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August 14, 2001

0037584

Florida Department of Environmental Protection
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Attention: Mr. Jeff Koerner, P.E.

RE: OKEELANTA POWER COGENERATION FACILITY
ARMS FACILITY ID NO. 0990332
PROJECT NO. 0990332-014-AC/PSD-FL-196M
APPLICATION TO MODIFY CO AND SO_2 EMISSIONS STANDARDS
REQUEST FOR ADDITIONAL INFORMATION NO. 2

Dear Mr. Koerner:

Okeelanta Power Limited Partnership (OkPLP) has received the Department's letter dated July 11, 2001, requesting additional information in regards to revising the CO and SO_2 emissions standards for the three cogeneration boilers. A response to each of the Department's questions is provided below, in the same order as they appear in the Department's letter.

1. <u>CO, NO_x, and SO_2 Data</u>

A brief summary of the methodology for determining lb/MMBtu by the CEMS data acquisition system (DAS) is provided below.

The DAS calculates a combined a carbon-based F-factor (Fc factor) by determining the fraction of heat input due to each type fuel and using the F_c factor for each type fuel. F_c for biomass is 1,850 scf/MMBtu.

Heat input due to each type fuel is determined by fuel flow rates. Biomass fuel flow to the boilers is controlled by the biomass feeder speeds. The feeder speeds correlate to the volume of biomass entering the boilers. Feeder speed is read directly into the DAS, which is programmed to convert the speed to volume of material. A constant is set in the DAS related to the percentage of wood versus bagasse being fed to the boilers. This constant is changed depending on the time of year, i.e., crop season, off-season, etc. With this constant, the DAS calculates the lb/hr of wood and bagasse entering the boilers. Fuel oil input to each boiler is also measured by fuel oil flow meters.

Constants are also in the DAS related to heating value of wood, bagasse and fuel oil. The DAS uses these constants to calculate the heat input due to each fuel type, and then the combined F_c factor.

Next, the DAS uses the combined fuel factor (F_c) to convert ppm measured in the flue gas stream to lb/MMBtu, based on the following equation:

$$E\ (lb/MMBtu) = (ppm * Fc * 100 * K) / Wet\ CO_2\%$$

where, ppm is wet pollutant concentration from CEMS
F_c is combined carbon fuel factor
K is conversion factor depending on pollutant of interest
Wet CO_2% = percentage of CO_2 in the gas stream, wet basis.

Combustion Systems, Inc., conducted a boiler efficiency study at Okeelanta Power in July 1997. The results of this study are as follows:

- Boiler A had a boiler efficiency of 59.81% to 65.47% when co-firing bagasse and wood with the wood percentages ranging from 14.4% to 48.2%.
- Boiler B had a boiler efficiency of 64.24% to 70.92% when co-firing bagasse and wood with the wood percentages ranging from 23.4% to 68.8%.
- Boiler C had a boiler efficiency of 72.45% to 72.93% when firing 100% wood.

The study states that, "Bagasse and wood co-firing resulted in significantly lower boiler efficiencies in Boilers A and Boiler B at Okeelanta, due to the high moisture content of the bagasse".

2. Elevated CO Emissions

The CO excursions of the 30-day rolling average are listed in the tables in Appendix A of our response dated June 8, 2001. The dates of the excursions are stated at the top of each table, as follows:

- Boiler A excursions: 11/10/99 through 11/30/99. Each day was an excursion of the 30-day rolling average, for a total of 19 excursions.
- Boiler C excursions: 10/30/99 through 11/26/99. Each day was an excursion of the 30-day rolling average, for a total of 28 excursions.

The 30-day rolling average standard was approved on June 22, 1999. Therefore, the units have operated under this standard for 24 months. This indicates that Boiler A was out of compliance with the CO standard for 2.8% of this time, and Boiler C was out of compliance with the CO standard for 3.8% of this time.

OkPLP always employs "good combustion practices" in operating the boilers. To do otherwise would be costly in terms of not only wasted fuel, but also higher maintenance costs associated with boiler operation. The boiler operators are trained in proper boiler operation and good combustion practices.

Bagasse fuel has higher moisture content (50-55%) compared to wood (35-50%). However, bagasse is of smaller particle size with more surface area, therefore the moisture in bagasse can be driven off faster as compared to larger pieces of wood. Also, greater relative amounts of wood are burned during the summer months, when rainfall is the greatest.

Review of the periods of CO excursions indicates that the excursions for both Boilers A and C began shortly after the start of the crop season. Wood was primarily burned prior to these periods, with bagasse being primarily burned during the period of actual excursions. This indicates that average CO emissions were already rising prior to the crop season starting. This is also demonstrated from Figure 2-1 of the original application, which shows high average CO levels occurring for Boiler A in September 1999, prior to the start of the crop season and prior to the excursions. A similar trend is shown for Boiler C (Figure 2-3 of application) for October 1999, just

prior to the excursions. These data indicate that burning bagasse, with its high moisture content, would not be a solution to CO excursions.

OkPLP is a unique operation in that it handles very large volumes of biomass. Approximately 1.4 million tons of biomass is burned annually. Large storage areas for both wood and bagasse are maintained to insure an adequate fuel supply. Providing a 3-day storage area for dry biomass would be highly impractical. OkPLP does not store biomass fuel for very long, and operates on a "first in, first out" basis, since the Btu content of biomass fuel degrades over time. This also minimizes exposure of the fuel to rainfall. The facility has two biomass fuel reclaim areas: one south of the plant to reclaim bagasse, and one east of the plant to reclaim wood. Mobile equipment is always active in the reclaim areas. Constructing a building or covered structure of any sort would interfere with the movement of the mobile equipment and the ability to store and handle biomass fuel. Any covered or confined storage area, in addition to being impractical, would be highly costly.

Natural gas was permitted primarily to replace fuel oil as a startup and supplemental fuel. At times, fuel oil is burned to enhance the combustion process. However, fuel oil or natural gas is very expensive compared to biomass fuel, and the facility could not economically operate for very long if required to burn fossil fuels on an ongoing basis.

OkPLP will continue to implement combustion controls and good combustion practices to reduce CO emissions. However, this does not guarantee in itself that no further excursions of the CO standard will occur. OkPLP desires to be in compliance with its emission limiting standards at all times. OkPLP has made best efforts to combust the fuel as efficiently as possible. However, when extreme events arise, CO emissions can be variable. Due to the variability of CO emissions from biomass burning, and the documented effect of fuel moisture, OkPLP is requesting the 12-month rolling average for CO.

OkPLP did not notify the Department of the replacement of the wood feeders. The old wood feeders were of inefficient design, plugged frequently, and allowed cold air into the boilers. The hourly fuel feed rate or maximum heat input rate did not change as a result of the new rotary feeders.

3. Elevated SO_2 Emissions

The SO_2 excursions of the 30-day rolling average are listed in the tables in Appendix A of our response dated June 8, 2001. The dates of the excursions are stated at the top of each table, as follows:

- Boiler A excursions: 9/11/00, 10/03/00 and 10/04/00. Each day was an excursion of the 30-day rolling average, for a total of 3 excursions.
- Boiler B excursions: 6/23/00 through 7/17/00. Each day was an excursion of the 30-day rolling average, for a total of 23 excursions.
- Boiler C excursions: 6/14/00 through 7/12/00. Each day was an excursion of the 30-day rolling average, for a total of 27 excursions.

There have not been any further excursions since these dates. The current 30-day rolling average standards of 0.05 lb/MMBtu for wood and 0.02 lb/MMBtu for bagasse were approved on 10/24/97. Therefore, the units have operated under this standard for 45 months.

Okeelanta began to collect and analyze additional fuel samples for sulfur when the SO_2 standard was first exceeded. It was determined that the sulfur content of the fuel was higher than the original 1992 application had predicted. Therefore, OkPLP applied for a permit revision as allowed by the

air permit, i.e., "Subject to revision after testing". The facility has no SO_2 control equipment so there was little the plant could do to prevent an exceedance other than adhere to "Good Operating Practices."

OkPLP investigated these excursions in order to attempt to identify the cause. These data were presented in the original application for the CO/SO_2 revision request, which analyzed the possibility that fuel sulfur content had increased or that the mechanical collector additions had some effect on SO_2 emissions. The data were found to be inconclusive regarding the mechanical collectors, but indicated that fuel sulfur content may have increased. OkPLP is continuing with more frequent fuel sulfur analysis in an attempt to identify the cause. No further excursions have taken place since July 2000.

