Memorandum

Florida Department of
Environmental Protection

BAR

TO: Howard L. Rhodes

THRU: Clair Fancy
Al Linero 9/17

FROM: Teresa Heron

DATE: September 17, 1999

SUBJECT: Wheelabrator North and South Broward Resource Recovery Facilities
Air Pollution Control Equipment Addition

Attached is the final modification to the PSD permit for these two nearly identical facilities. These permit modifications address the installation of new SNCR systems for NO_x to comply with the Emission Guidelines for existing municipal solid waste combustors, 40 CFR 60, Subpart Cb and the clarification of authorized fuels. In addition to the above, these permit modifications also address: fabric filter inlet temperature for dioxin control; incorporation of the Subpart Cb emission standards; elimination of furnace temperature limits; installation of metal recovery operations; and minor corrections to the PSD Permits.

The slate of authorized fuels is being expanded and redefined from "refuse such as garbage and trash" to: non-hazardous solid waste including municipal solid waste (MSW) as defined at 40 CFR 60.51b; records and documents; non-hazardous contraband, clean wood and land clearing debris; oil spill debris; waste tires; expired or off-spec packaged or unpackaged consumable goods (e.g. pharmaceuticals); consumer products; packaging materials; certain floor covering; used oil and filters; and certain other wastes similar to MSW. We included limits (acceptable to Wheelabrator) on these segregated wastes to insure the overall composition continues to comport to the typical characteristics of MSW.

We recommend your approval and signature.

AAL/th

Attachments

Today, September 23, 000 is Day 58

BUREAU OF AIR REGULATION

SEP 27 1999

RECEIVED

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NOTICE OF FINAL PERMIT MODIFICATION

In the Matter of an
Application for Permit Modification by:

Wheelabrator North Broward, Inc.
2600 N. W. 48th Street
Pompano Beach, Florida 33073

Permit Modification No. PSD-FL-112(B)
Metals Recovery and Pollution Control Project
Broward County

_____/

Enclosed is the Final Permit Modification Number PSD-FL-112 (B). This permit modification is to: install a selective catalytic reduction system for nitrogen oxides control; add metals recovery operations; revise the existing PSD permit conditions to reflect the requirements of 40CFR60 Subpart Cb; clarify and define the permitted wastes and fuels; and revise some existing specific conditions of the permit. This facility is located at 2600 N.W. 48th Street, Pompano Beach, Florida 33073. This permit modification is issued pursuant to Chapter 403, Florida Statutes.

Any party to this order (permit) has the right to seek judicial review of the permit pursuant to Section 120.68, F.S., by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Legal Office; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 (thirty) days from the date this Notice is filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

C.H. Fancy, P.E., Chief
Bureau of Air Regulation

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF FINAL PERMIT MODIFICATION (including the FINAL permit Modification) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 9-28-99 to the person(s) listed:

Thomas D. Kirk, WNBI*
Ken Kosky, P.E., Golder
Gregg Worley, EPA
Isidore Goldman, P.E, DEP SED
Daniela Banu, Director, BCDNRP
Buck Oven, P.E, DEP PPSO

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to §120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Kym Baker 9-28-99
(Clerk) (Date)

FINAL DETERMINATION

Wheelabrator North and South Broward Refuse-to-Energy Facilities
Broward County, Florida
PSD-FL-112(B) and 105(B)

The Department distributed public notice packages on May 21, 1999 with the following changes to Wheelabrator's (EPA-issued) PSD permits:

- Inclusion of a requirement for selective non-catalytic reduction system for NO_X control in compliance with 40CFR60 Subpart Cb, "Emissions Guidelines and Compliance Schedules for Municipal Waste Combustors."
- Changes in conditions to reflect all of the Subpart Cb control, emissions, testing, and reporting requirements.
- Installation of metals recovery operations
- Clarification and definition of the permitted wastes and other fuels that may be used.

The South Broward Resource Recovery Facility is located at 4440 South State Road 7, Ft. Lauderdale. The North Broward Resource Recovery Facility is located at 2600 N.W. 48th Street, Pompano Beach. The two Public Notices of Intent to Issue were published in the Sun Sentinel on August 13, 1999.

The Department received no comments from EPA, the public or the National Park Service pursuant to the Notice.

Wheelabrator filed a request to extend the time requirement for filing petitions for an administrative hearing in accordance with Sections 120.569 and 120.57, F.S. The request expired on July 31.

Comments on the draft permit were received from Golder Associates on behalf of the County by letter dated June 24,1999. Golder's comments and the Department's responses follow.

Specific Condition 1.a.:

Comments

The heat inputs authorized in the existing PSD permits are 323.6 and 302.5 mmBtu/hr for the South and North facilities, respectively. Incorporation of the Subpart Cb requirements and clarifying the definition of acceptable fuels will not change the nominal or maximum capacity of the boiler in terms of heat input or fuel throughput. Additionally there has never been a limit related to any nominal capacity rating and consequently establishing such new limitations is not appropriate. This can be added as a permitting note, which we have suggested.

The emission table has been clarified to indicate which are "emission standards" and which are "equivalent emissions". Footnotes were added to define each. The appropriate Subpart Cb emission standards are the appropriate limitations for determining compliance. Specifying other emission unit designations without clarification will only

create confusion in determining compliance. It is appropriate to list "equivalent emissions" for the purpose of determining potential to emit for the facility.

Some of the numbers listed as potential emissions were adjusted based on a calculation check. These were minor adjustments.

The emission limitations for fluoride are proposed to be deleted. The initial compliance tests and the annual tests have continued to demonstrate compliance with these limits. The addition of the SNCR will not affect emissions of fluoride nor will the clarification on fuel definition since the scrubber/fabric filter will effectively control fluoride emissions.

Response

The Department believes that the original EPA-issued PSD permit should have had enforceable pound per hour limitations. However, the purpose of the present revision is to replace the old concentration-based or emissions per unit of heat input-based limits of the PSD permit with the generally stricter conditions of Subpart Cb. Therefore enforceable pound per hour, ton per year, and pound per million Btu heat input limits will not be added. They will be shown as equivalent emissions for recordkeeping. The changes requested by the applicant were made except that the fluoride limits will not be deleted. The fluoride emission limit is a BACT requirement of the original EPA-issued PSD permit.

Specific Condition 1.a.(2) and 1.a.(4) :

Comment:

Language has been added to Condition 1.a.(2) to make it consistent with the Subpart Cb requirements. The first sentence in Condition 1.a.(2) can be deleted since it is redundant and not as specific as the rest of the language in Condition 1.a.(2). Compliance with the Condition 1.a.(4) work practices should reference Condition 1.a.(2).

Response

This condition was revised as requested. The language proposed is consistent with Subpart Cb requirements.

Specific Condition 1.c.(1):

Comment:

The references to limitations on nominal rates should be eliminated. See comment for Specific Condition 1.a.

Response

This condition was revised as requested. The original permit did not have this requirement and this project is not increasing capacity or steam flow.

Specific Condition 1.c.(2):

Comment:

This condition can be deleted since the new conditions on load level and compliance with load requirements are more restrictive. In addition, the requirements cited as 40 CFR 62.53(a) are for Subpart E which only require daily charging rates and hours of operation which are less stringent than the 40 CFR Subpart Cb load level monitoring requirements.

Response

This condition was not deleted. Monitoring the daily charging rate in accordance with 40 CFR Subpart E, is an applicable requirement.

Specific Condition 1.d.(1):

Comment:

We have proposed deleting these old compliance test conditions since these are being replaced by the requirements of 40 CFR Subpart Cb as identified in Specific Condition d.(2).

Response

This request was acceptable. Some of the existing conditions were considered obsolete and were deleted. This facility is subject to all applicable requirements of 40 CFR60, Subpart Cb.

Specific Condition 1.d.(2):

Comment:

The facility will be required to demonstrate compliance with all of 40 CFR Subpart Cb emission requirements after completion of the retrofit in accordance with the Subpart Cb implementation schedule and 40 CFR 60.38b. Consequently, we have proposed adding the specific requirement to conduct the initial performance test 60 days after the boiler reaches maximum load or 180 days after startup of the SNCR system.

As indicated above, the testing for fluoride is proposed to be deleted.

The testing requirements for mercury were clarified to be consistent with Rule 62-296.416. Upstream and downstream mercury testing is only required if the percent reduction limit will be used to determine compliance with the alternative 85 % mercury removal limit [see added footnote (4)].

Response

This condition was changed as requested. It should be noted that final compliance with the requirements on 40CFR60, Subpart Cb is 36 months after EPA approval of the State Plan (November 13, 2000) or by December 19, 2000; whichever comes first.

Regarding mercury, the testing requirements for this pollutant shall be consistent with Rule 62-296.416 F.A.C.

Specific Condition 1.d.(3):

Comment:

The requirement for continuous compliance with operational parameters including: oxygen, steam pressure and temperature, carbon injection, combustion zone temperature, slake lime utilization and power generation is not appropriate and should be deleted. There are no proposed limits for these operational parameters, nor are they necessary to determine compliance with the Subpart Cb requirements.

Response

This condition was modified as requested since some of the proposed parameters in the proposed new condition are not regulated in Subpart Cb.

Specific Conditions 2, 3 and 6:

Comment:

The deletion of these conditions is recommended since these are being replaced by either more stringent and appropriate requirements or are no longer applicable.

Response

These conditions were deleted as requested. They are obsolete. This facility is subject to all applicable requirements of Subpart Cb and this includes measurements of the steam flow.

Specific Condition 7.f.(6):

Comment:

It is proposed that the exclusion of polyethylene and polyurethane vinyl floor coverings be deleted. We know of no regulatory basis for excluding this material.

Response

This condition was modified to read vinyl floor coverings.

Specific Condition 7.h.(1):

Comment:

We propose adding "non-combustible" before construction and demolition debris, since such debris could include wood (wood forms, building lumber, posts, etc.) that are combustible.

Response

This condition was not modified as requested. There is no need to add the "non-combustible" language for this segregated load.

Specific Condition 9.a.(1):

Comment:

The requirement for measuring CO_2 can be deleted since the O_2 is used as the diluent gas for SO_2, CO and NO_x monitoring.

Response

This condition is revised as requested.

Specific Condition 10 (South) and 11 (North):

Comment:

The requirement to submit copies of materials to EPA Region IV has been deleted since the Department now has this authority.

Response

This condition was modified to include only DEP.

Specific Condition 13:

Comment:

This condition is not applicable since there will be no physical or operation change that is related to the proposed clarification of acceptable fuels definition and the addition of the SNCR NOx control system that would increase emissions and is therefore not a "modification" pursuant to Rule 62-210.200(188). As noted in the correspondence dated April 9, 1999, there will be a decrease in the allowable emissions of nearly all pollutants for which there is a current emission limit. The only apparent increase is for potential CO emissions (actual emission will not increase) and is a result of using the more appropriate Subpart Cb limit, since there will be no change in operation. The worst case increase in "potential" CO emissions is still below the PSD threshold.

Response

This new condition was deleted. EPA has clarified that these RRF or MSW units although they produce steam and electricity, there are not considered electric utility steam generating units.

Specific Condition 15:

Comment:

This condition is redundant to Rule 62-297.310(5), which is an applicable requirement for the facility. Moreover, the wording of the proposed condition is not consistent with either that rule or Rule 62-4.070(3). Clearly, the Subpart Cb testing and monitoring requirements provide direct confirmation of proper operation of each emission unit. Any new conditions to be included in the operating permit would be extraneous and not necessary to confirm operation. EPA has stated that the monitoring requirements incorporated in Subpart Cb meet the periodic monitoring and CAM requirements for Title V permits, if this what this condition was intended to address.

Response

This new condition was deleted. This permitting action does not need to include all applicable requirements that a unit may be subject to.

The final action of the Department will be to issue the permit with the changes noted above.

Department of Environmental Protection

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Jeb Bush
Governor

David B. Struhs
Secretary

PERMITTEE:

Wheelabrator North Broward, Inc
Resource Recovery Facility
2600 N.W. 48th Street
Pompano Beach, Florida 33073

FID No.	0112120
PSD No.	PSD-FL-112 (B)
SIC No.	4953
PPS No.	PA 86-22
Expires:	December 30, 2000

Authorized Representative:
Thomas D. Kirk
Plant Manager

PROJECT AND LOCATION:

Permit modification to include the requirement for selective non-catalytic reduction systems to control NOx emissions and to revise existing conditions to comply with the requirements of 40CFR60, Subpart Cb - Emission Guideline and Compliance Times for Municipal Waste Combustors That Are Constructed on or Before December 19, 1995. This permit modification also defines wastes which can be combusted and allows the installation of a metal recovery operation. The facility is located at 2600 N.W. 48th Street Pompano Beach, Broward County, Florida 33073. UTM coordinates are Zone 17; 583.5 km E ; 2907.5 km N.

STATEMENT OF BASIS:

This construction permit is issued under the provisions of Chapter 403 of the Florida Statutes (F.S.), and the Florida Administrative Code (F.A.C.) Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297. The above named permittee is authorized to modify the facility in accordance with the conditions of this permit and as described in the application, approved drawings, plans, and other documents on file with the Department of Environmental Protection (Department).

Attached appendix is part of this permit:

Appendix GC Construction Permit General Conditions

Howard L. Rhodes, Director
Division of Air Resources
Management

FINAL PSD PERMIT MODIFICATION
PSD-FL-112 (B)

WHEELEBRATOR NORTH BROWARD, INC

Pompano Beach, Florida

SPECIFIC CONDITIONS

PSD-FL-112 originally issued July 28, 1987 by EPA Region IV, is hereby amended as follows:

1. Emission Limitations

a. ~~Stack emissions from each unit shall not exceed the following:~~

~~Particulate:~~	~~0.0150 gr/dscf dry volume corrected to 12% CO_2.~~
~~Sulfur Dioxide:~~ ~~(1)~~	~~0.140 lb/MMBtu heat input and 60 ppm (3-hr rolling average, dry volume, corrected to 12% CO_2); or~~
~~(2)~~	~~65% reduction of uncontrolled SO2 emissions.* In no case shall the SO2 emissions exceed 0.310 lb/MMBtu heat input and 124 ppm (3-hr rolling average, dry volume, corrected to 12% CO2).~~ ~~The 124 ppm limit above shall be modified to reflect a new emission limit (in ppm) from the control device at 65% control efficiency. Within 18 months of start-up of operation, the County shall submit compliance tests that will be used to determine the new SO_2 emission limit (in ppm). The limit will be determined by observed average emission rate (u) from the submitted compliance tests and will be statistically analyzed using the one tailed student T test (t.05+(x - u) n0.5/s at the 95% confidence level to derive a mean emission rate (x), where s is the standard deviation of observed values n. The final operating SO_2 emission limit (in ppm) shall be this mean emission rate (x). This value shall be restricted to no more than 124 ppm or less than 60 ppm (3-hr rolling average, dry volume, corrected to 12% CO_2).~~
~~Nitrogen Oxides:~~	~~.560 lb/MMBtu heat input and 350 ppm (3-hr rolling average, dry volume corrected to 12% CO2).~~
~~Carbon Monoxide:~~	~~.090 lb/MMBtu heat input: 400 ppm (1-hr rolling average, dry volume, corrected to 12% CO2); and 88 ppm (4-day rolling average, dry volume, corrected to 12% CO2).~~
~~Lead:~~	~~.00056 lb/MMBtu~~
~~Fluorides:~~	~~.0040 lb/MMBtu~~
~~Beryllium:~~	~~9.30×10^{-7} lb/MMBtu~~
~~Mercury:~~	~~7.50×10^{-4} lb/MMBtu~~

1.a The following emissions standards apply to the following emissions units after improvements to comply with 40 CFR Subpart Cb are completed and the initial performance tests are completed. **[Rule 62-204.800(8)(b), 40 CFR 60 Subpart Cb]**

EMISSIONS UNIT NO.	EMISSIONS UNITS DESCRIPTION
001	302.5 MMBtu/hr (maximum) Municipal Waste Combustor & Auxiliary Burners - Unit No.1
002	302.5 MMBtu/hr (maximum) Municipal Waste Combustor & Auxiliary Burners - Unit No.2
003	302.5 MMBtu/hr (maximum) Municipal Waste Combustor & Auxiliary Burners - Unit No.3

{Permitting Note: Each of the three municipal waste combustor (MWCs) has a *nominal* design rate capacity of 747 tons MSW per day and 280 MMBtu heat input (with MSW having a heating value of 4,500 Btu per pound). A maximum capacity of 807 tons per day and 302.5 MMBtu per hour heat input (108% rated capacity) is allowed. Short-term capacity is limited by limiting steam production (maximum of 186,000 lb/hr), which effectively limits heat input.

		EQUIVALENT EMISSIONS[2]		
POLLUTANT	EMISSIONS STANDARDS[1]	lb/mmBtu	lb/hr	TPY
PM[3] Particulate Matter	27 mg/dscm or 0.012 gr/dscf corrected to 7% O_2	0.024	7.35	32.24
VE Visible Emissions	10% (6 min. block avg.)			
Cd Cadmium	0.040 mg/dscm corrected to 7% O_2	3.6 E-05	0.011	0.048
Be[4] Beryllium	0.001 mg/dscm corrected to 7 % O_2	9.3E-07	0.0003	0.0012
Pb Lead	0.44 mg/dscm corrected to 7% O_2	4.4E-04	0.133	0.58
Hg Mercury	70 ug/dscm or 85% reduction by weight or volume corrected to 7% O_2 (whichever is less stringent)	6.3 E-05	0.019	0.08
SO_2 Sulfur Dioxide	29 ppmdv or 75% reduction by weight or volume corrected to 7% O_2 (whichever is less stringent)	0.11	32.8	143.5
HCl Hydrochloric Acid	29 ppmdv or 95% reduction corrected to 7% O_2 (whichever is less stringent)	0.04	11.7	51.3
Dioxins/Furans	30 ng/dscm corrected to 7% O_2	2.7 E-08	8.2E-06	3.6E-05
NO_X Nitrogen Oxides	205 ppmdv corrected to 7% O_2	0.35	106.5	466.4
CO Carbon Monoxide	100 ppmdv corrected to 7% O_2	0.105	31.8	139.1
F Fluorides	Not to exceed 0.0040 lb/MMBtu (BACT limit from original permit)	0.0040	1.21	5.29

1. These maximum allowable emission standards are applicable to each MWC combustor unit and shall be used in demonstrating compliance with the compliance procedures specified in specific conditions d.3. [Rules 62-4.070, and 62-296.416, F.A.C., 40 CFR 60.33b and 40 CFR 60.34b]
2. Permitting note: These equivalent emissions are listed for the purposes of providing information on the potential to emit for each MWC and not in determining compliance with applicable emission standards.
3. This limit for PM is more restrictive than the emission limit for PM in 40 CFR 60.43b
4. Beryllium: PSD original permit limit. Not to exceed applicable NESHAP, 40 CFR 61.32 (a)(Subpart C).

Basis: Equivalent emissions calculations (lb/hr and ton/yr) are based on the maximum heat input rate of 302.5 MMBtu/hr [108 % rated capacity] per unit and 8760 hours of operation. Short-term capacity is limited by limiting steam production (maximum of 186,000 lb steam/hr) which effectively limits heat input.

Averaging Times
SO_2: 24-hour daily block geometric mean (midnight to midnight)
NO_x: 24-hour daily block arithmetic mean (midnight to midnight)
CO: 4-hour block arithmetic mean beginning at midnight
Opacity: 6 minutes block arithmetic mean

Abbreviations
ug/dscm: Micrograms per dry standard cubic meter
mg/dscm: Milligrams per dry standard cubic meter
ppmdv: Part per million dry volume
ng/dscm: Nanograms per dry standard cubic meter
Dioxins/ furans: Total tetra through octa-chlorinated dibenzo-p dioxins and dibenzofurans
F: Fluorides as hydrogen fluoride

Temperature: 17° C above maximum demonstrated PM control device inlet

~~Visible Emissions: Opacity of stack emissions shall not be greater than 15% opacity.~~

1.a.(1) Excess Emissions: Excess opacity resulting from startup or shutdown shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess opacity shall be minimized but in no case exceed two hours in any 24-hour period unless specifically authorized by ~~EPA~~ the Department for longer duration.

Emission standards apply at all times except during periods of startup/shutdown and malfunction as stated in 40 CFR 60.58b(a).

1.a.(2) Fugitive Ash Emissions From Ash Conveying Systems(New Condition): No owner or operator of this facility shall cause to be discharged to the atmosphere visible emissions of combustion ash from an ash conveying system (including conveyor transfer points) in excess of 5 % of the observation period (i.e., 9 minutes per 3-hour period) as determined by EPA Reference Method 22. The 5 percent visible ash emission limit does not cover visible ash emissions discharged inside a building or ash conveying systems, but the visible emission limit does cover visible emissions discharged to the atmosphere from buildings of enclosures of ash conveying systems (including conveyor transfer points). **[Rule 62-204.800(8)(b), F.A.C., 40 CFR 60.36b; 60.55b and 62-4-070(3) F.A.C.]**

~~The units are subject to 40 CFR 60 Subpart E, and Subpart Db, New Source Performance Standards (NSPS), except that where requirements in this permit are more restrictive, the requirements in this permit shall apply.~~

1.a.(3) Applicable Requirements: These units are subject to all applicable requirements of 40 CFR 60 Subpart Cb, Emissions Control Guidelines and Compliance Schedules for Municipal Solid Waste Combustors, Subpart E, NSPS for Incinerators, Subpart Db NSPS for Industrial-Commercial-Institutional Steam Generating Units, 40CFR61 Subpart C, NESHAP for Beryllium and Rule 62-296.416 F.A.C., Waste-to-Energy Facilities, except that where requirements in this permit are more restrictive, the requirements in this permit shall apply.
[PSD-FL-112, 40CFR60 Subparts Cb, E, Db and 40CFR61 Subpart C]

~~There shall be no greater than 10% opacity for emissions from the refuse bunker and the ash handling and loadout. The potential for dust generation by ash handling activities will be~~

~~mitigated by quenching the ash prior to loading in ash transport trucks. Additionally, all portions of the proposed facility including the ash handling facilities which have the potential for fugitive emissions shall be enclosed. Also, those areas which have to be open for operational purposes (e.g., tipping floor of the refuse bunker while trucks are entering and leaving) will be under negative air pressure.~~

1.a.(4) Ash Handling Facilities: The potential for dust generation by ash handling activities will be mitigated by quenching or conditioning the ash prior to loading in ash transport trucks. Ash handling facilities shall be enclosed (including the proposed future metal recovery area). Unprocessed refuse storage areas which must be open for operational purposes (e.g., tipping floor of the refuse bunker while trucks are entering and leaving) will be under negative air pressure. Residue from the grates, and grate siftings shall be discharged into the bottom ash quenching system, and ash from the combustor/boiler and fabric filter hoppers shall be discharged into the fly ash conditioning system during normal operations to minimize visible dust generation. The ash/residue in the Ash Handling Building shall remain sufficiently moist to minimize dust during storage and handling operations. Compliance with this condition shall be determined in accordance with Condition a.(2).
[Rule 62-204.800(8)(b), F.A.C., 40 CFR 60.36b; 60.55b and 62-4-070(3) F.A.C.]

1.b Only distillate fuel oil or natural gas shall be used in startup burners. The annual capacity factor for use of natural gas and oil, as determined by 40 CFR 60.43b(d), shall be less than 10%. If the annual capacity factor of natural gas is greater than 10%, then the facility shall be subject to §60.44b.

1.c ~~None of the three individual municipal waste incinerators shall be charged in excess of 302.5 mmBtu/hr and 806.6 tons per day MSW (108% rated capacity) nor produce 186,000 lb/hr steam (3-hr rolling average).~~ Operating Requirements

1.c.(1) Operating Rates: The maximum individual MWC throughput shall not exceed 807 tons MSW per day (2420 tons per day entire facility) and 302.5 MMBtu per hour (108% rated capacity) nor produce in excess of 186,000 pounds steam per hour based on a 4-hour block arithmetic average. (Compliance per new Specific Conditions c.(2) listed below).
[Rule 62-204.800(8)(b), F. A. C., 40 CFR 60.31b; 60.38b; 60.51b, and 60.58b(j)]
[PSD-FL-112/PA 85-21 and Rule 62-4.030(3), F.A.C.]

~~1.c.(2) The temperature of the flue gas exiting the final combustion chamber of the incinerator shall not be less that 180^{0}F.~~

1.c.(2) Continuous Charging Rate (New Condition): The daily solid waste charging rate and hours of operation shall be determined and recorded for each MWC unit. The daily charging rate shall be determined each month on an average daily basis for each MWC unit using the Facility's truck scale weight data , refuse pit inventory, and MWC operating data for the preceding calendar month. Monthly truck scale weight records on the weight of solid waste received and processed at the Facility and refuse pit inventory shall be used to determine the amount of solid waste charged during the preceding calendar month on an average daily basis. The MWC load level measurements or other operating data shall be used to determined the number of operating hours per MWC unit for each day during the preceding calendar month. **[Rule 62-204.800(8)(b), F.A.C., and 40 CFR 60.53(a)]**

1.c.(3) Unit load (New Condition) : means the steam load of the municipal waste combustor (MWC) measured as specified in 40 CFR 60.58b(i)(6). Each MWC unit shall not operate at a load level greater than 110 percent of the unit's "maximum demonstrated unit load." The maximum demonstrated unit load is the highest 4-hour arithmetic averaged MWC unit load achieved during four consecutive hours during the most recent dioxin/furan performance stack test in which compliance with the dioxin/furan emission limit was achieved. Higher loads are allowed for testing purposes as specified at 40 CFR 60.53b(b). **[Rule 62-204.800(8)(b), F.A.C., 40 CFR 60.31b; 60.38b; 60.51b; 60.53b(b); and 60.58b(i)(8)]**

1.c.(4) Load Level Requirements (New Condition): The owner or operator of an affected facility with steam generation capability shall install, calibrate, maintain, and operate a steam flow meter or a feedwater flow meter; measure steam (or feedwater) flow in kilograms per hour (or pounds per hour) on a continuous basis; and record the output of the monitor (in accordance with the ASME method described in 40 CFR 60.58b(i)(6). Steam (or feedwater) flow shall be calculated in 4-hour block arithmetic averages. Higher loads are allowed for testing purposes as specified at 40 CFR 60.53b(b). **[Rule 62-204.800(8)(b), F.A.C., 40 CFR 60.31b; 60.38b; 60.51b; 60.53b(b); and 60.58b(i)(6)]**

1.d Compliance Tests

~~1.d.(1)a Annual compliance tests for particulate matter, lead, SO_2, nitrogen oxides, CO, fluorides, mercury, and beryllium shall be conducted in accordance with 40 CFR 60.8 (a) (b), (d), (e), and (f).~~

~~1.d.(1)b Compliance with the opacity standard for the incinerator stack emissions in condition 1.a. of this part shall be determined in accordance with 60.11(b) and (f).~~

~~1.d.(1)c Compliance with the emission limitations for 65% control of total sulfur dioxide emissions shall be determined by using the test methods in condition 1.d.(2) and sampling for SO_2 emissions before and after the acid gas control device. Continuous emissions data shall also be used to demonstrate compliance with the SO_2 concentration limits in condition 1.a above.~~

1.d.(1) Initial compliance tests for each combustion unit shall be conducted within 60 days after achieving maximum boiler operating capacity, but not later than 180 days after startup of the Selective Non-Catalytic Reduction (SNCR) system. Compliance tests shall be performed according to 40 CFR 60.38b. Annual tests shall be conducted within one year after the initial tests, unless otherwise allowed by the Department. A test protocol shall be submitted for approval to the Department's Southeast District office (DEPSED) and the Broward County Department of Planning and Environmental Protection (BCDPEP) at least 45 days prior to initial testing.
[40CFR 60.8, 40CFR60.11, Rule 62-204.800(8)(b), F.A.C. and Chapter 62-297, F.A.C.]

1.d.(2) The following test methods and procedures for 40 CFR 60 and 61 shall be used for compliance testing:

a. Method 1 for selection of sample site and sample traverses

b. Method 2 for determining stack gas flow rate when converting concentrations to or from mass emission limits.

c. Method 3 for analysis for calculation of percent O_2 and CO_2.

d. Method 4 for determining stack gas moisture content to convert the flow rate from actual standard cubic feet to dry standard cubic feet for use in converting concentrations in dry gases to or from mass emission limits.

e. Method 5, ~~for concentrations of particulate matter and associated moisture content. One sample shall continue one test run.~~ Determination of Particulate Matter Emissions (front half catch only) from Stationary Sources (I) and (A). Pursuant to 40 CFR 60.58b(c)(3) EPA Reference Method 5 shall be used for determining compliance with the particulate matter emission limit. The minimum sample volume shall be 1.7 cubic meters. The probe and filter holder heating systems in the sample train shall be set to provide a gas temperature no greater than 160 ± 14 °C. An oxygen or carbon dioxide measurement shall be obtained simultaneously with each Method 5 run.

~~f.~~ Method 9, ~~for visible determination of the opacity of emissions.~~ Visual Determination of the Opacity of Emissions from Stationary Sources (I) and (A).

~~g. Method 6 for concentration of SO2. Two samples, taken at approximately 30 minute intervals, shall constitute one test run.~~

~~h. Method 7 for concentration of nitrogen oxides. Four samples, taken at approximately 15 minutes intervals, shall constitute one run.~~

~~i. Method 10 for determination of CO concentrations. One sample constitutes one run.~~

~~j. Method 12 for determination of lead concentration and associated moisture content. One sample constitutes one test run.~~

k. Method 13B or 13A, ~~for determination of fluoride emission rate ans associated moisture content. One sample shall constitute one run.~~ Determination of Total Fluoride Emissions from Stationary Sources (I) and (A).

~~l. Method 101A for determination of mercury emission rate and associated moisture content. One sample shall constitute one test run.~~

~~m. Method 104 for determination of beryllium emission rate and associated moisture content. One sample shall constitute one test run.~~

n. Method 23, Determination of Dioxin/Furan Concentration from Stationary Sources (I) and (A). Dioxin/Furan emission limit shall be expressed as the total mass of tetra- through octa chlorinated dibenzo-p-dioxins and dibenzofurans. The facility may perform less frequent testing for dioxin/furan emissions, as allowed by 40 CFR 60.38b(b) and with prior notice to the Department, if the emission unit's dioxin/furan emissions do not exceed 15 ug/dscm corrected to 7% O_2 or less.

o. Method 26 or 26A, Determination of HCl Emissions (I) and (A). HCl stack tests upstream and downstream of the control device (s) shall be conducted to calculate percent control to demonstrate compliance with the alternate removal limit.

p. Method 29, Determination of Metals Emissions from Stationary Sources (I) and (A). Mercury emissions testing shall be conducted semiannually. Mercury stack tests shall be performed downstream of control devices or upstream and downstream of the control devices when determining compliance with the alternative removal requirement.

1.d.(3) Continuous Compliance with Emission Limits (New Condition):
Continuous compliance with the emission limits for opacity, carbon monoxide (CO), nitrogen oxides (NOx), sulfur dioxide (SO_2) listed above and the operational parameters: steam production (lb/hr) or feedwater flowrate (lb/hr), and fabric filter inlet flue gas temperature) shall be demonstrated by continuous emission monitoring systems (CEMS) operated in accordance with 40 CFR 60.58b and 60.59b(f). SO_2 monitors shall be located both upstream of the scrubber and downstream of the baghouse, in order to calculate percent removal efficiency.
[Rule 62-204.800(8)(b), F.A.C. and 40 CFR 60.38 (40 CFR 60.58b) and 62-4.070 F.A.C.]

2. ~~Compliance with emission limitations specified in lb/mmBtu in conditions 1.a and 1.c. of this part shall be determined by calculation an "F" factor in dscf/mmBtu corrected to 12% CO_2 using the boilers' efficiency (as determined by the calorimeter method contained in Attachment A during acceptance testing) and measured steam production. Data obtained from test methods required in condition 1.d. of this part for compliance testing shall be used for the calculation of the "F" factor required by this condition~~.

3. ~~Devices shall be installed to continuously monitor and record steam production. These devices shall be adequately maintained and operating during all periods of steam production~~.

4. The height of each boiler exhaust stack shall not be less than 59.4 meters above ground level at the base of the stack.

5. Each incinerator boiler shall have a metal name plate affixed in a conspicuous place on the shell showing manufacturer, model number, type waste, rated capacity, and certification number.

6. ~~The permittee must submit to EPA and DER, within fifteen (15) days after it becomes available to the County, copies of the technical data pertaining to the incinerator boiler design, acid gas control equipment design, particulate control equipment design, and the fuel mix that will be used to evaluate compliance of the facility with the preceeding emission limitations~~.

7. Fuel

~~The Resource Recovery Facility shall utilize refuse such as garbage and trash (as defined in Chapter 17-7, FAC) but not grease, scum, grit, screenings or sewage sludge.~~

The primary fuel for this facility is municipal solid waste (MSW), including the items and materials that fit within the definition of MSW contained in either 40CFR60.51b or Section 403.706 (5), F.A.C., Florida Statutes (1998).

7.a Subject to the limitations contained in this permit, the authorized fuels for the facility also include the other solid wastes that are not MSW which are described below. However, the facility shall not burn:

(1) those materials that are prohibited by state or federal law;
(2) those materials that are prohibited by this permit;
(3) those materials that are not authorized by this permit;
(4) lead acid batteries;
(5) hazardous waste;
(6) nuclear waste;
(7) radioactive waste;
(8) sewage sludge;
(9) explosives; and
(10) asbestos containing materials.

7.b. The fuel may be received either as a mixture or as a single-item stream (segregated load) of discarded materials. If the facility intends to use an authorized fuel that is segregated non-MSW material, the fuel shall be either:
(1) well mixed with MSW in the refuse pit; or
(2) alternately charged with MSW in the hopper.

7.c. The facility owner/operator shall prepare and maintain records concerning the description and quantities of all segregated loads of non-MSW material which are received and used as fuel at the facility, and subject to a percentage weight limitation, below (7.g and 7.h.). For the purposes of this permit, a segregated load is defined to mean a container or truck that is almost completely or exclusively filled with a single item or homogenous composition of waste material, as determined by visual inspection.

7.d. To ensure that the facility's fuel does not adversely affect the facility's combustion process or emissions, the facility operator shall:
(1) comply with good combustion operating practices in accordance with 40 CFR 60.53b;
(2) install, operate and maintain continuous emissions monitors (CEMS) for oxygen, carbon monoxide, sulfur dioxide, oxides of nitrogen and particulate control device inlet temperature in accordance with 40 CFR 60.58b; and
(3) record and maintain the CEMS data in accordance with 40 CFR 60.59b.

These steps shall be used to ensure and verify continuous compliance with the emissions limitations in this permit.

7.e Natural gas may be used as fuel during warm-up, startup, shutdown, and malfunction periods, and at other times when necessary and consistent with good combustion practices.

7.f Subject to the conditions and limitations contained in this permit, the following other solid waste may be used as fuel at the facility:

(1) Confidential, proprietary or special documents (including but not limited to business records, lottery tickets, event tickets, coupons, credit cards, magnetic tape and microfilm);
(2) Contraband which is being destroyed at the request of appropriately authorized local, state or federal governmental agencies, provided that such material is not an explosive, a propellant, a hazardous waste, or otherwise prohibited at the facility. For the purposes of this section,

contraband includes but is not limited to drugs, narcotics, fruits, vegetables, plants, counterfeit money, and counterfeit consumer goods;
(3) Wood pallets, clean wood, and land clearing debris.
(4) Packaging materials and containers;
(5) Clothing, natural and synthetic fibers, fabric remnants, and similar debris, including but not limited to aprons and gloves; and
(6) Rugs, carpets, and floor coverings.

7.g Subject to the conditions and limitations contained in this permit waste tires may be used as fuel at the facility. The total quantity of waste tires received as segregated loads and burned at the facility shall not exceed 3%, by weight, of the facility's total fuel. Compliance with this limitation shall be determined by using a rolling 30 day average in accordance with specific condition No. 7.i. below.

7.h. Subject to the conditions and limitations contained in this permit, the following other solid waste materials may be used as fuel at the facility (i.e. the following are authorized fuels that are non-MSW material). The total quantity of the following non-MSW material received as segregated loads and burned at the facility shall not exceed 5%, by weight, of the facility's total fuel. Compliance with this limitation shall be determined by using a rolling 30 day average in accordance with specific condition No. 7.i. below.

(1) Construction and demolition debris.
(2) Oil spill debris from aquatic, coastal, estuarine or river environments. Such items or materials include but are not limited to rags, wipes, and absorbents.
(3) Items suitable for human, plant or domesticated animal use, consumption or application where the item's shelf-life has expired or the generator wishes to remove the items from the market. Such items or materials include but are not limited to off-specification or expired consumer products, pharmaceuticals, medications, health and personal care products, cosmetics, foodstuffs, nutritional supplements, returned goods, and controlled substances.
(4) Consumer-packaged products intended for human or domesticated animal use or application but not consumption. Such items or materials include but are not limited to carpet cleaners, household or bathroom cleaners, polishes, waxes and detergents.
(5) Waste materials that:
  (i) are generated in the manufacture of items in categories (7.h.3) or (7.h.4), above and are functionally or commercially useless (expired, rejected or spent); or
  (ii) are not yet formed or packaged for commercial distribution. Such items or materials must be substantially similar to other items or materials routinely found in MSW.
(6) Waste materials that contain oil from:
  (i) the routine cleanup of industrial or commercial establishments and machinery; or
  (ii) spills of virgin or used petroleum products. Such items or materials include but are not limited to rags, wipes, and absorbents.
(7) Used oil and used oil filters. Used oil containing a PCB concentration equal or greater than 50 ppm shall not be burned, pursuant to the limitations of 40 CFR 761.20(e).
(8) Waste materials generated by manufacturing, industrial or agricultural activities, provided that these items or materials are substantially similar to items or materials that are found routinely in MSW, subject to prior approval of the Department.

7.i. Segregated Solid Waste Record Keeping:

The following records shall be made and kept to demonstrate compliance with the segregated non-MSW percentage limitations of specific condition 7:

(1) Each segregated load of non-MSW materials, that is subject to the percentage weight limitation of specific conditions 7.g. and 7.h., which is received for processing shall be documented as to waste description and weight. The weight of all waste materials received for processing shall be measured using the facility truck scale and recorded.
(2) Each day the total weight of segregated tires received shall be computed, and the daily total shall be added to the sum of the daily totals from the previous 29 days. The resultant 30 day total weight of tires shall be divided by the total weight of all waste materials received in the same 30 day period, and the resultant number shall be multiplied by 100 to express the ratio in percentage terms. The percentage computed shall be compared to the 3% limitation.
(3) Each day the total weight of segregated non-MSW materials received that are subject to the 5% restriction shall be computed, and the daily total shall be added to the sum of the daily totals from the previous 29 days. The resultant 30 day total weight of segregated non-MSW materials shall be divided by the total weight of all waste materials received in the same 30 day period, and the resultant number shall be multiplied by 100 to express the ratio in percentage terms. The percentage computed shall be compared to the 5% limitation.

8. Air Pollution Control Equipment

The permittee shall install, continuously operate, and maintain the following air pollution controls to minimize emissions. Controls listed shall be fully operational upon startup of the proposed equipment.

8.a. Each boiler ~~shall be~~ is equipped with a particulate emission control device for the control of particulates.
8.b. Each boiler ~~shall be~~ is equipped with an acid gas control device designed to remove at least 90% of the acid gases.
~~8.c. The temperature of flue gases exiting the acid control equipment shall not exceed 300^{0}F.~~
8.c. Compliance with the PM Control Device Temperature (New Condition)
Each MWC unit is required to continuously monitor and record the flue gas temperature at the inlet to the PM control device in accordance with the requirements at 40 CFR 60.58b(i)(7). The PM control device temperature shall be calculated in 4-hour block arithmetic averages. Each MWC unit shall be allowed to operate up to 17°C (30° F) above the unit's maximum demonstrated PM control device temperature. The maximum demonstrated PM control device temperature is the highest 4-hour arithmetic block-averaged measurement of temperature at the inlet to the PM control device recorded for 4 consecutive hours during the most recent dioxin/furan performance test which complied with the limits given above. The PM control device inlet temperature and the steam (or feedwater) flow for each unit during the stack test shall be continuously monitored and recorded in accordance with 40 CFR 60, Subpart Cb. Higher temperatures are allowed for testing purposes, as specified at 40 CFR 60.53b(c).
8.d. Each boiler shall be equipped with a selective non-catalytic reduction system to control nitrogen oxides emissions. (New Condition)
8.e. Mercury is controlled by source separation techniques pursuant to Rule 62-296.416 F.A.C. (New Condition)

9. Continuous Emission Monitoring

9.a Prior to the date of startup and thereafter, the County shall install, maintain, and operate the following continuous monitoring systems for each boiler exhaust stack:

(1) Continuous emission monitoring (CEM) systems to measure stack gas opacity and SO_2 , NO_x, CO, ~~CO_2~~ and O_2 concentrations for each unit. Continuous monitors for SO_2 shall be installed after the acid gas control device for each unit. The systems shall meet the EPA Monitoring performance specifications of 40 CFR 60.13 and 40 CFR 60, Appendix B, during initial compliance testing and annually thereafter. Additionally CEM's shall meet the quality control requirements of 40 CFR 60, Appendix F. ~~(Attachment B).~~

(2) CEM data recorded during periods of startup, shutdown, and malfunction shall be reported but excluded from compliance averaging periods for CO, NOx, and opacity.

(3) a. CEM data recorded during periods or startup and shutdown shall be excluded from compliance averaging periods for SO_2.

b. CEM data recorded during periods of acid gas control device malfunctions shall be excluded from compliance averaging periods for SO_2 provided that the preceeding thirty day period which ends on the last day of malfunction period meets and average SO_2 emission limit equal to the SO_2 limit specified in conditions 1.a. CEM data must be available for 90% of the operating time for this exemption to apply. A malfunction as used in this permit means any sudden and unavoidable failure of air pollution control equipment or process equipment or of a process to operate in a normal or usual manner. Failures that are caused entirely or in part by poor maintenance, careless operation, or any other preventable upset condition or preventable equipment breakdown shall not be considered malfunctions.

~~(4) The temperatures of the final combustion chamber of the furnace and flue gases exiting the acid control devices shall be continuously monitored.~~

9.b An excess emissions report shall be submitted to EPA for every calendar quarter. The report shall include the following:

(1) The magnitude of excess emissions computed in accordance with 40 CFR 60.13(h), any conversion factors used, and the date and time of commencement and completion of each period of excess emissions (60.7(c)(1)).

(2) Specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions of the furnace/boiler system. The nature and cause of any malfunction (if known) and the corrective action taken or preventative measures adopted shall also be reported (60.7(c)(2)).

(3) The date and time identifying each period during which the continuous monitoring system was inoperative except for zero and span checks, and the nature of the system repairs or adjustments (60.7(c)(3)).

(4) When no excess emissions have occurred or the continuous monitoring system has not been inoperative, repaired, or adjusted, such information shall be stated in the report (60.7(c)(4)).

(5) County shall maintain a file of all measurements, including continuous monitoring systems performance evaluations; all continuous monitoring systems or monitoring device calibration checks; adjustments and maintenance performed on these systems or devices; and all other information required by this permit recorded in a permanent form suitable for inspection (60.7(d)).

(6) Excess emissions shall be defined as any applicable period during which the average emissions of CO, NOx and/or SO_2, as measured by the continuous monitoring system, exceeds the CO, NOx and/or SO_2 maximum emission limit (in ppm) set for each pollutant in condition 1.a. above.

9.c Excess emissions indicated by the CEM systems shall be considered violations of the applicable opacity limit or operating emission limits (in ppm) for the purposes of this permit provided the data represents accurate emission levels and the CEM's do not exceed the calibration drift (as

specified in the respective performance specification tests) on the day when initial and subsequent compliance is determined. The burden of proof to demonstrate that the data does not reflect accurate emission readings shall be the responsibility of the permittee.

10. Excess emissions which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure which may reasonably be prevented during start-up or shutdown shall be prohibited.

11. Reporting

11.a. A copy of the results of the compliance tests shall be submitted within forty-five days of testing to the DEP Bureau of Air Regulation, New Source Review Section, MS5505, Twin Towers Office Building, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, the DEP Southeast District Office, 400 North Congress Avenue, West Palm Beach, Florida 33416-5425, and Broward County Department of Natural Resources Protection Air Quality Division, 218 Southwest First Avenue, Ft. Lauderdale, Florida 33301. ~~and EPA Region IV~~.

11.b. Continuous emissions monitoring data shall be reported to the DEP Southeast District, Broward County offices and EPA Region IV on a quarterly basis in accordance with Rule 62-204.800(8)(b) F.A.C., and 40 CFR 60.7.

11.c. EPA address for submitting report is:

Chief, Air Radiation Technology Branch
U.S. EPA – Region IV
61 Forsyth Street
Atlanta, Georgia 30303

12. Metal Recovery Facility (New Condition)

The proposed future metal recovery area will be enclosed in a building adjacent to the existing ash loadout area. All ash is currently quenched with water after leaving each boiler. The bottom ash will be moisturized and will not generate fugitive dust.

13. Schedule of Compliance with 40 CFR 60 Subpart Cb (New Condition)
[Rule 62-204.800(8)(b) F.A.C. and EPA – Approved Florida Compliance Plan]

13.a. Submittal of a final control plan: January 13, 1998.

13.b Awarding of contracts for emission control system or for process modification, or issuance of orders for the purchase of components parts to accomplish emission control or process modification: July 13, 1999.

13.c Initiation of on-site construction or installation of emission control equipment or process change: November 13, 1999.

13.d Completion of on-site construction or installation of emission control equipment or process change: September 13, 2000.

13.e Final compliance: November 13, 2000.

APPENDIX GC
GENERAL PERMIT CONDITIONS [RULE 62-4.160, F.A.C.]

G.1 The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

G.2 This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings or exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

G.3 As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey and vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

G.4 This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.

G.5 This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

G.6 The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

G.7 The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:

(a) Have access to and copy and records that must be kept under the conditions of the permit;
(b) Inspect the facility, equipment, practices, or operations regulated or required under this permit, and,
(c) Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

G.8 If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

(a) A description of and cause of non-compliance; and
(b) The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

G.9 In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extend it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

G.10 The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

G.11 This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 62-4.120 and 62-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

G.12 This permit or a copy thereof shall be kept at the work site of the permitted activity.

G.13 This permit also constitutes:

(a) Determination of Best Available Control Technology issued by EPA in 1987(x);
(b) Determination of Prevention of Significant Deterioration issued by EPA in 1987(x); and
(c) Compliance with New Source Performance Standards (x).

G.14 The permittee shall comply with the following:

(a) Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
(b) The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application or this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.
(c) Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements;
2. The person responsible for performing the sampling or measurements;
3. The dates analyses were performed;
4. The person responsible for performing the analyses;
5. The analytical techniques or methods used; and
6. The results of such analyses.

G.15 When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

Is your RETURN ADDRESS completed on the reverse side?

- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Thomas D. Kirk
Wheelabrator N. Broward
2600 NW 48th St.
Pompano Beach. Fl
33073

4a. Article Number
P 265 659 307

4b. Service Type
☐ Registered ☒ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery
9/30/99

5. Received By: (Print Name)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature: (Addressee or Agent)
X

P

...estic Return Receipt

Thank you for using Return Receipt Service.

P 265 659 307

US Postal Service
Receipt for Certified Mail
No Insurance Coverage Provided.
Do not use for International Mail (See reverse)

Sent to Thomas Kirk	
Street & Number Wheelabrator North Broward	
Post Office, State, & ZIP Code Pompano Bch, Fl	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date PSD-FL-1126(B) 9-28-99	

PS Form 3800, April 1995

Wheelabrator South Broward Inc.
A Waste Management Company

4400 South State Road 7
Ft. Lauderdale, FL 33314
(954) 581-6606
(954) 581-6705 Fax

September 18, 2001

Certified #7000 1530 0001 5735 0401
Return Receipt Requested

Mr. C. H. Fancy, P.E. Chief
Bureau of Air Regulations
Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: Wheelabrator South Broward
Final Comments for PPSC Modifications – 08/05/01
PA 85-21 (DEP CASE NO. PA 85-21D).

Dear Mr. Fancy:

Please find attached South Broward's final comments to the FDEP modifications on 08/05/01 to the conditions of certifications for the Power Plant Siting Certification, PA 85-21 (DEP CASE NO. PA 85-21D).

If there are any questions, please contact this office at (954) 581-6606.

Sincerely,

William B. Roberts

William B. Roberts
General Manager

010918.WBR.ch

Attachment

cc: Jairaj Gosine (with attachment)
Matt Killeen (w/o attachment)
Tim Porter (with attachment)
File: 3.7.3
5.1.3.2

Final Comments to PPSC Modifications of August 5, 2001

On August 5, 2001, the facility conditions of certifications for the Power Plant Siting Certification, PA 85 21 were modified by the FDEP (DEP CASE NO. PA 85-21D). Notwithstanding the final PPSC modifications, the PPSC still contains some errors and omissions that need to be addressed as noted below.

1. The chart on top of Page 4 of the PPSC modification issued on 08/05/01, references North Broward's boilers and maximum firing rates. This chart needs to be replaced with the correct chart for South Broward's boilers as shown below:

Emissions Unit No.	Emissions Unit Description
001	323.6 MMBtu/hr (maximum) Municipal Waste Combustor & Auxiliary Burners – Unit #1
002	323.6 MMBtu/hr (maximum) Municipal Waste Combustor & Auxiliary Burners – Unit #2
003	323.6 MMBtu/hr (maximum) Municipal Waste Combustor & Auxiliary Burners – Unit #3

The permitting note should read as follows:
{Permitting note: Each of the three municipal waste combustors (MWC's) has a nominal design rate capacity of 750 ton MSW per day (a maximum of 863 ton per day), 281 MMBtu per hour with MSW having a heating value of 4,500 Btu per pound. Short term capacity is limited by limiting steam production (maximum of 192,000 lb/hr), which effectively limits heat input.}

2. Condition XIV 1.a. e. (3) on Page 19 of the August 1, 2000, modifications- The references to "oxygen measurements", "pressure and temperature" and carbon injection system operating parameters, temperature of the combustion zone, slake lime utilization and power utilization" should have been removed to make South Broward's PPSC consistent with the North Broward PPSC revision and the final PSD permit revisions of both facilities. The facility requests the correction of this condition in the PPSC.

3. Condition XIV. D. on Page 30 of the August 1, 2000, modifications references a condition that does not exist in the present South Broward PPSC, any South Broward revision, the North Broward PPSC, any North Broward PPSC revision or the final North or South Broward PSD permit revisions. Nor is the condition contained in the Title V operating permit. The facility requests the deletion of this condition from the PPSC.

4. Condition XIV. E. on Page 30 of the August 1, 2000, modifications references a condition that does not exist in the present South Broward PPSC, any South Broward revision, the North Broward PPSC, any North Broward PPSC revision or the final North or South Broward PSD permit revisions. Nor is the condition contained in the Title V operating permit. The facility requests the deletion of this condition from the PPSC.

Golder Associates Inc.

6241 NW 23rd Street, Suite 500
Gainesville, FL 32653-1500
Telephone (352) 336-5600
Fax (352) 336-6603

Golder Associates

June 24, 1999

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BUREAU OF
AIR REGULATION

Mr. A. A. Linero, P.E., Administrator
New Source Review Section
Bureau of Air Regulation
Florida department of Environmental Protection
111 South Magnolia Drive, Suite 4
Tallahassee, Florida 32301

Attention: Teresa Heron

RE: South and North Broward County Resource Recovery Facilities - Subpart Cb
Wheelabrator South Broward, Inc. and Wheelabrator North Broward, Inc.

Dear Teresa:

As we discussed, please find the attached edits to the draft changes to the specific conditions for the South and North Broward Resource Recovery Facilities. The edits include ~~strikeout~~ for proposed deletion and underline for additions. A discussion of the proposed changes is presented below. We are providing these draft changes to try and provide consistency in the permits between the two facilities in incorporating the Subpart Cb requirements as well eliminate ambiguities. This should make the permits more readable and practically enforceable as well as assist in development of the Title V operating permit.

Specific Condition 1.a.: The heat inputs authorized in the existing PSD permits are 323.6 and 302.5 mmBtu/hr for the south and north facilities, respectively. Incorporation of the Subpart Cb requirements and clarifying the definition of acceptable fuels will not change the nominal or maximum capacity of the boiler in terms of heat input or fuel throughput. Additionally there has never been a limit related to any nominal capacity rating and consequently establishing such new limitations is not appropriate. This can be added as a permitting note, which we have suggested.

The emission table has been clarified to indicate which are "emission standards" and which are "equivalent emissions". Footnotes were added to define each. The appropriate Subpart Cb emission standards are the appropriate limitations for determining compliance. Specifying other emission unit designations without clarification will only create confusion in determining compliance. It is appropriate to list "equivalent emissions" for the purpose of determining potential to emit for the facility.

Some of the numbers listed as potential emissions were adjusted based on a calculation check. These were minor adjustments.

The emission limitations for fluoride are proposed to be deleted. The initial compliance tests and the annual tests have continued to demonstrate compliance with these limits. The addition of the

SNCR will not affect emissions of fluoride nor will the clarification on fuel definition since the scrubber/fabric filter will effectively control fluoride emissions.

Specific Condition1.a.(2) and 1.a.(4) : Language has been added to Condition 1.a.(2) to make it consistent with the Subpart Cb requirements. The first sentence in Condition 1.a.(2) can be deleted since it is redundant and not as specific as the rest of the language in Condition 1.a.(2). Compliance with the Condition 1.a.(4) work practices should reference Condition 1.a.(2).

Specific Condition c.(1): The references to limitations on nominal rates should be eliminated. See comment for Specific Condition 1. A.

Specific Condition c.(2): This condition can be deleted since the new conditions on load level and compliance with load requirements are more restrictive. In addition, the requirements cited as 40 CFR 62.53(a) are for Subpart E which only require daily charging rates and hours of operation which are less stringent than the 40 CFR Subpart Cb load level monitoring requirements.

Specific Condition d.(1): We have proposed deleting these old compliance test conditions since these are being replaced by the requirements of 40 CFR Subpart Cb as identified in Specific Condition d.(2).

Specific Condition d.(2): The facility will be required to demonstrate compliance with all of 40 CFR Subpart Cb emission requirements after completion of the retrofit in accordance with the Subpart Cb implementation schedule and 40 CFR 60.38b. Consequently, we have proposed adding the specific requirement to conduct the initial performance test 60 days after the boiler reaches maximum load or 180 days after startup of the SNCR system.

As indicated above, the testing for fluoride is proposed to be deleted.

The testing requirements for mercury were clarified to be consistent with Rule 62-296.416. Upstream and downstream mercury testing is only required if the percent reduction limit will be used to determine compliance with the alternative 85 % mercury removal limit [see added footnote (4)].

Specific Condition d.(3): The requirement for continuous compliance with operational parameters including: oxygen, steam pressure and temperature, carbon injection, combustion zone temperature, slake lime utilization and power generation is not appropriate and should be deleted. There are no proposed limits for these operational parameters, nor are they necessary to determine compliance with the Subpart Cb requirements.

Specific Conditions 2, 3 and 6: The deletion of these conditions is recommended since these are being replaced by either more stringent and appropriate requirements or are no longer applicable.

Specific Condition 7.f.(6): It is proposed that the exclusion of polyethylene and polyurethane vinyl floor coverings be deleted. We know of no regulatory basis for excluding this material.

Specific Condition 7.h.(1): We propose adding "non-combustible" before construction and demolition debris, since such debris could include wood (wood forms, building lumber, posts, etc.) that are combustible.

Specific Condition 9.a.(1): The requirement for measuring CO_2 can be deleted since the O_2 is used as the diluent gas for SO_2 , CO and NO_x monitoring.

Specific Condition 10 (South Facility) and 11 (North Facility): The requirement to submit copies of materials to EPA Region IV has been deleted since the Department now has this authority.

Specific Condition 13: This condition is not applicable since there will be no physical or operation change that is related to the proposed clarification of acceptable fuels definition and the addition of the SNCR NOx control system that would increase emissions and is therefore not a "modification" pursuant to Rule 62-210.200(188). As noted in the correspondence dated April 9, 1999, there will be a decrease in the allowable emissions of nearly all pollutants for which there is a current emission limit. The only apparent increase is for potential CO emissions (actual emission will not increase) and is a result of using the more appropriate Subpart Cb limit, since there will be no change in operation. The worst case increase in "potential" CO emissions is still below the PSD threshold.

Specific Condition 15: This condition is redundant to Rule 62-297.310(5) which is an applicable requirement for the facility. Moreover, the wording of the proposed condition is not consistent with either that rule or Rule 62-4.070(3). Clearly, the Subpart Cb testing and monitoring requirements provide direct confirmation of proper operation of each emission unit. Any new conditions to be included in the operating permit would be extraneous and not necessary to confirm operation. EPA has stated that the monitoring requirements incorporated in Subpart Cb meet the periodic monitoring and CAM requirements for Title V permits, if this what this condition was intended to address.

Your consideration of these comments is appreciated. Please call if you have any questions. Representatives from Wheelabrator and I can meet with you concerning our proposed changes if you desire.

Sincerely,

GOLDER ASSOCIATES INC.

Kennard F, Kosky, P.E.
Principal

KFK/tla
Enclosures

cc: Rick Mulhorn, Wheelabrator

cc: File
EPA
SED
Broward Co.
Buck Oven, PPS

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SPECIFIC CONDITIONS

PSD-FL-112 is hereby modified as follows:

1. Emission Limitations

~~a. Stack emissions from each unit shall not exceed the following:~~

~~Particulate: 0.0150 gr/dscf dry volume corrected to 12% CO_2.~~

~~Sulfur Dioxide: (1) 0.140 lb/MMBtu heat input and 60 ppm (3-hr rolling average, dry volume, corrected to 12% CO_2); or~~

~~(2) 65% reduction of uncontrolled SO_2 emissions.* In no case shall the SO_2 emissions exceed 0.310 lb/MMBtu heat input and 124 ppm (3-hr rolling average, dry volume, corrected to 12% CO_2).~~

~~The 124 ppm limit above shall be modified to reflect a new emission limit (in ppm) from the control device at 65% control efficiency. Within 18 months of start-up of operation, the County shall submit compliance tests that will be used to determine the new SO_2 emission limit (in ppm). The limit will be determined by observed average emission rate (u) from the submitted compliance tests and will be statistically analyzed using the one tailed student T test (t.05 + (x-u) n 0.5/s at the 95% confidence level to derive a mean emission rate (x), where s is the standard deviation of observed values n. The final operating SO_2 emission limit (in ppm) shall be this mean emission rate (x). This value shall be restricted to no more than 124 ppm or less than 60 ppm (3-hr rolling average, dry volume, corrected to 12% CO_2).~~

~~Nitrogen Oxides: .560 lb/MMBtu heat input and 350 ppm (3-hr rolling average, dry volume corrected to 12% CO_2).~~

~~Carbon Monoxide: .090 lb/MMBtu heat input: 400 ppm (1-hr rolling average, dry volume, corrected to 12% CO_2); and 88 ppm (4-day rolling average, dry volume, corrected to 12% CO_2).~~

~~Lead: .00056 lb/MMBtu~~

~~Fluorides: .0040 lb/MMBtu~~

~~Beryllium: 9.30×10^{-7} lb/MMBtu~~

~~Mercury: 7.50×10^{-4} lb/MMBtu~~

1. EMISSIONS LIMITATIONS

a. The following emissions standards apply to the following emissions units after improvements to comply with 40 CFR Subpart Cb are completed and the initial performance tests are completed .

EMISSIONS UNIT NO.	EMISSIONS UNITS DESCRIPTION
001	~~280~~ 302.5 MMBtu/hr (~~nominal~~ maximum) Municipal Waste Combustor & Burners - Unit No.1

002	~~280~~ 302.5 MMBtu/hr (~~nominal~~ maximum) Municipal Waste Combustor & Burners - Unit No.2
003	~~280~~ 302.5 MMBtu/hr (~~nominal~~ maximum) Municipal Waste Combustor & Auxiliary - Unit No.3

{Permitting Note: Each of the three municipal waste combustor (MWCs) ~~shall have~~ has a *nominal* design rate capacity of 747 tons MSW per day (a maximum of 807 tons per day), 280 MMBtu per hour with MSW having a heating value of 4,500 Btu per pound} . ~~The "operating window" of 108 percent (%) over the nominal design rate of 280 MMBtu heat input corresponds to 302.5 MMBtu/hr heat input and a maximum of 186,000 lb steam/ hour (5,600 BTU/lb heating value.~~ Short-term capacity is limited by limiting steam production (maximum ~~n~~ of 186,000 lb/hr), which effectively limits heat input.

		EQUIVALENT EMISSIONS[b]		
POLLUTANT	**EMISSIONS STANDARDS[a]**	**LB/MMBtu**	**LB/HR**	**TON/YR**
PM [(1)] Particulate Matter	27 mg/dscm or 0.012 gr/dscf corrected to 7% O_2	0.024	7.35	32.2
VE Visible Emissions	10 % (6 min. block avg.)			
Cd Cadmium	0.040 mg/dscm corrected to 7% O_2	3.6E-05	0.011	0.048
Be [(2)] Beryllium	0.001 mg/dscm corrected to 7 % O_2	9.3E-07	0.0003	0.0012
Pb Lead	0.44 mg/dscm corrected to 7% O_2	4.4E-04	0.133	0.58
Hg Mercury	70 ug/dscm or 85% reduction by weight or volume corrected to 7% O_2 (whichever is less stringent)	6.3E-05	0..019	0.08
SO_2 Sulfur Dioxide	29 ppmdv or 75% reduction by weight or volume corrected to 7% O_2 (whichever is less stringent)	0.116 ~~or 75% reduction @ 7% O_2~~	32.8 ~~or 75% reduction @ 7 % O_2~~	143.5
HCl Hydrochloric Acid	29 ppmdv or 95% reduction corrected to 7% O_2 (whichever is less stringent)	0.042 ~~or 95% reduction @ 7% O_2~~	11.7 ~~or 95% reduction @ 7% O_2~~	51.3
Dioxins/Furans	30 ng/dscm corrected to 7% O_2	2.7 E-08	8.2E-06	3.6E-05
CO Carbon Monoxide	100 ppmdv corrected to 7% O_2	0.105	31.8	139.1
NOx [(1)] Nitrogen Oxides	205 ppmdv corrected to 7% O_2	0.35	106.5	466.4

[a] These maximum allowable emission standards ~~rates~~ are applicable to each MWC combustor unit and shall be used in demonstrating compliance with the compliance procedures specified in specific conditions d.3.. [Rules 62-4.070, and 62-296.416, F.A.C., 40 CFR 60.33b and 40 CFR 60.34b]

[b] Permitting note: These equivalent emissions are listed for the purposes of providing information on the potential to emit for each MWC and not in determining compliance with applicable emission standards.

~~For fluoride, the permittee shall conduct initial performance test to demonstrate that the burning of the requested fuels do not exceed the BACT original permitted emission level. No annual testing is required.~~

~~F Fluorides~~	~~To be demostrated initially Not to exceed 0.0040 b/MMBtu~~	~~0.0040~~	~~1.21~~	~~5.29~~

Notes:
(1) This limit for PM is more restrictive than the emission limit for PM in 40 CFR 60.43b

(2) Beryllium: PSD original permit limit. Not to exceed applicable NESHAP, 40 CFR 61.32 (a)(Subpart C).

Basis: Equivalent emissions calculations (lb/hr and ton/yr) are based on the maximum heat input rate of 302.5 MMBtu/hr and 186,000 lb steam/hr [108 % rated capacity] per unit and 8760 hours of operation. ~~Nominal rated capacity of each boiler is 747 tons waste per day. Nominal heat input capacity is 280 MMBtu/hr.~~ Short-term capacity is limited by limiting steam production (186,000 lb steam/hr) which effectively limits heat input.

Averaging Times
SO_2: 24-hour daily block geometric mean (midnight to midnight)
NO_x: 24-hour daily block arithmetic mean (midnight to midnight)
CO: 4-hour block arithmetic mean beginning at midnight
Opacity: 6 minutes block arithmetic mean

Abbreviations
ug/dscm: Micrograms per dry standard cubic meter
mg/dscm: Milligrams per dry standard cubic meter
ppmdv: Part per million dry volume
ng/dscm: Nanograms per dry standard cubic meter
Dioxins/ furans: Total tetra through octa-chlorinated dibenzo-p dioxins and dibenzofurans
F: Fluorides as hydrogen fluoride

Temperature: 17° C above maximum demonstrated PM control device inlet

Emission standards apply at all times except during periods of startup/shutdown and malfunction as defined in 40 CFR 60.58b(a).

~~Visible Emissions: Opacity of stack emissions shall not be greater than 15% opacity. Excess opacity resulting from startup or shutdown shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess opacity shall be minimized but in no case exceed two hours in any 24-hour period unless specifically authorized by EPA for longer duration.~~

a.(2) ~~Visible~~ *Fugitive Ash* Emissions *From Ash Conveying Systems*:
No owner or operator of this facility shall cause to be discharged to the atmosphere visible emissions of combustion ash from an ash conveying system (including conveyor transfer points) in excess of 5 % of the observation period (i.e., 9 minutes per 3-hour period) as determined by EPA Reference Method 22. The 5 percent visible ash emission limit does not cover visible ash emissions discharged inside a building or ash conveying systems, but the visible emission limit does cover visible emissions discharged to the atmosphere from buildings of enclosures of ash conveying systems.

[Rule 62-204.800(8), F.A.C., 40 CFR 60.36b; 60.55b and 62-4-070(3) F.A.C.]

