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BUREAU OF AIR REGULATION

Golder Associates

August 6, 2007

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Florida Department of Environmental Protection
Department of Air Resources Management
2600 Blair Stone Road, MS 5500
Tallahassee, Florida 32399-2400

Attention : Mr. Jeffery Koerner, P. E., Air Permitting North

RE: UNITED STATES SUGAR CORPORATION (U.S. SUGAR) – CLEWISTON MILL APPLICATION TO FIRE WOOD CHIPS IN BOILER NO. 7 PROJECT NO. 0510003-044-AC (PSD-FL-389)

Dear Mr. Koerner:

The United States Sugar Corporation (U. S. Sugar) is in receipt of the Florida Department of Environmental Protection (Department) request for additional information (RAI) dated June 22, 2007, for the above referenced project. The project is for the proposed firing of wood chips in Boiler No. 7. Responses to each of the Department's requests are provided below, in the same order as they appear in the letter.

Comment 1. **The project proposes to fire up to 25% of the maximum annual heat input rate to Boiler 7 with wood, which is equivalent to 179,580 tons per year of wood. The boiler will be fired with 100% wood to meet the necessary steam demands of the mill and refinery. Wood will only be fired as a startup fuel and during the refinery season (May through September). Wood will not be blended with bagasse because the existing equipment cannot currently handle these fuels at the same time. The purpose of the project is to displace the distillate oil typically fired during the refining season with wood, a renewable biomass.**

a. Is this an accurate description of the project?

Response: The project description is correct except for the following: As stated on Page 2-2 of the application, Section 2.2, with the current conveying system, bagasse from the mills cannot be burned along with wood chips. This is because wood chips must be loaded onto the portion of the conveying system that conveys biomass from the biomass storage yard area to the boilers. Also, when bagasse is coming from the mills, which is during the crop season, all the boilers are receiving bagasse, and if wood chips were loaded onto the conveying system, wood chips would go to all the boilers. Bagasse and wood chips can be blended together during the off-season, or when the mills are shutdown during the crop season, by loading these fuels into the feeder boxes (there are two of these) located in the biomass storage area. The feeder boxes then feed the two fuels onto a single conveyor belt for delivery to the boilers.

During the wood chip test burn for Boiler No. 7, conducted on May 15-16, 2007, a 1:1 blend of bagasse and wood chips was burned (on a volume basis). The test was run in this manner due to concerns over fuel feeder plugging if greater proportions of wood chips were burned. U.S. Sugar is willing to accept a permit condition that limits wood chips to 50 percent of the total input on a volume basis. It is expected that wood chips will normally be burned in a 1:1 ratio with bagasse.

b. Describe how the fuel feed system will handle the switch between bagasse and wood. Identify the physical changes that would be necessary to blend and convey wood with bagasse.

Response: No physical changes to the current fuel feed system would be needed to blend and convey wood with bagasse. As described above, wood chips must be backfed from the biomass storage yard area. There are two fuel feeder boxes. Front-end loaders pick up wood or bagasse from the respective storage areas and deliver it to the feeder boxes. One feeder box will be used for wood chips, while the second will be used for bagasse. The feeder boxes meter (by speed control) the biomass onto the conveyor system, which then feeds Boiler No. 7. The wood chips and bagasse can be fed in equal amounts onto the conveying system by means of this feeder control.

c. Describe how the wood will be delivered, stored, chipped, handled, and conveyed.

Response: U.S. Sugar will handle burning wood chips in Boiler No. 7 the same way it has handled burning wood chips in Boiler No. 8 over the past year. Wood chips are delivered by truck, and unloaded in the wood chip storage yard. Front-end loaders then form and maintain the wood chip piles and area. A portable chipper is used in the storage area to process larger wood chips into a smaller size that will not plug the conveyor system or Boiler No. 7 fuel feeders. From the storage area, front-end loaders pick up the wood chips and deliver them to the fuel feeder boxes. The fuel feeders then meter the wood chips onto the conveying system, which then feeds Boiler No. 7.

d. Describe the procedures for ensuring that treated or painted wood is not present in the materials received.

Response: U.S. Sugar maintains contracts with its suppliers that specify that the wood chips delivered must by substantially free of treated or painted wood, plastics, etc. Each load of wood chips delivered to the facility is inspected for these materials. Any loads not meeting specifications are rejected and sent back to the supplier.

e. Will bottom and fly ash generated from wood firing be field spread?

Response: Yes, bottom and fly ash generated from wood firing in Boiler No. 7 will be field spread. Both bottom ash and fly ash from Boiler No. 7 are sluiced to ash settling ponds, which are dredged periodically. The dredged material is then field spread.

f. Will wood *only* be fired as a startup fuel and during the refinery season?