A time plot and listing of historic fuel sulfur analysis data are presented in Appendix A. Although not enough historic bagasse data are available to reach any conclusions regarding sulfur content, the data for wood show higher sulfur contents (in terms of potential lb/MMBtu SO_2 emissions) occurring in early 2001. The data indicate an average increase in fuel sulfur content of wood.

Since the fuel sulfur content is beyond the control of OkPLP, and the sulfur content of wood can vary considerably depending on the source, and the exact cause of the excursions is not known, it is possible that further excursions may occur. Therefore, OkPLP is requesting the higher SO_2 limits for biomass. It is stressed once again that Condition 20 of the current air permit states that the SO_2 emissions limits are subject to revision pursuant to facility testing.

The carbon injection system consists of three carbon hoppers with of total volume of 334 cu. ft. each. The blowers, hoppers, piping and injection points were designed to feed and inject carbon. Chemco, the manufacturer, states that lime is more difficult to inject with this system due to the physical consistency. The system would have to be re-engineered, i.e, investigate blower sizing, injection points, plant chemistry, piping arrangements and storage requirements (hopper size) in order to inject lime. This re-engineering would be expensive.

It is noted that, even at the requested SO_2 emission rate of 0.10 lb/MMBtu as a 30-day rolling average, SO_2 emissions from the OkPLP facility are much less than a comparable coal-fired or low sulfur fuel-fired power plant.

4. CO Modeling Analysis

The Pratt & Whitney new rocket testing facility was not permitted at the time the CO modeling was performed. In fact, the final permit has still not been issued, so the final approved allowable emissions are not known. The draft permit stated 1,000 TPY maximum CO emissions. Based on the modeling inventory submitted previously, this facility would not screen out by the North Carolina technique. Therefore, the CO modeling has been revised to include this source.

Okeelanta Boiler 16 was also added to the revised modeling inventory and included in the revised modeling analysis. The final permit for Boiler 16 has not been issued. The potential emission rates and stack and operating parameters are based on the pending permit. Please find revised modeling tables attached in Appendix B.

The modeling files were posted on Golder's FTP site in early June, as stated on page 4 of Appendix C of the June 8, 2001 submittal. The revised model runs will also be posted there.

5. SO_2 Modeling Analysis

The requested change was revised in the June 8, 2001 submittal to remove coal as an authorized fuel. On pages 3 and 6 of the June 8 letter and in Table 2-5 attached, the maximum annual SO_2 emissions were stated to be 575 TPY based upon biomass firing and the requested annual limit of 0.10 lb/MMBtu. The permit application forms reflecting the removal of coal were also attached to the letter.

Current actual emissions and the revised future potential SO_2 emissions were presented in Table 3-1 of the June 8 submittal. This showed that the increase in SO_2 emissions was 441.8 TPY.

The Department's January 25, 2001 comment letter clearly stated in comment #5 to compare the SO_2 emission rates used in the original PSD air quality analysis versus the expected maximum future SO_2 emission rates. The modeling was to be revised only if the future maximum emission rates were higher than what was used in the original analysis. This comparison showed much lower SO_2 emissions in the future compared to those originally modeled, both on a short-term and an annual basis.

6. Coal Firing

No response needed.

7. Other Requests

a. *Stack testing for CO, NO_x, SO_2, visible emissions, fluorides, beryllium, arsenic, chromium and copper*

Maximum future fluoride emissions:
With coal firing: 12.94 TPY
Without coal firing: 4.03 TPY

Maximum future beryllium emissions:
With coal firing: 0.0032 TPY
Without coal firing: 0.0016 TPY

A revised PSD applicability for these two pollutants is attached (Appendix C). PSD review is not triggered for beryllium. Note that although the revised PSD applicability analysis for fluorides shows the emission increase to be just barely over the significant emission rate of 3.0 TPY, the future potential emissions are based on the highest single stack test result for fluorides for bagasse or wood. This is due to the need to use a highly conservative future emission factor (in the event that the factor becomes a limit). Therefore, potential fluoride emissions are likely greatly overestimated.

Also note that an emission factor for beryllium due to wood firing has been assigned in the tables. All stack tests performed to date on bagasse have shown nondetectable levels of beryllium. Of all the stack tests performed on wood, only one test on each of Units B and C have shown any detectable levels. Therefore, the potential future emissions (without coal firing) are likely greatly overestimated.

To provide a more realistic estimate of the increase in emissions for fluorides and beryllium, the maximum future emissions were estimated using the same emission factors as for the baseline emissions. These future actual emissions and the PSD applicability based on this methodology are

shown in Appendix C, Tables C-1 and C-2. As shown, PSD review is not triggered based on expected future emissions.

A summary of the stack test results for arsenic, chromium and copper are also included in Appendix C, Tables C-3 and C-4.

b. ***Emission limits for lead, mercury, fluorides and beryllium***
The revised PSD applicability for lead and mercury were included in Tables 3-1 and 3-2 of the June 8 submittal. They are provided again as revised Tables 3-1 and 3-2. The analysis shows that PSD review is triggered for lead but not for mercury.

As for fluorides and beryllium, potential future emissions are overestimated due to the need to use a highly conservative future emission factor (in the event that the factor becomes a limit). To provide a more realistic estimate of the increase in emissions for lead and mercury, the maximum future emissions were also estimated using the same emission factors as for the baseline emissions. These future actual emissions and the PSD applicability based on this methodology are shown in Appendix C, Tables C-1 and C-2. As shown, PSD review is not triggered based on expected future emissions.

c. ***Eliminate the requirement for a carbon injection system***
No response necessary.

d. ***Bubbling of lead and mercury limits***
The request is simply to be allowed to average the test results from all three boilers to demonstrate compliance with the lb/MMBtu limits for lead and mercury. This is a compliance demonstration issue. An individual limit would be retained for each boiler.

Thank you for your consideration of this information and requests. Please call if there are any questions.

Sincerely,

GOLDER ASSOCIATES INC.

David A. Buff

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APPENDIX A

BIOMASS FUEL SULFUR ANALYSIS DATA

Figure A-1. Potential SO_2 Emissions From Wood Fuel (Revised 8/6/01)
1/5/99 - 7/16/01