~~The units are subject to 40 CFR 60 Subpart E, and Subpart Db, New Source Performance Standards (NSPS), except that where requirements in this permit are more restrictive, the requirements in this permit shall apply.~~

a. (3) Applicable Requirements:
These units are subject to all applicable requirements of 40 CFR 60 Subpart Cb, Emissions Control Guidelines and Compliance Schedules for Municipal Solid Waste Combustors, Subpart E, NSPS for Incinerators, Subpart Db NSPS for Industrial-Commercial-Institutional Steam Generating Units, 40CFR61 Subpart C, NESHAP for Beryllium and Rule 62-296.416 F.A.C., Waste-to-Energy Facilities, except that where requirements in this permit are more restrictive, the requirements in this permit shall apply.
[PSD-FL-112, 40CFR60 Subparts Cb, E, Db and 40CFR61 Subpart C]

~~There shall be no greater than 10% opacity for emissions from the refuse bunker and the ash handling and loadout. The potential for dust generation by ash handling activities will be mitigated by quenching the ash prior to loading in ash transport trucks. Additionally, all portions of the proposed facility including the ash handling facilities which have the potential for fugitive emissions shall be enclosed. Also, those areas which have to be open for operational purposes (e.g., tipping floor of the refuse bunker while trucks are entering and leaving) will be under negative air pressure.~~

a.(4) Ash Handling Facilities:
~~There shall be no greater than 5% opacity for emissions from the refuse bunker and the ash handling and loadout~~. The potential for dust generation by ash handling activities will be mitigated by quenching or conditioning the ash prior to loading in ash transport trucks. ~~The a~~ Ash handling facilities shall be enclosed *(including the proposed future metal recovery area).* Unprocessed refuse storage areas which must be open for operational purposes (e.g., tipping floor of the refuse bunker while trucks are entering and leaving) will be under negative air pressure. Residue from the grates, and grate siftings shall be discharged into the bottom ash quenching system, and ash from the combustor/boiler and fabric filter hoppers shall be discharged into the flyash conditioning system during normal operations ~~shall be discharged into the ash quenching system~~ to minimize visible dust generation. The ash/residue in the Ash Handling Building shall remain sufficiently moist to minimize ~~prevent~~ dust during storage and handling operations. Compliance with this condition shall be determined in accordance with Condition a.(2).
[Rule 62-204.800(8), F.A.C., 40 CFR 60.36b; 60.55b and 62-4-070(3) F.A.C.]

b. No change

c. (1) ~~None of the three individual municipal waste incinerators shall be charged in excess of 302.5 mmBtu/hr and 806.6 tons per day MSW (108% rated capacity) nor produce 186,000 lb/hr steam (3-hr rolling average).~~

c.(1) Operating Rates:
The maximum individual MWC throughput shall not exceed 807 tons MSW per day (2420 tons per day entire facility), and 302.5 MMBtu per hour (108% rated capacity) ~~and~~ nor produce in excess of186,000 pounds steam per hour ~~(108 % of the nominal design rate)~~ based on a 4-hour block arithmetic average. ~~The incinerators/boilers shall not be loaded in excess of their maximum operating capacity of 33.60 tons MSW per hour each, equivalent to 2420 tons MSW per day total, but no more than 2241 tons MSW per day on an annual (52 week rolling average) average basis for the entire facility.~~ ~~(Compliance per new Specific Conditions c.(2) listed below)~~
[Rule 62-204.800(8), F.A.C., 40 CFR 60.31b; 60.38b; 60.51b, and 60.58b(j)]
[PSD-FL-121(B)/PA 85-21 and Rule 62-4.030(3), F.A.C.]

c. (2) ~~The temperature of the flue gas exiting the final combustion chamber of the incinerator shall not be less than 1800^{0}F.~~
This condition is deleted. The rationale is explained in the Technical Evaluation and Preliminary Determination dated May 20, 1999. A new specific condition, as stated below, will use this c.(2) numeration

~~**New Specific Condition c.(2) Compliance with the Continuous Charging Rate**:~~
~~The daily solid waste charging rate and hours of operation shall be determined and recorded for each MWC unit. The daily charging rate shall be determined each month on an average daily basis for each MWC unit using the Facility's truck scale weight data , refuse pit inventory, and MWC operating data for the preceding calendar month. Monthly truck scale weight records on~~

~~the weight of solid waste received and processed at the Facility and refuse pit inventory shall be used to determine the amount of solid waste charged during the preceding calendar month on an average daily basis. The MWC load level measurements or other operating data shall be used to determined the number of operating hours per MWC unit for each day during the preceding calendar month. [Rule 62-204.800(8), F.A.C., and 40 CFR 60.53(a)]~~

New Specific Condition c.(3) (2)Load Level :
Unit load means the steam load of the municipal waste combustor (MWC) measured as specified in 40 CFR 60.58b(i)(6). Each MWC unit shall not operate at a load level greater than 110 percent of the unit's "maximum demonstrated unit load." The maximum demonstrated unit load is the highest 4-hour arithmetic averaged MWC unit load achieved during four consecutive hours during the most recent dioxin/furan performance stack test in which compliance with the dioxin/furan emission limit was achieved. Higher loads are allowed for testing purposes as specified at 40 CFR 60.53b(b). **[Rule 62-204.800(8), F.A.C., 40 CFR 60.31b; 60.38b; 60.51b; 60.53b(b); and 60.58b(i)(8)]**

New Specific Condition c.(4) (3) Compliance With Load Level Requirements:
The owner or operator of an affected facility with steam generation capability shall install, calibrate, maintain, and operate a steam flow meter or a feedwater flow meter; measure steam (or feedwater) flow in kilograms per hour (or pounds per hour) on a continuous basis; and record the output of the monitor (in accordance with the ASME method described in 40 CFR 60.58b(i)(6). Steam (or feedwater) flow shall be calculated in 4-hour block arithmetic averages. Higher loads are allowed for testing purposes as specified at 40 CFR 60.53b(b). **[Rule 62-204.800(8), F.A.C., 40 CFR 60.31b; 60.38b; 60.51b; 60.53b(b); and 60.58b(i)(6)]**

d. Compliance Tests

(1) a. ~~No change. *This condition would be updated in the Title V permit for this facility*~~. This condition is deleted: ~~Annual compliance tests for particulate matter, lead, SO_2, nitrogen oxides, CO, fluorides, mercury, and beryllium shall be conducted in accordance with 40 CFR 60.8 (a) (b), (d), (e), and (f).~~

b. ~~No change. *This condition would be updated in the Title V permit for this facility*~~. This condition is deleted: ~~Compliance with the opacity standard for the incinerator stack emissions in condition 1.a. of this part shall be determined in accordance with 60.11(b) and (f).~~

c. This condition is deleted: ~~Compliance with the emission limitations for 65% control of total sulfur dioxide emissions shall be determined by using the test methods in condition 1.d.(2) and sampling for SO_2 emissions before and after the acid gas control device. Continuous emissions data shall also be used to demonstrate compliance with the SO_2 concentration limits in condition 1.a above.~~

(2) The following test methods and procedures for 40 CFR 60 and 61 shall be used for compliance testing:

a. Method 1 for selection of sample site and sample traverses

b. Method 2 for determining stack gas flow rate when converting concentrations to or from mass emission limits.

c. Method 3 for analysis for calculation of percent O_2 and CO_2.

d. Method 4 for determining stack gas moisture content to convert the flow rate from actual standard cubic feet to dry standard cubic feet for use in converting concentrations in dry gases to or from mass emission limits.

~~e. Method 5 for concentrations of particulate matter and associate moisture content. One sample shall continue one test run.~~

~~f. Method 9 for visible determination of the opacity of emissions.~~

~~g. Method 6 for concentration of SO_2. Two samples, taken at approximately 30 minute intervals, shall constitute one test run.~~

~~h. Method 7 for concentration of nitrogen oxides. Four samples, taken at approximately 15 minutes intervals, shall constitute one run.~~

~~i. Method 10 for determination of CO concentrations. One sample constitutes one run.~~

~~j. Method 12 for determination of lead concentration and associated moisture content. One sample constitutes one test run.~~

~~k. Method 13B for determination of mercury emission rate ans associated moisture content. One sample shall constitute one run.~~

~~l. Method 101A for determination of mercury emission rate and associated moisture content. Ons sample shall constitute one test run.~~

~~m. Method 104 for determination of beryllium emission rate and associated moisture content. One sample shall constitute one test run.~~

d.(2) Stack Tests and Stack Test Methods:

Initial compliance tests for each combustion unit shall be conducted within 60 days after achieving maximum boiler operating capacity, but not later than 180 days after startup of the Selective Non-Catalytic Reduction (SNCR) system. Compliance tests shall be performed according to 40 CFR 60.38b. Annual tests shall be conducted within one year after the initial tests, unless otherwise allowed by the Department. A test protocol shall be submitted for approval to the Department's Southeast District office (DEPSED) and the Broward County Department of Natural Resources Protection (BCDNRP)~~)~~ at least 45 days prior to initial testing.
[Rule 62-204.800(8), F.A.C. and Chapter 62-297, F.A.C.]

Method 5[1]	Determination of Particulate Matter Emissions (front half catch only) from Stationary Sources (I) and (A).
Method 9	Visual Determination of the Opacity of Emissions from Stationary Sources (I) and (A).
~~Method 13A or 13 B~~	~~Determination of Total Fluoride Emissions from Stationary Sources (I) and (A).~~
Method 23[2]	Determination of Dioxin/furan concentration from Stationary Sources (I) and (A).

Method 26[3] Determination of HCl emissions (I) and (A).
or 26A
Method 29[3][4] Determination of Metals Emissions from Stationary Sources (I) and (A). Mercury emissions testing shall be conducted semiannually.

[1] Pursuant to 40 CFR 60.58b(c)(3) EPA Reference Method 5 shall be used for determining compliance with the particulate matter emission limit. The minimum sample volume shall be 1.7 cubic meters. The probe and filter holder heating systems in the sample train shall be set to provide a gas temperature no greater than 160 ± 14 °C. An oxygen or carbon dioxide measurement shall be obtained simultaneously with each Method 5 run.

[2] Dioxin/Furan emission limit expressed as the total mass of tetra- through octa chlorinated dibenzo-p-dioxins and dibenzofurans. The facility may perform less frequent testing for dioxin/furan emissions, as allowed by 40 CFR 60.38b(b) and with prior notice to the Department, if the emission unit's dioxin/furan emissions do not exceed 15 ug/dscm corrected to 7% O_2 or less.

[3] HCl ~~and mercury~~ stack tests upstream and downstream of the control device (s) shall be conducted to calculate percent control to demonstrate compliance with the alternative removal limit.

[4] Mercury stack tests shall be performed downstream or may be performed upstream or downstream of mercury control devices when determining compliance with the alternative removal requirement.

New Condition d.(3) Continuous Compliance with Emission Limits:
Continuous compliance with the emission limits for opacity, carbon monoxide (CO), nitrogen oxides (NOx), sulfur dioxide (SO_2) listed above and the operational parameters (~~including but not limited to~~: ~~oxygen measurements~~, steam production [lb./hr, ~~pressure, and temperature~~] or feedwater flowrate [lb./hr], ~~device to measure temperature of flue gas at the~~ and fabric filter inlet flue gas temperature, ~~carbon injection system operating parameters, temperature of the combustion zone, slake lime utilization, power generation, etc~~) shall be demonstrated by continuous emission monitoring systems (CEMS) operated in accordance with 40 CFR 60.58b and 60.59b(f). SO_2 monitors shall be located both upstream of the scrubber and downstream of the baghouse, in order to calculate percent removal efficiency. **[Rule 62-204.800(8), F.A.C. and 40 CFR 60.38 (40 CFR 60.58b) and 62-4.070 F.A.C.]**

2. This condition is deleted: ~~Compliance with emission limitations specified in lb/mmBtu in conditions 1.a and 1.c. of this part shall be determined by claculation an "F" factor in dscf/mmBtu corrected to 12% CO_2 using the boilers' efficiency (as determined by the calorimeter method contained in Attachment A during acceptance testing) and measured steam production. Data obtained from test methods required in condition 1.d. of this part for compliance testing shall be used for the calculation of the "F" factor required by this condition.~~
3. This condition is deleted: ~~Devices shall be installed to continuously monitor and record steam production. These devices shall be adequately maintained and operating during all periods of steam production~~.

4. No change.
5. No change.
6. This condition is deleted: ~~The permittee must submit to EPA and DER, within fifteen (15) days after it becomes available to the County, copies of the technical data pertaining to the incinerator boiler design, acid gas control equipment design, particulate control equipment design, and the fuel mix that will be used to evaluate compliance of the facility with the preceeding emission limitations~~.

SPECIFIC CONDITION 7.

Fuel

~~The Resource Recovery Facility shall utilize refuse such as garbage and trash (as defined in Chapter 17-7, FAC) but not grease, scum, grit, screenings or sewage sludge.~~

7. The primary fuel for this facility is municipal solid waste (MSW), including the items and materials that fit within the definition of MSW contained in either 40CFR60.51b or Section 403.706 (5), F.A.C., Florida Statutes (1998).

7.a Subject to the limitations contained in this permit, the authorized fuels for the facility also include the other solid wastes that are not MSW which are described below. However, the facility shall not burn:

(1) those materials that are prohibited by state or federal law;
(2) those materials that are prohibited by this permit;
(3) those materials that are not authorized by this permit;
(4) lead acid batteries;
(5) hazardous waste;
(6) nuclear waste;
(8) radioactive waste;
(9) sewage sludge;
(10) explosives ~~.~~ ; and
(11) asbestos containing materials.

7.b The fuel may be received either as a mixture or as a single-item stream (segregated load) of discarded materials. If the facility intends to use an authorized fuel that is segregated non-MSW material, the fuel shall be either:

(1) well mixed with MSW in the refuse pit; or
(2) alternately charged with MSW in the hopper.

7.c. The facility owner/operator shall prepare and maintain records concerning the description and quantities of all segregated loads of non-MSW material which are received and used as fuel at the facility, and subject to a percentage weight limitation, below (7.g and 7.h.). For the purposes of this permit, a segregated load is defined to mean a container or truck that is almost completely or exclusively filled with a single item or homogenous composition of waste material, as determined by visual inspection.

7.d. To ensure that the facility's fuel does not adversely affect the facility's combustion process or emissions, the facility operator shall:

(1) comply with good combustion operating practices in accordance with 40 CFR 60.53b;
(2) install, operate and maintain continuous emissions monitors (CEMS) for oxygen, carbon monoxide, sulfur dioxide, oxides of nitrogen and *particulate control device inlet* temperature in accordance with 40 CFR 60.58b; and
(3) record and maintain the CEMS data in accordance with 40 CFR 60.59b.

These steps shall be used to ensure and verify continuous compliance with the emissions limitations in this permit.

Natural gas may be used as fuel during warm-up, startup, shutdown, and malfunction periods, and at other times when necessary and consistent with good combustion practices.

7.f. Subject to the conditions and limitations contained in this permit, the following other solid waste may be used as fuel at the facility:

(1) Confidential, proprietary or special documents (including but not limited to business records, lottery tickets, event tickets, coupons, *credit cards, magnetic tape* and microfilm);
(2) Contraband which is being destroyed at the request of appropriately authorized local, state or federal governmental agencies, provided that such material is not an explosive, a propellant, a hazardous waste, or otherwise prohibited at the facility. For the purposes of this section, contraband includes but is not limited to drugs, narcotics, fruits, vegetables, plants, counterfeit money, and counterfeit consumer goods;
(3) Wood pallets, clean wood, and land clearing debris and combustible construction and demolition debris.
(4) Packaging materials and containers;
(5) Clothing, natural and synthetic fibers, fabric remnants, and similar debris, including but not limited to aprons and gloves; ~~or~~ and
(6) Rugs, carpets, and floor coverings~~, but not asbestos-containing materials or polyethylene or polyurethane vinyl floor coverings~~.

7.g. Subject to the conditions and limitations contained in this permit waste tires may be used as fuel at the facility. The total quantity of waste tires received as segregated loads and burned at the facility shall not exceed 3%, by weight, of the facility's total fuel. Compliance with this limitation shall be determined by using a rolling 30 day average in accordance with specific condition No. 7.i. below.

7.h. Subject to the conditions and limitations contained in this permit, the following other solid waste materials may be used as fuel at the facility (i.e. the following are authorized fuels that are non-MSW material). The total quantity of the following non-MSW material received as segregated loads and burned at the facility shall not exceed 5%, by weight, of the facility's total fuel. Compliance with this limitation shall be determined by using a rolling 30 day average in accordance with specific condition No. 7.i. below.

(1) Non-Combustible Construction and demolition debris.
(2) Oil spill debris from aquatic, coastal, estuarine or river environments. Such items or materials include but are not limited to rags, wipes, and absorbents.
(3) Items suitable for human, plant or domesticated animal use, consumption or application where the item's shelf-life has expired or the generator wishes to remove

the items from the market. Such items or materials include but are not limited to off-specification or expired consumer products, pharmaceuticals, medications, health and personal care products, cosmetics, foodstuffs, nutritional supplements, returned goods, and controlled substances.

(4) Consumer-packaged products intended for human or domesticated animal use or application but not consumption. Such items or materials include but are not limited to carpet cleaners, household or bathroom cleaners, polishes, waxes and detergents.

(5) Waste materials that:
  (i) are generated in the manufacture of items in categories (c) or (d), above and are functionally or commercially useless (expired, rejected or spent); or
  (ii) are not yet formed or packaged for commercial distribution. Such items or materials must be substantially similar to other items or materials routinely found in MSW.

(f) Waste materials that contain oil from:
  (i) the routine cleanup of industrial or commercial establishments and machinery; or
  (ii) spills of virgin or used petroleum products. Such items or materials include but are not limited to rags, wipes, and absorbents.

(6) Used oil and used oil filters. Used oil containing a PCB concentration equal or greater than 50 ppm shall not be burned, pursuant to the limitations of 40 CFR 761.20(e).

(7) Waste materials generated by manufacturing, industrial or agricultural activities, provided that these items or materials are substantially similar to items or materials that are found routinely in MSW, subject to prior approval of the Department.

7.i. Segregated Solid Waste Record Keeping:

The following records shall be made and kept to demonstrate compliance with the segregated non-MSW percentage limitations of specific condition 7.

Each segregated load of non-MSW materials, that is subject to the percentage weight limitation of specific conditions 7.g. and 7.h., which is received for processing shall be documented as to waste description and weight. The weight of all waste materials received for processing shall be measured using the facility truck scale and recorded.

Each day the total weight of segregated tires received shall be computed, and the daily total shall be added to the sum of the daily totals from the previous 29 days. The resultant 30 day total weight of tires shall be divided by the total weight of all waste materials received in the same 30 day period, and the resultant number shall be multiplied by 100 to express the ratio in percentage terms. The percentage computed shall be compared to the 3% limitation.

Each day the total weight of segregated non-MSW materials received that are subject to the 5% restriction shall be computed, and the daily total shall be added to the sum of the daily totals from the previous 29 days. The resultant 30 day total weight of segregated non-MSW materials shall be divided by the total weight of all waste materials received in the same 30 day period, and the resultant number shall be multiplied by 100 to express the ratio in percentage terms. The percentage computed shall be compared to the 5% limitation.

8. No Change except as noted below:

SPECIFIC CONDITION 8.c.

~~The temperature of flue gases exiting the acid gas control equipment shall not exceed 300°F.~~

8.c. Compliance with the PM Control Device Temperature:
Each MWC unit is required to continuously monitor and record the flue gas temperature at the inlet to the PM control device in accordance with the requirements at 40 CFR 60.58b(i)(7). The PM control device temperature shall be calculated in 4-hour block arithmetic averages. Each MWC unit shall be allowed to operate up to 17°C (30° F) above the unit's maximum demonstrated PM control device temperature. The maximum demonstrated PM control device temperature is the highest 4-hour arithmetic block-averaged measurement of temperature at the inlet to the PM control device recorded for 4 consecutive hours during the most recent dioxin/furan performance test which complied with the limits given above. The PM control device inlet temperature and the steam (or feedwater) flow for each unit during the stack test shall be continuously monitored and recorded in accordance with 40 CFR 60, Subpart Cb. Higher temperatures are allowed for testing purposes, as specified at 40 CFR 60.53b(c). **[Rule 62-204.800(8), F.A.C. and 40 CFR 60.38b, 40 CFR 60.53b(c) and 60.58b(i)(7) and (9)]**

9. Continuous Emission Monitoring

a. No Change.
(1) Continuous emission monitoring (CEM systems to measure stack gas opacity and SO_2, NO_x, CO, ~~CO_2~~, and O_2 concentrations for each unit. No change in remainder of condition.

(2) and (3). No change.

b. No change

c. No change.

10. No change.

11. Reporting

a. A copy of the results of the compliance tests shall be submitted within forty-five days of testing to the DEP Bureau of Air Regulation, the DEP Southeast District Office and Broward County ~~and EPA Region IV~~.

NEW SPECIFIC CONDITIONS 12, and 13, ~~14 and 15~~

12. METAL RECOVERY FACILITY
The metal recovery area will be enclosed in a building adjacent to the existing ash loadout area. All bottom ash is currently quenched with water after leaving each boiler. The resulting bottom ash will be about 20 to 30 percent moisture and will not generate fugitive dust.

~~13. ELECTRIC UTILITY STEAM GENERATING UNIT ACTUAL EMISSIONS~~
~~The permittee shall provide the Department within the period not longer than 10 years following the change, information demonstrating that the physical or operational change did not result in a "representative actual annual emissions" increase in accordance with Rule 62-210.200 (12)(d), F.A.C., and Rule 62-212.400, F.A.C.~~
~~[40 CFR 52.21(b)(33), Rule 62-4.070 (3), Rule 62-212.400, and Rule 62-210.200, F.A.C.]~~

13 ~~14.~~ SCHEDULE OF COMPLIANCE

The compliance schedule for each unit is provided below.

Increment 1: 2 months after EPA approval of the Florida State Plan
Increment 2: 8 months after EPA approval of the Florida State Plan
Increment 3: 24 months after EPA approval of the Florida State Plan
Increment 4: 34 months after EPA approval of the Florida State Plan
Increment 5: 36 months after EPA approval of the Florida State Plan or by December 19, 2000

The five increments of progress are:
Increment 1: Submittal of a final control plan for the designated facility to the appropriate air pollution control agency.
Increment 2: Awarding of contracts for emission control system or for process modification, or issuance of orders for the purchase of components parts to accomplish emission control or process modification.
Increment 3: Initiation of on-site construction or installation of emission control equipment or process change.
Increment 4: Completion of on-site construction or installation of emission control equipment or process change.
Increment 5: Final compliance.

~~15. DETERMINATION OF PROCESS VARIABLES~~
~~Any other operating parameters (including but not limited to control equipment operating parameters) established during compliance testing and/or inspection that will confirm the proper operation of each emission unit shall be included in the operating permit [Rule 62-297.310 (5), F.A.C. and 62-4.070(3), F.A.C.]~~

A copy of this permit modification shall be attached to Permit PSD-FL-112 and shall become a part of this permit.

SPECIFIC CONDITIONS

PSD-FL-105 is hereby amended as follows:

1. Emission Limitations

~~a. Stack emissions from each unit shall not exceed the following:~~

~~Particulate: 0.0150 gr/dscf dry volume corrected to 12% CO_2.~~

~~Sulfur Dioxide: (1) 0.140 lb/MMBtu heat input and 60 ppm (3-hr rolling average, dry volume, corrected to 12% CO_2); or~~

~~(2) 65% reduction of uncontrolled SO_2 emissions.* In no case shall the SO2 emissions exceed 0.310 lb/MMBtu heat input and 124 ppm (3-hr rolling average, dry volume, corrected to 12% CO_2).~~

~~The 124 ppm limit above shall be modified to reflect a new emission limit (in ppm) from the control device at 65% control efficiency. Within 18 months of start-up of operation, the County shall submit compliance tests that will be used to determine the new SO_2 emission limit (in ppm). The limit will be determined by observed average emission rate (x) from the submitted compliance tests and will be statistically analyzed using the one tailed student T test ($t.05 = (x-u) n/s$ at the 95% confidence level to derive a mean emission rate (u), where s is the standard deviation of observed values n. The final operating SO_2 emission limit (in ppm) shall be this mean emission rate (u). This value shall be restricted to no more than 124 ppm or less than 60 ppm (3-hr rolling average, dry volume, corrected to 12% CO_2).~~

~~Nitrogen Oxides: .560 lb/MMBtu heat input and 350 ppm (3-hr rolling average, dry volume corrected to 12% CO_2).~~

~~Carbon Monoxide: .090 lb/MMBtu heat input; 400 ppm (1-hr rolling average, dry volume, corrected to 12% CO_2); and 88 ppm (4-day rolling average, dry volume, corrected to 12% CO_2).~~

~~Lead: .00056 lb/MMBtu~~

~~Fluorides: .0040 lb/MMBtu~~

~~Beryllium: 9.30×10^{-7} lb/MMBtu~~

~~Mercury: 7.50×10^{-4} lb/MMBtu~~

1. EMISSIONS LIMITATIONS

a. The following emissions standards apply to the following emissions units after improvements to comply with 40 CFR Subpart Cb are completed and the initial performance tests are completed.

EMISSIONS UNIT NO.	EMISSIONS UNITS DESCRIPTION
001	~~281~~ 323.6 MMBtu/hr (~~nominal~~ maximum) Municipal Waste Combustor & Auxiliary Bu No.1
002	~~281~~ 323.6 MMBtu/hr (~~nominal~~ maximum) Municipal Waste Combustor & Auxiliary Bu No.2
003	~~281~~ 323.6 MMBtu/hr (~~nominal~~ maximum) Municipal Waste Combustor & Auxiliary Bu No.3

{Permitting Note: Each of the three municipal waste combustor (MWCs) ~~shall have~~ has a *nominal* design rate capacity of 750 tons MSW per day (a maximum of 863 tons per day), ~~281~~ 323.6 MMBtu per hour with MSW having a heating value of 4,500 Btu per pound). ~~The "operating window" of 115 percent (%) over the nominal design rate of 281 MMBtu heat input corresponds to 323.6 MMBtu/hr heat input and a maximum of 192,000 lb steam/ hour (5,600 BTU/lb heating value).~~ Short-term capacity is limited by limiting steam production (maximum n of 192,000 lb/hr), which effectively limits heat input.

		EQUIVALENT EMISSIONS[b]		
POLLUTANT	**EMISSIONS STANDARDS[a]**	**LB/MMBtu**	**LB/HR**	**TON/YR**
PM [(1)] Particulate Matter	27 mg/dscm or 0.012 gr/dscf corrected to 7% O_2	0.0243	7.85	34.4
VE Visible Emissions	10% (6 min. block avg.)			
Cd Cadmium	0.040 mg/dscm corrected to 7% O_2	3.7 ~~3.6~~E-05	0.012	0.051
Be [(2)] Beryllium	0.001 mg/dscm corrected to 7 % O_2	9.3E-07	0.0003	0.0013
Pb Lead	0.44 mg/dscm corrected to 7% O_2	4.4E-04	0.142	0.62
Hg Mercury	70 ug/dscm or 85% reduction by weight or volume corrected to 7% O_2 (whichever is less stringent)	6.2 ~~6.3~~E-05	0.02	0.09
SO_2 Sulfur Dioxide	29 ppmdv or 75% reduction by weight or volume corrected to 7% O_2 (whichever is less stringent)	0.11 ~~08 or 75% reduction @ 7% O_2~~	35.1 ~~or 75% reduction @ 7 % O_2~~	153.7
HCl Hydrochloric Acid	29 ppmdv or 95% reduction corrected to 7% O_2 (whichever is less stringent)	0.042 ~~or 95% reduction @ 7% O_2~~	12.6 ~~or 95% reduction @ 7% O_2~~	55
Dioxins/Furans	30 ng/dscm corrected to 7% O_2	2.7 E-08	8.7E-06	3.8E-05
CO Carbon Monoxide	100 ppmdv corrected to 7% O_2	0.105	33.9	148.~~7~~5
NOx [(2)] Nitrogen Oxides	205 ppmdv corrected to 7% O_2	0.352	114	499

[a] These maximum allowable emission standards ~~rates~~ are applicable to each MWC combustor unit and shall be used in demonstrating compliance with the compliance procedures specified in specific conditions d.3. [Rules 62-4.070, and 62-296.416, F.A.C., 40 CFR 60.33b and 40 CFR 60.34b]

[b] Permitting note: These equivalent emissions are listed for the purposes of providing information on the potential to emit for each MWC and not in determining compliance with applicable emission standards.

~~For fluoride, the permittee shall conduct initial performance test to demonstrate that the burning of the requested fuels do not exceed the BACT original permitted emission level. No annual testing is required.~~

~~F~~ ~~Fluorides~~	~~To be demostrated initially~~ ~~Not to exceed 0.0040 lb/MMBtu~~	~~0.0040~~	~~1.29~~	~~5.66~~

Notes:
(1) This limit for PM is more restrictive than the emission limit for PM in 40 CFR 60.43b
(2) Beryllium: PSD original permit limit. Not to exceed applicable NESHAP, 40 CFR 61.32 (a)(Subpart C).

Basis: Equivalent emissions calculations (lb/hr and ton/yr) are based on the maximum heat input rate of 323.6 ~~326.6~~ MMBtu/hr and 192,000 lb steam/hr [115 % rated capacity] per unit and 8760 hours of operation. ~~Nominal rated capacity of each boiler is 750 tons waste per day.~~ ~~Nominal heat input capacity is 281 MMBtu/hr.~~ Short-term capacity is limited by limiting steam production (192,000 lb steam/hr) which effectively limits heat input.

Averaging Times
SO_2: 24-hour daily block geometric mean (midnight to midnight)
NO_x: 24-hour daily block arithmetic mean (midnight to midnight)
CO: 4-hour block arithmetic mean beginning at midnight
Opacity: 6 minutes block arithmetic mean

Abbreviations
ug/dscm: Micrograms per dry standard cubic meter
mg/dscm: Milligrams per dry standard cubic meter
ppmdv: Part per million dry volume
ng/dscm: Nanograms per dry standard cubic meter
Dioxins/ furans: Total tetra through octa-chlorinated dibenzo-p dioxins and dibenzofurans
F: Fluorides as hydrogen fluoride

Temperature: 17° C above maximum demonstrated PM control device inlet

~~Visible Emissions: Opacity of stack emissions shall not be greater than 15% opacity. Excess opacity resulting from startup or shutdown shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess opacity shall be minimized but in no case exceed two hours in any 24-hour period unless specifically authorized by EPA for longer duration.~~

Emission standards apply at all times except during periods of startup/shutdown and malfunction as defined in 40 CFR 60.58b(a). Excess emissions which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure which may reasonably e be prevented during start-up or shutdown shall be prohibited.

a.(2) ~~Visible~~ *Fugitive Ash* Emissions *From Ash Conveying Systems*:

No owner or operator of this facility shall cause to be discharged to the atmosphere visible emissions of combustion ash from an ash conveying system (including conveyor transfer points) in excess of 5 % of the observation period (i.e., 9 minutes per 3-hour period) as determined by EPA Reference Method 22. The 5 percent visible ash emission limit does not cover visible ash emissions discharged inside a building or ash conveying systems, but the visible emission limit does cover visible emissions discharged to the atmosphere from buildings of enclosures of ash conveying systems.
[Rule 62-204.800(8), F.A.C., 40 CFR 60.36b; 60.55b and 62-4-070(3) F.A.C.]

~~The units are subject to 40 CFR 60 Subpart E, and Subpart Db, New Source Performance Standards (NSPS), except that where requirements in this permit are more restrictive, the requirements in this permit shall apply.~~

a. (3) Applicable Requirements:

These units are subject to all applicable requirements of 40 CFR 60 Subpart Cb, Emissions Control Guidelines and Compliance Schedules for Municipal Solid Waste Combustors, Subpart E, NSPS for Incinerators, Subpart Db NSPS for Industrial-Commercial-Institutional Steam Generating Units, 40CFR61 Subpart C, NESHAP for Beryllium and Rule 62-296.416 F.A.C., Waste-to-Energy Facilities, except that where requirements in this permit are more restrictive, the requirements in this permit shall apply.
[PSD-FL-112, 40CFR60 Subparts Cb, E, Db and 40CFR61 Subpart C]

~~There shall be no greater than 10% opacity for emissions from the refuse bunker and the ash handling and loadout. The potential for dust generation by ash handling activities will be mitigated by quenching the ash prior to loading in ash transport trucks. Additionally, all portions of the proposed facility including the ash handling facilities which have the potential for fugitive emissions shall be enclosed. Also, those areas which have to be open for operational purposes (e.g., tipping floor of the refuse bunker while trucks are entering and leaving) will be under negative air pressure.~~

a.(4) Ash Handling Facilities:
~~There shall be no greater than 5% opacity for emissions from the refuse bunker and the ash handling and loadout~~. The potential for dust generation by ash handling activities will be mitigated by quenching or conditioning the ash prior to loading in ash transport trucks. ~~The a~~ Ash handling facilities shall be enclosed *(including the proposed future metal recovery area)*. Unprocessed refuse storage areas which must be open for operational purposes (e.g., tipping floor of the refuse bunker while trucks are entering and leaving) will be under negative air pressure. Residue from the grates, and grate siftings shall be discharged into the bottom ash quenching system, and ash from the combustor/boiler and fabric filter hoppers shall be discharged into the fly ash conditioning system during normal operations ~~shall be discharged into the ash quenching system~~ to minimize visible dust generation. The ash/residue in the Ash Handling Building shall remain sufficiently moist to minimize ~~prevent~~ dust during storage and handling operations. Compliance with this condition shall be determined in accordance with Condition a.(2).
[Rule 62-204.800(8), F.A.C., 40 CFR 60.36b; 60.55b and 62-4-070(3) F.A.C.]

b. No change

c. ~~None of the three individual municipal waste incinerators shall be charged in excess of 323.6 mmBtu/hr and 863 tons per day MSW (115% rated capacity) nor produce 192,000 lb/hr steam (3-hr rolling average).~~

c.(1) Operating Rates:
The maximum individual MWC throughput shall not exceed 863 tons MSW per day (2589 tons per day entire facility) and 323.6 MMBtu per hour (115% rated capacity) nor produce in excess of ~~and~~ 192,000 pounds steam per hour ~~(115 % of the nominal design rate)~~ based on a 4-hour block arithmetic average. ~~The incinerators/boilers shall not be loaded in excess of their maximum operating capacity of 36 tons MSW per hour each, equivalent to 2589 tons MSW per day total, but no more than 2250 tons MSW per day on an annual (52 week rolling average) average basis for the entire facility.~~ ~~(Compliance per new Specific Conditions c.(2) listed below)~~
[Rule 62-204.800(8), F.A.C., 40 CFR 60.31b; 60.38b; 60.51b, and 60.58b(j)]
[PSD-FL-105/PA 85-21 and Rule 62-4.030(3), F.A.C.]

~~**New Specific Condition c.(2) Compliance with the Continuous Charging Rate:**~~
~~The daily solid waste charging rate and hours of operation shall be determined and recorded for each MWC unit. The daily charging rate shall be determined each month on an average daily~~

~~basis for each MWC unit using the Facility's truck scale weight data , refuse pit inventory, and MWC operating data for the preceding calendar month. Monthly truck scale weight records on the weight of solid waste received and processed at the Facility and refuse pit inventory shall be used to determine the amount of solid waste charged during the preceding calendar month on an average daily basis. The MWC load level measurements or other operating data shall be used to determined the number of operating hours per MWC unit for each day during the preceding calendar month. [Rule 62-204.800(8), F.A.C., and 40 CFR 60.53(a)]~~

New Specific Condition c.~~(3)~~(2) Load Level :
Unit load means the steam load of the municipal waste combustor (MWC) measured as specified in 40 CFR 60.58b(i)(6). Each MWC unit shall not operate at a load level greater than 110 percent of the unit's "maximum demonstrated unit load." The maximum demonstrated unit load is the highest 4-hour arithmetic averaged MWC unit load achieved during four consecutive hours during the most recent dioxin/furan performance stack test in which compliance with the dioxin/furan emission limit was achieved. Higher loads are allowed for testing purposes as specified at 40 CFR 60.53b(b). **[Rule 62-204.800(8), F.A.C., 40 CFR 60.31b; 60.38b; 60.51b; 60.53b(b); and 60.58b(i)(8)]**

New Specific Condition c.~~(4)~~ (3) Compliance With Load Level Requirements:
The owner or operator of an affected facility with steam generation capability shall install, calibrate, maintain, and operate a steam flow meter or a feedwater flow meter; measure steam (or feedwater) flow in kilograms per hour (or pounds per hour) on a continuous basis; and record the output of the monitor (in accordance with the ASME method described in 40 CFR 60.58b(i)(6). Steam (or feedwater) flow shall be calculated in 4-hour block arithmetic averages. Higher loads are allowed for testing purposes as specified at 40 CFR 60.53b(b). **[Rule 62-204.800(8), F.A.C., 40 CFR 60.31b; 60.38b; 60.51b; 60.53b(b); and 60.58b(i)(6)]**

d. Compliance Tests

(1) a. ~~No change.~~ ~~*This condition would be updated in the Title V permit for this facility.*~~ This condition is deleted: ~~Annual compliance tests for particulate matter, lead, SO , nitrogen oxides, CO, fluorides, mercury, and beryllium shall be conducted in accordance with 40 CFR 60.8 (a) (b), (d), (e), and (f).~~

b. ~~No change.~~ ~~*This condition would be updated in the Title V permit for this facility.*~~ This condition is deleted: ~~Compliance with the opacity standard for the incinerator stack emissions in condition 1.a. of this part shall be determined in accordance with 60.11(b) and (f).~~

c. This condition is deleted: ~~Compliance with the emission limitations for 65% control of total sulfur dioxide emissions shall be determined by using the test methods in condition 1.d.(2) and sampling for SO_2 emissions before and after the acid gas control device. Continuous emissions data shall also be used to demonstrate compliance with the SO_2 concentration limits in condition 1.a above.~~

(2) The following test methods and procedures for 40 CFR 60 and 61 shall be used for compliance testing:

a. Method 1 for selection of sample site and sample traverses

b. Method 2 for determining stack gas flow rate when converting concentrations to or from mass emission limits.

c. Method 3 for analysis for calculation of percent O_2 and CO_2.

d. Method 4 for determining stack gas moisture content to convert the flow rate from actual standard cubic feet to dry standard cubic feet for use in converting concentrations in dry gases to or from mass emission limits.

~~e. Method 5 for concentrations of particulate matter and associate moisture content. One sample shall continue one test run.~~

~~f. Method 9 for visible determination of the opacity of emissions.~~

~~g. Method 6 for concentration of SO_2. Two samples, taken at approximately 30 minute intervals, shall constitute one test run.~~

~~h. Method 7 for concentration of nitrogen oxides. Four samples, taken at approximately 15 minutes intervals, shall constitute one run.~~

~~i. Method 10 for determination of CO concentrations. One sample constitutes one run.~~

~~j. Method 12 for determination of lead concentration and associated moisture content. One sample constitutes one test run.~~

~~k. Method 13B for determination of mercury emission rate ans associated moisture content. One sample shall constitute one run.~~

~~l. Method 101A for determination of mercury emission rate and associated moisture content. Ons sample shall constitute one test run.~~

~~m. Method 104 for determination of beryllium emission rate and associated moisture content. One sample shall constitute one test run.~~

d.(2) Stack Tests and Stack Test Methods:

Initial compliance tests for each combustion unit shall be conducted within 60 days after achieving maximum boiler operating capacity, but not later than 180 days after startup of the Selective Non-Catalytic Reduction (SNCR) system. Compliance tests shall be performed according to 40 CFR 60.38b. Annual tests shall be conducted within one year after the initial tests, unless otherwise allowed by the Department. A test protocol shall be submitted for approval to the Department's Southeast District office (DEPSED) and the Broward County Department of Natural Resources Protection (BCDNRP)~~)~~ at least 45 days prior to initial testing.
[Rule 62-204.800(8), F.A.C. and Chapter 62-297, F.A.C.]

Method 5(1)	Determination of Particulate Matter Emissions (front half catch only) from Stationary Sources (I) and (A).
Method 9	Visual Determination of the Opacity of Emissions from Stationary Sources (I) and (A).
~~Method 13A or 13 B~~	~~Determination of Total Fluoride Emissions from Stationary Sources (I) and (A).~~
Method 23(2)	Determination of Dioxin/furan concentration from Stationary Sources (I) and (A).
Method 26(3) or 26A	Determination of HCl emissions (I) and (A).
Method 29(4)	Determination of Metals Emissions from Stationary Sources (I) and (A). Mercury emissions testing shall be conducted semiannually.

(1) Pursuant to 40 CFR 60.58b(c)(3) EPA Reference Method 5 shall be used for determining compliance with the particulate matter emission limit. The minimum sample volume shall be 1.7 cubic meters. The probe and filter holder heating systems in the sample train shall be set to provide a gas temperature no greater than 160 ± 14 °C. An oxygen or carbon dioxide measurement shall be obtained simultaneously with each Method 5 run.

(2) Dioxin/Furan emission limit expressed as the total mass of tetra- through octa chlorinated dibenzo-p-dioxins and dibenzofurans. The facility may perform less frequent testing for dioxin/furan emissions, as allowed by 40 CFR 60.38b(b) and with prior notice to the Department, if the emission unit's dioxin/furan emissions do not exceed 15 ug/dscm corrected to 7% O_2 or less.

(3) HCl stack tests upstream and downstream of the control device (s) shall be conducted to calculate percent control to demonstrate compliance with the alternate removal limit .

(4) Mercury stack tests shall be performed downstream of control devices or upstream and downstream of the control devices when determining compliance with the alternative removal requirement.

New Condition d.(3) Continuous Compliance with Emission Limits:
Continuous compliance with the emission limits for opacity, carbon monoxide (CO), nitrogen oxides (NOx), sulfur dioxide (SO_2) listed above and the operational parameters (including ~~but not limited to~~: ~~oxygen measurements~~, steam production [lb/hr, ~~pressure, and temperature~~] or feedwater flowrate [lb/hr], ~~device to measure temperature of flue gas at the~~ and fabric filter inlet flue gas temperature, ~~carbon injection system operating parameters, temperature of the combustion zone, slake lime utilization, power generation, etc~~.) shall be demonstrated by continuous emission monitoring systems (CEMS) operated in accordance with 40 CFR 60.58b and 60.59b(f). SO_2 monitors shall be located both upstream of the scrubber and downstream of the baghouse, in order to calculate percent removal efficiency. **[Rule 62-204.800(8), F.A.C. and 40 CFR 60.38 (40 CFR 60.58b) and 62-4.070 F.A.C.]**

2. This condition is deleted: ~~Compliance with emission limitations specified in lb/mmBtu in conditions 1.a and 1.c. of this part shall be determined by claculation an "F" factor in dscf/mmBtu corrected to 12% CO_2 using the boilers' efficiency (as determined by the calorimeter method contained in Attachment A during acceptance testing) and measured steam production. Data obtained from test methods required in condition 1.d. of this part for compliance testing shall be used for the calculation of the "F" factor required by this condition.~~
3. This condition is deleted: ~~Devices shall be installed to continuously monitor and record steam production. These devices shall be adequately maintained and operating during all periods of steam production~~.
4. No change.
5. No change.
6. This condition is deleted: ~~The permittee must submit to EPA and DER, within fifteen (15) days after it becomes available to the County, copies of the technical data pertaining to the incinerator boiler design, acid gas control equipment design, particulate control equipment design, and the fuel mix that will be used to evaluate compliance of the facility with the preceeding emission limitations~~.

SPECIFIC CONDITION 7.

Fuel

~~The Resource Recovery Facility shall utilize refuse such as garbage and trash (as defined in Chapter 17-7, FAC) but not grease, scum, grit, screenings or sewage sludge.~~

7. The primary fuel for this facility is municipal solid waste (MSW), including the items and materials that fit within the definition of MSW contained in either 40CFR60.51b or Section 403.706 (5), F.A.C., Florida Statutes (1998).

7.a Subject to the limitations contained in this permit, the authorized fuels for the facility also include the other solid wastes that are not MSW which are described below. However, the facility shall not burn:

(1) those materials that are prohibited by state or federal law;
(2) those materials that are prohibited by this permit;
(3) those materials that are not authorized by this permit;
(4) lead acid batteries;
(5) hazardous waste;
(6) nuclear waste;
(8) radioactive waste;
(9) sewage sludge;
(10) explosives; and
(11) asbestos containing materials.

7.b The fuel may be received either as a mixture or as a single-item stream (segregated load) of discarded materials. If the facility intends to use an authorized fuel that is segregated non-MSW material, the fuel shall be either:

(1) well mixed with MSW in the refuse pit; or
(2) alternately charged with MSW in the hopper.

7.c. The facility owner/operator shall prepare and maintain records concerning the description and quantities of all segregated loads of non-MSW material which are received and used as fuel at the facility, and subject to a percentage weight limitation, below (7.g and 7.h.). For the purposes of this permit, a segregated load is defined to mean a container or truck that is almost completely or exclusively filled with a single item or homogenous composition of waste material, as determined by visual inspection.

7.d. To ensure that the facility's fuel does not adversely affect the facility's combustion process or emissions, the facility operator shall:

(1) comply with good combustion operating practices in accordance with 40 CFR 60.53b;
(2) install, operate and maintain continuous emissions monitors (CEMS) for oxygen, carbon monoxide, sulfur dioxide, oxides of nitrogen and *particulate control device inlet* temperature in accordance with 40 CFR 60.58b; and
(3) record and maintain the CEMS data in accordance with 40 CFR 60.59b.

These steps shall be used to ensure and verify continuous compliance with the emissions limitations in this permit.

Natural gas may be used as fuel during warm-up, startup, shutdown, and malfunction periods, and at other times when necessary and consistent with good combustion practices.

7.f. Subject to the conditions and limitations contained in this permit, the following other solid waste may be used as fuel at the facility:

(1) Confidential, proprietary or special documents (including but not limited to business records, lottery tickets, event tickets, coupons, *credit cards, magnetic tape* and microfilm);
(2) Contraband which is being destroyed at the request of appropriately authorized local, state or federal governmental agencies, provided that such material is not an explosive, a propellant, a hazardous waste, or otherwise prohibited at the facility. For the purposes of this section, contraband includes but is not limited to drugs, narcotics, fruits, vegetables, plants, counterfeit money, and counterfeit consumer goods;
(3) Wood pallets, clean wood, and land clearing debris and combustible construction and demolition debris.
(4) Packaging materials and containers;
(5) Clothing, natural and synthetic fibers, fabric remnants, and similar debris, including but not limited to aprons and gloves; ~~or~~ and
(6) Rugs, carpets, and floor coverings ~~, but not asbestos-containing materials or polyethylene or polyurethane vinyl floor coverings~~.

7.g. Subject to the conditions and limitations contained in this permit waste tires may be used as fuel at the facility. The total quantity of waste tires received as segregated loads and burned at the facility shall not exceed 3%, by weight, of the facility's total fuel. Compliance with this limitation shall be determined by using a rolling 30 day average in accordance with specific condition No. 7.i. below.

7.h. Subject to the conditions and limitations contained in this permit, the following other solid waste materials may be used as fuel at the facility (i.e. the following are authorized fuels that are non-MSW material). The total quantity of the following non-MSW material received as segregated loads and burned at the facility shall not exceed 5%, by weight, of the facility's total fuel. Compliance with this limitation shall be determined by using a rolling 30 day average in accordance with specific condition No. 7.i. below.

(1) Non-Combustible Construction and demolition debris.
(2) Oil spill debris from aquatic, coastal, estuarine or river environments. Such items or materials include but are not limited to rags, wipes, and absorbents.
(3) Items suitable for human, plant or domesticated animal use, consumption or application where the item's shelf-life has expired or the generator wishes to remove the items from the market. Such items or materials include but are not limited to off-specification or expired consumer products, pharmaceuticals, medications, health and personal care products, cosmetics, foodstuffs, nutritional supplements, returned goods, and controlled substances.
(4) Consumer-packaged products intended for human or domesticated animal use or application but not consumption. Such items or materials include but are not limited to carpet cleaners, household or bathroom cleaners, polishes, waxes and detergents.
(5) Waste materials that:

(i) are generated in the manufacture of items in categories (c) or (d), above and are functionally or commercially useless (expired, rejected or spent); or
(ii) are not yet formed or packaged for commercial distribution. Such items or materials must be substantially similar to other items or materials routinely found in MSW.

(f) Waste materials that contain oil from:
(i) the routine cleanup of industrial or commercial establishments and machinery; or
(ii) spills of virgin or used petroleum products. Such items or materials include but are not limited to rags, wipes, and absorbents.

(6) Used oil and used oil filters. Used oil containing a PCB concentration equal or greater than 50 ppm shall not be burned, pursuant to the limitations of 40 CFR 761.20(e).

(7) Waste materials generated by manufacturing, industrial or agricultural activities, provided that these items or materials are substantially similar to items or materials that are found routinely in MSW, subject to prior approval of the Department.

7.i. Segregated Solid Waste Record Keeping:

The following records shall be made and kept to demonstrate compliance with the segregated non-MSW percentage limitations of specific condition 7.

Each segregated load of non-MSW materials, that is subject to the percentage weight limitation of specific conditions 7.g. and 7.h., which is received for processing shall be documented as to waste description and weight. The weight of all waste materials received for processing shall be measured using the facility truck scale and recorded.

Each day the total weight of segregated tires received shall be computed, and the daily total shall be added to the sum of the daily totals from the previous 29 days. The resultant 30 day total weight of tires shall be divided by the total weight of all waste materials received in the same 30 day period, and the resultant number shall be multiplied by 100 to express the ratio in percentage terms. The percentage computed shall be compared to the 3% limitation.

Each day the total weight of segregated non-MSW materials received that are subject to the 5% restriction shall be computed, and the daily total shall be added to the sum of the daily totals from the previous 29 days. The resultant 30 day total weight of segregated non-MSW materials shall be divided by the total weight of all waste materials received in the same 30 day period, and the resultant number shall be multiplied by 100 to express the ratio in percentage terms. The percentage computed shall be compared to the 5% limitation.

8. No Change.

9. Continuous Emission Monitoring

a. No Change.

(1) Continuous emission monitoring (CEM systems to measure stack gas opacity and SO_2, NO_x, CO, ~~CO_2~~, and O_2 concentrations for each unit. No change in remainder of condition.

(2) and (3). No change.

b. No change.

c. No change.

10. Reporting

a. A copy of the results of the compliance tests shall be submitted within forty-five days of testing to the DEP Bureau of Air Regulation, the DEP Southeast District Office and Broward County ~~and EPA Region IV~~.

PSD AND CONDITIONS of CERTIFICATION:

FROM: ~~The temperature of flue gases exiting the acid gas control equipment shall not exceed 300°F.~~

TO: *11* ~~12~~. Compliance with the PM Control Device Temperature:
Each MWC unit is required to continuously monitor and record the flue gas temperature at the inlet to the PM control device in accordance with the requirements at 40 CFR 60.58b(i)(7). The PM control device temperature shall be calculated in 4-hour block arithmetic averages. Each MWC unit shall be allowed to operate up to 17°C (30° F) above the unit's maximum demonstrated PM control device temperature. The maximum demonstrated PM control device temperature is the highest 4-hour arithmetic block-averaged measurement of temperature at the inlet to the PM control device recorded for 4 consecutive hours during the most recent dioxin/furan performance test which complied with the limits given above. The PM control device inlet temperature and the steam (or feedwater) flow for each unit during the stack test shall be continuously monitored and recorded in accordance with 40 CFR 60, Subpart Cb. Higher temperatures are allowed for testing purposes, as specified at 40 CFR 60.53b(c). **[Rule 62-204.800(8), F.A.C. and 40 CFR 60.38b, 40 CFR 60.53b(c) and 60.58b(i)(7) and (9)]**

FROM: ~~The temperature of the flue gas exiting the final combustion chamber of the incinerator shall not be less than 1800°F.~~
TO: This condition is deleted from the Conditions of Certification. The rationale is explained in the Technical Evaluation and Preliminary Determination dated May 20, 1999. A new specific condition, as stated below, will use this c(2) numeration in the Conditions of Certification.

NEW SPECIFIC CONDITIONS 12, and 13, ~~and 14 and 15~~

12. METAL RECOVERY FACILITY
The metal recovery area will be enclosed in a building adjacent to the existing ash loadout area. All bottom ash is currently quenched with water after leaving each boiler. The resulting bottom ash will be about 20 to 30 percent moisture and will not generate fugitive dust.

~~13. ELECTRIC UTILITY STEAM GENERATING UNIT ACTUAL EMISSIONS~~
~~The permittee shall provide the Department within the period not longer than 10 years following the change, information demonstrating that the physical or operational change did not result in a "representative actual annual emissions" increase in accordance with Rule 62-210.200 (12)(d), F.A.C., and Rule 62-212.400, F.A.C.~~
~~[40 CFR 52.21(b)(33), Rule 62-4.070 (3), Rule 62-212.400, and Rule 62-210.200, F.A.C.]~~

13 ~~14~~. SCHEDULE OF COMPLIANCE

The compliance schedule for each unit is provided below.

Increment 1: 2 months after EPA approval of the Florida State Plan
Increment 2: 8 months after EPA approval of the Florida State Plan
Increment 3: 24 months after EPA approval of the Florida State Plan
Increment 4: 34 months after EPA approval of the Florida State Plan
Increment 5: 36 months after EPA approval of the Florida State Plan or by December 19, 2000

The five increments of progress are:
Increment 1: Submittal of a final control plan for the designated facility to the appropriate air pollution control agency.
Increment 2: Awarding of contracts for emission control system or for process modification, or issuance of orders for the purchase of components parts to accomplish emission control or process modification.
Increment 3: Initiation of on-site construction or installation of emission control equipment or process change.
Increment 4: Completion of on-site construction or installation of emission control equipment or process change.
Increment 5: Final compliance.

~~15. DETERMINATION OF PROCESS VARIABLES~~
~~Any other operating parameters (including but not limited to control equipment operating parameters) established during compliance testing and/or inspection that will confirm the proper operation of each emission unit shall be included in the operating permit [Rule 62-297.310 (5), F.A.C. and 62-4.070(3), F.A.C.]~~

A copy of this letter shall be filed with the PSD-FL-105 permit and shall become part of the permit.

Golder Associates Inc.

6241 NW 23rd Street, Suite 500
Gainesville, FL 32653-1500
Telephone (352) 336-5600
Fax (352) 336-6603

Golder Associates

June 2, 1999

9837542-0100

Mr. David B. Struhs, Secretary
c/o Office of General Council
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RE: Request for Extension to File for Administrative Hearing
Wheelabrator South Broward, Inc. FDEP File No. PSD-FL-105(B)
Wheelabrator North Broward, Inc. FDEP File No. PSD-FL-112(B)

Dear Secretary Struhs:

On May 24, 1999, Wheelabrator South Broward Inc. and Wheelabrator North Broward, Inc. (Wheelabrator) received the Department's Notice of Intent to amend Prevention of Significant Deterioration (PSD) permits for the facilities. The amendments were for pollution control projects to meet the new source performance standards (NSPS) codified in 40 Code of Federal Regulations (CFR) Part 60 Subpart Cb. These NSPS apply to municipal waste combustors (MWCs) constructed on or before December 19, 1995. The permits also involve the installation of metal recovery equipment and clarification of the input material to the MWCs. Pursuant to the Intent to Issue, Wheelabrator has until June 7, 1999 to file a petition for administrative proceedings regarding the permits.

On behalf of Wheelabrator, requests for extensions to file petitions for administrative proceedings are attached. The extensions will allow discussions of the draft permits with the Bureau of Air Regulation with the intent to clarify several conditions that are important to the operation of these resource recovery facilities.

Sincerely,

GOLDER ASSOCIATES INC.

Kennard F. Kosky, P.E.
Principal

cc: Rick Mulhorn, Wheelabrator
William Roberts, Wheelabrator
Mark Santella, Wheelabrator
Chuck Faller, Wheelabrator
Timothy Porter, Wheelabrator
Teresa Heron, FDEP Bureau of Air Regulation
A. A. Linero, P.E., FDEP Bureau of Air Regulation

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STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

PETITION FOR ADDITIONAL TIME IN WHICH TO FILE
A PETITION FOR ADMINISTRATIVE HEARING
UNDER SECTIONS 120.569 and 120.57, FLORIDA STATUES

Applicant: Wheelabrator South Broward, Inc.

DEP File No.: PSD-FL-105(B)
Intent to Issue Permit Amendment for 40 CFR Part 60 Subpart Cb

The undersigned has read Sections 120.569 and 120.57, Florida Statutes (F.S.), and fully understands the applicant's rights under those sections.

With regard to the above referenced draft permit, the applicant hereby requests an extension of time in which to file a petition for an administrative hearing. The applicant has received the draft permit from the Florida Department of Environmental Regulation (FDEP) Bureau of Air Regulation, but needs additional time in which to review the specific and general permit conditions. Based on our review of the draft permit, a request to revise certain conditions will be made to the Bureau of Air Regulation. The draft permit contains additional specific conditions involving changes in various requirements and performance testing which must be discussed and clarified with the Department. To allow for this process, and protect the right of the applicant to file for an administrative hearing if so desired, this request for additional time is being made. This extension request has been discussed with the permitting engineer for Bureau of Air Regulation, Ms. Teresa Heron and she does not object to the granting the extension. Granting the request will still allow rights to parties an opportunity to discuss the pertinent permit provisions and to achieve a mutually acceptable resolution of points in need of clarification or correction, without the initiation of formal administrative proceedings. This request is made freely and voluntarily by the applicant, is in its self-interest, and is made without any pressure or coercion by anyone employed by the State of Florida Department of Environmental Protection.

This request for extension of time shall expire on July 31, 1999.

The undersigned is authorized to make this request on behalf of the applicant.

Kennard F. Kosky 6/2/99
Signature/Date

Kennard F. Kosky, P.E., Principal, Golder Associates Inc.
Name/Title (please print)

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

PETITION FOR ADDITIONAL TIME IN WHICH TO FILE
A PETITION FOR ADMINISTRATIVE HEARING
UNDER SECTIONS 120.569 and 120.57, FLORIDA STATUES

Applicant: Wheelabrator North Broward, Inc.

DEP File No.: PSD-FL-112(B)
Intent to Issue Permit Amendment for 40 CFR Part 60 Subpart Cb

The undersigned has read Sections 120.569 and 120.57, Florida Statutes (F.S.), and fully understands the applicant's rights under those sections.

With regard to the above referenced draft permit, the applicant hereby requests an extension of time in which to file a petition for an administrative hearing. The applicant has received the draft permit from the Florida Department of Environmental Regulation (FDEP) Bureau of Air Regulation, but needs additional time in which to review the specific and general permit conditions. Based on our review of the draft permit, a request to revise certain conditions will be made to the Bureau of Air Regulation. The draft permit contains additional specific conditions involving changes in various requirements and performance testing which must be discussed and clarified with the Department. To allow for this process, and protect the right of the applicant to file for an administrative hearing if so desired, this request for additional time is being made. This extension request has been discussed with the permitting engineer for Bureau of Air Regulation, Ms. Teresa Heron and she does not object to the granting the extension. Granting the request will still allow rights to parties an opportunity to discuss the pertinent permit provisions and to achieve a mutually acceptable resolution of points in need of clarification or correction, without the initiation of formal administrative proceedings. This request is made freely and voluntarily by the applicant, is in its self-interest, and is made without any pressure or coercion by anyone employed by the State of Florida Department of Environmental Protection.

This request for extension of time shall expire on July 31, 1999.

The undersigned is authorized to make this request on behalf of the applicant.

Kennard F. Kosky 6/2/99
Signature/Date

Kennard F. Kosky, P.E., Principal, Golder Associates Inc.
Name/Title (please print)

Golder Associates Fax

To: Teresa Heron **Fax Number:** 850-922-6979

Company: FDEP—Air **Date:** June 2, 1999

From: Ken Kosky **e-mail:** @golder.com

Our ref: **Voice Mail:**

RE: 9837542-0100

Total pages (including cover): 4 **Hard copy to follow** ☐

MESSAGE

Golder Associates

6241 NW 23rd St., Suite 500
Gainesville, FL 32653
U.S.A.
Telephone: (352) 336-5600
Fax: (352) 336-6603

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Department of
Environmental Protection

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Jeb Bush
Governor

David B. Struhs
Secretary

May 20, 1999

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Thomas D. Kirk
Plant Manager
Wheelabrator North Broward, Inc.
2600 N. W. 48th Street
Pompano Beach, Florida 33073

Re: DEP File No. PSD-FL-112(B)
Metals Recovery and Pollution Control Project

Dear Mr. Kirk:

Enclosed is one copy of the Draft Modification to the Permit for the Prevention of Significant Deterioration of Air Quality (PSD Permit) for the Wheelabrator North Broward Recource Recovery Facility located at 2600 N. W. 48th Street, Pompano Beach, Broward County, Florida 33073. The Technical Evaluation and Preliminary Determination, the Department's Intent to Issue and the Public Notice of Intent to Issue PSD Permit Modification are also included.

The Public Notice of Intent to Issue PSD Permit Modification must be published one time only, as soon as possible, in the legal advertisement section of a newspaper of general circulation in the area affected, pursuant to the requirements Chapter 50, Florida Statutes. Proof of publication, i.e., newspaper affidavit, must be provided to the Department's Bureau of Air Regulation office within seven days of publication. Failure to publish the notice and provide proof of publication may result in the denial of the permit.

Please submit any written comments you wish to have considered concerning the Department's proposed action to A. A. Linero, P.E., Administrator, New Source Review Section at the above letterhead address. If you have any other questions, please contact Ms. Teresa Heron at 850/921-9529 or Mr. Linero at 850/921-9523.

Sincerely,

C. H. Fancy, P.E., Chief,
Bureau of Air Regulation

CHF/th

Enclosures

PUBLIC NOTICE OF INTENT TO ISSUE PSD PERMIT MODIFICATION

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

DEP File No. PSD-FL-112(B)
Wheelabrator North Broward, Inc.
Broward County

The Department of Environmental Protection (Department) gives notice of its intent to issue a PSD Permit Modification to Wheelabrator North Broward. Inc to: improve the air pollution control system; specify which materials can be burned; install a metals recovery facility; and make a number of monitoring changes at its resource recovery facility. A Best Available Control Technology determination was not required pursuant to Rule 62-212.400, F.A.C. and 40 CFR 52.21, Prevention of Significant Deterioration (PSD). The applicant's name and address are Wheelabrator North Broward, Inc. 2600 N. W. 48th Street Pompano Beach, Florida 33073

The purpose of the air pollution control project is to comply with 40 CFR 60, Subpart Cb - Emission Guideline and Compliance Times for Municipal Waste Combustors That Are Constructed on or Before December 19, 1995. The Emission Guideline was developed pursuant to Section 129 (Solid Waste Combustion) of the Clean Air Act as amended in 1990. These requirements are incorporated in Department Rule 62-204.800(8), F.A.C.

The facility consists of three nominal 747 ton per day (TPD) mass burn furnaces, waterwall boilers, ash discharge systems, air pollution control equipment, and a steam turbine with a 68 megawatt electrical generator. The existing air pollution control system for each unit consists of spray dryer absorbers and fabric filters. The system will be improved by installation of a selective non-catalytic reduction system for the control of nitrogen oxides and by incorporation of combustion controls to minimize formation of dioxins and furans, volatile organic compounds, and carbon monoxide.

The original PSD permit contained permit limits in accordance with the existing regulations in 1987. Specific limits, in compliance with current Subpart Cb, and testing requirements are proposed for all previously mentioned pollutants. Continuous emission monitors will be installed for sulfur dioxide, nitrogen oxides, oxygen, carbon monoxide, and temperature at key points.

The units were originally permitted to utilize "refuse such as garbage and trash" as defined in the Department's solid waste rules. The modified permit will specify the wastes as: solid waste including municipal solid waste (MSW) as defined at 40 CFR 60.51b and Section 403.706(5), F.S.; segregated wastes such as records and documents, non-hazardous contraband, clean wood and land clearing debris, packaging materials, clothing and fabric remnants and certain types of floor covering; segregated waste tires (not to exceed 3 percent of the total wastes received); other segregated wastes (not to exceed 5 percent of the total wastes received) such as construction and demolition debris, oil spill debris, expired or off-spec packaged or unpackaged consumable goods (e.g. pharmaceuticals), consumer products, waste materials containing oil, used oil and filters and certain other wastes similar to MSW. The precise nature of the wastes is detailed in the draft permit package. By limiting the amount of segregated materials combusted at the facility, the Department has reasonable assurance that the overall composition of the wastes burned will be within the typical characteristics of MSW in terms of heating value, moisture, ash, and emissions characteristics.

Additional requested revisions to the permit are to replace the 300 degree F temperature limit at the acid control device (fabric filter outlet) with the Subpart Cb particulate control device inlet temperature and to eliminate the furnace temperature requirements by incorporation of the good combustion practices specified in Subpart Cb. Wheelabrator is also planning to install equipment and facilities to expand the removal of recoverable metals from the botton ash generated by the facility.

The Department will issue the FINAL Permit Modification, in accordance with the conditions of the DRAFT Permit Modification unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments concerning the proposed DRAFT Permit Modification issuance action for a period of 30 (thirty) days from the date of publication of this Notice. Any written comments should be provided to the Department's Bureau of Air Regulation, 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in this DRAFT Permit Modification, the Department shall issue a Revised DRAFT Permit Modification and require, if applicable, another Public Notice.

The Department will issue FINAL Permit Modification with the conditions of the DRAFT Permit Modification unless a timely petition for an administrative hearing is filed pursuant to Sections 120.569 and 120.57 F.S. The procedures for petitioning for a hearing are set forth below. Mediation is not available for this action.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative hearing in accordance with Sections 120.569 and 120.57 F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000, telephone: 850/488-9370, fax: 850/487-4938. Petitions must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. A petitioner must mail a copy of the petition to the applicant at the address indicated above, at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57 F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-5.207 of the Florida Administrative Code.

A petition must contain the following information: (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Permit File Number and the county in which the project is proposed; (b) A statement of how and when each petitioner received notice of the Department's action or proposed action; (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action; (d) A statement of the material facts disputed by petitioner, if any; (e) A statement of the facts that the petitioner contends warrant reversal or modification of the Department's action or proposed action; (f) A statement identifying the rules or statutes that the petitioner contends require reversal or modification of the Department's action or proposed action; and (g) A statement of the relief sought by the petitioner, stating precisely the action that the petitioner wants the Department to take with respect to the Department's action or proposed action addressed in this notice of intent.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice of intent. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

A complete project file is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Department of Environmental Protection Bureau of Air Regulation 111 S. Magnolia Drive, Suite 4 Tallahassee, Florida, 32301 Telephone: 850/488-0114 Fax: 850/922-6979	Department of Environmental Protection Southeast District Office 400 North Congress Avenue West Palm Beach, Florida 33416-5425 Telephone: (561) 681-6600 Fax: : (561) 681-6755	Broward County Department of Natural Resource Protection Air Quality Division 218 Southwest First Avenue Ft. Lauderdale, Florida 33301 Telephone: (954) 519-1220 Fax: : (954) 519-1495

The complete project file includes the Draft Permit Modification, the application, and the information submitted by the responsible official, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the Administrator, New Resource Review Section at 111 South Magnolia Drive, Suite 4, Tallahassee, Florida 32301, or call 850/488-0114, for additional information.

