E-02
Styrene	1.9E-03	MACT W/B	1.7	7.5	OC	75	4.3E-01	1.9
2,3,7,8-Tetrachlorodibenzo-p-dioxins	8.6E-12	AP-42 Wood	7.7E-09	3.4E-08	OC	75	1.9E-09	8.5E-09
Tetrachlorodibenzo-p-dioxins	4.7E-10	AP-42 Wood	4.2E-07	1.9E-06	OC	75	1.1E-07	4.6E-07
2,3,7,8-Tetrachlorodibenzo-p-furans	9.0E-11	AP-42 Wood	8.1E-08	3.5E-07	OC	75	2.0E-08	8.9E-08
Tetrachlorodibenzo-p-furans	7.5E-10	AP-42 Wood	6.8E-07	3.0E-06	OC	75	1.7E-07	7.4E-07
Tetrachloroethene	3.4E-05	MACT W/B	3.1E-02	1.3E-01	OC	75	7.7E-03	3.4E-02
Toluene	0.000096	MACT Stoker	8.6E-02	3.8E-01	OC	75	2.2E-02	9.5E-02
1,1,1-Trichloroethane	0.000031	AP-42 Wood	2.8E-02	1.2E-01	OC	75	7.0E-03	3.1E-02
Trichloroethene	0.00003	AP-42 Wood	2.7E-02	1.2E-01	OC	75	6.8E-03	3.0E-02
2,4,6-Trichlorophenol	<2.2E-08	AP-42 Wood	2.0E-05	8.7E-05	OC	75	5.0E-06	2.2E-05
Vinyl Chloride	0.000012	MACT W/B	1.1E-02	4.7E-02	OC	75	2.7E-03	1.2E-02
Xylenes (mixed)	0.0000012	MACT W/B	1.1E-03	4.7E-03	OC	75	2.7E-04	1.2E-03
Total HAP Emissions			12.84	56.22			3.21	14.06
Individual HAP Emissions			4.14	18.13			1.04	4.53

Emissions based on:		
	Heat Input (MMBtu/hr)	**900**
	Heat Input (MMBtu/YR)	**7,884,000**

Notes:

a) References used in development of emission factors:

MACT Wood - Obtained from vacated boiler MACT backup database tests performed on wood-burning boilers of any configuration.

MACT Stoker - Obtained from vacated boiler MACT backup database tests performed on wood and biomass fired stoker boilers.

MACT Wood/Biomass - Obtained from vacated boiler MACT backup database tests performed on wood and biomass fired boilers of any configuration.

MACT Database - Obtained from recent ICR test data used as basis for EPA proposed MACT.

EPA AP-42 - Obtained from AP-42 (1998) Table 1.6-3 or Table 1.6-6.

b) Control Device Code: OC - Oxidation Catalyst.

Source: Golder, 2011. EPA AP-42, 1998; Table 1.6-3.

TABLE 3-6: Metal Trace HAP Emission Estimates for the Boiler at 100% Load

Organic Compound	Emission[a] Factor (lb/MMBtu)	Rating	Uncontrolled Emissions (lb/hr)	Uncontrolled Emissions (TPY)	Control Device	Control (%)	Controlled Emissions (lb/hr)	Controlled Emissions (TPY)
Antimony	7.9E-06	C	7.1E-03	3.1E-02	ESP	98	1.4E-04	6.2E-04
Arsenic	2.2E-05	A	2.0E-02	8.7E-02	ESP	98	4.0E-04	1.7E-03
Beryllium	1.1E-06	B	9.9E-04	4.3E-03	ESP	98	2.0E-05	8.7E-05
Cadmium	4.1E-06	A	3.7E-03	1.6E-02	ESP	98	7.4E-05	3.2E-04
Chromium, total	2.1E-05	A	1.9E-02	8.3E-02	ESP	98	3.8E-04	1.7E-03
Cobalt	6.5E-06	C	5.9E-03	2.6E-02	ESP	98	1.2E-04	5.1E-04
Lead	4.8E-05	A	4.3E-02	1.9E-01			4.3E-02	1.9E-01
Manganese	1.6E-03	A	1.4E+00	6.3E+00	ESP	98	2.9E-02	1.3E-01
Mercury[b]	4.6E-06		4.1E-03	1.8E-02			4.1E-03	1.8E-02
Nickel	3.3E-05	A	3.0E-02	1.3E-01	ESP	98	5.9E-04	2.6E-03
Selenium	2.8E-06	A	2.5E-03	1.1E-02	ESP	98	5.0E-05	2.2E-04
Total HAP Emissions			1.58	6.90			0.08	0.34
Individual HAP Emissions			1.44	6.31			0.04	0.19

Emissions based on:	**Heat Input (MMBtu/hr)**	**900**
	Heat Input (MMBtu/YR)	**7,884,000**

Note: EPA Emission Factor Ratings: A-Excellent; B-Above Average; C-Average; D-Below Average; E-Poor.

[a] Emission factors based on USEPA AP-42 Table 1.6-4.

[b] Mercury based on the allowable limit of NESHAP Subpart DDDDD (Boiler MACT) for "existing" biomass unit, 4.6E-06 lb/MMBtu.

Source: Golder, 2011.

Table 3-7: Proposed Boiler Emissions during Startup/Shutdown Events When Firing Natural Gas

Parameter	Boiler
Performance	
Startup Heat Input (MMBtu/hr-HHV)	90.00
Shutdown Heat Input (MMBtu/hr-HHV)	NA
Fuel	Natural Gas
Heat Content (HHV-Btu/scf)	1,020
Fuel Usage (scf/hr-boiler)	88,235
Cold Startup Fuel Hours (hrs/event)	16
Cold Startup Events per year (event/years)	4
Warm Startup Fuel Hours (hrs/event)	6
Warm Startup Events per year (event/years)	4
Hot Startup Fuel Hours (hrs/event)	3
Hot Startup Events per year (event/years)	4
Maximum Hours per Year	100
Maximum Fuel Usage (scf/yr)	8,823,529
Emissions	
SO_2 -Basis (grains S/100 scf-gas) [a]	2
(lb/hr)	0.50
(tpy)	0.03
NO_x - (lb/MMBtu) [b]	0.049
(lb/hr)	4.41
(tpy)	0.22
CO - (lb/MMBtu) [b]	0.082
(lb/hr)	7.41
(tpy)	0.37
VOC - (lb/mmBtu) [b]	0.005
(lb/hr)	0.49
(tpy)	0.02
PM/PM10 - (lb/mmBtu) [b]	0.007
(lb/hr)	0.67
(tpy)	0.03

Source:

[a] Typical maximum sulfur content for natural gas.

[b] Emissions based on EPA, 1996 (AP-42, Tables 1.4-1 and 1.4-2).

Table 3-8: Proposed Boiler Emissions during Startup/Shutdown Events When Firing ULSD Fuel Oil

Parameter	Boiler
Performance	Startup
Fuel Heat Content (HHV-Btu/lb)	19,300
Fuel density (lb/gal)	7.1
Startup Fuel usage (gallons/hr)	662
Shutdown Fuel usage (gallons/hr)	NA
Startup Heat Input (MMBtu/hr-HHV)	90.7
Shutdown Heat Input (MMBtu/hr-HHV)	NA
Fuel	ULSDO
Cold Startup Fuel Hours (hrs/event)	16
Cold Startup Events per year (event/years)	4
Warm Startup Fuel Hours (hrs/event)	6
Warm Startup Events per year (event/years)	4
Hot Startup Fuel Hours (hrs/event)	3
Hot Startup Events per year (event/years)	4
Maximum Hours per Year	100
Emissions	Startup
SO_2 - Basis (%S) [a]	0.0015%
Conversion of S to SO_2	100
Molecular weight SO_2/ S (64/32)	2
Emission rate (lb/hr)	0.141
(tpy)	0.007
NO_x - (lb/1000 gal) [b]	20
(lb/hr)	13.2
(tpy)	0.66
Assuming Low NOx Burners	
(lb/hr)	10.6
(tpy)	0.53
CO - (lb/1000 gal) [b]	5
(lb/hr)	3.31
(tpy)	0.17
VOC - (lb/1000 gal) [b, d]	0.252
(lb/hr)	0.17
(tpy)	0.01
PM/PM_{10} - (lb/1000 gal) [b, e]	2
(lb/hr)	1.32
(tpy)	0.07

Source:

[a] Typical maximum sulfur content for ULSDO.

[b] Emissions based on EPA, 2010 (AP-42, Tables 1.3-1 and 1.3-3).

[c] Based On EPA 2010 AP-42 Table 1.3-14, Low NOx burners will reduce NOx by 20% to 50% for distillate oil.

[d] Emissions represent total organic compounds.

[e] Emissions represent filterable PM.

Table 3-9: Summary of PM Emissions from Material Handling Operations

Operation Scenario	Emission Rate (lb/hr) PM 24-hour Rate	Emission Rate (TPY) PM Annual Rate	Emission Rate (lb/hr) PM_{10} 24-hour Rate	Emission Rate (TPY) PM_{10} Annual Rate	Emission Rate (lb/hr) $PM_{2.5}$ 24-hour Rate	Emission Rate (TPY) $PM_{2.5}$ Annual Rate
Fuel Delivery - Paved Road Emissions	1.14	2.44	0.11	0.49	0.03	0.12
Management of Pile (Frontend Loaders) - Unpaved Road Emissions	0.46	1.85	0.065	0.262	0.007	0.026
Delivery of Lime - Paved Road Emissions	0.003	0.004	0.0006	0.0009	0.0001	0.0002
Stack Out Operations	0.28	0.23	0.14	0.11	0.02	0.02
Relcaim Operations	0.013	0.022	0.006	0.011	0.001	0.002
Screen and Hog Mill	0.051	0.112	0.019	0.041	0.0146	0.032
Silo Handling System						
Lime Silo Vents	0.77	3.04	0.36	1.44	0.06	0.22
Ash Silos Vents	2.11	8.47	1.00	4.01	0.15	0.61
Total Net Emissions	**4.8**	**16.2**	**1.7**	**6.4**	**0.3**	**1.0**

Source: Golder, 2011

Table 4-1: Greenhouse Gas (GHG) Emission Calculations

	Table C-1 Default HHV	Table C1 & C2 Default Emission Factors		
		CH_4	N_2O	CO_2
Wood and Wood Residuals	15.38 MMBtu/short ton	3.2E-02 kg/MMBtu	4.2E-03 kg/MMBtu	93.8 kg/MMBtu
Natural Gas	1.028E-03 MMBtu/scf	1.0E-03 kg/MMBtu	1.0E-04 kg/MMBtu	53.02 kg/MMBtu
No. 2 fuel oil	0.138 MMBtu/gal	3.0E-03 kg/MMBtu	6.0E-04 kg/MMBtu	73.96 kg/MMBtu

Annual Fuel Usage

Fuels	Annual Operating Hours (hrs/yr)	Fuel Use	
Boiler - Biomass (Wood)	8,760	740,000 ton/yr	11,381,200 MMBtu/yr
Startup Fuel for Boiler - No. 2 fuel oil	100	66,176 gal/yr	9,132 MMBtu/yr

Notes:

Example Equation: Fuel Use in MMBtu/yr = Fuel Use (scf/yr) x HHV (Default high heat value from 40 CFR 98, Table C-1) in MMBtu/scf.