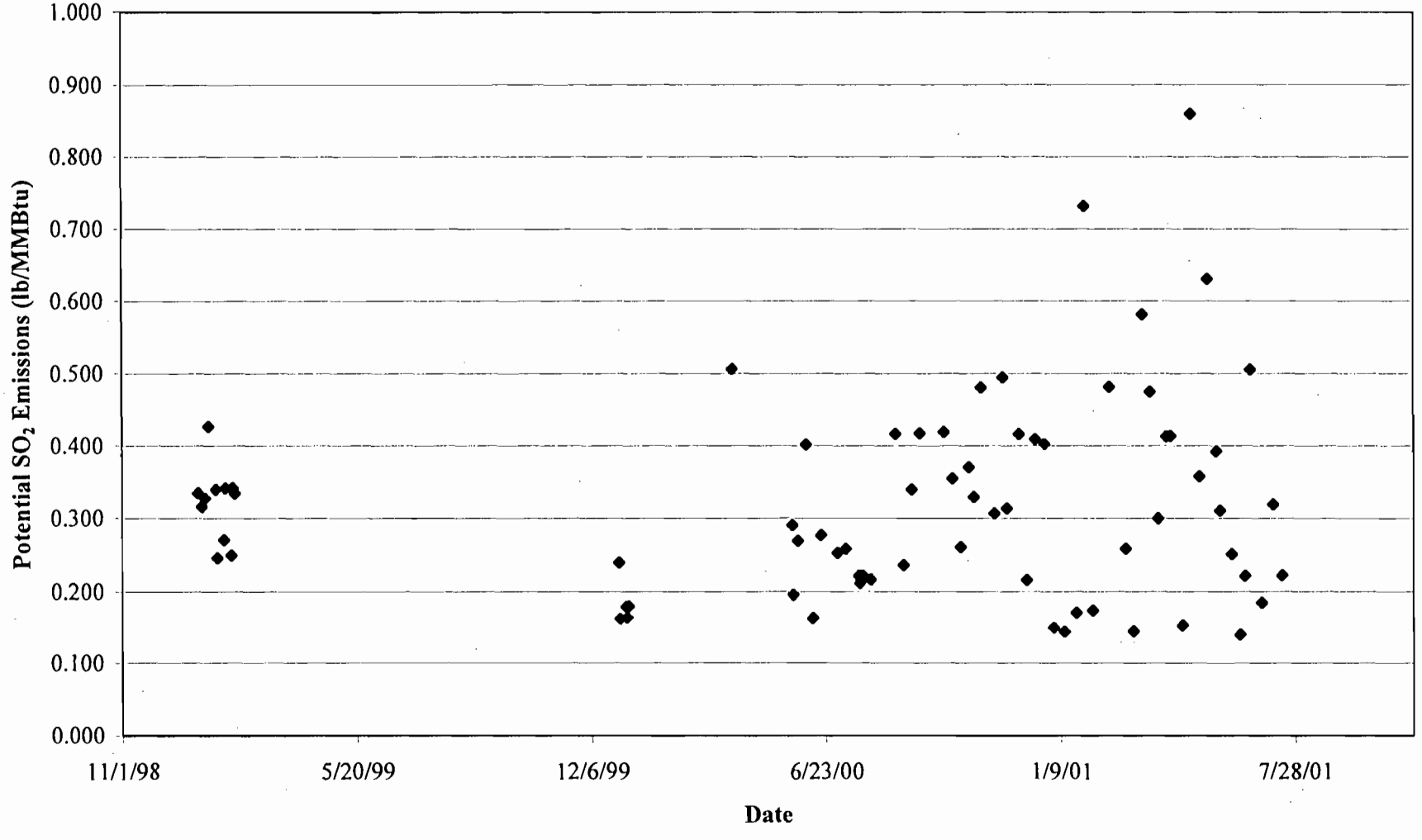

Figure A-2. Potential SO_2 Emissions From Bagasse Fuel (Revised 8/6/01)
12/28/98-7/16/01

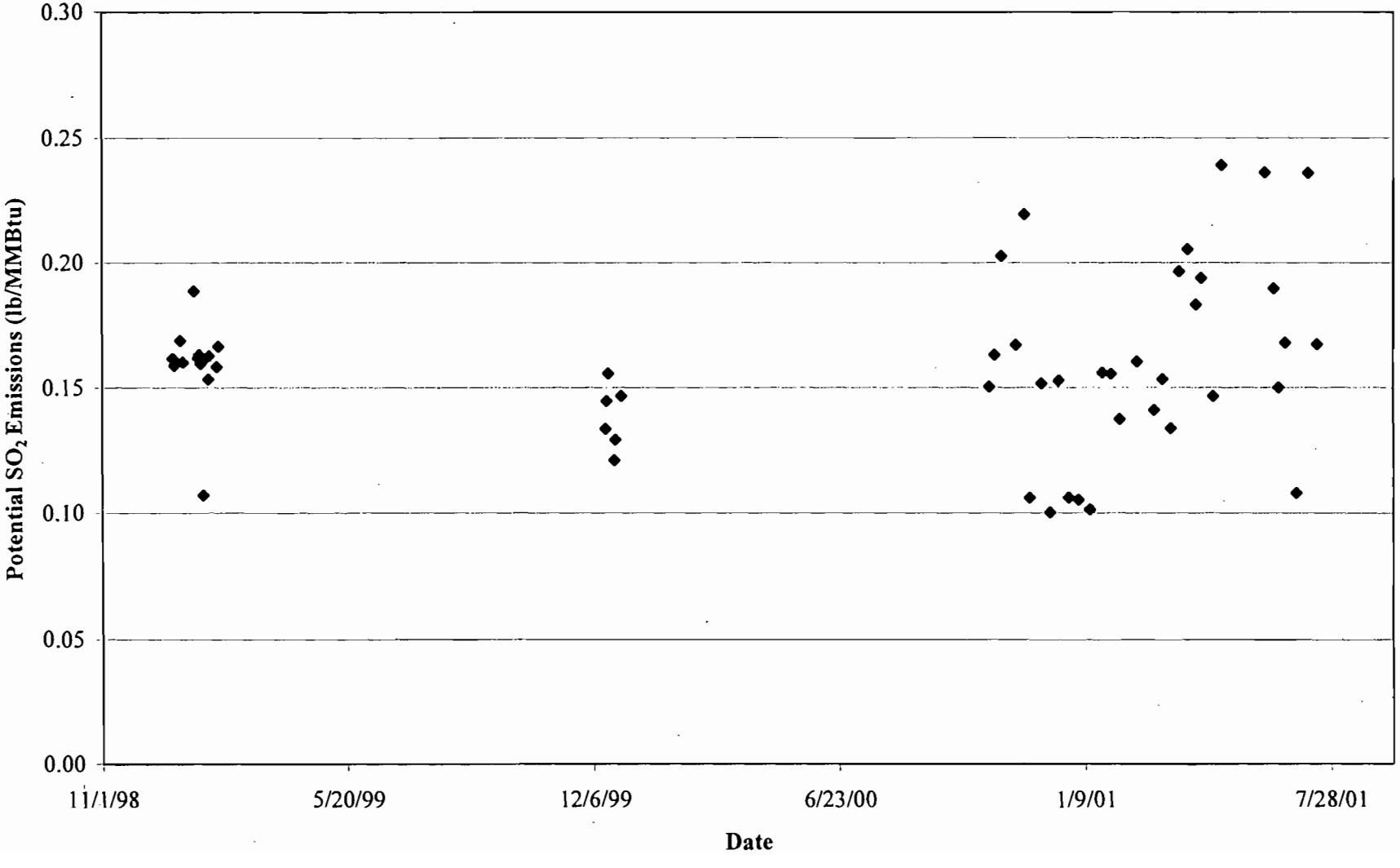

Table A-1. Summary of Wood Fuel Analyses, Okeelanta Power L.P. (Revised 8/6/01)

Sample Date	Sulfur (%)	Heat Content (Btu/lb)	Potential SO_2 Emissions (lb/MMBtu)	Daily Average SO_2 (lb/MMBtu)
1/5/99	0.09	4,972	0.36	
1/5/99	0.08	4,769	0.34	
1/5/99	0.07	4,583	0.31	0.33
1/8/99	0.07	5,359	0.26	
1/8/99	0.10	4,804	0.42	
1/8/99	0.07	5,172	0.27	0.32
1/11/99	0.05	5,429	0.18	
1/11/99	0.09	4,019	0.45	
1/11/99	0.07	3,997	0.35	0.33
1/14/99	0.10	5,172	0.39	
1/14/99	0.11	5,255	0.42	
1/14/99	0.11	4,634	0.47	0.43
1/20/99	0.10	4,907	0.41	
1/20/99	0.08	5,260	0.30	
1/20/99	0.08	5,220	0.31	0.34
1/21/99	0.07	5,229	0.27	
1/21/99	0.07	5,298	0.26	
1/21/99	0.05	4,894	0.20	0.25
1/27/99	0.08	5,920	0.27	0.27
1/28/99	0.06	3,516	0.34	0.34
2/2/99	0.06	4,394	0.27	
2/2/99	0.06	5,197	0.23	
2/2/99	0.06	4,927	0.24	0.25
2/3/99	0.08	4,686	0.34	0.34
2/5/99	0.07	4,509	0.31	
2/5/99	0.08	4,582	0.35	0.33
12/29/99	0.05	4,850	0.21	
12/29/99	0.04	4,949	0.16	0.24
12/30/99	0.04	5,073	0.16	
12/30/99	0.04	4,759	0.17	0.16
1/4/00	0.04	4,845	0.17	
1/4/00	0.05	4,835	0.21	
1/4/00	0.04	4,833	0.17	0.18
1/5/00	0.04	5,030	0.16	
1/5/00	0.04	4,739	0.17	0.16
1/6/00	0.05	5,031	0.20	
1/6/00	0.04	4,919	0.16	
1/6/00	0.04	5,029	0.16	
1/6/00	0.05	5,029	0.20	0.18

Table A-1. Summary of Wood Fuel Analyses, Okeelanta Power L.P. (Revised 8/6/01)