In the Matter of an
Application for Permit Modification by:

Wheelabrator North Broward, Inc.
2600 N. W. 48th Street
Pompano Beach, Florida 33073

DEP File No. PSD-FL-112(B)
Metals Recovery and Pollution Control Project
Broward County

INTENT TO ISSUE PSD PERMIT MODIFICATION

The Department of Environmental Protection (Department) gives notice of its intent to issue a PSD Permit Modification (copy of DRAFT Permit Modification attached) for the proposed project, as detailed in the application specified above, for the reasons stated below.

The applicant, Wheelabrator North Broward, Inc., applied on December 17, 1998, to the Department for a PSD Permit Modification for its North Broward Resource Recovery Facility located at 2600 N. W. 48th Street, Pompano Beach, Broward County. Wheelabrator North Broward, Inc. requested to revise the existing PSD permit for clarification of the permitted fuels allowed to be combusted at the North Broward Resource Recovery Facility, and to install a selective non-catalytic reduction system for NOx control. Additional requested revisions to the permit are to replace the 300 ^{0}F temperature limit at the acid control device (fabric filter outlet) with the Subpart Cb particulate control device inlet temperature and to eliminate the furnace temperature requirements by incorporation of the good combustion practices (GCP) specified in Subpart Cb. Wheelabrator is also planning to install equipment and facilities to expand the removal of recoverable metals from the botton ash generated by the facility.

The Department has permitting jurisdiction under the provisions of Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, and 62-212. The above actions are not exempt from permitting procedures. The Department has determined that a PSD Permit Modification is required to include the fuels requested by the facility.

The Department intends to issue this PSD Permit Modification based on the belief that reasonable assurances have been provided to indicate that operation of these emission units will not adversely impact air quality, and the emission units will comply with all appropriate provisions of Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297, F.A.C.

Pursuant to Section 403.815, F.S., and Rule 62-110.106(7)(a)1., F.A.C., you (the applicant) are required to publish at your own expense the enclosed "PUBLIC NOTICE OF INTENT TO ISSUE PSD PERMIT MODIFICATION". The notice shall be published one time only in the legal advertisement section of a newspaper of general circulation in the area affected. Rule 62-110.106(7)(b), F.A.C., requires that the applicant cause the notice to be published as soon as possible after notification by the Department of its intended action. For the purpose of these rules, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S., in the county where the activity is to take place. If you are uncertain that a newspaper meets these requirements, please contact the Department at the address or telephone number listed below. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation, at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400 (Telephone: 850/488-0114; Fax 850/ 922-6979). You must provide proof of publication within seven days of publication, pursuant to Rule 62-110.106(5), F.A.C. No permitting action for which published notice is required shall be granted until proof of publication of notice is made by furnishing a uniform affidavit in substantially the form prescribed in section 50.051, F.S. to the office of the Department issuing the permit. Failure to publish the notice and provide proof of publication may result in the denial of the permit pursuant to Rules 62-110.106(9) & (11), F.A.C.

The Department will issue the FINAL Permit Modification, in accordance with the conditions of the enclosed DRAFT Permit Modification unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments concerning the proposed DRAFT Permit Modification issuance action for a period of 30 (thirty) days from the date of publication of "PUBLIC NOTICE OF INTENT TO ISSUE PSD PERMIT MODIFICATION." Any written comments should be provided to the Department's Bureau of Air Regulation, 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in this DRAFT Permit Modification, the Department shall issue a Revised DRAFT Permit Modification and require, if applicable, another Public Notice.

The Department will issue the Permit Modification with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to Sections 120.569 and 120.57 F.S. The procedures for petitioning for a hearing are set forth below. Mediation is not available for this action

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative hearing in accordance with Sections 120.569 and 120.57 F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000, telephone: 850/488-9730, fax: 850/487-4938. Petitions must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. A petitioner must mail a copy of the petition to the applicant at the address indicated above, at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57 F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-5.207 of the Florida Administrative Code.

A petition must contain the following information: (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Permit File Number and the county in which the project is proposed; (b) A statement of how and when each petitioner received notice of the Department's action or proposed action; (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action; (d) A statement of the material facts disputed by petitioner, if any; (e) A statement of the facts that the petitioner contends warrant reversal or modification of the Department's action or proposed action; (f) A statement identifying the rules or statutes that the petitioner contends require reversal or modification of the Department's action or proposed action; and (g) A statement of the relief sought by the petitioner, stating precisely the action that the petitioner wants the Department to take with respect to the action or proposed action addressed in this notice of intent.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice of intent. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

In addition to the above, a person subject to regulation has a right to apply for a variance from or waiver of the requirements of particular rules, on certain conditions, under Section 120.542 F.S. The relief provided by this state statute applies only to state rules, not statutes, and not to any federal regulatory requirements. Applying for a variance or waiver does not substitute or extend the time for filing a petition for an administrative hearing or exercising any other right that a person may have in relation to the action proposed in this notice of intent.

The application for a variance or waiver is made by filing a petition with the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. The petition must specify the following information: (a) The name, address, and telephone number of the petitioner; (b) The name, address, and telephone number of the attorney or qualified representative of the petitioner, if any; (c) Each rule or portion of a rule from which a variance or waiver is requested; (d) The citation to the statute underlying (implemented by) the rule identified in (c) above; (e) The type of action requested; (f) The specific facts that would justify a variance or waiver for the petitioner; (g) The reason why the variance or waiver would serve the purposes of the underlying statute (implemented by the rule); and (h) A statement whether the variance or waiver is

permanent or temporary and, if temporary, a statement of the dates showing the duration of the variance or waiver requested.

The Department will grant a variance or waiver when the petition demonstrates both that the application of the rule would create a substantial hardship or violate principles of fairness, as each of those terms is defined in Section 120.542(2) F.S., and that the purpose of the underlying statute will be or has been achieved by other means by the petitioner.

Persons subject to regulation pursuant to any federally delegated or approved air program should be aware that Florida is specifically not authorized to issue variances or waivers from any requirements of any such federally delegated or approved program. The requirements of the program remain fully enforceable by the Administrator of the EPA and by any person under the Clean Air Act unless and until the Administrator separately approves any variance or waiver in accordance with the procedures of the federal program.

Executed in Tallahassee, Florida.

C. H. Fancy, P.E., Chief
Bureau of Air Regulation

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this INTENT TO ISSUE PSD PERMIT MODIFICATION (including the PUBLIC NOTICE, TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION and DRAFT Permit Modification) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 5-21-99 to the person(s) listed:

Thomas D. Kirk, Plant Manager, Wheelabrator North Broward, Inc. *
Ken Kosky, P.E
Gregg Worley, EPA
Isidore Goldman, P.E, FDEP SED
Daniela Banu, Director, BCDNRP
Buck Oven, P.E, DEP/PPSC

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to §120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Kyri Ibber 5-21-99
(Clerk) (Date)

TECHNICAL EVALUATION

AND

PRELIMINARY DETERMINATION

North Broward Resource Recovery Facility

Wheelabrator North Broward, Inc.
Pompano Beach, Florida
Broward, County

DEP FILES: PSD-FL-112(B) and PA 86-22

Facility ID No.: 0112120

Department of Environmental Protection
Division of Air Resources Management
Bureau of Air Regulation

May 20, 1999

1.0 APPLICATION INFORMATION

1.1 Applicant Name and Address

Wheelabrator North Broward, Inc.
2600 N. W. 48th Street
Pompano Beach, Florida 33073

Authorized Representative
Mr. Thomas D. Kirk, Plant Manager

1.2 Reviewing and Process Schedule

12-07-99:	Date of Receipt of Application
04-12-99:	Application deemed complete, FDEP Bureau of Air Quality Regulation
05-20-99:	Issued Intent

2. FACILITY INFORMATION

2.1 Facility Location

The Wheelabrator North Broward, Inc. facility is located at 2700 Hilton Road (N. W. 48th Street), Pompano Beach, Broward County. The UTM coordinates of this facility are Zone 17 ; 583.5 km E ; 2,907.5 km N.

2.2 Standard Industrial Classification Code (SIC)

Major Group No.	49	Electric, Gas, and Sanitary Services
Group No.	495	Sanitary Services
Industry No.	4953	Refuse Systems

2.3 Facility Category

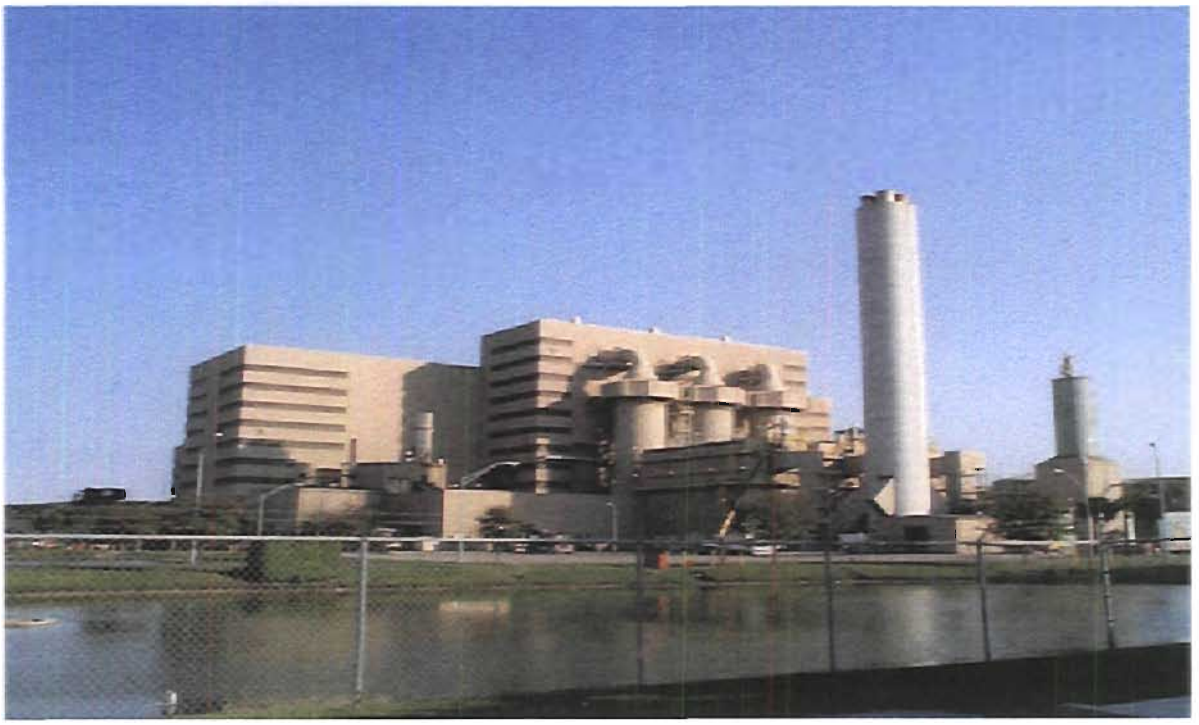
This facility produces electricity by combusting solid waste, recovering the heat as steam, and expanding the steam in an electrical generator. The solid waste burned is typically characterized as "refuse such as garbage and trash" or as municipal solid waste (MSW) Each of the three incinerators at the facility is permitted to combust up to 806.6 tons per day (108% of rated capacity) of municipal solid waste (MSW). Certain segregated wastes consisting of materials typically found in MSW are mixed into the waste while maintaining the overall characteristics of the waste within the typical ranges of heat and moisture content as well as emission characteristics. The electricity produced is sold to the local utility. The generator name plate rating is 67.6 MW for the facility.

The facility is classified as a major, or Title V, source of air pollution because emissions of at least one regulated air pollutant exceed 100 tons per year. Air pollutant emissions are over 100 TPY for sulfur dioxide (SO_2), nitrogen oxides (NO_x) and carbon monoxide (CO). It is also a major source because emissions of hazardous air pollutants exceed 10 tons per year individually or 25 tons per year in the aggregate.

This facility is on the list of the 28 Major Facility Categories, Table 62-212.400-1, F.A.C. Because emissions are greater than 100 tons per year for at least one criteria pollutant, the facility is also a major facility with respect to Rule 62-212.400, F.A.C., Prevention of Significant Deterioration (PSD).

The facility was issued a PSD permit, including a determination of Best Available Control Technology (BACT), by the United States Environmental Protection Agency (EPA) on June 26, 1987. This PSD permit was later modified on February 9, 1989.

The Wheelabrator North Broward Resource Recovery Facility photograph follows:



3. PROJECT DESCRIPTION

3.1 This permit addresses the following emissions units:

Emission Unit No.	System	Emission Unit Description
-001	Unit #1	806.6 Tons per Day (maximum) MSW Incinerator
-002	Unit #2	806.6 Tons per Day (maximum) MSW Incinerator
-003	Unit #3	806.6 Tons per Day (maximum) MSW Incinerator

On December 7, 1998, Wheelabrator North Broward, Inc requested a revision to their existing PSD permit for clarification of the permitted fuels allowed to be combusted at the North Broward Resource Recovery Facility. The permit currently allows for the combustion of "refuse such as garbage and trash (as defined in Chapter 17-7, FAC) but not grease, scum, grit screenings or sewage sludge." Although the applicant states that in the site certification application, the waste was identified as " all forms of garbage, commercial waste, rubbish, leaves and brush, paper and cardboard, plastics, wood and lumber, rags, carpeting, a limited amount of tires, wood furniture, mattresses, stumps, wood pallets, timber, tree limbs, ties, and logs, not separated and recycled at the source of generation, and minor amounts of pathological and biological wastes", the PSD permit and the PPSC document as written did not specified all these wastes. This permitting action will explicitly specify which materials can be burned.

In addition to the above request, Wheelebrator is also requesting:

- The addition of a Metal Recovery Facility
- The addition of Selective Non-Catalytic Reduction (SNCR) required to meet 40 Code of federal regulations (CFR) Part 60, Subpart Cb as adopted by reference in Rule 62-204(7)(b) Florida Administrative Code (F.A.C)
- A new permit condition for the fabric filter temperature in accordance with Cb Emission Guideline Requirements
- Elimination of Furnace Temperature limits
- Incorporate Good Combustion Practice (GCP) requirements of Subpart Cb.
- To eliminate emission limits for VOC, SAM, HF and As.

The existing boilers are already equipped with the spray dryer absorber and fabric filters. Wheelabrator uses the mercury separation program to reduce mercury emissions. Reduction of NO_X in the combustion gases will be accomplished by the proposed new SNCR system that involves injection of liquid ammonia (NH3) or urea.

The following details the applicant's request and the Department determination:

3.2 Waste fuels

The units were originally permitted to utilize "refuse such as garbage and trash" as defined in the Department's solid waste rules. The applicant requests that the modified permit specify the wastes and certain segregated wastes as solid waste including municipal solid waste (MSW) as defined at 40CFR60.51b and Section 403.706 (5), F.A.C., Florida Statutes (1995). The applicant proposed the following wording:

3.2.1. Subject to the limitations contained in this permit, the authorized fuels for the facility also include the other solid wastes that are not MSW which are described below. However, the facility shall not burn:

(a) those materials that are prohibited by state or federal law;
(b) those materials that are prohibited by this permit;
(c) those materials that are not authorized by this permit;
(d) lead acid batteries;

(e) hazardous waste;
(f) nuclear waste;
(g) radioactive waste;
(h) sewage sludge;
(i) explosives.

3.2.2 The fuel may be received either as a mixture or as a single-item stream (segregated load) of discarded materials. If the facility intends to use an authorized fuel that is segregated non-MSW material, the fuel shall be either:

(a) well mixed with MSW in the refuse pit; or
(b) alternately charged with MSW in the hopper.

3.2.3 The facility owner/operator shall prepare and maintain records concerning the description and quantities of all segregated loads of non-MSW material which are received and used as fuel at the facility, and subject to a percentage weight limitation, below (3.2.6. and 3.2.7). For the purposes of this permit, a segregated load is defined to mean a container or truck that is almost completely or exclusively filled with a single item or homogenous composition of waste material, as determined by visual inspection.

3.2.4 To ensure that the facility's fuel does not adversely affect the facility's combustion process or emissions, the facility operator shall:

(a) comply with good combustion operating practices in accordance with 40 CFR 60.53b;
(b) install, operate and maintain continuous emissions monitors (CEMS) for oxygen, carbon monoxide, sulfur dioxide, oxides of nitrogen and *particulate control device inlet* temperature in accordance with 40 CFR 60.58b; and
(c) record and maintain the CEMS data in accordance with 40 CFR 60.59b.

These steps shall be used to ensure and verify continuous compliance with the emissions limitations in this permit.

Natural gas may be used as fuel during warm-up, startup, shutdown, and malfunction periods, and at other times when necessary and consistent with good combustion practices.

3.2.5 Subject to the conditions and limitations contained in this permit, the following other solid waste may be used as fuel at the facility:

(a) Confidential, proprietary or special documents (including but not limited to business records, lottery tickets, event tickets, coupons, *credit cards, magnetic tape* and microfilm);
(b) Contraband which is being destroyed at the request of appropriately authorized local, state or federal governmental agencies, provided that such material is not an explosive, a propellant, a hazardous waste, or otherwise prohibited at the facility. For the purposes of this section, contraband includes but is not limited to drugs, narcotics, fruits, vegetables, plants, counterfeit money, and counterfeit consumer goods;
(c) Wood pallets, clean wood, and land clearing debris;
(d) Packaging materials and containers;

(e) Clothing, natural and synthetic fibers, fabric remnants, and similar debris, including but not limited to aprons and gloves; or
(f) Rugs, carpets, and floor coverings, but not asbestos-containing materials or polyethylene or polyurethane vinyl floor coverings.

3.2.6 Subject to the conditions and limitations contained in this permit waste tires may be used as fuel at the facility. The total quantity of waste tires received as segregated loads and burned at the facility shall not exceed 3%, by weight, of the facility's total fuel. Compliance with this limitation shall be determined by using a rolling 30-day average in accordance with specific condition No. 3.2.8 below.

3.2.7 Subject to the conditions and limitations contained in this permit, the following other solid waste materials may be used as fuel at the facility (i.e. the following are authorized fuels that are non-MSW material). The total quantity of the following non-MSW material received as segregated loads and burned at the facility shall not exceed 5%, by weight, of the facility's total fuel. Compliance with this limitation shall be determined by using a rolling 30 day average in accordance with specific condition No.3.2.8 below.

(a) Construction and demolition debris.
(b) Oil spill debris from aquatic, coastal, estuarine or river environments. Such items or materials include but are not limited to rags, wipes, and absorbents.
(c) Items suitable for human, plant or domesticated animal use, consumption or application where the item's shelf-life has expired or the generator wishes to remove the items from the market. Such items or materials include but are not limited to off-specification or expired consumer products, pharmaceuticals, medications, health and personal care products, cosmetics, foodstuffs, nutritional supplements, returned goods, and controlled substances.
(d) Consumer-packaged products intended for human or domesticated animal use or application but not consumption. Such items or materials include but are not limited to carpet cleaners, household or bathroom cleaners, polishes, waxes and detergents.
(e) Waste materials that:
  (i) are generated in the manufacture of items in categories (c) or (d), above and are functionally or commercially useless (expired, rejected or spent); or
  (ii) are not yet formed or packaged for commercial distribution. Such items or materials must be substantially similar to other items or materials routinely found in MSW.
(f) Waste materials that contain oil from:
  (i) the routine cleanup of industrial or commercial establishments and machinery; or
  (ii) spills of virgin or used petroleum products. Such items or materials include but are not limited to rags, wipes, and absorbents.
(g) Used oil and used oil filters. Used oil containing a PCB concentration equal or greater than 50 ppm shall not be burned, pursuant to the limitations of 40 CFR 761.20(e).
(h) Waste materials generated by manufacturing, industrial or agricultural activities, provided that these items or materials are substantially similar to items or materials that are found routinely in MSW, subject to prior approval of the Department.

3.2.8. Segregated Solid Waste Record Keeping:

The following records shall be made and kept to demonstrate compliance with the segregated non-MSW percentage limitations of specific condition 3.2.

Each segregated load of non-MSW materials, that is subject to the percentage weight limitation of specific conditions 3.2.6 and 3.2.7, which is received for processing shall be documented as to waste description and weight. The weight of all waste materials received for processing shall be measured using the facility truck scale and recorded.

Each day the total weight of segregated tires received shall be computed, and the daily total shall be added to the sum of the daily totals from the previous 29 days. The resultant 30 day total weight of tires shall be divided by the total weight of all waste materials received in the same 30 day period, and the resultant number shall be multiplied by 100 to express the ratio in percentage terms. The percentage computed shall be compared to the 3% limitation.

Each day the total weight of segregated non-MSW materials received that are subject to the 5% restriction shall be computed, and the daily total shall be added to the sum of the daily totals from the previous 29 days. The resultant 30 day total weight of segregated non-MSW materials shall be divided by the total weight of all waste materials received in the same 30 day period, and the resultant number shall be multiplied by 100 to express the ratio in percentage terms. The percentage computed shall be compared to the 5% limitation.

3.3. Emission Limits

- The applicant proposes that the following emissions limits currently in the PSD/PPSC be deleted:
- Emission limits for sulfuric acid mist and fluorides (as HF) be deleted since the facility has continuously demonstrated compliance with these limits.
- CO limit to be replaced with the Subpart Cb Good Combustion Practice (GCP) requirements.
- To eliminate the VOCs emission limit since the CO limit would provide assurance that emissions of VOCs remain low.
- To eliminate the arsenic emissions limit since this pollutant is not longer considered a PSD pollutant.

The Department's Bureau of Air Regulation has determined that a CO limit pursuant to 40CFR 60 Subpart Cb shall be part of the permit. The CO limit requirement is one of the rationales to demonstrate continuous compliance with GCP stated in the EPA Municipal Waste Combustion: Background Document mentioned below and is also a part of the applicable Subpart Cb emissions standards.

Regarding, hydrogen fluoride (HF), the Department would need test results accomplished during the initial performance test to demonstrate that the burning of the requested fuels do not exceed the permitted limit imposed as part of the original BACT-PSD permit.

For VOCs and sulfuric acid mist ($H_2SO_{4\ mist}$) emissions limits, is the Department intention to remove them from the Power Plant Site Conditions of Certification (PPSCC). The Department

believes that since 40CFR60 Subpart Cb does not include emission standards for these pollutants, compliance with the CO and SO_2 emissions limits are sufficient to determine compliance with the VOCs and sulfuric acid mist ($H_2SO_{4\ mist}$) emissions limits imposed in the original PPSCC.

Regarding arsenic (As), the PSD permit does not include an emission limit for this pollutant. No new limit for this pollutant would be imposed as a result of this permitting action.

3.4. Removal of 300 0F SDA/FF outlet Temperature Limit

The applicant proposed that the existing 300°F PPSC temperature limit at the acid gas control device exit (fabric filter outlet) be replaced with the Subpart Cb particulate control device inlet temperature limit.

The applicant contends that the Subpart Cb temperature limit is determined during annual compliance testing and therefore it is directly tied to actual emissions performance of the boiler and air pollution control equipment. They state that the current, PPSC limit of 300°F at the exit of the acid gas control device was primarily intended to ensure that the acid gas control device would achieve at least 90 percent removal of acid gases and secondarily to ensure that trace metals and semivolatile organics such as dioxins would be condensed onto particulate and therefore collected in the particulate control device.

The applicant adds that the 90 percent removal of acid gases design requirement in the PPSC presumably referred to hydrogen chloride (HCl) since SO_2 had a specific limit of 0.14 lb/mmBtu or 65 percent removal. Subpart Cb incorporates emission limits for MWC acid gases (HCl and SO_2). The HCl limit of 29 ppm at 7 percent O_2 or 95 percent removal is based on annual stack testing. The Subpart Cb, HCl limit can be continuously achieved by SDA/FF air pollution control equipment irrespective of a 300°F temperature limit. They affirm that, the Subpart Cb temperature limit derived directly from annual compliance tests ensures that control of trace metals and dioxins or other organics will be continuously achieved. The regulated metals, including cadmium, lead, and beryllium, condense onto particulate at temperatures well above 300°F in the convective sections of the boiler. Consequently, maintaining a 300°F baghouse outlet temperature provides no additional control for these metals. Mercury control will increase at lower fabric filter temperatures but test data has shown little difference in mercury removal at temperatures less than 350°F. The fact that the applicant uses waste separation for mercury control further supports its position.

Based on the above, the applicant believes that the substitution of the Subpart Cb particulate control device inlet temperature limit for the existing 300°F limit will ensure that high removal levels of all metals and semivolatile organics will be continuously achieved. Operating at a higher temperature will also reduce baghouse maintenance due to higher corrosion levels attributed to operating at a lower temperature.

The Department's Bureau of Air Regulation concurs with the applicant and its proposal. The outlet temperature requirement is deleted from the permit and replaced by the inlet temperature to the control device as required by 40 CFR60 Subpart Cb.

As explained in the EPA's Background Information Document to the Subpart Cb Emissions Guidelines, EPA decided to select the inlet temperature to the control device as the control parameter. EPA explanation to how to determine the maximum PM control device inlet temperature is to "take the highest average PM control device inlet temperature measured during any one of three successful performance run for dioxin/furans and to add 17 ^{0}C (30 ^{0}F). The averaging time for the PM control device inlet temperature limit must be consistent with the averaging time for a single dioxin/furan performance test (approximately 4 hours). If an 8-hour averaging time was allowed for the inlet temperature, then a unit could theoretically operate for 4 hours at temperatures above those shown to be safe by the dioxin/furan performance test. The PM control device inlet temperature requirements help ensure that conditions for high dioxin/furan formation rates do not occur. The temperature limit also controls partitioning of dioxin/furan between the solid and vapor phase. At lower temperatures, dioxins/furans remain absorbed on PM and are disposed with the collected fly ash. There is no evidence that dioxin/furans absorbed on fly ash can be volatilized at ambient temperatures nor leached in landfills. EPA adds that the temperature at which low dioxin/furan emissions is achieved may defer between MWC units, and that the requirements take that into consideration" [1].

3.5 *Furnace Temperature Requirements*

The PPSC and the PSD permit requires that the furnace temperature be monitored and maintained above 1,800°F.

The applicant proposes that based on continuing compliance with the Subpart Cb good combustion practice (GCP) operational requirements, the furnace temperature limit and monitoring requirements can be eliminated from the permit and PPSC. They affirm that the GCP requirements will ensure that optimum boiler combustion and fabric filter operating conditions are continuously achieved minimizing emissions of dioxins and organics, the original intent of the PPSC furnace temperature limit.

According to the applicant, the original objective of furnace temperature requirements was to assure combustion conditions were sufficient for maximum destruction of organics in the combustion zone. US EPA, in the development of the MWC standards and Emissions Guidelines under Subpart Eb and Cb, was concerned that imposing furnace temperature requirements could be counter productive since air/fuel mixing would be adversely impacted. To maintain furnace temperature at full boiler load generally requires a decrease in total boiler excess air, which is accomplished by decreasing the relative amount of overfire air. With decreasing overfire air, overfire air penetration into the secondary combustion zone will be reduced. Consequently, air/fuel mixing will be reduced, which results in reduced oxidation/destruction potential for organics. The applicant states that a furnace temperature requirement does not address the secondary formation of dioxins on flyash or particulate matter in the low temperature sections of the boiler and particulate control equipment. This secondary formation of dioxins has the largest potential impact on boiler dioxin emissions and is directly addressed by limiting carryover of particulate matter/flyash and minimizing operating temperature of the particulate control equipment, which compliance with the Subpart Cb GCP requirements ensure.

The applicant adds that complying with the Subpart Cb CO limit ensures that both optimum furnace/temperature conditions and good air/fuel mixing are being maintained. Limiting boiler steam flow to the average steam flow achieved during annual compliance tests minimizes particulate carryover to the cooler section of the boiler and PM control device reducing potential for low temperature dioxin formation. Finally, minimizing particulate control device operating temperature to within 30°F of that achieved during compliance tests ensures that low temperature post-combustion dioxin formation is minimized.

The applicant cites the USEPA conclusion that the three major components of the GCP standard under NSPS Subparts Ea, Eb, and Cb are the most effective mechanisms for ensuring optimum combustion conditions, maximizing organic destruction, and minimizing the potential for post-combustion zone formation of organics. The three components of GCP include: 1) a short term CO emission limit, 2) restricting maximum boiler operating conditions using a steam flow limit and 3) restricting operating temperatures in the particulate control equipment.

The Department's Bureau of Air Regulation concurs with the applicant and this requirement is deleted and replaced with the good combustion practices (GCP) outlined in the 40 CFR 60, Subpart Cb.

In fact, the EPA spent a substantial amount of resources investigating, developing, and documenting GCS. The EPA's first effort resulted in a report on the combustion control of organics (Municipal Waste Combustion Study: Combustion Control of Organics, EPA/530-SW-87-021c, June 1987). In reviewing these recommendations, EPA decided that only three parameters would be required to demonstrate continuous compliance with GCP. These include a "CO emission limit to insure operation at combustion conditions which are indicative of the furnace destruction of organics, a load limit which is to control the amounts of PM which are carried out of the combustor with flue gases, and a temperature limit at the inlet of each PM control device to control formation of CDD/CDF within each control device"[1].

3.6. Metal Recovery Facility

The applicant is proposing to install equipment and facilities, pursuant to Rule 62-701.700 F.A.C, to expand the removal of recoverable metals from the bottom ash generated by the facility. The proposed metal recovery system involves a series of conveyors and mechanical devices that will separate the ferrous and non-ferrous metals from the bottom ash of the MSW fired boilers. The processing will occur in a new enclosed building to be located adjacent to the existing ash loadout area. All bottom ash is currently quenched with water after leaving each boiler. The resulting bottom ash will be about 20 to 30 percent moisture and will not generate fugitive dust.

The Department's Bureau of Air Regulation concurs with the applicant and allows the construction of this facility since no fugitive dust emissions are expected.

3.7 Selective Non Catalytic Reduction (SNCR) System

To comply with the NOx emission limits specified in Subpart Cb, the applicant is proposing to install a selective non-catalytic reduction (SNCR) system. The following is the applicant's description of the proposed system:

The proposed retrofit will store, convey, and inject aqueous urea into the furnace of each boiler immediately above the over fire air zone. The SNCR system will use urea, instead of ammonia, to provide the reducing reaction with NOx forming nitrogen and water. The reaction occurs across a wider temperature range than ammonia and reduces the potential health and safety risks associated with the release of ammonia during handling or storage. Ammonia slip is generally controlled to less than 50 ppmvd at 7 percent O2.

The SNCR unit will be designed to allow the concentrated reagent to be delivered to the facility in a heated, self-unloading tanker truck and transferred to a heated fiberglass reinforced plastic tank for on site storage. The tank will provide approximately one-two weeks of storage capacity under normal operating conditions.

A common circulation module transfers the chemical from the storage tank to the individual boiler metering modules. A recirculation pump and a supplemental electric heater, both located on the circulation module, provide agitation and heating capability. Flow and pressure control of the urea and dilution water fluids used in the SNCR process is performed with the metering modules. Metering of the concentrated reagent, dilution of the reagent with water and mixing of the resulting solution is also accomplished at these modules. The diluted reagent is pumped to the distribution modules where the individual distribution panels are located. The panel regulates the compressed air and diluted reagent flows to the individual fluid injection nozzles.

The Department's Bureau of Air Regulation allows the installation of the SNCR system to reduce NOx emissions to comply with the 40CFR Subpart Cb NOx standard.

4. PROCESS DESCRIPTION

4.1 General Information

The facility is a waste-to-energy installation employing mass burning of solid waste, heat recovery as superheated steam, and power generation in a steam electric cycle. Other than landfilling, this is the most common method of solid waste disposal in the United States. There are twelve such facilities in the State of Florida. The following is a general description of the process.

Waste is received via transfer, roll-off, or collection vehicles. All waste is taken to the Refuse Receiving Building, where it is deposited onto the tipping floor or into the Refuse Storage Pit. The refuse is stored at this location until needed to charge the combustion units.

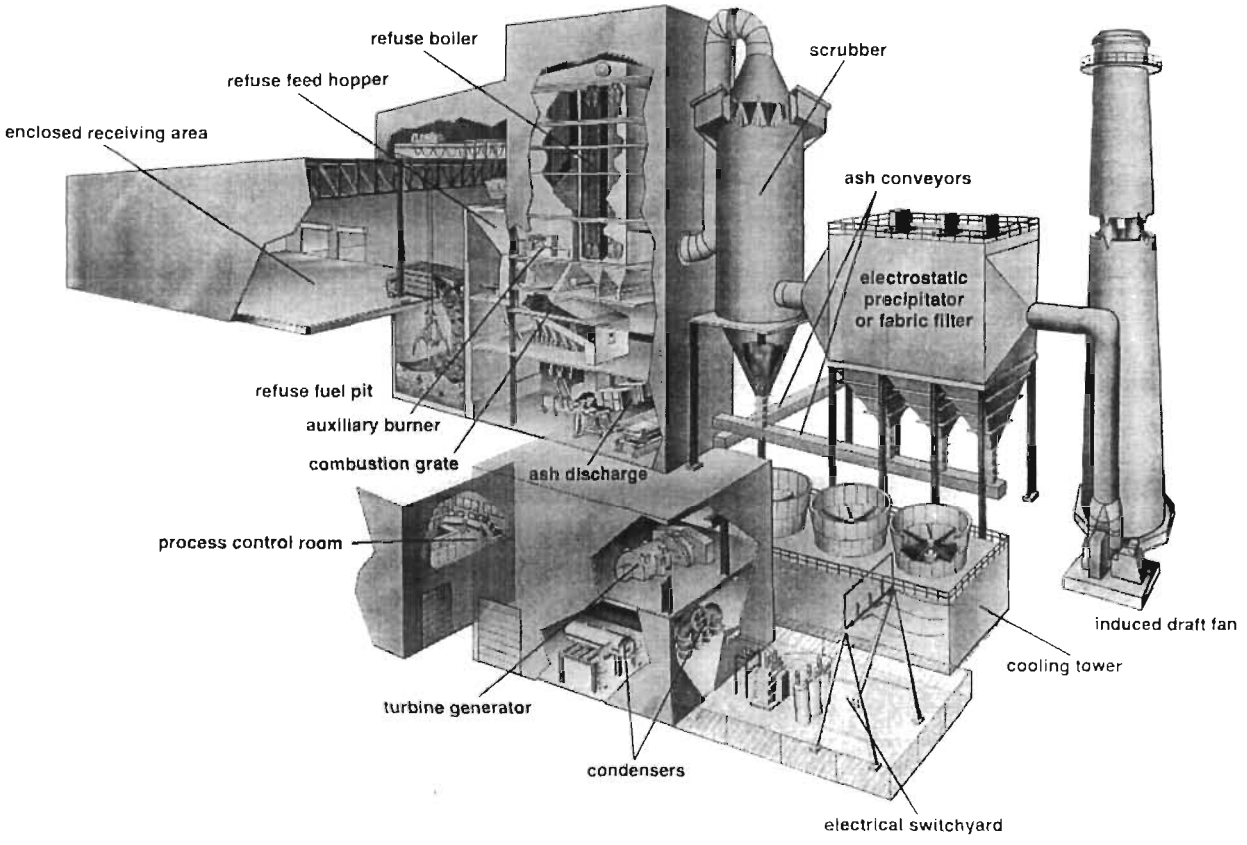
Charging of the combustion units is accomplished using overhead cranes equipped with "orange peel" grapples. These stack, mix, and relocate waste within the pit and transfer it into the feed hoppers serving each unit. The waste enters the three refuse-fired steam generators, each of which consists of an integrated mass-burn furnace and boiler.

Combustion air is drawn from the refuse tipping area (assisting in odor control) and conveyed through the gas side of the air preheater and into the refuse-fired generators where the waste is combusted. Exhaust gases from the refuse-fired generators pass through an economizer units and

are ducted to the air pollution control systems which consists of spray dryer adsorbers and fabric filter bag houses. Treated gases are exhausted to the atmosphere through three individual flues within a single 195 foot stack. Bottom ash from the furnaces is removed, quenched and processed for metal recovery and disposal.

The superheated steam from each boiler enters a turbine where it is expanded. The turbine powers a single 67.6 megawatt electric power generator. The electric power is introduced into the electrical grid and is purchased by the local utility.

A diagram of the Waste-to-Energy System follows:



4.2 *Operating Window*

Wheelabrator operates the plant within a so-called 108 percent "operating window," or ~807 tons per day normalized around the previous nominal capacity of ~747 tons per day at a waste heat content of 4,500 Btu per pound (Btu/lb). Because of the wide range in waste heat content, Wheelabrator wants to continue with sufficient flexibility to burn more waste to achieve the desired steam production (186,000 lb/hr), particularly when waste heat content is low. This is a common and recognized industrial and regulatory practice. This permitting action will not revise the allowed operating window but will clarify maximum rated capacities of the units in terms of waste throughput, heat input and steam flow consistent with the above operating window {refer to the permitting note of the revised permit PSD-FL-112 (B)}.

It is expected that Wheelabrator will provide the Department with an updated engineering assessment of the maximum rated capacities of the units in terms of waste throughput, heat input and steam flow consistent with the allowable steam flow of 186,000 lb/hr of steam before the issuance of this final permit modification.

5. RULE APPLICABILITY

This facility is located in Broward County, an area designated as attainment for all criteria pollutants in accordance with Rule 62-204.360, F.A.C.

Because the project, as proposed, is expected to reduce NOx air emissions it would not normally be considered a modification under Chapters 62-210 and 62-212 of the Florida Administrative Code (F.A.C.). However the applicant plans to burn a more varied slate of wastes, thus creating at least the potential for an emission increase of at least one air pollutant. Therefore the project must be assessed for permitting requirements and preconstruction review requirements. Because some of these changes, including the proposed emission limits and requested deletion of the VOC, SAM, HF BACT limits affect existing PSD permit conditions, a permit modification is required whether or not the project constitutes a facility or source modification.

The proposed project is not subject to review under Chapter 62-212, specifically Rule 62-212.400 F.A.C., Prevention of Significant Deterioration (PSD), because the potential emission increases for each pollutant do not exceed the significance emission rates given in Chapter 62-212, Table 62-212.400-2, F.A.C. The professional engineer's certification states that there is not a net emissions increase (no change in actual emissions), as defined in Rule 62-212.400(e), F.A.C for any pollutant from the proposed revision to PSD-Fl-112 (Golder Associates's letter of April 9, 1999). In the case of NOx, the only pollutant affected by this PCP, there would be an emissions reduction due to the addition of the Non Selective Non-Catalytic Reduction.

Despite the burning of more varied waste slate requested concurrently with the existing pollution control system, actual emissions of all pollutants will probably decrease or remain the same. Emissions of NOx will be reduced with the installation of SNCR system.

A pollution control project (PCP), as is the installation of the SNCR system to control NOx emissions, that is added, replaced, or used at an existing electric utility steam generating unit and that meets the requirements of 40 CFR 52.21 (b) (2)(iii)(h) is not subject to the preconstruction review requirements of this rule.

Pursuant to 40 CFR 52.21 (b)(2)(iii)(h),"a physical change or change in the method of operation shall not include the addition, replacement or use of a pollution control project at an existing electric utility steam generating unit, unless the Administrator determines that such addition, replacement, or use renders the unit less environmentally beneficial, or except: (1) When the Administrator has reason to believe that the pollution control project would result in a significant net increase in *representative actual annual emissions* of any criteria pollutant over levels used for that source in the most recent air quality impact analysis in the area conducted for the purpose of Title I, if any, and (2) The Administrator determines that the increase will cause or contribute to a violation of any national ambient air quality standard or PSD increment, or visibility limitation".

Because the three combustors and each turbine and generator comprise an *electric utility steam generating unit* with a capacity greater than 25 megawatts, the Department can alternatively review

PSD applicability by comparing past actual emissions with *representative future actual annual emissions.*

The main rules applicable to this project are 40CFR60, Subpart Cb - Emission Guideline and Compliance Times for Municipal Waste Combustors That Are Constructed on or Before December 19, 1995 (the Emission Guideline) and Rule 62-296.416, F.A.C., Waste-to-Energy Facilities. Physical or operational changes made to an existing unit primarily for the purpose of compliance with the Emission Guideline are not considered in determining whether the unit is a modified or reconstructed facility under 40CFR60, Subparts Ea or Eb. The latter subparts are Standards of Performance for MWCs on which construction commenced after December 20, 1989 and September 20, 1994, respectively. The Emission Guideline and the other Subparts are all adopted by reference in Rule 62-204.800(7) and (8), F.A.C.

This facility is not subject to the Maximum Achievable Control Technology (MACT) for Hazardous Air Pollutants (HAPs) requirements pursuant to Section 112(g) of the Clean Air Act since the addition of the SNCR to comply with the NOx standard does not constitute reconstruction of a major source. The Emission Guideline under Subpart Cb, with which the facility will comply, was developed pursuant to Section 129 (Solid Waste Combustion) of the Clean Air Act as amended in 1990. It requires and achieves the same objectives as MACT for existing facilities.

This facility shall comply with all applicable provisions of the following regulations:

• 40 CFR 60 Subpart Cb	Emissions Guidelines and Compliance Times for Existing Municipal Waste Combustors Constructed on or Before December 19, 1995.
• 40 CFR 51 Subpart P	Protection of Visibility.
• 40 CFR 60, Subpart Db	Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units.
• 40 CFR 60, Subpart E	Standards of Performance for Incinerators.
• 40 CFR 60, Subpart A	General Provisions
• 40 CFR 61, Subpart C	National Emission Standard for Beryllium
• 40 CFR 64	Compliance Assurance Monitoring Rule
• 40 CFR 50	National Primary and Secondary Ambient Air Quality Standards

This facility is also subject to the applicable requirements related to used fuels and wastes given in 40CFR279, 40CFR273 and 40CFR261 (July 1998 version), which are adopted by reference in Chapters 62-710, 62-737 and Chapter 62-730, F.A.C.

The emission units affected by this revision shall comply with all applicable provisions of the Florida Administrative Code (including applicable portions of the Code of Federal Regulations incorporated therein) and, specifically, the following Chapters and Rules:

Chapter 62-17	Electric Power Siting
Chapter 62-4	Permits.
Rule 62-204.220	Ambient Air Quality Protection
Rule 62-204.240	Ambient Air Quality Standards
Rule 62-204.260	Prevention of Significant Deterioration Increments
Rule 62-204.360	Designation of Prevention of Significant Deterioration Areas
Rule 62-204.800	Federal Regulations Adopted by Reference
Rule 62-210.300	Permits Required

Rule 62-210.350	Public Notice and Comments
Rule 62-210.370	Reports
Rule 62-210.550	Stack Height Policy
Rule 62-210.650	Circumvention
Rule 62-210.700	Excess Emissions
Rule 62-210.900	Forms and Instructions
Rule 62-212.300	General Preconstruction Review Requirements
Rule 62-212.400	Prevention of Significant Deterioration
Chapter 62-213	Operation Permits for Major Sources of Air Pollution
Chapter 62-214	Requirements For Sources Subject To The Federal Acid Rain Program
Rule 62-296.320	General Pollutant Emission Limiting Standards
Rule 62-297.310	General Test Requirements
Rule 62-297.401	Compliance Test Methods
Rule 62-296.410(3)	Specific Emission Limiting and Performance Standards Requirements for Incinerators
Rule 62-296.416	Waste to Energy Facilities
Chapter 62-256	Open Burning and Frost Protection Fires
Rule 62-297.570	Test Reports
Rule 62-297.520	EPA Continuous Monitor Performance Specifications

6. PROJECTED EMISSIONS

6.1 Emission Limitations

Emission Limits

The maximum allowable short-term emission limits for the facility before and after implementation of the requested changes are as follows:

POLLUTANT	PERMITTED LIMIT	PROPOSED LIMIT
Sulfur Dioxide (SO_2) [1]	129.8 ppm @ 7% O_2	29 ppmdv @ 7% O_2 or 75% removal
Sulfur Dioxide (SO_2) [2]	58.6 ppm @ 7% O_2	
Volatile Organic Compounds (VOC [(c)]	0.013 lb/MMBtu	none - CO is surrogate
Particulate Matter (PM) [3(a)(b)]	34.9 mg/dscm @ 7% O_2	27 mg/dscm @ 7% O_2 [(9)]
Particulate Matter (PM) [4]	111.3 mg/dscm @ 7% O_2	
Particulate Matter (PM) [5]	186.0 mg/dscm @ 7% O_2	
Nitrogen Oxides (NO_x) [6(a)(b)]	325.9 @ 7% O_2	205 ppmdv @ 7% O_2 (24-hr) [(9)]
Carbon Monoxide (CO) [7(a)(b)]	406.4 ppm @ 12% CO_2	100 ppmdv @ 7% O_2 (4-hr) [(10)]
Carbon Monoxide (CO) [7(a)(b)]	86.9 ppm @ 7% O_2	87 ppmdv @ 7% O_2 (4-day rolling average)
Total Fluoride (F) [(a)(b)]	0.004 lb/MMBtu	None
Sulfuric Acid Mist (H_2SO_4 or SAM [)(c)]	0.047 lb/MMBtu	None
Hydrogen Chloride (HCl)	None	29 ppmdv @ 7% O_2 or 95% removal
Beryllium (Be) [(a)(c)]	9.30 E-07 lb/MMBtu	None
Lead (Pb) [(a)(b)]	0.0015 lb/MMBtu	440 ug/dscm @ 7% O_2 [(9)]
Mercury (Hg) [(a)(c)]	0.84 mg/dscm @ 7% O_2	70 ug/dscm @ 7% O_2 or 85% removal [(9)]
Dioxins/Furans	None	30 ng/dscm @ 7% O_2 [(9)]
Cadmium (Cd)	None	40 ug/dscm @ 7% O_2 [(9)]
VE10		10% [(11)]
VE15 [(a)(b)]		NA
VE20 [(8)]		NA

Basis: Table 4-2 Wheelebrator - North Broward Waste to Energy Facility Emission Limits submitted on December 7, 1998.

1. And 124 ppm at 12% CO_2-dry not to exceed; 3-hour rolling average
2. And 60 ppm at 12% CO_2-dry; or 65% removal; 3-hour rolling average
3. Corrected to 12% CO_2-dry (MCC)
4. 40 CFR 60.43b(d)
5. @ 50% air- 296.401(3)(a)
6. And 350 ppm at 12% CO_2; 3-hour rolling average
7. And 400 ppm at 12% CO_2-dry; 1-hour rolling average; 88 ppm at 12% CO_2- dry; 4-day rolling average
8. Rule 62-296.320 (4)(b) (1)
9. Corrected to 7% O_2 (dry); FDEP limit
10. Corrected to 7 O_2 (dry); 4-hour block average
11. 6 min block average

a. PSD-FL-105 Part 1,1.a
b. Final Order Modifying Conditions of Certification No. 85-2; (4/17/91)
c. Original PA-85-21

6.2 *Recent Stack Test Results*

The following is a summary of recent stack test results (converted using EPA Method 19) from each combustor and the comparison with the limits of 40 CFR 60 Subpart Cb. As the table shows, except for the NOx standard, all the standards are well below the applicable Subpart Cb limits. It is expected pursuant to 40 CFR 52.21 (b)(2)(iii)(h), that this project as proposed would not have significant increase in representative actual emissions of any pollutant. A selective non-catalytic system (SNCR) will be installed for the control of NOx.

POLLUTANT	UNITS	EMISSIONS 001	EMISSIONS 002	EMISSIONS 003	SUBPART Cb
SO2	ppm @ 7 % O_2	3.54	7.74	3.73	29
NOx	ppm @ 7 % O_2	272.39	220.01	239.80	205
CO	ppm @ 7 % O_2	10.52	17.21	14.34	100
PM	mg/dscm @ 7 % O_2	3.67	7.90	1.00	27
Pb	mg/dscm @ 7 % O_2	0.010	0.016	0.004	0.49
Hg	ug/dscm @ 7 % O_2	12.8	20.5	14.8	70
Dioxins/Furans	ng/dscm @ 7 % O_2	0.68	NC	NC	30
Opacity	Percent	0%	0%	0%	10%

Source:

Table 4-3 Summary of Recent Stack Test Results (3/98) as compared to Limits of 40 CFR 60 subpart Cb North Broward Resource Recovery Facility. Wheelabrator 's request dated December 7, 1998.

6.3 *Control Technology Review*

There will be no change to the existing emissions control systems for acid gases and particulate matter. Each unit is equipped with a spray dryer adsorber and a fabric filter baghouse system. New proposed selective non catalytic reduction (SNCR) system will be

installed to control NOx emissions. This facility chose to control mercury emissions by implementation of a mercury waste separation program.

6.4 Emissions Summary

[EMISSION UNIT Nos. -001, -002 or -003]

Pollutants	Current Allowable		New Allowable		Net Increase or Decrease
	lb/hr	ton/yr	lb/hr	ton/yr	ton/yr
PM/PM_{10}	9.5	41.6	7.35	32.2	-9.4
SO_2	66.3	290.0	32.8	143.5	-146.5
NOx	169.3	741.5	106.5	466.4	-275.1
CO	27.2	119.2	31.8	139.1	19.9
Mercury	0.23	0.96	0.019	0.08	-0.9
Beryllium	2.81E-04	1.20E-03	2.81E-04	1.20E-03	0
HCL	None	None	11.71	51.3	0
Dioxins	None	None	8.20E-06	3.60E-05	0
Cadmium	None	None	0.011	0.048	0
Lead	0.45	1.98	0.133	0.58	-1.4

Source: Table 1. Allowable Emissions for North Broward Resource Recovery Facility. Golder Associates' letter dated April 9, 1999.

6.5 Air Quality Analysis

6.5.1 Introduction

An air quality analysis was not required for this project.

7. CONCLUSION

Based on the foregoing technical evaluation of the application submitted by Wheelabrator North Broward, Inc., the Department has made a preliminary determination that the proposed project will comply with all applicable state and federal air pollution regulations provided certain conditions are met. The Specific Conditions are listed in the attached draft permit amendment.

NSR Administrator: A.A. Linero, P.E.
Permit Engineer: Teresa M. Heron

REFERENCES

[1] EPA- 453/R-95-0136 Municipal Waste Combustion, Background Information Document for Promulgated Standards and Guidelines- Public comments and Responses. October 1995.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NOTICE OF PERMIT MODIFICATION

In the Matter of an
Application for PSD Permit Modification

Wheelabrator North Broward, Inc.
2600 N. W. 48th Street
Pompano Beach, Florida 33073

DEP File No. PSD-FL-112(B)
Metals Recovery and Pollution Control Project
Broward County

Enclosed is the PSD Permit Modification Number PSD-Fl-112 (B). This modification is to revise the existing PSD permit for clarification of the permitted fuels allowed to be combusted at the North Broward Resource Recovery Facility, and to install a selective non-catalytic reduction system for NOx control. Additional requested revisions to the permit are to replace the 300 ^{0}F temperature limit at the acid control device (fabric filter outlet) with the Subpart Cb particulate control device inlet temperature and to eliminate the furnace temperature requirements by incorporation of the good combustion practices (GCP) specified in Subpart Cb. This modification will also allow Wheelabrator to install equipment and facilities to expand the removal of recoverable metals from the botton ash generated by the facility. This permit is issued pursuant to Chapter 403, Florida Statutes.

Any party to this order (permit) has the right to seek judicial review of the permit pursuant to Section 120.68, F.S., by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Legal Office; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 (thirty) days from the date this Notice is filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

Howard L. Rhodes, Director
Division of Air Resources
Management

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF PERMIT MODIFICATION (including the PSD permit Modification) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on _____ to the person(s) listed:

Thomas D. Kirk, Plant Manager, Wheelabrator North Broward, Inc. *
Ken Kosky, P.E
Gregg Worley, EPA
Isidore Goldman, P.E, FDEP SED
Daniela Banu, Director, BCDNRP
Buck Oven, P.E, DEP/PPSC

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to §120.52(7), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

_____ _____
(Clerk) (Date)

PSD PERMIT MODIFICATION
PSD-FL-112 (B)

SPECIFIC CONDITIONS

PSD-FL-112 is hereby modified as follows:

1. Emission Limitations

~~a. Stack emissions from each unit shall not exceed the following:~~

~~Particulate: 0.0150 gr/dscf dry volume corrected to 12% CO_2.~~

~~Sulfur Dioxide: (1) 0.140 lb/MMBtu heat input and 60 ppm (3-hr rolling average, dry volume, corrected to 12% CO_2); or~~

~~(2) 65% reduction of uncontrolled SO_2 emissions.* In no case shall the SO_2 emissions exceed 0.310 lb/MMBtu heat input and 124 ppm (3-hr rolling average, dry volume, corrected to 12% CO_2).~~

~~The 124 ppm limit above shall be modified to reflect a new emission limit (in ppm) from the control device at 65% control efficiency. Within 18 months of start-up of operation, the County shall submit compliance tests that will be used to determine the new SO_2 emission limit (in ppm). The limit will be determined by observed average emission rate (u) from the submitted compliance tests and will be statistically analyzed using the one tailed student T test ($t.05 + (x-u) n 0.5/s$ at the 95% confidence level to derive a mean emission rate (x), where s is the standard deviation of observed values n. The final operating SO_2 emission limit (in ppm) shall be this mean emission rate (x). This value shall be restricted to no more than 124 ppm or less than 60 ppm (3-hr rolling average, dry volume, corrected to 12% CO_2).~~

~~Nitrogen Oxides: .560 lb/MMBtu heat input and 350 ppm (3-hr rolling average, dry volume corrected to 12% CO_2).~~

~~Carbon Monoxide: .090 lb/MMBtu heat input: 400 ppm (1-hr rolling average, dry volume, corrected to 12% CO_2); and 88 ppm (4-day rolling average, dry volume, corrected to 12% CO_2).~~

~~Lead: .00056 lb/MMBtu~~

~~Fluorides: .0040 lb/MMBtu~~

~~Beryllium: 9.30×10^{-7} lb/MMBtu~~

~~Mercury: 7.50×10^{-4} lb/MMBtu~~

1. EMISSIONS LIMITATIONS

a. The following emissions standards apply to the following emissions units after improvements to comply with 40 CFR Subpart Cb are completed.

EMISSIONS UNIT NO.	EMISSIONS UNITS DESCRIPTION
001	280 MMBtu/hr (nominal) Municipal Waste Combustor & Auxiliary Burners - Unit No.1
002	280 MMBtu/hr (nominal) Municipal Waste Combustor & Auxiliary Burners - Unit No.2
003	280 MMBtu/hr (nominal) Municipal Waste Combustor & Auxiliary Burners - Unit No.3

{Permitting Note: Each of the three municipal waste combustor (MWCs) shall have a *nominal* design rate capacity of 747 tons MSW per day (a maximum of 807 tons per day), 280 MMBtu per hour with MSW having a heating value of 4,500 Btu per pound. The "operating window" of 108 percent (%) over the nominal design rate of 280 MMBtu heat input corresponds to 302.5 MMBtu/hr heat input and a maximum of 186,000 lb steam/ hour (5,600 BTU/lb heating value. Short-term capacity is limited by limiting steam production (maximun of 186,000 lb/hr), which effectively limits heat input.

		EQUIVALENT EMISSIONS		
POLLUTANT	**EMISSIONS STANDARDS**	**LB/MMBtu**	**LB/HR**	**TON/YR**
PM [1] Particulate Matter	27 mg/dscm or 0.012 gr/dscf corrected to 7% O_2	0.024	7.35	32.2
VE Visible Emissions	10 % (6 min. block avg.)			
Cd Cadmium	0.040 mg/dscm corrected to 7% O_2	3.6E-05	0.011	0.048
Be [2] Beryllium	0.001 mg/dscm corrected to 7 % O_2	9.3E-07	0.0003	0.0012
Pb Lead	0.44 mg/dscm corrected to 7% O_2	4.4E-04	0.133	0.58
Hg Mercury	70 ug/dscm or 85% reduction by weight or volume corrected to 7% O_2 (whichever is less stringent)	6.3E-05	0..019	0.08
SO_2 Sulfur Dioxide	29 ppmdv or 75% reduction by weight or volume corrected to 7% O_2 (whichever is less stringent)	0.116 or 75% reduction @ 7% O_2	32.8 or 75% reduction @ 7 % O_2	143.5
HCl Hydrochloric Acid	29 ppmdv or 95% reduction corrected to 7% O_2 (whichever is less stringent)	0.042 or 95% reduction @ 7% O_2	11.7 or 95% reduction @ 7% O_2	51.3
Dioxins/Furans	30 ng/dscm corrected to 7% O_2	2.7 E-08	8.2E-06	3.6E-05
CO Carbon Monoxide	100 ppmdv corrected to 7% O_2	0.105	31.8	139.1
NOx [2] Nitrogen Oxides	205 ppmdv corrected to 7% O_2	0.35	106.5	466.4

These maximum allowable emission rates are applicable to each MWC combustor unit. [Rules 62-4.070, and 62-296.416, F.A.C., 40 CFR 60.33b and 40 CFR 60.34b]

For fluoride, the permittee shall conduct initial performance test to demonstrate that the burning of the requested fuels do not exceed the BACT original permitted emission level. No annual testing is required.

F Fluorides	To be demostrated initially Not to exceed 0.0040 b/MMBtu	0.0040	1.21	5.29

Notes:

(1) This limit for PM is more restrictive than the emission limit for PM in 40 CFR 60.43b
(2) Beryllium: PSD original permit limit. Not to exceed applicable NESHAP, 40 CFR 61.32 (a)(Subpart C).

Basis: Equivalent emissions calculations (lb/hr and ton/yr) are based on the maximum heat input rate of 302.5 MMBtu/hr and 186.000 lb steam/hr [108 % rated capacity] per unit and 8760 hours of operation. Nominal rated capacity of each boiler is 747 tons waste per day. Nominal heat input capacity is 280 MMBtu/hr. Short-term capacity is limited by limiting steam production (186.000 lb steam/hr) which effectively limits heat input.

Averaging Times
SO_2: 24-hour daily block geometric mean (midnight to midnight)
NO_x: 24-hour daily block arithmetic mean (midnight to midnight)
CO: 4-hour block arithmetic mean beginning at midnight
Opacity: 6 minutes block arithmetic mean

Abbreviations
ug/dscm: Micrograms per dry standard cubic meter

mg/dscm: Milligrams per dry standard cubic meter
ppmdv: Part per million dry volume
ng/dscm: Nanograms per dry standard cubic meter
Dioxins/ furans: Total tetra through octa-chlorinated dibenzo-p dioxins and dibenzofurans
F: Fluorides as hydrogen fluoride

Temperature: 17° C above maximum demonstrated PM control device inlet

~~Visible Emissions: Opacity of stack emissions shall not be greater than 15% opacity. Excess opacity resulting from startup or shutdown shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess opacity shall be minimized but in no case exceed two hours in any 24 hour period unless specifically authorized by EPA for longer duration.~~

a.(2) Visible Emissions:

No owner or operator of this facility shall cause to be discharge to the atmosphere visible emissions of combustion ash from an ash conveying system (including conveyor transfer points) in excess of 5 % of the observation period (i.e., 9 minutes per 3-hour period) as determined by EPA Reference Method 22.
[Rule 62-204.800(8), F.A.C., 40 CFR 60.36b; 60.55b and 62-4-070(3) F.A.C.]

~~The units are subject to 40 CFR 60 Subpart E, and Subpart Db, New Source Performance Standards (NSPS), except that where requirements in this permit are more restrictive, the requirements in this permit shall apply.~~

a. (3) Applicable Requirements:

These units are subject to all applicable requirements of 40 CFR 60 Subpart Cb, Emissions Control Guidelines and Compliance Schedules for Municipal Solid Waste Combustors, Subpart E, NSPS for Incinerators, Subpart Db NSPS for Industrial-Commercial-Institutional Steam Generating Units, 40CFR61 Subpart C, NESHAP for Beryllium and Rule 62-296.416 F.A.C., Waste-to-Energy Facilities, except that where requirements in this permit are more restrictive, the requirements in this permit shall apply.
[PSD-FL-112, 40CFR60 Subparts Cb, E, Db and 40CFR61 Subpart C]

~~There shall be no greater than 10% opacity for emissions from the refuse bunker and the ash handling and loadout. The potential for dust generation by ash handling activities will be mitigated by quenching the ash prior to loading in ash transport trucks. Additionally, all portions of the proposed facility including the ash handling facilities which have the potential for fugitive emissions shall be enclosed. Also, those areas which have to be open for operational purposes (e.g., tipping floor of the refuse bunker while trucks are entering and leaving) will be under negative air pressure.~~

a.(4) Ash Handling Facilities:

There shall be no greater than 5% opacity for emissions from the refuse bunker and the ash handling and loadout. The potential for dust generation by ash handling activities will be mitigated by quenching the ash prior to loading in ash transport trucks. The ash handling facilities shall be enclosed *(including the metal recovery area)*. Unprocessed refuse storage areas which must be open for operational purposes (e.g., tipping floor of the refuse bunker while trucks are entering and leaving) will be under negative air pressure. Residue from the grates, grate siftings, and ash from the combustor/boiler and fabric filter hoppers during normal operations shall be discharged into the ash quenching system to minimize visible dust. The ash/residue in the Ash Handling Building shall remain sufficiently moist to prevent dust during storage and handling operations.

[Rule 62-204.800(8), F.A.C., 40 CFR 60.36b; 60.55b and 62-4-070(3) F.A.C.]

b. No change

c. (1) ~~None of the three individual municipal waste incinerators shall be charged in excess of 302.5 mmBtu/hr and 806.6 tons per day MSW (108% rated capacity) nor produce 186,000 lb/hr steam (3-hr rolling average).~~

c.(1) Operating Rates:
The maximum individual MWC throughput shall not exceed 807 tons MSW per day (2420 tons per day entire facility), 302.5 MMBtu per hour and 186,000 pounds steam per hour (108 % of the nominal design rate) based on a 4-hour block arithmetic average. The incinerators/boilers shall not be loaded in excess of their maximum operating capacity of 33.60 tons MSW per hour each, equivalent to 2420 tons MSW per day total, but no more than 2241 tons MSW per day on an annual (52 week rolling average) average basis for the entire facility. (Compliance per new Specific Conditions c.(2) listed below)
[Rule 62-204.800(8), F.A.C., 40 CFR 60.31b; 60.38b; 60.51b, and 60.58b(j)]
[PSD-FL-121(B)/PA 85-21 and Rule 62-4.030(3), F.A.C.]

c. (2) ~~The temperature of the flue gas exiting the final combustion chamber of the incinerator shall not be less than 1800^{0}F.~~
This condition is deleted. The rationale is explained in the Technical Evaluation and Preliminary Determination dated May 20, 1999. A new specific condition, as stated below, will use this c.(2) numeration

New Specific Condition c.(2) Compliance with the Continuous Charging Rate:
The daily solid waste charging rate and hours of operation shall be determined and recorded for each MWC unit. The daily charging rate shall be determined each month on an average daily basis for each MWC unit using the Facility's truck scale weight data , refuse pit inventory, and MWC operating data for the preceding calendar month. Monthly truck scale weight records on the weight of solid waste received and processed at the Facility and refuse pit inventory shall be used to determine the amount of solid waste charged during the preceding calendar month on an average daily basis. The MWC load level measurements or other operating data shall be used to determined the number of operating hours per MWC unit for each day during the preceding calendar month. **[Rule 62-204.800(8), F.A.C., and 40 CFR 60.53(a)]**

New Specific Condition c.(3) Load Level :
Unit load means the steam load of the municipal waste combustor (MWC) measured as specified in 40 CFR 60.58b(i)(6). Each MWC unit shall not operate at a load level greater than 110 percent of the unit's "maximum demonstrated unit load." The maximum demonstrated unit load is the highest 4-hour arithmetic averaged MWC unit load achieved during four consecutive hours during the most recent dioxin/furan performance stack test in which compliance with the dioxin/furan emission limit was achieved. Higher loads are allowed for testing purposes as specified at 40 CFR 60.53b(b). **[Rule 62-204.800(8), F.A.C., 40 CFR 60.31b; 60.38b; 60.51b; 60.53b(b); and 60.58b(i)(8)]**

New Specific Condition c.(4) Compliance With Load Level Requirements:
The owner or operator of an affected facility with steam generation capability shall install, calibrate, maintain, and operate a steam flow meter or a feedwater flow meter; measure steam (or

feedwater) flow in kilograms per hour (or pounds per hour) on a continuous basis; and record the output of the monitor (in accordance with the ASME method described in 40 CFR 60.58b(i)(6). Steam (or feedwater) flow shall be calculated in 4-hour block arithmetic averages. Higher loads are allowed for testing purposes as specified at 40 CFR 60.53b(b). **[Rule 62-204.800(8), F.A.C., 40 CFR 60.31b; 60.38b; 60.51b; 60.53b(b); and 60.58b(i)(6)]**

d. Compliance Tests

(1) a. No change. *This condition would be updated in the Title V permit for this facility.*

b. No change. *This condition would be updated in the Title V permit for this facility.*

c. ~~Compliance with the emission limitations for 65% control of total sulfur dioxide emissions shall be determined by using the test methods in condition 1.d.(2) and sampling for SO_2 emissions before and after the acid gas control device. Continuous emissions data shall also be used to demonstrate compliance with the SO_2 concentration limits in condition 1.a above.~~

(2) The following test methods and procedures for 40 CFR 60 and 61 shall be used for compliance testing:

a. Method 1 for selection of sample site and sample traverses

b. Method for determining stack gas flow rate when converting concentrations to or from mass emission limits.

c. Method 3 for analysis for calculation of percent O_2 and CO_2

d. Method 4 for determining stack gas moisture content to convert the flow rate from actual standard cubic feet to dry standard cubic feet for use in converting concentrations in dry gases to or from mass emission limits.