GHG Emission Calculations

Allowable Fuels	CO_2[b]	N_2O[c,d]	CH_4[c,d]	Total CO_2 Equivalent
	metric tons			metric tonnes
Boiler - Biomass (Wood)	[a]	48	364	22,466
Startup Fuel for Boiler - No. 2 fuel oil	675	0.005	0.027	678
	675	**47.81**	**364.23**	**23,144**

Allowable Fuels	CO_2[b]	N_2O[c,d]	CH_4[c,d]	Total CO_2 Equivalent
	short tons			short tons
Boiler - Biomass (Wood)	[a]	53	401	24,713
Startup Fuel for Boiler - No. 2 fuel oil	743	0.006	0.030	745
	743	**53**	**401**	**25,459**
		Step 1 GHG Tailoring Rule Threshold (modification):		**75,000**

Allowable Fuels	CO_2	N_2O	CH_4	Total GHG Emissions
	short tons			short tons
Boiler - Biomass (Wood)	[a]	53	401	453
Startup Fuel for Boiler - No. 2 fuel oil	743.0	0.006	0.030	743
	743	**53**	**401**	**1,196**
		Step 2 GHG Tailoring Rule Threshold:		**250**

Notes:

tonne = metric ton; 1 metric ton = 1000 kg; 1 tonne = 1.1 short ton.

[a] On July 20, 2011, EPA promulgated the final rule deferring regulations on biogenic CO_2 emissions, Federal Register [FR 76 43490-43508]. In it, EPA finalizes changes to the PSD and Title V programs deferring, for three years, the application of those programs to biogenic CO_2 emissions. However, the deferral does not apply to other greenhouse gases, such as methane (CH_4) and nitrous oxide (N_2O).

[b] CO_2 emissions based on Tier 1 methodology. Tier 1 uses annual fuel usage, default fuel heat content, and default emission factors to estimate CO_2 emissions.

Fuel type CO_2 (tonnes) = Fuel Use (MMBtu/yr) x EF (Default emission factor for CO_2 from 40 CFR 98, Table C-1)/1000 (tonnes/kg).

[c] N_2O and CH_4 emissions based on fuel use, default fuel heat content, and default emission factor.

Fuel type: N_2O or CH_4 = Fuel Use (MMBtu/yr) x EF (Default emission factor for CH_4 or N_2O from 40 CFR 98, Table C-2)/1000 (tonnes/kg)

[d] N_2O is multiplied by a factor of 310 to determine CO_2 equivalence. CH_4 is multiplied by a factor of 21 to determine CO_2 equivalence.

Startup fuel emissions are conservatively based solely on No. 2 fuel oil usage.

Table 5-1: Summary of Modeled Air Impacts from the Project Compared to the National and Florida AAQS

Pollutant	Averaging Period	Concentration ($\mu g/m^3$)					
		Modeled (A)	Background (B)	Total (A+B)	NAAQS		Florida AAQS
					Primary Standard	Secondary Standard	
CO	1-Hour	35	1,239	1,273	40,000	40,000	40,000
	8-Hour	11	1,145	1,155	10,000	10,000	10,000
$PM_{2.5}$	24-Hour	4.4	18	23	35[a]	35	35
	Annual	0.6	9.0	10	15	15	15
PM_{10}	24-Hour	27	41	68	150	150	150
	Annual	4.0	17	21	NA	NA	50
SO_2	1-Hour	92	58	149	196[b]	NA	NA
	3-Hour	76	26	102	NA	1,300	1,300
	24-Hour	20	8.6	29	365	NA	260
	Annual	1.5	2.3	3.8	80	NA	60
NO_2	1-Hour[c]	60	75	136	188[d]	NA	NA
	Annual	1.1	14	15	100	100	100

Notes:

[a] The 24-hour $PM_{2.5}$ standard is met when the 3-year average of 98th percentile of the 24-hour concentrations are less than 35 $\mu g/m^3$.

[b] The final rule signed June 2, 2010. To attain this standard, the 3-year average of 99th percentile of daily 1-hour average at each monitor within an area must not exceed 196 $\mu g/m^3$.

[c] Assumes NO_x to NO_2 ratio of 0.80 for the 1-hour standard under Tier 2.

[d] The 1-hour NO_2 standard is met when the 3-year average of 98th percentile of daily 1-hour maximum values is less than 188 $\mu g/m^3$.

NA = not applicable, i.e. no standard exists. NAAQS = National Ambient Air Quality Standards.

Table 5-2 : AERMOD Model Features

MAJOR FEATURES OF THE AERMOD MODEL, VERSION 11103

Plume dispersion/growth rates are determined by the profile of vertical and horizontal turbulence, vary with height, and use a continuous growth function.

In a convective atmosphere, uses three separate algorithms to describe plume behavior as it comes in contact with the mixed layer lid; in a stable atmosphere, uses a mechanically mixed layer near the surface.

Polar or Cartesian coordinate systems for receptor locations can be included directly or by an external file reference.

Urban model dispersion is input as a function of city size and population density; sources can also be modeled individually as urban sources.

Stable plume rise: uses Briggs equations with winds and temperature gradients at stack top up to halfway up to plume rise. Convective plume rise: plume superimposed on random convective velocities.

Procedures suggested by Briggs (1974) for evaluating stack-tip downwash.

Has capability of simulating point, volume, area, and multi-sized area sources.

Accounts for the effects of vertical variations in wind and turbulence (Brower et al., 1998).

Uses measured and computed boundary layer parameters and similarity relationships to develop vertical profiles of wind, temperature, and turbulence (Brower et al., 1998).

Concentration estimates for 1-hour to annual average times.

Creates vertical profiles of wind, temperature, and turbulence using all available measurement levels.

Terrain features are depicted by use of a controlling hill elevation and a receptor point elevation.

Modeling domain surface characteristics are determined by selected direction and month/season values of surface roughness length, albedo, and Bowen ratio.

Contains both a mechanical and convective mixed layer height, the latter based on the hourly accumulation of sensible heat flux.

The method of Pasquill (1976) to account for buoyancy-induced dispersion.

A default regulatory option to set various model options and parameters to EPA-recommended values.

Contains procedures for calm-wind and missing data for the processing of short term averages.

Note: AERMOD = The American Meteorological Society and EPA Regulatory Model.

Source: Golder 2011

Table 5-3 : Modeled Source Parameters

Point Sources	MODEL ID	UTM Coordinates[a] East (m)	UTM Coordinates[a] North (m)	Physical Height (ft)	Physical Height (m)	Physical Diameter (ft)	Physical Diameter (m)	Operating Temperature (°F)	Operating Temperature (K)	Operating Velocity (ft/s)	Operating Velocity (m/s)
Boiler	BOILER	360,027.24	3,162,556.71	150	45.7	12.0	3.66	334	441	46.1	14.0
Ash Silo Vent (AA)	VENT_AA	360,052.09	3,162,600.89	125	38.1	2.0	0.61	77	298	36.1	11.0
Ash Silo Vent (M)	VENT_M	360,045.50	3,162,617.04	200	61.0	1.5	0.46	180	355	103.7	31.6
Lime Silo Vent (BB)	VENT_BB	360,058.46	3,162,462.46	150	45.7	4.0	1.22	100	311	25.2	7.7
Screen to hog mill (R5) to conveyor C3 (R6)	BAGHSE1	360,223.40	3,162,695.58	50	15.2	0.6	0.18	ambient	ambient	60.0	18.3

Volume Sources				Release Height ft	Release Height m	Side length ft	Side length m	Initial Sigma y ft	Initial Sigma y m	Initial Sigma z ft	Initial Sigma z m
Conveyor C1 to Pile	S5	360,283.73	3,162,934.09	25	7.6	10.0	3.0	2.3	0.7	4.7	1.4
Conveyor C2 to screen to conveyor C3	R3_R4	360,223.50	3,162,695.26	25	7.6	32.0	9.8	7.5	2.3	4.7	1.4
Conveyor C3 to conveyor C4	R7	360,175.06	3,162,560.36	20	6.1	32.5	9.9	7.6	2.3	4.7	1.4

Line Sources				Release Height ft	Release Height m	Side length ft	Side length m
Frontend loaders for pile management	FEL_S6	[b]	[b]	9.0	2.7	20	6.1
Delivery of fuel truks (S1)	FUELTKS	[c]	[c]	9.0	2.7	40	12.2
Delivery of lime truks (R10)	LIMETKS	[d]	[d]	9.0	2.7	40	12.2

Area Sources				Release Height ft	Release Height m
Open pile[e]	PILE_S7	360,283.43	3,163,000.12	20	6.1
Trucks unloading to hoppers	UNLTK_S2	360,415.58	3,162,797.78	0	0
Hoppers to conveyor C1	S3_S4	360,431.47	3,162,775.52	0	0
Frontend loaders to reclaim hoppers and to conveyor C2	R1_R2	360,223.88	3,162,950.03	0	0

Notes:

[a] UTM Zone 17, North American Datum 83.

[b] Line source comprised of 23 volume sources.

[c] Line source comprised of 76 volume sources.

[d] Line source comprised of 79 volume sources.

[e] Pile release height set equal to half the pile height.

Table 5-4 : Modeled Source Emission Rates

Sources	MODEL ID	PM_{10} (lb/hr)	PM_{10} (g/s)	$PM_{2.5}$ (lb/hr)	$PM_{2.5}$ (g/s)	SO_2 (lb/hr)	SO_2 (g/s)	NOx (lb/hr)	NOx (g/s)	CO (lb/hr)	CO (g/s)
Boiler	BOILER	11.7	1.47	7.6	0.96	135.0	17.01	135.0	17.01	40.5	5.10
Ash Silo Vent (AA)	VENT_AA	0.33	0.04	0.05	0.006	--	--	--	--	--	--
Ash Silo Vent (M)	VENT_M	0.67	0.08	0.1	0.013	--	--	--	--	--	--
Lime Silo Vent (BB)	VENT_BB	0.36	0.05	0.055	0.007	--	--	--	--	--	--
Screen to hog mill (R5) to conveyor C3 (R6)	BAGHSE1	1.00E-04	1.26E-05	2.00E-05	2.52E-06	--	--	--	--	--	--
Conveyor C1 to Pile	S5	5.50E-03	6.93E-04	8.00E-04	1.01E-04	--	--	--	--	--	--
Conveyor C2 to screen to conveyor C3	R3_R4	7.00E-04	8.82E-05	1.00E-04	1.26E-05	--	--	--	--	--	--
Conveyor C3 to conveyor C4	R7	3.40E-04	4.28E-05	5.00E-05	6.30E-06	--	--	--	--	--	--
Frontend loaders for pile management	FEL_S6 [a]	0.065	0.0082	0.0065	0.00082	--	--	--	--	--	--
Delivery of fuel truks (S1)	FUELTKS [b]	0.11	0.0139	0.03	0.0038	--	--	--	--	--	--
Delivery of lime truks (R10)	LIMETKS [c]	6.00E-04	7.56E-05	1.40E-04	1.76E-05	--	--	--	--	--	--
Open pile	PILE_S7	0.12	0.0151	0.018	0.0023	--	--	--	--	--	--
Trucks unloading to hoppers	UNLTK_S2	4.10E-03	5.17E-04	6.00E-04	7.56E-05	--	--	--	--	--	--
Hoppers to conveyor C1	S3_S4	8.20E-03	1.03E-03	1.20E-03	1.51E-04	--	--	--	--	--	--
Frontend loaders to reclaim hoppers and to conveyor C2	R1_R2	4.10E-03	5.17E-04	6.00E-04	7.56E-05	--	--	--	--	--	--

Notes:

[a] Line source comprised of 23 volume sources.