Sample Date	Sulfur (%)	Heat Content (Btu/lb)	Potential SO_2 Emissions (lb/MMBtu)	Daily Average SO_2 (lb/MMBtu)
4/4/00	0.03	4,417	0.14	
4/4/00	0.16	5,298	0.60	
4/4/00	0.04	4,235	0.19	
4/4/00	0.14	5,866	0.48	
4/4/00	0.04	4,606	0.17	
4/4/00	0.22	5,216	0.84	
4/4/00	0.07	4,190	0.33	
4/4/00	0.15	5,744	0.52	
4/4/00	0.27	4,571	1.18	
4/4/00	0.23	4,835	0.95	
4/4/00	0.15	5,182	0.58	
4/4/00	0.02	4,929	0.08	0.51
5/25/00	0.08	5,508	0.29	0.29
5/26/00	0.04	4,089	0.20	0.20
5/30/00	0.08	4,346	0.37	
5/30/00	0.04	4,707	0.17	0.27
6/6/00	0.05	4,831	0.21	
6/6/00	0.15	5,024	0.60	0.40
6/12/00	0.04	4,882	0.16	
6/12/00	0.03	3,869	0.16	
6/12/00	0.04	4,707	0.17	0.16
6/19/00	0.09	5,091	0.35	
6/19/00	0.04	4,000	0.20	0.28
7/3/00	0.08	4,638	0.34	
7/3/00	0.03	3,755	0.16	0.25
7/10/00	0.05	4,060	0.25	
7/10/00	0.07	4,900	0.29	
7/10/00	0.04	3,592	0.22	
7/10/00	0.09	5,511	0.33	
7/10/00	0.06	5,720	0.21	0.26
7/21/00	0.05	4,899	0.20	
7/21/00	0.03	4,024	0.15	
7/21/00	0.05	4,810	0.21	
7/21/00	0.08	4,911	0.33	
7/21/00	0.06	5,447	0.22	0.22
7/22/00	0.05	4,497	0.22	
7/22/00	0.04	5,008	0.16	
7/22/00	0.06	5,002	0.24	
7/22/00	0.06	5,364	0.22	0.21

Table A-1. Summary of Wood Fuel Analyses, Okeelanta Power L.P. (Revised 8/6/01)

Sample Date	Sulfur (%)	Heat Content (Btu/lb)	Potential SO_2 Emissions (lb/MMBtu)	Daily Average SO_2 (lb/MMBtu)
7/24/00	0.04	4,585	0.17	
7/24/00	0.04	4,426	0.18	
7/24/00	0.03	3,366	0.18	
7/24/00	0.09	4,320	0.42	
7/24/00	0.07	4,841	0.29	
7/24/00	0.03	3,455	0.17	
7/24/00	0.02	2,917	0.14	0.22
7/31/00	0.07	4,717	0.30	
7/31/00	0.02	2,957	0.14	0.22
8/21/00	0.14	5,135	0.55	
8/21/00	0.06	4,177	0.29	0.42
8/28/00	0.07	4,796	0.29	
8/28/00	0.03	3,370	0.18	0.23
9/4/00	0.12	4,371	0.55	
9/4/00	0.02	3,094	0.13	0.34
9/11/00	0.13	4,027	0.65	
9/11/00	0.03	3,183	0.19	0.42
10/2/00	0.07	5,583	0.25	
10/2/00	0.12	4,081	0.59	0.42
10/9/00	0.08	4,657	0.34	
10/9/00	0.06	3,279	0.37	0.35
10/16/00	0.09	4,854	0.37	
10/16/00	0.03	3,991	0.15	0.26
10/23/00	0.09	4,854	0.37	0.37
10/27/00	0.08	4,863	0.33	0.33
11/2/00	0.13	5,412	0.48	0.48
11/13/00	0.08	5,223	0.31	0.31
11/20/00	0.13	5,255	0.49	0.49
11/24/00	0.08	5,102	0.31	0.31
12/4/00	0.11	5,286	0.42	0.42
12/11/00	0.06	5,567	0.22	0.22
12/18/00	0.10	4,890	0.41	0.41
12/26/00	0.10	4,965	0.40	0.40
1/3/01	0.04	5,333	0.15	0.15
1/12/01	0.04	5,563	0.14	
1/12/01	0.04	5,544	0.14	0.14
1/22/01	0.05	5,846	0.17	0.17
1/29/01	0.20	5,465	0.73	0.73
2/5/01	0.06	6,900	0.17	0.17

Table A-1. Summary of Wood Fuel Analyses, Okeelanta Power L.P. (Revised 8/6/01)

Sample Date	Sulfur (%)	Heat Content (Btu/lb)	Potential SO_2 Emissions (lb/MMBtu)	Daily Average SO_2 (lb/MMBtu)
2/19/01	0.13	5,385	0.48	
2/19/01	0.15	6,248	0.48	0.48
3/5/01	0.10	5,445	0.37	
3/5/01	0.04	5,349	0.15	0.26
3/12/01	0.04	5,519	0.14	0.14
3/19/01	0.15	5,158	0.58	0.58
3/26/01	0.12	5,054	0.47	0.47
4/2/01	0.09	6,011	0.30	0.30
4/9/01	0.11	5,329	0.41	0.41
4/13/01	0.11	5,316	0.41	0.41
4/23/01	0.05	6,536	0.15	0.15
4/30/01	0.25	5,814	0.86	0.86
5/7/01	0.10	5,593	0.36	0.36
5/14/01	0.16	5,076	0.63	0.63
5/22/01	0.10	5,093	0.39	0.39
5/25/01	0.09	5,800	0.31	0.31
6/4/01	0.06	4,781	0.25	0.25
6/11/01	0.03	4,285	0.14	0.14
6/15/01	0.06	5,431	0.22	0.22
6/20/01	0.12	4,744	0.51	0.51
6/29/01	0.05	5,409	0.18	0.18
7/9/01	0.08	5,016	0.32	0.32
7/16/01	0.06	5,403	0.22	0.22

Table A-2. Summary of Bagasse Fuel Analyses, Okeelanta Power L.P. (Revised 8/6/01)

Sample Date	Sulfur (%)	Heat Content (Btu/lb)	Potential SO_2 Emissions (lb/MMBtu)	Daily Average SO_2 (lb/MMBtu)
12/29/98	0.03	3,714	0.16	
12/29/98	0.03	3,715	0.16	0.16
12/30/98	0.03	3,780	0.16	0.16
1/4/99	0.03	3,607	0.17	
1/4/99	0.03	3,619	0.17	
1/4/99	0.03	3,441	0.17	0.17
1/6/99	0.03	3,741	0.16	
1/6/99	0.03	3,716	0.16	
1/6/99	0.03	3,790	0.16	0.16
1/15/99	0.04	3,737	0.21	0.19
1/15/99	0.03	3,680	0.16	
1/18/99	0.03	3,779	0.16	
1/18/99	0.03	3,621	0.17	
1/18/99	0.03	3,725	0.16	0.16
1/19/99	0.03	3,682	0.16	
1/19/99	0.03	3,677	0.16	0.16
1/20/99	0.03	3,762	0.16	0.16
1/22/99	0.03	3,734	0.16	0.16
1/22/99	0.02	3,712	0.11	
1/22/99	0.02	3,769	0.11	0.11
1/26/99	0.02	2,953	0.14	
1/26/99	0.03	3,740	0.16	
1/26/99	0.03	3,656	0.16	0.15
1/27/99	0.03	3,689	0.16	0.16
2/2/99	0.03	3,790	0.16	0.16
2/3/99	0.03	3,605	0.17	0.17
12/15/99	0.03	3,542	0.17	
12/15/99	0.02	3,234	0.12	
12/15/99	0.02	3,704	0.11	0.13
12/16/99	0.03	3,451	0.17	
12/16/99	0.03	3,490	0.17	
12/16/99	0.02	3,634	0.11	
12/16/99	0.02	3,254	0.12	0.14
12/17/99	0.03	3,298	0.18	
12/17/99	0.03	3,579	0.17	
12/17/99	0.02	3,401	0.12	0.16
12/22/99	0.02	3,495	0.11	
12/22/99	0.03	3,889	0.15	
12/22/99	0.02	4,229	0.09	0.12
12/23/99	0.02	3,772	0.11	
12/23/99	0.02	3,892	0.10	
12/23/99	0.03	3,359	0.18	0.13
12/28/99	0.03	3,626	0.17	
12/28/99	0.03	3,594	0.17	
12/28/99	0.02	3,731	0.11	0.15

Table A-2. Summary of Bagasse Fuel Analyses, Okeelanta Power L.P. (Revised 8/6/01)