~~e. Method 5 for concentrations of particulate matter and associate moisture content. One sample shall continue one test run.~~

~~f. Method 9 for visible determination of the opacity of emissions.~~

~~g. Method 6 for concentration of SO_2. Two samples, taken at approximately 30 minute intervals, shall constitute one test run.~~

~~h. Method 7 for concentration of nitrogen oxides. Four samples, taken at approximately 15 minutes intervals, shall constitute one run.~~

~~i. Method 10 for determination of CO concentrations. One sample constitutes one run.~~

~~j. Method 12 for determination of lead concentration and associated moisture content. One sample constitutes one test run.~~

~~k. Method 13B for determination of mercury emission rate ans associated moisture content. One sample shall constitute one run.~~

~~l. Method 101A for determination of mercury emission rate and associated moisture content. Ons sample shall constitute one test run.~~

~~m. Method 104 for determination of beryllium emission rate and associated moisture content. One sample shall constitute one test run.~~

d.(2) Stack Tests and Stack Test Methods:

Initial compliance tests for each combustion unit shall be conducted within 60 days after achieving maximum operating capacity, but not later than 180 days after startup. Annual tests shall be conducted within one year after the initial tests, unless otherwise allowed by the Department. A test protocol shall be submitted for approval to the Department's Southeast District office (DEPSED) and the Broward County Department of Natural Resources Protection (BCDNRP)) at least 45 days prior to initial testing.
[Rule 62-204.800(8), F.A.C. and Chapter 62-297, F.A.C.]

Method 5[1]	Determination of Particulate Matter Emissions (front half catch only) from Stationary Sources (I) and (A).
Method 9	Visual Determination of the Opacity of Emissions from Stationary Sources (I) and (A).
Method 13A or 13 B	Determination of Total Fluoride Emissions from Stationary Sources (I) and (A).
Method 23[2]	Determination of Dioxin/furan concentration from Stationary Sources (I) and (A).
Method 26[3] or 26A	Determination of HCl emissions (I) and (A).
Method 29[3]	Determination of Metals Emissions from Stationary Sources (I) and (A). Mercury emissions testing shall be conducted semiannually.

[1] Pursuant to 40 CFR 60.58b(c)(3) EPA Reference Method 5 shall be used for determining compliance with the particulate matter emission limit. The minimum sample volume shall be 1.7 cubic meters. The probe and filter holder heating systems in the sample train shall be set to provide a gas temperature no greater than 160 ± 14 °C. An oxygen or carbon dioxide measurement shall be obtained simultaneously with each Method 5 run.

[2] Dioxin/Furan emission limit expressed as the total mass of tetra- through octa chlorinated dibenzo-p-dioxins and dibenzofurans. The facility may perform less frequent testing for dioxin/furan emissions, as allowed by 40 CFR 60.38b(b) and with prior notice to the Department, if the emission unit's dioxin/furan emissions do not exceed 15 ug/dscm corrected to 7% O_2 or less.

[3] HCl and mercury stack tests upstream and downstream of the control device (s) shall be conducted to calculate percent control.

New Condition d.(3) Continuous Compliance with Emission Limits:

Continuous compliance with the emission limits for opacity, carbon monoxide (CO), nitrogen oxides (NOx), sulfur dioxide (SO_2) listed above and the operational parameters (including but not limited to: oxygen measurements, steam production [lb/hr, pressure, and temperature] or feedwater flowrate [lb/hr], device to measure temperature of flue gas at the fabric filter inlet, carbon injection system operating parameters, temperature of the combustion zone, slake lime utilization, power generation, etc) shall be demonstrated by continuous emission monitoring systems (CEMS) operated in accordance with 40 CFR 60.58b and 60.59b(f). SO_2 monitors shall be located both upstream of the scrubber and downstream of the baghouse, in order to calculate percent removal efficiency. **[Rule 62-204.800(8), F.A.C. and 40 CFR 60.38 (40 CFR 60.58b) and 62-4.070 F.A.C.]**

SPECIFIC CONDITION 7.

Fuel

~~The Resource Recovery Facility shall utilize refuse such as garbage and trash (as defined in Chapter 17-7, FAC) but not grease, scum, grit, screenings or sewage sludge.~~

7. The primary fuel for this facility is municipal solid waste (MSW), including the items and materials that fit within the definition of MSW contained in either 40CFR60.51b or Section 403.706 (5), F.A.C., Florida Statutes (1998).

7.a Subject to the limitations contained in this permit, the authorized fuels for the facility also include the other solid wastes that are not MSW which are described below. However, the facility shall not burn:

(1) those materials that are prohibited by state or federal law;
(2) those materials that are prohibited by this permit;
(3) those materials that are not authorized by this permit;
(4) lead acid batteries;
(5) hazardous waste;
(6) nuclear waste;
(8) radioactive waste;
(9) sewage sludge;
(10) explosives.

7.b The fuel may be received either as a mixture or as a single-item stream (segregated load) of discarded materials. If the facility intends to use an authorized fuel that is segregated non-MSW material, the fuel shall be either:

(1) well mixed with MSW in the refuse pit; or
(2) alternately charged with MSW in the hopper.

7.c. The facility owner/operator shall prepare and maintain records concerning the description and quantities of all segregated loads of non-MSW material which are received and used as fuel at the facility, and subject to a percentage weight limitation, below (7.g and 7.h.). For the purposes of this permit, a segregated load is defined to mean a container or truck that is almost completely or exclusively filled with a single item or homogenous composition of waste material, as determined by visual inspection.

7.d. To ensure that the facility's fuel does not adversely affect the facility's combustion process or emissions, the facility operator shall:

(1) comply with good combustion operating practices in accordance with 40 CFR 60.53b;
(2) install, operate and maintain continuous emissions monitors (CEMS) for oxygen, carbon monoxide, sulfur dioxide, oxides of nitrogen and *particulate control device inlet* temperature in accordance with 40 CFR 60.58b; and
(3) record and maintain the CEMS data in accordance with 40 CFR 60.59b.

These steps shall be used to ensure and verify continuous compliance with the emissions limitations in this permit.

Natural gas may be used as fuel during warm-up, startup, shutdown, and malfunction periods, and at other times when necessary and consistent with good combustion practices.

7.f. Subject to the conditions and limitations contained in this permit, the following other solid waste may be used as fuel at the facility:

(1) Confidential, proprietary or special documents (including but not limited to business records, lottery tickets, event tickets, coupons, *credit cards, magnetic tape* and microfilm);
(2) Contraband which is being destroyed at the request of appropriately authorized local, state or federal governmental agencies, provided that such material is not an explosive, a propellant, a hazardous waste, or otherwise prohibited at the facility. For the purposes of this section, contraband includes but is not limited to drugs, narcotics, fruits, vegetables, plants, counterfeit money, and counterfeit consumer goods;
(3) Wood pallets, clean wood, and land clearing debris and
(4) Packaging materials and containers;
(5) Clothing, natural and synthetic fibers, fabric remnants, and similar debris, including but not limited to aprons and gloves; or
(6) Rugs, carpets, and floor coverings, but not asbestos-containing materials or polyethylene or polyurethane vinyl floor coverings.

7.g. Subject to the conditions and limitations contained in this permit waste tires may be used as fuel at the facility. The total quantity of waste tires received as segregated loads and burned at the facility shall not exceed 3%, by weight, of the facility's total fuel. Compliance with this limitation shall be determined by using a rolling 30 day average in accordance with specific condition No. 7.i. below.

7.h. Subject to the conditions and limitations contained in this permit, the following other solid waste materials may be used as fuel at the facility (i.e. the following are authorized fuels that are non-MSW material). The total quantity of the following non-MSW material received as segregated loads and burned at the facility shall not exceed 5%, by weight, of the facility's total fuel. Compliance with this limitation shall be determined by using a rolling 30 day average in accordance with specific condition No. 7.i. below.

(1) Construction and demolition debris.
(2) Oil spill debris from aquatic, coastal, estuarine or river environments. Such items or materials include but are not limited to rags, wipes, and absorbents.
(3) Items suitable for human, plant or domesticated animal use, consumption or application where the item's shelf-life has expired or the generator wishes to remove the items from the market. Such items or materials include but are not limited to off-specification or expired consumer products, pharmaceuticals, medications, health and personal care products, cosmetics, foodstuffs, nutritional supplements, returned goods, and controlled substances.
(4) Consumer-packaged products intended for human or domesticated animal use or application but not consumption. Such items or materials include but are not limited to carpet cleaners, household or bathroom cleaners, polishes, waxes and detergents.
(5) Waste materials that:
    (i) are generated in the manufacture of items in categories (c) or (d), above and are functionally or commercially useless (expired, rejected or spent); or

(ii) are not yet formed or packaged for commercial distribution. Such items or materials must be substantially similar to other items or materials routinely found in MSW.

(f) Waste materials that contain oil from:
(i) the routine cleanup of industrial or commercial establishments and machinery; or
(ii) spills of virgin or used petroleum products. Such items or materials include but are not limited to rags, wipes, and absorbents.

(6) Used oil and used oil filters. Used oil containing a PCB concentration equal or greater than 50 ppm shall not be burned, pursuant to the limitations of 40 CFR 761.20(e).

(7) Waste materials generated by manufacturing, industrial or agricultural activities, provided that these items or materials are substantially similar to items or materials that are found routinely in MSW, subject to prior approval of the Department.

7.i. Segregated Solid Waste Record Keeping:

The following records shall be made and kept to demonstrate compliance with the segregated non-MSW percentage limitations of specific condition 7.

Each segregated load of non-MSW materials, that is subject to the percentage weight limitation of specific conditions 7.g. and 7.h., which is received for processing shall be documented as to waste description and weight. The weight of all waste materials received for processing shall be measured using the facility truck scale and recorded.

Each day the total weight of segregated tires received shall be computed, and the daily total shall be added to the sum of the daily totals from the previous 29 days. The resultant 30 day total weight of tires shall be divided by the total weight of all waste materials received in the same 30 day period, and the resultant number shall be multiplied by 100 to express the ratio in percentage terms. The percentage computed shall be compared to the 3% limitation.

Each day the total weight of segregated non-MSW materials received that are subject to the 5% restriction shall be computed, and the daily total shall be added to the sum of the daily totals from the previous 29 days. The resultant 30 day total weight of segregated non-MSW materials shall be divided by the total weight of all waste materials received in the same 30 day period, and the resultant number shall be multiplied by 100 to express the ratio in percentage terms. The percentage computed shall be compared to the 5% limitation.

SPECIFIC CONDITION 8.c.

~~The temperature of flue gases exiting the acid gas control equipment shall not exceed 300^{0}F.~~

8.c. Compliance with the PM Control Device Temperature:
Each MWC unit is required to continuously monitor and record the flue gas temperature at the inlet to the PM control device in accordance with the requirements at 40 CFR 60.58b(i)(7). The PM control device temperature shall be calculated in 4-hour block arithmetic averages. Each MWC unit shall be allowed to operate up to 17°C (30° F) above the unit's maximum demonstrated PM control device temperature. The maximum demonstrated PM control device temperature is the highest 4-hour arithmetic block-averaged measurement of temperature at the inlet to the PM control device recorded for 4 consecutive hours during the most recent

dioxin/furan performance test which complied with the limits given above. The PM control device inlet temperature and the steam (or feedwater) flow for each unit during the stack test shall be continuously monitored and recorded in accordance with 40 CFR 60, Subpart Cb. Higher temperatures are allowed for testing purposes, as specified at 40 CFR 60.53b(c). **[Rule 62-204.800(8), F.A.C. and 40 CFR 60.38b, 40 CFR 60.53b(c) and 60.58b(i)(7) and (9)]**

NEW SPECIFIC CONDITIONS 12, 13, 14 and 15

12. METAL RECOVERY FACILITY

The metal recovery area will be enclosed in a building adjacent to the existing ash loadout area. All bottom ash is currently quenched with water after leaving each boiler. The resulting bottom ash will be about 20 to 30 percent moisture and will not generate fugitive dust.

13. ELECTRIC UTILITY STEAM GENERATING UNIT ACTUAL EMISSIONS

The permittee shall provide the Department within the period not longer than 10 years following the change, information demonstrating that the physical or operational change did not result in a "representative actual annual emissions" increase in accordance with Rule 62-210.200 (12)(d), F.A.C., and Rule 62-212.400, F.A.C.
[40 CFR 52.21(b)(33), Rule 62-4.070 (3), Rule 62-212.400, and Rule 62-210.200, F.A.C.]

14. SCHEDULE OF COMPLIANCE

The compliance schedule for each unit is provided below.

Increment 1: 2 months after EPA approval of the Florida State Plan
Increment 2: 8 months after EPA approval of the Florida State Plan
Increment 3: 24 months after EPA approval of the Florida State Plan
Increment 4: 34 months after EPA approval of the Florida State Plan
Increment 5: 36 months after EPA approval of the Florida State Plan or by December 19, 2000

The five increments of progress are:
Increment 1: Submittal of a final control plan for the designated facility to the appropriate air pollution control agency.
Increment 2: Awarding of contracts for emission control system or for process modification, or issuance of orders for the purchase of components parts to accomplish emission control or process modification.
Increment 3: Initiation of on-site construction or installation of emission control equipment or process change.
Increment 4: Completion of on-site construction or installation of emission control equipment or process change.
Increment 5: Final compliance.

15. DETERMINATION OF PROCESS VARIABLES

Any other operating parameters (including but not limited to control equipment operating parameters) established during compliance testing and/or inspection that will confirm the proper operation of each emission unit shall be included in the operating permit [Rule 62-297.310 (5), F.A.C. and 62-4.070(3), F.A.C.]

A copy of this permit modification shall be attached to Permit PSD-FL-112 and shall become a part of this permit.

Is your RETURN ADDRESS completed on the

- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

2. ☐ Restricted Delivery
Consult postmaster for fee.

3. Article Addressed to:
Thomas D. Kirk, P.M.
Wheelabrator N. Broward
2600 NW 48th St.
Pompano Bch, Fl
33073

4a. Article Number
Z 333 618 150

4b. Service Type
☐ Registered ☒ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery
5/24

5. Received By: (Print Name)
M Cameron

8. Addressee's Address (Only if requested and fee is paid)

6. Signature: (Addressee or Agent)
X M Cameron

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TOTAL Postage & Fees	$ 4.30
Postmark or Date PSD-FL-112(69) USPS	5-21-99

PS Form 3800, April 1995

Florida Department of
Environmental Protection

Memorandum

TO: Clair Fancy

THRU: Al Linero

FROM: Teresa Heron

DATE: May 12, 1999

SUBJECT: Wheelabrator North Broward Resource Recovery Facility
Air Pollution Control Equipment Retrofit

Attached is a draft modification to the PSD permit for this facility. This permit modification addresses the installation of the new SNCR air pollution control system for NOx to comply with the Emission Guidelines for existing municipal solid waste combustors, 40 CFR 60, Subpart Cb and the clarification of authorized fuels. In addition to the above, this permit modification also address a new permit condition for the fabric filter inlet temperature in accordance with Cb Emission Guideline Requirements; the incorporation of Subpart Cb emission standards, the elimination of Furnace Temperature limits and minor corrections to PSD conditions to be consistent with the Conditions of Certification.

The pollution control systems for this facility consist of: the existing spray dryer absorbers and fabric filters to control acid gases, particulate matter, and heavy metals; the new selective non-catalytic reduction to control nitrogen oxides; and combustion controls for volatile organic compounds, carbon monoxide, and dioxins and furans. Mercury is controlled by source separation techniques.

The slate of authorized fuels is being expanded and defined from "refuse such as garbage and trash" to: non-hazardous solid waste including municipal solid waste (MSW) as defined at 40 CFR 60.51b; records and documents; non-hazardous contraband, clean wood and land clearing debris; oil spill debris; waste tires; expired or off-spec packaged or unpackaged consumable goods (e.g. pharmaceuticals); consumer products; packaging materials; certain floor covering; used oil and filters; and certain other wastes similar to MSW. We included limits (acceptable to Wheelabrator) on these segregated wastes to insure the overall composition continues to comport to the typical characteristics of MSW.

We recommend your approval and signature.

AAL/th

Attachments

Golder Associates Inc.

6241 NW 23rd Street, Suite 500
Gainesville, FL 32653-1500
Telephone (352) 336-5600
Fax (352) 336-6603

April 9, 1999

9837542Y/F1/WP/RTC

Mr. A. A. Linero, P.E., Administrator
New Source Review Section
Bureau of Air Regulation
Florida Department of Environmental Protection
111 South Magnolia Drive, Suite 4
Tallahassee, FL 32301

Attention: Teresa Heron

RE: South and North Broward County Resource Recovery Facilities - Subpart Cb
Wheelabrator South Broward, Inc. and Wheelabrator North Broward, Inc.

Dear Teresa:

As we discussed and as identified in the Department's February 26, 1999 letter, I am providing additional information pertaining to the applications submitted to the Department that addresses the New Source Performance Standards (NSPS) Subpart Cb including certain permit simplifications. The information you requested is provided below.

1. Pursuant to Rules 62-4.070(3), 62-210.200 and 62-212.400(2)(a)2. F.A.C., please provide reasonable assurance that the burning of the proposed wastes and the operation of the boilers at the proposed conditions will not be construed as a modification (no emissions increases). Include all assumptions, reference materials and calculations (i.e., test data, comparison of actual emissions vs. representative actual emissions in TPY).

As defined in Rule 62-210.200(188), a "modification" is "any physical change in, or change in the method of operation of, or addition to a facility which would result in an increase in actual emissions of any air pollutant subject to regulation under the Act." The only proposed physical change or change in the method of operation of the boilers will be the addition of Selective Non-Catalytic Reduction (SNCR) systems to meet the nitrogen oxides emission limits of Subpart Cb. This system is being installed to lower NOx emissions. The addition of SNCR, while a physical addition to the facility, will not result in any changes in actual emissions of any other regulated air pollutant. The requested definition of fuels will only more specifically describe what the type of fuels can be used. The revised definition contains fuels that are commonly mixed in the normal household and commercial waste streams and will not change the emission characteristics of the units. None of the other proposed amendments to the existing PSD conditions, e.g., adjusting allowable emissions to the Subpart Cb requirements, will result in an increase in actual emissions. Accordingly, Prevention of Significant Deterioration (PSD) review is not applicable.

Attached as Tables 1 and 2 are changes in allowable emissions as a result of the request. These tables are based on the application forms (Section H. Emission Unit Pollutant Detail Information) and Table 4-2 in the applications. For PM/PM10, SO_2, NO_x, Lead and Mercury there are considerable decreases in allowable emissions. For CO there is no increase in actual emissions, since the streamlining of the current CO emission limits into the Subpart Cb limit does not change the combustion efficiency of the boilers. However, there is an apparent increase in the annual allowable emissions.

The apparent increase in CO allowable emissions is an artifact of eliminating the existing CO limits of 0.09 lb/mmBtu or 88 ppm at 12 percent CO_2 (4-day rolling average) and 400 ppm at 12 percent CO_2 (1-hour rolling average). The Subpart Cb limit is 100 ppm at 7 percent O_2 (4-hour block average) and is more stringent overall than the previously combined limits and compliance methods. Using the previous lowest CO emission limit of 0.09 lb/mmBtu, which is the basis for the existing PSD annual limit the maximum increase in the allowable emission rate would be about 60 tons/year for each facility. This is less than the PSD significant emission rate. The deletion of the other CO emission limits would bring the PSD and PPSA in conformance with the Subpart Cb requirements.

2. What is the net steam energy (difference between the enthalpy of the steam and feedwater)? Please see attached correspondence from CDM for reference.

We have reviewed the material transmitted with the February 26, 1999 letter concerning the Hillsborough County's request for increased steam flow and the use of net enthalpy for determination of boiler heat input. For the South and North Broward applications, there is no request to change the heat input (i.e., mmBtu/hr), fuel input (i.e., tons/day) or production rate (i.e., lb/hr steam) limitations. The steam limits in the approvals are 192,000 and 186,000 lb/hr for the South Broward and North Broward facilities, respectively. EPA in the development of the Eb/Cb standards determined that steam flow was the best practical and most accurate method for determining combustor load levels. Therefore, the incorporation of an additional limit would not be warranted. To date, the facilities have effectively used the steam production limitations (i.e., in lb/hr) to demonstrate compliance with the production limits and should be allowed to continue without additional limitations.

3. Consolidation of the emission limits between the PSD permit and the PPSC conditions of certification.

The deletion of the emission limits for these pollutants is requested for several reasons. This includes permit simplification, compliance with other pollutants as surrogates and change in FDEP PSD rules.

First, the PSD and PPSA conditions in several instances do not include the emissions limits of these pollutants (see attached summary). For the South Broward facility, the PSD permit includes emission limits for fluorides but does not include emission limits for VOCs, As, and SAM; the PPSA approval includes emission limits for VOCs, fluorides, and SAM with no limit for As. For the North Broward facility, the PSD permit includes emission limits for

fluorides but does not include limits for VOCs, As and SAM as emission limits; the PPSA approval includes emission limits for VOCs, fluorides, As, and SAM.

Second, the PSD permit was issued after the PPSA and would have accounted for those pollutants that both EPA and Department determined to be appropriate for the facilities. Eliminating VOCs, As, and SAM from the PPSA conditions would make the approvals consistent. Second, the emission limits for SO_2 and HCL will provide the Department reasonable assurance that other acid gases such as SAM and F are low. The emission limit for CO also assures that the emissions of VOCs are low. Indeed, the last compliance tests (1998) for these pollutants found the actual emissions from 5 to 100 times lower than the emission limits. In several cases the actual emissions were less than the detection limits.

Finally, the Department's change in Table 212.400-2 of Chapter 62-212 does not include As. Moreover, the Subpart Cb emission limits for PM and cadmium and lead were intended by EPA to represent emission limits for the category of all Municipal Waste Combustor metals. Meeting these limits would ensure that emission of other metals would be minimized. The elimination of the emission limits for As, SAM, F and VOCs will result in permit conditions that are consistent across the two approvals (PSD and PPSA) and with Subpart Cb requirements.

In the review of the application, there were a few errors in the North Broward application concerning emissions (SO_2 and HCL) that I noticed and have provided corrections for. These do not substantially change the application. Your prompt review of the application is appreciated. If there are any further questions please call.

Sincerely,

GOLDER ASSOCIATES INC.

Kennard F. Kosky, P.E.
Principal
Professional Engineer No. 14996
STATE OF FLORIDA
SEAL

KFK/arz

cc: Mark Santella, Wheelabrator
Rick Mulhorn, Wheelabrator

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cc: B. Oven, PPS
SED
EPA
Broward Co.
S. Smallwood, ERM South
file

Table 2. Allowable Emissions for North Broward Resource Recovery Facility (per boiler)

	Current Allowable		New Allowable		Net Difference	PSD Significant Level
Pollutants	lb/hr	ton/yr	lb/hr	ton/yr	ton/yr	ton/yr
PM/PM10	9.5	41.6	7.35	32.2	-9.4	25/15
SO_2	66.3	290.0	32.8	143.5	-146.5	40[a]
NO_x	169.3	741.5	106.5	466.4	-275.1	40
CO	27.2	119.2	31.8	139.1	19.9	100
Beryllium	2.81E-04	1.20E-03	2.81E-04	1.20E-03	0	15[b]
Lead	0.45	1.98	0.133	0.58	-1.4	0.6[b]
Mercury	0.23	0.96	0.019	0.08	-0.9	0.1
HCL	None	None	11.71	51.3	0	40[a]
Dioxins	None	None	8.20E-06	3.60E-05	0	3.50E-06
Cadmium	None	None	0.011	0.048	0	15[b]

Footnotes:

a: MSC Acid Gases - includes SO_2 and HCL.

b: MSC Metals (as PM); lead also a MSC metal.

Consolidation Summary of PSD and PPSA Approvals-
VOCs, Fluorides, Arsenic and SAM[1]

South Broward

Pollutant	PSD (PSD-FL-105)	PPSA (PA 85-21)
Volatile Organic Compounds	No	Yes
Fluorides	Yes	Yes
Arsenic (As)	No	No
Sulfuric Acid Mist (SAM)	No	Yes

North Broward

Pollutant	PSD (PSD-FL-112)	PPSA (PA 86-22)
Volatile Organic Compounds	No	Yes
Fluorides	Yes	Yes
Arsenic (As)	No	Yes
Sulfuric Acid Mist (SAM)	No	Yes

[1] Emission limits for these pollutants are requested to be eliminated from both the PPSA approval and the PSD approval, as applicable.

Table 1. Allowable Emissions for South Broward Resource Recovery Facility (per boiler)

	Current Allowable		New Allowable		Net Difference	PSD Significant Level
Pollutants	lb/hr	ton/yr	lb/hr	ton/yr	ton/yr	ton/yr
PM/PM10	10.1	44.5	7.85	34.4	-10.1	25/15
SO_2	70.9	310.6	35.1	153.7	-156.9	40[a]
NO_x	181.2	793.3	114	499	-294.3	40
CO	29.1	127.6	33.9	148.5	20.9	100
Beryllium	3.01E-04	1.32E-03	3.01E-04	1.32E-03	0	15[b]
Lead	0.48	2.11	0.142	0.62	-1.5	0.6[b]
Mercury	0.24	1.08	0.02	0.09	-1.0	0.1
HCL	None	None	12.55	55	0	40[a]
Dioxins	None	None	8.70E-06	3.80E-05	0	3.50E-06
Cadmium	None	None	0.012	0.051	0	15[b]

Footnotes:

a: MSC Acid Gases - includes SO_2 and HCL.

b: MSC Metals (as PM); lead also a MSC metal.

4. Professional Engineer's 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.

If the purpose of this application is to obtain a Title V source 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 schedule is submitted with this application.

If the purpose of this application is to obtain an air construction permit for one or more proposed new or modified emissions units (check here [X] 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.

If the purpose of this application is to obtain an initial air operation permit or operation permit revision 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 (seal)

4/9/99
Date

* Attach any exception to certification statement.

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Pollutant Detail Information:

1. Pollutant Emitted: **SO2**
2. Total Percent Efficiency of Control: **75** %
3. Potential Emissions: **32.8** lb/hour **143.5** tons/year
4. Synthetically Limited? [ ] Yes [**X**] No
5. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/yr
6. Emission Factor: **29 ppmvd @ 7% O2** Reference: **40 CFR 60 Subpart Cb**
7. Emissions Method Code: [**X**] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
8. Calculation of Emissions (limit to 600 characters): **32.6 tons/hr x 3.9 lb/ton x (1-0.75) = 32.8 lb/hr; 3.9 lb/ton = uncontrolled SO2 from Table 2.1.8 AP-42**
9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters): **Emission limit is the less stringent requirement of 75% removal or 29 ppmvd @ 7% O2.**

Emissions Unit Information Section 1 of 3

Allowable Emissions (Pollutant identified on front page)

A.

1. Basis for Allowable Emissions Code: **RULE**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: **29 ppmvd @ 7% O2**	
4. Equivalent Allowable Emissions:	**32.8** lb/hour **143.5** tons/year
5. Method of Compliance (limit to 60 characters): **Stack Test Method 6C**	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **40 CFR 60 Subpart Cb specifies the less stringent requirement of 75% removal or 29 ppmdv @ 7% O2.**	

B.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lb/hour	tons/year
5. Method of Compliance (limit to 60 characters):		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):		

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Pollutant Detail Information:

1. Pollutant Emitted: **H106**
2. Total Percent Efficiency of Control: **95** %
3. Potential Emissions: **11.71** lb/hour **51.3** tons/year
4. Synthetically Limited? [ ] Yes [**X**] No
5. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/yr
6. Emission Factor: **29 ppmvd @ 7% O2** Reference: **40 CFR 60 Subpart Cb**
7. Emissions Method Code: [**X**] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
8. Calculation of Emissions (limit to 600 characters): **33.6 tons/hr x 6.97 lb/ton x (1-0.95) = 11.71 lb/hr; 6.97 lb/ton = uncontrolled HCL from Table 2.1.8 AP-42**
9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters): **Emission limit is the less stringent requirement of 95% removal or 29 ppmvd @ 7% O2.**

Emissions Unit Information Section 1 of 3

Allowable Emissions (Pollutant identified on front page)

A.

1. Basis for Allowable Emissions Code: **RULE**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: **29 ppmvd @ 7% O2**	
4. Equivalent Allowable Emissions: **11.71** lb/hour	**51.3** tons/year
5. Method of Compliance (limit to 60 characters):	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **40 CFR 60 Subpart Cb, less stringent requirement of 95% control efficiency or 29 ppmvd @ 7% O2.**	

B.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lb/hour	tons/year
5. Method of Compliance (limit to 60 characters):		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):		

Emissions Unit Information Section 2 **of** 3

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Pollutant Detail Information:

1. Pollutant Emitted: **SO2**

2. Total Percent Efficiency of Control: **75** %

3. Potential Emissions: **32.8** lb/hour **143.5** tons/year

4. Synthetically Limited? [ ] Yes [**X**] No

5. Range of Estimated Fugitive/Other Emissions:

   [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/yr

6. Emission Factor: **29 ppmvd @ 7% O2**

   Reference: **40 CFR 60 Subpart Cb**

7. Emissions Method Code:

   [**X**] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

8. Calculation of Emissions (limit to 600 characters):

   32.6 tons/hr x 3.9 lb/ton x (1-0.75) = 32.8 lb/hr; 3.9 lb/ton = uncontrolled SO2 from Table 2.1.8 AP-42

9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters):

   Emission limit is the less stringent requirement of 75% removal or 29 ppmvd @ 7% O2.

Emissions Unit Information Section 2 of 3

Allowable Emissions (Pollutant identified on front page)

A.

1. Basis for Allowable Emissions Code: **RULE**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: **29 ppmvd @ 7% O2**	
4. Equivalent Allowable Emissions:	**32.8** lb/hour **143.5** tons/year
5. Method of Compliance (limit to 60 characters): **Stack Test Method 6C**	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **40 CFR 60 Subpart Cb specifies the less stringent requirement of 75% removal or 29 ppmdv @ 7% O2.**	

B.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lb/hour	tons/year
5. Method of Compliance (limit to 60 characters):		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):		

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Pollutant Detail Information:

1. Pollutant Emitted: **H106**

2. Total Percent Efficiency of Control: **95** %

3. Potential Emissions: **11.71** lb/hour **51.3** tons/year

4. Synthetically Limited? [ ] Yes [**X**] No

5. Range of Estimated Fugitive/Other Emissions:

   [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/yr

6. Emission Factor: **29 ppmvd @ 7% O2**

   Reference: **40 CFR 60 Subpart Cb**

7. Emissions Method Code:

   [**X**] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

8. Calculation of Emissions (limit to 600 characters):

   33.6 tons/hr x 6.97 lb/ton x (1-0.95) = 11.71 lb/hr; 6.97 lb/ton = uncontrolled HCL from Table 2.1.8 AP-42

9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters):

   Emission limit is the less stringent requirement of 95% removal or 29 ppmvd @ 7% O2.

Emissions Unit Information Section 2 of 3

Allowable Emissions (Pollutant identified on front page)

A.

1. Basis for Allowable Emissions Code: **RULE**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: **29 ppmvd @ 7% O2**	
4. Equivalent Allowable Emissions: **11.71** lb/hour	**51.3** tons/year
5. Method of Compliance (limit to 60 characters):	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **40 CFR 60 Subpart Cb, less stringent requirement of 95% control efficiency or 29 ppmvd @ 7% O2.**	

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1. Basis for Allowable Emissions Code:	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units:	
4. Equivalent Allowable Emissions: lb/hour	tons/year
5. Method of Compliance (limit to 60 characters):	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):	

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Pollutant Detail Information:

1. Pollutant Emitted: **SO2**
2. Total Percent Efficiency of Control: **75** %
3. Potential Emissions: **32.8** lb/hour **143.5** tons/year
4. Synthetically Limited? [ ] Yes [**X**] No
5. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/yr
6. Emission Factor: **29 ppmvd @ 7% O2** Reference: **40 CFR 60 Subpart Cb**
7. Emissions Method Code: [**X**] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
8. Calculation of Emissions (limit to 600 characters): **32.6 tons/hr x 3.9 lb/ton x (1-0.75) = 32.8 lb/hr; 3.9 lb/ton = uncontrolled SO2 from Table 2.1.8 AP-42**
9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters): **Emission limit is the less stringent requirement of 75% removal or 29 ppmvd @ 7% O2.**

Emissions Unit Information Section 3 of 3
Allowable Emissions (Pollutant identified on front page)

A.

1. Basis for Allowable Emissions Code: **RULE**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: **29 ppmvd @ 7% O2**	
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1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lb/hour	tons/year
5. Method of Compliance (limit to 60 characters):		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):		

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Pollutant Detail Information:

1. Pollutant Emitted: **H106**

2. Total Percent Efficiency of Control: **95** %

3. Potential Emissions: **11.71** lb/hour **51.3** tons/year

4. Synthetically Limited? [ ] Yes [**X**] No

5. Range of Estimated Fugitive/Other Emissions:

   [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/yr

6. Emission Factor: **29 ppmvd @ 7% O2**

   Reference: **40 CFR 60 Subpart Cb**

7. Emissions Method Code:

   [**X**] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

8. Calculation of Emissions (limit to 600 characters):

   33.6 tons/hr x 6.97 lb/ton x (1-0.95) = 11.71 lb/hr; 6.97 lb/ton = uncontrolled HCL from Table 2.1.8 AP-42

9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters):

   Emission limit is the less stringent requirement of 95% removal or 29 ppmvd @ 7% O2.

Emissions Unit Information Section 3 of 3

Allowable Emissions (Pollutant identified on front page)

A.

1. Basis for Allowable Emissions Code: **RULE**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: **29 ppmvd @ 7% O2**	
4. Equivalent Allowable Emissions: **11.71** lb/hour	**51.3** tons/year
5. Method of Compliance (limit to 60 characters):	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **40 CFR 60 Subpart Cb, less stringent requirement of 95% control efficiency or 29 ppmvd @ 7% O2.**	

B.

1. Basis for Allowable Emissions Code:	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units:	
4. Equivalent Allowable Emissions: lb/hour	tons/year
5. Method of Compliance (limit to 60 characters):	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):	

Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

February 26, 1999

CERTIFIED MAIL -RETURN RECEIPT REQUESTED

Mr. Kennard Kosky
Golder Associates Inc.
6241 NW 23rd Street Suite 500
Gainesville, FL 32653-1500

Subject: DEP Files No.: PSD-FL-112(B)/PA 86-22 Request for Permit Modification

Dear Mr. Kosky:

This letter is to confirm the telephone conversations and the e- mail correspondence between you and Ms. Teresa Heron of my staff. We are in the process of finalizing the proposed permit amendment, however we need the data verbally requested to complete it. Basically the information needed is repeated as follows:

1. Pursuant to Rules 62-4.070 (3), 62-210.200 and 62-212.400(2)(a)2. F.A.C., please provide reasonable assurance that the burning of the proposed wastes and the operation of the boilers at the proposed conditions will not be construed as a modification (no emissions increases). Include all assumptions, reference materials and calculations (i.e., test data, comparison of actual emissions vs. representative actual emissions in TPY).
2. What is the net steam energy (difference between the enthalpy of the steam & feedwater)? Please see attached correspondence from CDM for reference.
3. Consolidation of the emission limits between the PSD permit and the PPSC conditions of certification.

If you have any questions regarding this matter, please call Teresa Heron (Review Engineer) at (850) 921-9529 or write to me at the above address.

Sincerely,

2/26

for A. A. Linero, F.E. Administrator
New Source Review Section

AAL/th/t

cc: Buck Oven, DEP PPSC
Thomas D. Kirk, WNB

Is your RETURN ADDRESS completed on the reverse

- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "*Return Receipt Requested*" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Mr. Kennard Kosky
Golder Associates
6241 NW 23rd St
Gainesville, Fl
32653-1500

4a. Article Number: P 265 659 428

4b. Service Type
☐ Registered ☒ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery: 3-3-99

5. Received By: *(Print Name)*

8. Addressee's Address *(Only if requested and fee is paid)*

6. Signature: *(Addressee or Agent)*
X M. Reinert

PS Form **3811**, December 1994 102595-97-B-0179 Domestic Return Receipt

Thank you for using Return Receipt Service.

P 265 659 428

US Postal Service
Receipt for Certified Mail
No Insurance Coverage Provided.
Do not use for International Mail *(See reverse)*

Sent to	Kosky
Street & Number	Golder Assoc
Post Office, State, & ZIP Code	Gainesville Fl
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date	3-1-99

PS Form **3800**, April 1995

PSD-FL-1126(B)
PA 86-22

FACSIMILE TRANSMISSION

GOLDER ASSOCIATES INC.

6241 NW 23RD STREET
GAINESVILLE, FLORIDA 32653 USA

TELEPHONE NO. (352) 336-5600
FAX NO. (352) 336-6603

Date:	January 21, 1999	Project No.: 1480
FAX No.:	(850)922-6979	
TO:	Teresa Heron	
ORGANIZATION:	FDEP-Bureau of Air Regulation	
FR:	Kennard F. Kosky, P.E.	
RE:	MODIFICATION REQUEST-FINAL CONDITIONS	
Hard Copy to Follow: ☐ Yes X No		Total Number of Pages (including this cover page): 4

MESSAGE:
Dear Teresa: Attached please find the final EPA approval for the North Broward Resource Recovery Facility which changes the heat input rate. Condition c. 1. shows the increase in the heat input to 302.5 mmBtu/hr from the previous version. I will forward that to you via mail the complete PSD package. Please call if you have any questions.

Regards, Ken

cc: Rick Mulhorn, Wheelabrator; via US mail w/o enclosures

FORMS/FAX

07040

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

FEB 9 1989

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Thomas M. Henderson
Project Director
Broward County Resource
Recovery Office
115 South Andrews Avenue, Room 521
Ft. Lauderdale, Florida 33301

Re: North Broward Resource Recovery Facility (PSD-FL-112)

Dear Mr. Henderson:

Pursuant to the February 5, 1989, request from Ms. Kerri L. Barsh, Attorney, Greenberg, Traurig, Hoffman, Lipoff, Rosen & Quentel, P.A., this is to confirm that the U.S. Environmental Protection Agency (EPA) has determined that the modifications to the federally issued Prevention of Significant Deterioration (PSD) permit (PSD-FL-112) proposed at the North Broward Resource Recovery Facility (RRF) will meet all applicable requirements of 40 CFR §52.21. Specifically, the federally issued PSD permit No. PSD-FL-112 will be modified to reflect the construction of three (3) municipal waste incinerators rather than four (4) as previously planned. All other conditions and limitations specified in the original PSD permit issued on July 28, 1987, will remain in force and effect.

Accordingly, PART I, Specific Conditions, item c.(1) will now be revised to read as follows:

c. (1) None of the three individual municipal solid waste incinerators shall be charged in excess of 302.5 mmBtu/hr and 806.6 tons per day MSW (108% rated capacity) nor produce in excess of 186,000 lbs/hr of steam (3-hr rolling average).

In addition to the above change, the original construction authorization signed by Lee A. DeHihns, III, Deputy Regional Administrator, will be modified to authorize this change. Enclosed with this letter, please find the modified page to permit PSD-FL-112 authorizing the construction of the three municipal waste combustors.

Please be advised that the modifications to your PSD permit herein described shall become a binding part of permit PSD-FL-112. This permit modification shall become effective upon receipt of this letter unless you notify us of your objection to the conditions contained herein within ten (10) days after receipt of this letter.

If you have any questions concerning this matter, please contact Mr. Wayne Aronson of my staff at (404) 347-2864.

Sincerely yours,

Greer C. Tidwell
Regional Administrator

Enclosure

cc: C. H. Fancy, Deputy Chief
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

PERMIT TO CONSTRUCT UNDER THE RULES FOR THE
PREVENTION OF SIGNIFICANT DETERIORATION OF AIR QUALITY

Pursuant to and in accordance with the provisions of Part C, Subpart 1 of the Clean Air Act, as amended, 42 U.S.C. §7470 et. seq., and the regulations promulgated thereunder at 40 CFR §52.21, as amended at 50 Fed. Reg. 28550 (July 12, 1985),

North Broward County Resource Recovery Facility

is, as of the effective date of this permit (PSD-FL-112) authorized to construct a resource recovery facility consisting of three 806.6 ton per day (maximum capacity) mass burn, municipal solid waste incinerators and appurtenances at the following location:

2700 Hilton Road (N.W. 48th Street)
Pompano Beach, Florida 33060
Unincorporated Broward County, Florida.

Upon completion of authorized construction and commencement of operation/production, this stationary source shall be operated in accordance with the emission limitations, sampling requirements, monitoring requirements and other conditions set forth in the attached Part I. - Specific Conditions and Part II. - General Conditions.

This permit is hereby issued on JUL 23 1987 and shall become effective thirty (30) days after receipt hereof unless a petition for administrative review is filed with the Administrator during that time. If a petition is filed any applicable effective date shall be determined in accordance with 40 CFR §124.19(f)(1).

If construction does not commence within 18 months after the effective date of this permit, or if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable time, this permit shall expire and authorization to construct shall become invalid.

This authorization to construct shall not relieve the owner or operator of the responsibility to comply fully with all applicable provisions of Federal, State, and local law.

FEB 09 1989
Date Signed

for Regional Administrator

87-853

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

JUL 2 8 1987

APT-APB/eaw

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Thomas M. Henderson
Project Director
Broward County Resource Recovery Office
115 South Andrews Avenue, Room 521
Ft. Lauderdale, Florida 33301

Re: North Broward Resource Recovery Facility (PSD-FL-112)

Dear Mr. Henderson:

Review of your February 14, 1986, application to construct a four unit, 226.9 mmBTU/hr (each) heat input, mass burn, municipal solid waste fired, energy recovery facility in Broward County, Florida, has been completed. The construction is subject to rules for the Prevention of Significant Deterioration (PSD) of air quality contained in 40 CFR §52.21. The Florida Department of Environmental Regulation (FDER) performed the preliminary determination concerning the proposed construction and published a request for public comment on September 13, 1986. Eleven public comments were received and addressed in the final determination. On June 26, 1987, the Environmental Protection Agency (EPA) prepared a final determination recommending issuance of the PSD permit by EPA.

EPA has determined that the construction as described in the application meets all the applicable requirements of 40 CFR §52.21. Accordingly, pursuant to 40 CFR §124.15, the Regional Administrator has made a final decision to issue the enclosed Permit to Construct: Part I. - Specific Conditions and Part II. - General Conditions. This authority to construct, granted as of the effective date of the permit, is based solely on the requirements of 40 CFR §52.21, air quality. It does not apply to other permits issued by this Agency or by other agencies. Please be advised that a violation of any permit condition, as well as any construction which proceeds in material variance with information contained in the final determination, will be subject to enforcement action.

This final permit decision is subject to appeal under 40 CFR §124.19 by petitioning the Administrator of the EPA within thirty (30) days after receipt thereof. The petitioner must submit a statement of reasons for the appeal and the Administrator must decide on the petition within a reasonable time period. If the petition is denied, the permit shall become effective upon notice of such action to the parties to the appeal. If no appeal is

filed with the Administrator, the permit shall become effective thirty (30) days after receipt of this letter. Upon the expiration of the thirty (30) day period, EPA will notify you of the status of the permit's effective date.

Receipt of this letter does not constitute authority to construct. Approval to construct this four unit, mass burn, municipal solid waste fired, energy recovery facility shall be granted as of the effective date of the permit. The complete analysis which justifies this approval has been fully documented for future reference, if necessary. Any questions concerning this approval may be directed to Mr. Bruce Miller, Chief, Air Programs Branch at (404) 347-2864.

Sincerely yours,

Winston A. Smith, Director
Air, Pesticides, and Toxics
Management Division

Enclosure

cc: Mr. Steve Smallwood, P.E., Chief
Bureau of Air Quality Management
Florida Department of Environmental
Regulation

PERMIT TO CONSTRUCT UNDER THE RULES FOR THE
PREVENTION OF SIGNIFICANT DETERIORATION OF AIR QUALITY

Pursuant to and in accordance with the provisions of Part C, Subpart 1 of the Clean Air Act, as amended, 42 U.S.C. §7470 et. seq., and the regulations promulgated thereunder at 40 CFR §52.21, as amended at 50 Fed. Reg. 28550 (July 12, 1985),

North Broward County Resource Recovery Facility

is, as of the effective date of this permit (PSD-FL-112) authorized to construct a resource recovery facility consisting of four 605 ton per day (maximum capacity) mass burn, municipal solid waste incinerators and appurtenances at the following location:

2700 Hilton Road (N.W. 48th Street)
Pompano Beach, Florida 33060
Unincorporated Broward County, Florida.

Upon completion of authorized construction and commencement of operation/production, this stationary source shall be operated in accordance with the emission limitations, sampling requirements, monitoring requirements and other conditions set forth in the attached Part I. - Specific Conditions and Part II. - General Conditions.

This permit is hereby issued on JUL 28 1987 and shall become effective thirty (30) days after receipt hereof unless a petition for administrative review is filed with the Administrator during that time. If a petition is filed any applicable effective date shall be determined in accordance with 40 CFR §124.19(f)(1).

If construction does not commence within 18 months after the effective date of this permit, or if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable time, this permit shall expire and authorization to construct shall become invalid.

This authorization to construct shall not relieve the owner or operator of the responsibility to comply fully with all applicable provisions of Federal, State, and local law.

July 28, 1987
Date Signed

Lee A. DeHihns, III, Deputy
Regional Administrator

PART I. - Specific Conditions

1. Emission Limitations

a. Stack emissions from each unit shall not exceed the following:

Particulate: 0.0150 gr/dscf dry volume corrected to 12% CO_2.

Sulfur Dioxide: (1) 0.140 lb/mmBtu heat input and 60 ppm (3-hr rolling average, dry volume, corrected to 12% CO_2); or

(2) 65% reduction of uncontrolled SO_2 emissions.* In no case shall the SO_2 emissions exceed 0.310 lb/mmBtu heat input and 124 ppm (3-hr rolling average, dry volume, corrected to 12% CO_2).

The 124 ppm limit above shall be modified to reflect a new emission limit (in ppm) from the control device at 65% control efficiency. ~~Within 18 months of start-up of operation, the County shall submit compliance tests that~~ will be used to determine the new SO_2 emission limit (in ppm). The limit will be determined by observed average emission rate (u) from the submitted compliance tests and will be statistically analyzed using the one tailed student T test ($t_{.05} = (\bar{x} - u)\, n^{0.5}/s$) at the 95% confidence level to derive a mean emission rate ($\bar{x}$), where s is the standard deviation of observed values n. The final operating SO_2 emission limit (in ppm) shall be this mean emission rate ($\bar{x}$). This value shall be restricted to no more than 124 ppm or less than 60 ppm (3-hr rolling average, dry volume, corrected to 12% CO_2).

Nitrogen Oxides: .560 lb/mmBtu heat input and 350 ppm (3-hr rolling average, dry volume, corrected to 12% CO_2).

Carbon Monoxide: .090 lb/mmBtu heat input; 400 ppm (1-hr rolling average, dry volume, corrected to 12% CO_2); and 88 ppm (4-day rolling average, dry volume, corrected to 12% CO_2).

Lead: .00056 lb/mmBtu

Fluorides: .0040 lb/mmBtu

Beryllium: 9.30×10^{-7} lb/mmBtu

Mercury: 7.50×10^{-4} lb/mmBtu

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* Uncontrolled SO_2 emissions will be measured at the inlet to the acid gas control device.

Visible Emissions: Opacity of stack emissions shall not be greater than 15% opacity. Excess opacity resulting from startup or shutdown shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess opacity shall be minimized but in no case exceed two hours in any 24-hour period unless specifically authorized by EPA for longer duration.

The units are subject to 40 CFR Part 60, Subpart E and Subpart Db, New Source Performance Standards (NSPS), except that where requirements in this permit are more restrictive, the requirements in this permit shall apply.

There shall be no greater than 10% opacity for emissions from the refuse bunker and the ash handling and loadout. The potential for dust generation by ash handling activities will be mitigated by quenching the ash prior to loading in ash transport trucks. Additionally, all portions of the proposed facility, including the ash handling facility, which have the potential for fugitive emissions will be enclosed. Also, those areas which have to be open for operational purposes, (e.g., tipping floor of the refuse bunker while trucks are entering and leaving) will be under negative air pressure.

b. Only distillate fuel oil or natural gas shall be used in startup burners. The annual capacity factor for use of natural gas and oil, as determined by 40 CFR 60.43b(d), shall be less than 10%. If the annual capacity factor of natural gas is greater than 10%, then the facility shall be subject to §60.44b.

c. (1) None of the four individual municipal solid waste incinerators shall be charged in excess of 226.9 mmBtu/hr and 605 tons per day MSW (110% rated capacity) nor produce in excess of ~~139,500 lbs~~/hr of steam (3-hr rolling average). 186,000 AMENDED 2/9/89

(2) The temperature of the flue gas exiting the final combustion chamber of the incinerator shall not be less than 1800°F.

d. Compliance Tests

(1) a. Annual compliance tests for particulate matter, lead, SO_2, nitrogen oxides, CO, fluorides, mercury, and beryllium shall be conducted in accordance with 40 CFR 60.8 (a), (b), (d), (e), and (f).

b. Compliance with the opacity standard for the incinerator stack emissions in condition 1.a. of this part shall be determined in accordance with 40 CFR 60.11 (b) and (e).

c. Compliance with the emission limitation for 65% control of total sulfur dioxide emissions shall be determined by using the test methods in condition 1.d.(2) and sampling for SO_2 emissions before and after the acid gas control device. Continuous emissions data shall also be used to demonstrate compliance with the SO_2 concentration limits in condition 1.a. above.

(2) The following test methods and procedures for 40 CFR Parts 60 and 61 shall be used for compliance testing:

a. Method 1 for selection of sample site and sample traverses.

b. Method 2 for determining stack gas flow rate when converting concentrations to or from mass emission limits.

c. Method 3 for gas analysis for calculation of percent O_2 and CO_2.

d. Method 4 for determining stack gas moisture content to convert the flow rate from actual standard cubic feet to dry standard cubic feet for use in converting concentrations in dry gases to or from mass emission limits.

e. Method 5 for concentration of particulate matter and associated moisture content. One sample shall constitute one test run.

f. Method 9 for visible determination of the opacity of emissions.

g. Method 6 for concentration of SO_2. Two samples, taken at approximately 30 minute intervals, shall contitute one test run.

h. Method 7 for concentration of nitrogen oxides. Four samples, taken at approximately 15 minute intervals, shall constitute one test run.

i. Method 10 for determination of CO concentrations. One sample constitutes one test run.

j. Method 12 for determination of lead concentration and associated moisture content. One sample constitutes one test run.

k. Method 13B for determination of fluoride concentrations and associated moisture content. One sample shall constitute one test run.

l. Method 101A for determination of mercury emission rate and associated moisture content. One sample shall constitute one test run.

m. Method 104 for determination of beryllium emission rate and associated moisture content. One sample shall constitute one test run.

2. Compliance with emission limitations specified in lb/mmBtu in conditions 1.a. and 1.c. of this part shall be determined by calculating an "F" factor in dscf/mmBtu corrected to 12% CO_2 using the boilers' efficiency (as determined by the calorimeter method contained in Attachment A during acceptance testing) and the measured steam production. Data obtained from test methods required in condition 1.d. of this part for compliance testing shall be used for the calculation of the "F" factor required by this condition.

3. Devices shall be installed to continuously monitor and record steam production, the final combustion chamber temperature, and flue gases temperature at the exit of the acid gas removal equipment. These devices shall be adequately maintained and operating during all periods of operation.

4. The height of each boiler exhaust stack shall not be less than 61.0 meters above ground level at the base of the stack.

5. Each incinerator boiler shall have a metal name plate affixed in a conspicuous place on the shell showing manufacturer, model number, type waste, rated capacity, and certification number.

6. The permittee must submit to EPA and DER, within fifteen (15) days after it becomes available to the County, copies of technical data pertaining to the incinerator boiler design, acid gas control equipment design, particulate control equipment design, and the fuel mix that will be used to evaluate compliance of the facility with the preceeding emission limitations.

7. Fuel

   The Resource Recovery Facility shall utilize refuse such as garbage and trash (as defined in Chapter 17-7, FAC) but not grease, scum, grit screenings or sewage sludge.

8. Air Pollution Control Equipment

   The permittee shall install, continuously operate, and maintain the following air pollution controls to minimize emissions. Controls listed shall be fully operational upon startup of the proposed equipment.

   a. Each boiler shall be equipped with a particulate emission control device for the control of particulates.

   b. Each boiler shall be equipped with an acid gas control device designed to remove at least 90% of the acid gases.

   c. The temperature of flue gases exiting the acid gas control equipment shall not exceed 300°F.

PSD AIR PERMIT

9. Continuous Emission Monitoring

a. Prior to the date of startup and thereafter, the County shall install, maintain, and operate the following continuous monitoring systems for each boiler exhaust stack:

(1) Continuous emission monitoring (CEM) systems to measure stack gas opacity and SO_2, NO_x, CO, CO_2, and O_2 concentrations for each unit. Continuous monitors for SO_2 shall be installed after the acid gas control device for each unit. The systems shall meet the EPA monitoring performance specifications of 40 CFR 60.13 and 40 CFR 60, Appendix B, during initial compliance testing and annually thereafter. Additionally, CEM's shall meet the quality control requirements of 40 CFR 60, Appendix F (Attachment B).

(2) CEM data recorded during periods of startup, shutdown, and malfunction shall be reported but excluded from compliance averaging periods for CO, NO_x, and opacity.

(3) a. CEM data recorded during periods of startup and shutdown shall be excluded from compliance averaging periods for SO_2.

b. CEM data recorded during periods of acid gas control device malfunctions shall be excluded from compliance averaging periods for SO_2 provided that the preceeding thirty day period which ends on the last day of the malfunction period meets an average SO_2 emission limit equal to the SO_2 limit specified in condition 1.a. CEM data must be available for 90% of the operating time for this exemption to apply. A malfunction as used in this permit means any sudden and unavoidable failure of air pollution control equipment or process equipment or of a process to operate in a normal or usual manner. Failures that are caused entirely or in part by poor maintenance, careless operation, or any other preventable upset condition or preventable equipment breakdown shall not be considered malfunctions.

(4) The temperatures of the final combustion chamber of the furnace and flue gases exiting the acid gas control device shall be continuously monitored.

b. An excess emissions report shall be submitted to EPA for every calendar quarter. The report shall include the following:

(1) The magnitude of excess emissions computed in accordance with 40 CFR 60.13(h), any conversion factors used, and the date and time of commencement and completion of each period of excess emissions (60.7(c)(1)).

PSD AIR PERMIT

(2) Specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions of the furnace/boiler system. The nature and cause of any malfunction (if known) and the corrective action taken or preventive measures adopted shall also be reported (60.7(c)(2)).

(3) The date and time identifying each period during which the continuous monitoring system was inoperative except for zero and span checks, and the nature of the system repairs or adjustments (60.7(c)(3)).

(4) When no excess emissions have occurred or the continuous monitoring system has not been inoperative, repaired, or adjusted, such information shall be stated in the report (60.7(c)(4)).

(5) The Laboratory shall maintain a file of all measurements, including continuous monitoring systems performance evaluations; all continuous monitoring systems or monitoring device calibrartion checks; adjustments and maintenance performed on these systems or devices; and all other information required by this permit recorded in a permanent form suitable for inspection (60.7(d)).

(6) Excess emissions shall be defined as any applicable period during which the average emissions of CO, NO_x, and/or SO_2, as measured by the continuous monitoring system, exceeds the CO, NO_x, and/or SO_2 maximum emission limit (in ppm) set for each pollutant in condition 1.a. above.

c. Excess emissions indicated by the CEM systems shall be considered violations of the applicable opacity limit or operating emission limits (in ppm) for the purposes of this permit provided the data represents accurate emission levels and the CEM's do not exceed the calibration drift (as specified in the respective performance specification tests) on the day when initial and subsequent compliance is determined. The burden of proof to demonstrate that the data does not reflect accurate emission readings shall be the responsibility of the permittee.

10. Excess emissions which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure which may reasonably be prevented during start-up or shutdown shall be prohibited.

11. Reporting

a. A copy of the results of the compliance tests shall be submitted within forty-five days of testing to the DER Bureau of Air Quality Management, the DER Southeast Florida District Office, Broward County, and EPA Region IV. 45 DAYS

b. Continuous emissions monitoring data shall be reported to the DER Southeast District Office and EPA Region IV on a quarterly basis in accordance with Section 17-2.710, FAC, and 40 CFR 60.7.

c. Addresses for submitting reports are:

EPA Region IV

Chief, Air Compliance Branch
U.S. Environmental Protection Agency
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Florida Department of Environmental Regulation (DER)

Deputy Chief, Compliance and Ambient Monitoring
Bureau of Air Quality Management
Florida Department of Environmental
Regulation (DER)
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301

Southeast District Office of DER

District Manager
Department of Environmental Regulation
3301 Gun Club Road
P.O. Box 3858
West Palm Beach, Florida 33402

Broward County

Broward County Environmental Quality
Control Board
500 Southwest 14th Court
Ft. Lauderdale, Florida 33315

PART II. - General Conditions

1. The permittee shall comply with the notification and record-keeping requirements codified at 40 CFR Part 60.7. In addition, the permittee shall provide EPA with 30 days notice prior to conducting any compliance testing required under condition 1.a.

2. The permittee shall retain records of all information resulting from monitoring activities and information indicating operation parameters as specified in the specific conditions of this permit for a minimum of two (2) years from the date of recording. 2 YEARS

3. If, for any reason, the permittee does not comply with or will not be able to comply with the emission limitations specified in this permit, the permittee shall provide EPA with the following information in writing within five (5) days of such condition:

   (a) description of noncomplying emission(s),
   (b) cause of noncompliance,
   (c) anticipated time the noncompliance is expected to continue or, if corrected, the duration of the period of noncompliance,
   (d) steps taken by the permittee to reduce and eliminate the noncomplying emission.

   Failure to provide the above information when appropriate shall constitute a violation of the terms and conditions of this permit. Submittal of the aforementioned information does not constitute a waiver of the emission limitations contained within this permit.

4. Any proposed change in the information contained in the final determination regarding facility emissions or changes in the quantity or quality of materials processed that would result in new or increased emissions or ambient air quality impact must be reported to EPA. If appropriate, modifications to the permit may then be made by EPA to reflect any necessary changes in the permit conditions. In no case are any new or increased emissions allowed that will cause violation of the emission limitations specified herein. Any contruction or operation of the source in material variance with the final determination shall be considered a violation of this permit.

5. In the event of any change in control of ownership of the source described in the permit, the permittee shall notify the succeeding owner of the existence of this permit and EPA of the change in control of ownership within 30 days.

6. The permittee shall allow representatives of the state and local environmental control agency or representatives of the EPA, upon presentation of credentials:

(a) to enter upon the permittee's premises, or other premises under the control of the permittee, where an air pollutant source is located or in which any records are required to be kept under the terms and conditions of this permit;

(b) to have access to and copy at reasonable times any records required to be kept under the terms and conditions of this permit, or the Clean Air Act;

(c) to inspect at reasonable times any monitoring equipment or monitoring method required in this permit;

(d) to sample at reasonable times any emissions of pollutants; and

(e) to perform at reasonable times an operation and maintenance inspection of the permitted source.

7. The conditions of this permit are severable, and if any provision of this permit or the application of any provisions of this permit to any circumstances is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected.

Dec 1998

REPORT ON

REQUEST FOR MODIFICATION OF SITE CERTIFICATION PA86-22

NORTH BROWARD COUNTY RESOURCE RECOVERY FACILITY

Prepared For:

Wheelabrator North Broward, Inc.
2600 NW 48th Street
Pompano Beach, Florida 33073

Prepared By:

Golder Associates Inc.
6241 NW 23rd Street, Suite 500
Gainesville, Florida 32653

November 1998

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1.0 INTRODUCTION AND APPLICANT

Wheelabrator North Broward, Inc. is the operator of the North Broward Resource Recovery Facility located in unincorporated northern Broward County, Florida (see Figure 1-1). The facility received certification under the Florida Power Plant Siting Act (PPSA) in 1986 for the construction and operation of a mass burn resource recovery facility (Site Certification No. PA-86-22; and amendments). The facility was permitted to process 2,250 ton/day (nominal rating) of municipal solid waste in 3 mass burn refuse boilers. Each boiler is permitted to burn up to 806 tons/day.

Wheelabrator is submitting a Request for Modification of the Site Certification for the following:

- a clarification of the fuels allowed to be used in the facility
- the addition of a metal recovery facility
- the addition of Selective Non-Catalytic Reduction (SNCR) required to meet 40 Code of Federal Regulations (CFR) Part 60, Subpart Cb as adopted by reference in Rule 62-204(7)(b) Florida Administrative Code (F.A.C.)
- a new permit condition for the fabric filter outlet temperature in accordance with Cb Emission Guideline requirements
- Elimination of furnace temperature limits
- incorporate Good Combustion Practice (GCP) requirements of Subpart Cb

In addition to the Request for Modification of the Site Certification, Wheelabrator is simultaneously requesting a revision of the Prevention of Significant Deterioration approval issued in 1987 (PSD-FL-112) to incorporate those portions of the modification request related to air emissions and fuels, including the 40 CFR Part 60 Subpart Cb requirements.

2.0 ALLOWABLE FUELS

2.1 BACKGROUND

In its site certification application, Wheelabrator identified its primary fuel as process waste, including "all forms of garbage, commercial waste, rubbish, leaves and brush, paper and cardboard, plastics, wood and lumber, rags, carpeting, a limited amount of tires, wood furniture, mattresses, stumps, wood pallets, timber, tree limbs, ties, and logs, not separated and recycled at the source of generation, and minor amounts of pathological and biological wastes." The Site Certification issued in 1986, as well as the PSD approval issued in 1987, permitted the facility to burn "refuse such as garbage and trash as defined in Chapter 17-7 Florida Administrative Code," but not grease, scum, grit screenings or sewage sludge. Chapter 17-7 did not define "refuse," nor did any other environmental statute or regulation. Because several other resource recovery facilities also have permits which use the undefined term "refuse," the FDEP has recently sought to clarify the allowable fuels at such facilities. Wheelabrator is seeking from FDEP a clarification of its site certification and PSD approval consistent with the approach used by FDEP at other similarly situated resource recovery facilities.

2.2 RECENT PERMIT CLARIFICATIONS

Recent permitting actions by FDEP have clarified the allowable fuels for several resource recovery facilities, including the City of Tampa McKay Bay Resource Recovery Facility and the Hillsborough County Resource Recovery Facility. Permit clarifications were issued by FDEP for both facilities [McKay Bay Permit No. 0570127-002-AC/PSD-FL-086(A) and Hillsborough County PSD-FL-121(B)]. The request made herein is consistent with the clarifications made for these facilities, given the particular circumstances of the North Broward County Resource Recovery Facility.

2.3 PROPOSED PERMIT LANGUAGE

The proposed permit language requested by Wheelabrator is presented below. This language was developed from the permit language for the McKay Bay and Hillsborough County facilities.

A.1 Fuels

The primary fuel for the facility is solid waste (MSW), including the items and materials that fit within the definition of MSW contained in either 40 CFR 60.51b or Section 403.706(5), Florida Statutes (1995).

A.1.1 Subject to the limitations contained in this permit, the authorized fuels for the facility also include other solid wastes that are not MSW which are described below. However, the facility shall not burn:

(a) those materials that are prohibited by state or federal law;

(b) those materials that are prohibited by this permit;

(c) lead acid batteries;

(d) hazardous waste;

(e) nuclear waste;

(f) radioactive waste;

(g) sewage sludge;

(h) explosives.

A.1.2 The fuel may be received either as a mixture or as a single-item stream (segregated load) of discarded materials. If the facility intends to use an authorized fuel that is segregated non-MSW material, the fuel shall be either:

(a) well mixed with MSW in the refuse pit; or

(b) alternately charged with MSW in the hopper.

A.1.3 The facility owner/operator shall prepare and maintain records concerning the description and quantities of all segregated loads of non-MSW material which are received and used as fuel at the facility, and subject to a percentage weight limitation, below (A.1.6. and A.1.7). For the purposes of this permit, a segregated load is defined to mean a container or truck that is primarily or exclusively filled with a single item or homogenous composition waste material as determined by visual inspection.

A.1.4 To ensure that the facility's fuel does not adversely affect the facility's combustion process or emissions, the facility shall:

(a) comply with good combustion operating practices in accordance with 40 CFR 60.53b;

(b) install, operate and maintain continuous emissions monitors (CEMS) for oxygen, carbon monoxide, sulfur dioxide, oxides of nitrogen and particulate control device inlet temperature in accordance with 40 CFR 60.58b; and

(c) record and maintain the CEMS data in accordance with 40 CFR 60.59b.

These steps shall be used to ensure and verify continuous compliance with the emissions limitations in this permit.

Natural gas may be used as fuel during warm-up, startup, shutdown, and malfunction periods, and at other times when necessary and consistent with good combustion practices. The facility may also use landfill gas as fuel.

A.1.5 Subject to the conditions and limitations contained in this permit, the following other solid waste materials may be used as fuel at the facility:

(a) Confidential, proprietary or special documents (including but not limited to business records, lottery tickets, event tickets, coupons, credit cards, magnetic tape and microfilm);

(b) Contraband which is being destroyed at the request of appropriately authorized local, state or federal governmental agencies, provided that such material is not an explosive, a propellant, a hazardous waste, or otherwise prohibited at the facility. For the purposes of this section, contraband includes but is not limited to drugs, narcotics, fruits, vegetables, plants, counterfeit money, and counterfeit consumer goods;

(c) Wood pallets, clean wood, land clearing debris and combustible construction and demolition debris;

(d) Packaging materials and containers;

(e) Clothing, natural and synthetic fibers, fabric remnants, and similar debris, including but not limited to aprons and gloves; or

(f) Rugs, carpets, and floor coverings, but not asbestos-containing materials. or polyurethane vinyl floor covering

A.1.6 Subject to the conditions and limitations contained in this permit waste tires may be used as fuel at the facility. The total quantity of waste tires received as segregated loads and burned at the facility shall not exceed 3 percent, by weight, of the facility's total fuel. Compliance with this limitation shall be determined by using a rolling 30 day average in accordance with specific condition A.1.8.