Response: No, wood will be fired as a primary fuel along with bagasse during the refinery season. The refinery season is when biomass is backfed from the biomass storage area, and when typically only Boiler No. 7 or Boiler No. 8 is operated (although Boiler Nos. 1, 2, and 4 can be operated if Boiler Nos. 7 and 8 are shutdown).

Comment 2. Based on previous annual operating reports, it appears that distillate oil firing has ranged from 4% to 15% of the total heat input rate to Boiler 7. However, other boilers are also used during the refinery season.

a. Identify the steam demands of the refinery season. For Boiler 7, identify the corresponding heat input rate to achieve this level of steam.

Response: The sugar refinery requires an approximate average of 250,000 pounds per hour (lb/hr) steam and a maximum of about 300,000 lb/hr steam. The corresponding heat input rates to achieve this level from Boiler No. 7 are 527 million British thermal units per hour (MMBtu/hr) and 633 MMBtu/hr.

b. For each of the last 5 years for the refinery season, identify the amount of steam generated from firing bagasse and oil and corresponding heat input rates for each fuel.

Response: See attached Table 1.

Comment 3. Table 5-1 identifies previous NO_x BACT determinations for biomass-fired industrial and commercial boilers. Please identify which projects are for new units and which are for modified units.

Response: Table 5-1 has been revised to clarify new sources versus modifications to existing sources, to the extent that information could be determined from the BACT/LAER Clearinghouse. All of the determinations for bagasse-fired boilers were for modifications, except for U.S. Sugar Boiler No. 8, which was a new source.

Comment 4. Section 5.2.6 of the application identifies that Boiler 7 currently controls NO_x emissions with a combination of good combustion practices, overfire air, low excess air, and low nitrogen content of the fuel. Additional controls are rejected as BACT.

a. What NO_x emissions standard is proposed as BACT?

Response: As shown in the application, the previous testing of Boiler No. 7 in May 2005, while the boiler was burning a ratio of approximately 1:4 wood to bagasse and operating at a heat input rate of 407 MMBtu/hr, resulted in NO_x emissions of 0.31 pounds per million British thermal units (lb/MMBtu) (average of four runs). The highest individual run was 0.32 lb/MMBtu. The future projected NO_x emissions when burning wood chips were based on this average test value of 0.31 lb/MMBtu. The recent testing of Boiler No. 7 on wood chips (May 2007), while the boiler was burning a ratio of about 1:1 wood and bagasse and operating at a heat input rate of 548 MMBtu/hr, resulted in NO_x emissions of 0.23 lb/MMBtu, with the highest run being 0.26 lb/MMBtu.

Based on these results, and knowledge of the boiler, we believe that a NO_x emission limit of 0.31 lb/MMBtu would be acceptable for wood chips or a combination of wood chips and bagasse.

b. What is the averaging period and method proposed to demonstrate compliance?

Response: The averaging period for a NO_x limit would be hourly and compliance would be demonstrated by annual stack tests of three test runs each using U.S. Environmental Protection Agency (EPA) Method 7 or 7E. The average of the stack test runs would be used for compliance.

c. What parametric monitoring is proposed to ensure that good combustion practices are being followed? Describe the methods used to ensure low excess air and that the overfire air system is adjusted to reduce NO_x emissions.

Response: In the current Title V operating permit, Boiler No. 7 is already subject to an Operation & Maintenance (O&M) Plan to minimize carbon monoxide (CO) and volatile organic compound (VOC) emissions to the extent practicable, consistent with good combustion practices. Therefore, these O&M practices, and the good combustion practices contained therein, are proposed to control NO_x emissions. A separate plan to minimize NO_x emissions to the extent practicable would be in conflict with the current O&M Plan to minimize CO and VOC emissions; therefore, separate parametric monitoring is not proposed. The current O&M Plan contains the requirement to maintain the combustion air to the boiler at the highest possible level (resulting in the highest possible excess air) to promote good combustion.

Comment 5. Page 3-13 includes a discussion of the applicable requirements in NSPS Subpart Db for Boiler 7. The application states that the requirement to install a COMS no longer applies because the opacity limit for fuel oil firing no longer applies as a result of the low sulfur content and fuel restrictions. However, wood is specifically identified as a fuel under the standards for particulate matter, which includes opacity. Please comment.