Sample Date	Sulfur (%)	Heat Content (Btu/lb)	Potential SO_2 Emissions (lb/MMBtu)	Daily Average SO_2 (lb/MMBtu)
10/23/00	0.03	3,991	0.15	0.15
10/27/00	0.03	3,680	0.16	0.16
11/2/00	0.05	4,934	0.20	0.20
11/13/00	0.03	3,592	0.17	0.17
11/20/00	0.04	3,647	0.22	0.22
11/24/00	0.02	3,769	0.11	0.11
12/4/00	0.03	3,954	0.15	0.15
12/11/00	0.02	3,993	0.10	0.10
12/18/00	0.03	3,928	0.15	0.15
12/26/00	0.02	3,765	0.11	0.11
1/3/01	0.02	3,802	0.11	0.11
1/12/01	0.02	4,062	0.10	
1/12/01	0.02	3,837	0.10	0.10
1/22/01	0.03	3,846	0.16	0.16
1/29/01	0.03	3,858	0.16	0.16
2/5/01	0.03	4,364	0.14	0.14
2/19/01	0.03	3,793	0.16	
2/19/01	0.03	3,693	0.16	0.16
3/5/01	0.03	4,283	0.14	
3/5/01	0.03	4,226	0.14	0.14
3/12/01	0.03	3,912	0.15	0.15
3/19/01	0.03	4,476	0.13	0.13
3/26/01	0.04	4,070	0.20	0.20
4/2/01	0.04	3,897	0.21	0.21
4/9/01	0.04	4,366	0.18	0.18
4/13/01	0.04	4,124	0.19	0.19
4/23/01	0.03	4,090	0.15	0.15
4/30/01	0.05	4,183	0.24	0.24
6/4/01	0.05	4,231	0.24	0.24
6/11/01	0.03	3,166	0.19	0.19
6/15/01	0.02	2,666	0.15	0.15
6/20/01	0.03	3,575	0.17	0.17
6/29/01	0.02	3,703	0.11	0.11
7/9/01	0.04	3,390	0.24	0.24
7/16/01	0.03	3,591	0.17	0.17

APPENDIX B

REVISIONS TO
AIR QUALITY IMPACT ANALYSIS
FOR
CARBON MONOXIDE

Table B-1. Summary of CO Facilities Considered for Inclusion in the AAQS and PSD Class II Air Modeling Analyses (Revised 8/6/01)

AIRS Number	Facility	County	UTM Coordinates East (km)	UTM Coordinates North (km)	Relative to Okeelanta Power [a] X (km)	Relative to Okeelanta Power [a] Y (km)	Relative to Okeelanta Power [a] Distance (km)	Relative to Okeelanta Power [a] Direction (deg)	Maximum CO Emissions (TPY)	Q, (TPY) Emission Threshold [b] (Dist - 6) x 20	Include in Modeling Analysis ?
0990086	Glades Correctional Institute	Palm Beach	523.4	2955.2	-1.5	15.1	15.2	354	10	183.5	NO
0990026	Sugar Cane Growers	Palm Beach	534.9	2953.3	10.0	13.2	16.6	37	33,771	211.2	YES
0510001	Everglades Sugar	Hendry	509.6	2954.2	-15.3	14.1	20.8	313	15	296.1	NO
0510003	U.S. Sugar Clewiston	Hendry	506.1	2956.9	-18.8	16.8	25.2	312	64,644	384.3	YES
0990016	Atlantic Sugar Association	Palm Beach	552.9	2945.2	28.0	5.1	28.5	80	25,065	449.2	YES
0990061	U.S. Sugar -Bryant	Palm Beach	538.8	2968.1	13.9	28.0	31.3	26	19,958	505.2	YES
0990019	Osceola Farms	Palm Beach	544.2	2968.0	19.3	27.9	33.9	35	25,175	558.5	YES
0510015	Southern Gardens Citrus	Hendry	487.6	2957.6	-37.3	17.5	41.2	295	1,888	704.0	YES
0990021	Pratt & Whitney	Palm Beach	559.2	2978.3	34.3	38.2	51.3	42	1,000	906.8	YES
0850102	Bechtel Indiantown	Martin	545.6	2991.5	20.7	51.4	55.4	22	1,651	988.2	YES
0850001	FPL -Martin	Martin	543.1	2992.9	18.2	52.8	55.8	19	2,285	997.0	YES
0500045	Lake Worth Utilities	Palm Beach	592.8	2943.7	67.9	3.6	68.0	87	204	1239.9	NO
0360119	Lee County Resource Recovery	Lee	424.0	2946.0	-100.9	5.9	101.1	273	238	1901.4	NO
0710002	FPL - Fort Myers [c]	Lee	422.1	2952.9	-102.8	12.8	103.6	277	4,478	1951.9	YES
[a] Okeelanta Power Coordinates:			524.9	2940.1							

[b] Proposed project's emissions are significant to 6 kilometers.
Emission inventory is limited to facilities within 56 km of Okeelanta facility but includes major plants outside the proposed project's significant impact distance.

[c] Large source beyond screening area included in modeling analysis.

Table B-2. Summary of CO Sources Included in the Air Modeling Analysis (Revised 8/13/01)

AIRS Number	Facility	Units	ISCST3 ID Name	Stack and Operating Parameters				Emission Rate (g/s)
				Height (m)	Diameter (m)	Temperature (K)	Velocity (m/s)	
50PMB500332	Okeelanta Sugar Mill	Boiler 16	OKBLR16	22.9	1.52	483.2	22.86	4.07
0990026	Sugar Cane Growers [a]	Unit 1&2	SUGCN12	45.7	1.87	339.0	21.75	547.09
		Unit 3	SUGCN3	27.4	1.52	339.0	22.25	187.61
		Unit 4 PSD	SUGCN4	54.9	2.44	339.0	21.73	467.71
		Unit 5	SUGCN5	45.7	2.30	339.0	15.94	359.60
		Unit 8 PSD	SUGCN8	47.2	2.90	339.0	13.62	381.02
0510003	U.S. Sugar Clewiston							
		Unit 1	BRL1	65.0	2.44	347.0	19.20	811.79
		Unit 2	BLR2	65.0	2.44	338.0	17.32	732.19
		Unit 3	BLR3	65.0	2.44	333.2	8.47	334.28
		Unit 4	BLR4	45.7	2.51	344.3	25.35	518.43
		Unit 7	BLR7	68.6	2.59	405.4	25.96	71.62
0990016	Atlantic Sugar Association [a]	Unit 1	ATLSUG1	27.4	1.83	346.0	17.97	299.90
		Unit 2	ATLSUG2	27.4	1.83	350.0	23.36	585.60
		Unit 3	ATLSUG3	27.4	1.83	350.0	21.56	180.20
		Unit 4	ATLSUG4	27.4	1.83	344.0	25.16	180.20
		Unit 5 [b]	ATLSUG5	27.4	1.68	339.0	19.24	209.10
0990061	U.S. Sugar -Bryant [a]	Unit 5 PSD	USSBRY5	42.7	2.90	345.0	11.49	760.91
		Unit 1,2&3	USBRY123	19.8	1.64	342.0	36.40	1309.77
0990019	Osceola Farms [a]	Unit 2	OSBLR2	27.4	1.52	339.0	18.63	317.52
		Unit 3	OSBLR3	27.4	1.92	344.0	14.34	128.77
		Unit 4	OSBLR4	27.4	1.83	344.0	16.53	317.52
		Unit 5	OSBLR5	27.4	1.52	344.0	17.85	374.22
		Unit 6	OSBLR6	27.4	1.92	339.0	18.25	310.40
0510015	Southern Gardens Citrus - PSD	Peel Dryer	SGARDDRY	38.1	1.16	353.0	7.45	116.68
		Boilers 1-3	SGARDBLR	16.8	1.22	478.0	14.23	0.50
0990021	Pratt & Whitney	Jet Engine	PWJETEG	21.3	18.30	383.2	12.20	21000
		Unit 1	PRWIT1	15.2	0.91	810.9	143.70	1.63
		Unit 16	PRWIT16	4.6	0.76	533.2	6.90	0.43
		Unit 22	PRWIT22	20.1	2.32	672.0	10.20	1.11
		Unit 40	PRWIT40	14.9	1.22	298.2	0.04	0.12
		Unit 45	PRWIT45	3.7	0.15	298.2	2.60	2.01
		Unit 59	PRWIT59	6.1	0.46	533.2	4.90	0.64
		Unit 68	PRWIT68	3.7	0.24	922.0	151.40	0.23
		Unit 69	PRWIT69	5.5	3.66	422.0	0.08	5.98
0850102	Bechtel Indiantown		BECHTIND	150.9	4.88	333.2	30.50	47.38
0850001	FPL -Martin	Units 1&2	MART12	152.1	7.99	420.9	21.03	38.92
		Aux Blr PSD	MARTAUX	18.3	1.10	535.4	15.24	-
		Diesel Gens PSD	MARTGEN	7.6	0.30	785.9	39.62	-
		Units 3&4 PSD	MART34	64.9	6.10	410.9	18.90	26.66
0710002	FPL Fort Myers	Gas Turbines 1 - 12	FMGT112	9.8	3.47	797.0	57.73	61.69
		HRSGs 1-6	FMCT1_6	38.1	5.79	377.6	21.43	32.51
		CT 1 - 2	FMCT1_2	24.4	6.25	852.00	39.1	34.32

[a] Facilities or sources with facilities that operate only during the October 1 through April 30 crop season.