A.1.7 Subject to the conditions and limitations contained in this permit, the following other solid waste materials may be used as fuel at the facility (i.e. the following are authorized fuels that are non-MSW material). The total quantity of the following non-MSW material received ~~as segregated loads~~ and burned at the facility shall not exceed 5 percent, by weight, of the facility's total fuel. Compliance with this limitation shall be determined by using a rolling 30 day average in accordance with specific condition No. A.1.8 below.

(a) Non-combustible construction and demolition debris.

(b) Oil spill debris from aquatic, coastal, estuarine or river environments. Such items or materials include but are not limited to rags, wipes, and absorbents.

(c) Items suitable for human, plant or domesticated animal use, consumption or application where the item's shelf-life has expired or the generator wishes to remove the items from the market. Such items or materials include but are not limited to off-specification or expired consumer products, pharmaceuticals, medications, health and personal-care products, cosmetics, foodstuffs, nutritional supplements, returned goods, and controlled substances.

(d) Consumer-packaged products intended for human or domesticated animal use or application but not consumption. Such items or materials include but are not limited to carpet cleaners, household or bathroom cleaners, polishes, waxes and detergents.

(e) Waste materials that:

(i) are generated in the manufacture of items in categories (c) or (d), above and are functionally or commercially useless (expired, rejected or spent); or

(ii) are not yet formed or packaged for commercial distribution. Such items or materials must be substantially similar to other items or materials routinely found in MSW.

(f) Waste materials that contain oil from:

(i) the routine cleanup of industrial or commercial establishments and machinery; or

(ii) spills of virgin or used petroleum products. Such items or materials include but are not limited to rags, wipes, and absorbents.

(g) Used oil and used oil filters. Used oil containing a PCB concentration equal or greater than 50 ppm shall not be burned, pursuant to the limitations of 40 CFR 761.20(e).

(h) Waste materials generated by manufacturing, industrial or agricultural activities, provided that these items or materials are substantially similar to items or materials that are found routinely in MSW, subject to prior approval of the Department.

A.1.8 Segregated Solid Waste Record Keeping: The following records shall be made and kept to demonstrate compliance with the segregated non-MSW percentage limitations of specific condition A.1.6 and A.1.7.

Each segregated load of non-MSW materials, that is subject to the percentage weight limitation of specific conditions A.1.6 and A.1.7, which is received for processing shall be documented as to waste description and weight. The weight of all waste materials received for processing shall be measured using the facility truck scale and recorded.

Each day the total weight of segregated tires received shall be computed, and the daily total shall be added to the sum of the daily totals from the previous 29 days. The resultant 30 day total weight of tires shall be divided by the total weight of all waste materials received in the same 30 day period, and the resultant number shall be multiplied by 100 to express the ratio in percentage terms. The percentage computed shall be compared to the 3 percent limitation.

Each day the total weight of segregated non-MSW materials received that are subject to the 5% restriction shall be computed, and the daily total shall be added to the sum of the daily totals from the previous 29 days. The resultant 30 day total weight of segregated non-MSW materials shall be divided by the total weight of all waste materials received in the same 30 day period, and the resultant number shall be multiplied by 100 to express the ratio in percentage terms. The percentage computed shall be compared to the 5 percent limitation.

2.4 PSD APPLICABILITY

The requested clarification is not subject to the Department's Rules in 62-212.400 F.A.C. regarding Prevention of Significant Deterioration (PSD) approval because the clarification is not classified as a "modification" as defined in Rule 62-210.200(187) F.A.C. A modification is defined as any physical change or change in the method of operation which would result in an increase in the actual emissions of any regulated air pollutant. The requested change simply identifies more specifically the fuels that are acceptable at the facility under the existing site certification and PSD approval. Accordingly, this clarification does not constitute a physical change or a change in the method of operation subject to PSD review.

40CFR279, 40CFR 273, 40CFR261

3.0 METALS RECOVERY

3.1 PROJECT OVERVIEW

The proposed metal recovery system involves a series of conveyors and mechanical devices that will separate the ferrous and non-ferrous metals from the bottom ash of the MSW fired boilers. The processing will occur in a new building to be constructed adjacent to and in the existing ash loadout building at the site and represent an extension of the ash handling system (see Figures 3-1, 3-2, and 3-3).

The building will be enclosed, with three or more exit doors for removal of ash and recovered metals. The building will add approximately 5,400 square feet (ft^2) and range in height from 26 to 36 feet, in order to accommodate the height of the conveyors and processing equipment. The ferrous and non-ferrous material will be removed using a grizzly, magnet, eddy current separator, and associated conveyors or similar equipment.

Metals recovered from the system will be discharged into a concrete bunker. Metals will then be transferred using a front end loader to trucks parked outside the building. The metals are not expected to contain significant amounts of dust and will therefore not generate fugitive emissions during loading in this outdoor area. If needed to prevent dust, a water spray will be applied to the recovered metal prior to loading out.

The loaded trucks will be covered with a tarp before leaving the site. The trucks will deliver the metals to a separately-owned, operated, and permitted metal processing facility. It is expected that the metal recovery process will generate an additional four to six trucks per day, six days per week, coming to and leaving the site. Currently, there are three to four trucks per day over six days per week that are used to ship recovered metals. The current operation involves removal of ferrous metals from the bottom ash conveyor with a cross belt magnet. These truck trips would generally be scheduled during daylight hours, usually to avoid peak traffic hours on local roadways. The number of loads of ash to be handled will be offset accordingly, reducing the potential for other fugitive dust generation.

Construction of the new building will not increase the impervious area around the site. The areas for the metal recovery building are currently open pavement. These areas have been previously altered (graded with fill added and paved) during the construction of the facility. Foundations for the metal recovery building may require piling and a methane protection system.

The only wastewater that will be generated from the metal recovery operation will be periodic washdown waters, which will be directed to new U-drains connected to the existing facility wastewater collection and re-use system.

3.2 MATERIAL RECOVERY

Wheelabrator North Broward Inc. is proposing to install equipment and facilities to expand the removal of recoverable metals from the bottom ash generated by the facility. Since the construction and operation of the North Broward County Resource Recovery Facility, Rule 62-701.700 F.A.C. has been promulgated for FDEP to approve and require conditions for material recovery facilities. A material recovery facility is defined as a solid waste management facility that provides for the extraction of recyclable materials, materials suitable for use as a fuel or soil amendment, or any combination of such materials from solid waste. Under this broad definition, the proposed metal recovery operation for the North Broward Resource Recovery Facility would be classified as a material recovery facility under the Department Rules in 62-701.700 F.A.C. This section provides the Engineering Report as specified in Rule 62-701.700 (2) F.A.C. The following outlines the information being provided to address the requirements of this rule.

62-701.700(2)(a) As discussed in Section 3.1, the metal recovery facility will only process bottom ash generated by the facility.

62-701.700(2)(b) Section 3.1 presented a description of the operation of the equipment. As discussed, only bottom ash will be processed. Currently, the bottom ash and non-ferrous metals are transported to the landfill. Ferrous metals are removed from the bottom ash with a cross belt magnet prior to transport. Any shutdowns

or malfunctions may result in the transport of bottom ash including metals to the landfill, as is the current practice. Potential hazards, such as fire, are not applicable to the bottom ash since this material has undergone high temperature reduction of the combustible components.

62-701.700(2)(c) Section 3.1 presented a description of the loading, unloading and processing area. All processing will occur in a building with a concrete floor that will not result in leachate formation. Wash down water will be routed to the existing contact water system for re-use. Volumes of wash down water are presented in Section 3.4.

62-701.700(2)(d) There will be no temporary on-site storage facilities associated with the metal recovery operation.

62-701.700(2)(e) As discussed above, all processing will be performed within a building with no leachate generation.

62-701.700(2)(f) Potential groundwater and surface contamination will not result from the metal recovery operation.

62-701.700(2)(g) Any metals not recovered from the operation that are included with the other components of the bottom ash will be transported to the landfill as is the current practice. The bottom ash contains low amounts of putrescible wastes due to the combustion process. Control of vectors and odors would be provided as necessary.

The operational requirements of Rule 62-701.700(3) are not applicable to the metal recovery operation since the existing facility has included provisions for operation and maintenance, waste screening, contingency plans and closure plan. The financial responsibility of Rule 62-701.700(4) is not applicable since the facility is currently operating and authorized to handle MSW and does not pose an environmental threat.

Stormwater, as specified in Rule 62-701.700(5) is addressed in Section 3.5. There will not be any contact stormwater generated as a result of adding the metal recovery operation.

3.3 AIR EMISSIONS

The metals recovery area will be enclosed in a building adjacent to the existing ash loadout area. All bottom ash is currently quenched with water after leaving each boiler. The resulting bottom ash will be about 20 to 30 percent moisture and will not generate fugitive dust.

3.4 WATER USE

The current water use will not be affected by the installation of metals recovery. The bottom ash to be processed is sufficiently moist so that additional water for dust control will not be required. Periodically, the area will be washed with the wash water handled in the same manner as that currently performed with the existing ash handling facilities. Water for washing would not exceed about 1,000 gallons per day. Currently, waste water goes to a contact sump where it is subsequently stored and reused in ash quenching and flue gas cooling.

3.5 STORMWATER

The installation of the metal recovery building will not result in an increase in the impervious surface.

3.6 ASH MANAGEMENT PLAN

The facility is currently operating with an ash management plan that has been submitted to the FDEP Southern District Solid Waste Section. This plan will be updated and submitted to FDEP when the system is constructed and initially operated.

3.7 TRANSPORTATION

The existing facility has an average daily truck traffic of about 248 vehicle trips per day with a peak of about 320 trips per day and an average maximum ranging from 250 to 300 trips per day. The increase of 4 to 6 trips per day would be insignificant relative to

the current operation. The plant access road has sufficient capacity to accommodate the small increase in truck traffic. In addition, a majority of the additional truck traffic would occur over the day with limited impacts to peak traffic flow periods.

3.8 LOCAL APPROVALS

Any required local approvals such as building permits and site plan approval will be obtained directly from the Broward County local government.

3.9 PROPOSED CONDITIONS OF CERTIFICATION

Wheelabrator North Broward proposes a descriptive condition be added to allow for the installation of the system. A proposed condition is as follows:

> "The North Broward County Resource Recovery Facility may install a Metal Recovery system to process bottom ash for removal of ferrous and non-ferrous metals. The Metal Recovery system must comply with the applicable conditions in this certification as it pertains to the facility as a whole."

4.0 40 CFR SUBPART Cb EMISSION GUIDELINE REQUIREMENTS

4.1 EXISTING FACILITY DESCRIPTION

The facility currently consists of 3 mass burn combustion units each rated nominally at 750 tons per day and a generator nameplate rating of 67.6 MW for the facility. Each combustion unit consists of a mass-burn grate furnace, boiler, spray dryer absorber (SDA) and baghouse (FF). Flue gas exiting each individual baghouse is directed to a common stack with separate flues for all three (3) units. The SDA/FF air pollution control technology installed on each unit controls particulate matter, acid gasses, metals and dioxin. To meet the emission limitations for NO_x pursuant to 40 CFR 60 Subpart Cb the facility is proposing to install a selective non-catalytic reduction (SNCR) system.

The facility is classified as an existing resource recovery facility (waste-to-energy facility) and is subject to 40 CFR 60 Subpart Cb emission limits and other requirements adopted in the Florida Administrative Code (F.A.C.) including Rule 62-296.416 (Waste to Energy Rule) and Rule 62-204.800 which incorporates 40 CFR 60 Subpart Db, Subpart Cb, Subpart E, and Subpart Eb. Table 4-1 provides a compliance summary of 40 CFR Part 60 Subpart Cb emission limits and the status of the control technology installed at the facility. The installation of the SNCR system will not subject the facility to PSD review under Rule 62-212-400 F.A.C., since there will not be an increase in actual emissions.

The proposed addition of the SNCR system will result in the facility's compliance with EPA's emission limits in 40 CFR 60, subpart Cb for NO_x. The facility's existing pollution control equipment reduces emissions of particulate matter, acid gases, metals and organics. Due to flue gas cooling, organics condense as PM, and are captured by the fabric filters (FF). The flue gas cooling also minimizes the post combustion formation of organics. The SDA's currently achieve 29 PPM (corrected to 7 percent O_2 dry) or a 75 reduction of SO_2 and will achieve the 29 PPM (corrected to 7 percent O_2 dry) or 95 percent removal for HCL, as specified in Subpart Cb.

The facility, since it has been operating, has demonstrated compliance with the limits contained in the PSD approval, the Conditions of Certification, and the Florida Mercury

Rule (Section 62-296.416 F.A.C.). The addition of the SNCR system for NO_x control is needed to meet the Subpart Cb requirements. The facility will also implement as necessary the other requirements of Subpart Cb including good combustion practice, compliance and performance testing, monitoring, and recordkeeping and reporting.

Table 4-2 presents a comparison of the current emission limits, which include those in the PSD approval, the Conditions of Certification(PPSC) and Florida Rules, and those required by Subpart Cb (See Attachment A for calculations). Since the various emissions limits are expressed in different units, the current PPSC and PSD limits were converted to the applicable Subpart Cb units using the EPA F-Factor method as provided in EPA method 19 (see Attachment A). As shown in Table 4-2, the Subpart Cb limits are more stringent than the current limits for SO_2, PM, visible emissions, NO_x, and Pb. There are no current PSD or PPSC emission limits for cadmium (Cd), hydrogen chloride (HCL), and dioxins/furans as contained in Subpart Cb. PSD and PPSC limits exist for sulfuric acid mist, beryllium (Be), VOC and total fluorides (HF) however, there are no limits specified in Subpart Cb for these pollutants.

Table 4-3 provides the most recent stack test data and compares results with 40 CFR Part 60 Subpart Cb emission limits for those emissions where testing was performed. The test results are presented in the same units as those for Subpart Cb for comparison. From the table, all pollutants listed are well below the Subpart Cb emission limits for all three units with the exception of NO_x. The NO_x emission limits in Subpart Cb requirements (205 ppm corrected to 7% O dry) will be achieved with the addition of an SNCR system.

4.2 DESCRIPTION OF SNCR SYSTEM

To comply with the NO_x emission limits specified in Subpart Cb, the North Broward facility is proposing to install a selective non-catalytic reduction (SNCR) system. The proposed retrofit will store, convey, and inject aqueous urea into the furnace of each boiler immediately above the over fire air zone. The SNCR system will use urea, instead of ammonia, to provide the reducing reaction with NO_x forming nitrogen and

water. The reaction occurs across a wider temperature range than ammonia and reduces the potential health and safety risks associated with the release of ammonia during handling or storage. Ammonia slip is generally controlled to less that 50 ppmvd at 7 percent O_2.

The SNCR unit will be designed to allow the concentrated reagent to be delivered to the facility in a heated, self-unloading tanker truck and transferred to a heated fiberglass reinforced plastic tank for on site storage. The tank will provide approximately one - two weeks of storage capacity under normal operating conditions.

A common circulation module transfers the chemical from the storage tank to the individual boiler metering modules. A recirculation pump and a supplemental electric heater, both located on the circulation module, provide agitation and heating capability. Flow and pressure control of the urea and dilution water fluids used in the SNCR process is performed with the metering modules. Metering of the concentrated reagent, dilution of the reagent with water and mixing of the resulting solution is also accomplished at these modules. The diluted reagent is pumped to the distribution modules where the individual distribution panels are located. The panel regulates the compressed air and diluted reagent flows to the individual fluid injection nozzles. Vendor information, including flow diagrams, is presented in Attachment B.

4.3 PROPOSED PERMIT CONDITIONS

4.3.1 Emissions Limits

The proposed permit conditions are presented in Table 4-4. Wheelabrator North Broward proposes that the current PPSC and PSD limits be replaced with the Subpart Cb limits for those emissions where the Subpart Cb limits are more stringent. These emissions include: PM, visible emissions, NO_x, SO_2, CO, Pb and Hg. The Subpart Cb performance test and continuous monitoring requirements under 40 CFR 60.58 would be used to simultaneously demonstrate compliance with Subpart Cb limits and therefore the amended PSD and PPSC limits. It is also proposed that the current emission limits for sulfuric acid mist and flourides(as HF) be deleted. The facility has

continuously demonstrated compliance with the limits for these emissions and compliance with the lower SO_2 and new HCl Subpart Cb limits would further reduce emissions of sulfuric acid mist and HF. The PPSC and PSD limits for CO are proposed to be replaced with the Subpart Cb Good Combustion Practice (GCP) requirements. However, the GCP CO emission limit would be 87 ppm @ 7% O_2 4 hour block average based on CEM. This new limit is derived from the 0.09 lb/MMBtu PPSC/PSD limit based on a 4 day rolling average. Amending the current PSD/PPSC limits to reflect the more stringent Subpart Cb limits also would establish a direct and consistent approach to demonstrating compliance by incorporating emission limit units of ug/dscm @ 7% O_2 and ppm @ 7%O_2. This would eliminate the current lb/MMBtu and/or ppm at 12% CO_2 dual emission limit units and the reliance on calculating test specific F factors. The current beryllium limit would be converted to a ug/dscm limit for consistency with the Subpart Cb Pb, Cd and Hg limits.

It is also requested that with GCP, the emission limit for VOC should be deleted since the CO limit would provide the FDEP assurance that emissions of VOC remain low. This approach has been used by the Department in many previous permits. In addition, since arsenic is no longer considered a PSD pollutant pursuant to F.A.C 62-212.400, it is requested that the arsenic emission limit be deleted from the permit. The FDEP Air Permit application is contained in Attachment C.

4.3.2 Removal of 300°F SDA/FF Outlet Temperature Limit

It is also proposed that the existing 300°F PPSC temperature limit at the acid gas control device exit (fabric filter outlet) be replaced with the Subpart Cb particulate control device inlet temperature limit. The Subpart Cb temperature limit is determined during annual compliance testing and therefore it is directly tied to actual emissions performance of the boiler and air pollution control equipment. The current, PPSC limit of 300°F at the exit of the acid gas control device was primarily intended to ensure that the acid gas control device would achieve at least 90 percent removal of acid gasses and secondarily to ensure that trace metals and semivolatile organics such as dioxins would be condensed onto particulate and therefore collected in the particulate control device.

The 90 percent removal of acid gasses design requirement in the PPSC presumably referred to hydrogen chloride (HCl) since SO_2 had a specific limit of 0.14 lb/mmBtu or 65 percent removal. Subpart Cb incorporates emission limits for MWC acid gasses (HCl and SO_2). The HCl limit of 29 ppm at 7 percent O_2 or 95 percent removal is based on annual stack testing. The Subpart Cb, HCl limit can be continuously achieved by SDA/FF air pollution control equipment irrespective of a 300°F temperature limit. Additionally, the Subpart Cb temperature limit derived directly from annual compliance tests ensures that control of trace metals and dioxins or other organics will be continuously achieved. The regulated metals, including cadmium, lead, and beryllium, condense onto particulate at temperatures well above 300°F in the convective sections of the boiler. Consequently maintaining a 300°F FF outlet temperature provides no additional control for these metals. Mercury control will increase at lower fabric filter temperatures but test data has shown little difference in mercury removal at temperatures less than 350°F.

Based on the above, the substitution of the Subpart Cb particulate control device inlet temperature limit for the existing 300°F limit will ensure that high removal levels of all metals and semivolatile organics will be continuously achieved. Operating at a higher temperature will also reduce FF maintenance due to higher corrosion levels attributed to operating at a lower temperature.

4.3.3 Furnace Temperature Requirements

The PPSC requires that the furnace temperature be monitored and maintained above 1,800°F. The furnace temperature and monitoring requirements can be eliminated with the incorporation of the good Combustion Practice (GCP) operational requirements specified in Subpart Cb.

The original objective of furnace temperature requirements was to assure combustion conditions were sufficient for maximum destruction of organics in the combustion zone. USEPA, in the development of the MWC standards and Emissions Guidelines under Subpart Eb and Cb, was concerned that imposing furnace temperature requirements

could be counter productive since air/fuel mixing would be adversely impacted. To maintain furnace temperature at full boiler load generally requires a decrease in total boiler excess air, which is accomplished by decreasing the relative amount of overfire air. With decreasing overfire air, overfire air penetration into the secondary combustion zone will be reduced. Consequently, air/fuel mixing will be reduced, which results in reduced oxidation/destruction potential for organics.

Importantly, a furnace temperature requirement does not address the secondary formation of dioxins on flyash or particulate matter in the low temperature sections of the boiler and particulate control equipment. This secondary formation of dioxins has the largest potential impact on boiler dioxin emissions and is directly addressed by limiting carryover of particulate matter/flyash and minimizing operating temperature of the particulate control equipment, which compliance with the Subpart Cb GCP requirements ensure.

USEPA concluded that the three major components of the GCP standard under NSPS Subparts Ea, Eb, and Cb are the most effective mechanisms for ensuring optimum combustion conditions, maximizing organic destruction, and minimizing the potential for post-combustion zone formation of organics. The three components of GCP include 1) a short term CO emission limit, 2) restricting maximum boiler operating conditions using a steam flow limit and 3) restricting operating temperatures in the particulate control equipment.

Complying with the Subpart Cb CO limit ensures that both optimum furnace/temperature conditions and good air/fuel mixing are being maintained. Limiting boiler steam flow to the average steamflow achieved during annual compliance tests minimizes particulate carryover to the cooler section of the boiler and PM control device reducing potential for low temperature dioxin formation. Finally, minimizing particulate control device operating temperature to within 30°F of that achieved during compliance tests ensures that low temperature post-combustion dioxin formation is minimized.

Based on continuing compliance with the Subpart Cb requirements, the furnace temperature limit and monitoring requirements can be eliminated in the PPSC. The GCP requirements will ensure that optimum boiler combustion and fabric filter operating conditions are continuously achieved minimizing emissions of dioxins and organics, the original intent of the PPSC furnace temperature limit.

5.0 EXISTING AIR EMISSION PERMITS

The facility received construction and operation permits from the South Florida District for the installation and operation of baghouses installed on the lime silo and the ash handling system. These emission units have been included in the Title V Permit Applications and the latest operation permit was AO 06-208187. Wheelabrator is providing notice of these emission units which will be regulated under the Title V permit program.

Table 4-1. Compliance Summary of 40 CFR Part 60; Subpart Cb Emission Limits and Control Technology

Parameter	Emission Limit [a]	Section of 40 CFR 60, Subpart Cb	Control Technology	Status of Control Technology
PM	27mg/dscm	60.33b (a) (1) (i)	Fabric Filters (FF)	Existing
Opacity	10 percent	60.33b (a) (1) (iii)	Fabric Filters (FF)	Existing
Cadmium	0.040 mg/dscm	60.33b (a) (2)(i)	Fabric Filters (FF)	Existing
Lead	0.49mg/dscm	60.33b (a) (2) (iii)	Fabric Filters (FF)	Existing
Mercury	0.070mg/dscm	60.33b (a) (3) and 62-296.416 (3) (b)	Separation program, and/or SDA/FF	Existing
Sulfur Dioxide	29 ppm[b]	60.33b (b) (3) (i)	SDA/FF	Existing
HCL	29 ppm[c]	60.33b (c) (3) (ii)	SDA/FF	Existing
Dioxins/Furans	30ng/dscm	60.33b (c) (1) (ii)	SDA/FF, Good combustion practices	Existing
NO_x	205 ppm[d]	60.33b (d)	SNCR	To be installed
CO	100 ppm[e]	60.34b (a) 60.33b	Good combustion practices	Existing
Fugitive Ash Emissions	No VE > 5 percent of observation period	60.55(b)	Quench/Enclosures	Existing

[a] Numerical limits corrected to 7% O_2 dry conditions.
[b] or 75% reduction whichever is less stringent.
[c] or 95% reduction whichever is less strigent.
[d] 24-hour block average.
[e] 4-hour block average.

Table 4-2. Wheelebrator - North Broward Waste to Energy Facility Emission Limits - Current and pursuant to 40 CFR 60 Subpart Cb.

Pollutant	Current Limits	Units	Basis	Current limits In Subpart Cb units	Subpart Cb Limits	
SO2	0.31	lb/MMbtu	(1)(a)(b)	129.8 ppm @ 7% O2	29 ppm @ 7% O2	
SO2	0.14	lb/MMbtu	(2)(a)(b)	58.6 ppm @ 7% O2	or 75% removed	
VOC	0.013	lb/MMbtu	(c)		None	
PM	0.015	gr/dscf	(3)(a)(b)	34.9 mg/dscm @ 7% O2	27 mg/dscm @ 7% O2	(9)
PM	0.1	lb/MMbtu	(4)	111.3 mg/dscm @ 7% O2	---	
PM	0.08	gr/dscf	(5)	186.0 mg/dscm @ 7% O2	---	
NOx	0.56	lb/MMbtu	(6)(a)(b)	325.9 ppm @ 7% O2	205 ppm @ 7% O2	(9)
CO	0.09	lb/MMbtu	(7)(a)(b)	86.9 ppm @ 7% O2	100 ppm @ 7% O2	(10)
CO	400	ppm	(7)(a)(b)	406.4 ppm @ 12% CO2		
Total Flouride (F)	0.004	lb/MMbtu	(a)(b)		None	
Sulfuric Acid Mist (SAM)	0.047	lb/MMbtu	(c)		None	
HCL gas	None				29 ppm @ 7% O2 or 95% removed	
Beryllium (H021)	9.30E-07	lb/MMbtu	(a)(c)		None	
Lead (Pb)	0.0015	lb/MMbtu	(a)(b)	1.67 mg/dscm @ 7% O2	0.49 mg/dscm @ 7% O2	(9)
Mercury (H114)	7.50E-04	lb/MMbtu	(a)(c)	0.84 mg/dscm @ 7% O2	0.070 mg/dscm @ 7% O2	(9)
Dioxins/Furans	None				30 mg/dscm @ 7% O2	(9)
Cadmium	None				0.04 mg/dscm @ 7% O2	(9)
VE10	None				10%	(11)
VE15	1.50E-01		(a)(b)		NA	
VE20	2.00E-01		(8)		NA	

Footnotes and Basis:

(1) and 124 ppm at 12 % CO2 - dry not to exceed; 3-hour rolling average
(2) and 60 ppm at 12 % CO2 -dry; or 65% removal; 3-hour rolling average
(3) Corrected to 12% CO2 - dry (MCC)
(4) 40 CFR 60.43 b(d)
(5) @ 50 % air - 296.401(3)(a)
(6) and 350 ppm at 12 % CO2 -dry; 3-hour rolling average
(7) and 400 ppm at 12 % CO2 -dry; 1-hour rolling average
88 ppm at 12 % CO2 -dry; 4-day rolling average
(8) Rule 62-296.320(4)(b)(1)
(9) Corrected to 7% O2 (dry); FDEP limit
(10) Corrected to 7% O2 (dry); 4-hour block average
(11) 6 min. block average
(a) PSD-FL-105 Part I,1.a.
(b) Final Order Modifying Conditions of Certification No PA 85-21; (4/17/91)
(c) Original PA-85-21

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Table 4-3. Summary of Recent Stack Test Results (3/98) as compared to Limits of 40 CFR 60 Subpart Cb
North Broward Resource Recovery Facility

Parameter	Units	Emissions[a]			Cb Limits
		Unit 1	Unit 2	Unit 3	
Sulfur Dioxide	ppm @ 7% O_2	3.54	7.74	3.73	29
Nitrogen Oxides	ppm @ 7% O_2	272.39	220.01	239.80	205
Carbon Monoxid	ppm @ 7% O_2	10.52	17.21	14.34	100
Particulate Matte	mg/dscm @ 7% O	3.67	7.90	1.00	27
Lead	mg/dscm @ 7% O	0.010	0.016	0.004	0.49
Mercury[b]	ug/dscm @ 7% O_2	12.8	20.5	14.8	70
Dioxins/Furans [c]	ng/dscm @ 7% O_2	0.68	NC	NC	30
Opacity	percent	0%	0%	0%	10%

[a] converted using EPA Method 19; See Attachment A
[b] 1997 stack tests

Table 4-4. Proposed Permit Limits for North Broward Resource Recovery Facility

Pollutant	Emission Standards	Test Method
PM [1]–Particulate Matter	27 mg/dscm (corrected to 7% O_2)	EPA Method 5
VE–Visible Emissions	10% (6 min. block avg.)	EPA Method 9 and COM
Cd–Cadmium	0.040 mg/dscm (corrected to 7% O_2)	EPA Method 29
Be–Beryllium	0.001 mg/dscm (corected to 7% O_2)	EPA Method 29
Pb–Lead	0.49 mg/dscm (corrected to 7% O_2)	EPA Method 29
Hg–Mercury	70 μg/dscm or 85% reduction by weight (corrected to 7% O_2, whichever is less stringent)	EPA Method 29
SO_2–Sulfur Dioxide	29 ppmdv or 75 percent reduction by weight or volume corrected to 7% O_2 (whichever is less stringent)	CEMS 24-hour daily geometric mean
HCl–Hydrochloric Acid	29 ppmdv or 95% reduction corrected to 7% O_2 (whichever is less stringent)	EPA Method 26 or 26a
Dioxins/Furans	30 ng/dscm (corrected to 7% O_2)	EPA Method 23
CO–Carbon Monoxide	100 ppmdv (corrected to 7% O_2)	CEMS 4-hour block average
?	87 ppmdv (corrected to 7% O_2)	CEMS 4-day rolling average
NO_x–Nitrogen Oxides	205 ppmdv (corrected to 7% O_2)	CEMS 24-hour block average
Fabric Filter Inlet Temperatur	17° C above maximum demonstrated PM control device inlet	CTMS 4-hour block average

These maximum allowable emission rates are applicable to each MWC combustor unit. [Rules 62-4.030, and 62-296.416, F.A.C., 40 CFR 60.33b and 40 CFR 60.34b]

Notes:

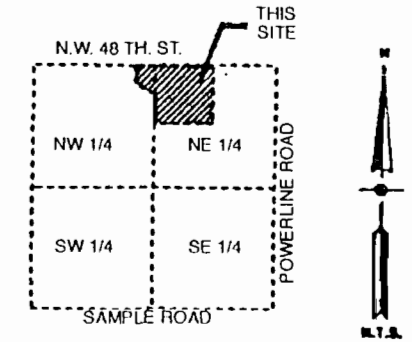
(1) This limit for PM is more restrictive than the emission limit for PM in 40 CFR 60.43b

Averaging Times

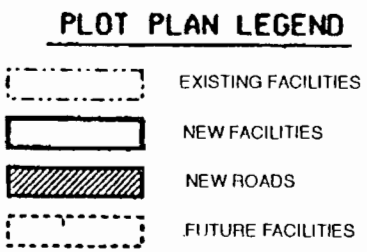
SO_2–24-hour daily block geometric mean (midnight to midnight)
NO_x–24-hour daily block arithmetic mean (midnight to midnight)
CO–4-hour block arithmetic mean beginning at midnight
Opacity–6 minutes block arithmetic mean

Abbreviations

μg/dscm–Micrograms per dry standard cubic meter
mg/dscm–Milligrams per dry standard cubic meter
ppmdv–Part per million dry volume
ng/dscm–Nanograms per dry standard cubic meter
Dioxins/furans–Total tetra through octa-chlorinated dibenzo-p dioxins and dibenzofurans
CEMS–Continuous Emission Monitoring System
COM–Continuous Opacity Monitors
CTMS–Continuous Temperature Monitoring System
EPA–U.S. Environmental Protection Agency



LOCATION MAP



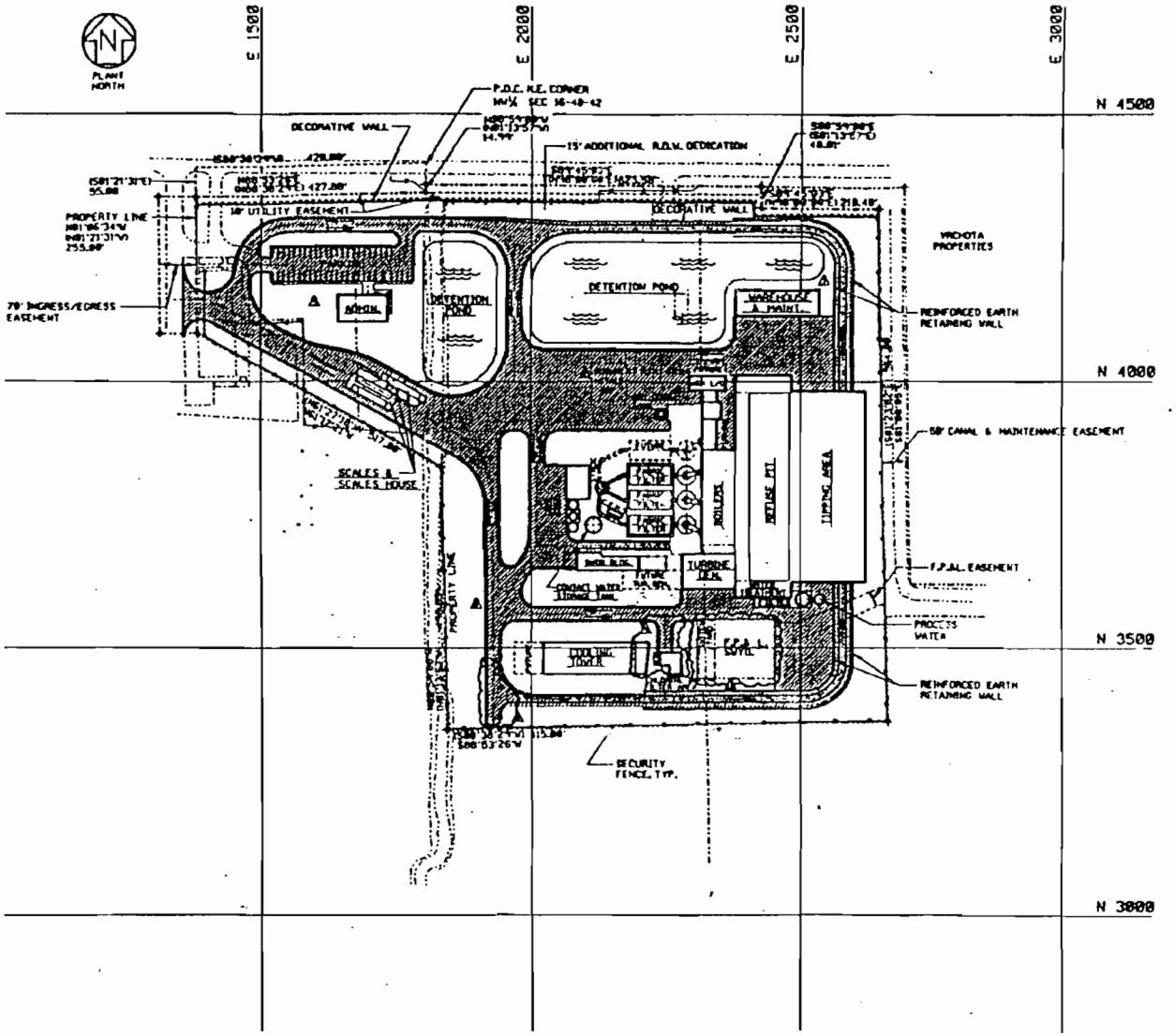


Figure 1-1
North Broward Resource Recovery Facility
Plot Plan

Source: Wheelabrator Environmental Systems, Inc., 1989; Golder & Associates, 1998.

Golder Associates

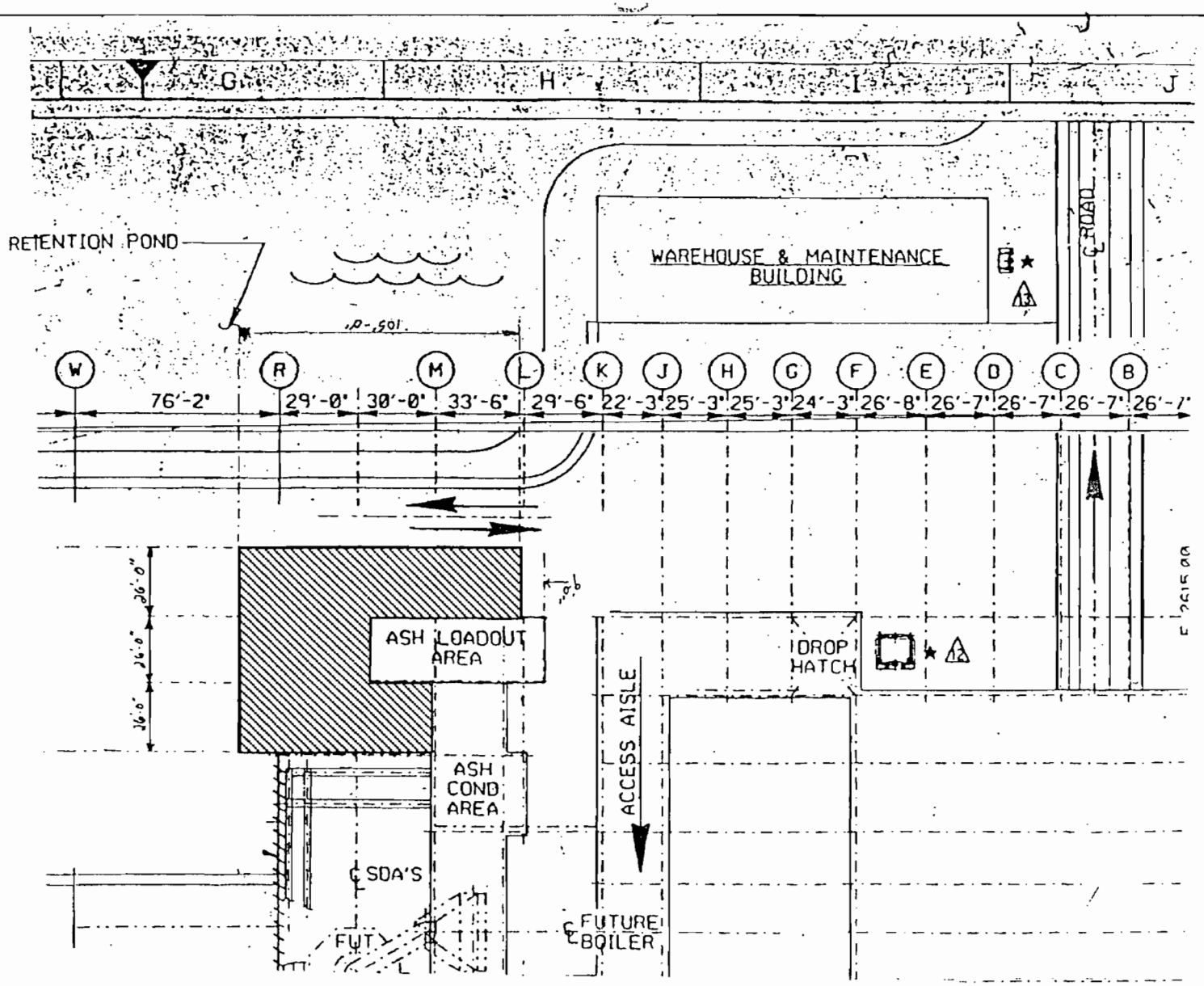


Figure 3-1
North Broward Resource Recovery Facility
Area of New Construction

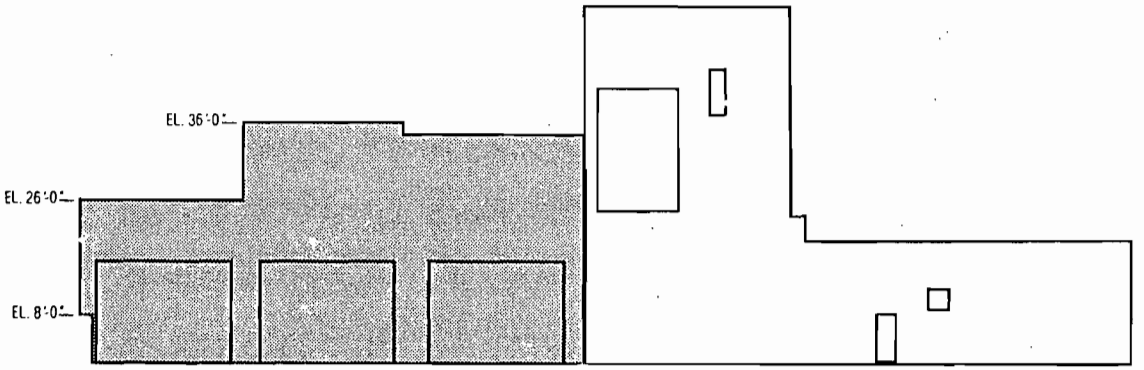
Source: Wheelabrator Environmental Systems, Inc., 1989; Golder & Associates, Inc., 1998.

Golder Associates

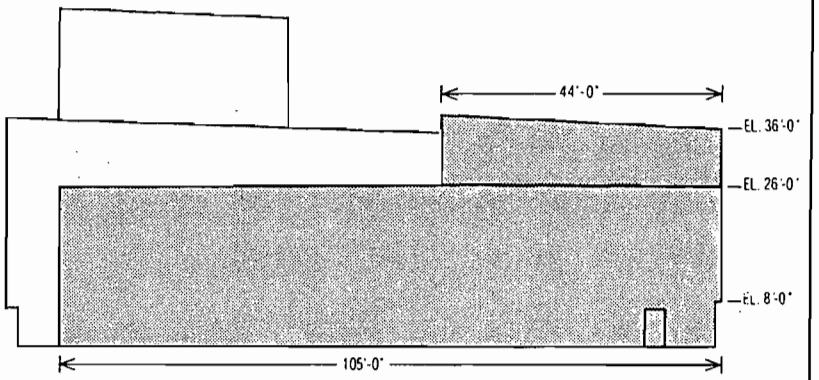
KEY

AREAS OF NEW CONSTRUCTION

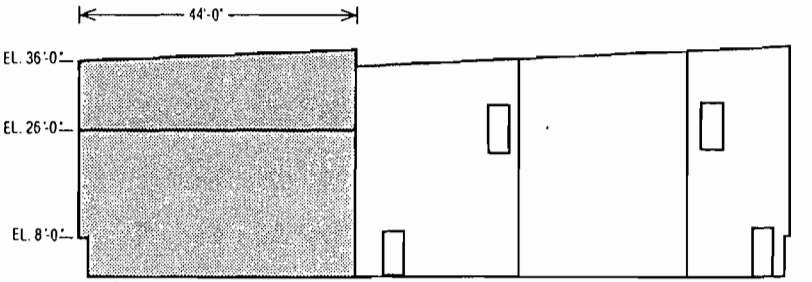
(DRAWINGS ARE NOT TO SCALE)



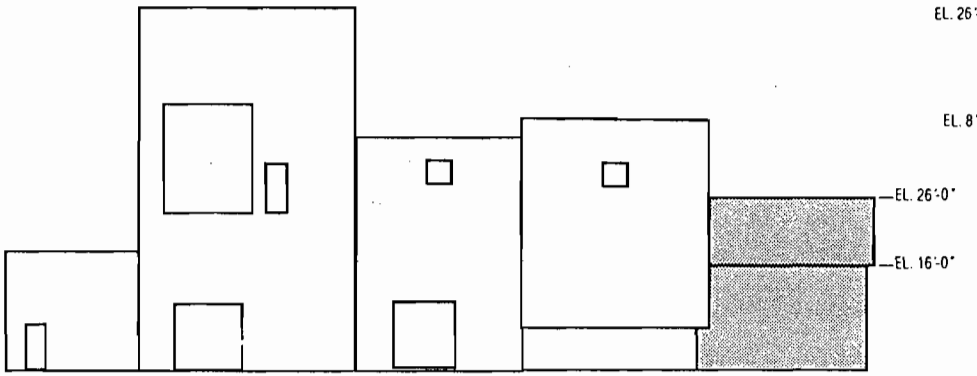
WEST ELEVATION



NORTH ELEVATION



SOUTH ELEVATION CROSS SECTION



EAST ELEVATION

Figure 3-2
North Broward Resource Recovery Facility
Elevation Views of Areas of New Construction

Source: Wheelabrator Environmental Systems, Inc., 1989; Golder & Associates, 1998.

Golder Associates

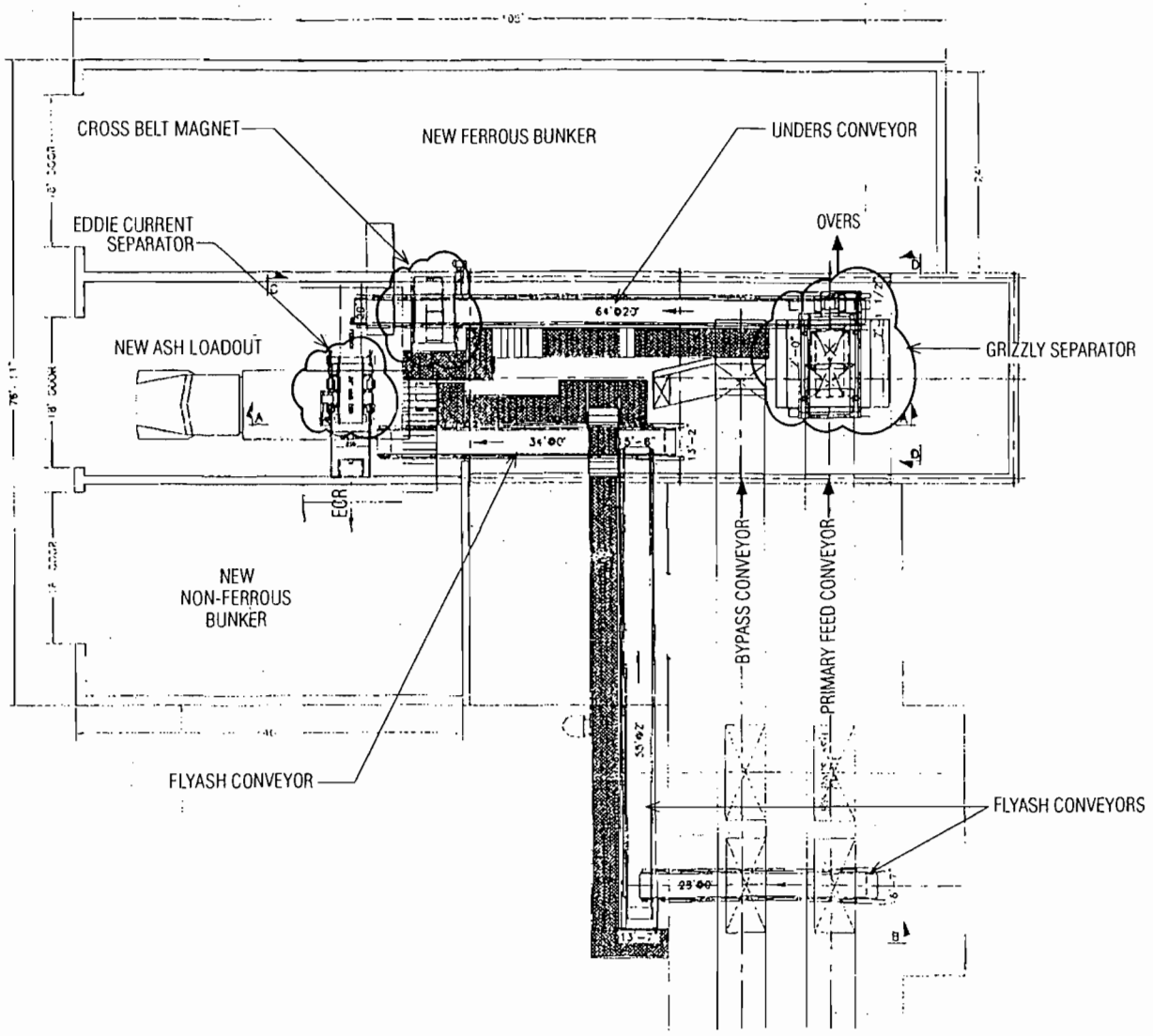


Figure 3-3
North Broward Resource Recovery Facility
Plan View and Flow of Metals Recovery

Source: Fritz Enterprises, 1998.

Golder Associates

May 27, 1998

Outline for Modification Request
South/North Broward Resource Recovery Facility
Wheelabrator South Broward Inc. and Wheelabrator North Broward Inc.

The following is an outline of information to be included in the modification request for South and North Broward Recovery Facility. The facility was certified under the Florida Power Plant Siting Act (PPSA) and modification of the conditions of certification are required.

Introduction and Applicant

This section will discuss the four areas for which the conditions need clarification, changes or additions. The areas include: a clarification of the fuels allowed to be used in the facility, the addition of a metal recovery facility, addition of Selective Non-Catalytic Reduction required to meet 40 Code of Federal Regulations (CFR) Part 60, Subpart Cb, and the addition of emission sources that were permitted separately.

1.0 Allowable Fuels
- 1.1 Information Related to Original PPSA application
- 1.2 Information Related to Historical and Current Practice
- 1.3 Requested Language for PPSA

2.0 Metals Recovery
- 2.1 Project Overview
- 2.2 Air Emissions (Minor source of fugitive controlled by wet scrubber)
- 2.3 Stormwater (addition of 2,400 ft^2 of new impervious area for South Broward, only)
- 2.4 Ash Residue Management Plan (update)
- 2.5 Material Recovery (address relevant portions of 62-701.700 F.A.C.)
- 2.6 Transportation (additional 3 trucks per day)
- 2.7 Development Code and Site Plan Information
- 2.8 Requested Conditions of Certification

3.0 Subpart Cb Compliance Plan -- see attached control plans
- 3.1 Existing Facilities Description (brief overview of FF and SD systems)
- 3.2 Description of SNCR system
- 3.3 Performance, Emissions and Stack Conditions (redundant fabric filter outlet temp)
- 3.4 Urea Tank - any permits required
- 3.5 Requested Conditions of Certification

4.0 Existing Air Emission Permits
- 4.1 Description of Sources and Existing Permits (Lime Silo and Ash Handling)
- 4.2 Requested Conditions of Certification

Items related to air emissions (1.0, 2.2 and 3.0) will also be submitted separately as a modification of the PSD permit. The existing air emission sources (4.0) have been handled separately as part of the Title V permit applications submitted in June of 1996.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

JUL 2 8 1987

APT-APB/eaw

RECEIVED

APR 4 1988

DER - BAQM

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Thomas M. Henderson
Project Director
Broward County Resource Recovery Office
115 South Andrews Avenue, Room 521
Ft. Lauderdale, Florida 33301

Re: North Broward Resource Recovery Facility (PSD-FL-112)

Dear Mr. Henderson:

Review of your February 14, 1986, application to construct a four unit, 226.9 mmBTU/hr (each) heat input, mass burn, municipal solid waste fired, energy recovery facility in Broward County, Florida, has been completed. The construction is subject to rules for the Prevention of Significant Deterioration (PSD) of air quality contained in 40 CFR §52.21. The Florida Department of Environmental Regulation (FDER) performed the preliminary determination concerning the proposed construction and published a request for public comment on September 13, 1986. Eleven public comments were received and addressed in the final determination. On June 26, 1987, the Environmental Protection Agency (EPA) prepared a final determination recommending issuance of the PSD permit by EPA.

EPA has determined that the construction as described in the application meets all the applicable requirements of 40 CFR §52.21. Accordingly, pursuant to 40 CFR §124.15, the Regional Administrator has made a final decision to issue the enclosed Permit to Construct: Part I. - Specific Conditions and Part II. - General Conditions. This authority to construct, granted as of the effective date of the permit, is based solely on the requirements of 40 CFR §52.21, air quality. It does not apply to other permits issued by this Agency or by other agencies. Please be advised that a violation of any permit condition, as well as any construction which proceeds in material variance with information contained in the final determination, will be subject to enforcement action.

This final permit decision is subject to appeal under 40 CFR §124.19 by petitioning the Administrator of the EPA within thirty (30) days after receipt thereof. The petitioner must submit a statement of reasons for the appeal and the Administrator must decide on the petition within a reasonable time period. If the petition is denied, the permit shall become effective upon notice of such action to the parties to the appeal. If no appeal is

filed with the Administrator, the permit shall become effective thirty (30) days after receipt of this letter. Upon the expiration of the thirty (30) day period, EPA will notify you of the status of the permit's effective date.

Receipt of this letter does not constitute authority to construct. Approval to construct this four unit, mass burn, municipal solid waste fired, energy recovery facility shall be granted as of the effective date of the permit. The complete analysis which justifies this approval has been fully documented for future reference, if necessary. Any questions concerning this approval may be directed to Mr. Bruce Miller, Chief, Air Programs Branch at (404) 347-2864.

Sincerely yours,

Winston A. Smith, Director
Air, Pesticides, and Toxics
Management Division

Enclosure

cc: Mr. Steve Smallwood, P.E., Chief
Bureau of Air Quality Management
Florida Department of Environmental
Regulation

PERMIT TO CONSTRUCT UNDER THE RULES FOR THE
PREVENTION OF SIGNIFICANT DETERIORATION OF AIR QUALITY

Pursuant to and in accordance with the provisions of Part C, Subpart 1 of the Clean Air Act, as amended, 42 U.S.C. §7470 et. seq., and the regulations promulgated thereunder at 40 CFR §52.21, as amended at 50 Fed. Reg. 28550 (July 12, 1985),

North Broward County Resource Recovery Facility

is, as of the effective date of this permit (PSD-FL-112) authorized to construct a resource recovery facility consisting of four 605 ton per day (maximum capacity) mass burn, municipal solid waste incinerators and appurtenances at the following location:

2700 Hilton Road (N.W. 48th Street)
Pompano Beach, Florida 33060
Unincorporated Broward County, Florida.

Upon completion of authorized construction and commencement of operation/production, this stationary source shall be operated in accordance with the emission limitations, sampling requirements, monitoring requirements and other conditions set forth in the attached Part I. - Specific Conditions and Part II. - General Conditions.

This permit is hereby issued on JUL 2 8 1987 and shall become effective thirty (30) days after receipt hereof unless a petition for administrative review is filed with the Administrator during that time. If a petition is filed any applicable effective date shall be determined in accordance with 40 CFR §124.19(f)(1).

If construction does not commence within 18 months after the effective date of this permit, or if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable time, this permit shall expire and authorization to construct shall become invalid.

This authorization to construct shall not relieve the owner or operator of the responsibility to comply fully with all applicable provisions of Federal, State, and local law.

July 28, 1987
Date Signed

Lee A. DeHihns, III, Deputy
Regional Administrator

PART I. - Specific Conditions

1. Emission Limitations

a. Stack emissions from each unit shall not exceed the following:

Particulate: 0.0150 gr/dscf dry volume corrected to 12% CO_2.

Sulfur Dioxide: (1) 0.140 lb/mmBtu heat input and 60 ppm (3-hr rolling average, dry volume, corrected to 12% CO_2); or

(2) 65% reduction of uncontrolled SO_2 emissions.* In no case shall the SO_2 emissions exceed 0.310 lb/mmBtu heat input and 124 ppm (3-hr rolling average, dry volume, corrected to 12% CO_2).

The 124 ppm limit above shall be modified to reflect a new emission limit (in ppm) from the control device at 65% control efficiency. Within 18 months of start-up of operation, the County shall submit compliance tests that will be used to determine the new SO_2 emission limit (in ppm). The limit will be determined by observed average emission rate (u) from the submitted compliance tests and will be statistically analyzed using the one tailed student T test ($t_{.05} = (\bar{x} - u)\, n^{0.5}/s$) at the 95% confidence level to derive a mean emission rate ($\bar{x}$), where s is the standard deviation of observed values n. The final operating SO_2 emission limit (in ppm) shall be this mean emission rate ($\bar{x}$). This value shall be restricted to no more than 124 ppm or less than 60 ppm (3-hr rolling average, dry volume, corrected to 12% CO_2).

Nitrogen Oxides: .560 lb/mmBtu heat input and 350 ppm (3-hr rolling average, dry volume, corrected to 12% CO_2).

Carbon Monoxide: .090 lb/mmBtu heat input; 400 ppm (1-hr rolling average, dry volume, corrected to 12% CO_2); and 88 ppm (4-day rolling average, dry volume, corrected to 12% CO_2).

Lead: .00056 lb/mmBtu

Fluorides: .0040 lb/mmBtu

Beryllium: 9.30×10^{-7} lb/mmBtu

Mercury: 7.50×10^{-4} lb/mmBtu

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* Uncontrolled SO_2 emissions will be measured at the inlet to the acid gas control device.

Visible Emissions: Opacity of stack emissions shall not be greater than 15% opacity. Excess opacity resulting from startup or shutdown shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess opacity shall be minimized but in no case exceed two hours in any 24-hour period unless specifically authorized by EPA for longer duration.

The units are subject to 40 CFR Part 60, Subpart E and Subpart Db, New Source Performance Standards (NSPS), except that where requirements in this permit are more restrictive, the requirements in this permit shall apply.

There shall be no greater than 10% opacity for emissions from the refuse bunker and the ash handling and loadout. The potential for dust generation by ash handling activities will be mitigated by quenching the ash prior to loading in ash transport trucks. Additionally, all portions of the proposed facility, including the ash handling facility, which have the potential for fugitive emissions will be enclosed. Also, those areas which have to be open for operational purposes, (e.g., tipping floor of the refuse bunker while trucks are entering and leaving) will be under negative air pressure.

b. Only distillate fuel oil or natural gas shall be used in startup burners. The annual capacity factor for use of natural gas and oil, as determined by 40 CFR 60.43b(d), shall be less than 10%. If the annual capacity factor of natural gas is greater than 10%, then the facility shall be subject to §60.44b.

c. (1) None of the four individual municipal solid waste incinerators shall be charged in excess of 226.9 mmBtu/hr and 605 tons per day MSW (110% rated capacity) nor produce in excess of 129,500 lbs/hr of steam (3-hr rolling average).

(2) The temperature of the flue gas exiting the final combustion chamber of the incinerator shall not be less than 1800°F.

d. Compliance Tests

(1) a. Annual compliance tests for particulate matter, lead, SO_2, nitrogen oxides, CO, fluorides, mercury, and beryllium shall be conducted in accordance with 40 CFR 60.8 (a), (b), (d), (e), and (f).

b. Compliance with the opacity standard for the incinerator stack emissions in condition 1.a. of this part shall be determined in accordance with 40 CFR 60.11 (b) and (e).

c. Compliance with the emission limitation for 65% control of total sulfur dioxide emissions shall be determined by using the test methods in condition 1.d.(2) and sampling for SO_2 emissions before and after the acid gas control device. Continuous emissions data shall also be used to demonstrate compliance with the SO_2 concentration limits in condition 1.a. above.

(2) The following test methods and procedures for 40 CFR Parts 60 and 61 shall be used for compliance testing:

a. Method 1 for selection of sample site and sample traverses.

b. Method 2 for determining stack gas flow rate when converting concentrations to or from mass emission limits.

c. Method 3 for gas analysis for calculation of percent O_2 and CO_2.

d. Method 4 for determining stack gas moisture content to convert the flow rate from actual standard cubic feet to dry standard cubic feet for use in converting concentrations in dry gases to or from mass emission limits.

e. Method 5 for concentration of particulate matter and associated moisture content. One sample shall constitute one test run.

f. Method 9 for visible determination of the opacity of emissions.

g. Method 6 for concentration of SO_2. Two samples, taken at approximately 30 minute intervals, shall contitute one test run.

h. Method 7 for concentration of nitrogen oxides. Four samples, taken at approximately 15 minute intervals, shall constitute one test run.

i. Method 10 for determination of CO concentrations. One sample constitutes one test run.

j. Method 12 for determination of lead concentration and associated moisture content. One sample constitutes one test run.

k. Method 13B for determination of fluoride concentrations and associated moisture content. One sample shall constitute one test run.

l. Method 101A for determination of mercury emission rate and associated moisture content. One sample shall constitute one test run.

m. Method 104 for determination of beryllium emission rate and associated moisture content. One sample shall constitute one test run.

2. Compliance with emission limitations specified in lb/mmBtu in conditions 1.a. and 1.c. of this part shall be determined by calculating an "F" factor in dscf/mmBtu corrected to 12% CO_2 using the boilers' efficiency (as determined by the calorimeter method contained in Attachment A during acceptance testing) and the measured steam production. Data obtained from test methods required in condition 1.d. of this part for compliance testing shall be used for the calculation of the "F" factor required by this condition.

3. Devices shall be installed to continuously monitor and record steam production, the final combustion chamber temperature, and flue gases temperature at the exit of the acid gas removal equipment. These devices shall be adequately maintained and operating during all periods of operation.

4. The height of each boiler exhaust stack shall not be less than 61.0 meters above ground level at the base of the stack.

5. Each incinerator boiler shall have a metal name plate affixed in a conspicuous place on the shell showing manufacturer, model number, type waste, rated capacity, and certification number.

6. The permittee must submit to EPA and DER, within fifteen (15) days after it becomes available to the County, copies of technical data pertaining to the incinerator boiler design, acid gas control equipment design, particulate control equipment design, and the fuel mix that will be used to evaluate compliance of the facility with the preceeding emission limitations.

7. Fuel

   The Resource Recovery Facility shall utilize refuse such as garbage and trash (as defined in Chapter 17-7, FAC) but not grease, scum, grit screenings or sewage sludge.

8. Air Pollution Control Equipment

   The permittee shall install, continuously operate, and maintain the following air pollution controls to minimize emissions. Controls listed shall be fully operational upon startup of the proposed equipment.

   a. Each boiler shall be equipped with a particulate emission control device for the control of particulates.

   b. Each boiler shall be equipped with an acid gas control device designed to remove at least 90% of the acid gases.

   c. The temperature of flue gases exiting the acid gas control equipment shall not exceed 300°F.

9. Continuous Emission Monitoring

a. Prior to the date of startup and thereafter, the County shall install, maintain, and operate the following continuous monitoring systems for each boiler exhaust stack:

(1) Continuous emission monitoring (CEM) systems to measure stack gas opacity and SO_2, NO_x, CO, CO_2, and O_2 concentrations for each unit. Continuous monitors for SO_2 shall be installed after the acid gas control device for each unit. The systems shall meet the EPA monitoring performance specifications of 40 CFR 60.13 and 40 CFR 60, Appendix B, during initial compliance testing and annually thereafter. Additionally, CEM's shall meet the quality control requirements of 40 CFR 60, Appendix F (Attachment B).

(2) CEM data recorded during periods of startup, shutdown, and malfunction shall be reported but excluded from compliance averaging periods for CO, NO_x, and opacity.

(3) a. CEM data recorded during periods of startup and shutdown shall be excluded from compliance averaging periods for SO_2.

b. CEM data recorded during periods of acid gas control device malfunctions shall be excluded from compliance averaging periods for SO_2 provided that the preceeding thirty day period which ends on the last day of the malfunction period meets an average SO_2 emission limit equal to the SO_2 limit specified in condition 1.a. CEM data must be available for 90% of the operating time for this exemption to apply. A malfunction as used in this permit means any sudden and unavoidable failure of air pollution control equipment or process equipment or of a process to operate in a normal or usual manner. Failures that are caused entirely or in part by poor maintenance, careless operation, or any other preventable upset condition or preventable equipment breakdown shall not be considered malfunctions.

(4) The temperatures of the final combustion chamber of the furnace and flue gases exiting the acid gas control device shall be continuously monitored.

b. An excess emissions report shall be submitted to EPA for every calendar quarter. The report shall include the following:

(1) The magnitude of excess emissions computed in accordance with 40 CFR 60.13(h), any conversion factors used, and the date and time of commencement and completion of each period of excess emissions (60.7(c)(1)).

(2) Specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions of the furnace/boiler system. The nature and cause of any malfunction (if known) and the corrective action taken or preventive measures adopted shall also be reported (60.7(c)(2)).

(3) The date and time identifying each period during which the continuous monitoring system was inoperative except for zero and span checks, and the nature of the system repairs or adjustments (60.7(c)(3)).

(4) When no excess emissions have occurred or the continuous monitoring system has not been inoperative, repaired, or adjusted, such information shall be stated in the report (60.7(c)(4)).

(5) County shall maintain a file of all measurements, including continuous monitoring systems performance evaluations; all continuous monitoring systems or monitoring device calibrartion checks; adjustments and maintenance performed on these systems or devices; and all other information required by this permit recorded in a permanent form suitable for inspection (60.7(d)).

(6) Excess emissions shall be defined as any applicable period during which the average emissions of CO, NO_x, and/or SO_2, as measured by the continuous monitoring system, exceeds the CO, NO_x, and/or SO_2 maximum emission limit (in ppm) set for each pollutant in condition 1.a. above.

c. Excess emissions indicated by the CEM systems shall be considered violations of the applicable opacity limit or operating emission limits (in ppm) for the purposes of this permit provided the data represents accurate emission levels and the CEM's do not exceed the calibration drift (as specified in the respective performance specification tests) on the day when initial and subsequent compliance is determined. The burden of proof to demonstrate that the data does not reflect accurate emission readings shall be the responsibility of the permittee.

10. Excess emissions which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure which may reasonably be prevented during start-up or shutdown shall be prohibited.

11. Reporting

a. A copy of the results of the compliance tests shall be submitted within forty-five days of testing to the DER Bureau of Air Quality Management, the DER Southeast Florida District Office, Broward County, and EPA Region IV.

b. Continuous emissions monitoring data shall be reported to the DER Southeast District Office and EPA Region IV on a quarterly basis in accordance with Section 17-2.710, FAC, and 40 CFR 60.7.

c. Addresses for submitting reports are:

EPA Region IV

Chief, Air Compliance Branch
U.S. Environmental Protection Agency
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Florida Department of Environmental Regulation (DER)

Deputy Chief, Compliance and Ambient Monitoring
Bureau of Air Quality Management
Florida Department of Environmental
Regulation (DER)
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301

Southeast District Office of DER

District Manager
Department of Environmental Regulation
3301 Gun Club Road
P.O. Box 3858
West Palm Beach, Florida 33402

Broward County

Broward County Environmental Quality
Control Board
500 Southwest 14th Court
Ft. Lauderdale, Florida 33315

PART II. - General Conditions

1. The permittee shall comply with the notification and record-keeping requirements codified at 40 CFR Part 60.7. In addition, the permittee shall provide EPA with 30 days notice prior to conducting any compliance testing required under condition 1.a.