Response: Upon review of Subpart Db, it does appear that by firing wood chips in Boiler No. 7, the boiler would become subject to the opacity standard under Subpart Db, along with the requirement to install and operate a continuous opacity monitoring system (COMS). The particulate matter (PM) standard for wood firing is contained in 60.43b(h)(4) for sources that commenced modification after February 28, 2005. The PM limit is 0.085 lb/MMBtu, which Boiler No. 7 meets by virtue of its current emission limit of 0.03 lb/MMBtu.

The opacity standard is contained in 60.43b(f), and is 20 percent opacity (6-minute average), except for one 6-minute period per hour of not more than 27 percent opacity. This opacity standard under Subpart Db would apply only when Boiler No. 7 is firing wood chips. Section 60.48b(a) further provides that any affected facility subject to an opacity standard under 60.43b shall install a COMS.

Boiler No. 7 is equipped with wet sand separators ahead of the electrostatic precipitator (ESP) control device. The wet sand separators' primary function is to remove abrasive sand from the flue gas prior to the ID fan. A significant amount of water [up to 40 gallons per minute (gpm)] is injected into the flue gas stream passing through the separators. For this reason, a COMS placed in the Boiler No. 7 stack may not provide accurate measurement due to liquid water interferences. Additionally, Boiler No. 7 will be operated infrequently while firing wood chips (only during the off-season and very limited times during the crop season).

In recognition of these issues, U.S. Sugar is proposing an alternative monitoring plan (AMP) to satisfy the COMS requirement. An AMP is allowed under 60.13(i). The proposed AMP is based on the Compliance Assurance Monitoring (CAM) Plan for Boiler No. 7, which relies on ESP power input measurements as an indicator parameter for PM emissions. The proposed AMP is attached.

Comment 6. The cost effectiveness of the SNCR system was based on NO_x emissions generated only from the maximum amount of wood proposed. Is this because wood firing will be conducted alone and only during the refinery season and startup?

Response: Yes; wood chips will only be fired during the off-season and very limited times during the crop season (i.e. during startups). Even though wood chips will now be fired in combination with bagasse (1:1 blend), the wood chips will still be primarily utilized to replace No. 2 fuel oil. The No. 2 fuel oil will not normally be burned when wood chips are being burned, except as a supplemental fuel.

Comment 7. In May, the Department authorized a temporary trial burn of 100% wood chips in Boiler 7 to conduct stack testing to determine NO_x emissions and gather operational data. Please provide an update on the status of the trial burn and the preliminary results when available. Also, please provide a copy of the test report as soon as practicable.

Response: The trial burn on wood chips was conducted on May 15-16, 2007. During the testing, a 1:1 blend of wood chips and bagasse was fired in the boiler. The stack test report was sent to your attention July 25, 2007.

Comment 8. NO_x is an ozone precursor and any net increase of 100 tons per year requires an ambient impact analysis. The predicted NO_x increase for this project is greater than 100 tons per year. Please provide this analysis.

Response: An air monitoring analysis for ozone is attached.

Comment 9. **At this time, the Department is unable to accept the use of the "VISTAS" version of CALPUFF and CALMET. Please revise the air quality analysis for Class I impacts using the regulatory version of CALMET and CALPUFF. Presently, the regulatory versions are CALMET 5.53a and CALPUFF 5.711a.**

Response: The Department requests that the Class I modeling for this application be revised using meteorological data developed with CALMET version 5.53a and with the CALPUFF Version 5.711a suite of programs. While the original modeling conducted in April 2007 did use CALPUFF Version 5.711a, the only meteorological data being used at that time were developed with CALMET Version 5.722 (the "VISTAS" version) for BART. While Golder has very recently processed meteorological data using Version 5.53a (for use on the FPL Glades project), we were recently advised that EPA was planning to update those EPA-approved versions. On June 23, TRC Companies, Inc. (TRC) released the EPA CALPUFF and CALMET Version 5.8 and Golder reprocessed the meteorological data using Version 5.8. Since CALPUFF Version 5.711a and CALMET Version 5.53a are no longer the official regulatory versions, we have revised the Class I modeling with CALPUFF and CALMET Versions 5.8 instead. The results of the revised modeling are presented in the attached tables numbered 6-7, 7-2, and 7-3.

Please call or e-mail me if you have any questions concerning this additional information.

Sincerely,

GOLDER ASSOCIATES INC.

David A. Buff

David A. Buff, P.E., Q.E.P.
Principal Engineer
Florida P. E. # 19011

DB/all

Enclosure

cc: K. Tingberg
P. Briggs
A. Satyal, FDEP South District

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APPLICATION INFORMATION

Professional Engineer Certification

1.	Professional Engineer Name: **David A. Buff** Registration Number: **19011**
2.	Professional Engineer Mailing Address... Organization/Firm: **Golder Associates Inc.**** Street Address: **6241 NW 23rd Street, Suite 500** City: **Gainesville** State: **FL** Zip Code: **32653**
3.	Professional Engineer Telephone Numbers... Telephone: **(352) 336-5600** ext.**545** Fax: **(352) 336-6603**
4.	Professional Engineer Email Address: **dbuff@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.