[b] Sugar mill sources that operate all year.

Table B-3. Maximum Predicted CO Impacts for the Proposed Project
AAQS Screening Analysis, Okeelanta Power, L.P. (Revised 8/13/01)

Pollutant/ Averaging Time	Concentration (ug/m^3)[a]	Receptor Location[b] Direction (degree)	Receptor Location[b] Distance (m)	Time Period (YYMMDDHH)
HSH 8-Hour	871	217	3,534	87103024
	690	227	4,133	88101516
	618	221	3,785	89110624
	714	224	3,921	90041324
	785	20	6,000	91110524
HSH 1-Hour	2,776	20	6,000	87011923
	2,802	221	3,785	88122618
	3,146	20	5,000	89040619
	2,959	20	5,000	90031904
	2,975	20	6,000	91102101

[a] Based on 5-year meteorological record, West Palm Beach, 1987 to 1991.

[b] Relative to the Cogeneration Boiler B stack.

Note: YYMMDDHH = Year, Month, Day, Hour Ending
HSH = Highest, Second-Highest

Table B-4. Maximum Predicted CO Concentrations for All Sources Compared to AAQS, Refined Analysis, Okeelanta Power, L.P. (Revised 8/13/01)

Pollutant/ Averaging Time	Concentration (ug/m^3) Total	Modeled Sources	Background	Receptor Location[a] Direction (degree)	Distance (m)	Time Period (YYMMDDHH)	Florida AAQS (ug/m^3)
HSH 8-hour	3,861	871	2,990	217	3,534	87103024	10,000
	3,816	826	2,990	17	6,000	91110524	
HSH 1-hour	7,654	3,284	4,370	24	6,000	89040619	
	7,520	3,150	4,370	25	6,000	90102418	40,000
	7,448	3,078	4,370	25	6,000	91033102	

[a] Relative to the Cogeneration Boiler B stack.

Note: YYMMDDHH = Year, Month, Day, Hour Ending
HSH = Highest, Second-Highest

87-91 WPB

1 hr
$1756.53 g/s^{-1}$ or 13,942 lbs/hr
$1216.2 g/s^{-1} \sim$ 9,652 lbs/hr

APPENDIX C

REVISED EMISSION TABLES
AND
PSD APPLICABILITY

Table 2-4. Maximum Annual Emissions for Single Boiler at Okeelanta Power L.P. (Revised 8/6/01)

Regulated Pollutant	Biomass Emission Factor (lb/MMBtu)	Biomass Activity Factor (10^{12} Btu/yr)	Biomass Annual Emissions (TPY)	Alternate Fuel Emission Factor (lb/MMBtu)	Alternate Fuel Activity Factor (10^{12} Btu/yr)	Alternate Fuel Annual missions (TPY)	Total Annual Emissions (TPY)
			100% Biomass				
Particulate (TSP)	0.03	6.263	93.95	--	--	--	93.95 [a]
Particulate (PM_{10})	0.03	6.263	93.95	--	--	--	93.95 [a]
Sulfur dioxide	0.10	6.263	313.15	--	--	--	313.15 [a]
Nitrogen oxides	0.15	6.263	469.73	--	--	--	469.73 [a]
Carbon monoxide	0.35	6.263	1,096.03	--	--	--	1,096.03 [a]
VOC	0.06	6.263	187.89	--	--	--	187.89 [a]
Lead	1.6E-04	6.263	0.501	--	--	--	0.501 [a]
Mercury	5.43E-06	6.263	0.0170	--	--	--	0.0170 [a]
Beryllium[b]	6.00E-07	2.881 [c]	0.0009	--	--	--	0.00086
Fluorides	7.00E-04	6.263	2.19	--	--	--	2.19 [a]
Sulfuric acid mist	0.0061	6.263	19.10	--	--	--	19.10 [a]
			75.1% Biomass / 24.9% Fuel Oil				
Particulate (TSP)	0.03	4.428	66.42	0.03	1.468	22.02	88.44
Particulate (PM_{10})	0.03	4.428	66.42	0.03	1.468	22.02	88.44
Sulfur dioxide	0.10	4.428	221.40	0.05	1.468	36.70	258.10
Nitrogen oxides	0.15	4.428	332.10	0.15	1.468	110.10	442.20
Carbon monoxide	0.35	4.428	774.90	0.35	1.468	256.90	1,031.80
VOC	0.06	4.428	132.84	0.03	1.468	22.02	154.86
Lead	1.6E-04	4.428	0.354	8.9E-07	1.468	0.0007	0.355
Mercury	5.43E-06	4.428	0.0120	2.4E-06	1.468	0.0018	0.0138
Beryllium[b]	6.00E-07	2.037 [c]	0.0006	3.5E-07	1.468	0.00026	0.00087 [a]
Fluorides	7.00E-04	4.428	1.55	6.27E-06	1.468	0.0046	1.5544
Sulfuric acid mist	0.0061	4.428	13.51	0.0015	1.468	1.10	14.61
			75.1% Biomass / 24.9% Natural Gas				
Particulate (TSP)	0.03	4.428	66.42	0.0073	1.468	5.36	71.78
Particulate (PM_{10})	0.03	4.428	66.42	0.0073	1.468	5.36	71.78
Sulfur dioxide	0.10	4.428	221.40	0.00058	1.468	0.43	221.83
Nitrogen oxides	0.15	4.428	332.10	0.15	1.468	110.10	442.20
Carbon monoxide	0.35	4.428	774.90	0.08	1.468	58.72	833.62
VOC	0.06	4.428	132.84	0.0053	1.468	3.89	136.73
Lead	1.6E-04	4.428	0.354	4.8E-07	1.468	0.0004	0.355
Mercury	5.43E-06	4.428	0.0120	2.5E-07	1.468	0.0002	0.0122
Beryllium[b]	6.00E-07	2.037 [c]	0.0006	1.2E-08	1.468	0.00001	0.00062
Fluorides	7.00E-04	4.428	1.55	--	--	--	1.5498
Sulfuric acid mist	0.0061	4.428	13.51	3.55E-05	1.468	0.03	13.53

[a] Denotes maximum annual emissions for any fuel scenario.

[b] Stack tests indicate that Beryllium emissions are below detectable limits for bagasse-firing, therefore, the emission factor and potential emissions are based on wood-firing.

[c] Wood-firing heat input represents 46% of total heat input, therefore, activity factor reflects 46% of total biomass activity factor.

Note: No emissions of total reduced sulfur, asbestos, or vinyl chloride are expected.