2. The permittee shall retain records of all information resulting from monitoring activities and information indicating operation parameters as specified in the specific conditions of this permit for a minimum of two (2) years from the date of recording.

3. If, for any reason, the permittee does not comply with or will not be able to comply with the emission limitations specified in this permit, the permittee shall provide EPA with the following information in writing within five (5) days of such condition:

   (a) description of noncomplying emission(s),
   (b) cause of noncompliance,
   (c) anticipated time the noncompliance is expected to continue or, if corrected, the duration of the period of noncompliance,
   (d) steps taken by the permittee to reduce and eliminate the noncomplying emission.

   Failure to provide the above information when appropriate shall constitute a violation of the terms and conditions of this permit. Submittal of the aforementioned information does not constitute a waiver of the emission limitations contained within this permit.

4. Any proposed change in the information contained in the final determination regarding facility emissions or changes in the quantity or quality of materials processed that would result in new or increased emissions or ambient air quality impact must be reported to EPA. If appropriate, modifications to the permit may then be made by EPA to reflect any necessary changes in the permit conditions. In no case are any new or increased emissions allowed that will cause violation of the emission limitations specified herein. Any contruction or operation of the source in material variance with the final determination shall be considered a violation of this permit.

5. In the event of any change in control of ownership of the source described in the permit, the permittee shall notify the succeeding owner of the existence of this permit and EPA of the change in control of ownership within 30 days.

6. The permittee shall allow representatives of the state and local environmental control agency or representatives of the EPA, upon presentation of credentials:

(a) to enter upon the permittee's premises, or other premises under the control of the permittee, where an air pollutant source is located or in which any records are required to be kept under the terms and conditions of this permit;

(b) to have access to and copy at reasonable times any records required to be kept under the terms and conditions of this permit, or the Clean Air Act;

(c) to inspect at reasonable times any monitoring equipment or monitoring method required in this permit;

(d) to sample at reasonable times any emissions of pollutants; and

(e) to perform at reasonable times an operation and maintenance inspection of the permitted source.

7. The conditions of this permit are severable, and if any provision of this permit or the application of any provisions of this permit to any circumstances is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected.

cc: mike ✓
Wilson

Wheelabrator South Broward Inc.

A Waste Management Company
4400 South State Road 7
Ft. Lauderdale, FL 33314

Phone 954.581.6606
Fax 954.581.6705

Thomas D. Kirk
General Manager

February 25, 1998

Certified #P 427 396 798
Return Receipt Requested

Mr. Michael Hewett
Florida Department of Environmental Protection
Division of Air Resources Management
Twin Towers Office Building
2600 Blair Stone Road
Mail Station 5500
Tallahassee, FL 32399-2400

RE: Wheelabrator South Broward Subpart Cb Emission Guidelines Final Control Plan

Dear Mr. Hewett:

In accordance with the Florida State Plan approved by USEPA on November 13, 1997 implementing the Subpart Cb Emission Guidelines, the following final control plan is provided for the Wheelabrator South Broward Facility (WSB). This final control plan is submitted to describe the controls and measures WSB will use to comply with the Subpart Cb emission limits and other requirements as adopted in Florida Administrative Code (FAC) Chapters 62-204.800 and 62-296.416.

The WSB facility is already equipped with spray dryer/fabric filter (SDA/FF) air pollution control technology for the control of particulate, acid gases, metals and dioxins; therefore, the WSB facility will not require a major retrofit. To meet the Subpart Cb requirements generally will require installation of Selective Non-Catalytic Reduction (SNCR) NOx controls and incorporation of the Subpart Cb good combustion practice, compliance and performance testing, and monitoring, record keeping and reporting requirements.

The following summarizes the controls or measures required or already in place to meet each Subpart Cb requirement applicable to WSB. Except for the mercury limits, Florida's rules implementing the Subpart Cb requirements cross reference the federal requirements at 40 CFR 60 Subpart Cb.

1. Particulate emission limit as specified at 40 CFR 60.33b(a)(2)(i) and (ii). Facilities existing fabric filters will be used to comply with this requirement.

2. Opacity limit at 40 CFR 60 60.33b(a)(1)(iii). Compliance will be achieved with the existing fabric filters.

3. Emission limits for Cadmium and Lead at 40 CFR 60.33b(a)(2)(i) through (iv). Compliance will be achieved with the existing fabric filters.

4. Emission limit for Mercury at DEP Rule 62-296.416(3)(b) apply. Compliance is achieved through the Broward County mercury waste separation program and augmented by the existing spray dryer/fabric filters. Compliance with the limit is currently demonstrated semiannually on each unit.

5. The emission limits for sulfur dioxide and hydrogen chloride at 40 CFR 60.33b(b)(1)(i) and (ii) and 40 CFR 60b(b)(2)(i) and (ii). The existing SDA/FF air pollution controls will achieve compliance with these limits.

6. The emission limit for total mass dioxin/furans as specified at 40 CFR 60.33b(c)(1)(i) through 60.33b(c)(2). Emission limits will be met with the existing good combustion control technology and the existing SDA/FFs.

7. The emission limit for nitrogen oxides at 40 CFR 60.33b(d). SNCR will be added to achieve compliance with this emission limit. This will require installation of a liquid urea storage tank with or without dry powdered urea mixing capability, urea metering and injection control system, injection nozzles at the appropriate furnace locations and interconnecting piping.

8. The emission limit for carbon monoxide at 40 CFR 60.34b(a). This emission limit will be achieved with the existing good combustion control technology.

9. Operating practices requirement as specified at 40 CFR 60.53b(b) and (c). The facility as currently operated can comply with the load and temperature requirements. Steamflow and fabric filter inlet temperature are currently monitored.

10. Operator training requirements as specified at 40 CFR 60.54b. The facility will meet these requirements in accordance with the schedule in 40 CFR 60.39b(c)(4) – (within 12 months of EPA approval of Florida's Subpart Cb Plan – November 13, 1998).

11. Fugitive ash emission requirements at 40 CFR 60.55b. The facility can comply with these requirements because the ash handling areas are fully enclosed.

12. Compliance and performance testing at 40 CFR 60.58b, 60.24(b)(2) and FAC 62-204.800(8)(b). The facility will comply with these requirements as required by the schedule. These include the Subpart Cb CEM requirements which will be met with the existing CEMs installed at the facility as modified with a new data acquisition system to incorporate

the Cb averaging times and data recording and record keeping provisions in addition to any other necessary equipment changes.

As specified in the Subpart Cb State Plan approved by USEPA, the following compliance schedule will be followed:

July 13, 1998	-	Awarding of Construction Contract for SNCR
November 13, 2000	-	Completion of Onsite Construction
December 19, 2000	-	Achieve Compliance

The initial performance tests to demonstrate compliance with the Subpart Cb emission limits will be conducted within 180 days after achieving compliance and will be coordinated with the annual testing requirements in the PPSC and PSD permits. It is expected that a modification to the existing PPSC permit and a construction permit will be required for the retrofit.

Additional details of the emission controls or measures to meet Subpart Cb requirements will be provided in the permit to construct application and modification to the PPSC permit as may be requested by DEP. We trust the above information is sufficient to fulfill final control plan submittal requirements. If there are any questions or you need additional information, please give me a call.

Sincerely,

Thomas Kirk
General Manager

980226.TDK.ch

cc: Chuck Faller
Tom Henderson
Tim Porter

Department of Environmental Protection

Lawton Chiles
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Virginia B. Wetherell
Secretary

February 12, 1998

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Thomas D. Kirk
Plant Manager
Wheelabrator North Broward, Inc.
2600 N. W. 48th Street
Pompano Beach, Florida 33073

Re: Draft Permit Amendment No. PSD-FL-112(~~A~~)

Dear Mr. Kirk:

Enclosed is one copy of the Draft Amendment to the Permit for the Prevention of Significant Deterioration of Air Quality (PSD Permit) for the Wheelabrator North Broward, Inc. facility located at 2600 N. W. 48th Street, Pompano Beach, Broward County, Florida 33073. The Department's Intent to Issue Air Construction Permit Amendment, the DRAFT Permit Amendment, Technical Evaluation and Preliminary Determination, and the "PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT AMENDMENT" are also included.

The "PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT AMENDMENT " must be published within 30 (thirty) days of receipt of this letter. Proof of publication, i.e., newspaper affidavit, must be provided to the Department's Bureau of Air Regulation office within 7 (seven) days of publication. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the permit.

Please submit any written comments you wish to have considered concerning the Department's proposed action to A. A. Linero, P.E., Administrator, New Source Review Section at the above letterhead address. If you have any other questions, please contact Mr. Edward J. Svec or Mr. Linero at 850/488-1344.

Sincerely,

C. H. Fancy, P.E., Chief,
Bureau of Air Regulation

CHF/ejs

Enclosures

In the Matter of an
Application for Permit Amendment by:

Wheelabrator North Broward, Inc.
2600 N. W. 48th Street
Pompano Beach, Florida 33073

DRAFT Permit Amendment No. PSD-FL-112(A)
Wheelabrator North Broward, Inc.
Broward

INTENT TO ISSUE AIR CONSTRUCTION PERMIT AMENDMENT

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit amendment (copy of DRAFT Permit amendment attached) for the proposed project, as detailed in the application specified above, for the reasons stated below.

The applicant, Wheelabrator North Broward, Inc., applied on December 4, 1997, to the Department for an air construction permit amendment for its Wheelabrator North Broward, Inc. facility located at 2600 N. W. 48th Street, Pompano Beach, Broward County. Wheelabrator North Broward, Inc. requested a revision to their existing PSD permit for clarification of the permitted fuels allowed to be combusted at the North Broward Resource Recovery Facility. The permit currently allows for the combustion of "refuse such as garbage and trash (as defined in Chapter 17-7, FAC) but not grease, scum, grit screenings or sewage sludge." Specifically, the request seeks approval to also combust pharmaceutical wastes, used oil filters and tires in addition to municipal solid waste. In addition to this request, the Department will replace the term "refuse such as garbage or trash (as defined in Chapter 17-7, FAC)" with the terms municipal solid waste or municipal-type waste or MSW as they are defined in both 40 CFR 60.51a and 51b.

The Department has permitting jurisdiction under the provisions of Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, and 62-212. The above actions are not exempt from permitting procedures. The Department has determined that an air construction permit amendment is required to include the fuels requested by the facility.

The Department intends to issue this air construction permit amendment based on the belief that reasonable assurances have been provided to indicate that operation of these emission units will not adversely impact air quality, and the emission units will comply with all appropriate provisions of Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297, F.A.C.

Pursuant to Section 403.815, F.S., and Rule 62-103.150, F.A.C., you (the applicant) are required to publish at your own expense the enclosed "PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT AMENDMENT". The notice shall be published one time only within 30 (thirty) days in the legal advertisement section of a newspaper of general circulation in the area affected. For the purpose of these rules, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S., in the county where the activity is to take place. Where there is more than one newspaper of general circulation in the county, the newspaper used must be one with significant circulation in the area that may be affected by the permit. If you are uncertain that a newspaper meets these requirements, please contact the Department at the address or telephone number listed below. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation, at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400 (Telephone: 850/488-1344; Fax 850/ 922-6979) within 7 (seven) days of publication. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the permit amendment pursuant to Rule 62-103.150 (6), F.A.C.

The Department will issue the FINAL Permit Amendment, in accordance with the conditions of the enclosed DRAFT Permit Amendment unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments concerning the proposed DRAFT Permit Amendment issuance action for a period of 30 (thirty) days from the date of publication of "PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT AMENDMENT." Any written comments should be provided to the

Department's Bureau of Air Regulation, 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in this DRAFT Permit Amendment, the Department shall issue a Revised DRAFT Permit Amendment and require, if applicable, another Public Notice.

The Department will issue the permit amendment with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to Sections 120.569 and 120.57 F.S. The procedures for petitioning for a hearing are set forth below. Mediation is not available for this action

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative hearing in accordance with Sections 120.569 and 120.57 F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000, telephone: 850/488-9730, fax: 850/487-4938. Petitions must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. A petitioner must mail a copy of the petition to the applicant at the address indicated above, at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57 F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-5.207 of the Florida Administrative Code.

A petition must contain the following information: (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Permit File Number and the county in which the project is proposed; (b) A statement of how and when each petitioner received notice of the Department's action or proposed action; (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action; (d) A statement of the material facts disputed by petitioner, if any; (e) A statement of the facts that the petitioner contends warrant reversal or modification of the Department's action or proposed action; (f) A statement identifying the rules or statutes that the petitioner contends require reversal or modification of the Department's action or proposed action; and (g) A statement of the relief sought by the petitioner, stating precisely the action that the petitioner wants the Department to take with respect to the action or proposed action addressed in this notice of intent.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice of intent. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

In addition to the above, a person subject to regulation has a right to apply for a variance from or waiver of the requirements of particular rules, on certain conditions, under Section 120.542 F.S. The relief provided by this state statute applies only to state rules, not statutes, and not to any federal regulatory requirements. Applying for a variance or waiver does not substitute or extend the time for filing a petition for an administrative hearing or exercising any other right that a person may have in relation to the action proposed in this notice of intent.

The application for a variance or waiver is made by filing a petition with the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. The petition must specify the following information: (a) The name, address, and telephone number of the petitioner; (b) The name, address, and telephone number of the attorney or qualified representative of the petitioner, if any; (c) Each rule or portion of a rule from which a variance or waiver is requested; (d) The citation to the statute underlying (implemented by) the rule identified in (c) above; (e) The type of action requested; (f) The specific facts that would justify a variance or waiver for the petitioner; (g) The reason why the variance or waiver would serve the purposes of the underlying statute (implemented by the rule); and (h) A statement whether the variance or waiver is permanent or temporary and, if temporary, a statement of the dates showing the duration of the variance or waiver requested.

The Department will grant a variance or waiver when the petition demonstrates both that the application of the rule would create a substantial hardship or violate principles of fairness, as each of those terms is defined in Section 120.542(2) F.S., and that the purpose of the underlying statute will be or has been achieved by other means by the petitioner.

Persons subject to regulation pursuant to any federally delegated or approved air program should be aware that Florida is specifically not authorized to issue variances or waivers from any requirements of any such federally delegated or approved program. The requirements of the program remain fully enforceable by the Administrator of the EPA and by any person under the Clean Air Act unless and until the Administrator separately approves any variance or waiver in accordance with the procedures of the federal program.

Executed in Tallahassee, Florida.

C. H. Fancy, P.E., Chief
Bureau of Air Regulation

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this INTENT TO ISSUE AIR CONSTRUCTION PERMIT AMENDMENT (including the PUBLIC NOTICE, and DRAFT permit amendment) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 2-16-98 to the person(s) listed:

Mr. Thomas D. Kirk, Plant Manager, Wheelabrator South Broward, Inc. *
Mr. Stephen Smallwood, PE, ERM South
Mr. Brian Beals, EPA
Mr. Isidore Goldman, PE, FDEP SED
Ms. Daniela Banu, Director, BCDNRP

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to §120.52(7), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Kuri Tobar 2-16-98
(Clerk) (Date)

NOTICE TO BE PUBLISHED IN THE NEWSPAPER

PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT AMENDMENT

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

DRAFT Permit Amendment No. PSD-FL-112(A)
Wheelabrator North Broward, Inc.
Broward County

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit amendment to Wheelabrator North Broward, Inc., for Wheelabrator North Broward, Inc. located at 2600 N. W. 48th Street, Pompano Beach, Broward, County. A Best Available Control Technology (BACT) determination was not required pursuant to Rule 62-212.400, F.A.C. and 40 CFR 52.21, Prevention of Significant Deterioration (PSD). The amendment will not result in an increase in any emissions from the facility, and will not cause a violation of any state or federal ambient air quality standards or increments. The applicant's name and address are:

Wheelabrator North Broward, Inc.
2600 N. W. 48th Street
Pompano Beach, Florida 33073

On December 4, 1997, Wheelabrator North Broward, Inc. requested a revision to their existing PSD permit for clarification of the permitted fuels allowed to be combusted at the North Broward Resource Recovery Facility. The permit currently allows for the combustion of "refuse such as garbage and trash (as defined in Chapter 17-7, FAC) but not grease, scum, grit screenings or sewage sludge." Specifically, the request seeks approval to also combust pharmaceutical wastes, used oil filters and tires in addition to municipal solid waste. In addition to this request, the Department will replace the term "refuse such as garbage or trash (as defined in Chapter 17-7, FAC)" with the terms municipal solid waste or municipal-type waste or MSW as they are defined in both 40 CFR 60.51a and 51b.

The proposed fuels allowed to be combusted at the emissions units are:

A. Municipal Solid Waste or Municipal-Type Waste or MSW Municipal solid waste or municipal-type waste or MSW means household, commercial/retail, and/or institutional waste. Household waste includes material discarded by single and multiple residential dwellings, hotels, motels, and other similar permanent or temporary housing establishments or facilities. Commercial/retail waste includes material discarded by stores, offices, restaurants, warehouses, nonmanufacturing activities at industrial facilities, and other similar establishments or facilities. Institutional waste includes material discarded by schools, nonmedical waste discarded by hospitals, material discarded by nonmanufacturing activities at prisons and government facilities, and material discarded by other similar establishments or facilities. Household, commercial/ retail, and institutional waste does not include used oil; sewage sludge; wood pallets; construction, renovation and demolition wastes (which includes but is not limited to railroad ties and telephone poles); clean wood; industrial process or manufacturing wastes; medical waste; or motor vehicles (including motor vehicle parts or vehicle fluff). Household, commercial/retail, and institutional wastes includes yard waste and refuse-derived fuel.

NOTICE TO BE PUBLISHED
IN THE NEWSPAPER

B. Used Oil Filters

C. Tires Tires (whole or shredded) may be processed/fed to this emissions unit(s) up to three (3) percent by weight of the permitted capacity of the emissions unit(s).

D. Pharmaceutical Wastes Pharmaceutical wastes include the following:

(1) Expired pharmaceuticals (Rx);
(2) Over the counter medicines, treatments, and supplements (OTC);
(3) Health and beauty products (HB);
(4) Off-specification, recalled or out of date Rx, OTC an HB;
(5) Small amounts of bulk containers of Rx, OTC and HB;
(6) Packaging material including glass, plastic, and paper for Rx, OTC and HB; and
(7) Controlled substances confiscated by law enforcement agencies.

The Department will issue the FINAL Permit Amendment, in accordance with the conditions of the DRAFT Permit Amendment unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments concerning the proposed DRAFT Permit Amendment issuance action for a period of 30 (thirty) days from the date of publication of this Notice. Any written comments should be provided to the Department's Bureau of Air Regulation, 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in this DRAFT Permit Amendment, the Department shall issue a Revised DRAFT Permit Amendment and require, if applicable, another Public Notice.

The Department will issue FINAL Permit Amendment with the conditions of the DRAFT Permit Amendment unless a timely petition for an administrative hearing is filed pursuant to Sections 120.569 and 120.57 F.S. The procedures for petitioning for a hearing are set forth below. Mediation is not available for this action.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative hearing in accordance with Sections 120.569 and 120.57 F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000, telephone: 850/488-9370, fax: 850/487-4938. Petitions must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. A petitioner must mail a copy of the petition to the applicant at the address indicated above, at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57 F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-5.207 of the Florida Administrative Code.

A petition must contain the following information: (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Permit File Number and the county in which the project is proposed; (b) A statement of how and when each petitioner received notice of the Department's

NOTICE TO BE PUBLISHED
IN THE NEWSPAPER

action or proposed action; (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action; (d) A statement of the material facts disputed by petitioner, if any; (e) A statement of the facts that the petitioner contends warrant reversal or modification of the Department's action or proposed action; (f) A statement identifying the rules or statutes that the petitioner contends require reversal or modification of the Department's action or proposed action; and (g) A statement of the relief sought by the petitioner, stating precisely the action that the petitioner wants the Department to take with respect to the Department's action or proposed action addressed in this notice of intent.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice of intent. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

A complete project file is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Department of Environmental Protection
Bureau of Air Regulation
111 S. Magnolia Drive, Suite 4
Tallahassee, Florida, 32301
Telephone: 850/488-1344
Fax: 850/922-6979

Department of Environmental Protection
Southeast District Office
400 North Congress Avenue
West Palm Beach, Florida 33416-5425
Telephone: (561) 681-6600
Fax: : (561) 681-6755

Broward County Department of Natural
Resource Protection
Air Quality Division
218 Southwest First Avenue
Ft. Lauderdale, Florida 33301
Telephone: (954) 519-1220
Fax: : (954) 519-1495

The complete project file includes the Draft Permit Amendment, the application, and the information submitted by the responsible official, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the Administrator, New Resource Review Section at 111 South Magnolia Drive, Suite 4, Tallahassee, Florida 32301, or call 850/488-1344, for additional information.

TECHNICAL EVALUATION

AND

PRELIMINARY DETERMINATION

Wheelabrator North Broward, Inc.

Wheelabrator North Broward, Inc.
Pompano Beach, Florida
Broward, County

PSD-FL-112(A)
Facility ID No.: 0112120

Department of Environmental Protection
Division of Air Resources Management
Bureau of Air Regulation

February 12, 1998

1. APPLICATION INFORMATION

1.1 Applicant Name and Address

Wheelabrator North Broward, Inc.
2600 N. W. 48th Street
Pompano Beach, Florida 33073

Authorized Representative
Mr. Thomas D. Kirk, Plant Manager

1.2 Reviewing and Process Schedule

12-04-97: Date of Receipt of Application
12-04-97: Application deemed complete/sufficient
02-12-97: Issued Intent

2. FACILITY INFORMATION

2.1 Facility Location

The Wheelabrator North Broward, Inc. facility is located 2600 N. W. 48th Street, Pompano Beach, Broward County. The UTM coordinates of this facility are Zone 17 ; 583.5 km E ; 2,907.5 km N.

2.2 Standard Industrial Classification Code (SIC)

Major Group No.	49	Electric, Gas, and Sanitary Services
Group No.	495	Sanitary Services
Industry No.	4953	Refuse Systems

2.3 Facility Category

This facility produces electricity by combusting solid waste, recovering the heat as steam, and expanding the steam in an electrical generator. The solid waste burned is typically characterized as "refuse such as garbage and trash (as defined in Chapter 17-7, FAC) but not grease, scum, grit screenings or sewage sludge." Each of the three incinerators at the facility is permitted to combust up to 605 tons per day (110% of rated capacity) of municipal solid waste (MSW). The electricity produced is sold to the local utility.

The facility is classified as a major, or Title V, source of air pollution because emissions of at least one regulated air pollutant exceed 100 tons per year. Air pollutant emissions

are over 100 TPY for sulfur dioxide (SO_2), nitrogen oxides (NO_x) and carbon monoxide (CO). It is also a major source because emissions of hazardous air pollutants exceed 10 tons per year individually or 25 tons per year in the aggregate.

This facility is on the list of the 28 Major Facility Categories, Table 62-212.400-1, F.A.C. Because emissions are greater than 100 tons per year for at least one criteria pollutant, the facility is also a major facility with respect to Rule 62-212.400, F.A.C., Prevention of Significant Deterioration (PSD).

The facility was issued a PSD permit, including a determination of Best Available Control Technology (BACT), by the United States Environmental Protection Agency (EPA) on June 26, 1987.

3. PROJECT DESCRIPTION

3.1 This permit addresses the following emissions units:

EMISSION UNIT NO.	SYSTEM	EMISSION UNIT DESCRIPTION
-001	Unit #1	605 Tons per Day MSW Incinerator
-002	Unit #2	605 Tons per Day MSW Incinerator
-003	Unit #3	605 Tons per Day MSW Incinerator

On December 4, 1997, Wheelabrator North Broward, Inc. requested a revision to their existing PSD permit for clarification of the permitted fuels allowed to be combusted at the North Broward Resource Recovery Facility. The permit currently allows for the combustion of "refuse such as garbage and trash (as defined in Chapter 17-7, FAC) but not grease, scum, grit screenings or sewage sludge." Specifically, the request seeks approval to also combust pharmaceutical wastes, used oil filters and tires in addition to municipal solid waste. In addition to this request, the Department will replace the term "refuse such as garbage or trash (as defined in Chapter 17-7, FAC)" with the terms municipal solid waste or municipal-type waste or MSW as they are defined in both 40 CFR 60.51a and 51b.

The proposed fuels allowed to be combusted at the emissions units are:

A. Municipal Solid Waste or Municipal-Type Waste or MSW Municipal solid waste or municipal-type waste or MSW means household, commercial/retail, and/or institutional waste. Household waste includes material discarded by single and multiple residential dwellings, hotels, motels, and other similar permanent or temporary housing establishments or facilities. Commercial/retail waste includes material discarded by stores,

offices, restaurants, warehouses, nonmanufacturing activities at industrial facilities, and other similar establishments or facilities. Institutional waste includes material discarded by schools, nonmedical waste discarded by hospitals, material discarded by nonmanufacturing activities at prisons and government facilities, and material discarded by other similar establishments or facilities. Household, commercial/retail, and institutional waste does not include used oil; sewage sludge; wood pallets; construction, renovation and demolition wastes (which includes but is not limited to railroad ties and telephone poles); clean wood; industrial process or manufacturing wastes; medical waste; or motor vehicles (including motor vehicle parts or vehicle fluff). Household, commercial/retail, and institutional wastes includes yard waste and refuse-derived fuel.

B. Used Oil Filters

C. Tires Tires (whole or shredded) may be processed/fed to this emissions unit(s) up to three (3) percent by weight of the permitted capacity of the emissions unit(s).

D. Pharmaceutical Wastes Pharmaceutical wastes include the following:

(1) Expired pharmaceuticals (Rx);
(2) Over the counter medicines, treatments, and supplements (OTC);
(3) Health and beauty products (HB);
(4) Off-specification, recalled or out of date Rx, OTC an HB;
(5) Small amounts of bulk containers of Rx, OTC and HB;
(6) Packaging material including glass, plastic, and paper for Rx, OTC and HB; and
(7) Controlled substances confiscated by law enforcement agencies.

4. PROCESS DESCRIPTION

4.1 General Information

The facility is a waste-to-energy installation employing mass burning of solid waste, heat recovery as superheated steam, and power generation in a steam electric cycle. Other than landfilling, this is the most common method of solid waste disposal in the United States. There are twelve such facilities in the State of Florida. The following is a general description of the process:

Waste is received via transfer, roll-off, or collection vehicles. All waste is taken to the Refuse Receiving Building, where it is deposited onto the tipping floor or into the Refuse Storage Pit. The refuse is stored at this location until needed to charge the combustion units.

Charging of the combustion units is accomplished using overhead cranes equipped with "orange peel" grapples. These stack, mix, and relocate waste within the pit and transfer it

into the feed hoppers serving each unit. The waste enters the three refuse-fired steam generators, each of which consists of an integrated mass-burn furnace and boiler.

Combustion air is drawn from the refuse tipping area (assisting in odor control) and conveyed through the gas side of the air preheater and into the refuse-fired generators where the waste is combusted. Exhaust gases from the refuse-fired generators pass through an economizer units and are ducted to the air pollution control systems which consists of spray dryer adsorbers and fabric filter bag houses. Treated gases are exhausted to the atmosphere through three individual flues within a single 195 foot stack. Bottom ash from the furnaces is removed, quenched and processed for metal recovery and disposal.

The superheated steam from each boiler enters a turbine where it is expanded. Each turbine powers a 68.5 megawatt electric power generator. The electric power is introduced into the electrical grid and is purchased by the local utility.

5. RULE APPLICABILITY

The Department has determined that the proposed additional waste to be burned is subject to preconstruction review requirements under the provisions of Chapter 403, Florida Statutes, and Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297 of the Florida Administrative Code (F.A.C.).

This facility is located in Broward County, an area designated as attainment for all criteria pollutants in accordance with Rule 62-204.360, F.A.C. The professional engineer's certification states that the net emissions increase, as defined in Rule 62-212.400(e), F.A.C., for each pollutant from the proposed revision to PSD-FL-112 is zero. The proposed project is not subject to review under Rule 62-212.400., F.A.C., Prevention of Significant Deterioration (PSD), because the potential emission increases are zero for each pollutant and thereby do not exceed the significance emission rates given in Chapter 62-212, Table 62-212.400-2, F.A.C.

The emission units affected by this revision shall comply with all applicable provisions of the Florida Administrative Code (including applicable portions of the Code of Federal Regulations incorporated therein) and, specifically, the following Chapters and Rules:

Chapter 62-4	Permits.
Rule 62-204.220	Ambient Air Quality Protection
Rule 62-204.240	Ambient Air Quality Standards
Rule 62-204.260	Prevention of Significant Deterioration Increments
Rule 62-204.360	Designation of Prevention of Significant Deterioration Areas
Rule 62-204.800	Federal Regulations Adopted by Reference
Rule 62-210.300	Permits Required

Rule 62-210.350	Public Notice and Comments
Rule 62-210.370	Reports
Rule 62-210.550	Stack Height Policy
Rule 62-210.650	Circumvention
Rule 62-210.700	Excess Emissions
Rule 62-210.900	Forms and Instructions
Rule 62-212.300	General Preconstruction Review Requirements
Rule 62-212.400	Prevention of Significant Deterioration
Rule 62-213	Operation Permits for Major Sources of Air Pollution
Rule 62-296.320	General Pollutant Emission Limiting Standards
Rule 62-297.310	General Test Requirements
Rule 62-297.401	Compliance Test Methods
Rule 62-297.520	EPA Continuous Monitor Performance Specifications

6. SOURCE IMPACT ANALYSIS

6.1 Emission Limitations

There will be no change to the emissions limits of permit PSD-FL-112.

6.2 Emission Summary

[EMISSION UNIT Nos. -001, -002 or -003]

Pollutants	Current Allowable		New Allowable		Net Increase	PSD Significant Level
	lb/hr	ton/yr	lb/hr	ton/yr	ton/yr	ton/yr
PM	11.9	52.11	11.9	52.11	0	25
SO2	31.77	139.2	31.77	139.2	0	40
NOx	127.1	556.5	127.1	556.5	0	40
CO	20.4	89.4	20.4	89.4	0	100
Fluorides	0.91	4.0	0.91	4.0	0	3
Mercury	0.17	0.75	0.17	0.75	0	0.1
Beryllium	2.11E-04	9.24E-04	2.11E-04	9.24E-04	0	0.0004
Lead	0.127	0.56	0.127	0.56	0	0.6

6.3 Control Technology Review

There will be no change to the existing emissions control systems. Each unit is equipped with a spray dryer adsorber and a fabric filter baghouse system.

6.4 Air Quality Analysis

6.4.1 Introduction

An air quality analysis was not required for this project.

7. CONCLUSION

Based on the foregoing technical evaluation of the application submitted by Wheelabrator North Broward, Inc., the Department has made a preliminary determination that the proposed project will comply with all applicable state and federal air pollution regulations provided certain conditions are met. The Specific Conditions are listed in the attached draft permit amendment.

Permit Engineer: Edward J. Svec

Department of Environmental Protection

DRAFT

Lawton Chiles
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Virginia B. Wetherell
Secretary

[Month day, year]

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Thomas D. Kirk
Plant Manager
Wheelabrator North Broward, Inc.
2600 N. W. 48th Street
Pompano Beach, Florida 33073

Re: Permit Amendment No. PSD-FL-112(A)
Wheelabrator North Broward, Inc.
Dear Mr. Kirk:

The Department has reviewed Wheelabrator North Broward, Inc.'s December 4, 1997 letter requesting an amendment to its permit to revise their existing PSD permit to clarify the permitted fuels allowed to be combusted at the North Broward Resource Recovery Facility. The permit currently allows for the combustion of "refuse such as garbage and trash (as defined in Chapter 17-7, FAC) but not grease, scum, grit screenings or sewage sludge." Specifically, the request seeks approval to also combust pharmaceutical wastes, used oil filters and tires in addition to municipal solid waste. In addition to this request, the Department will replace the term "refuse such as garbage or trash (as defined in Chapter 17-7, FAC)" with the terms municipal solid waste or municipal-type waste or MSW as they are defined in both 40 CFR 60.51a and 51b.

This request is acceptable and the permit is hereby amended as follows:

From:

Part I. - Specific Conditions

7. Fuel

The Resource Recovery Facility shall utilize refuse such as garbage and trash (as defined in Chapter 17-7, F.A.C.) but not grease, scum, grit screenings, or sewage sludge.

To:

Part I. - Specific Conditions

7. Fuel

The Resource Recovery Facility shall utilize:

A. Municipal Solid Waste or Municipal-Type Waste or MSW Municipal solid waste or municipal-type waste or MSW means household, commercial/retail, and/or institutional waste. Household waste includes material discarded by single and multiple residential dwellings, hotels, motels, and other similar permanent

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or temporary housing establishments or facilities. Commercial/retail waste includes material discarded by stores, offices, restaurants, warehouses, nonmanufacturing activities at industrial facilities, and other similar establishments or facilities. Institutional waste includes material discarded by schools, nonmedical waste discarded by hospitals, material discarded by nonmanufacturing activities at prisons and government facilities, and material discarded by other similar establishments or facilities. Household, commercial/retail, and institutional waste does not include used oil; sewage sludge; wood pallets; construction, renovation and demolition wastes (which includes but is not limited to railroad ties and telephone poles); clean wood; industrial process or manufacturing wastes; medical waste; or motor vehicles (including motor vehicle parts or vehicle fluff). Household, commercial/retail, and institutional wastes includes yard waste and refuse-derived fuel.

B. Used Oil Filters

C. Tires Tires (whole or shredded) may be processed/fed to this emissions unit(s) up to three (3) percent by weight of the permitted capacity of the emissions unit(s).

D. Pharmaceutical Wastes Pharmaceutical wastes include the following:

(1) Expired pharmaceuticals (Rx);
(2) Over the counter medicines, treatments, and supplements (OTC);
(3) Health and beauty products (HB);
(4) Off-specification, recalled or out of date Rx, OTC an HB;
(5) Small amounts of bulk containers of Rx, OTC and HB;
(6) Packaging material including glass, plastic, and paper for Rx, OTC and HB; and
(7) Controlled substances confiscated by law enforcement agencies.

The Resource Recovery Facility shall not utilize grease, scum, grit screenings, or sewage sludge.

A copy of this letter shall be filed with the referenced permit and shall become part of the permit.

Sincerely,

Howard L. Rhodes, Director
Division of Air Resources
Management

HLR/ejs

Enclosures

Is your RETURN ADDRESS completed on the reverse?

...your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "*Return Receipt Requested*" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

...following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Mr. Thomas D. Kirk, Plant Mgr
Wheelabrator N. Broward
2600 NW 48th St.
Pompano Beach, Fl
33073

4a. Article Number
P 265 659 295

4b. Service Type
☐ Registered ☒ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery
2-18-98

5. Received By: *(Print Name)*

8. Addressee's Address *(Only if requested and fee is paid)*

6. Signature: *(Addressee or Agent)*
X

PS Form **3811,** December 1994 Domestic Return Receipt

Thank you for using Return Receipt Service.

P 265 659 295

US Postal Service
Receipt for Certified Mail
No Insurance Coverage Provided.
Do not use for International Mail *(See reverse)*

Sent to Thomas Kirk	
Street & Number Wheelabrator North	
Post Office, State, & ZIP Code Pompano, Bch, Fl	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date	2-16-98 PSD-FL-112(A)

PS Form **3800,** April 1995

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW
ATLANTA, GEORGIA 30303-8909

DEC 15 1997

4APT-ARB

RECEIVED
DEC 18 1997
DIVISION OF AIR
RESOURCES MANAGEMENT

Mr. Howard L. Rhodes, Director
Department of Environmental Protection
Division of Air Resources Management
Mail Station 5500
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

SUBJ: North and South Broward Resource Recovery Facilities

Dear Mr. Rhodes:

This letter is in response to your agency correspondence, dated October 7, 1997, concerning the burning of used oil filters, tires, and pharmaceutical waste at the North Broward and South Broward Resource Recovery Facilities. The municipal waste combustion facilities in North Broward County and South Broward County each consist of three mass burn units, each having a capacity to burn 750 tons per day of municipal solid waste (MSW). These facilities are subject to the municipal waste combustor (MWC) requirements of the implementation plan for the State of Florida for existing MWC sources. The State of Florida plan (which was noticed for approval in the Federal Register on November 13, 1997) implements the emission guidelines for MWC sources under the federal requirements of 40 C.F.R. part 60, subpart Cb. The burning of used oil filters and tires is referenced in subpart Cb. For the portion of this question concerning pharmaceutical waste, the federal rule for Hospital/Medical/Infectious Waste Incinerator (HMIWI) sources, promulgated on September 15, 1997 at 40 C.F.R. part 60, subparts Ce and Ec, provides the basis for our response.

Definitions and Applicability

This response is derived directly from specific portions of the federal rules for solid waste incinerators, MWC units, and HMIWI units. As a reference, the definitions of "solid waste," "MSW," "HMIWI," "hospital waste," "medical/infectious waste," "pathological waste, "co-fired combustor," and the applicability criteria from the HMIWI rule are included in this section.

Definitions (§§60.51, 60.51b, 60.51c)

"Solid waste" means refuse, more than 50 percent of which is municipal type waste consisting of a mixture of paper, wood, yard wastes, food wastes, plastics, leather, rubber, and other combustibles, and noncombustible materials such as glass and rock.

"MSW" or "municipal-type solid waste" means household, commercial/retail, and/or institutional waste. Household waste includes material discarded by single and multiple residential dwellings, hotels, motels, and other similar permanent or temporary housing establishments or facilities. Commercial/retail waste includes material discarded by stores, offices, restaurants, warehouses, nonmanufacturing activities at industrial facilities, and other similar establishments or facilities. Institutional waste includes material discarded by schools, nonmedical waste discarded by hospitals, material discarded by nonmanufacturing activities at prisons and government facilities, and material discarded by other similar establishments or facilities. Household, commercial/retail, and institutional waste does not include used oil; sewage sludge; wood pallets; construction, renovation, and demolition wastes (which includes but is not limited to railroad ties and telephone poles); clean wood; industrial process or manufacturing wastes; medical waste; or motor vehicles (including motor vehicle parts or vehicle fluff). Household, commercial/retail, and institutional wastes include (1) yard waste, (2) refuse-derived fuel, and (3) motor vehicle maintenance materials limited to vehicle batteries and tires except as specified in § 60.50b(g).

"HMIWI" means any device that combusts any amount of hospital waste and/or medical/infectious waste.

"Hospital waste" means discards generated at a hospital, except unused items returned to the manufacturer. The definition of hospital waste does not include human corpses, remains, and anatomical parts that are intended for interment or cremation.

"Medical/infectious waste" means any waste generated in the diagnosis, treatment, or immunization of human beings or animals, in research pertaining thereto, or in the production or testing of biologicals that is listed in paragraphs (1) through (7) of this definition. The definition of medical/infectious waste does not include hazardous waste identified or listed under the regulations in part 261 of this chapter; household waste, as defined in §261.4(b)(1) of this chapter; ash from incineration of medical/infectious waste, once the incineration process has been completed; human corpses, remains, and anatomical parts that are intended for interment; and domestic sewage materials identified in §261.4(a)(1) of this chapter.
(1) Cultures and stocks of infectious agents and associated biologicals, including: cultures from medical and pathological laboratories; cultures and stocks of infectious agents from research and industrial laboratories; wastes

from the production of biologicals; discarded live and attenuated vaccines; and culture dishes and devices used to transfer, inoculate, and mix cultures.
(2) Human pathological waste, including tissues, organs, and body parts and body fluids that are removed during surgery or autopsy, or other medical procedures, and specimens of body fluids and their containers.
(3) Human blood and blood products including:
(I) Liquid waste human blood;
(ii) Products of blood;
(iii) Items saturated and/or dripping with human blood; or
(iv) Items that were saturated and/or dripping with human blood that are now caked with dried human blood; including serum, plasma, and other blood components, and their containers, which were used or intended for use in either patient care, testing and laboratory analysis or the development of pharmaceuticals. Intravenous bags are also include in this category.
(4) Sharps that have been used in animal or human patient care or treatment or in medical, research, or industrial laboratories, including hypodermic needles, syringes (with or without the attached needle), pasteur pipettes, scalpel blades, blood vials, needles with attached tubing, and culture dishes (regardless of presence of infectious agents). Also included are other types of broken or unbroken glassware that were in contact with infectious agents, such as used slides and cover slips.
(5) Animal waste including contaminated animal carcasses, body parts, and bedding of animals that were known to have been exposed to infectious agents during research (including research in veterinary hospitals), production of biologicals or testing of pharmaceuticals.
(6) Isolation wastes including biological waste and discarded materials contaminated with blood, excretions, exudates, or secretions from humans who are isolated to protect others from certain highly communicable diseases, or isolated animals known to be infected with highly communicable diseases.
(7) Unused sharps including the following unused, discarded sharps: hypodermic needles, suture needles, syringes, and scalpel blades.

"Pathological waste" means waste material consisting of only human or animal remains, anatomical parts, and/or tissue, the bags/containers used to collect and transport the waste material, and animal bedding (if applicable).

"Co-fired combustor" means a unit combusting hospital waste and/or medical/infectious waste with other fuels or wastes (e.g., coal, municipal solid waste) and subject to an enforceable requirement limiting the unit to combusting a

fuel feed stream, 10 percent or less of the weight of which is comprised, in aggregate, of hospital waste and medical/infectious waste as measured on a calendar quarter basis. For purposes of this definition, pathological waste, chemotherapeutic waste, and low-level radioactive waste are considered "other" wastes when calculating the percentage of hospital waste and medical/infectious waste combusted.

Applicability (§60.50c)

(a) Except as provided in paragraphs (b) through (h) of this section, the affected facility to which this subpart applies is each individual hospital/medical/infectious waste incinerator (HMIWI) for which construction is commenced after June 20, 1996 or for which modification is commenced after March 16, 1998.
(b) A combustor is not subject to this subpart during periods when only pathological waste, low-level radioactive waste, and/or chemotherapeutic waste (all defined in §60.51c) is burned, provided the owner or operator of the combustor:
(1) Notifies the Administrator of an exemption claim; and
(2) Keeps records on a calendar quarter basis of the periods of time when only pathological waste, low-level radioactive waste and/or chemotherapeutic waste is burned.
(c) Any co-fired combustor (defined in §60.51c) is not subject to this subpart if the owner or operator of the co-fired combustor:
(1) Notifies the Administrator of an exemption claim;
(2) Provides an estimate of the relative amounts of hospital waste, medical/infectious waste, and other fuels and wastes to be combusted; and
(3) Keeps records on a calendar quarter basis of the weight of hospital waste and medical/infectious waste combusted, and the weight of all other fuels and wastes combusted at the co-fired combustor.
(d) Any combustor required to have a permit under section 3005 of the Solid Waste Disposal Act is not subject to this subpart.
(e) Any combustor which meets the applicability requirements under subpart Cb, Ea, or Eb of this part (standards or guidelines for certain municipal waste combustors) is not subject to this subpart.
(f) Any pyrolysis unit (defined in §60.51c) is not subject to this subpart.
(g) Cement kilns firing hospital waste and/or medical/infectious waste are not subject to this subpart.
(h) Physical or operational changes made to an existing HMIWI solely for the purpose of complying with emission guidelines under subpart Ce are not considered a modification and do not result in an existing HMIWI becoming

subject to this subpart.

Applicability to North Broward and South Broward Facilities

A definition for "refuse" is not provided in any rule proposal or standard for incinerators or MWC facilities (under 40 C.F.R. part 60, subparts Cb, E, Ea, or Eb). Tires are included in the definition of MSW, but used oil filters are not. However, waste types not specifically addressed in the rule are addressed in the rule preamble. On page 65392 of the December 19, 1995, Federal Register notice for the MWC rule, it states that:

> [a]lthough these wastes are not MSW, they can be intermixed with MSW and can be combusted in MWC plants. The regulations do not prohibit their combustion.

The North Broward and South Broward Resource Recovery Facilities are both subject to the requirements of 40 C.F.R. part 60, subpart Cb. Based on the definitions and applicability presented, we can conclude that any MWC subject to Subpart Cb, Ea, or Eb is exempt from Subparts Ce and Ec, regardless of the amount of hospital waste or medical/infectious waste burned. Therefore, the North Broward and South Broward Facilities are exempt from the entire HMIWI rule, although certain pharmaceutical wastes can be classified as hospital waste or medical/infectious waste. Based on this conclusion, the burning of pharmaceutical waste would not subject the North Broward and South Broward facilities to additional requirements.

However, for your information, not all MWC units are subject to Subparts Cb, Ea, or Eb because these subparts only affect MWC units larger than 250 tons per day. Any MWC unit which is smaller than 250 tons per day and burns more than 10 percent hospital waste and medical/infectious waste is subject to Subpart Ce or Ec. Any MWC unit which is smaller than 250 tons per day and burns 10 percent or less hospital waste and medical/infectious waste is exempt from most of the provisions of Subparts Ce and Ec, but must notify the EPA Administrator of an exemption claim and keep records of wastes burned. These units burning 10 percent or less hospital waste and medical/infectious waste are called "co-fired combustors."

Thank you for the opportunity to respond to your question. If you have any questions or comments, please contact Mr. Scott Davis of my staff at (404) 562-9127.

Sincerely,

Douglas Neeley

R. Douglas Neeley
Chief
Air and Radiation Technology Branch
Air, Pesticides and Toxics
Management Division

cc: Walt Stevenson, OAQPS

AL

Wheelabrator South Broward Inc.

A Waste Management Company
4400 South State Road 7
Ft. Lauderdale, FL 33314

Phone 954.581.6606
Fax 954.581.6705

Thomas D. Kirk
General Manager

December 4, 1997

VIA FAX 904-922-6979

Mr. Clair H. Fancy
Bureau Chief
Bureau of Air Regulation
Division of Air Resources Management
Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 34399-2400

Subject: Request For Clarification of Permitted Fuels at the North Broward & South Broward Resource Recovery Facilities

Dear Mr. Fancy:

This letter serves as a cover letter to our September 17, 1997 submittal addressing the above captioned topic. The referenced submittal is our formal application for a revision to our existing permit. As stated in the application, please note that the changes proposed will not increase our annual throughput nor create an increase in our current emissions.

Should you have any questions or require any additional information relating to the application, please contact Carol Eaton, Senior Environmental Engineer in our Corporate Offices at 800-682-0026. We appreciate your cooperation in this matter.

Very truly yours,

Carole Hopson
For

Thomas D. Kirk
General Manager

971204.TDK.ch

AL

Wheelabrator Environmental Systems Inc.

A Waste Management Company
4 Liberty Lane West
Hampton, NH 03842

Phone 603.929.3000

November 13, 1997

Mr. Clair H. Fancy
Bureau Chief
Bureau of Air Regulation
Division of Air Resources Management
Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 34399-2400

Re: North and South Broward Resource Recovery Facilities

Dear Mr. Fancy:

Wheelabrator's North and South Broward waste-to-energy plants submitted a request for clarification of the permitted fuels in a letter dated September 17, 1997. We have since received a response from the FDEP (attached).

We would like to meet with you at your earliest convenience to discuss this issue. Steve Smallwood, Thomas Kirk and I are available to meet December 3, 4 and December 8 (early afternoon) or December 9.

Please let me know which date is convenient for you and we will make the necessary travel arrangements. I can be reached at (800) 682-0026 ext. 3462 or directly at (603) 929-3462. I look forward to hearing from you soon.

Sincerely,

Carol A. Eaton

Carol A. Eaton, P.E.
Senior Environmental Engineer

ce383

Department of Environmental Protection

Lawton Chiles
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Virginia B. Wetherell
Secretary

October 10, 1997

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Thomas Kirk, Plant Manager
Wheelabrator North and South Broward, Inc.
4400 South State Road 7
Fort Lauderdale, Florida 33314

Re: Permitted Fuels at North and South
Broward Resource Recovery Facilities

Dear Mr. Kirk:

The Department has reviewed your letter dated September 17, 1997 requesting clarification of permitted fuels at the referenced facilities. Our understanding of our meeting of April 22, 1997 was that you would submit a permit application if you anticipated any change to your waste stream.

The PSD permit for this facility was issued by EPA while the Site Certification was issued by the Siting Board. The certification and permit now allow facility to burn "refuse, such as garbage and trash (as defined at 17-701, F.A.C.)." We consider it inappropriate to make any alteration to the permit terms or conditions, or to specify or clarify that additional materials can be burned, without conforming to the proper public notice processes.

If you wish for the permit and site certification terms to be altered, please submit the correct application, including documentation that the change is or is not a modification under Rule 62-210.200, F.A.C. and we will review the matter as expeditiously as practicable.

For your information, the Department received a permit request in 1993 from Bay Resource Management Center to conduct a performance test to burn similar material at its Panama City. The purpose was to gather data to determine if burning such materials resulted in emissions increases. The Department issued an Intent on the matter, but the company decided not to proceed with the tests. At our meeting of April 22, we advised Wheelabrator that we would accept tests from similar facilities together with a technical analysis sealed by a professional engineer, in lieu of performance tests at the Broward facilities.

If you have any questions regarding this matter, please call me or Mr. Ed Svec at 850/488-1344.

Sincerely,

10/10

A. A. Linero, P.E. Administrator
New Source Review Section

cc: Brian Beals, EPA
Buck Oven, DEP
Pat Comer, DEP
Mary Jean Yon, DEP

Department of Environmental Protection

Lawton Chiles
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Virginia B. Wetherell
Secretary

October 7, 1997

Mr. Brian Beals, Section Chief
Air, Radiation Technology Branch
Preconstruction/HAP Section
U.S. EPA - Region IV
61 Forsyth Street
Atlanta, Georgia 30303

Re: Wheelabrator North and South Broward County Resource Recovery Facilities
PSD-FL 112 and PSD-FL-105

Dear Mr. Beals:

Attached is a request from Wheelabrator, Broward County, to clarify whether pharmaceuticals, cosmetics, controlled substances, and similar wastes can be burned under the terms of the PSD permits issued by EPA.

The permits describe the units as municipal solid waste incinerators. The same permits allow the burning of refuse such as garbage and trash but not hazardous waste, grease, scum, grit screenings or sewage sludge. Wheelabrator does not consider public notice to be required in making this clarification.

Please provide any comments as soon as possible. If you have any questions, please call me at (850)488-1344.

Sincerely,

A. A. Linero, P.E.
Administrator
New Source Review Section

AAL/kt

enclosures

original in 112

Wheelabrator South Broward Inc.

A Waste Management Company
4400 South State Road 7
Ft. Lauderdale, FL 33314

Phone 954.581.6606
Fax 954.581.6705

Thomas D. Kirk
General Manager

September 17, 1997

Clair H. Fancy
Bureau Chief
Bureau of Air Regulation
Division of Air Resources Management
Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 34399-2400

RE: REQUEST FOR CLARIFICATION
OF PERMITTED FUELS AT THE
NORTH BROWARD and SOUTH BROWARD
RESOURCE RECOVERY FACILITIES

Dear Mr. Fancy:

As you will recall, when we met with you and other representatives of the Florida Department of Environmental Protection ("FDEP") on April 22, 1997, we agreed to submit a request for clarification of the permitted fuels at the Wheelabrator North Broward ("WNB") and Wheelabrator South Broward ("WSB") facilities (collectively, "Wheelabrator"). As promised, this request includes a description of the fuels about which we are seeking clarification -- specifically, pharmaceutical wastes, used oil filters, and tires -- as well as a discussion of the handling practices which will be utilized by the facilities to ensure that the processing of these fuels will have no adverse impact on the facilities' air emissions. As we explained at our April 22, 1997 meeting, it is our strong belief that pharmaceutical wastes, used oil filters and tires fall clearly within the meaning of "refuse" as used in the facilities' permits and, therefore, are currently permitted fuels at each facility. With this letter, we are simply seeking FDEP's concurrence that pharmaceutical wastes, used oil filters, and tires are acceptable fuels at WSB and WNB.

I. Background

Wheelabrator's North Broward and South Broward waste-to-energy plants were both licensed during the mid to late 1980s under the Florida Power Plant Siting Act and the U.S. EPA's Prevention of Significant Deterioration (PSD) preconstruction review air permitting program. During the late 1980s to early 1990s, the state's site certification was updated to reflect the requirements of the final EPA PSD air permits, which were issued after the state site certifications.

The two mass burn plants are approximately the same size and design. Each plant consists of three mass burn refuse fired boilers. Each of the units at WSB is permitted to burn up to 863 tons per day (115% rated capacity) with a maximum heat input of 323.6 mmBtu/hr. Each of the units at WNB is permitted to burn up to 806 tons per day (100% rated capacity) with a maximum heat input of 302.5 mmBtu/hr. The average heat input of the refuse burned in each boiler at each plant is assumed to be 4500 Btu/pound.

WSB and WNB were designed and constructed with state-of-the-art air pollution control equipment (APCE) in accordance with Best Available Control Technology. Acid gases (SO_2 and HCl), particulate matter, metals, and dioxin/furans are controlled by spray dryer absorbers followed by fabric filters. Both facilities operate Continuous Emissions Monitoring Systems (CEMS) to demonstrate compliance with the emissions limitations defined in their operating permits. Stack gas opacity, sulfur dioxide, nitrous oxides, carbon monoxide and oxygen concentrations are measured continuously. Detailed records are kept and the monitoring results are reported to regulatory agencies on a quarterly basis. Additional monitoring devices include devices which record final combustion chamber temperature, steam production and flue gas temperature at the exit of the acid gas removal system.

II. Permitted Fuels Identified in Facilities' Site Certifications and PSD Permits

Pursuant to the provisions in both the PSD permits and the site certifications, both plants are permitted to burn "refuse, such as garbage and trash, (as defined in 17-701, FAC)", but not "hazardous waste (as defined in 17-730, FAC)", nor grease, scum, grit screenings or sewage sludge. In addition, a limited amount of distillate fuel oil or natural gas, may be used in the startup burners.

There is no definition of "refuse" in the Florida statutes or regulations, nor is "refuse" a defined term under federal air regulations. In addition, the permits themselves do not specifically define "refuse." However, notwithstanding the lack of a definition of refuse, the general and specific conditions in the PSD permits and the site certifications do establish the following criteria to be used by the facilities in determining which types of material may be burned at WNB and WSB:

(1) The plants may burn only materials that are refuse, but may not burn hazardous waste (as defined in 17-730, FAC), nor grease, scum, grit screenings or sewage sludge, without first obtaining a modification of the permits/certifications by the FDEP Bureau of Air Regulation ("BAR") to allow this type of refuse to be burned. It is significant to note that by specifically excluding these materials, FDEP implicitly acknowledged that "refuse" is a broad enough term to include materials such as these which are not typically considered garbage or trash.

(2) The plants may not burn refuse at a rate that is greater than that specified in the permits/certifications, nor at a rate that would result in a heat release to any of the boilers that would be greater than the maximum Btu/hr heat input specified in the permits/certifications, without first obtaining a modification of the permits/ certifications by the FDEP BAR to allow higher processing rates.

(3) The plants may not burn any material of a quality and quantity that would cause a violation of the specific air pollutant emission limits included in the permits/ certifications, without first obtaining a modification of the permits/certifications by the FDEP BAR to revise the affected emission limits to a level that would not be violated as a result of burning that type and amount of refuse.

(4) The plants' owner may not make nonexempt physical or operational changes to any unit at either plant that would result in a significant net emissions increase of an EPA regulated air pollutant, without first obtaining a modification of the permits/ certifications by the FDEP BAR to limit the net emissions increase of each EPA regulated air pollutant on a plant wide basis to a level that would be below the significant net emissions increase level, or obtain a new PSD permit including a new BACT determination for the affected unit(s), before making such physical or operational changes.

Thus, the PSD permits and site certifications do not detail precisely what fuels the facility can accept. Rather, they provide a framework for evaluating the various materials available to be processed. Within this framework, changes in the quality and quantity of the materials processed are allowed without the need for permit modifications or amendments, provided that: (a) such changes do not result in the facility burning materials that are not "refuse" or in burning any of the types of wastes that are specifically prohibited by the permits/ certifications; (b) the material is not burned in a way that results in exceeding the maximum materials throughput, heat input, or emission limits in the permits/certifications; and (c) the burning of such materials does not require any significant physical or operational changes to be made at the plant.

III. Clarification Sought Regarding Permitted Fuels

Given the framework identified above, it is clear that the WNB and WSB can accept pharmaceutical wastes, used oil filters and tires within the limits of the existing permits and certifications. Specifically, these wastes are all "refuse" and are not specifically prohibited by the permits/certifications. In addition, accepting such refuse will not result in an exceedance of the maximum materials throughput, heat input, or applicable emissions limits. Finally, acceptance of pharmaceutical wastes, used oil filters, and tires does not require any significant physical or operation changes to be made at the plants.

With this request for clarification, WNB and WSB seek FDEP's concurrence that

pharmaceutical wastes, used oil filters, and tires are acceptable fuels under the facilities' existing permits and certifications. Each of these fuels is discussed below. In addition, FDEP's authority to review and respond to this request is also addressed.

A. Agency's Authority

Pursuant to the general conditions of the EPA PSD permits, "any proposed changes in the quantity or quality of materials processed that would result in new or increased emissions or ambient air quality impacts must be reported to EPA. If appropriate, modifications to the permit may then be made by EPA to reflect any necessary changes in the permit conditions. In no case are any new or increased emissions allowed that will cause violation of the emission limitations herein."

Because the Florida DEP currently has full delegation of the U.S. EPA's PSD preconstruction review air permitting program in Florida, such notice is to be provided to FDEP BAR. The determination of whether a particular change in the materials processed requires any kind of change to the permit or the air provisions of the site certification may be made by the BAR. If any changes to the conditions of the PSD permit or the site certification are needed, the BAR with the approval of the Secretary of the FDEP, may make such changes.

B. Used Oil Filters

Both WNB and WSB currently accept used oil filters. In its June 3, 1992 guidance memorandum, FDEP stated:

> We feel that the technology and pollution control equipment at the waste-to-energy facility, coupled with the operator training for mixing the waste as it is fed into the combustors is enough to assure that a "slug" of any one type of waste is avoided, and gives us reasonable assurance that used oil filters will not present an environmental problem due to emissions in these facilities. In any event, incineration with metal recovery is preferable to landfilling.
>
> We feel, as a 'rule of thumb,' that if the facility can reasonably certify or demonstrate that the amount of filters being accepted (or any other specific waste for that matter) is not over two to three times the normal average amount of that type of waste in the overall waste stream, then no permit or certification modifications need be made.

Because both facilities accept used oil filters well within the parameters of this guidance memo, no modifications to the permits or certifications are necessary.

C. Tires

Both WNB and WSB also currently accept tires. In its April 16, 1992 guidance memo, FDEP stated:

> "Tires (shredded and whole) may be processed/fed to these units up to 3%, by weight, of the permitted capacity without any change in the existing permits."

WNB and WSB accept tires well within this 3% by weight limit and, therefore, no modifications to the permits or certifications are necessary.

D. Pharmaceutical Wastes

Refuse identified in the category of pharmaceutical waste includes the following:

- expired pharmaceuticals (Rx)
- over the counter medicines, treatments, and supplements (OTC)
- health and beauty products (HB)
- off spec, recalled, or out of date Rx, OTC, and HB
- small amounts of bulk containers of Rx, OTC, and HB
- packaging material including glass, plastic, paper for Rx, OTC and HB
- controlled substances confiscated by law enforcement agencies

With the exception of the controlled substances, most of these types of pharmaceutical wastes are now part of the overall waste stream. In many cases, these pharmaceutical wastes are put into the trash pickup dumpsters, and collected and disposed of as trash. There is an increasing demand to handle these wastes differently, however, because of concerns about the ultimate disposal of this material. Specifically, many pharmaceutical manufacturers and wholesale distributors want this type of waste taken directly from their warehouse or store to an incinerator and destroyed, to prevent it from being stolen and sold on the black market.

These types of refuse are different than trash and garbage not in their physical natures, but usually in their point of origin and the means of delivering the waste material to the plants. Specifically, these materials are expected to be delivered in segregated loads and, in most cases, will originate at various pharmaceutical manufacturers and wholesale distributors.

The following table, which is based on the information provided in the site certification applications, provides an annual breakdown of the components of the refuse currently accepted at the facility. Please note that the overall breakdown of the trash and garbage, as reported in the applications, typically delivered to the plants is: Garbage (55-60%), Processable trash, as received (17-20%), Processable trash, requiring size reduction (4-7%), Non-processable trash (16-21%). The

amount of trash and garbage delivered to the plants on a monthly basis varies from about 80-110% of the annual average rate, and the weekly and daily variations are greater than that. The typical components that make up the trash and garbage vary by similar amounts. Indeed, it is not unusual for the amount of the major components to vary by 5%. The plant addresses this kind of variation in the quality and quantity of this material by handling it in a way that allows the material to be properly incinerated while staying within all of the permit limits.

TABLE 1
PHYSICAL COMPOSITION - GARBAGE AND PROCESSABLE TRASH FRACTIONS
(As Received Basis)

Component	Percent by Weight		
	Garbage	Trash	Combined
Paper, Cardboard	39-47	9-11	27-36
Plastics	8-9	3-10	5-7
Rubber, Tires	--	0-9	0-3
Textiles, Rags, Carpeting, and Mattresses	2-3	1	2
Food Waste	9	NA	5-6
Garden Waste, Stumps, Leaves and Brush	17-21	36-45	22-24
Wood	2-3	28-35	8-13
Glass	7-12	--	5-7
Metals	6	--	4-5
Rock, Brick	--	--	0-15
Other	--	5-7	2
TOTAL	100	100	100

-- means no data available
NA - not applicable

The primary components of the pharmaceutical wastes that Wheelabrator plans to burn are

paper, cardboard and plastics, which already represent 32-43% of the garbage and trash currently accepted at the facilities. In addition, the pharmaceutical wastes Wheelabrator plans to burn will be less than 5% of the total amount of material burned which is consistent with the typical 5% variation in the major components of the fuel as discussed above. Given the strong similarity between the components of the pharmaceutical wastes and the components of Wheelabrator's existing fuel, there will be no significant change in heat input to the boilers.

Finally, the addition of pharmaceutical wastes as a fuel at the WNB and WSB facilities will not impact the air emissions at either facility. As discussed in detail in Appendix A, the pharmaceutical waste will be introduced into the refuse fuel pit and managed to ensure appropriate fuel blending and complete and efficient combustion. Accordingly, neither facility will have any significant increases in emissions and both facilities will have no problem meeting their permitted emission limits.

Wheelabrator believes that the refuse described above -- used oil filters, tires, and pharmaceutical wastes -- are permitted fuels under the facilities' existing site certifications and PSD permits. As discussed above, the nature of these materials, as well as the handling practices that will be utilized by the facilities for all segregated refuse, ensure that processing these materials at WNB and WSB will have no adverse impact on the facilities' air emissions. Accordingly, we look forward to receiving FDEP's concurrence that used oil filters, tires and pharmaceutical wastes are permitted fuels at both facilities.

Sincerely,

Thomas Kirk

Thomas Kirk
Plant Manager
Wheelabrator North Broward, Inc.
Wheelabrator South Broward, Inc.

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s:\king\swk225.wpd

cc: Jack Chisolm, OGC
Doug Beason, OGC
Pat Comer, OGC
Jeff Brown, OGC
Chip Collette, OGC
Buck Oven, PPS
Mike Hewett, DARM

APPENDIX A

Addendum to Operation and Contingency Plans

APPENDIX A

1.0 RESOURCE RECOVERY FACILITY OPERATIONAL AND CONTINGENCY PLAN

1.12 Handling Procedure for Segregated Refuse

The South Broward Resource Recovery Facility, aka Wheelabrator South Broward, Inc., is permitted to "...utilize refuse such as garbage and trash (as defined in Chapter 17-7, FAC) as its fuel." It is not permitted to accept hazardous waste, grease, scum, grit screenings or sewer sludge.

1.12.1 Requirements for Acceptance

Since Wheelabrator South Broward must ensure that safeguards are in place to identify and reject hazardous wastes and other refuse not permitted for acceptance, a procedure has been developed for handling loads of segregated refuse for which the facility requires the completion of a Waste Profile Form. The facility currently requires that a Waste Profile Form be completed for the following materials:

PHARMACEUTICAL WASTE
TIRES
USED OIL FILTERS

* Generator Certifications: The generator of the load of segregated refuse must certify that the material to be burned is not hazardous. This certification is normally accomplished with the completion of a Waste Profile Form.

* Waste Profile Form: This form is to be completed by the Generator to indicate the specific nature of the waste requiring disposal and to certify that the waste is non-hazardous. If deemed necessary by Wheelabrator management personnel, an MSDS and/or TCLP analysis may be required in addition to the Waste Profile Form. Once the Waste Profile Form has been completed and received by the facility, Wheelabrator South Broward shall make a determination to confirm that the waste is non-hazardous, that it is refuse allowed by facility permits and to determine that combustion of the waste will not impair the operations of the facility. This review may take several days, but less if the waste has been previously reviewed.

1.12.2 Operational Controls - Tipping Floor Disposal

At the scheduled time of delivery, the customer or its representative will stop at the facility scale house to be weighed and notify the scale house attendant of the load of segregated refuse. The scale house attendant will in turn notify the tipping floor attendant and the facility operations control room. The scale house attendant shall then direct the load of segregated refuse to the tipping floor. The customer will be responsible for unloading the waste onto the tipping floor under the direction of the tipping floor attendant.

The tipping floor attendant will perform a detailed inspection of the entire load. Any unacceptable waste will be re-loaded onto the customer's truck for removal off-site at the customer's sole expense. A Screening Report for Segregated Refuse form shall be completed for all segregated refuse. The decision to reject any waste will be made at the sole discretion of the facility's management.

Provided the waste has passed inspection, the tipping floor attendant shall notify the refuse crane operator that a load of segregated refuse is to be dumped and inspected and will convey any special mixing or handling instructions. The refuse crane operator shall in turn confirm acceptance with the control room, if the load is to be fed directly into a boiler and may affect the operation of the boiler.

The tipping floor attendant shall instruct the tipping floor loader operator to push the inspected load into the pit where it is mixed with other wastes by one of the two refuse cranes. Subsequently, the combined mixed waste is picked by one of two refuse cranes and deposited into the feed hopper of an on-line boiler. Material in the feed hopper is gravity fed into the furnace.