[b] Line source comprised of 76 volume sources.

[c] Line source comprised of 79 volume sources.

Table 5-5 : Modeled Solid Structure Dimensions

Structure Type	Label	Diameter (ft)	Diameter (m)	Height (ft)	Height (m)	Length (ft)	Length (m)	Width (ft)	Width (m)
Boiler Building	A	NA	NA	139	42	118	36	89	27
Power Plant Buidling	B	NA	NA	83	25	213	65	246	75
K2 Clinker Silo	C	93	28	211	64	NA	NA	NA	NA
K2 Cement Silo	D	78	24	200	61	NA	NA	NA	NA
K2 Cement Silo	E	78	24	200	61	NA	NA	NA	NA
K1 Cement Silo 1	F	61	19	200	61	NA	NA	NA	NA
K1 Cement Silo 2	G	61	19	200	61	NA	NA	NA	NA
K1 Cement Silo 3	H	61	19	200	61	NA	NA	NA	NA
K1 Cement Silo 4	I	61	19	200	61	NA	NA	NA	NA
K1 and Power Plant Baghouse	J	NA	NA	72	22	138	42	98	30
K1 Raw Meal Silo	K	35	11	213	65	NA	NA	NA	NA
K1 Raw Meal Silo	L	35	11	213	65	NA	NA	NA	NA
D28 Silo	M	30.5	9	134	41	NA	NA	NA	NA
D64 Silo	N	NA	NA	134	41	NA	NA	NA	NA
K1 Finish Mill	O	NA	NA	108	33	49	15	85	26
K1 Raw Mill	P	NA	NA	121	37	79	24	48	15
K2 Finish Mill	Q	NA	NA	130	40	110	34	72	22
K2 Finish Mill Baghouse	R	NA	NA	112	34	43	13	79	24
K1 Preheater Tower	S	NA	NA	337	103	136	42	115	35
Cement Plant Bagging Facility and Power Plant Warehouse	T	NA	NA	50	15	207	63	407	124
K2 Preheater Tower	U	NA	NA	330	101	39	12	62	19
K2 Baghouse	V	NA	NA	171	52	44	14	75	23
K2 Blending Silo	W	49	15	282	86	NA	NA	NA	NA
D16 Silo	X	32	10	124	38	NA	NA	NA	NA
Z30 Silo	Y	32	10	124	38	NA	NA	NA	NA
D33 Silo	Z	24	7	96	29	NA	NA	NA	NA
D72 Silo	AA	24	7	101	31	NA	NA	NA	NA
Limestone Injection Silo	BB	24	7	115	35	NA	NA	NA	NA

Note: The labeled solid structured are presented in Figure 2A.
Source: Central Pomer and Lime, 2011

Table 5-6: Non-Modeled Background Data

Pollutant	Site Name and ID	Year	Concentrations (ug/m³)														
			1-HOUR						3-HOUR		8-HOUR				24-HOUR		Annual
			Highest	2nd Highest	98th Percentile	3-Year Avg. 98th Percentile	99th Percentile	3-Year Avg. 99th Percentile[a]	Highest	2nd Highest	Highest	2nd Highest	4th Highest	3-Year Avg. 4th Highest	Highest	2nd Highest	
	NAAQS [ug/m³]		**NA**	**NA**	**NA**	**35**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**15**
	Florida AAQS [ug/m³]		**NA**	**NA**	**NA**	**35**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**15**
$PM_{2.5}$[a]	1167 North Dover Road, Valrico-Hillsborough County (ID: 12-057-3002)	2009	20.4	19.6	17.2	18.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.6
		2010	18.3	15.8	14.6	16.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	8.1
		2011	21	18	18.4	16.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9.0
	NAAQS [ug/m³]		**NA**	**150**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
	Florida AAQS [ug/m³]		**NA**	**150**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**50**
PM_{10}	1167 North Dover Road, Valrico-Hillsborough County (ID: 12-057-3002)	2009	23	23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	15.5
		2010	42	41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	15.7
		2011	32	26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	17.1
	NAAQS [ug/m³]		**NA**	**235**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**157**	**NA**	**NA**	**NA**
	Florida AAQS [ug/m³]		**NA**	**235**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
O_3[b]	5121 Gandy Blvd, Tampa-Hillsborough County (ID: 12-057-1065)	2009	204	184	NA	NA	NA	NA	NA	NA	137	135	135	148	NA	NA	NA
		2010	175	165	NA	NA	NA	NA	NA	NA	171	145	141	143	NA	NA	NA
		2011	159	153	NA	NA	NA	NA	NA	NA	133	131	126	134	NA	NA	NA
	NAAQS [ug/m³]		**NA**	**NA**	**NA**	**188**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**100**
	Florida AAQS [ug/m³]		**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**100**
NO_2[c]	5121 Gandy Blvd, Tampa-Hillsborough County (ID: 12-057-1065)	2009	92	92	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11
		2010	83	79	75	75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11
		2011	73	71	71	73	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	14
	NAAQS [ug/m³]		**NA**	**40,000**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**10,000**	**NA**	**NA**	**NA**	**NA**	**NA**
	Florida AAQS [ug/m³]		**NA**	**40,000**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**10,000**	**NA**	**NA**	**NA**	**NA**	**NA**
CO	1167 North Dover Road, Valrico-Hillsborough County (ID: 12-057-3002)	2009	1252	1239	NA	NA	NA	NA	NA	NA	1145	1145	NA	NA	NA	NA	NA
		2010	1231	1162	NA	NA	NA	NA	NA	NA	1030	1030	NA	NA	NA	NA	NA
		2011	1042	995	NA	NA	NA	NA	NA	NA	572	572	NA	NA	NA	NA	NA
	NAAQS [ug/m³]		**NA**	**NA**	**NA**	**NA**	**NA**	**196**	**NA**	**1,300[e]**	**NA**	**NA**	**NA**	**NA**	**NA**	**367**	**79**
	Florida AAQS [ug/m³]		**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**1,300**	**NA**	**NA**	**NA**	**NA**	**NA**	**260**	**60**
SO_2[d]	1167 North Dover Road, Valrico-Hillsborough County (ID: 12-057-3002)	2009	47	45	NA	NA	--	--	26	26	NA	NA	NA	NA	10	8	2
		2010	71	45	NA	NA	39	39	--	--	NA	NA	NA	NA	9	9	2
		2011	76	24	NA	NA	76	58	--	--	NA	NA	NA	NA	9	6	2

Notes: NA = not applicable; AAQS = Ambient Air Quality Standards

[a] The 24-hour $PM_{2.5}$ standard is met when the 3-year average of 98th percentile of the 24-hour concentrations are less than 35 ug/m³

[b] On March 27, 2008, EPA promulgated revised AAQS for ozone. The O standard was modified to be 0.075 ppm (147 µg/m³) for the 8-hour average; achieved when the 3-year average of 99th percentile values is 0.075 ppm or less.

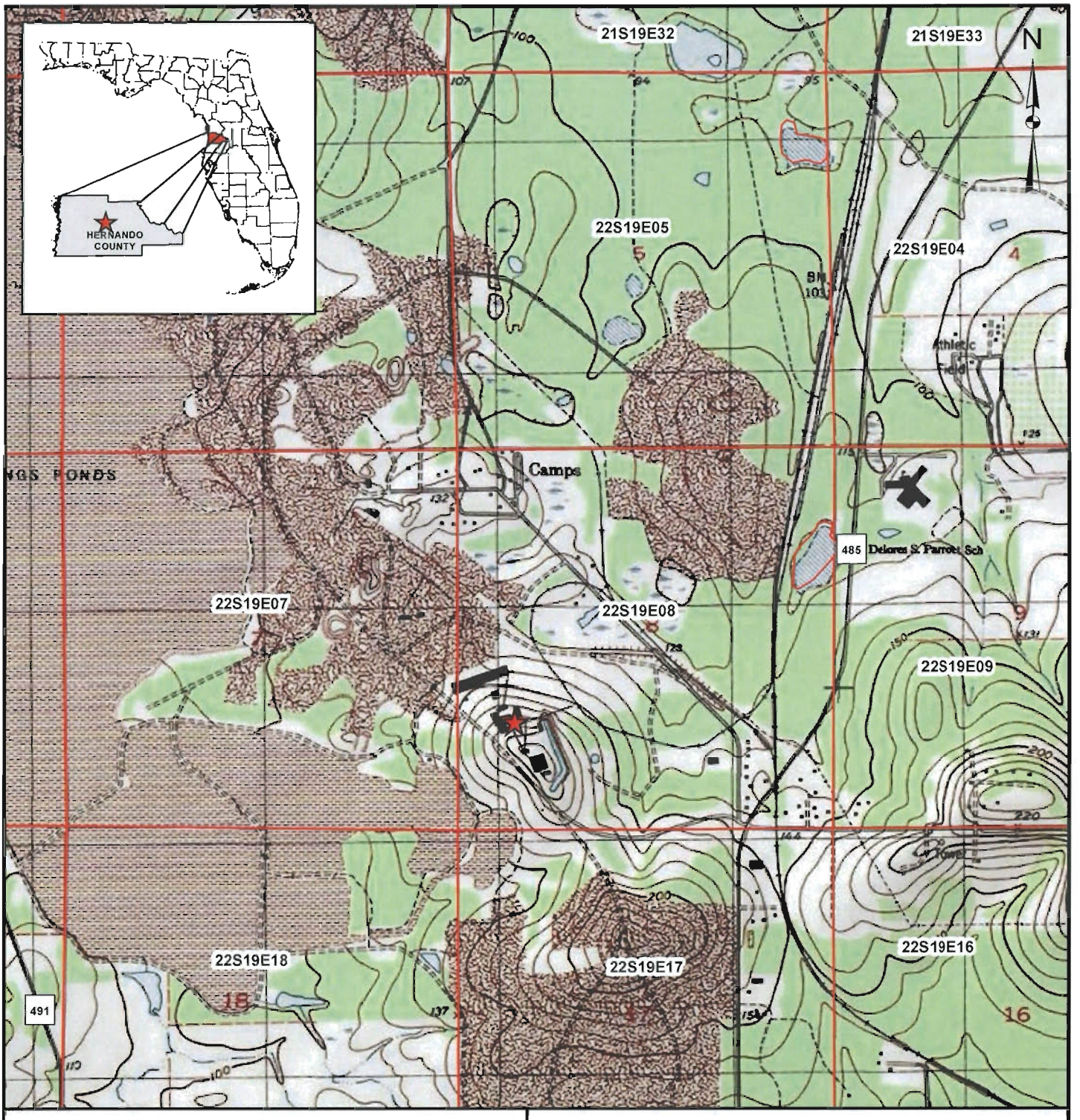
[c] The 1-hour NO_2 standard is met when the 3-year average of 98th percentile of daily 1-hour maximum values is less than 188 ug/m³

[d] The final rule signed June 2, 2010. To attain the 1-hour SO standard, the 3-year average of 99th percentile of daily 1-hour average at each monitor within an area must not exceed 196 ug/m³

[e] Based on secondary NAAQS standard.

Source: Golder 2011, USEPA Quicklook database, 2011.