Table 2-5. Maximum Annual Emissions for Okeelanta Power L.P. (total all boilers, Revised 8/6/01)

Regulated Pollutant	Biomass Emission Factor (lb/MMBtu)	Biomass Activity Factor (10^{12} Btu/yr)	Biomass Annual Emissions (TPY)	Alternate Fuel Emission Factor (lb/MMBtu)	Alternate Fuel Activity Factor (10^{12} Btu/yr)	Alternate Fuel Annual Emissions (TPY)	Total Annual Emissions (TPY)
			100% Biomass				
Particulate (TSP)	0.03	11.500	172.50	--	--	--	172.50 [a]
Particulate (PM_{10})	0.03	11.500	172.50	--	--	--	172.50 [a]
Sulfur dioxide	0.10	11.500	575.00	--	--	--	575.00 [a]
Nitrogen oxides	0.15	11.500	862.50	--	--	--	862.50 [a]
Carbon monoxide	0.35	11.500	2,012.50	--	--	--	2,012.50 [a]
VOC	0.06	11.500	345.00	--	--	--	345.00 [a]
Lead	1.6E-04	11.500	0.920	--	--	--	0.920 [a]
Mercury	5.43E-06	11.500	0.0312	--	--	--	0.031 [a]
Beryllium[b]	6.00E-07	5.290 [c]	0.0016	--	--	--	0.00159
Fluorides	7.00E-04	11.500	4.03	--	--	--	4.03 [a]
Sulfuric acid mist	0.0061	11.500	35.08	--	--	--	35.08 [a]
			75.1% Biomass / 24.9% Fuel Oil				
Particulate (TSP)	0.03	8.130	121.95	0.03	2.696	40.44	162.39
Particulate (PM_{10})	0.03	8.130	121.95	0.03	2.696	40.44	162.39
Sulfur dioxide	0.10	8.130	406.50	0.05	2.696	67.40	473.90
Nitrogen oxides	0.15	8.130	609.75	0.15	2.696	202.20	811.95
Carbon monoxide	0.35	8.130	1,422.75	0.35	2.696	471.80	1,894.55
VOC	0.06	8.130	243.90	0.03	2.696	40.44	284.34
Lead	1.6E-04	8.130	0.650	8.9E-07	2.696	0.0012	0.652
Mercury	5.43E-06	8.130	0.0221	2.4E-06	2.696	0.0032	0.025
Beryllium[b]	6.00E-07	3.740 [c]	0.0011	3.5E-07	2.696	0.00047	0.00159 [a]
Fluorides	7.00E-04	8.130	2.85	6.27E-06	2.696	0.0085	2.854
Sulfuric acid mist	0.0061	8.130	24.80	0.0015	2.696	2.02	26.82
			75.1% Biomass / 24.9% Natural Gas				
Particulate (TSP)	0.03	8.130	121.95	0.0073	2.696	9.84	131.79
Particulate (PM_{10})	0.03	8.130	121.95	0.0073	2.696	9.84	131.79
Sulfur dioxide	0.10	8.130	406.50	0.00058	2.696	0.78	407.28
Nitrogen oxides	0.15	8.130	609.75	0.15	2.696	202.20	811.95
Carbon monoxide	0.35	8.130	1,422.75	0.08	2.696	107.84	1,530.59
VOC	0.06	8.130	243.90	0.0053	2.696	7.14	251.04
Lead	1.6E-04	8.130	0.650	4.8E-07	2.696	0.0006	0.651
Mercury	5.43E-06	8.130	0.0221	2.5E-07	2.696	0.0003	0.022
Beryllium[b]	6.00E-07	3.740 [c]	0.0011	1.2E-08	2.696	0.00002	0.00114
Fluorides	7.00E-04	8.130	2.85	--	--	--	2.846
Sulfuric acid mist	0.0061	8.130	24.80	3.55E-05	2.696	0.05	24.84

[a] Denotes maximum annual emissions for any fuel scenario.

[b] Stack tests indicate that Beryllium emissions are below detectable limits for bagasse-firing, therefore, the emission factor and potential emissions are based on wood-firing.

[c] Wood-firing heat input represents 46% of total heat input, therefore, activity factor reflects 46% of total biomass activity factor.

Note: No emissions of total reduced sulfur, asbestos, or vinyl chloride are expected.

Table 3-1. Current Actual and Future Potential Emissions, Okeelanta Power L.P. (Revised 8/6/01)

Boiler	Operating Hours[a]	Heat Input[a] (MMBtu/yr)	Annual Emissions (TPY)					
			CO	SO_2	Lead	Mercury	Beryllium	Fluoride
Boiler A	7,265	3,824,398	478.34	47.11	0.036	0.0016	1.99E-04	0.358
Boiler B	5,927	3,206,304	485.29	38.32	0.032	0.0014	1.90E-04	0.292
Boiler C	6,978	3,694,714	562.44	47.80	0.034	0.0015	1.89E-04	0.346
Total	20,170	10,725,416	1,526.07	133.23	0.102	0.0045	5.78E-04	0.996
Future Potential Emissions		11,500,000	2,012.5	575.0	0.920	0.031	0.0016	4.03
Net Increase			486.4	441.8	0.818	0.027	0.0010	3.03
PSD Significant Emission Rate			100	40	0.6	0.1	0.0004	3

[a] Based on the period April 1999 through March 2000.

Table 3-2. Current Actual Lead, Mercury, Beryllium, and Fluoride Emissions for Okeelanta Power L.P. Boilers (Revised 8/6/01)

Parameter		Boiler A Lead	Boiler A Mercury	Boiler A Beryllium	Boiler A Fluoride		Boiler B Lead	Boiler B Mercury	Boiler B Beryllium	Boiler B Fluoride		Boiler C Lead	Boiler C Mercury	Boiler C Beryllium	Boiler C Fluoride
Emission Factor (lb/MMBtu)															
Wood waste [a]		3.03E-05	1.33E-06	2.23E-07 [d]	1.46E-04		3.03E-05	1.33E-06	2.23E-07 [d]	1.46E-04		3.03E-05	1.33E-06	2.23E-07 [d]	1.46E-04
Bagasse [a]		8.91E-06	3.66E-07	ND	2.24E-04		8.91E-06	3.66E-07	ND	2.24E-04		8.91E-06	3.66E-07	ND	2.24E-04
No. 2 Fuel [b]		8.90E-07	2.40E-06	3.50E-07	6.30E-06		8.90E-07	2.40E-06	3.50E-07	6.30E-06		8.90E-07	2.40E-06	3.50E-07	6.30E-06
Heat Input (MMBtu/yr) [c]															
Wood	45.68%	1,746,985	1,746,985	1,746,985	1,746,985	52.05%	1,668,881	1,668,881	1,668,881	1,668,881	44.68%	1,650,798	1,650,798	1,650,798	1,650,798
Bagasse	53.69%	2,053,319	2,053,319	2,053,319	2,053,319	47.34%	1,517,864	1,517,864	1,517,864	1,517,864	54.48%	2,012,880	2,012,880	2,012,880	2,012,880
No. 2	0.63%	24,094	24,094	24,094	24,094	0.61%	19,558	19,558	19,558	19,558	0.84%	31,036	31,036	31,036	31,036
Total		3,824,398	3,824,398	3,824,398	3,824,398		3,206,304	3,206,304	3,206,304	3,206,304		3,694,714	3,694,714	3,694,714	3,694,714
Emissions (TPY)															
April 1999 - March 2000 Emissions		0.036	0.0016	1.99E-04	0.358		0.032	0.0014	1.90E-04	0.292		0.03	0.0015	1.89E-04	0.346

[a] Based on average actual stack test data for 1999 and 2000.

[b] Based upon permit limit.

[c] Based upon actual boiler heat input for period April 1999 - March 2000.

[d] Emissions based on average of one detectable test from 1999 and one half of the detectable limits for remaining 1999 and 2000 stack test data since they were below the detectable limits.

Notes: ND = Nondetectable; indicates pollutant emissions are below the detectable limit.

Table C-1. Estimated Future Actual Emissions of Selected Pollutants for Okeelanta Power L.P. (total all boilers)