1.12.3 Operational Controls - Refuse Hopper Disposal

For segregated refuse that must be handled in a manner to assure destruction, such as controlled substances, the following procedures will be utilized by the facility.

At the scheduled time of delivery, the customer or its representative will stop at the facility scale house to be weighed and notify the scale house attendant of the assured destruction load. The scale house attendant in turn shall notify the Support Staff Supervisor, or his designee and the facility operations control room. The scale house attendant shall then direct the assured load to the plant elevator access.

The Support Staff Supervisor, or his designee, shall meet the truck at the plant elevator access. The customer shall be directed to, and be responsible for, unloading the assured destruction load under the supervision of the Support Staff Supervisor, or his designee. The Support Staff Supervisor, or his designee, shall perform an inspection of the entire load. Any unacceptable waste will be re-loaded onto the customer's truck for removal off-site at the customer's sole expense. A Screening Report for Segregated Refuse form shall be completed for all assured destruction loads. The decision to reject any waste will be made at the sole discretion of the facility's management.

The Support Staff Supervisor, or his designee, shall notify the crane operator and the shift supervisor that an assured destruction load is to be disposed of via the feed chute hoppers. Under the supervision of the Support Staff Supervisor, or his designee, the assured destruction load shall be taken, via plant elevator, to elevation 78 where the load shall be directly fed into an on-line boiler's refuse hopper.

1.12.4 Disposal

In the furnace, refuse is burned at a temperature exceeding 1800 deg F, to assure complete destruction of the waste and living organisms within the waste. The remaining ash no longer has the physical or chemical identity of the original product and represents complete destruction of the original product. The ash is landfilled at the ash monofill located adjacent to the facility.

1.12 Handling Procedure for Segregated Refuse

The North Broward Resource Recovery Facility, aka Wheelabrator North Broward, Inc., is permitted to "...utilize refuse such as garbage and trash (as defined in Chapter 17-7, FAC) as its fuel." It is not permitted to accept hazardous waste, grease, scum, grit screenings or sewer sludge.

1.12.1 Requirements for Acceptance

Since Wheelabrator North Broward must ensure that safeguards are in place to identify and reject hazardous wastes and other refuse not permitted for acceptance, a procedure has been developed for handling loads of segregated refuse for which the facility requires the completion of a Waste Profile Form. The facility currently requires that a Waste Profile Form be completed for the following materials:

PHARMACEUTICAL WASTE
TIRES
USED OIL FILTERS

* Generator Certifications: The generator of the load of segregated refuse must certify that the material to be burned is not hazardous. This certification is normally accomplished with the completion of a Waste Profile Form.

* Waste Profile Form: This form is to be completed by the Generator to indicate the specific nature of the waste requiring disposal and to certify that the waste is non-hazardous. If deemed necessary by Wheelabrator management personnel, an MSDS and/or TCLP analysis may be required in addition to the Waste Profile Form. Once the Waste Profile Form has been completed and received by the facility, Wheelabrator North Broward shall make a determination to confirm that the waste is non-hazardous, that it is refuse allowed by facility permits and to determine that combustion of the waste will not impair the operations of the facility. This review may take several days, but less if the waste has been previously reviewed.

1.12.2 Operational Controls - Tipping Floor Disposal

At the scheduled time of delivery, the customer or its representative will stop at the facility scale house to be weighed and notify the scale house attendant of the load of segregated refuse. The scale house attendant will in turn notify the tipping floor attendant and the facility operations control room. The scale house attendant shall then direct the load of segregated refuse to the tipping floor. The customer will be responsible for unloading the waste onto the tipping floor under the direction of the tipping floor attendant.

The tipping floor attendant will perform a detailed inspection of the entire load. Any unacceptable waste will be re-loaded onto the customer's truck for removal off-site at the customer's sole expense. A Screening Report for Segregated Refuse form shall be completed for all segregated refuse. The decision to reject any waste will be made at the sole discretion of the facility's management.

Provided the waste has passed inspection, the tipping floor attendant shall notify the refuse crane operator that a load of segregated refuse is to be dumped and inspected and will convey any special mixing or handling instructions. The refuse crane operator shall in turn confirm acceptance with the control room, if the load is to be fed directly into a boiler and may affect the operation of the boiler.

The tipping floor attendant shall instruct the tipping floor loader operator to push the inspected load into the pit where it is mixed with other wastes by one of the two refuse cranes. Subsequently, the combined mixed waste is picked by one of two refuse cranes and deposited into the feed hopper of an on-line boiler. Material in the feed hopper is gravity fed into the furnace.

1.12.3 Operational Controls - Refuse Hopper Disposal

For segregated refuse that must be handled in a manner to assure destruction, such as controlled substances, the following procedures will be utilized by the facility.

At the scheduled time of delivery, the customer or its representative will stop at the facility scale house to be weighed and notify the scale house attendant of the assured destruction load. The scale house attendant in turn shall notify the Shift Supervisor, or his designee and the facility operations control room. The scale house attendant shall then direct the assured load to the plant elevator access.

The Shift Supervisor, or his designee, shall meet the truck at the plant elevator access. The customer shall be directed to, and be responsible for, unloading the assured destruction load under the supervision of the Shift Supervisor, or his designee. The Shift Supervisor, or his designee, shall perform an inspection of the entire load. Any unacceptable waste will be re-loaded onto the customer's truck for removal off-site at the customer's sole expense. A Screening Report for Segregated Refuse form shall be completed for all assured destruction loads. The decision to reject any waste will be made at the sole discretion of the facility's management.

The Shift Supervisor, or his designee, shall notify the crane operator and the shift supervisor that an assured destruction load is to be disposed of via the feed chute hoppers. Under the supervision of the Shift Supervisor, or his designee, the assured destruction load shall be taken, via plant elevator, to elevation 78 where the load shall be directly fed into an on-line boiler's refuse hopper.

1.12.4 Disposal

In the furnace, refuse is burned at a temperature exceeding 1800 deg F, to assure complete destruction of the waste and living organisms within the waste. The remaining ash no longer has the physical or chemical identity of the original product and represents complete destruction of the original product. The ash is landfilled at the ash monofill located adjacent to the facility.

WASTE PROFILE

PROFILE NO. _____

APPROVALS:	NAME	DATE
YES NO RESCO		
YES NO WESI LEGAL:		
YES NO CWM		

GENERAL INFORMATION

1. GENERATOR NAME: _____ Generator USEPA ID: _____

2. Generator Address: _____ Billing Address: ☐ Same _____

3. Technical Contact/Phone: _____ Billing Contact/Phone: _____

PROPERTIES AND COMPOSITION

5. Process Generating Waste: _____

6. Waste Name: _____

7A. Is this a USEPA hazardous waste (40 CFR Part 261)? Yes ☐ No ☐

B. Identify All USEPA listed and characteristic waste code numbers (D, F, K, P, U): _____

State Waste Codes: _____

8. Physical State @ 70°F: A. Solid ☐ Liquid ☐ Both ☐ B. Single Layer ☐ Multilayer ☐ C. Free liquid range _____

9A. pH: Range _____ to _____ or Not applicable ☐ B. Strong Odor ☐; describe _____

10. Liquid Flash Point: <73°F ☐ 73-99°F ☐ 100-139°F ☐ 40-199°F ☐ ≥200°F ☐ N.A. ☐ Closed Cup ☐ Open Cup ☐

11. CHEMICAL COMPOSITION: List ALL constituents (including halogenated organics) present in any concentration and forward available analysis.

Constituents	Range	Units	Constituents	Range	Units

TOTAL COMPOSITION MUST EQUAL OR EXCEED 100%

12. OTHER: PCBs if yes, concentration _____ppm, PCBs regulated by 40 CFR 761 ☐. Pyrophoric ☐ Explosive ☐ Radioactive ☐ Benzene if yes, concentration _____ppm. Shock Sensitive ☐ Oxidizer ☐ Carcinogen ☐ Infectious ☐ Other _____

13. If the waste is subject to the land ban and meets the treatment standards, check here: _____, and supply analytical results where applicable. _____

SHIPPING INFORMATION

14. Packaging: Bulk Solid ☐ Bulk Liquid ☐ Drum ☐ Type/Size: _____ Other: _____

15. ANTICIPATED ANNUAL VOLUME: _____ Units: _____ Other: _____

SAMPLING INFORMATION

16a. Sample source(drum, lagoon, pond, tank, vat, ect.) _____

Date Sampled: _____ Sampler's Name/Company: _____

16b. Generator's Agent Supervising Sampling: _____ 17. ☐ No sample required (see instructions).

GENERATOR'S CERTIFICATION

I hereby certify that all information submitted in this and all attached documents contains true and accurate descriptions of this waste. Any sample submitted is representative as defined in 40 CFR 261-Appendix I or by using an equivalent method. All relevant information regarding known or suspended hazards in the possession of the generator has been disclosed. I authorize CWM to obtain a sample from any waste shipment for purposes of recertification.

_____ _____ _____

Signature Printed (or typed) name and title Date

WHEELABRATOR BROWARD

Screening Report for Segregated Refuse

DATE: _____

TIME ARRIVED: _____ TIME DEPARTED: _____

INSPECTED BY: _____
(print)

TYPE OF SCREENING:

Floor _____ Hopper_____

TRUCK INSPECTED: Company _____

Driver _____

Truck Number _____
(if applicable)

ACCEPTED: _____ REJECTED: _____

TYPE OF MATERIAL OBSERVED:

_____

_____

_____

_____

COMMENTS:

_____

_____

_____

_____

(SCREEN1)

PROFESSIONAL ENGINEER
CERTIFICATION

I have reviewed the letter report to Clair H. Fancy, P.E., Chief, FDEP Bureau of Air Regulation, from Thomas Kirk, Plant Manager, Wheelabrator North Broward, Inc. and Wheelabrator South Broward, Inc., dated September 17, 1997, entitled REQUEST FOR CLARIFICATION OF PERMITTED FUELS AT THE NORTH BROWARD and SOUTH BROWARD RESOURCE RECOVERY FACILITIES.

After reasonable inquiry, I have concluded that: (a) the additional fuels proposed to be burned at the two facilities are "refuse", but they are not any of the types of wastes that are specifically prohibited by permits/certification; (b) the material would not be burned in a way that results in exceeding the maximum materials throughputs, heat inputs or emission limits; and (c) the burning of the materials proposed does not require any significant physical or operational changes to be made. Therefore, under the current permits, the materials proposed are allowed without the need for permit modifications or amendments.

Stephen Smallwood, P.E.
Florida Registration No. 26630

17 September 1997
Date

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NOTICE OF FINAL PERMIT MODIFICATION

In the Matter of an
Application for Permit Modification

Mr. Thomas D. Kirk, Plant Manager
Wheelabrator North Broward, Inc.
2600 Northwest 48th Street
Pompany Beach, Florida 33073

DEP File No. PSD-FL-112
North Broward Resource Recovery Facility

Enclosed is a letter that modifies Permit Number PSD-FL-112 to allow the use of EPA Method 29 in lieu of Method 101A for Mercury, Method 12 for lead, Method 104 for beryllium and Method 108 for arsenic for annual compliance stack testing. This permit modification is issued pursuant to Chapter 403, Florida Statutes.

Any party to this order (permit) has the right to seek judicial review of the permit pursuant to Section 120.68, F.S., by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Legal Office; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 (thirty) days from the date this Notice is filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

C.H. Fancy, P.E., Chief
Bureau of Air Regulation

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF FINAL PERMIT MODIFICATION (including the FINAL permit Modification) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 5-22-97 to the person(s) listed:

Mr. Thomas D. Kirk, Wheelabrator North Broward Inc.*
Mr. Brian Beals, EPA
Mr. John Bunyak, NPS
Ms. Terri Hillard, SED
Ms. Daniela Banu, Broward County

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to §120.52(7), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Kimi Tober 5-22-97
(Clerk) (Date)

Fold at line over top of envelope to the right of the return address

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "*Return Receipt Requested*" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Thomas D. Kirk, Plant Mgr.
Wheelabrator N. Broward
2600 NW 48th Street
Pompano Beach, Fl
33073

4a. Article Number
P 265 659 186

4b. Service Type
☐ Registered ☒ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery
5/27

5. Received By: *(Print Name)*
Rudder Pearce

8. Addressee's Address *(Only if requested and fee is paid)*

6. Signature: *(Addressee or Agent)*
X

PS Form **3811,** December 1994 Domestic Return Receipt

Is your RETURN ADDRESS completed on the reverse side?

Thank you for using Return Receipt Service.

P 265 659 186

US Postal Service
Receipt for Certified Mail
No Insurance Coverage Provided.
Do not use for International Mail *(See reverse)*

~~Sent to~~ Thomas Kirk	
Street & Number Wheelabrator North B.	
Post Office, State, & ZIP Code Pompano Bch, Fl	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date 5-22-97 PSD-Fl-112	

PS Form **3800**, April 1995

Test Method Change

Wheelabrator North Broward Inc.

A Wheelabrator Technologies Company
2600 N.W. 48th Street
Pompano Beach, FL 33073

Phone 954.971.8701
Fax 954.971.8703

February 24, 1997

CERTIFIED MAIL #Z 784 818 809
RETURN RECEIPT REQUESTED

Al Linero
Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: Wheelabrator North Broward
Use of EPA 29

PSD-FL-112

Dear Mr. Linero:

Wheelabrator North Broward is requesting to utilize EPA Method 29 in lieu of Method 101A for mercury, Method 12 for lead, Method 104 for beryllium and Method 108 for arsenic during the upcoming annual compliance stack-testing. At present, stack testing is scheduled for March 21-23, 1997.

EPA Method 29 has been approved by the EPA and is incorporated in 40 CFR subpart Eb.

If the Department finds the use of Method 29 acceptable, please contact me at (954) 971-8701, extension 210, or in my absence, Chuck Faller at extension 250.

Very truly yours,

Thomas D. Kirk
Plant Manager

970224.TDK

cc: Tim Porter
Chuck Faller
Frank Ferraro
Terri Hilliard, FDEP, West Palm Beach * Certified Mail # Z 784 818 810
Don Markley

Department of
Environmental Protection

Lawton Chiles
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Virginia B. Wetherell
Secretary

May 19, 1997

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Thomas D. Kirk
Plant Manager
Wheelabrator North Broward Inc.
2600 N.W. 48th Street
Pompano Beach, FL 33073

Re: Modification of Final Determination - PSD-FL-112
North Broward Resource Recovery Facility

Dear Mr. Kirk:

The Department is in receipt of your letter dated February 24, 1997 requesting to use EPA Method 29 in lieu of Method 101A for Mercury, Method 12 for lead, Method 104 for beryllium and Method 108 for arsenic for annual compliance stack testing. The Department hereby amends the Specific Conditions related to methods of compliance in the subject Final Determination (dated July 28, 1987) pursuant to 40 CFR 52.21 - Prevention of Significant Deterioration (PSD Permit). The PSD permit is modified as follows:

Specific Condition: 1.d.(2)

FROM:

j. Method 12 for determination of lead concentration and associated moisture content. One sample constitutes one test run.

l. Method 101A for determination of mercury emission rate and associated moisture content. One sample shall constitute one test run.

m. Method 104 for determination of beryllium emission rate and associated moisture content. One sample shall constitute one test run.

TO:

j. EPA Method 29, Determination of Metals Emissions from Stationary Sources, shall be used for determining compliance with the beryllium, mercury, lead and arsenic emission rates and their respective moisture contents. For each pollutant one sample shall constitute one test run.

l. Deleted.

m. Deleted.

A copy of this letter shall be filed with the referenced permit and shall become part of Permit PSD-FL-112.

Sincerely,

Howard L. Rhodes, Director
Division of Air Resources
Management

HLR/th

Is your RETURN ADDRESS completed on the reverse?

card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Mr. Thomas Kirk, Plant Mgr
Wheelabrator N + S Broward
4400 S. State Rd 7
Ft. Lauderdale, Fl
33314

4a. Article Number
P 265 659 467

4b. Service Type
☐ Registered ☒ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

5. Received By: (Print Name)

7. Date of Delivery
10/15

6. Signature: (Addressee or Agent)
X C. Hopsin

8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, December 1994 Domestic Return Receipt

Thank you for using Return Receipt Service.

P 265 659 467

US Postal Service
Receipt for Certified Mail
No Insurance Coverage Provided.
Do not use for International Mail (See reverse)

Sent to Thomas Kirk	
Street & Number Wheelabrator N+S	
Post Office, State, & ZIP Code Ft. Lauderdale, Fl	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date 10-10-97	

PS Form 3800, April 1995

Memorandum

Florida Department of
Environmental Protection

TO: Howard L. Rhodes
E.H. Fancy

THRU Al Linero 5/15

FROM: Teresa Heron

DATE: May 15, 1997

SUBJECT: Wheelabrator North & South Broward RRF Modifications
EPA PSD-FL-112 and PSD-FL-105 A

Attached are letters modifying PSD permits for the above facilities. Wheelabrator North Broward Inc. and Wheelabrator South Broward Inc. requested to use EPA Method 29 in lieu of Method 101A for mercury, Method 12 for lead, Method 104 for beryllium, and Method 108 for arsenic during annual compliance stack testing. EPA Method 29 is incorporated in 40 CFR 60 Subpart Eb, Standards of Performance for Municipal Waste Combustors. It is a more accurate and less expensive procedure than presently used.

They published noticed for the changes and received no comments. We consulted with Mike Harley and Terri Hillard (SED) who agree that the requested change makes sense. We recommend your approval and signature.

Wheelabrator South Broward Inc.

A Wheelabrator Technologies Company
4400 South State Road 7
Ft. Lauderdale, FL 33314

Phone 954.581.6606
Fax 954.581.6705

Thomas D. Kirk
Plant Manager

April 2, 1997

Certified #P 399 931 023
Return Receipt Requested

Mr. C. H. Fancy, P.O., Chief
Florida Department of Environmental Protection
Bureau of Air Regulation
2600 Twin Towers Office Building
Tallahassee, FL 32399-2400

Re: Draft Permit Modification Nos. PSD-FL-112 & 105
North and South Broward Resource Recovery Facilities

Dear Mr. Fancy:

As per the above referenced draft permit modifications, the Department requires that Wheelabrator provide proof of publication within 7 (seven) days of publication. Please find enclosed the required affidavit from the Sun Sentinel.

Very truly yours,

Thomas D. Kirk
Plant Manager

970402.TDK.ch

cc: Chuck Faller (with)
Tom Henderson (without)
Don Markley (without)
Tim Porter (without)

Wheelabrator South Broward Inc.

A Wheelabrator Technologies Company
4400 South State Road 7
Ft. Lauderdale, FL 33314
Phone 954.581.6606
Fax 954.581.6705

Thomas D. Kirk
Plant Manager

March 31, 1997

Certified #P 399 931 015
Return Receipt Requested

Mr. C. H. Fancy, P.O., Chief
Florida Department of Environmental Protection
Bureau of Air Regulation
2600 Twin Towers Office Building
Tallahassee, FL 32399-2400

Re: Draft Permit Modification Nos. PSD-FL-112 & 105
North and South Broward Resource Recovery Facilities

Dear Mr. Fancy:

As per the above referenced draft permit modifications, the Department requires that Wheelabrator provide proof of publication within 7 (seven) days of publication. However, this facility has not received an affidavit from the Sun Sentinel as of March 31, 1997. Enclosed is a copy of the publication as it appeared in the March 24, 1997 edition of the Sun Sentinel. Hopefully, this will serve as proper proof until the Sun Sentinel can be contacted for the proper affidavit.

Very truly yours,

Thomas D. Kirk
Plant Manager

970331.TDK.ch

cc: Chuck Faller (with)
Tom Henderson (without)
Don Markley (without)
Tim Porter (without)

cc: T. Heron, BAR

BEST AVAILABLE COPY

S U N - S E N T I N E L
PUBLISHED DAILY
FORT LAUDERDALE, BROWARD COUNTY, FLORIDA
BOCA RATON, PALM BEACH COUNTY, FLORIDA
MIAMI, DADE COUNTY, FLORIDA

STATE OF FLORIDA
COUNTY OF BROWARD/PALM BEACH/DADE
BEFORE THE UNDERSIGNED AUTHORITY PERSONALLY APPEA

..... WHO ON OATH SAYS THAT HE/SHE IS A DULY AUTHORIZED REPRESENTATIVE OF THE CLASSIFIED DEPARTMENT OF THE SUN-SENTINEL, DAILY NEWSPAPER PUBLISHED IN BROWARD/PALM BEACH/DADE COU FLORIDA THAT THE ATTACHED COPY OF ADVERTISEMENT, B

NOTICE OF INTENT

IN THE MATTER OF

PERMIT PSD-FL 112&105

IN THE CIRCUIT COURT, WAS PUBLISHED IN SAID NEWSPA THE ISSUES OF
C , 03/24, 2 X

AFFIANT FURTHER SAYS THAT THE SAID SUN-SENTINEL I NEWSPAPER PUBLISHED IN SAID BROWARD/PALM BEACH/DAD COUNTY, FLORIDA, AND THAT THE SAID NEWSPAPER HAS H BEEN CONTINUOUSLY PUBLISHED IN SAID BROWARD/PALM B COUNTY, FLORIDA, EACH DAY, AND HAS BEEN ENTERED AS CLASS MATTER AT THE POST OFFICE IN FORT LAUDERDALE BROWARD COUNTY, FLORIDA, FOR A PERIOD OF ONE YEAR PRECEDING THE FIRST PUBLICATION OF THE ATTACHED CO ADVERTISEMENT; AND AFFIANT FURTHER SAYS THAT HE/SH NEITHER PAID NOR PROMISED ANY PERSON, FIRM OR CORP ANY DISCOUNT, REBATE, COMMISSION OR REFUND FOR THE OF SECURING THIS ADVERTISEMENT FOR PUBLICATION IN NEWSPAPER.

.....
(SIGNATURE OF AFFIANT)

SWORN TO AND SUBSCRIBED BEFORE ME
THIS 31 DAY OF MARCH
A.D. 1997

.....
(SIGNATURE OF NOTARY PUBLIC)

TARA L. BEZAK
MY COMMISSION # CC295690 EXPIRES
July 20, 1997
BONDED THRU TROY FAIN INSURANCE, INC.

.....
(NAME OF NOTARY TYPED, PRINTED OR STAMPED)

PERSONALLY KNOWN ..... OR

PRODUCED IDENTIFICATION .....

PUBLIC NOTICE OF INTENT
TO ISSUE PERMIT MODIFICATIONS
STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DRAFT Permit Modifications PSD-FL-112 & 105
North Broward Resource Recovery Facility
South Broward Resource Recovery Facility
Broward County

The Department of Environmental Protection (Department) gives notice of its intent to issue modifications of Permits PSD-FL-112 & 105 to Wheelabrator for the North Broward Resource Recovery Facility located at 2700 Hilton Road, Pompano Beach, Broward County, and the South Broward Resource Recovery Facility located at the intersection of State Road 84 and US Route 441, Broward County. The business addresses for the two facilities are Wheelabrator North Broward Inc, 2600 NW 48 Street, Pompano Beach, FL 33073 and Wheelabrator South Broward Inc, 4400 South State Road 7, Ft. Lauderdale, FL 33314.

Based on a recommendation by the Department, the applicant requests to use EPA Method 29 in lieu of Method 101A for Mercury, Method 12 for lead, Method 104 for beryllium and Method 108 for arsenic during annual compliance stack testing. EPA Method 29 is the Determination of Metals Emissions from Stationary Sources which simultaneously tests for all of the mentioned pollutants. This change will allow for the use of an updated, more accurate, and less expensive compliance method. Wheelabrator will conduct all other tests required by the Department in the same manner as performed in previous years.

The Department will issue the FINAL Permit Modifications, in accordance with the conditions of the DRAFT Permit Modifications unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments concerning the proposed DRAFT Permit Modifications issuance action for a period of 30 (thirty) days from the date of publications of this Notice. Written comments should be provided to the Department's Bureau of Air Regulation, 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in these DRAFT Permit Modifications, the Department shall issue Revised DRAFT Permit Modifications and require, if applicable, another Public Notice.

The Department will issue FINAL Permit Modifications with the conditions of the DRAFT Permit Modifications unless a timely petition for an administrative hearing is filed pursuant to Sections 120.569 and 120.57 F.S. or a party requests mediation as an alternative remedy under Section 120.573 before the deadline for filing a petition. Choosing mediation will not adversely affect the right to a hearing if mediation does not result in a settlement. The procedures for petitioning for a hearing are set forth below, followed by the procedures for requesting mediation.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative hearing in accordance with Sections 120.569 and 120.57, F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000, telephone 904/488-9370, fax: 904/487-4938. Petitions must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. A petitioner musts mail a copy of the petition to the applicant at the address indicated above, at the time of filing. The failure of any person to file a petition (or a request for mediation, as well as discussed below) within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Section 120.569 and 120.57 F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-5.207 of the Florida Administrative Code.

A petition must contain the following information: (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Permit File Number and the county in which the project is proposed; (b) A statement of how and when each petitioner received notice of the Department's action or proposed action; (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action; (d) A statement of the material facts disputed by petitioner, if any; (e) A statement of facts that the petitioner contends warrant reversal or modification of the Department's action or proposed action; (f) A statement identifying the rules or statutes that the petitioner contends require reversal or modification of the Department's action or proposed action; and (g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action addressed in this notice of intent.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice of intent. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

A person whose substantial interests are affected by the Department's proposed permitting decision, may elect to pursue mediation by asking all parties to the proceeding to agree to such mediation and by filing with the Department a request for mediation and the written agreement of all such parties to mediate the dispute. The request and agreement must be filed in (received by) the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000, by the same deadline as set forth above for the filing of a petition.

A request for mediation must contain the following information: (a) The name, address, and telephone number of the person requesting mediaiton and that person's representative, if any; (b) A statement of the preliminary agency action; (c) A statement of the relief sought; and (d) Either an explanation of how the requester's substantial interests

PUBLIC NOTICE OF INTENT TO ISSUE PERMIT MODIFICATIONS

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DRAFT Permit Modifications PSD-FL-112 & 105
North Broward Resource Recovery Facility
South Broward Resource Recovery Facility
Broward County

The Department of Environmental Protection (Department) gives notice of its intent to issue modifications of Permits PSD-FL-112 & 105 to Wheelabrator for the North Broward Resource Recovery Facility located at 2700 Hilton Road, Pompano Beach, Broward County, and the South Broward Resource Recovery Facility located at the intersection of State Road 84 and US Route 441, Broward County. The business addresses for the two facilities are Wheelabrator North Broward Inc, 2600 NW 48 Street, Pompano Beach, FL 33073 and Wheelabrator South Broward Inc, 4400 South State Road 7, Ft. Lauderdale, FL 33314.

Based on a recommendation by the Department, the applicant requests to use EPA Method 29 in lieu of Method 101A for Mercury, Method 12 for lead, Method 104 for beryllium and Method 108 for arsenic during annual compliance stack testing. EPA Method 29 is the Determination of Metals Emissions from Stationary Sources which simultaneously tests for all of the mentioned pollutants. This change will allow for the use of an updated, more accurate, and less expensive compliance method. Wheelabrator will conduct all other tests required by the Department in the same manner as performed in previous years.

The Department will issue the FINAL Permit Modifications, in accordance with the conditions of the DRAFT Permit Modifications unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments concerning the proposed DRAFT Permit Modifications issuance action for a period of 30 (thirty) days from the date of publications of this Notice. Written comments should be provided to the Department's Bureau of Air Regulation, 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in these DRAFT Permit Modifications, the Department shall issue Revised DRAFT Permit Modifications and require, if applicable, another Public Notice.

The Department will issue FINAL Permit Modifications with the conditions of the DRAFT Permit Modifications unless a timely petition for an administrative hearing is filed pursuant to Sections 120.569 and 120.57 F.S. or a party requests mediation as an alternative remedy under Section 120.573 before the deadline for filing a petition. Choosing mediation will not adversely affect the right to a hearing if mediation does not result in a settlement. The procedures for petitioning for a hearing are set forth below, followed by the procedures for requesting mediation.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative hearing in accordance with Sections 120.569 and 120.57, F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000, telephone 904/488-9370, fax: 904/487-4938. Petitions must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. A petitioner musts mail a copy of the petition to the applicant at the address indicated above, at the time of filing. The failure of any person to file a petition (or a request for mediation, as well as discussed below) within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Section 120.569 and 120.57 F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-5.207 of the Florida Administrative Code.

A petition must contain the following information: (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Permit File Number and the county in which the project is proposed; (b) A statement of how and when each petitioner received notice of the Department's action or proposed action; (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action; (d) A statement of the material facts disputed by petitioner, if any; (e) A statement of facts that the petitioner contends warrant reversal or modification of the Department's action or proposed action; (f) A statement identifying the rules or statutes that the petitioner contends require reversal or modification of the Department's action or proposed action; and (g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action addressed in this notice of intent.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice of intent. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

A person whose substantial interests are affected by the Department's proposed permitting decision, may elect to pursue mediation by asking all parties to the proceeding to agree to such mediation and by filing with the Department a request for mediation and the written agreement of all such parties to mediate the dispute. The request and agreement must be filed in (received by) the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000, by the same deadline as set forth above for the filing of a petition.

A request for mediation must contain the following information: (a) The name, address, and telephone number of the person requesting mediaiton and that person's representative, if any; (b) A statement of the preliminary agency action; (c) A statement of the relief sought; and (d) Either an explanation of how the requester's substantial interests will be affected by the action or proposed action addressed in this notice of intent or a statement clearly identifying the petition for hearing that the requester has already filed, and incorporating it by reference.

The agreement to mediate must include the following: (a) The names, addresses, and telephone numbers of any persons who may attend the mediation; (b) The name, address, and telephone number of the mediator selected by the parties, or a provision for selecting a mediator within a specified time; (c) The agreed allocation of the costs and fees associated with the mediation; (d) The agreement of the parties on the confidentiality of discussions and documents introduced during mediation; (e) The date, time and place of the first mediation session, or a deadline for holding the first session, if no mediator has yet been chosen; (f) The name of each party's representative who shall have authority to settle or recommend settlement, and (g) The signature of all parties or their authorized representatives.

As provided in Section 120.573 F.S., the timely agreement of all parties to mediate will tell the time limitations imposed by Sections 120.569 and 120.57 F.S. for requesting and holding an administrative hearing. Unless otherwise agreed by the parties, the mediation must be concluded within sixty days of the execution of the agreement. If mediation results in settlement of the administrative dispute, the Department must enter a final order incorporating the agreement of the parties. Persons whose substantial interests will be affected by such modified final decision of the Department have a right to petition for a hearing only in accordance with the requirements for such petitions set forth above. If mediation terminates without settlement of the dispute, the Department shall notify all parties in writing that the administrative hearing processes under Sections 120.569 and 120.57 F.S. remain available for disposition of the dispute, and the notice will specify the deadlines that then will apply for challenging the agency and electing remedies under those two statutes.

A complete project file is available for public inspection during normal business hours, 8:00 AM to 5:00 PM, Monday through Friday, except holidays at:

Department of Environmental Protection, Bureau of Air Regulations, 111 S. Magnolia Drive, Suite 4, Tallahassee, FL 32301, telephone: 904/488-1334, Fax: 904/922-6979.

Department of Environmental Protection Southeast District, 400 North Congress Avenue, West Palm Beach, Florida 33401, telephone: 407/681-6600, Fax: 407/681-6755.

Broward County Dept. National Resource Protection, 218 Southwest First Avenue, Ft. Lauderdale, FL 33301, telephone: 954/519-1220, fax: 954/519-1495.

The complete project filed includes the Draft Permit Modifications, the applications, and the information submitted by the responsible official exclusive of confidential records under Section 403.111 F.S. Interested persons may contact the Administrator, New Resource Review Section at 111 South Magnolia Drive, Suite 4, Tallahassee, Florida 32301 or call 904/488-1344, for additional information.

March 24,31, 1997

Department of Environmental Protection

Lawton Chiles
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Virginia B. Wetherell
Secretary

March 4, 1997

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Thomas D. Kirk
Plant Manager
Wheelabrator North Broward Inc.
2600 N.W. 48th Street
Pomapano Beach, FL 33073

Re: DRAFT Permit Modifications Nos. PSD-FL-112 & 105
North and South Broward Resource Recovery Facilities

Dear Mr. Kirk:

Enclosed is one copy of the Draft Permit Modifications to the PSD permits for North and South Broward Resource Recovery Facilities respectively located at 2700 Hilton Road, Pompano Beach and the intersection of State Road 84 and U.S. 441, Fort Lauderdale, Broward County. The Department's Intents to Issue Permit Modification and the "PUBLIC NOTICE OF INTENT TO ISSUE PERMIT MODIFICATIONS" are also included. Note that the PUBLIC NOTICE covers both facilities.

The "PUBLIC NOTICE OF INTENT TO ISSUE PERMIT MODIFICATIONS" must be published within 30 (thirty) days of receipt of this letter. Proof of publication, i.e., newspaper affidavit, must be provided to the Department's Bureau of Air Regulation office within 7 (seven) days of publication. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the permit modification.

Please submit any written comments you wish to have considered concerning the Department's proposed action to A. A. Linero, P.E., Administrator, New Source Review Section at the above letterhead address. If you have any other questions, please contact Ms. Teresa Heron or Mr. Linero at 904/488-1344.

Sincerely,

C. H. Fancy, P.E., Chief,
Bureau of Air Regulation

CHF/aal/hh

Enclosures

PUBLIC NOTICE OF INTENT TO ISSUE PERMIT MODIFICATIONS

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

DRAFT Permit Modifications PSD-FL-112 & 105
North Broward Resource Recovery Facility
South Broward Resource Recovery Facility
Broward County

The Department of Environmental Protection (Department) gives notice of its intent to issue modifications of Permits PSD-FL-112 & 105 to Wheelabrator for the North Broward Resource Recovery Facility located at 2700 Hilton Road, Pompano Beach, Broward County, and the South Broward Resource Recovery Facility located at the intersection of State Road 84 and U.S. Route 441, Broward County. The business addresses for the two facilities are Wheelabrator North Broward Inc., 2600 N.W. 48th Street, Pompano Beach, Florida 33073 and Wheelabrator South Broward Inc., 4400 South State Road 7, Fort Lauderdale Florida 33314.

Based on a recommendation by the Department, the applicant requests to use EPA Method 29 in lieu of Method 101A for Mercury, Method 12 for lead, Method 104 for beryllium and Method 108 for arsenic during annual compliance stack testing. EPA Method 29 is the Determination of Metals Emissions from Stationary Sources which simultaneously tests for all of the mentioned pollutants. This change will allow for the use of an updated, more accurate, and less expensive compliance method. Wheelabrator will conduct all other tests requirred by the Department in the same manner as performed in previous years.

The Department will issue the FINAL Permit Modifications, in accordance with the conditions of the DRAFT Permit Modifications unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments concerning the proposed DRAFT Permit Modifications issuance action for a period of 30 (thirty) days from the date of publication of this Notice. Written comments should be provided to the Department's Bureau of Air Regulation, 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in these DRAFT Permit Modifications, the Department shall issue Revised DRAFT Permit Modifications and require, if applicable, another Public Notice.

The Department will issue FINAL Permit Modifications with the conditions of the DRAFT Permit Modifications unless a timely petition for an administrative hearing is filed pursuant to Sections 120.569 and 120.57 F.S. or a party requests mediation as an alternative remedy under Section 120.573 before the deadline for filing a petition. Choosing mediation will not adversely affect the right to a hearing if mediation does not result in a settlement. The procedures for petitioning for a hearing are set forth below, followed by the procedures for requesting mediation.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative hearing in accordance with Sections 120.569 and 120.57 F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000, telephone: 904/488-9370, fax: 904/487-4938. Petitions must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. A petitioner must mail a copy of the petition to the applicant at the address indicated above, at the time of filing. The failure of any person to file a petition (or a request for mediation, as discussed below) within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57 F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-5.207 of the Florida Administrative Code.

A petition must contain the following information: (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Permit File Number and the county in which the project is proposed; (b) A statement of how and when each petitioner received notice of the Department's action or proposed action; (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action; (d) A statement of the material facts disputed by petitioner, if any; (e) A statement of the facts that the petitioner contends warrant reversal or modification of the Department's action or proposed action; (f) A statement identifying the rules or statutes that the petitioner contends require reversal or modification of the Department's action or proposed action; and (g) A statement of the relief sought by the petitioner, stating precisely the action that the petitioner wants the Department to take with respect to the Department's action or proposed action addressed in this notice of intent.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice of intent. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

A person whose substantial interests are affected by the Department's proposed permitting decision, may elect to pursue mediation by asking all parties to the proceeding to agree to such mediation and by filing with the Department a request for mediation and the written agreement of all such parties to mediate the dispute. The request and agreement must be filed in (received by) the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000, by the same deadline as set forth above for the filing of a petition.

A request for mediation must contain the following information: (a) The name, address, and telephone number of the person requesting mediation and that person's representative, if any; (b) A statement of the preliminary agency action; (c) A statement of the relief sought; and (d) Either an explanation of how the requester's substantial interests will be affected by the action or proposed action addressed in this notice of intent or a statement clearly identifying the petition for hearing that the requester has already filed, and incorporating it by reference.

The agreement to mediate must include the following: (a) The names, addresses, and telephone numbers of any persons who may attend the mediation; (b) The name, address, and telephone number of the mediator selected by the parties, or a provision for selecting a mediator within a specified time; (c) The agreed allocation of the costs and fees associated with the mediation; (d) The agreement of the parties on the confidentiality of discussions and documents introduced during mediation; (e) The date, time, and place of the first mediation session, or a deadline for holding the first session, if no mediator has yet been chosen; (f) The name of each party's representative who shall have authority to settle or recommend settlement; and (g) The signatures of all parties or their authorized representatives.

As provided in Section 120.573 F.S., the timely agreement of all parties to mediate will toll the time limitations imposed by Sections 120.569 and 120.57 F.S. for requesting and holding an administrative hearing. Unless otherwise agreed by the parties, the mediation must be concluded within sixty days of the execution of the agreement. If mediation results in settlement of the administrative dispute, the Department must enter a final order incorporating the agreement of the parties. Persons whose substantial interests will be affected by such modified final decision of the Department have a right to petition for a hearing only in accordance with the requirements for such petitions set forth above. If mediation terminates without settlement of the dispute, the Department shall notify all parties in writing that the administrative hearing processes under Sections 120.569 and 120.57 F.S. remain available for disposition of the dispute, and the notice will specify the deadlines that then will apply for challenging the agency action and electing remedies under those two statutes.

A complete project file is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Department of Environmental Protection Bureau of Air Regulation 111 S. Magnolia Drive, Suite 4 Tallahassee, Florida 32301 Telephone: 904/488-1344 Fax: 904/922-6979	Department of Environmental Protection Southeast District 400 North Congress Avenue West Palm Beach, Florida 33401 Telephone: 407/681-6600 Fax: 407/681-6755	Broward County Dept. Natural Resource Protection 218 Southwest First Avenue Fort Lauderdale, Florida 33301 Telephone: 954/519-1220 Fax: 954/519-1495

The complete project file includes the Draft Permit Modifications, the applications, and the information submitted by the responsible official, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the Administrator, New Resource Review Section at 111 South Magnolia Drive, Suite 4, Tallahassee, Florida 32301, or call 904/488-1344, for additional information.

In the Matter of an
Application for Permit Modification by:

Wheelabrator North Broward Inc.
2600 N.W. 48th Street
Pompano Beach, Florida 33073 /

DRAFT Permit Modification PSD-FL-112
PA 86-22
North Broward Resource Recovery Facility

INTENT TO ISSUE PERMIT MODIFICATION

The Department of Environmental Protection (Department) gives notice of its intent to issue a permit modification (copy of DRAFT Permit modification attached) for the proposed action, as detailed in the application specified above, for the reasons stated below.

The applicant, Wheelabrator North Broward Inc., applied on February 24, 1997, to the Department for a permit modification to the methods of compliance contained in the Final Determination (PSD Permit) issued July 28, 1987 by EPA for its North Broward Resource Recovery Facility located at 2700 Hilton Road, Pompano Beach, Broward County. Requested by the applicant is a change to compliance test EPA Method 29 for lead, beryllium, mercury and arsenic. This would replace Method 12, Method 104, Method 101A, and Method 108, respectively.

The Department has permitting jurisdiction under the provisions of Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, and 62-212. The above actions are not exempt from permitting procedures. The Department has determined that a modification of PSD-FL-112 is required to change the emission testing requirements in the previously issued permit.

The Department intends to issue this air construction permit modification based on the belief that reasonable assurances have been provided to indicate that operation of these emission units will not adversely impact air quality, and the emission units will comply with all appropriate provisions of Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297, F.A.C.

Pursuant to Section 403.815, F.S., and Rule 62-103.150, F.A.C., you (the applicant) are required to publish at your own expense the enclosed "PUBLIC NOTICE OF INTENT TO ISSUE PERMIT MODIFICATIONS". The notice shall be published one time only within 30 (thirty) days in the legal advertisement section of a newspaper of general circulation in the area affected. For the purpose of these rules, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S., in the county where the activity is to take place. Where there is more than one newspaper of general circulation in the county, the newspaper used must be one with significant circulation in the area that may be affected by the permit. If you are uncertain that a newspaper meets these requirements, please contact the Department at the address or telephone number listed below. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation, at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400 (Telephone: 904/488-1344; Fax 904/ 922-6979) within 7 (seven) days of publication. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the permit modification pursuant to Rule 62-103.150 (6), F.A.C.

The Department will issue the FINAL Permit Modification, in accordance with the conditions of the enclosed DRAFT Permit Modification unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments concerning the proposed DRAFT Permit Modification issuance action for a period of 30 (thirty) days from the date of publication of "PUBLIC NOTICE OF INTENT TO ISSUE PERMIT MODIFICATIONS." Written comments should be provided to the Department's Bureau of Air Regulation, 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in this DRAFT Permit Modification, the Department shall issue a Revised DRAFT Permit Modification and require, if applicable, another Public Notice.

The Department will issue the permit modification with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to Sections 120.569 and 120.57 F.S., or a party requests mediation as an alternative remedy under Section 120.573 F.S. before the deadline for filing a petition. Choosing mediation will not adversely affect the right to a hearing if mediation does not result in a settlement. The procedures for petitioning for a hearing are set forth below, followed by the procedures for requesting mediation.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative hearing in accordance with Sections 120.569 and 120.57 F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000, telephone: 904/488-9730, fax: 904/487-4938. Petitions must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. A petitioner must mail a copy of the petition to the applicant at the address indicated above, at the time of filing. The failure of any person to file a petition (or a request for mediation, as discussed below) within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57 F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-5.207 of the Florida Administrative Code.

A petition must contain the following information: (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Permit File Number and the county in which the project is proposed; (b) A statement of how and when each petitioner received notice of the Department's action or proposed action; (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action; (d) A statement of the material facts disputed by petitioner, if any; (e) A statement of the facts that the petitioner contends warrant reversal or modification of the Department's action or proposed action; (f) A statement identifying the rules or statutes that the petitioner contends require reversal or modification of the Department's action or proposed action; and (g) A statement of the relief sought by the petitioner, stating precisely the action that the petitioner wants the Department to take with respect to the action or proposed action addressed in this notice of intent.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice of intent. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

A person whose substantial interests are affected by the Department's proposed permitting decision, may elect to pursue mediation by asking all parties to the proceeding to agree to such mediation and by filing with the Department a request for mediation and the written agreement of all such parties to mediate the dispute. The request and agreement must be filed in (received by) the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000, by the same deadline as set forth above for the filing of a petition.

A request for mediation must contain the following information: (a) The name, address, and telephone number of the person requesting mediation and that person's representative, if any; (b) A statement of the preliminary agency action; (c) A statement of the relief sought; and (d) Either an explanation of how the requester's substantial interests will be affected by the action or proposed action addressed in this notice of intent or a statement clearly identifying the petition for hearing that the requester has already filed, and incorporating it by reference.

The agreement to mediate must include the following: (a) The names, addresses, and telephone numbers of any persons who may attend the mediation; (b) The name, address, and telephone number of the mediator selected by the parties, or a provision for selecting a mediator within a specified time; (c) The agreed allocation of the costs and fees associated with the mediation; (d) The agreement of the parties on the confidentiality of discussions and documents introduced during mediation; (e) The date, time, and place of the first mediation session, or a deadline

for holding the first session, if no mediator has yet been chosen; (f) The name of each party's representative who shall have authority to settle or recommend settlement; and (g) The signatures of all parties or their authorized representatives.

As provided in Section 120.573 F.S., the timely agreement of all parties to mediate will toll the time limitations imposed by Sections 120.569 and 120.57 F.S. for requesting and holding an administrative hearing. Unless otherwise agreed by the parties, the mediation must be concluded within sixty days of the execution of the agreement. If mediation results in settlement of the administrative dispute, the Department must enter a final order incorporating the agreement of the parties. Persons whose substantial interests will be affected by such modified final decision of the Department have a right to petition for a hearing only in accordance with the requirements for such petitions set forth above. If mediation terminates without settlement of the dispute, the Department shall notify all parties in writing that the administrative hearing processes under Sections 120.569 and 120.57 F.S. remain available for disposition of the dispute, and the notice will specify the deadlines that then will apply for challenging the agency action and electing remedies under those two statutes.

In addition to the above, a person subject to regulation has a right to apply for a variance from or waiver of the requirements of particular rules, on certain conditions, under Section 120.542 F.S. The relief provided by this state statute applies only to state rules, not statutes, and not to any federal regulatory requirements. Applying for a variance or waiver does not substitute or extend the time for filing a petition for an administrative hearing or exercising any other right that a person may have in relation to the action proposed in this notice of intent.

The application for a variance or waiver is made by filing a petition with the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. The petition must specify the following information: (a) The name, address, and telephone number of the petitioner; (b) The name, address, and telephone number of the attorney or qualified representative of the petitioner, if any; (c) Each rule or portion of a rule from which a variance or waiver is requested; (d) The citation to the statute underlying (implemented by) the rule identified in (c) above; (e) The type of action requested; (f) The specific facts that would justify a variance or waiver for the petitioner; (g) The reason why the variance or waiver would serve the purposes of the underlying statute (implemented by the rule); and (h) A statement whether the variance or waiver is permanent or temporary and, if temporary, a statement of the dates showing the duration of the variance or waiver requested.

The Department will grant a variance or waiver when the petition demonstrates both that the application of the rule would create a substantial hardship or violate principles of fairness, as each of those terms is defined in Section 120.542(2) F.S., and that the purpose of the underlying statute will be or has been achieved by other means by the petitioner.

Persons subject to regulation pursuant to any federally delegated or approved air program should be aware that Florida is specifically not authorized to issue variances or waivers from any requirements of any such federally delegated or approved program. The requirements of the program remain fully enforceable by the Administrator of the EPA and by any person under the Clean Air Act unless and until the Administrator separately approves any variance or waiver in accordance with the procedures of the federal program.

Executed in Tallahassee, Florida.

C. H. Fancy, P.E., Chief
Bureau of Air Regulation

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this INTENT TO ISSUE PERMIT MODIFICATION (including the PUBLIC NOTICE, and DRAFT permit modification) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 3-4-97 to the person(s) listed:

Mr. Thomas D. Kirk, Wheelabrator North Broward Inc.*
Mr. Brian Beals, EPA
Mr. John Bunyak, NPS
Ms. Terri Hillard, FDEP, West Palm Beach
Ms. Daniela Banu, BCDNRP, Broward County

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to §120.52(7), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

(Clerk) 3-4-97 (Date)

DRAFT

April XX, 1997

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Thomas D. Kirk
Plant Manager
Wheelabrator North Broward Inc.
2600 N.W. 48th Street
Pompano Beach, FL 33073

Re: Modification of Final Determination - PSD-FL-112
North Broward Resource Recovery Facility

Dear Mr. Kirk:

The Department is in receipt of your letter dated February 24, 1997 requesting to use EPA Method 29 in lieu of Method 101A for Mercury, Method 12 for lead, Method 104 for beryllium and Method 108 for arsenic for annual compliance stack testing. The Department hereby amends the Specific Conditions related to methods of compliance in the subject Final Determination (dated July 28, 1987) pursuant to 40 CFR 52.21 - Prevention of Significant Deterioration (PSD Permit). The PSD permit is modified as follows:

FROM

Specific Conditions: 1.d.(2)j.; 1.d.(2)l; 1.d.(2)m

Method 12 for determination of lead concentration and associated moisture content. One sample constitutes one test run.

Method 101A for determination of mercury emission rate and associated moisture content . One sample shall constitute one test run.

Method 104 for determination of beryllium emission rate and associated moisture content. One sample shall constitute one test run.

TO:

Specific Conditions 1.d.(2)j

EPA Method 29, Determination of Metals Emissions from Stationary Sources, shall be used for determining compliance with the beryllium, mercury, lead and arsenic emission rates and their respective moisture contents. For each pollutant one sample shall constitute one test run.

DRAFT

A copy of this letter shall be filed with the referenced permit and shall become part of Permit PSD-FL-112.

Sincerely,

Howard L. Rhodes, Director
Division of Air Resources
Management

HLR/aal/hh

In the Matter of an
Application for Permit Modification by:

Wheelabrator South Broward Inc.
4400 South State Road 7
Ft. Lauderdale, Florida 33314 /

DRAFT Permit Modification PSD-FL-105
PA 85-21
South Broward Resource Recovery Facility

INTENT TO ISSUE PERMIT MODIFICATION

The Department of Environmental Protection (Department) gives notice of its intent to issue a permit modification (copy of DRAFT Permit modification attached) for the proposed project, as detailed in the application specified above, for the reasons stated below.

The applicant, Wheelabrator South Broward Inc., applied on February 24, 1997, to the Department for a permit modification to the methods of compliance contained in the Final Determination (PSD Permit) issued May 15, 1987 by EPA for its South Broward Resource Recovery Facility located on State Road 84, Broward County. Requested by the applicant is a change to compliance test EPA Method 29 for lead, beryllium, and mercury. This would replace Method 12, Method 104, and Method 101A, respectively.

The Department has permitting jurisdiction under the provisions of Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, and 62-212. The above actions are not exempt from permitting procedures. The Department has determined that a modification of PSD-FL-105 is required to change the emission testing requirements in the previously issued permit.

The Department intends to issue this air construction permit modification based on the belief that reasonable assurances have been provided to indicate that operation of these emission units will not adversely impact air quality, and the emission units will comply with all appropriate provisions of Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297, F.A.C.

Pursuant to Section 403.815, F.S., and Rule 62-103.150, F.A.C., you (the applicant) are required to publish at your own expense the enclosed "PUBLIC NOTICE OF INTENT TO ISSUE PERMIT MODIFICATIONS". The notice shall be published one time only within 30 (thirty) days in the legal advertisement section of a newspaper of general circulation in the area affected. For the purpose of these rules, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S., in the county where the activity is to take place. Where there is more than one newspaper of general circulation in the county, the newspaper used must be one with significant circulation in the area that may be affected by the permit. If you are uncertain that a newspaper meets these requirements, please contact the Department at the address or telephone number listed below. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation, at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400 (Telephone: 904/488-1344; Fax 904/ 922-6979) within 7 (seven) days of publication. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the permit modification pursuant to Rule 62-103.150 (6), F.A.C.

The Department will issue the FINAL Permit Modification, in accordance with the conditions of the enclosed DRAFT Permit Modification unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments concerning the proposed DRAFT Permit Modification issuance action for a period of 30 (thirty) days from the date of publication of "PUBLIC NOTICE OF INTENT TO ISSUE PERMIT MODIFICATIONS." Written comments should be provided to the Department's Bureau of Air Regulation, 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in this DRAFT Permit Modification, the Department shall issue a Revised DRAFT Permit Modification and require, if applicable, another Public Notice.

The Department will issue the permit modification with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to Sections 120.569 and 120.57 F.S., or a party requests mediation as an alternative remedy under Section 120.573 F.S. before the deadline for filing a petition. Choosing mediation will not adversely affect the right to a hearing if mediation does not result in a settlement. The procedures for petitioning for a hearing are set forth below, followed by the procedures for requesting mediation.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative hearing in accordance with Sections 120.569 and 120.57 F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000, telephone: 904/488-9730, fax: 904/487-4938. Petitions must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. A petitioner must mail a copy of the petition to the applicant at the address indicated above, at the time of filing. The failure of any person to file a petition (or a request for mediation, as discussed below) within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57 F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-5.207 of the Florida Administrative Code.

A petition must contain the following information: (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Permit File Number and the county in which the project is proposed; (b) A statement of how and when each petitioner received notice of the Department's action or proposed action; (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action; (d) A statement of the material facts disputed by petitioner, if any; (e) A statement of the facts that the petitioner contends warrant reversal or modification of the Department's action or proposed action; (f) A statement identifying the rules or statutes that the petitioner contends require reversal or modification of the Department's action or proposed action; and (g) A statement of the relief sought by the petitioner, stating precisely the action that the petitioner wants the Department to take with respect to the action or proposed action addressed in this notice of intent.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice of intent. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

A person whose substantial interests are affected by the Department's proposed permitting decision, may elect to pursue mediation by asking all parties to the proceeding to agree to such mediation and by filing with the Department a request for mediation and the written agreement of all such parties to mediate the dispute. The request and agreement must be filed in (received by) the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000, by the same deadline as set forth above for the filing of a petition.

A request for mediation must contain the following information: (a) The name, address, and telephone number of the person requesting mediation and that person's representative, if any; (b) A statement of the preliminary agency action; (c) A statement of the relief sought; and (d) Either an explanation of how the requester's substantial interests will be affected by the action or proposed action addressed in this notice of intent or a statement clearly identifying the petition for hearing that the requester has already filed, and incorporating it by reference.

The agreement to mediate must include the following: (a) The names, addresses, and telephone numbers of any persons who may attend the mediation; (b) The name, address, and telephone number of the mediator selected by the parties, or a provision for selecting a mediator within a specified time; (c) The agreed allocation of the costs

and fees associated with the mediation; (d) The agreement of the parties on the confidentiality of discussions and documents introduced during mediation; (e) The date, time, and place of the first mediation session, or a deadline for holding the first session, if no mediator has yet been chosen; (f) The name of each party's representative who shall have authority to settle or recommend settlement; and (g) The signatures of all parties or their authorized representatives.

As provided in Section 120.573 F.S., the timely agreement of all parties to mediate will toll the time limitations imposed by Sections 120.569 and 120.57 F.S. for requesting and holding an administrative hearing. Unless otherwise agreed by the parties, the mediation must be concluded within sixty days of the execution of the agreement. If mediation results in settlement of the administrative dispute, the Department must enter a final order incorporating the agreement of the parties. Persons whose substantial interests will be affected by such modified final decision of the Department have a right to petition for a hearing only in accordance with the requirements for such petitions set forth above. If mediation terminates without settlement of the dispute, the Department shall notify all parties in writing that the administrative hearing processes under Sections 120.569 and 120.57 F.S. remain available for disposition of the dispute, and the notice will specify the deadlines that then will apply for challenging the agency action and electing remedies under those two statutes.

In addition to the above, a person subject to regulation has a right to apply for a variance from or waiver of the requirements of particular rules, on certain conditions, under Section 120.542 F.S. The relief provided by this state statute applies only to state rules, not statutes, and not to any federal regulatory requirements. Applying for a variance or waiver does not substitute or extend the time for filing a petition for an administrative hearing or exercising any other right that a person may have in relation to the action proposed in this notice of intent.

The application for a variance or waiver is made by filing a petition with the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. The petition must specify the following information: (a) The name, address, and telephone number of the petitioner; (b) The name, address, and telephone number of the attorney or qualified representative of the petitioner, if any; (c) Each rule or portion of a rule from which a variance or waiver is requested; (d) The citation to the statute underlying (implemented by) the rule identified in (c) above; (e) The type of action requested; (f) The specific facts that would justify a variance or waiver for the petitioner; (g) The reason why the variance or waiver would serve the purposes of the underlying statute (implemented by the rule); and (h) A statement whether the variance or waiver is permanent or temporary and, if temporary, a statement of the dates showing the duration of the variance or waiver requested.

The Department will grant a variance or waiver when the petition demonstrates both that the application of the rule would create a substantial hardship or violate principles of fairness, as each of those terms is defined in Section 120.542(2) F.S., and that the purpose of the underlying statute will be or has been achieved by other means by the petitioner.

Persons subject to regulation pursuant to any federally delegated or approved air program should be aware that Florida is specifically not authorized to issue variances or waivers from any requirements of any such federally delegated or approved program. The requirements of the program remain fully enforceable by the Administrator of the EPA and by any person under the Clean Air Act unless and until the Administrator separately approves any variance or waiver in accordance with the procedures of the federal program.

Executed in Tallahassee, Florida.

C. H. Fancy, P.E., Chief
Bureau of Air Regulation

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this INTENT TO ISSUE PERMIT MODIFICATION (including the PUBLIC NOTICE, and DRAFT permit modification) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 3-4-97 to the person(s) listed:

Mr. Thomas Kirk, Wheelabrator South Broward Inc.*
Mr. Brian Beals, EPA
Mr. John Bunyak, NPS
Ms. Terri Hillard, FDEP, West Palm Beach
Ms. Daniela Banu, BCDNRP, Broward County

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to §120.52(7), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Kyra Tober 3-4-97
(Clerk) (Date)

DRAFT

April XX, 1997

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Thomas D. Kirk
Plant Manager
Wheelabrator South Broward Inc.
4400 South State Road 7
Fort Lauderdale, Florida 33314

Re: Modification of Final Determination - PSD-FL-105
South Broward Resource Recovery Facility

Dear Mr. Kirk:

The Department is in receipt of your letter dated February 24, 1997 requesting to use EPA Method 29 in lieu of Method 101A for Mercury, Method 12 for lead, and Method 104 for beryllium for annual compliance stack testing. The Department hereby amends the Specific Conditions related to methods of compliance in the subject Final Determination (dated May 15, 1987) pursuant to 40 CFR 52.21 - Prevention of Significant Deterioration (PSD Permit). The PSD permit is modified as follows:

FROM:

Specific Conditions 1.d.(2)j.; 1.d.(2)l; 1.d.(2)m:

Method 12 for determination of lead concentration and associated moisture content. One sample constitutes one test run.

Method 101A for determination of mercury emission rate and associated moisture content . One sample shall constitute one test run.

Method 104 for determination of beryllium emission rate and associated moisture content. One sample shall constitute one test run.

TO:

Specific Condition 1.d.(2)j

EPA Method 29, Determination of Metals Emissions from Stationary Sources, shall be used for determining compliance with the beryllium, mercury, and lead emission rates and their respective moisture contents. For each pollutant one sample shall constitute one test run.

A copy of this letter shall be filed with the referenced permit and shall become part of Permit PSD-FL-105.

Sincerely,

Howard L. Rhodes, Director
Division of Air Resources
Management

HLR/aal/hh

Memorandum

Florida Department of
Environmental Protection

TO: Clair Fancy

THRU: Al Linero

FROM: Teresa Heron

DATE: March 4, 1997

SUBJECT: Wheelabrator North & South Broward RRF Modifications
EPA PSD-FL-112 and PSD-FL-105

Attached are letters modifying ~~construction~~ PSD permits for the above facilities. Wheelabrator North Broward Inc. and Wheelabrator South Broward Inc. request to use EPA Method 29 in lieu of Method 101A for mercury, Method 12 for lead, Method 104 for beryllium, and Method 108 for arsenic during annual compliance stack testing. EPA Method 29 is incorporated in 40 CFR 60 Subpart Eb, Standards of Performance for Municipal Waste Combustors. It is a more accurate and less expensive procedure than presently used.

We consulted with Mike Harley and Terri Hillard (SED) who agree that the requested change makes sense. We recommend your approval and signature.

permit.
- Write "*Return Receipt Requested*" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Thomas D. Kirk, Plant Mgr
Wheelabrator N. Broward
2600 N.W. 48th St.
Pompano Bch, Fl
33073

4a. Article Number
P 265 659 179

4b. Service Type
☐ Registered ☒ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery
3-6-97

5. Received By: *(Print Name)*

8. Addressee's Address *(Only if requested and fee is paid)*

6. Signature: *(Addressee or Agent)*
X

PS Form **3811**, December 1994

is your RETURN ADDRESS completed on the r

Thank you for using Return Receipt Servic

ipt

P 265 659 179

US Postal Service
Receipt for Certified Mail
No Insurance Coverage Provided.
Do not use for International Mail *(See reverse)*

Sent to Thomas Kirk	
Street & Number Wheelabrator North	
Post Office, State, & ZIP Code Broward	
Postage	$
Certified Fee (+ 50th)	
Special Delivery Fee ERF	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date PSD-FT-112 4105	3/4/97

PS Form **3800**, April 1995

Wheelabrator North Broward Inc.

A Wheelabrator Technologies Company
2600 N.W. 48th Street
Pompano Beach, FL 33073

Phone 954.971.8701
Fax. 954.971.8703

DATE: 3/3/97 TIME: 1130 hrs

TO: Heather Hinst FROM: Chuck Faller

904 - ~~388~~ 922-6979

NUMBER OF PAGES INCLUDING COVER SHEET: 5

SHOULD YOU HAVE ANY PROBLEMS, CALL SENDER AT (954) 971-8701 EXT. 200

CONTENTS OF TRANSMITTAL:

COMMENTS:

FAX NUMBER OF RECEIVER: 904 - 922-6979

Condition XIV.A.1. is modified as follows:

1. Emission Limitations upon the operation of Units 1-3

a. Stack emissions from each unit shall not exceed the following assuming a Btu content of 4500 Btu/lb of MSW:

(1) Particulate matter: 0.015 grains per standard cubic foot dry gas corrected to 12% CO_2.

(2) SO_2: 0.140 lb/mmBtu heat input and 60 ppm (3-hr rolling average, dry volume, corrected to 12% CO_2); or 65% reduction of uncontrolled SO_2 emissions. In no case shall SO_2 emissions exceed 0.310 lb/mmBtu heat input and 124 ppm (3-hr rolling average, dry volume, corrected to 12% CO_2).

The 124 ppm limit above shall be modified to reflect a new emission limit (in ppm) from the control device at 65% control efficiency. Within 18 months of start-up of operation the County shall submit a compliance test that will be used to determine the new SO_2 emission limit (in ppm). The limit will be determined by observed average emission rate (u) from the submitted compliance tests and will be statistically analyzed using the one-tailed student T test ($t_{.05} = (x - u)\, n^{0.5}/s$) at the 95% confidence level to derive an emission rate (x) where s is the standard deviation of observed values n. The final SO_2 emission limit (in ppm) shall be this mean emission rate (x). This value shall be restricted to no more than 124 ppm or less 60 ppm (3-hr rolling average, dry volume, corrected to 12% CO_2).

REVISION TO PPSC 86-22

(3) Nitrogen Oxides: 350 ppm (3-hr rolling average, dry volume, corrected to 12% CO_2).

(4) Carbon Monoxide: 0.090 lb/mmBtu heat input; 400 ppm (1-hr rolling average, dry volume, corrected to 12% CO_2); and 88 ppm (4-day rolling average, dry volume corrected to 12% CO_2.

(5) Lead: 0.00056 lbs/mmBtu heat input.

(6) Mercury: 7.5×10^{-4} lbs/mmBtu heat input.

(7) Odor: There shall be no objectionable odor at the site boundary.

(8) Visible Emissions: Opacity shall be no greater than 15% except that visible emissions of no more than 20% opacity may be allowed for up to three consecutive minutes in any one hour except during start up or upsets when the provisions of 17-2.250, F.A.C., shall apply, provided that: (1) best operational practices to minimize emissions are adhered to, and (2) the duration of excess opacity is minimized but in no case allowed to exceed two hours in any 24-hour period, unless specifically authorized by EPA for longer durations. Opacity requirements shall be demonstrated in accordance with 17-2.700(6)(a)9., F.A.C., Method 9.

(9) Fluoride: 0.0040 lb/mmBtu heat input.

c. The incinerator boilers shall not be loaded in excess of their rated nameplate capacity of 67,200 pounds of MSW per hour or 302.5 x 10^6 Btu per hour each. The temperature of the flue gas exiting the combustion chamber of the incinerator shall be equal to or greater than 1800 degrees F.

REVISION TO PPSC 86-22

C. Reporting

1. Notice of commencement of construction shall be submitted to the Southeast District Office and SFWMD within 15 days of initiation. Starting three (3) months after construction commences, a quarterly construction status report shall be submitted to the Southeast District Office. The report shall be a short narrative describing the progress of construction.

2. Upon or immediately prior to completion of construction of the resource recovery facility or a phase thereof, the Southeast District Office and SFWMD will be notified of a date on which a site or facility inspection should be performed in accordance with Condition V, and the inspection shall be performed within fourteen (14) days of the date of notification by the Permittee.

XIV. OPERATION

A. Air

The operation of the Resource Recovery Facility shall be in accordance with all applicable provisions of Chapter 17-2, 17-5, and 17-7, Florida Administrative Code. In addition to the foregoing, the Permittee shall comply with the following specific conditions of certification:

1. Emission Limitations upon Operation of Units 1-4

a. Stack emissions from each unit shall not exceed the following, assuming a Btu content of 4500 Btu/lb of MSW:

(1) Particulate matter: 0.015 grains per standard cubic foot dry gas corrected to 12% CO_2.

(2) SO_2: 0.55 lbs/MBtu average heat input for each unit.

Compliance with SO_2 emission limits shall be determined by annual stack tests and by averaging three or more stack test runs for each unit.

ORIGINAL PPSC 86-22

(3) Nitrogen Oxides: 0.56 lbs/MBtu heat input.

(4) Carbon Monoxide: 400 ppmvd corrected to 7% O_2, 8 hour average, 130 ppmvd corrected to 7% O_2, 4 day average

(5) Lead: 0.00056 lbs/MBtu heat input

• (6) Mercury: ~~9.2 x E-4 lb/MBtu~~ 7.5E-4

(7) Odor: there shall be no objectionable odor at the site boundary.

(8) Visible emissions: opacity shall be no greater than 15% except that visible emissions with no more than 20% opacity may be allowed for up to three consecutive minutes in any one hour except during start up or upsets when the provisions of 17-2.250, FAC, shall apply. Opacity compliance shall be demonstrated in accordance with Florida Administrative Code Rule 17-2.700(6)(a)9 , DER Method 9.