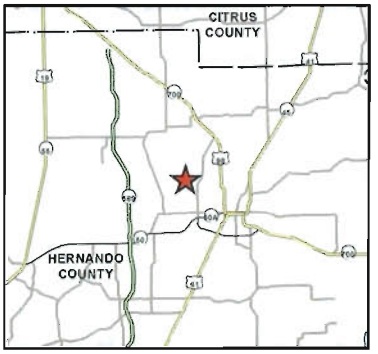
FIGURES



LEGEND

- APPROXIMATE PROJECT LOCATION
- TOLL ROAD
- US ROAD
- STATE ROAD
- COUNTY ROAD
- TOWNSHIP-RANGE -SECTION
- COUNTY BOUNDARY

REGIONAL MAP



REFERENCES

1. APPROXIMATE PROJECT LOCATION: FLORIDA POWER DEVELOPMENT, 2011
2. ROADS: FLORIDA DEPARTMENT OF TRANSPORTATION, 2011
3. TOWNSHIP-RANGE-SECTION: FLORIDA RESOURCES & ENVIRONMENTAL ANALYSIS CENTER, 2003
4. COUNTY BOUNDARIES: FLORIDA GEOGRAPHIC DATA LIBRARY, 2008
5. USGS TOPOGRAPHIC MAP: NATIONAL GEOGRAPHIC SOCIETY, 2010

2,000 0 2,000 Feet

REV.	DATE	DES	REVISION DESCRIPTION	GIS	CHK	RVW

PROJECT

FPD BIOMASS CONVERSION PROJECT

TITLE

PROJECT LOCATION

Golder Associates Tampa, Florida

PROJECT No. 113-89534			FILE No. 113-89534A057	
DESIGN	JG	06/13/2011	SCALE: AS SHOWN	REV. 0
GIS	JG	06/13/2011	FIGURE 1	
CHECK	PP	09/15/2011		
REVIEW	SHO	09/15/2011		

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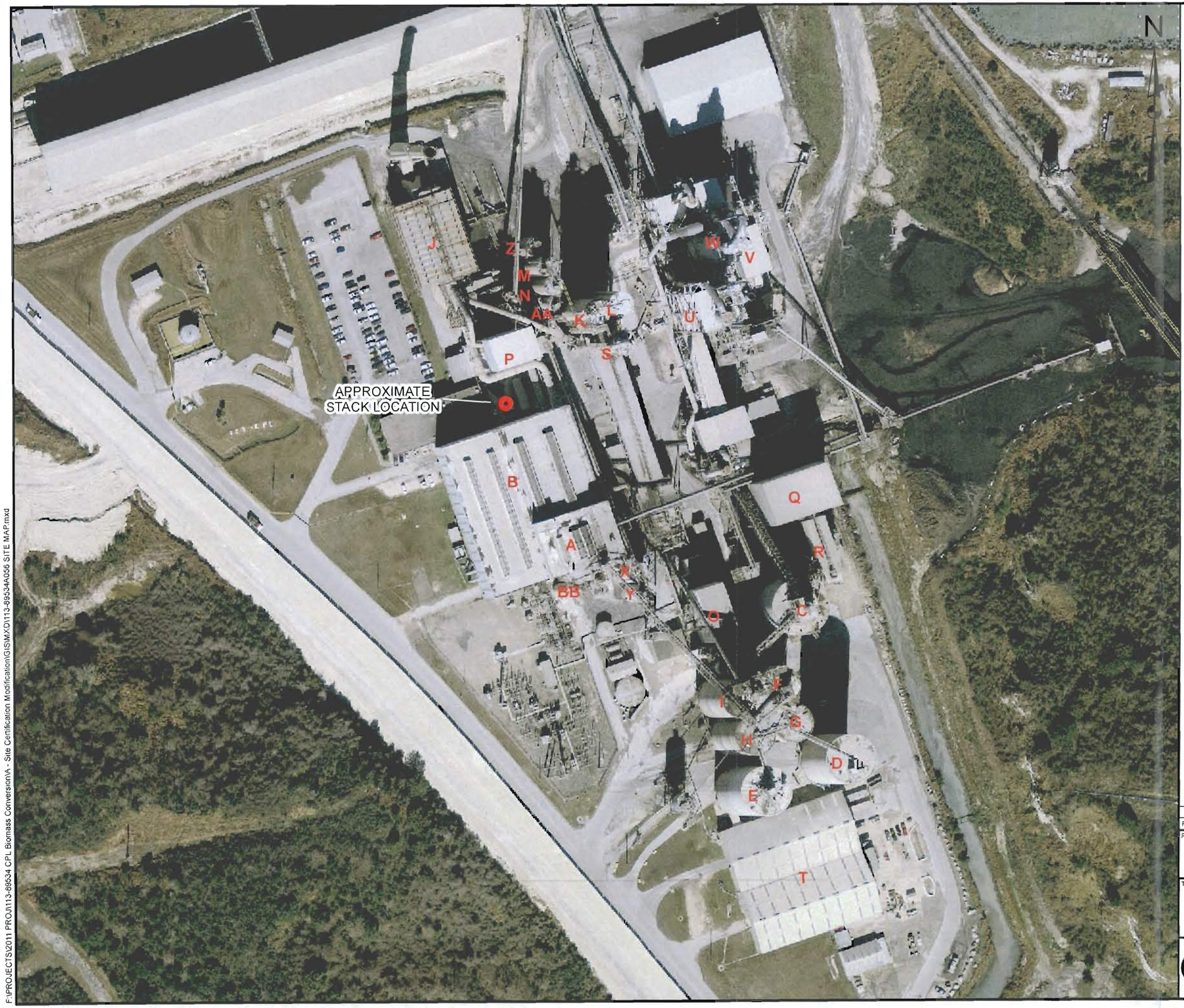


LABEL	BUILDING
A	BOILER BUILDING
B	POWER PLANT BUIDLING
C	K2 CLINKER SILO
D	K2 CEMENT SILO
E	K2 CEMENT SILO
F	K1 CEMENT SILO 1
G	K1 CEMENT SILO 2
H	K1 CEMENT SILO 3
I	K1 CEMENT SILO 4
J	K1 AND POWER PLANT BAGHOUSE
K	K1 RAW MEAL SILO
L	K1 RAW MEAL SILO
M	D28 SILO
N	D64 SILO
O	K1 FINISH MILL
P	K1 RAW MILL
Q	K2 FINISH MILL
R	K2 FINISH MILL BAGHOUSE
S	K1 PREHEATER TOWER
T	CEMENT PLANT BAGGING FACILITY AND POWER PLANT WAREHOUSE
U	K2 PREHEATER TOWER
V	K2 BAGHOUSE
W	K2 BLENDING SILO
X	D16 SILO
Y	Z30 SILO
Z	D33 SILO
AA	D72 SILO
BB	LIMESTONE INJECTION SILO

REFERENCES

1. 2010 AERIAL: SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT AND WOOLPERT, INC., 2010

150 75 0 150
Feet

REV	DATE	DES	REVISION DESCRIPTION	GIS	CHK	RVW

PROJECT

FPD BIOMASS CONVERSION PROJECT

TITLE

SITE LAYOUT - BOILER AND SURROUNDING STRUCTURES

Golder Associates
Tampa, Florida

PROJECT No. 113-89534			FILE No. 113-89534A056	
DESIGN	JDG	07/20/2011	SCALE: AS SHOWN	REV. 0
GIS	JDG	09/21/2011		
CHECK	PP	09/21/2011		
REVIEW	SHO	09/21/2011		

FIGURE 2A

F:\PROJECTS\2011 PROJ\113-89534 CPL Biomass ConversionVA - Site Certification Modification\GIS\MXD\113-89534A056 SITE MAP.mxd

LEGEND

CONVEYOR LAYOUT

POTENTIAL TRUCK ROUTES

1. POTENTIAL FUEL TRUCK ROUTE: ~ 7,626 FT
2. POTENTIAL LIME INJECTION SILO TRUCK ROUTE: ~ 15,387 FT

REFERENCES

1. POTENTIAL TRUCK ROUTES: GOLDER ASSOCIATES INC., 2011
2. 2010 AERIAL: SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT AND WOOLPERT, INC., 2010

600 0 600
Feet

REV.	DATE	DES	REVISION DESCRIPTION	GIS	CHK	RVW

PROJECT

FPD BIOMASS CONVERSION PROJECT

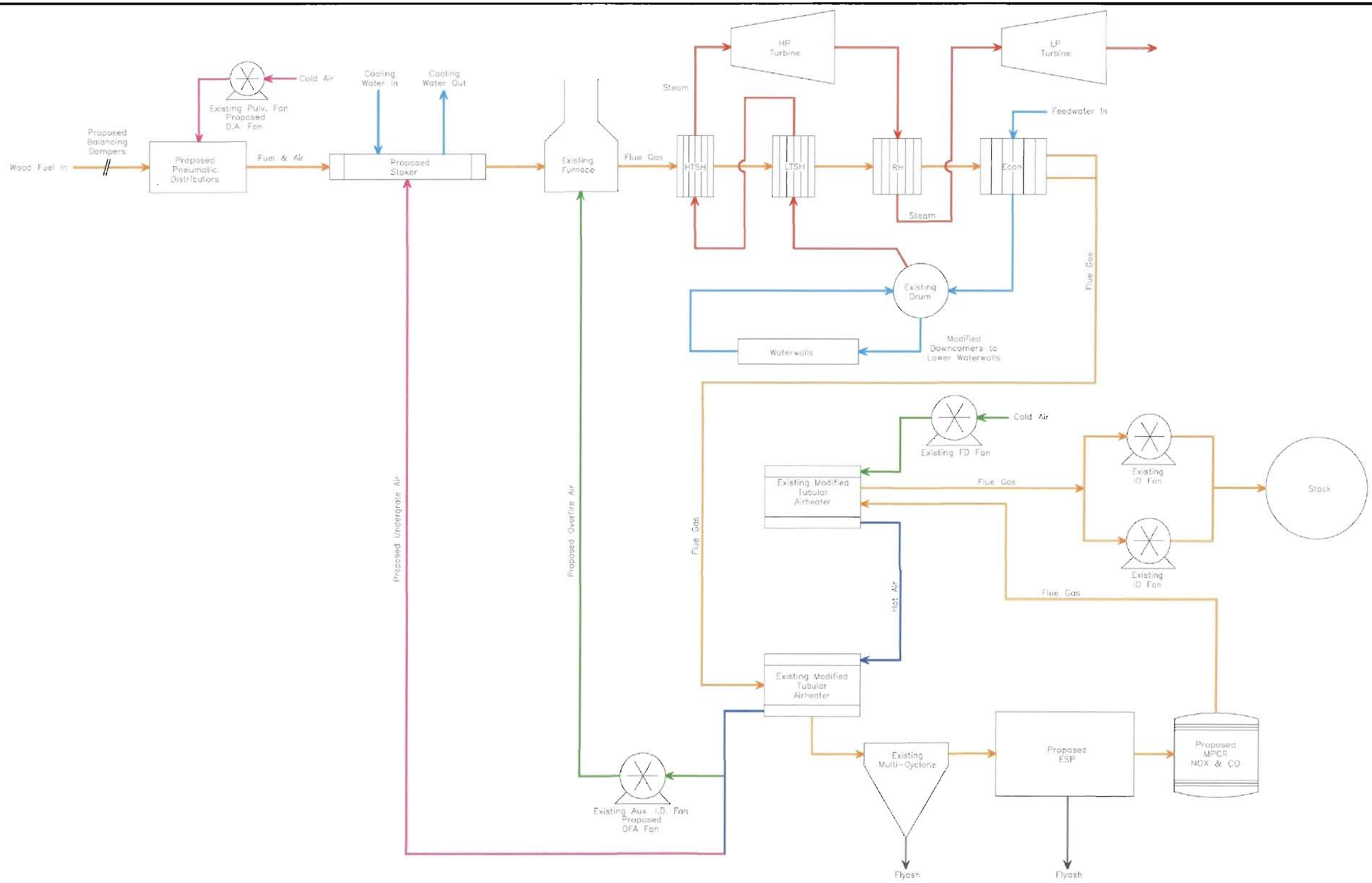
TITLE

SITE LAYOUT - MATERIAL HANDLING OPERATIONS

Golder Associates
Tampa, Florida

PROJECT No. 113-89534			FILE No. 113-89534A053	
DESIGN	JDG	06/13/2011	SCALE: AS SHOWN	REV. 0
GIS	JDG	09/16/2011		
CHECK	PP	09/16/2011	FIGURE 2B	
REVIEW	SHO	09/23/2011		