David A. Buff
Signature

8/6/07
Date

(seal)

STATE OF FLORIDA PROFESSIONAL ENGINEER DAVID A. BUFF No. 19011

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

TABLE 1
U. S. SUGAR CLEWISTON MILL OFF-CROP SEASON OPERATIONS, 2002 THROUGH 2006

	Total Steam Production[a] lbs x 1000)	Total Heat Input (MMBtu)	Fuel Oil Heat Input[a] (MMBtu)	Bagasse Heat Input[a] (MMBtu)	Wood Chips Heat Input (MMBtu)
2002					
BOILER 1	167,362	345,689	54,925	290,763	0
BOILER 2	220,612	467,296	56,202	411,094	0
BOILER 3[b]	82,187	168,145	16,764	151,380	0
BOILER 4	0	0	0	0	0
BOILER 7	379,870	795,056	235,271	559,786	0
TOTAL	**850,031**	**1,776,186**	**363,163**	**1,413,023**	**0**
2003					
BOILER 1	106,744	220,481	30,044	190,437	0
BOILER 2	135,305	286,601	31,270	255,330	0
BOILER 3[b]	24,193	49,496	32,952	16,544	0
BOILER 4	9,606	20,971	17,440	3,530	0
BOILER 7	514,743	1,077,342	343,401	733,941	0
TOTAL	**790,591**	**1,654,890**	**455,108**	**1,199,782**	**0**
2004					
BOILER 1	39,177	80,921	37,013	43,907	0
BOILER 2	66,890	141,807	30,111	111,696	0
BOILER 3	31,322	63,483	12,122	51,361	0
BOILER 4	119,788	263,457	10,527	252,930	0
BOILER 7	502,530	1,051,780	81,492	970,288	0
TOTAL	**759,707**	**1,601,448**	**171,265**	**1,430,183**	**0**
2005					
BOILER 1	8,655	18,088	11,108	6,980	0
BOILER 2	8,930	18,651	9,475	9,176	0
BOILER 3	0	0	0	0	0
BOILER 4	134,860	292,066	17,993	274,073	0
BOILER 7	210,931	436,333	57,154	379,179	0
BOILER 8	707,941	1,330,091	151,860	1,178,231	0
TOTAL	**1,071,317**	**2,095,230**	**247,591**	**1,847,638**	**0**
2006					
BOILER 1	51,340	107,168	11,641	95,527	0
BOILER 2	0	0	0	0	0
BOILER 3	0	0	0	0	0
BOILER 4	152,462	327,609	17,266	310,344	0
BOILER 7	0	0	0	0	0
BOILER 8	876,623	1,625,084	55,475	644,850	924,759
TOTAL	**1,080,425**	**2,059,861**	**84,382**	**1,050,720**	**924,759**

[a] From AOR Data, except Boiler No. 8, which is based on CEMS data.

TABLE 6-7
PSD CLASS I SIGNIFICANT IMPACT ANALYSIS FOR THE PROPOSED PROJECT

Pollutant	Averaging Time	Concentration[a] (µg/m3) for Year			Proposed EPA Class I Significant Impact Level (µg/m³)
		2001	2002	2003	
Nitrogen Dioxide	Annual	0.0005	0.0006	0.0007	0.1
	24-Hour	0.020	0.025	0.018	-
	8-Hour	0.055	0.059	0.052	-
	3-Hour	0.076	0.068	0.093	-
	1-Hour	0.104	0.099	0.135	-

[a] Based on the CALPUFF version 5.8 and the 4-km Florida Domain developed with CALMET version 5.8, 2001-2003.

TABLE 7-2
MAXIMUM 24-HOUR AVERAGE VISIBILITY IMPAIRMENT PREDICTED FOR THE BOILER NO. 7 PROJECT AT THE EVERGLADES NATIONAL PARK PSD CLASS I AREA

	Visibility Impairment (%) [a]			Visibility Impairment Criteria (%)
Area	2001	2002	2003	
BACKGROUND EXTINCTION CALCULATIONS: METHOD 2 WITH RHMAX = 95 PERCENT				
	0.99	0.73	1.12	5.0

[a] Concentrations are highest predicted using the 4-km Florida Domain developed with CALMET version 5.8, 2001 - 2003. Background extinctions calculated using FLAG Document (December 2000) and stated method.