Regulated Pollutant	Biomass Emission Factor (lb/MMBtu)	Biomass Activity Factor[c] (10^{12} Btu/yr)	Biomass Annual Emissions (TPY)	Alternate Fuel Emission Factor (lb/MMBtu)	Alternate Fuel Activity Factor (10^{12} Btu/yr)	Alternate Fuel Annual Emissions (TPY)	Total Actual Emissions (TPY)
			100% Biomass				
Lead--*Wood*	3.03E-05	5.290	0.080	--	--	--	0.108 [a]
--*Bagasse*	8.91E-06	6.210	0.028	--	--	--	--
Mercury--*Wood*	1.33E-06	5.290	0.0035	--	--	--	0.0047
--*Bagasse*	3.66E-07	6.210	0.0011	--	--	--	--
Beryllium--*Wood*[b]	2.23E-07	5.290	0.00059	--	--	--	0.00059
Fluorides--*Wood*	1.46E-04	5.290	0.386	--	--	--	1.082 [a]
--*Bagasse*	2.24E-04	6.210	0.696	--	--	--	--
			75.1% Biomass / 24.9% Fuel Oil				
Lead--*Wood*	3.03E-05	3.740	0.057	8.9E-07	2.696	0.0012	0.077
--*Bagasse*	8.91E-06	4.390	0.020	--	--	--	--
Mercury--*Wood*	1.33E-06	3.740	0.0025	2.4E-06	2.696	0.0032	0.0065 [a]
--*Bagasse*	3.66E-07	4.390	0.00080	--	--	--	--
Beryllium--*Wood*[b]	2.23E-07	3.740	0.00042	3.5E-07	2.696	0.00047	0.00089 [a]
Fluorides--*Wood*	1.46E-04	3.740	0.273	6.27E-06	2.696	0.0085	0.773
--*Bagasse*	2.24E-04	4.390	0.492	--	--	--	--
			75.1% Biomass / 24.9% Natural Gas				
Lead--*Wood*	3.03E-05	3.740	0.057	4.8E-07	2.696	0.0006	0.077
--*Bagasse*	8.91E-06	4.390	0.020	--	--	--	--
Mercury--*Wood*	1.33E-06	3.740	0.0025	2.5E-07	2.696	0.0003	0.0036
--*Bagasse*	3.66E-07	4.390	0.00080	--	--	--	--
Beryllium--*Wood*[b]	2.23E-07	3.740	0.00042	1.2E-08	2.696	0.00002	0.00043
Fluorides--*Wood*	1.46E-04	3.740	0.273	--	--	--	0.765
--*Bagasse*	2.24E-04	4.390	0.492	--	--	--	--

[a] Denotes maximum annual emissions for any fuel scenario.

[b] Stack tests indicate that Beryllium emissions are below detectable limits for bagasse-firing, therefore, the emission factor and potential emissions are based on wood-firing only.

[c] Wood-firing heat input represents 46% of total heat input, therefore, the wood-firing activity factor reflects 46% of total biomass activity factor, while bagasse represents 54% of the total.

Note: No emissions of total reduced sulfur, asbestos, or vinyl chloride are expected.

Table C-2. Current and Future Actual Emissions, Okeelanta Power L.P.

Boiler	Operating Hours[a]	Heat Input[a] (MMBtu/yr)	Annual Emissions (TPY)			
			Lead	Mercury	Beryllium	Fluoride
Boilers A, B, C Total	20,170	10,725,416	0.102	0.0045	5.78E-04	0.996
Estimated Future Actual Emissions		11,500,000	0.108	0.007	0.0009	1.08
Net Increase			0.006	0.002	0.0003	0.09
PSD Significant Emission Rate			0.6	0.1	0.0004	3

[a] Based on the period April 1999 through March 2000.

Table C-3. Summary of Okeelanta Power Stack Tests - Wood Firing

Pollutant	Stack Testing: 05/96			Stack Testing: 01/99-02/99			Stack Testing: 12/99-01/00			Stack Testing: 01/3/01-01/23/01		
	Unit A Wood (lb/MMBtu)	Unit B Wood (lb/MMBtu)	Unit C Wood (lb/MMBtu)	Unit A Wood (lb/MMBtu)	Unit B Wood (lb/MMBtu)	Unit C Wood (lb/MMBtu)	Unit A Wood (lb/MMBtu)	Unit B Wood (lb/MMBtu)	Unit C Wood (lb/MMBtu)	Unit A Wood (lb/MMBtu)	Unit B Wood (lb/MMBtu)	Unit C Wood (lb/MMBtu)
Particulate (TSP)	0.0084	0.0039	0.0073	0.14	0.08	0.43	0.138	0.053	0.078	0.022	0.013	0.022
Particulate (PM_{10})	0.0058	0.003	0.0047	0.02	0.02	0.05	0.0266	0.0148	0.0158	0.025	0.0135	0.023
Sulfur Dioxide	0.063	0.080	0.039	0.03	0	0	0.031	0.0217	0.0357	0.032	0.019	0.03
Nitrogen Oxides	0.138	0.14	0.16	0.13	0.117	0.14	0.152	0.15	0.161	0.18	0.15	0.15
Carbon Monoxide	0.191	0.181	0.203	0.14	0.34	0.35	0.130	0.290	0.267	0.16	0.31	0.22
VOCs	0	0.00021	0.0012	0.004	0.005	0.006	0.012	0.006	0.006	0.002	0.014	0.003
Arsenic				4.80E-05	9.92E-05	4.88E-04[a]	1.53E-05	9.05E-06	1.60E-05	1.13E-04	2.50E-05	3.78E-05
Beryllium	<3.62E-9	<3.28E-9	<4.25e-9	<4.28E-07	5.09E-07	6.09E-07[a]	<2.56E-07	<2.61E-07	<2.68E-07	<1.16E-07	<1.10E-07	<1.05E-07
Chromium				2.36E-05	4.35E-05	3.11E-04[a]	8.72E-06	2.12E-05	1.11E-05	4.12E-05	2.04E-05	2.71E-05
Copper				4.78E-05	7.31E-05	2.89E-04[a]	2.60E-05	1.61E-05	3.08E-05	3.76E-05	1.42E-05	2.13E-05
Lead	2.43E-05	1.23E-05	2.77E-05	3.00E-05	8.40E-05	4.00E-04[a]	1.19E-05	7.97E-06	1.75E-05	7.49E-05	1.97E-05	3.91E-05
Mercury	9.75E-07	9.60E-07	1.70E-06	1.20E-06	1.50E-06	3.60E-06	6.25E-07	4.28E-07	6.52E-07	8.07E-07	8.09E-07	7.41E-07
Fluorides	<2.97E-02	<1.74E-2	2.00E-02	9.38E-05	5.07E-05	1.13E-04	1.50E-04	1.60E-04	3.10E-04	7.00E-04	6.00E-04	6.00E-04
Sulfuric Acid Mist	1.10E-03	1.40E-03	1.40E-03									

Sources: Air Consulting Engineering, Inc., 2001; Golder, 2001

[a] Results may not be representative due to high PM emissions.

Table C-4. Summary of Okeelanta Power Stack Tests - Bagasse Firing

Pollutant	Stack Testing: 1/22/99-2/5/99			Stack Testing: 12/99 - 01/00			Stack Testing: 01/3/01-01/23/01		
	Unit A (lb/MMBtu)	Unit B (lb/MMBtu)	Unit C (lb/MMBtu)	Unit A (lb/MMBtu)	Unit B (lb/MMBtu)	Unit C (lb/MMBtu)	Unit A (lb/MMBtu)	Unit B (lb/MMBtu)	Unit C (lb/MMBtu)
Particulate (TSP)	0.27	0.12	0.20	0.221	0.039	0.230	0.016	0.021	0.01
Particulate (PM_{10})	0.02	0.01	0.02	0.0282	0.0092	0.0308	0.0153	0.0232	0.0131
Sulfur Dioxide	0.02	0	0	0.0011	0.0080	0.0143	0.022	0.019	0.014
Nitrogen Oxides	0.13	0.12	0.13	0.138	0.142	0.179	0.19	0.17	0.17
Carbon Monoxide	0.16	0.26	0.28	0.377	0.354	0.299	0.24	0.21	0.24
Volatile Organic Compounds	0.01	0.02	0.007	0.010	0.007	0.012	0.007	0.008	0.01
Arsenic	3.18E-05	6.50E-06	4.92E-06	1.40E-06	5.42E-06	8.46E-06	6.34E-05	4.17E-05	4.40E-05
Beryllium	<3.77E-07	<3.94E-07	<1.25E-07	<2.22E-07	<2.34E-07	<2.52E-07	<1.10E-07	<1.07E-07	1.76E-07
Chromium	9.33E-06	5.85E-06	5.40E-06	2.15E-06	4.54E-06	6.57E-06	5.22E-05	2.91E-05	2.41E-05
Copper	2.55E-05	1.03E-05	1.33E-05	8.67E-06	1.43E-05	2.67E-05	2.38E-05	2.23E-05	1.18E-05
Lead	2.00E-05	7.30E-06	6.30E-06	3.41E-06	6.68E-06	9.77E-06	3.81E-05	4.76E-05	1.63E-05
Mercury	4.41E-07	3.83E-07	5.41E-07	1.26E-07	1.68E-07	5.34E-07	1.29E-06	1.41E-06	8.38E-07
Fluorides	7.06E-05	4.07E-05	3.04E-05	3.70E-04	4.40E-04	3.90E-04	6.00E-04	4.00E-04	3.00E-04

Sources: Air Consulting Engineering, Inc., 2001; Golder, 2001