F:\PROJECTS\2011 PROJ\113-89534 CPL Biomass ConversionA - Site Certification Modification\GIS\MXD\113-89534A053 MATERIAL HANDLING OPERATIONS.mxd



REFERENCES

1. BABCOCK POWER SERVICES INC., 2011

REV	DATE	DES	REVISION DESCRIPTION	GIS	CHK	RVW

PROJECT

FPD BIOMASS CONVERSION PROJECT

TITLE

PROPOSED PROCESS FLOW DIAGRAM

Golder Associates
Tampa, Florida

PROJECT No. 113-89534			FILE No. 113-89534A066	
DESIGN	JDG	09/21/2011	SCALE: AS SHOWN	REV. 0
GIS	JDG	09/21/2011		
CHECK	PP	09/21/2011	FIGURE 3	
REVIEW	SHO	09/23/2011		

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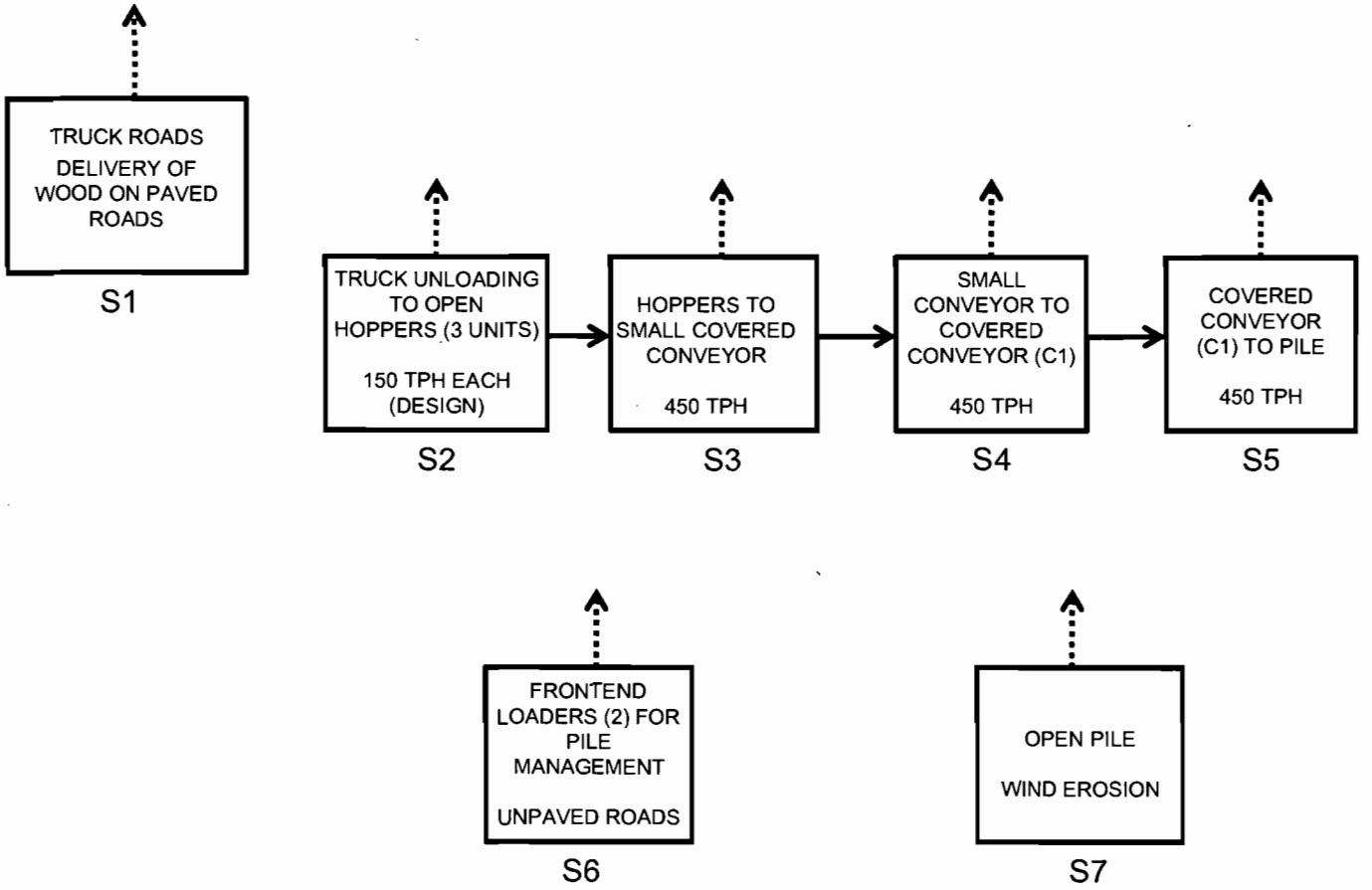
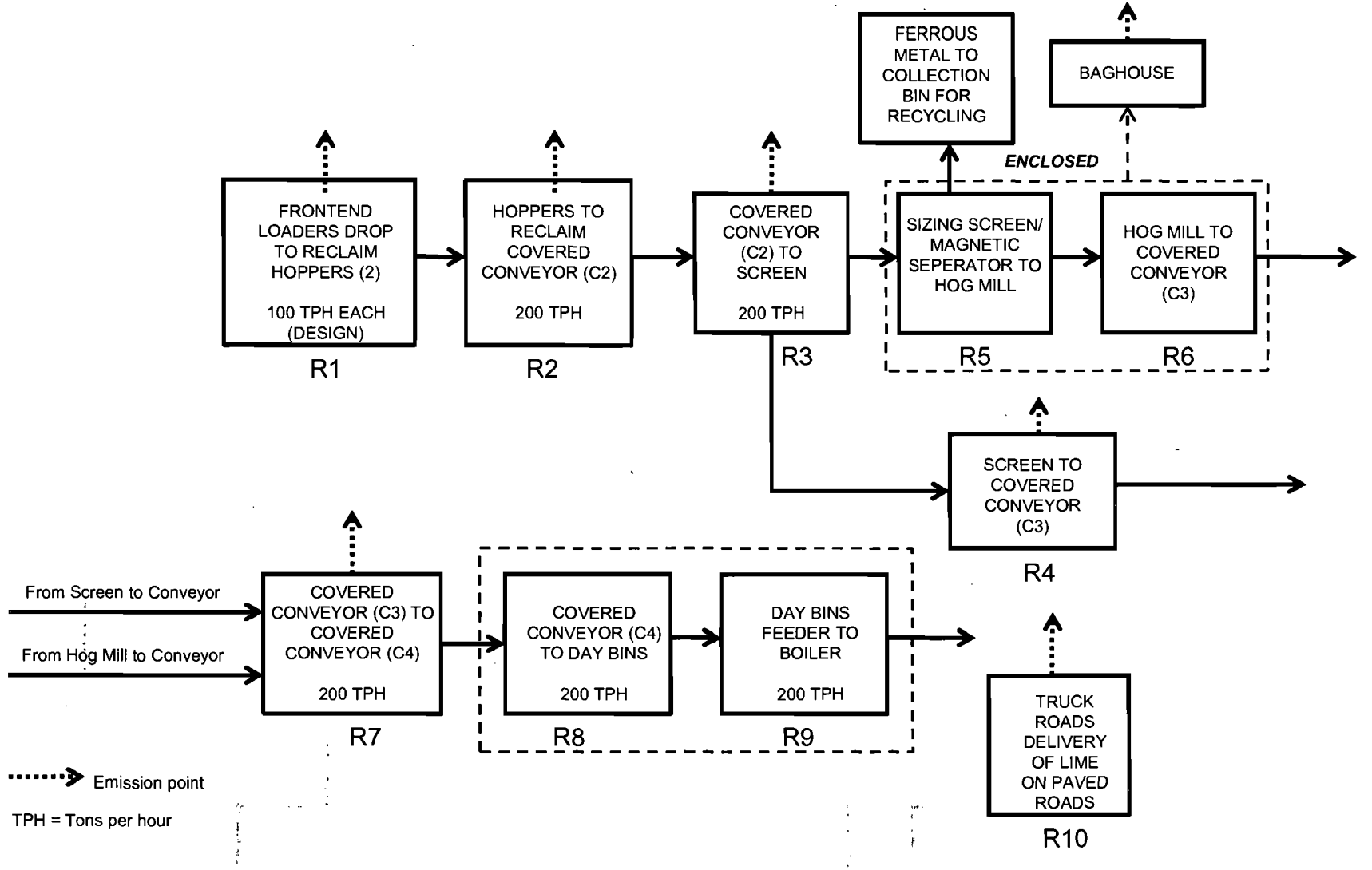


CLIENT/PROJECT **CP&L BIOMASS CONVERSION PROJECT**			TAMPA, FLORIDA Golder Associates				TITLE **Figure 4** **Material Handling Emission Points (Stack - out)**			
DRAWN	CHECKED	REVIEWED	DATE 9/20/2011	NOT TO SCALE	FILE NO.	Job No. 11389534	DWG NO.	SUBTITLE	REV. NO.	



CLIENT/PROJECT **CP&L BIOMASS CONVERSION PROJECT**				TAMPA, FLORIDA Golder Associates			TITLE **Figure 5** **Material Handling Emission Points (Reclaim)**			
DRAWN	CHECKED	REVIEWED	DATE 9/20/2011	NOT TO SCALE	FILE NO.	Job No. 11389534	DWG NO.	SUBTITLE	REV. NO.	

APPENDIX A
FUEL SPECIFICATIONS

DESIGN BIOMASS FUEL SPECIFICATIONS

Design Biomass Fuel Specifications

Constituent	Design (%)	Range (Min – Max) (%)
Ash	4.66	1.0 – 8.0
Sulfur	0.02	0.01 – 0.03
Hydrogen	3.34	2.4 – 5.4
Carbon	31.60	22.5 – 37.0
Water	35.00	20.0 – 55.0
Nitrogen	0.273	0.04 – 0.47
Oxygen	25.08	19.3 – 26.9
Chlorine	0.027	0.0 – 0.03
Total	100	
Moisture	35	15 - 55
Heating Value (Btu/lb, as-received basis)	5,352	4,420 – 5,785

Notes: Fuel specifications based on 70% vegetative biomass and 30% tree parts.
Source: Riley Power, Inc. and Golder 2011.