TABLE 7-3
TOTAL NITROGEN DEPOSITION RATES PREDICTED FOR THE PROPOSED PROJECT AT THE EVERGLADES NATIONAL PARK PSD CLASS I AREA

	Total Deposition (Wet + Dry) for Year						Deposition Analysis Threshold[b]
	2001		2002		2003		
PSD Class I Area	($g/m^2/s$)	(kg/ha/yr)	($g/m^2/s$)	(kg/ha/yr)	($g/m^2/s$)	(kg/ha/yr)	(kg/ha/yr)
Everglades National Park	5.139E-13	0.0002	8.817E-13	0.0003	7.254E-13	0.0002	0.01

[a] Conversion factor is used to convert $g/m^2/s$ to kg/hectare (ha)/yr using following units:

$g/m^2/s$	x	0.001	kg/g
	x	10000	m^2/hectare
	x	3600	sec/hr
	x	8760	hr/yr =kg/ha/yr
	or		
$g/m^2/s$	x	3.1536E+08	= kg/ha/yr

[b] Deposition analysis thresholds (DAT) for nitrogen and sulfur deposition provided by the U.S. Fish and Wildlife Service, January 2002. A DAT is the additional amount of N or S deposition within a Class I area, below which estimated impacts from a proposed new or modified source are considered insignificant.

ALTERNATIVE OPACITY MONITORING PLAN FOR BOILER NO. 7 WOOD CHIP FIRING U. S. SUGAR CLEWISTON

The United States Sugar Corporation (U. S. Sugar) proposes the following alternative monitoring plan (AMP) for opacity when Boiler No. 7 is firing wood chips. This plan is structured after the Compliance Assurance Monitoring (CAM) Plan for Boiler No. 7 at the Clewiston mill. Boiler No. 7 is subject to particulate matter (PM) limits, and the CAM Plan is for the purpose of indicating continuous compliance with the PM limit.

The effectiveness of the electrostatic precipitator (ESP) in controlling PM emissions from Boiler No. 7 can be evaluated based on total power input to the ESP. The ESP has a total of three fields. Total power input can be determined by monitoring secondary voltage and secondary current to each field, calculating power input to each field, and summing the individual field values to obtain total power input.

Total secondary power input to the ESP is a recognized parameter for controlling PM/PM_{10} emissions. Because U.S. Sugar has no test data for PM emissions while firing wood chips in Boiler No. 7, additional testing will be conducted after the wood chip permit is issued. U.S. Sugar is choosing to use the historic test data on bagasse at this time to establish an indicator value for total secondary power input to the Boiler No. 7 ESP for wood chip firing. The test data correlating the parameter to the PM emission levels are presented in the Clewiston CAM Plan.

The proposed parameter minimum value is based on 90 percent of the minimum parameter value recorded during any test run from the historic data, when compliance was demonstrated with the PM/PM_{10} limit. The calculation of the minimum parameter value is provided below:

> ESP secondary power input:
> Minimum test run value = 49.32 kilowatts (kW)
> Minimum parameter value = 49.32 x 0.9 = 44 kW

ESP operating parameter values below this minimum parameter value will be indicative of atypical operation of the control device. This methodology is consistent with the establishment of ESP operating limits under Title 40, Part 63 of the Code of Federal Regulations (40 CFR 63), Subpart DDDDD, which are the Industrial Boiler/Process Heater Maximum Achievable Control

Technology (MACT) standards. Boiler No. 7 will be subject to these standards beginning in September 2007.

The CAM regulations generally require that pollutant-specific emissions units with the potential to emit greater than 100 tons per year (TPY) collect monitoring data at least four times per hour. The CAM regulations also state that emission units with controlled emissions less than 100 TPY are subject to a reduced data collection frequency of at least once per day [40 CFR 64.3(b)(4)(iii)]. Because Boiler No. 7 has controlled emissions of less than 100 TPY, U.S. Sugar proposes a recording frequency of once per 8-hour shift.

Based on collecting data once per 8-hour shift, an excursion will occur when any individual reading is below the minimum parameter value. When an excursion occurs, corrective action will be initiated, beginning with an evaluation of the occurrence to determine the action required (if any) to correct the situation. All excursions will be documented and reported on a semi-annual basis.

The AMP for opacity when firing wood chips is summarized below for Boiler No. 7.

Monitoring Approach

The monitoring approach is based on monitoring total ESP secondary power input, which is calculated from the ESP secondary voltage and secondary current. The monitoring approach is summarized in the table below.