FUEL SPECIFICATIONS

Typical Ultra Low Sulfur Distillate Fuel Oil Composition

Elements	Maximum
Carbon Residue	0.35% on 10% bottoms
Water and Sediment	0.05%
Ash	0.01%
Vanadium	0.5 ppm
Sodium and potassium	0.5 ppm
Lead	1 ppm
Calcium	2 ppm
Sulfur	0.0015 wt %

Notes:
Low Heating Value (LHV) = 18,400 Btu/lb; 129,900 Btu/gallon (approximate).
High Heating Value (HHV) = 19,500 Btu/lb; 137,700 Btu/gallon (approximate)
ppm = parts per million.
Values of ULSD are typical.
Source: Golder 2011.

Typical Natural Gas Composition

Composition	Mole (%)
Nitrogen (N_2)	0.27 – 0.45
Helium (He)	0.01
Carbon Dioxide (CO_2)	0.44 – 0.88
Methane (CH_4)	96 - 97
Ethane (C_2H_6)	1.8 – 2.6
Propane (C_3H_8)	0.16 – 0.29
Butane (C_4H_{10})	0.011 – 0.017
Pentanes (C_5H_{12})	0.007 – 0.03
Hexanes (C_6H_{14})	0.03
Heptanes (C_7H_{16})	0.01
Octanes (C_8H_{18})	0
Argon, Oxygen (Ar, O_2)	0
Sulfur (S)	2 gr/100 scf
Water Vapor (H_2O)	0.6 lb/MMscf

Notes:
Low Heating Value (LHV) = 21,000 Btu/lb; 920 Btu/scf (approximate).
High Heating Value (HHV) = 23,300 Btu/lb; 1,020 Btu/scf (approximate).
scf = standard cubic feet
MM = million.
Values of natural gas are typical.
Source: Golder 2011.

APPENDIX B
BOILER DESIGN PARAMETERS

RILEYPower
A Babcock Power Inc. Company

Design & Record Sheet

PREDICTED PERFORMANCE SUMMARY

Customer: **Central Power & Lime**
Project: **Brooksville, FL**
Location: **Brooksville, FL**

Notes:

Proposal No. **100557.M2**

Parameter	Units				
Fuel Description	-	100% MCR - 75MWg	90% MCR - 67MWg	70% MCR - 50MWg	
Fuel Analysis 35% Moisture Combination	% by wt	H_2O: 35.00; N_2: 0.273; H_2: 3.34; O_2: 25.08; S: 0.02; Cl: 0.027; C: 31.6; Ash: 4.66; 5,352 Btu/lb as fired.			
Heat Input & Output					
Gross Heat Input	KBtu/hr	908.477	810.803	605.828	
Total Heat Output	KBtu/hr	684.537	610.535	455.219	
Water & Steam Flows					
Main Steam	**lb/hr**	**490.000**	**444.000**	**344.000**	
Feedwater (into economizer)	lb/hr	464.993	428.755	344.000	
SH Spray	lb/hr	25.007	15.245	0	
RH Outlet Steam	lb/hr	469.713	416.144	315.760	
RH Spray	lb/hr	24.584	11.015	0	
Water & Steam Temperatures					
Feedwater to Economizer	°F	348	346	340	
Main Steam	°F	950	950	911	
RH Steam Inlet	°F	498	486	427	
RH Steam Outlet	°F	950	950	884	
Water & Steam Pressures					
Main Steam Outlet	psig	1,887	1,876	1,843	
Reheat Steam Inlet	psig	199	174	118	
Air Temperatures					
Ambient Air	°F	80	80	80	
Flue Gas Temperatures					
Furnace Exit Gas Temperature (SB02)	°F	1,701	1,647	1,506	
Flue Gas to Stack	°F	334	334	333	
Fuel Air and Flue Gas Flow Rates					
Fuel Flow	lb/hr	167,085	149,121	111,423	
Excess Air	%	30.00	30.00	30.00	
Total Combustion Air	lb/hr	781,440	697,424	521,112	
Total Flue Gas Flow	lb/hr	938,580	837,670	625,903	
Heat Release Rates					
Grate Heat Release Rate	Btu/hr-ft^2	859,846	767,400	573,398	
Boiler Efficiency (Losses)					
Dry Flue Gas Loss	%	5.48	5.48	5.46	
Moist. (Liquid) in Fuel Loss	%	7.49	7.49	7.48	
Water from Hydrogen Combustion	%	6.38	6.38	6.38	
Air Moisture Loss	%	0.13	0.13	0.13	
Unburned Carbon Loss	%	3.50	3.50	3.50	
Radiation Loss	%	0.46	0.51	0.70	
Grate Loss	%	0.81	0.81	0.81	
Unaccounted Loss	%	0.40	0.40	0.40	
Manufacturers Margin	%	1.00	1.00	1.00	
Total Loss	%	25.65	25.70	25.86	
Efficiency w/Margin	%	**74.35**	**74.30**	**74.14**	

Notes

- Water Cooled Vibrating Grate: 26' x 40'

Revisions

Rev	Description	Issued By	Approved By
0	FIRST ISSUE	M. Healy	Ken Tompa 7/25/11

B930-02

APPENDIX C
MATERIAL HANDLING EMISSION ESTIMATES
(TABLES C-1 THROUGH C-5)

Table C-1: Material Handling Operations Emission Estimates (Stack-Out)

Parameters		Units Flow Diagram ID	Truck Paved Roads Delivery of wood S1	Truck Unloading to Hopppers (3 units at 150 TPH each) S2	Hoppers to Stackout Interm Covered Conveyor S3	Stackout Interm Covered Conveyor to C1 S4	Covered Conveyor C1 to Pile S5	Front End Loaders Unpaved Roads S8	Open Pile Wind Erosion S7
Operational Data									
Activity, hours	Daily	(hrs/day)	12	12	12	12	12	24	24
days	Annual	(days/yr)	365	365	365	365	365	365	365
Material Handling Data									
Material type			Wood Chips	Wood Chips	Wood Chips	Wood Chips	Wood Chips	Wood Chips	Wood Chips
Material throughput, ton/hr (design fuel)			168	168	168	168	168	84	168
ton/day	Daily	(tons/day)	2,018	2,018	2,018	2,018	2,018	2,018	2018
ton/y	Annual	(tons/yr)	736,547	736,547	736,547	736,547	736,547	736,547	736,547
Moisture content (M), %		%	NA	35	35	35	35	NA	35
Number of transfers		No.	NA	1	1	1	1	NA	NA
Miles per day of road transport	Daily Avg = Annual Avg	No.	117	NA	NA	NA	NA	40.1	NA
Miles per truck round trip	Daily Avg = Annual Avg	No.	1.4	NA	NA	NA	NA	0.3	NA
Number of truck trips	Daily Avg = Annual Avg	No.	81	NA	NA	NA	NA	159	NA
Storage Pile Data									
Pile Description (shape)									circular
Average Pile Height (ft									40
Pile Diameter (ft									425
Size, ft^2									141,484
Size, acres									3.25
General Site Characteristics									
Mean wind speed, mph	Daily	mph	14.5	14.54	14.54	14.54	14.54	14.5	14.5
	Annual	mph	7.3	7.27	7.27	7.27	7.27	7.3	7.3
Particle size multiplier, PM (k			0.011	0.74	0.74	0.74	0.74	4.9	1.0
Particle size multiplier, PM_{10} (k)			0.0022	0.35	0.35	0.35	0.35	1.5	0.5
Particle size multiplier, $PM_{2.5}$ (k)			0.00054	0.053	0.053	0.053	0.053	0.15	0.075
Days of precipitation greater than or	Short term		0					0	0
equal to 0.01 inch (p)	Annual		30					30	30
Time (%) that unobstructed wind speed	Short term								153
exceeds 5.4 m/s at mean pile height (f	Annual								30.8
Silt content (s), %			1	NA	NA	NA	NA	0.25	0.25
Emission Control Data									
Emission control method			Water Spreys	Low drop Point	Low drop Point	Low drop Point	Water Sprays	Low Drop Point	Open Pile with water sprays
Emission control removal efficiency, %		%	60	70	70	70	60	70	60
Emission Factor (EF) Equations									
Transfer Operations (EPA AP-42 Chapter 13.2.4, dated 11/06)[a]									
Uncontrolled EF (UEF) Equation	UEF (lb/ton) = [k x (0.0032) x (U / 5)$^{1.3}$]/[(M / 2)$^{1.4}$] where k = 0.74 (<30µm); k = 0.35 (<10µm); k = 0.053 (<2.5µm) U = mean wind speed (mph); M = material moisture content (%	(lb/ton)							
Controlled EF (CEF) Equation	CEF (lb/ton) = UEF (lb/ton) x [100% - Removal efficiency (%)]								
Unpaved Roads (EPA AP-42 Chapter 13.2.2, dated 11/06)[a]									
Uncontrolled EF (UEF) Equation	UEF (lb/mile) = k x (s/12)^a x (w/3)^b where a = 0.7 and b= 0.45, k = 4.9 for PM where a = 0.9 and b= 0.45, k = 1.5 for PM_{10} where a = 0.9 and b= 0.45, k = 0.15 for $PM_{2.5}$ s = surface material silt content (%) w = mean vehicle weight	(lb/mile)							
Controlled EF (CEF) Equation	CEF (lb/mile) = k x (s/12)^a x (w/3)^b x [(365-P)/365]) x [100% - Removal efficiency (%)] Accounting for rainfall using [(365-P)/365]) Where: P = number of precipitatoin days >0.01 inch								
Paved Roads (EPA AP-42 Chapter 13.2.1, dated 1/11)[a]									
Uncontrolled EF (UEF) Equation	UEF (lb/mile) = [k x (sl)^a x (w)^b] where a = 0.91 and b = 1.02 where k = 0.011 for PM; k = 0.0022 for PM_{10}; k = 0.00054 for $PM_{2.5}$ sl = road surface silt loading (%) = 1 based on Golder 2001 Port Transportation Study w = average weight of truck traveling the roa	(lb/mile)							
Controlled EF (CEF) Equation	CEF (lb/mile) = [k x (sl)^a x (w)^b] x (1-P/(4N)) x [100% - Removal efficiency (%)] N = number of days in the averaging period (365 for annual Accounting for rainfall using (1-P/(4 x365)) Where: P = number of precipitatoin days >0.01 inch, therefore control = (1-61/4/365) = 0.958								
Wind Erosion (EPA AP-42 Chpptor 13.2.5, dated 11/06, for k factors)[b]									
Uncontrolled EF (UEF) Equation	UEF (lb/day/acre) = k x 1.7 x (s/1.5) x ((365 - p)/235) x (f/15 *where k = 1.0 (30µm); k = 0.5 (<10µm); k = 0.075 (<2.5µm)*	(lb/day/acre)							
Controlled (Final) EF (CEF) Equation	CEF (lb/day/acre) = UEF (lb/day/acre) x (100 - Removal efficiency (%;								
Calculated PM Emission Factor (EF)									
Uncontrolled EF	Short term		0.293 (lb/mile)	0.00017 (lb/ton)	0.00017 (lb/ton)	0.00017 (lb/ton)	0.00017 (lb/ton)	0.92 (lb/mile)	4.5 (lb/day/acre)
	Annual		0.293 (lb/mile)	0.00007 (lb/ton)	0.00007 (lb/ton)	0.00007 (lb/ton)	0.00007 (lb/ton)	0.92 (lb/mile)	0.8 (lb/day/acre)
Controlled EF	Short term		0.117 (lb/mile)	0.00005 (lb/ton)	0.00005 (lb/ton)	0.00005 (lb/ton)	0.00007 (lb/ton)	0.28 (lb/mile)	1.8 (lb/day/acre)
	Annual		0.115 (lb/mile)	0.00002 (lb/ton)	0.00002 (lb/ton)	0.00002 (lb/ton)	0.00003 (lb/ton)	0.25 (lb/mile)	0.3 (lb/day/acre)
Calculated PM_{10} Emission Factor (EF)									
Uncontrolled EF, lb/ton	Short term		0.059 (lb/mile)	0.00008 (lb/ton)	0.00008 (lb/ton)	0.00008 (lb/ton)	0.00008 (lb/ton)	0.13 (lb/mile)	2.2 (lb/day/acre)
	Annual		0.059 (lb/mile)	0.00003 (lb/ton)	0.00003 (lb/ton)	0.00003 (lb/ton)	0.00003 (lb/ton)	0.13 (lb/mile)	0.4 (lb/day/acre)
Controlled EF, lb/ton	Short term		0.023 (lb/mile)	0.00002 (lb/ton)	0.00002 (lb/ton)	0.00002 (lb/ton)	0.00003 (lb/ton)	0.04 (lb/mile)	0.9 (lb/day/acre)
	Annual		0.023 (lb/mile)	0.00001 (lb/ton)	0.00001 (lb/ton)	0.00001 (lb/ton)	0.00001 (lb/ton)	0.04 (lb/mile)	0.2 (lb/day/acre)
Calculated $PM_{2.5}$ Emission Factor (EF)									
Uncontrolled EF, lb/ton	Short term		0.0144 (lb/mile)	0.00001 (lb/ton)	0.00001 (lb/ton)	0.00001 (lb/ton)	0.00001 (lb/ton)	0.01 (lb/mile)	0.3 (lb/day/acre)
	Annual		0.0144 (lb/mile)	0.00001 (lb/ton)	0.00001 (lb/ton)	0.00001 (lb/ton)	0.00001 (lb/ton)	0.01 (lb/mile)	0.1 (lb/day/acre)
Controlled EF, lb/ton	Short term		0.0058 (lb/mile)	0.000004 (lb/ton)	0.000004 (lb/ton)	0.000004 (lb/ton)	0.000005 (lb/ton)	0.00 (lb/mile)	0.1 (lb/day/acre)
	Annual		0.0056 (lb/mile)	0.000002 (lb/ton)	0.000002 (lb/ton)	0.000002 (lb/ton)	0.000002 (lb/ton)	0.00 (lb/mile)	0.0 (lb/day/acre)
Estimated Emission Rate (CER)									
PM									
lb/hr (daily basis			1.14	0.00870	0.00870	0.00870	0.01160	0.48	0.243
TPY			2.44	0.00774	0.00774	0.00774	0.01032	1.85	0.196
PM_{10}									
lb/hr (daily basis			0.11	0.0041	0.00412	0.00412	0.0055	0.065	0.122
TPY			0.49	0.0037	0.00368	0.00368	0.0049	0.28	0.098
$PM_{2.5}$									
lb/hr (daily basis			0.03	0.0006	0.00062	0.00062	0.0008	0.0085	0.018
TPY			0.12	0.0006	0.00055	0.00055	0.0007	0.026	0.015

Source: [a] USEPA, 2006; AP-42, Section 13.2.4 for Aggregate Handling and Storage Piles, Section 13.2.1.3 for Paved Roads, Section 13.2.2 for Unpaved Roads, USEPA, 1993; Emission Factor Documentation for AP-42, Section 13.2.1 Paved Roads.
[b] USEPA, 1992 (Fugitive Dust Background and Technical Information Document for Best Available Control Measures, Section 2.3.1.3.3, Wind Emissions from Continuously Active Piles), USEPA, 2006 13.2.5 for k factors.

Table C-2: Material Handling Operations Emission Estimates (Reclaim)

Parameters		Units / Flow Diagram ID	Frontend Loaders Drop to Reclaim *Hoppers (2)* R1	Hoppers to Reclaim Covered Conveyor C2 R2	Covered Conveyor C2 to *Screen* R3	Screen to Covered Conveyor C3 R4	Screen to Hog Mill R5	Hog Mill to Covered Reclaim Conveyor C3 R6	Covered Reclaim Conveyor C3 to Covered Reclaim Conveyor C4 R7	Covered Reclaim Conveyor C4 to *Day Bins* R8*	Day Bins Feeder to *Boiler* R9*	Truck Delivery of Lime On Paved Roads to Silo R10	
Operational Data													
Activity, hours	Daily	(hrs/day)	24	24	24	24	24	24	24	24	24	12	
days	Annual	(days/yr)	365	365	365	365	365	365	365	365	365	260	
Material Handling Data													
Material type			Wood Chips	Wood Chips	Wood Chips	Wood Chips	Wood Chips	Wood Chips	Wood Chips	Wood Chips	Wood Chips	Lime	
Material throughput, ton/hr (design fuel)			84	84	84	84	84	84	84	84	84	0.4	
ton/da	Daily	(tons/day)	2,018	2,018	2,018	2,018	2,018	2,018	2,018	2,018	2,018	NA	
ton/y	Annual	(tons/yr)	736,547	736,547	736,547	736,547	736,547	736,547	736,547	736,547	736,547	NA	
Moisture content (M), %		%	35	35	35	35	35	35	35	35	35	NA	
Number of transfers		No.	1	1	1	1	1	1	1	1	1	NA	
Miles per day of road transport	Daily Avg = Annual Avg	No.	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.3	
Miles per truck round trip	Daily Avg = Annual Avg	No.	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Number of truck trips	Daily Avg = Annual Avg	No.	NA	NA	NA	NA	NA	NA	NA	NA	NA		
General Site Characteristics													
Mean wind speed, mph	Daily	mph	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	
	Annual	mph	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	
Particle size multiplier, PM (k)			0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.011	
Particle size multiplier, PM_{10} (k)			0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.0022	
Particle size multiplier, $PM_{2.5}$ (k)			0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.00054	
Days of precipitation greater than or equel to 0.01 inch (p)	Short term												
	Annual											30	
Time (%) that unobstructed wind speed exceeds 5.4 m/s at mean pile height (f)	*Short term*												
	Annual												
Silt content (s), %			NA	NA	NA	NA	NA	NA	NA	NA	NA	1	
Emission Control Data													
Emission control method			Low drop Point	Low drop Point	Enclosed	Enclosed	Baghouse Controlled	Baghouse Controlled	Enclosed	Enclosed	Enclosed	Water Sprays	
Emission control removal efficiency, %		%	70	70	95	95	99	99	95	95	95	60	
Emission Factor (EF) Equations													
Transfer Operations (EPA AP-42 Chapter 13.2.4, dated 11/06) *													
Uncontrolled EF (UEF) Equation	UEF (lb/ton) = k x (0.0032) x $(U / 5)^{1.3}$)/$(M / 2)^{1.4}$] (lb/ton) where k = 0.74 (<30µm); k = 0.35 (<10µm); k = 0.053 (<2.5µm) *U = mean wind speed (mph); M = material moisture content (%)*												
Controlled EF (CEF) Equation	CEF (lb/ton) = UEF (lb/ton) x [100% - Removal ef (lb/ton)												
Paved Roads (EPA AP-42 Chapter 13.2.1, dated 1/11) *													
Uncontrolled EF (UEF) Equation	UEF (lb/mile) = [k x (sl)^a x (w)^b] (lb/mile) where a = 0.91 and b = 1.02 where k = 0.011 for PM; k = 0.0022 for PM_{10}; k = 0.00054 for $PM_{2.5}$ sl = road surface silt loading (%) = 1 based on Golder 2001 Port Transportation Study w = average weight of truck traveling the road												
Controlled EF (CEF) Equation	CEF (lb/mile) = [k x (sl)^a x (w)^b] x (1-P/(4N)) x [100% - Removal efficiency (%)] N = number of days in the avereging period (365 for annual) Accounting for rainfall using (1-P/(4 x385)) Where: P = number of precipitatoin days >0.01 inch, therefore control = (1-61/4/365) = 0.958												
Calculated PM Emission Factor (EF)													
Uncontrolled EF	Short term		1.7E-04 (lb/ton)	1.7E-04 (lb/ton)	1.7E-04 (lb/ton)	1.7E-04 (lb/ton)	1.7E-04 (lb/ton)	1.7E-04 (lb/ton)	1.7E-04 (lb/ton)	1.7E-04 (lb/ton)	1.7E-04 (lb/ton)	0.29	(lb/mile)
	Annual		7.0E-05 (lb/ton)	7.0E-05 (lb/ton)	7.0E-05 (lb/ton)	7.0E-05 (lb/ton)	7.0E-05 (lb/ton)	7.0E-05 (lb/ton)	7.0E-05 (lb/ton)	7.0E-05 (lb/ton)	7.0E-05 (lb/ton)	0.29	(lb/mile)
Controlled EF	Short term		5.2E-05 (lb/ton)	5.2E-05 (lb/ton)	8.6E-08 (lb/ton)	8.6E-06 (lb/ton)	1.7E-06 (lb/ton)	1.7E-06 (lb/ton)	8.6E-06 (lb/ton)	8.6E-06 (lb/ton)	8.6E-06 (lb/ton)	0.11	(lb/mile)
	Annual		2.1E-05 (lb/ton)	2.1E-05 (lb/ton)	3.5E-06 (lb/ton)	3.5E-06 (lb/ton)	7.0E-07 (lb/ton)	7.0E-07 (lb/ton)	3.5E-06 (lb/ton)	3.5E-06 (lb/ton)	3.5E-06 (lb/ton)	0.11	(lb/mile)
Calculated PM10 Emission Factor (EF)													
Uncontrolled EF, lb/ton	Short term		8.2E-05 (lb/ton)	8.2E-05 (lb/ton)	8.2E-05 (lb/ton)	8.2E-05 (lb/ton)	8.2E-05 (lb/ton)	8.2E-05 (lb/ton)	8.2E-05 (lb/ton)	8.2E-05 (lb/ton)	8.2E-05 (lb/ton)	0.059	(lb/mile)
	Annual		3.3E-05 (lb/ton)	3.3E-05 (lb/ton)	3.3E-05 (lb/ton)	3.3E-05 (lb/ton)	3.3E-05 (lb/ton)	3.3E-05 (lb/ton)	3.3E-05 (lb/ton)	3.3E-05 (lb/ton)	3.3E-05 (lb/ton)	0.059	(lb/mile)
Controlled EF, lb/ton	Short term		2.4E-05 (lb/ton)	2.4E-05 (lb/ton)	4.1E-06 (lb/ton)	4.1E-06 (lb/ton)	8.2E-07 (lb/ton)	8.2E-07 (lb/ton)	4.1E-06 (lb/ton)	4.1E-06 (lb/ton)	4.1E-06 (lb/ton)	0.023	(lb/mile)
	Annual		9.9E-06 (lb/ton)	9.9E-06 (lb/ton)	1.7E-06 (lb/ton)	1.7E-06 (lb/ton)	3.3E-07 (lb/ton)	3.3E-07 (lb/ton)	1.7E-06 (lb/ton)	1.7E-06 (lb/ton)	1.7E-06 (lb/ton)	0.023	(lb/mile)
Calculated PM2.5 Emission Factor (EF)													
Uncontrolled EF, lb/ton	Short term		1.2E-05 (lb/ton)	1.2E-05 (lb/ton)	1.2E-05 (lb/ton)	1.2E-05 (lb/ton)	1.2E-05 (lb/ton)	1.2E-05 (lb/ton)	1.2E-05 (lb/ton)	1.2E-05 (lb/ton)	1.2E-05 (lb/ton)	0.0144	(lb/mile)
	Annual		5.0E-06 (lb/ton)	5.0E-06 (lb/ton)	5.0E-06 (lb/ton)	5.0E-06 (lb/ton)	5.0E-06 (lb/ton)	5.0E-06 (lb/ton)	5.0E-06 (lb/ton)	5.0E-06 (lb/ton)	5.0E-06 (lb/ton)	0.0144	(lb/mile)
Controlled EF, lb/ton	Short term		3.7E-06 (lb/ton)	3.7E-06 (lb/ton)	6.2E-07 (lb/ton)	6.2E-07 (lb/ton)	1.2E-07 (lb/ton)	1.2E-07 (lb/ton)	6.2E-07 (lb/ton)	6.2E-07 (lb/ton)	6.2E-07 (lb/ton)	0.0056	(lb/mile)
	Annual		1.5E-06 (lb/ton)	1.5E-06 (lb/ton)	2.5E-07 (lb/ton)	2.5E-07 (lb/ton)	5.0E-08 (lb/ton)	5.0E-08 (lb/ton)	2.5E-07 (lb/ton)	2.5E-07 (lb/ton)	2.5E-07 (lb/ton)	0.0056	(lb/mile)
Estimated Emission Rate (CER) (TPY)													**TOTAL**
PM	lb/hr (daily basis)		0.0044	0.00435	0.00073	0.00073	0.00015	0.00015	0.00073	0.00073	0.00073	0.003	0.013
	TPY		0.0077	0.00774	0.00129	0.00129	0.00026	0.00026	0.00129	0.00129	0.00129	0.004	0.022
PM_{10}	lb/hr (daily basis)		0.0021	0.00206	0.00034	0.00034	0.00007	0.00007	0.00034	0.00034	0.00034	0.0006	0.006
	TPY		0.0037	0.00366	0.00061	0.00061	0.00012	0.00012	0.00061	0.00061	0.00061	0.001	0.011
$PM_{2.5}$	lb/hr (daily basis)		0.0003	0.00031	0.00005	0.00005	0.00001	0.00001	0.00005	0.00005	0.00005	0.00014	0.001
	TPY		0.0006	0.00055	0.00009	0.00009	0.00002	0.00002	0.00009	0.00009	0.00009	0.000	0.002