Boiler No. 7	Indicator No. 1
Indicator	Total Secondary Power Input
Measurement Approach	Total secondary power input to each field is calculated from the secondary current and voltage, which are monitored with an amp/volt meter.
Indicator Range	An excursion is defined as any total power input below 44 kW. Excursions trigger an inspection, corrective action, and a recordkeeping and reporting requirement.
Data Representativeness	Accuracy of the amp/volt meter is ±1 milliampere (mA) and ±1 kilovolt (kV).
Verification of Operational Status	NA
QA/QC Practices and Criteria	The amp/volt meter is maintained in accordance with the manufacturer's recommendations.
Monitoring Frequency	ESP secondary current and secondary voltage are measured continuously and used to determine the total secondary power input.
Data Collection Procedures	Total power input calculated from voltage and current readings once per 8-hour shift.
Averaging Period	NA

AMBIENT MONITORING ANALYSIS FOR OZONE
U. S. SUGAR CLEWISTON MILL

Introduction

In accordance with requirements of Title 40, Subpart 52.21(m) [40 CFR 52.21(m)] and Rule 62-212.400(5)(f), Florida Administrative Code (F.A.C.), any application for a Prevention of Significant Deterioration (PSD) permit must contain an analysis of continuous ambient air quality data in the area affected by the proposed major stationary facility or major modification. For a new major facility, the affected pollutants are those that the facility potentially would emit in significant amounts. For a major modification, the pollutants are those for which the net emissions increase exceeds the significant emission rate.

Ambient air monitoring for a period of up to 1 year is generally appropriate to satisfy the PSD monitoring requirements. A minimum of 4 months of data is required. Existing data from the vicinity of the proposed source may be used if the data meet certain quality assurance requirements; otherwise, additional data may need to be gathered. Guidance in designing a PSD monitoring network is provided in U.S. Environmental Protection Agency (EPA) *Ambient Monitoring Guidelines for Prevention of Significant Deterioration* (EPA, 1987).

An exemption from the preconstruction ambient monitoring requirements is also available if certain criteria are met. If the predicted increase in ambient concentrations due to the proposed modification is less than the specified *de minimis* concentration for a particular pollutant, the modification can be exempted from the preconstruction air monitoring requirements for that pollutant.

A preconstruction air monitoring analysis is required for ozone for the U.S. Sugar Clewiston Mill Boiler No. 7 wood chip firing project, since the increase in NO_x emissions due to the project are greater than 100 tons per year (TPY). This analysis is presented in the following section.

Ambient Ozone Concentrations

The PSD ambient monitoring guidelines allow the use of existing data to satisfy preconstruction review requirements. Presented in Table 1 is a summary of existing continuous ambient ozone data for the ozone monitor located in the vicinity of the Clewiston Mill. Data are presented for the last 3 years of record, 2004 to 2006. As shown, the two closest ozone monitors were operated in the West Palm Beach area during this period. The nearest ozone monitoring station was located in Royal Palm Beach.

The ozone monitor shows that ambient ozone concentrations were below the ambient air quality standards of: 0.12 parts per million (ppm) [235 micrograms per cubic meter ($\mu g/m^3$)], maximum 1-hour average allowed to be exceeded on average 1 day per year; and 0.08 ppm (157 $\mu g/m^3$), average annual fourth highest 8-hour average concentration over a 3-year period. The monitor in Royal Palm Beach is considered to be the most representative of the Clewiston Mill site, due to its location on the eastern edge of the Everglades Agricultural Area.

TABLE 1
SUMMARY OF AMBIENT OZONE DATA COLLECTED NEAR THE U.S. SUGAR CLEWISTON MILL

City	Site ID No.	Location	Year	Valid Days Measured	2nd Maximum Concentration-1-Hour Average		4th Highest Concentration-8-Hour Average	
					ppm	µg/m³	ppm	µg/m³
Royal Palm Beach	12-099-0009	980 Crestwood Blvd North	2006	242	0.093	183	0.071	139
			2005	176	0.079	155	0.062	122
			2004	208	0.077	151	0.067	132
Lantana	12-099-0020	1199 Lantana Road	2006	235	0.086	169	0.069	135
			2005	224	0.078	153	0.060	118
			2004	60	0.059	116	0.043	84

Note: NA= not applicable.
ppm = parts per million.
µg/m³ = micrograms per cubic meter.

Source: FDEP Quick Look Reports, 2006, 2005 and 2004 (based on EPA's Air Quality System).