Source: * USEPA. 2006; AP-42, Section 13.2.4 for Aggregate Handling and Storage Piles.

*R8 and R9 were not modeled because they are within a fully enclosed system.

Table C-3: Screen and Hog Mill Emissions

SCREEN					
	E = EF x W	**PM**	**PM_{10}**	**$PM_{2.5}$**	
	EF = Emission Factor	0.025	0.009	0.009	EPA's AP-42 Table 11.19.2-2 (Screening)
	W (average weight)	736,547	736,547	736,547	
	Uncontrolled Emissions (tons/year)	9.2	3.2	3.2	
	Control	99%	99%	99%	Enclosure with Baghouse Control
	Emissions (tons/year)	0.092	0.032	0.032	
	Emissions (lb/hr)	0.042	0.015	0.015	
HOG MILL					
	E = EF x W	**PM**	**PM_{10}**	**$PM_{2.5}$**	
	EF = Emission Factor	0.0054	0.0024	ND	EPA's AP-42 Table 11.19.2-2 (Tertiary Crushing)
	W (average weight)	736,547	736,547	736,547	
	Uncontrolled Emissions (tons/year)	1.989	0.884	ND	
	Control	99%	99%	99%	Enclosure with Baghouse Control
	Emissions (tons/year)	2.0E-02	8.8E-03	ND	
	Emissions (lb/hr)	9.1E-03	4.0E-03	ND	
Total (SCREEN + HOG MILL)					
	Emissions (tons/year)	0.11	0.04	0.032	
	Emissions (lb/hr)	0.05	0.02	0.015	

Note: ND - non detectable
Source: Golder, 2011.

Table C-4: Silo Handling System Emissions

Parameter	Units	Ash Silo Vent	Ash Silo Vent (M)[d]	Lime Silo Vent (BB)[e]
Operational Data (silo Loading)				
Air Flow	acfm	6,800	11,000	19,000
Stack height	ft	125	200	150
Diameter	ft	2	1.5	4
Temperature	(°F)	77	180	100
Controlled Emissions	grain/scf	0.015	0.02	0.015
Emission Factor (EF)[a]				
Particle size multiplier, PM (k)		0.74	0.74	0.74
Particle size multiplier, PM_{10} (k)		0.35	0.35	0.35
Particle size multiplier, $PM_{2.5}$ (k)		0.053	0.05	0.053
Controlled Emission Rates[b]				
PM Emission Rate	lb/hr	0.70	1.4	0.77
	TPY	3.07	5.4	3.04
PM_{10} Emission Rate	lb/hr	0.33	0.67	0.36
	TPY	1.45	2.55	1.44
$PM_{2.5}$ Emission Rate	lb/hr	0.05	0.10	0.055
	TPY	0.22	0.39	0.22

Notes:

[a] Emission Rates was based on the different particle size multipliers from EPA's batch drop equation (EPA AP-42 Chapter 13.2.4, dated 11/06).

[b] lb/hr and TPY emissions based on maximum allowable limits in Permit No. 0530021-021-AV.

[c] Ash silo vent "AA" corresponds to emission unit (EU) 001/D-75 in Permit No. 0530021-021-AV.

[d] Ash silo vent "M" corresponds to EU 036/D-31 in Permit No. 0530021-021-AV.

[e] Ash silo vent "BB" corresponds to EU 038/D-13 in Permit No. 0530021-021-AV.

Source: Golder, 2011

Table C-5: Material Handling Project Data

Operation Scenario	Data	Units
Stackout Operations[a]		
Hours of operation:	12	hours per day (hr/day)
	365	days per year (days/yr)
	4,380	hours per year (hr/yr)
Wood throughput rates:	168	Hopper 1 thru 3 (tons per hour - tons/hr)
	2,018	tons per day (tons/day)
	736,547	tons per year (TPY)
Fuel Truck Delivery		
Truck Traffic (delivering fuel):	13	tons per truck unloaded
	38	tons per truck loaded
	25	average weight (ton) of truck
	81	Number of tucks per day
	29,462	Number of trucks per year
	7,626	feet round trip per truck
	1.4	miles round trip per truck
Reclaim Operations		
Hours of operation:	24	hr/day
	365	days/yr
	8,760	hrs/yr
Wood throughput rates:	900	Heat Input (MMBtu/hr)
	35	% Moisture
	5,352	Btu/lb
	168,161	pounds per hour (lb/hr)
	84	tons/hr
	2,018	tons/day
	736,547	TPY
Lime Truck Delivery		
Lime Delivery:	1	truck per week
	25	ton of lime per truck
	5	ton of lime per day
	0.2	trucks per day
	7,817	ft round trip (entrance to lime silo) per truck
	1.5	miles round trip (entrance to lime silo) per truck
	0.3	miles per day
Lime Silo Unloading:	1300	tons
	25	tons per silo - based on 25 tons truck load
	52	per silo (unloading events)
	60	min per event (estimated unloading time)
	52	hsr/yr (total annual unloading time)
Wood Pile Management Estimation		
Area of pile:	141,556	square foot (ft^2)
Pile diameter:	425	feet (ft)
Front end loader trip length[b]:	1,333	ft traveled per frontend loader
	0.3	miles traveled per frontend loader
Daily Average:	40	miles per day roundtrip
Annual Average:	14,654	miles/year
Material Throughput:	84	tons/hr (design)
	2,018	tons/day
	736,547	TPY
Front end loader capacity[c]:	430,858	lbs operating weight
	47	cuyards (yd^3)
	1,269	cubic feet (ft^3)
	13	tons per scoop
Front end loader trips:	7	trips per hour
	159	trips per day

Notes:

[a] Based on a 7 day per week operational schedule.

[b] Assumed that frontend loadsers will move 1/2 of the perimeter of the circular storage pile (perimeter = pi x 2 x r).

[c] Frontend loader's capacity based on CAT 994F Wheeled Loader.

APPENDIX D
DISPERSION MODELING DOCUMENTATION
(PROVIDED IN CD FORMAT)

DESCRIPTION OF AIR MODELING FILES PROVIDED IN CD

AIR CONSTRUCTION PERMIT APPLICATION
Florida Crushed Stone Company Brooksville South Cement Plant

Submitted to:
Florida Department of Environmental Protection
2600 Blair Stone Rd.
Tallahassee, FL 32399-2400

On behalf of:
Florida Power Development, LLC
10311 Cement Plant Road
Brooksville, FL 34601

Submitted by:
Golder Associates Inc.
5100 W. Lemon Street, Suite 208
Tampa, FL 33609 USA

Project No. 11389534

FOLDERS
AERMAP FILES
AERMOD MODELING FILES
BPIP MODELING FILES
FILE CONTENT
MET DATA FILES

1. AERMAP DIRECTORY

FILE DESCRIPTION	MODEL FILENAME
AERMAP INPUT/OUTPUT	CPL.API/ AST
AERMAP- RECEPTORS	CPL.ROU
AERMAP- SOURCES	CPL.SOU

2. AERMOD DIRECTORY- MODEL INPUT/OUTPUT FILES

Predicted Impacts for all Sources Compared to AAQS

FILE DESCRIPTION	MODEL FILENAME
INPUT/OUTPUT	CO.INP/ CO.OUT
	NO2.INP/ NO2.OUT
	SO2.INP/ SO2.OUT
	SO2ANN.I<YY>/ SO2ANN.O<YY>
	PM25.INP/ PM25.OUT
	PM10.INP/ PM10.OUT
	PMANN.I<YY>/ PMANN.O<YY>

YY= LAST 2 DIGITS OF THE YEARS FROM 2006 TO 2010

3. BPIP DIRECTORY- INPUT/OUTPUT FILES

FILE DESCRIPTION	MODEL FILENAME
INPUT	CPL.BPI
OUTPUT	CPL.PRO

4. FILE CONTENT

READMESEP2011.DOC

5. MET DATA DIRECTORY

FILE DESCRIPTION – Individual met years	MODEL FILENAME
SURFACE METEOROLOGICAL DATA	TPA1M<YYYY>.SFC
PROFILE DATA	TPA1M<YYYY>.PFL

FILE DESCRIPTION – Concatenated met data	MODEL FILENAME
SURFACE METEOROLOGICAL DATA	TPA5yr.SFC
PROFILE DATA	TPA5yr.PFL

YYYY= DIGITS OF THE YEARS FROM 2006 TO 2010

Air Construction Permit Application Florida Crushed Stone Company Brooksville South Cement Plant

Golder Associates

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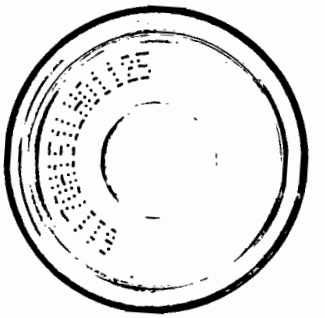

Project No.11389534

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Florida Power Development, LLC
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