TABLE 5-1
BACT DETERMINATIONS FOR NO_X EMISSIONS FROM BIOMASS-FIRED INDUSTRIAL & COMMERCIAL BOILERS

Company	State	RBLC ID	Permit Date	Permit Type	Fuel	Throughput	Emission Limits: As Provided in LAER/BACT Clearinghouse	Emission Limits: Converted to lb/MMBtu[a]	Control Equipment Description	Removal Efficiency %
Boilers firing Bagasse:										
US Sugar Corp. - Clewiston Blr No. 8	FL	FL-0257	11/18/2003	B	Bagasse	936 MMBtu/hr	0.14 lb/MMBtu	0.140	SNCR, Good Combustion & Operating Practices	50
Rio Grande Valley Sugar Growers	TX	TX-0461[b]	10/10/2003	--	Bagasse	288 MMBtu/hr	48 lb/hr	0.167	Good Combustion Practices	--
					Bagasse	194 MMBtu/hr	32.4 lb/hr	0.167	Good Combustion Practices	--
					Bagasse	202 MMBtu/hr	33.6 lb/hr	0.167	Good Combustion Practices	--
					Bagasse	137 MMBtu/hr	22.68 lb/hr	0.166	Good Combustion Practices	--
					Bagasse	562 MMBtu/hr	135 lb/hr	0.240	Good Combustion Practices	--
US Sugar Corp. - Clewiston Blr No. 4	FL	PSD-FL-272A[d]	5/18/2001	C	Bagasse	633 MMBtu/hr	0.2 lb/MMBtu	0.200	Good Combustion Practices	--
Atlantic Sugar Association - Blr No. 5	FL	PSD-FL-078B[d]	6/7/2001	C	Bagasse	255.3 MMBtu/hr	0.16 lb/MMBtu	0.160	Good Combustion Practices	--
US Sugar Corp. - Clewiston	FL	FL-0034	11/29/2000	C	Bagasse	633 MMBtu/hr	0.2 lb/MMBtu	0.200	Good Combustion Practices	--
US Sugar Corporation - Boiler No. 4	FL	FL-0248	11/19/1999	C	Bagasse	633 MMBtu/hr	0.2 lb/MMBtu	0.200	Good Combustion Practices	--
Boilers firing Wood and Wood products:										
Sierra Pacific Industries - Skagit Co Lumber Mill	WA	WA-0327[b]	1/25/2006	A	Bark & Waste Wood	430 MMBtu/hr	0.13 lb/MMBtu (Calendar Day)	0.130	SNCR	48
International Biofuels Inc	VA	VA-0298[b]	12/13/2005	A	Wood/Woodpaste	77 MMBtu/hr	0.22 lb/MMBtu	0.220	--	--
					Wood/Woodpaste	43 MMBtu/hr	0.22 lb/MMBtu	0.220	--	--
City of Virginia, VA Power Co, Laurention Energy	MN	MN-0058	6/30/2005	B	Wood	230 MMBtu/hr	0.15 lb/MMBtu (30-day avg)	0.150	SNCR	50
Hibbing Puc/Laurention Energy Authority	MN	MN-0059	6/30/2005	B	Wood	230 MMBtu/hr	0.15 lb/MMBtu (30-day rolling avg)	0.150	SNCR	50
Darrington Energy LLC	WA	WA-0329	2/11/2005	A	Wood Waste	403 MMBtu/hr	0.12 lb/MMBtu (24-hr avg)	0.120	SNCR	--
Inland Paperboard and Packaging (Gaylord)	LA	LA-0188	11/23/2004	C	Bark	787.5 MMBtu/hr	351.38 lb/hr	0.446	Overfire air; Low NO_X burners; good combustion	--
Public Service of New Hampshire - Schiller Station	NH	NH-0013	10/25/2004	B	Wood & Tree Products	720 MMBtu/hr	0.075 lb/MMBtu (24-hr avg)	0.075	Fluidized Bed Boiler & SNCR	65
Louisiana-Pacific Corporation	WI	WI-0223	6/17/2004	C	Wood	19.4 MMBtu/hr	8.9 lb/hr	0.459	Good Combustion Practices	--
					Wood	23.8 MMBtu/hr	16.2 lb/hr	0.681	Good Combustion Practices	--
Biomass Energy	OH	OH-0269	1/5/2004	A	Wood	175 MMBtu/hr	0.44 lb/MMBtu (for each of 7 boilers)	0.440	SNCR	80
Deltic Timber Corporation	AR	AR-0075	8/20/2003	B	Wood Waste & Bark	64.3 MMBtu/hr	0.3 lb/MMBtu	0.300	Oven Fire Air & Dry Low NO_X Combustion	--
Wellborn Cabinet Inc	AL	AL-0213	4/16/2003	C	Wood Waste	29.5 MMBtu/hr	14.75 lb/hr	0.500	Boiler Design & Combustion Control	--
Del-Tin Fiber LLC	AR	AR-0072	2/28/2003	C	Wood Waste	291 MMBtu/hr	87.2 lb/hr	0.300	Low NO_X burners & SNCR	--
West Frazer (South) Inc.	AR	AR-0065	11/7/2002	D	Wood Waste	29.63 MMBtu/hr	0.3 lb/MMBtu	0.300	Overfire air & Low NO_X Combustion	--
Sierra Pacific Industries - Aberdeen Div	WA	WA-0298	10/17/2002		Waste Wood	310 MMBtu/hr	0.15 lb/MMBtu (24-hr avg)	0.150	SNCR & Boiler Design	--
Meadwestvaco Kentucky Inc	KY	KY-0085	2/27/2002	C	Bark	631 MMBtu/hr	0.4 lb/MMBtu	0.400	--	--
Martinsville Thermal, LLC - Thermal Ventures	VA	VA-0268	2/15/2002	A	Wood	120 MMBtu/hr	0.4 lb/MMBtu	0.400	Good Combustion Practices	--
S.D. Warren Co. - Skowhegan, ME	ME	ME-0021	11/27/2001	C	Wood Waste	1,300 MMBtu/hr	0.2 lb/MMBtu	0.200	SNCR	
District Energy St. Paul Inc	MN	MN-0046	11/15/2001	D	Wood	550 MMBtu/hr	0.15 lb/MMBtu	0.150	SNCR	--
Temple-Inland Forest Products Corporation	TX	TX-0345	9/28/2001	C	Wood	40 MMBtu/hr	57.2 lb/hr	1.430	--	--
International Paper Company - Riegelwood Mill	NC	NC-0092	5/10/2001	B	Wood Waste	600 MMBtu/hr	0.35 lb/MMBtu	0.350	Good Combustion Practices	--
Duke Energy	OH	OH-0244	11/24/1999	A	Wood	28.7 MMBtu/hr	0.604 lb/MMBtu	0.604	--	--
Wheelabrator Sherman Energy Company	ME	ME-0026	4/9/1999	C	Wood	315 MMBtu/hr	0.25 lb/MMBtu (30-day avg)	0.250	Good Combustion Practices	--
Trigen Biopower	GA	GA-0116	11/24/1998	D	Wood Waste	265.1 MMBtu/hr	66.3 lb/hr	0.250	Bubbling Fluidized Bed Combustion	--
Gulf States Paper Corp	AL	AL-0122	10/14/1998	A	Wood	98 MMBtu/hr	0.3 lb/MMBtu	0.300	--	--
Sierra Pacific Industries - Quincy	CA	CA-0930	5/13/1998	D	Wood	245.3 MMBtu/hr	56.4 lb/hr	0.230	SNCR	--
Wellborn Cabinet Inc	AL	AL-0107	2/3/1998	A	Wood	29.5 MMBtu/hr	13.57 lb/hr	0.460	Boiler design & comb. Control: oxygen trim, staged comb., steam injection, & overfire air.	31
					Wood Waste	57.2 MMBtu/hr	0.25 lb/MMBtu	0.250	Staged Combustion	
Gulf States Paper Corporation	AL	AL-0116	12/10/1997	D	Bark	775 MMBtu/hr	0.3 lb/MMBtu	0.300	Low NO_X natural gas & fuel oil burner	50
Plum Creek Mfg - Evergreen Facility	MT	MT-0007	2/15/1997	--	Hog Fuel	225 MMBtu/hr	104 lb/hr	0.462	--	--
Boilers firing other Biomass:										
Archer Daniels Midland Company	ND	ND-0022	5/1/2006	C	Hulls	280 MMBtu/hr	0.2 lb/MMBtu (30-day rolling avg)	0.200	Combustion Control	30
Powerminn 9090 LLC	MN	MN-0057	10/23/2002	A	Manure	792 MMBtu/hr	0.16 lb/MMBtu (30-day avg)	0.160	SNCR	50
Archer Daniels Midland Co. - Northern	ND	ND-0018	7/9/1998	D	Hulls	200 MMBtu/hr	0.2 lb/MMBtu	0.200	--	--
					Hulls	280 MMBtu/hr	0.2 lb/MMBtu	0.200	--	--

0.160

Reference: RACT/BACT/LAER Clearinghouse on EPA's Webpage, 2007.
[a] To convert from lb/hr, the emission limit was divided by the throughput rate.
[b] From the draft BACT determination.
[c] Assuming 8,760 hr/yr.
[d] This information obtained from actual PSD permit, not Clearinghouse.

Process Types:
A: New/Greenfield Facility
B: Add new process to existing facility
C: Modify process at existing facility
D: Both B and C