• (9) ~~Fluoride: 0.018 lb/MBtu heat input~~ 0.0040

(10) Beryllium: 9.3XE-7 lb/MBtu heat input

(11) VOC: 0.013 lb/MBtu heat input

(12) Arsenic: 3.1 x E-3 lb/MBtu heat input

• (13) Sulfuric Acid Mist: 4.7 x E-2 lb/MBtu heat input

b. The height of the boiler exhaust stack shall not be less than 200 feet above grade.

c. The incinerator boilers shall not be loaded in excess of their rated nameplate capacity of 50,400 pounds of MSW or 226.9 x 10^6 Btu per hour each.

d. The incinerator boilers shall have a metal nameplate affixed in a conspicuous place on the shell showing manufacturer, model number, type waste, rated capacity and certification number.

e. Compliance with the limitations for particulates, sulfur oxides, nitrogen oxides, carbon monoxide, fluoride,

• Subject to change in accordance with current state rulemaking for resource recovery facilities or by petition under 403.516.

ORIGINAL PPSC 86-22

Wheelabrator North Broward Inc.

A Wheelabrator Technologies Company
2600 N.W. 48th Street
Pompano Beach, FL 33073

Phone 954.971.8701
Fax 954.971.8703

February 24, 1997

CERTIFIED MAIL #Z 784 818 809
RETURN RECEIPT REQUESTED

Al Linero
Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: Wheelabrator North Broward
Use of EPA 29

PSD- 112

Dear Mr. Linero:

Wheelabrator North Broward is requesting to utilize EPA Method 29 in lieu of Method 101A for mercury, Method 12 for lead, Method 104 for beryllium and Method 108 for arsenic during the upcoming annual compliance stack testing. At present, stack testing is scheduled for March 21-23, 1997.

EPA Method 29 has been approved by the EPA and is incorporated in 40 CFR subpart Eb.

If the Department finds the use of Method 29 acceptable, please contact me at (954) 971-8701, extension 210, or in my absence, Chuck Faller at extension 250.

Very truly yours,

Thomas D. Kirk
Plant Manager

970224.TDK

cc: Tim Porter
Chuck Faller
Frank Ferraro
Terri Hilliard, FDEP, West Palm Beach * Certified Mail # Z 784 818 810
Don Markley

0.4 percent is introduced. The tester may opt to include argon in the analysis using procedures subject to approval of the Administrator.

6.3 Dry Moles of Exhaust Gas. Use Equation 28a-2 to calculate the total moles of dry exhaust gas produced per kilogram of dry wood burned.

$$N_T = \left(\frac{42.5}{(Y_{CO2}+Y_{CO}+Y_{HC})} \right)$$

Eq. 28a-2

6.4 Air to Fuel Ratio. Use Equation 28a-3 to calculate the air to fuel ratio on a dry mass basis.

$$A/F = \left(\frac{(N_T \times M_d) - (510)}{(1000)} \right)$$

Eq. 28a-3

6.5 Burn Rate. Calculate the fuel burn rate as in Method 28, Section 8.3.

7. Bibliography

Same as Method 3, Section 7, and Method 5H, Section 7.

METHOD 29—DETERMINATION OF METALS EMISSIONS FROM STATIONARY SOURCES

1. Applicability and Principle

1.1 Applicability. This method is applicable to the determination of antimony (Sb), arsenic (As), barium (Ba), beryllium (Be), cadmium (Cd), chromium (Cr), cobalt (Co), copper (Cu), lead (Pb), manganese (Mn), mercury (Hg), nickel (Ni), phosphorus (P), selenium (Se), silver (Ag), thallium (Tl), and zinc (Zn) emissions from stationary sources. This method may be used to determine particulate emissions in addition to the metals emissions if the prescribed procedures and precautions are followed.

1.1.1 Hg emissions can be measured, alternatively, using EPA Method 101A of Appendix B, 40 CFR Part 61. Method 101-A measures only Hg but it can be of special interest to sources which need to measure both Hg and Mn emissions.

1.2 Principle. A stack sample is withdrawn isokinetically from the source, particulate emissions are collected in the probe and on a heated filter, and gaseous emissions are then collected in an aqueous acidic solution of hydrogen peroxide (analyzed for all metals including Hg) and an aqueous acidic solution of potassium permanganate (analyzed only for Hg). The recovered samples are digested, and appropriate fractions are analyzed for Hg by cold vapor atomic absorption spectroscopy (CVAAS) and for Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Ni, P, Se, Ag, Tl, and Zn by inductively coupled argon plasma emission spectroscopy (ICAP) or atomic absorption spectroscopy (AAS). Graphite furnace atomic absorption spectroscopy (GFAAS) is used for analysis of Sb, As, Cd, Co, Pb, Se, and Tl if these elements require greater analytical sensitivity than can be obtained by ICAP. If one so chooses, AAS may be used for analysis of all listed metals if the resulting in-stack method detection limits meet the goal of the testing program. Similarly, inductively coupled plasma-mass spectroscopy (ICP-MS) may be used for analysis of Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Ni, As, Tl and Zn.

2. Range, Detection Limits, Precision, and Interferences

2.1 Range. For the analysis described and for similar analyses, the ICAP response is linear over several orders of magnitude. Samples containing metal concentrations in the nanograms per ml (ng/ml) to micrograms per ml (µg/ml) range in the final analytical solution can be analyzed using this method. Samples containing greater than approximately 50 µg/ml As, Cr, or Pb should be diluted to that level or lower for final analysis. Samples containing greater than approximately 20 µg/ml of Cd should be diluted to that level before analysis.

2.2 Analytical Detection Limits. (NOTE: See section 2.3 for the description of in-stack detection limits.)

2.2.1 ICAP analytical detection limits for the sample solutions (based on Method 6010 in EPA Publication SW-846, Third Edition (November 1986) including updates I, II, IIA, and IIB, as incorporated by reference in §60.17(i)) are approximately as follows: Sb (32 ng/ml), As (53 ng/ml), Ba (2 ng/ml), Be (0.3 ng/ml), Cd (4 ng/ml), Cr (7 ng/ml), Co (7 ng/ml), Cu (6 ng/ml), Pb (42 ng/ml), Mn (2 ng/ml), Ni (15 ng/ml), P (75 ng/ml), Se (75 ng/ml), Ag (7 ng/ml), Tl (40 ng/ml), and Zn (2 ng/ml). ICP-MS analytical detection limits (based on based on Method 6020 in EPA Publication SW-846, Third Edition (November 1986) as incorporated by reference in §60.17(i)) are lower generally by a factor of ten or more. Be is lower by a factor of three. The actual sample analytical detection limits are sample dependent and may vary due to the sample matrix.

2.2.2 The analytical detection limits for analysis by direct aspiration AAS are approximately as follow: Sb (200 ng/ml), As (2 ng/ml), Ba (100 ng/ml), Be (5 ng/ml), Cd (5 ng/ml), Cr (50 ng/ml), Co (50 ng/ml), Cu (20 ng/ml), Pb (100 ng/ml), Mn (10 ng/ml), Ni (40 ng/ml), Se (2 ng/ml), Ag (10 ng/ml), Tl (100 ng/ml), and Zn (5 ng/ml).

2.2.3 The detection limit for Hg by CVAAS (on the resultant volume of the *disgestion* of the aliquots taken for Hg analyses) can be approximately 0.02 to 0.2ng/ml, depending upon the type of CVAAS analytical instrument used.

2.2.4 The use of GFAAS can enhance the detection limits compared to direct aspiration AAS as follows: Sb (3 ng/ml), As (1 ng/ml), Be (0.2 ng/ml), Cd (0.1 ng/ml), Cr (1 ng/ml), Co (1 ng/ml), Pb (1 ng/ml), Se (2 ng/ml), and Tl (ng/ml).

2.3 *In-stack Detection Limits.*

2.3.1 For test planning purposes in-stack detection limits can be developed by using the following information (1) the procedures described in this method, (2) the analytical detection limits described in Section 2.2 and in EPA Publication SW-846, Third Edition (November 1986) including updates I, II, IIA and IIB, as incorporated by reference in §60.17(i), (3) the normal volumes of 300 ml (Analytical Fraction 1) for the front-half and 150 ml (Analytical Fraction 2A) for the back-half samples, and (4) a stack gas sample volume of 1.25 m³. The resultant in-stack method detection limits for the above set of conditions are presented in Table 29-1 and were calculated by using Eq. 29-1.

$$A \times B/C = D \qquad \text{Eq. 29-1}$$

Where:

A=Analytical detectin limit, µg/ml.
B=Liquid volume of digested sample prior to aliquotting for analysis, Ml.
C=Stack sample gas volume, dsm³.
D=In-stack detection limit, µg/m³.

TABLE 29-1.—IN-STACK METHOD DETECTION LIMITS (µg/m³) FOR THE FRONT-HALF, THE BACK-HALF, AND THE TOTAL SAMPLING TRAIN USING ICAP AND AAS

Metal	Front-half: Probe and filter	Back-half: Impingers 1–3	Back-half: Impingers (4–6)*	Total train:
Antimony	[1] 7.7 (0.7)	[1] 3.8 (0.4)		[1] 11.5 (1.1)
Arsenic	[1] 12.7 (0.3)	[1] 6.4 (0.1)		[1] 19.1 (0.4)
Barium	0.5	0.3		0.8
Beryllium	[1] 0.07 (0.05)	[1] 0.04 (0.03)		[1] 0.11 (0.08)
Cadmium	[1] 1.0 (0.02)	[1] 0.5 (0.01)		[1] 1.5 (0.03)
Chromium	[1] 1.7 (0.2)	[1] 0.8 (0.1)		[1] 2.5 (0.3)
Cobalt	[1] 1.7 (0.2)	[1] 0.8 (0.1)		[1] 2.5 (0.3)
Copper	1.4	0.7		2.1
Lead	[1] 10.1 (0.2)	[1] 5.0 (0.1)		[1] 15.1 (0.3)
Manganese	[1] 0.5 (0.2)	[1] 0.2 (0.1)		[1] 0.7 (0.3)
Mercury	[2] 0.06	[2] 0.3	[2] 0.2	[2] 0.56
Nickel	3.6	1.8		5.4
Phosphorus	18	9		27.
Selenium	[1] 18 (0.5)	[1] 9 (0.3)		[1] 27 (0.8)
Silver	1.7	0.9		2.6
Thallium	[1] 9.6 (0.2)	[1] 4.8 (0.1)		[1] 14.4 (0.3)
Zinc	0.5	0.3		0.8

*Mercury analysis only.
[1] Detection limit when analyzed by GFAAS.
[2] Detection limit when analyzed by CVAAS, estimated for Back-Half and Total Train. See Sections 2.2 and 5.4.3.
Note: Actual method in-stack detection limits may vary from these values, as described in Section 2.3.3.

2.3.2 To ensure optimum precision/resolution in the analyses, the target concentrations of metals in the analytical solutions should be at least ten times their respective analytical detection limits. Under certain conditions, and with greater care in the analytical procedure, these concentrations can be as low as approximately three times the respective analytical detection limits without seriously impairing the precision of the analyses. On at least one sample run in the source test, and for each metal analyzed, perform either repetitive analyses, Method of Standard Additions, serial dilution, or matrix spike addition, etc., to document the quality of the data.

2.3.3 Actual in-stack method detection limits are based on actual source sampling parameters and analytical results as described above. If required, the method in-stack detection limits can be improved over those shown in Table 29-1 for a specific test by either increasing the sampled stack gas volume, reducing the total volume of the digested samples, improving the analytical detection limits, or any combination of the three. For extremely low levels of *Hg only*, the aliquot size selected for digestion and analysis can be increased to as much as 10 ml, thus improving the in-stack detection limit by a factor of ten compared to a 1 ml aliquot size.

2.3.3.1 A nominal one hour sampling run will collect a stack gas sampling volume of about 1.25 m³. If the sampling time is increased to four hours and 5 m³ are collected, the in-stack method detection limits would be improved by a factor of four compared to the values shown in Table 29-1.

2.3.3.2 The in-stack detection limits assume that all of the sample is digested and the final liquid volumes for analysis are the

normal values of 300 ml for Analytical Fraction 1, and 150 ml for Analytical Fraction 2A. If the volume of Analytical Fraction 1 is reduced from 300 to 30 ml, the in-stack detection limits for that fraction of the sample would be improved by a factor of ten. If the volume of Analytical Fraction 2A is reduced from 150 to 25 ml, the in-stack detection limits for that fraction of the sample would be improved by a factor of six. Matrix effect checks are necessary on sample analyses and typically are of much greater significance for samples that have been concentrated to less than the normal original sample volume. Reduction of Analytical Fractions 1 and 2A to volumes of less than 30 and 25 ml, respectively, could interfere with the redissolving of the residue and could increase interference by other compounds to an intolerable level.

2.3.3.3 When both of the modifications described in Sections 2.3.3.1 and 2.3.3.2 are used simultaneously on one sample, the resultant improvements are multiplicative. For example, an increase in stack gas volume by a factor of four and a reduction in the total liquid sample digested volume of both Analytical Fractions 1 and 2A by a factor of six would result in an improvement by a factor of twenty-four of the in-stack method detection limit.

2.4 Precision. The precision (relative standard deviation) for each metal detected in a method development test performed at a sewage sludge incinerator were found to be as follows: Sb (12.7 percent), As (13.5 percent), Ba (20.6 percent), Cd (11.5 percent), Cr (11.2 percent), Cu (11.5 percent), Pb (11.6 percent), P (14.6 percent), Se (15.3 percent), Tl (12.3 percent), and Zn (11.8 percent). The precision for Ni was 7.7 percent for another test conducted at a source simulator. Be, Mn, and Ag were not detected in the tests. However, based on the analytical detection limits of the ICAP for these metals, their precisions could be similar to those for the other metals when detected at similar levels.

2.5 Interferences. Iron (Fe) can be a spectral interference during the analysis of As, Cr, and Cd by ICAP. Aluminum (Al) can be a spectral interference during the analysis of As and Pb by ICAP. Generally, these interferences can be reduced by diluting the analytical sample, but such dilution raises the in-stack detection limits. Background and overlap corrections may be used to adjust for spectral interferences. Refer to Method 6010 in EPA Publication SW-846 Third Edition (November 1986) including updates I, II, IIA and IIB, as incorporated by reference in §60.17(i) the other analytical methods used for details on potential interferences to this method. For all GFAAS analyses, use matrix modifiers to limit interferences, and matrix match all standards.

3. Apparatus

3.1 Sampling. A schematic of the sampling train is shown in Figure 29-1. It has general similarities to the Method 5 train.

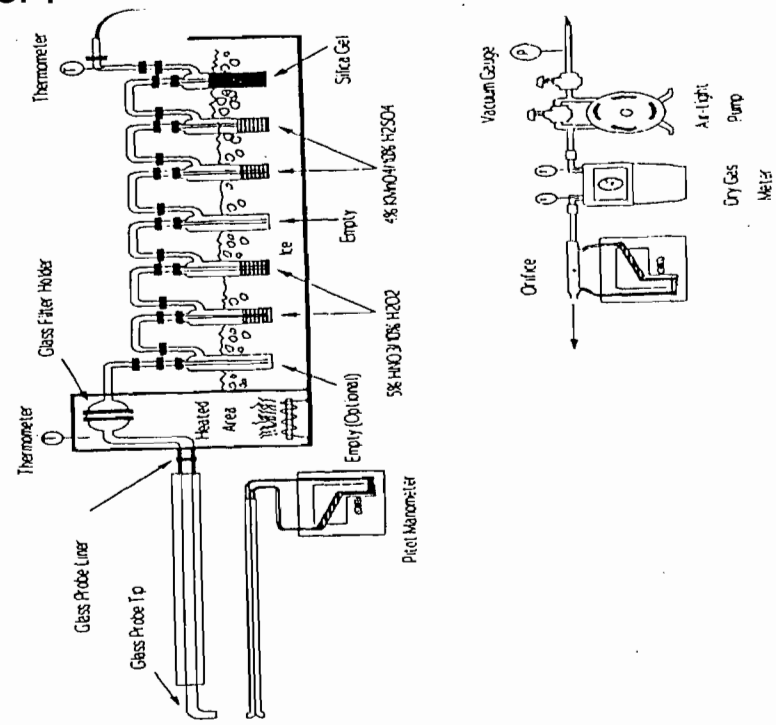

Figure 29-1. Sampling train.

3.1.1 Probe Nozzle (Probe Tip) and Borosilicate or Quartz Glass Probe Liner. Same as Method 5, Sections 2.1.1 and 2.1.2, except that glass nozzles are required unless alternate tips are constructed of materials that are free from contamination and will not interfere with the sample. If a probe tip other than glass is used, no correction to the sample test results to compensate for the nozzle's effect on the sample is allowed. Probe fittings of plastic such as Teflon, polypropylene, etc. are recommended instead of metal fittings to prevent contamination. If one chooses to do so, a single glass piece consisting of a combined probe tip and probe liner may be used.

3.1.2 Pitot Tube and Differential Pressure Gauge. Same as Method 2, Sections 2.1 and 2.2, respectively.

3.1.3 Filter Holder. Glass, same as Method 5, Section 2.1.5, except use a Teflon filter support or other non-metallic, non-contaminating support in place of the glass frit.

3.1.4 Filter Heating System. Same as Method 5, Section 2.1.6.

3.1.5 Condenser. Use the following system for condensing and collecting gaseous metals and determining the moisture content of the stack gas. The condensing system shall consist of four to seven impingers connected in series with leak-free ground glass fittings or other leak-free, non-contaminating fittings. Use the first impinger as a moisture trap. The second impinger (which is the first HNO_3/H_2O_2 impinger) shall be identical to the first impinger in Method 5. The third impinger (which is the second HNO_3/H_2O_2 impinger) shall be a Greenburg Smith impinger with the standard tip as described for the second impinger in Method 5, Section 2.1.7. The fourth (empty) impinger and the fifth and sixth (both acidified $KMnO_4$) impingers are the same as the first impinger in Method 5. Place a thermometer capable of measuring to within 1°C (2°F) at the outlet of the last impinger. If no Hg analysis is planned, then the fourth, fifth, and sixth impingers are not used.

3.1.6 Metering System, Barometer, and Gas Density Determination Equipment. Same as Method 5, Sections 2.1.8 through 2.1.10, respectively.

3.1.7 Teflon Tape. For capping openings and sealing connections, if necessary, on the sampling train.

3.2. Sample Recovery. Same as Method 5, Sections 2.2.1 through 2.2.8 (Probe-Liner and Probe-Nozzle Brushes or Swabs, Wash Bottles, Sample Storage Containers, Petri Dishes, Glass Graduated Cylinder, Plastic Storage Containers, Funnel and Rubber Policeman, and Glass Funnel), respectively, with the following exceptions and additions:

3.2.1 Non-metallic Probe-Liner and Probe-Nozzle Brushes or Swabs. Use non-metallic probe-liner and probe-nozzle brushes or swabs for quantitative recovery of materials collected in the front-half of the sampling train.

3.2.2 Sample Storage Containers. Use glass bottles (see the *Precaution:* in Section 4.3.2 of this Method) with Teflon-lined caps that are non-reactive to the oxidizing solutions, with capacities of 1000- and 500-ml, for storage of acidified $KMnO_4$- containing samples and blanks. Glass or polyethylene bottles may be used for other sample types.

3.2.3 Graduated Cylinder. Glass or equivalent.

3.2.4 Funnel. Glass or equivalent.

3.2.5 Labels. For identifying samples.

3.2.6 Polypropylene Tweezers and/or Plastic Gloves. For recovery of the filter from the sampling train filter holder.

3.3 Sample Preparation and Analysis.

3.3.1 Volumetric Flasks, 100-ml, 250-ml, and 100-ml. For preparation of standards and sample dilutions.

3.3.2 Graduated Cylinders. For preparation of reagents.

3.3.3 Parr[R] Bombs or Microwave Pressure Relief Vessels with Capping Station (CEM Corporation model or equivalent). For sample digestion.

3.3.4 Beakers and Watch Glasses. 250-ml beakers, with watch glass covers, for sample digestion.

3.3.5 Ring Stands and Clamps. For securing equipment such as filtration apparatus.

3.3.6 Filter Funnels. For holding filter paper.

3.3.7 Disposable Pasteur Pipets and Bulbs.

3.3.8 Volumetric Pipets.

3.3.9 Analytical Balance. Accurate to within .01 mg.

3.3.10 Microwave or Conventional Oven. For heating samples at fixed power levels or temperatures, respectively.

3.3.11 Hot Plates.

3.3.12 Atomic Absorption Spectrometer (AAS). Equipped with a background corrector.

3.3.12.1 Graphite Furnace Attachment. With Sb, As, Cd, Co, Pb, Se, and Tl hollow cathode lamps (HCLs) or electrodeless discharge lamps (EDLs). Same as Methods 7041 (Sb), 7060 (As), 7131 (Cd), 7201 (Co), 7421 (Pb), 7740 (Se), and 7841 (Tl) in EPA publication SW-846 Third Edition (November 1986) including updates I, II, IIA and IIB, as incorporated by reference in §60.17(i).

3.3.12.2 Cold Vapor Mercury Attachment. With a mercury HCL or EDL, an air recirculation pump, a quartz cell, an aerator apparatus, and a heat lamp or desiccator tube. The heat lamp shall be capable of raising the temperature at the quartz cell by 10°C above ambient, so that no condensation forms on the wall of the quartz cell. Same as Method 6020 in EPA publication SW-846 Third Edition (November 1986) including updates I, II, IIA and IIB, as incorporated by reference in §60.17(i). See NOTE NO. 2: Section 5.4.3 for other acceptable approaches for analysis of

Hg in which analytical detection limits of 0.002 ng/ml were obtained.

3.3.13 Inductively Coupled Argon Plasma Spectrometer. With either a direct or sequential reader and an alumina torch. Same as EPA Method 6010 in EPA publication SW-846 Third Edition (November 1986) including updates I, II, IIA and IIB, as incorporated by reference in §60.17(i).

3.3.14 Inductively Coupled Plasma-Mass Spectrometer. Same as EPA Method 6020 in EPA publication SW-846 Third Edition (November 1986) including updates I, II, IIA and IIB, as incorporated by reference in §60.17(i).

4. Reagents

4.1 Unless otherwise indicated, it is intended that all reagents conform to the specifications established by the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available. Otherwise, use the best available grade.

4.2 Sampling Reagents.

4.2.1 Sample Filters. Without organic binders. The filters shall contain less than 1.3 μg/in.[2] of each of the metals to be measured. Analytical results provided by filter manufacturers stating metals content of the filters are acceptable. However, if no such results are available, analyze filter blanks for each target metal prior to emission testing. Quartz fiber filters meeting these requirements are recommended. However, if glass fiber filters become available which meet these requirements, they may be used. Filter efficiencies and unreactiveness to sulfur dioxide (SO_2) or sulfur trioxide (SO_3) shall be as described in Section 3.1.1 of Method 5.

4.2.2 Water. To conform to ASTM Specification D1193-77, Type II (incorporated by reference—See §60.17). If necessary, analyze the water for all target metals prior to field use. All target metals should be less than 1 ng/ml.

4.2.3 Nitric Acid (HNO_3). Concentrated. Baker Instra-analyzed or equivalent.

4.2.4 Hydrochloric Acid (HCL). Concentrated. Baker Instra-analyzed or equivalent.

4.2.5 Hydrogen Peroxide (H_2O_2), 30 Percent (V/V).

4.2.6 Potassium Permanganate ($KMnO_4$).

4.2.7 Sulfuric Acid (H_2SO_4). Concentrated.

4.2.8 Silica Gel and Crushed Ice. Same as Method 5, Sections 3.1.2 and 3.1.4, respectively.

4.3 Pretest Preparation of Sampling Reagents.

4.3.1 HNO_3/H_2O_2 Absorbing Solution, 5 Percent HNO_3/10 Percent H_2O_2. Add carefully with stirring 50 ml of concentrated HNO_3 to a 1000-ml volumeric flask containing approximately 500 ml of water, and then add carefully with stirring 333 ml of 30 percent H_2O_2. Dilute to volume with water. Mix well. This reagent shall contain less than 2 ng/ml of each target metal.

4.3.2 Acidic $KMnO_4$ Absorbing Solution, 4 Percent $KMnO_4$ (W/V), 10 Percent H_2SO_4 (V/V). Prepare fresh daily. Mix carefully, with stirring, 100 ml of concentrated H_2SO_4 into approximately 800 ml of water, and add water with stirring to make a volume of 1 liter: this solution is 10 percent H_2SO_4 (V/V). Dissolve, with stirring, 40 g of $KMnO_4$ into 10 percent H_2SO_4 (V/V) and add 10 percent H_2SO_4 (V/V) with stirring to make a volume of 1 liter. Prepare and store in glass bottles to prevent degradation. This reagent shall contain less than 2 ng/ml of Hg.

Precaution: To prevent autocatalytic decomposition of the permanganate solution, filter the solution through Whatman 541 filter paper. Also, due to the potential reaction of the potassium permanganate with the acid, there could be pressure buildup in the solution storage bottle. Therefore these bottles shall not be fully filled and shall be vented to relieve excess pressure and prevent explosion potentials. Venting is required, but not in a manner that will allow contamination of the solution. A No. 70–72 hole drilled in the container cap and Teflon liner has been used.

4.3.3 HNO_3, 0.1 N. Add with stirring 6.3 ml of concentrated HNO_3 (70 percent) to a flask containing approximately 900 ml of water. Dilute to 1000 ml with water. Mix well. This reagent shall contain less than 2 ng/ml of each target metal.

4.3.4 HCl, 8 N. Carefully add with stirring 690 ml of concentrated HCl to a flask containing 250 ml of water. Dilute to 1000 ml with water. Mix well. This reagent shall contain less than 2 ng/ml of Hg.

4.4 Glassware Cleaning Reagents.

4.4.1 HNO_3, Concentrated. Fisher ACS grade or equivalent.

4.4.2 Water. To conform to ASTM Specification D1193-77, Type II (incorporated by reference—See §60.17).

4.4.3 HNO_3, 10 Percent (V/V). Add with stirring 500 ml of concentrated HNO_3 to a flask containing approximately 4000 ml of water. Dilute to 5000 ml with water. Mix well. This reagent shall contain less than 2 ng/ml of each target metal.

4.5 Sample Digestion and Analysis Reagents.

The metals standards, except Hg, may also be made from solid chemicals as described in Citation 3 of the Bibliography. Refer to Citations 1, 2, or 5 of the Bibliography for additional information on Hg standards. The 1000 μg/ml Hg stock solution standard may be made according to Section 6.2.5 of Method 101A.

4.5.1 HCL, Concentrated.

4.5.2 Hydrofluoric Acid (HF), Concentrated.

4.5.3 HNO_3, Concentrated. Baker Instra-analyzed or equivalent.

HNO_3, 50 Percent (V/V). Add with stirring 125 ml of concentrated HNO_3 to 100 ml of water. Dilute to 250 ml with water. Mix well. This reagent shall contain less than 2 ng/ml of each target metal.

4.5.5 HNO_3, 5 Percent (V/V). Add with stirring 50 ml of concentrated HNO_3 to 800 ml of water. Dilute to 1000 ml with water. Mix well. This reagent shall contain less than 2 ng/ml of each target metal.

4.5.6 Water. To conform to ASTM Specification D1193-77, Type II (incorporated by reference—See §60.17).

4.5.7 Hydroxylamine Hydrochloride and Sodium Chloride Solution. See Citation 2 of the Bibliography for preparation.

4.5.8 Stannous Chloride. See Citation 2 of the Bibliography for preparation.

4.5.9 $KMnO_4$, 5 Percent (W/V). See Citation 2 of the Bibliography for preparation.

4.5.10 H_2SO_4, Concentrated.

4.5.11 Potassium Persulfate, 5 Percent (W/V). See Citation 2 of the Bibliography for preparation.

4.5.12 Nickel Nitrate, Ni $(NO_3)_2$ $6H_2O$.

4.5.13 Lanthanum Oxide, La_2O_3.

4.5.14 Hg Standard (AAS Grade), 1000 µg/ml.

4.5.15 Pb Standard (AAS Grade), 1000 µg/ml.

4.5.16 As Standard (AAS Grade), 1000 µg/ml.

4.5.17 Cd Standard (AAS Grade), 1000 µg/ml.

4.5.18 Cr Standard (AAS Grade), 1000 µg/ml.

4.5.19 Sb Standard (AAS Grade), 1000 µg/ml.

4.5.20 Ba Standard (AAS Grade), 1000 µg/ml.

4.5.21 Be Standard (AAS Grade), 1000 µg/ml.

4.5.22 Co Standard (AAS Grade), 1000 µg/ml.

4.5.23 Cu Standard (AAS Grade), 1000 µg/ml.

4.5.24 Mn Standard (AAS Grade), 1000 µg/ml.

4.5.25 Ni Standard (AAS Grade), 1000 µg/ml.

4.5.26 P Standard (AAS Grade), 1000 µg/ml.

4.5.27 Se Standard (AAS Grade), 1000 µg/ml.

4.5.28 Ag Standard (AAS Grade), 1000 µg/ml.

4.5.29 Tl Standard (AAS Grade), 1000 µg/ml.

4.5.30 Zn Standard (AAS Grade), 1000 µg/ml.

4.5.31 Al Standard (AAS Grade), 1000 µg/ml.

4.5.32 Fe Standard (AAS Grade), 1000 µg/ml.

4.5.33 Hg Standards and Quality Control Samples. Prepare fresh weekly a 10 µg/ml intermediate Hg standard by adding 5 ml of 1000 µg/ml Hg stock solution prepared according to Method 101A to a 500-ml volumetric flask; dilute with stirring to 500 ml by first carefully adding 20 ml of 15 percent HNO_3 and then adding water to the 500-ml volume. Mix well. Prepare a 200 ng/ml working Hg standard solution fresh daily: add 5 ml of the 10 µg/ml intermediate standard to a 250-ml volumetric flask, and dilute to 250 ml with 5 ml of 4 percent $KMnO_4$, 5 ml of 15 percent HNO_3, and then water. Mix well. Use at least five separate aliquots of the working Hg standard solution and a blank to prepare the standard curve. These aliquots and blank shall contain 0.0, 1.0, 2.0, 3.0, 4.0, and 5.0 ml of the working standard solution containing 0, 200, 400, 600, 800, and 1000 ng Hg, respectively. Prepare quality control samples by making a separate 10 µg/ml standard and diluting until in the calibration range.

4.5.34 ICAP Standards and Quality Control Samples. Calibration standards for ICAP analysis can be combined into four different mixed standard solutions as follows:

MIXED STANDARD SOLUTIONS FOR ICAP ANALYSIS

Solution	Elements
I	As, Be, Cd, Mn, Pb, Se, Zn.
II	Ba, Co, Cu, Fe.
III	Al, Cr, Ni.
IV	Ag, P, Sb, Tl.

Prepare these standards by combining and diluting the appropriate volumes of the 1000 µg/ml solutions with 5 percent HNO_3. A minimum of one standard and a blank can be used to form each calibration curve. However, prepare a separate quality control sample spiked with known amounts of the target metals in quantities in the mid-range of the calibration curve. Suggested standard levels are 25 µg/ml for Al, Cr and Pb, 15 µg/ml for Fe, and 10 µg/ml for the remaining elements. Prepare any standards containing less than 1 µg/ml of metal on a daily basis. Standards containing greater than 1 µg/ml of metal should be stable for a minimum of 1 to 2 weeks. For ICP-MS, follow Method 6020 in EPA Publication SW-846 Third Edition (November 1986) including updates I, II, IIA and IIB, as incorporated by reference in §60.17(i).

4.5.35 GFAAS Standards. Sb, As, Cd, Co, Pb, Se, and Tl. Prepare a 10 µg/ml standard by adding 1 ml of 1000 µg/ml standard to a 100-ml volumetric flask. Dilute with stirring to 100 ml with 10 percent HNO_3. For GFAAS, matrix match the standards. Prepare a 100 ng/ml standard by adding 1 ml of the 10 µg/ml standard to a 100-ml volumetric flask, and dilute to 100 ml with the appropriate matrix solution. Prepare other standards by diluting the 100 ng/ml standards. Use at least five standards to make up the standard curve. Suggested levels are 0, 10, 50, 75, and 100 ng/ml. Prepare quality control samples by making a separate 10 µg/ml standard and diluting until it is in the range of the samples. Prepare any standards containing less than 1 µg/ml of metal on a daily basis. Standards containing greater than 1 µg/ml of metal should be stable for a minimum of 1 to 2 weeks.

4.5.36 Matrix Modifiers.

4.5.36.1 Nickel Nitrate, 1 Percent (V/V). Dissolve 4.956 g of Ni $(NO_3)_2$•$6H_2O$ or other nickel compound suitable for preparation of this matrix modifier in approximately 50 ml of water in a 100-ml volumetric flask. Dilute to 100 ml with water.

4.5.36.2 Nickel Nitrate, 0.1 Percent (V/V). Dilute 10 ml of 1 percent nickel nitrate solution to 100 ml with water. Inject an equal amount of sample and this modifier into the graphite furnace during GFAAS analysis for As.

4.5.36.3 Lanthanum. Carefully dissolve 0.5864 g of La_2O_3 in 10 ml of concentrated HNO_3, and dilute the solution by adding it with stirring to approximately 50 ml of water. Dilute to 100 ml with water, and mix well. Inject an equal amount of sample and this modifier into the graphite furnace during GFAAS analysis for Pb.

4.5.37 Whatman 40 and 541 Filter Papers (or equivalent). For filtration of digested samples.

5. Procedure

5.1 Sampling. The complexity of this method is such that, to obtain reliable results, both testers and analysts must be trained and experienced with the test procedures, including source sampling; reagent preparation and handling; sample handling; safety equipment and procedures; analytical calculations; reporting; and the specific procedural descriptions throughout this method.

5.1.1 Pretest Preparation. Follow the same general procedure given in Method 5, Section 4.1.1, except that, unless particulate emissions are to be determined, the filter need not be desiccated or weighed. First, rinse all sampling train glassware with hot tap water and then wash in hot soapy water. Next, rinse glassware three times with tap water, followed by three additional rinses with water. Then soak all glassware in a 10 percent (V/V) nitric acid solution for a minimum of 4 hours, rinse three times with water, rinse a final time with acetone, and allow to air dry. Cover all glassware openings where contamination can occur until the sampling train is assembled for sampling.

5.1.2 Preliminary Determinations. Same as Method 5, Section 4.1.2.

5.1.3 Preparation of Sampling Train.

5.1.3.1 Set up the sampling train as shown in Figure 29-1. Follow the same general procedures given in Method 5, Section 4.1.3, except place 100 ml of the HNO_3/H_2O_2 solution (Section 4.3.1. of this method) in each of the second and third impingers as shown in Figure 29-1. Place 100 ml of the acidic $KMnO_4$ absorbing solution (Section 4.3.2 of this method) in each of the fifth and sixth impingers as shown in Figure 29-1, and transfer approximately 200 to 300 g of pre-weighed silica gel from its container to the last impinger. Alternatively, the silica gel may be weighed directly in the impinger just prior to final train assembly.

5.1.3.2 Based on the specific source sampling conditions, the use of an empty first impinger can be eliminated if the moisture to be collected in the impingers will be less than approximately 100 ml.

5.1.3.3 If Hg analysis will not be performed, the fourth, fifth, and sixth impingers as shown in Figure 29-1 are not required.

5.1.3.4 To insure leak-free sampling train connections and to prevent possible sample contamination problems, use Teflon tape or other non-contaminating material instead of silicone grease.

Precaution: Exercise extreme care to prevent contamination within the train. Prevent the acidic $KMnO_4$ from contacting any glassware that contains sample material to be analyzed for Mn. Prevent acidic H_2O_2 from mixing with the acidic $KMnO_4$.

5.1.4 Leak-Check Procedures. Follow the leak-check procedures given in Method 5, Section 4.1.4.1 (Pretest Leak-Check), Section 4.1.4.2 (Leak-Checks During the Sample Run), and Section 4.1.4.3 (Post-Test Leak-Checks).

5.1.5 Sampling Train Operation. Follow the procedures given in Method 5, Section 4.1.5. When sampling for Hg, use a procedure analagous to that described in Section 7.1.1 of Method 101A, 40 CFR Part 61, Appendix B. If necessary to maintain the desired color in the last acidified permanganate impinger. For each run, record the data required on a data sheet such as the one shown in Figure 5-2 of Method 5.

5.1.6 Calculation of Percent Isokinetic. Same as Method 5, Section 4.1.6.

5.2 Sample Recovery.

5.2.1 Begin cleanup procedures as soon as the probe is removed from the stack at the end of a sampling period. The probe should be allowed to cool prior to sample recovery. When it can be safely handled, wipe off all external particulate matter near the tip of the probe nozzle and place a rinsed, non-contaminating cap over the probe nozzle to prevent losing or gaining particulate matter. Do not cap the probe tip tightly while the sampling train is cooling; a vacuum can form in the filter holder with the undesired result of drawing liquid from the impingers onto the filter.

5.2.2 Before moving the sampling train to the cleanup site, remove the probe from the sampling train and cap the open outlet. Be careful not to lose any condensate that might be present. Cap the filter inlet where

the probe was fastened. Remove the umbilical cord from the last impinger and cap the impinger. Cap the filter holder outlet and impinger inlet. Use non-contaminating caps, whether ground-glass stoppers, plastic caps, serum caps, or Teflon tape to close these openings.

5.2.3 Alternatively, the following procedure may be used to disassemble the train before the probe and filter holder/oven are completely cooled: Initially disconnect the filter holder outlet/impinger inlet and loosely cap the open ends. Then disconnect the probe from the filter holder or cyclone inlet and loosely cap the open ends. Cap the probe tip and remove the umbilical cord as previously described.

5.2.4 Transfer the probe and filter-impinger assembly to a cleanup area that is clean and protected from the wind and other potential causes of contamination or loss of sample. Inspect the train before and during disassembly and note any abnormal conditions. Take special precautions to assure that all the items necessary for recovery do not contaminate the samples. The sample is recovered and treated as follows (see schematic in Figures 29–2a and 29–2b):

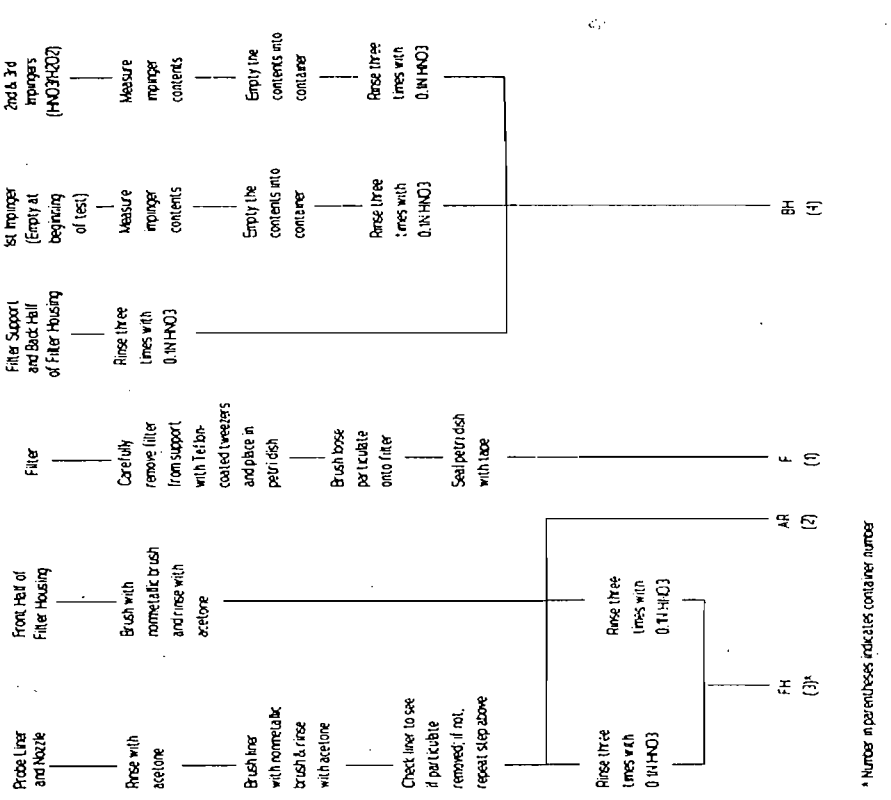

Figure 29-2a. Sample recovery scheme.

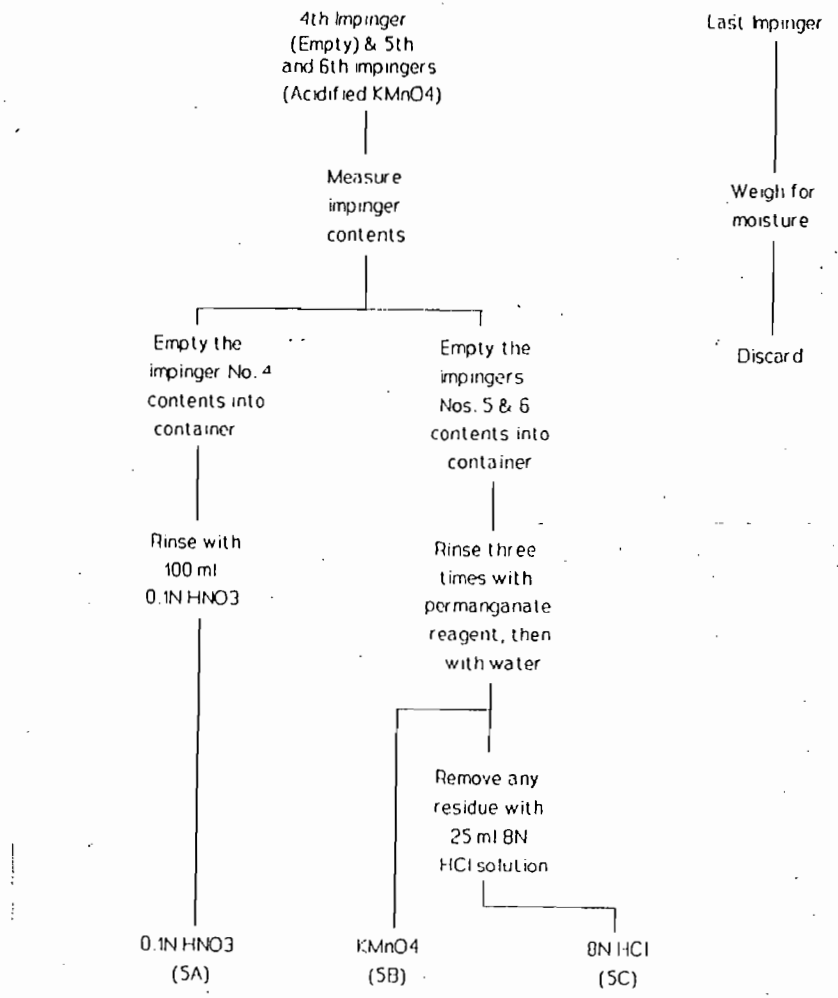

Figure 29-2b. Sample recovery scheme.

5.2.5 Container No. 1 (Sample Filter). Carefully remove the filter from the filter holder and place it in its labeled petri dish container. To handle the filter, use either acid-washed polypropylene or Teflon coated tweezers or clean, disposable surgical gloves rinsed with water and dried. If it is necessary to fold the filter, make certain the particulate cake is inside the fold. Carefully transfer the filter and any particulate matter or filter fibers that adhere to the filter holder gasket to the petri dish by using a dry (acid-cleaned) nylon bristle brush. Do not use any metal-containing materials when recovering this train. Seal the labeled petri dish.

5.2.6 Container No. 2. (Acetone Rinse). Perform this procedure only if a determination of particulate emissions is to be made. Quantitatively recover particulate matter and any condensate from the probe nozzle, probe fitting, probe liner, and front half of the filter holder by washing these components with a total of 100 ml of acetone, while simultaneously taking great care to see that no dust on the outside of the probe or other surfaces gets in the sample. The use of exactly 100 ml is necessary for the subsequent blank correction procedures. Distilled water may be used instead of acetone when approved by the Administrator and shall be used when specified by the Administrator; in these cases, save a water blank and follow the Administrator's directions on analysis.

5.2.6.1 Carefully remove the probe nozzle, and clean the inside surface by rinsing with acetone from a wash bottle while brushing with a non-metallic brush. Brush until the acetone rinse shows no visible particles, then make a final rinse of the inside surface with acetone.

5.2.6.2 Brush and rinse the sample exposed inside parts of the probe fitting with acetone in a similar way until no visible particles remain. Rinse the probe liner with acetone by tilting and rotating the probe while squirting acetone into its upper end so that all inside surfaces will be wetted with acetone. Allow the acetone to drain from the lower end into the sample container. A funnel may be used to aid in transferring liquid washings to the container. Follow the acetone rinse with a non-metallic probe brush. Hold the probe in an inclined position, squirt acetone into the upper end as the probe brush is being pushed with a twisting action three times through the probe. Hold a sample container underneath the lower end of the probe, and catch any acetone and particulate matter which is brushed through the probe until no visible particulate matter is carried out with the acetone or until none remains in the probe liner on visual inspection. Rinse the brush with acetone, and quantitatively collect these washings in the sample container. After the brushing, make a final acetone rinse of the probe as described above.

5.2.6.3 It is recommended that two people clean the probe to minimize sample losses. Between sampling runs, keep brushes clean and protected from contamination. Clean the inside of the front-half of the filter holder by rubbing the surfaces with a non-metallic brush and rinsing with acetone. Rinse each surface three times or more if needed to remove visible particulate. Make a final rinse of the brush and filter holder. After all acetone washings and particulate matter have been collected in the sample container, tighten the lid so that acetone will not leak out when shipped to the laboratory. Mark the height of the fluid level to determine whether or not leakage occurred during transport. Clearly label the container to identify its contents.

5.2.7 Container No. 3 (Probe Rinse). Keep the probe assembly clean and free from contamination during the probe rinse. Rinse the probe nozzle and fitting, probe liner, and front-half of the filter holder thoroughly with a total of 100 ml of 0.1 N HNO_3, and place the wash into a sample storage container.

(NOTE: The use of a total of exactly 100 ml is necessary for the subsequent blank correction procedures.)

Perform the rinses as applicable and generally as described in Method 12, Section 5.2.2. Record the volume of the rinses. Mark the height of the fluid level on the outside of the storage container and use this mark to determine if leakage occurs during transport. Seal the container, and clearly label the contents. Finally, rinse the nozzle, probe liner, and front-half of the filter holder with water followed by acetone, and discard these rinses.

5.2.8 Container No. 4 (Impingers 1 through 3, Moisture Knockout Impinger, when used, HNO_3/H_2O_2 Impingers Contents and Rinses). Due to the potentially large quantity of liquid involved, the tester may place the impinger solutions from impingers 1 through 3 in more than one container, if necessary. Measure the liquid in the first three impingers to within 0.5 ml using a graduated cylinder. Record the volume. This information is required to calculate the moisture content of the sampled flue gas. Clean each of the first three impingers, the filter support, the back half of the filter housing, and connecting glassware by thoroughly rinsing with 100 ml of 0.1 N HNO_3 using the procedure as applicable in Method 12, Section 5.2.4.

(NOTE: The use of exactly 100 ml of 0.1 N HNO_3 rinse is necessary for the subsequent blank correction procedures. Combine the rinses and impinger solutions, measure and record the final total volume. Mark the height of the fluid level, seal the container, and clearly label the contents.)

5.2.9 Container Nos. 5A (0.1 N HNO_3), 5B ($KMnO_4/H_2SO_4$ absorbing solution), and 5C (8 N HCl rinse and dilution).

5.2.9.1 When sampling for Hg, pour all the liquid from the impinger (normally impinger No. 4) that immediately preceded the two permanganate impingers into a graduated cylinder and measure the volume to within 0.5 ml. This information is required to calculate the moisture content of the sampled flue gas. Place the liquid in Container No. 5A. Rinse the impinger with exactly 100 ml of 0.1 N HNO_3 and place this rinse in Container No. 5A.

5.2.9.2 Pour all the liquid from the two permanganate impingers into a graduated cylinder and measure the volume to within 0.5 ml. This information is required to calculate the moisture content of the sampled flue gas. Place this acidic $KMnO_4$ solution into Container No. 5B. Using a total of exactly 100 ml of fresh acidified $KMnO_4$ solution for all rinses (approximately 33 ml per rinse), rinse the two permanganate impingers and connecting glassware a minimum of three times. Pour the rinses into Container No. 5B, carefully assuring transfer of all loose precipitated materials from the two impingers. Similarly, using 100 ml total of water, rinse the permanganate impingers and connecting glass a minimum of three times, and pour the rinses into Container 5B, carefully assuring transfer of any loose precipitated material. Mark the height of the fluid level, and clearly label the contents. Read the Precaution: in Section 4.3.2. *NOTE:* Due to the potential reaction of $KMnO_4$ with acid, pressure buildup can occur in the sample storage bottles. Do not fill these bottles completely and take precautions to relieve excess pressure. A No. 70-72 hole drilled in the container cap and Teflon liner has been used successfully.

5.2.9.3 If no visible deposits remain after the water rinse, no further rinse is necessary. However, if deposits remain on the impinger surfaces, wash them with 25 ml of 8 N HCl, and place the wash in a separate sample container labeled No. 5C containing 200 ml of water. First, place 200 ml of water in the container. Then wash the impinger walls and stem with the HCl by turning the impinger on its side and rotating it so that the HCl contacts all inside surfaces. Use a total of only 25 ml of 8 N HCl for rinsing both permanganate impingers combined. Rinse the first impinger, then pour the actual rinse used for the first impinger into the second impinger for its rinse. Finally, pour the 25 ml of 8 N HCl rinse carefully into the container. Mark the height of the fluid level on the outside of the container to determine if leakage occurs during transport.

5.2.10 Container No. 6 (Silica Gel). Note the color of the indicating silica gel to determine whether it has been completely spent and make a notation of its condition. Transfer the silica gel from its impinger to its original container and seal it. The tester may use a funnel to pour the silica gel and a rubber policeman to remove the silica gel from the impinger. The small amount of particles that might adhere to the impinger wall need not be removed. Do not use water or other liquids to transfer the silica gel since weight gained in the silica gel impinger is used for moisture calculations. Alternatively, if a balance is available in the field, record the weight of the spent silica gel (or silica gel plus impinger) to the nearest 0.5 g.

5.2.11 Container No. 7 (Acetone Blank). If particulate emissions are to be determined, at least once during each field test, place a 100-ml portion of the acetone used in the sample recovery process into a container labeled No. 7. Seal the container.

5.2.12 Container No. 8A (0.1 N HNO_3 Blank). At least once during each field test, place 300 ml of the 0.1 N HNO_3 solution used in the sample recovery process into a container labeled No. 8A. Seal the container.

5.2.13 Container No. 8B (Water Blank). At least once during each field test, place 100 ml of the water used in the sample recovery process into a container labeled No. 8B. Seal the container.

5.2.14 Container No. 9 (5 Percent HNO_3/10 Percent H_2O_2 Blank). At least once during each field test, place 200 ml of the 5 Percent HNO_3/10 Percent H_2O_2 solution used as the nitric acid impinger reagent into a container labeled No. 9. Seal the container.

5.2.15 Container No. 10 (Acidified $KMnO_4$ Blank). At least once during each field test, place 100 ml of the acidified $KMnO_4$ solution used as the impinger solution and in the sample recovery process into a container labeled No. 10. Prepare the container as described in Section 5.2.9.2. Read the *Precaution:* in Section 4.3.2. and read the NOTE in Section 5.2.9.2.

5.2.16 Container No. 11 (8 N HCl Blank). At least once during each field test, place 200 ml of water into a sample container labeled No. 11. Then carefully add with stirring 25 ml of 8 N HCl. Mix well and seal the container.

5.2.17 Container No. 12 (Sample Filter Blank). Once during each field test, place into a petri dish labeled No. 12 three unused blank filters from the same lot as the sampling filters. Seal the petri dish.

5.3 *Sample Preparation.* Note the level of the liquid in each of the containers and determine if any sample was lost during shipment. If a noticeable amount of leakage has occurred, either void the sample or use methods, subject to the approval of the Administrator, to correct the final results. A diagram illustrating sample preparation and analysis procedures for each of the sample train components is shown in Figure 29-3.

5.3.1 *Container No. 1 (Sample Filter).*

5.3.1.1 If particulate emissions are being determined, first desiccate the filter and filter catch without added heat (do not heat the filters to speed the drying) and weigh to a constant weight as described in Section 4.3 of Method 5.

5.3.1.2 Following this procedure, or initially, if particulate emissions are not being determined in addition to metals analysis, divide the filter with its filter catch into portions containing approximately 0.5 g each. Place the pieces in the analyst's choice of either individual microwave pressure relief vessels or Parr® Bombs. Add 6 ml of concentrated HNO_3 and 4 ml of concentrated HF to each vessel. For microwave heating, microwave the samples for approximately 12 to 15 minutes total heating time as follows: heat for 2 to 3 minutes, then turn off the microwave for 2 to 3 minutes, then heat for 2 to 3 minutes, etc., continue this alternation until the 12 to 15 minutes total heating time are completed (this procedure should comprise approximately 24 to 30 minutes at 600 watts). Microwave heating times are approximate and are dependent upon the number of samples being digested simultaneously. Sufficient heating is evidenced by sorbent reflux within the vessel. For conventional heating, heat the Parr® Bombs at 140 °C (285 °F) for 6 hours. Then cool the samples to room temperature, and combine with the acid digested probe rinse as required in Section 5.3.3.

5.3.1.3 If the sampling train includes an optional glass cyclone in front of the filter, prepare and digest the cyclone catch by the procedures described in section 5.3.1.2 and then combine the digestate with the digested filter sample.

5.3.2 Container No. 2 (Acetone Rinse). Note the level of liquid in the container and confirm on the analysis sheet whether or not leakage occurred during transport. If a noticeable amount of leakage has occurred, either void the sample or use methods, subject to the approval of the Administrator, to correct the final results. Measure the liquid in this container either volumetrically within 1 ml or gravimetrically within 0.5 g. Transfer the contents to an acid-cleaned, tared 250-ml beaker and evaporate to dryness at ambient temperature and pressure. If particulate emissions are being determined, desiccate for 24 hours without added heat, weigh to a constant weight according to the procedures described in Section 4.3 of Method 5, and report the results to the nearest 0.1 mg. Redissolve the residue with 10 ml of concentrated HNO_3.

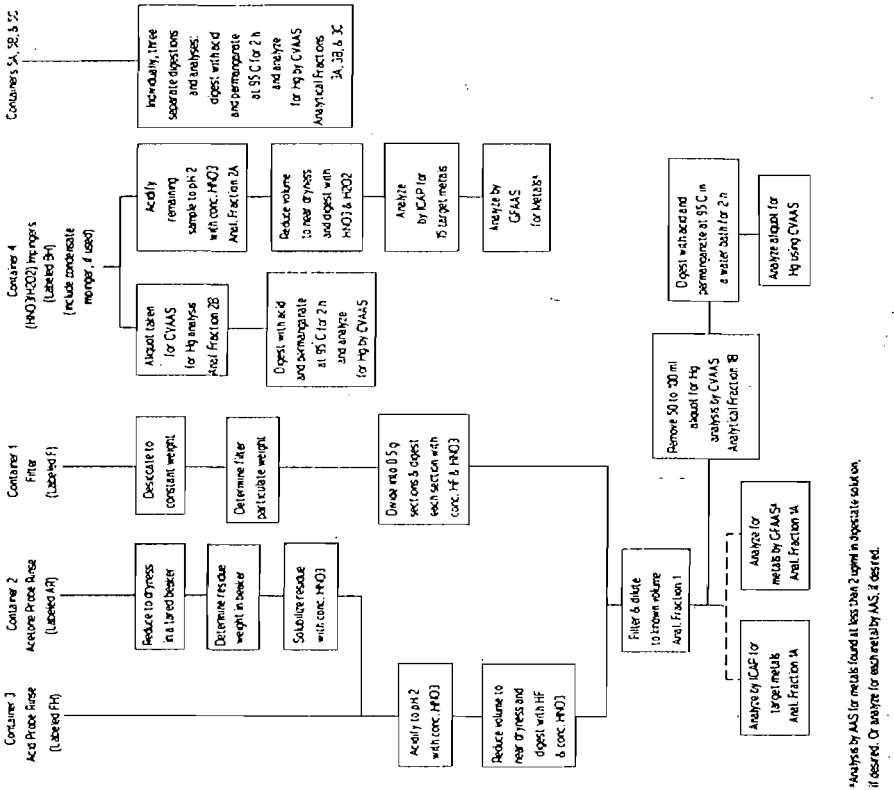

Figure 29-3. Sample preparation and analysis scheme.

Quantitatively combine the resultant sample, including all liquid and any particulate matter, with Container No. 3 before beginning Section 5.3.3.

5.3.3 Container No. 3 (Probe Rinse). Verify that the pH of this sample is 2 or lower. If it is not, acidify the sample by careful addition with stirring of concentrated HNO_3 to pH 2. Use water to rinse the sample into a beaker, and cover the beaker with a ribbed watch glass. Reduce the sample volume to approximately 20 ml by heating on a hot plate at a temperature just below boiling. Digest the sample in microwave vessels or Parr[R] Bombs by quantitatively transferring the sample to the vessel or bomb, carefully adding the 6 ml of concentrated HNO_3, 4 ml of concentrated HF, and then continuing to follow the procedures described in Section 5.3.1.2. Then combine the resultant sample directly with the acid digested portions of the filter prepared previously in Section 5.3.1.2. The resultant combined sample is referred to as *"Sample Fraction 1"*. Filter the combined sample using Whatman 541 filter paper. Dilute to 300 ml (or the appropriate volume for the expected metals concentration) with water. This diluted sample is *"Analytical Fraction 1"*. Measure and record the volume of Analytical Fraction 1 to within 0.1 ml. Quantitatively remove a 50-ml aliquot and label as *"Analytical Fraction 1B"*. Label the remaining 250-ml portion as *"Analytical Fraction 1A"*. Analytical Fraction 1A is used for ICAP or AAS analysis for all desired metals except Hg. Analytical Fraction 1B is used for the determination of front-half Hg.

5.3.4 Container No. 4 (Impingers 1-3). Measure and record the total volume of this sample to within 0.5 ml and label it *"Sample Fraction 2"*. Remove a 75- to 100-ml aliquot for Hg analysis and label the aliquot *"Analytical Fraction 2B"*. Label the remaining portion of Container No. 4 as *"Sample Fraction 2A"*. Sample Fraction 2A defines the volume of Analytical Fraction 2A *prior* to digestion. All of Sample Fraction 2A is digested to produce *"Analytical Fraction 2A"*. Analytical Fraction 2A defines the volume of Sample Fraction 2A *after* its digestion and the volume of Analytical Fraction 2A is normally 150 ml. Analytical Fraction 2A is analyzed for all metals except Hg. Verify that the pH of Sample Fraction 2A is 2 or lower. If necessary, use concentrated HNO_3 by careful addition and stirring to lower Sample Fraction 2A to pH 2. Use water to rinse Sample Fraction 2A into a beaker and then cover the beaker with a ribbed watch glass. Reduce Sample Fraction 2A to approximately 20 ml by heating on a hot plate at a temperature just below boiling. Then follow either of the digestion procedures described in Sections 5.3.4.1 or 5.3.4.2.

5.3.4.1 Conventional Digestion Procedure. Add 30 ml of 50 percent HNO_3, and heat for 30 minutes on a hot plate to just below boiling. Add 10 ml of 3 percent H_2O_2 and heat for 10 more minutes. Add 50 ml of hot water, and heat the sample for an additional 20 minutes. Cool, filter the sample, and dilute to 150 ml (or the appropriate volume for the expected metals concentrations) with water. This dilution produces Analytical Fraction 2A. Measure and record the volume to within 0.1 ml.

5.3.4.2 Microwave Digestion Procedure. Add 10 ml of 50 percent HNO_3 and heat for 6 minutes total *heating* time in alternations of 1 to 2 minutes at 600 Watts followed by 1 to 2 minutes with no power, etc., similar to the procedure described in Section 5.3.1. Allow the sample to cool. Add 10 ml of 3 percent H_2O_2 and heat for 2 more minutes. Add 50 ml of hot water, and heat for an additional 5 minutes. Cool, filter the sample, and dilute to 150 ml (or the appropriate volume for the expected metals concentrations) with water. This dilution produces Analytical Fraction 2A. Measure and record the volume to within 0.1 ml.

(NOTE: All microwave heating times given are approximate and are dependent upon the number of samples being digested at a time. Heating times as given above have been found acceptable for simultaneous digestion of up to 12 individual samples. Sufficient heating is evidenced by solvent reflux within the vessel.)

5.3.5 Container No. 5A (Impinger 4), Container Nos. 5B and 5C (Impingers 5 and 6). Keep the samples in Containers Nos. 5A, 5B, and 5C separate from each other. Measure and record the volume of 5A to within 0.5 ml. Label the contents of Container No. 5A to be Analytical Fraction 3A. To remove any brown MnO_2 precipitate from the contents of Container No. 5B, filter its contents through Whatman 40 filter paper into a 500 ml volumetric flask and dilute to volume with water. Save the filter for digestion of the brown MnO_2 precipitate. Label the 500 ml filtrate from Container No. 5B to be Analytical Fraction 3B. Analyze Analytical Fraction 3B for Hg within 48 hours of the filtration step. Place the saved filter, which was used to remove the brown MnO_2 precipitate, into an appropriately sized *vented* container, which will allow release of any gases including chlorine formed when the filter is digested. In a laboratory hood which will remove any gas produced by the digestion of the MnO_2, add 25 ml of 8 N HCl to the filter and allow to digest for a minimum of 24 hours at room temperature. Filter the contents of Container No. 5C through a Whatman 40 filter into a 500-ml volumetric flask. Then filter the result of the digestion of the brown MnO_2 from Container No. 5B through a Whatman 40 filter into the same 500-ml volumetric flask, and dilute and mix well to volume with water. Discard the Whatman 40 filter.

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Mark this combined 500-ml dilute HCl solution as Analytical Fraction 3C.

5.3.6 Container No. 6 (Silica Gel). Weigh the spent silica gel (or silica gel plus impinger) to the nearest 0.5 g using a balance.

5.4 Sample Analysis. For each sampling train sample run, seven individual analytical samples are generated; two for all desired metals except Hg, and five for Hg. A schematic identifying each sample container and the prescribed analytical preparation and analysis scheme is shown in Figure 29-3. The first two analytical samples, labeled Analytical Fractions 1A and 1B, consist of the digested samples from the front-half of the train. Analytical Fraction 1A is for ICAP, ICP-MS or AAS analysis as described in Sections 5.4.1 and 5.4.2, respectively. Analytical Fraction 1B is for front-half Hg analysis as described in Section 5.4.3. The contents of the back-half of the train are used to prepare the third through seventh analytical samples. The third and fourth analytical samples, labeled Analytical Fractions 2A and 2B, contain the samples from the moisture removal impinger No. 1, if used, and HNO_3/H_2O_2 impingers Nos. 2 and 3. Analytical Fraction 2A is for ICAP, ICP-MS or AAS analysis for target metals, except Hg. Analytical Fraction 2B is for analysis for Hg. The fifth through seventh analytical samples, labeled Analytical Fractions 3A, 3B, and 3C, consist of the impinger contents and rinses from the empty impinger No. 4 and the $H_2SO_4/KMnO_4$ impingers Nos. 5 and 6. These analytical samples are for analysis for Hg as described in Section 5.4.3. The total back-half Hg catch is determined from the sum of Analytical Fractions 2B, 3A, 3B, and 3C. Analytical Fractions 1A and 2A can be combined proportionally prior to analysis.

5.4.1 ICAP and ICP-MS Analysis. Analyze Analytical Fractions 1A and 2A by ICAP using Method 6010 or Method 200.7 (40 CFR part 136, appendix C). Calibrate the ICAP, and set up an analysis program as described in Method 6010 or Method 200.7. Follow the quality control procedures described in Section 7.3.1. Recommended wavelengths for analysis are as follows:

Element	Wavelength (nm)
Aluminum	308.215
Antimony	206.833
Arsenic	193.696
Barium	455.403
Beryllium	313.042
Cadmium	226.502
Chromium	267.716
Cobalt	228.616
Copper	324.754
Iron	259.940
Lead	220.353
Manganese	257.610
Nickel	231.604
Phosphorous	214.914
Selenium	196.026
Silver	328.068
Thallium	190.864
Zinc	213.856

These wavelengths represent the best combination of specificity and potential detection limit. Other wavelengths may be substituted if they can provide the needed specificity and detection limit, and are treated with the same corrective techniques for spectral interference. Initially, analyze all samples for the target metals (except Hg) plus Fe and Al. If Fe and Al are present, the sample might have to be diluted so that each of these elements is at a concentration of less than 50 ppm so as to reduce their spectral interferences on As, Cd, Cr, and Pb. Perform ICP-MS analysis by following Method 6020 in EPA Publication SW-846 Third Edition (November 1986) including updates I, II, IIA, and IIB, as incorporated by reference in §60.17(i).

(NOTE: When analyzing samples in a HF matrix, an alumina torch should be used; since all front-half samples will contain HF, use an alumina torch.)

5.4.2. AAS by Direct Aspiration and/or GFAAS. If analysis of metals in Analytical Fractions 1A and 2A by using GFAAS or direct aspiration AAS is needed, use Table 29-2 to determine which techniques and procedures to apply for each target metal. Use Table 29-2, if necessary, to determine techniques for minimization of interferences. Calibrate the instrument according to Section 6.3 and follow the quality control procedures specified in Section 7.3.2.

TABLE 29-2.—APPLICABLE TECHNIQUES, METHODS AND MINIMIZATION OF INTERFERENCE FOR AAS ANALYSIS

Metal	Technique	SW-846[1] method No.	Wavelength (nm)	Interferences	
				Cause	Minimization
Fe	Aspiration	7380	248.3	Contamination	Great care taken to avoid contamination.
Pb	Aspiration	7420	283.3	217.0 nm alternate	Background correction required.

TABLE 29-2.—APPLICABLE TECHNIQUES, METHODS AND MINIMIZATION OF INTERFERENCE FOR AAS ANALYSIS—Continued

Metal	Technique	SW-846[1] method No.	Wavelength (nm)	Interferences	
				Cause	Minimization
Pb	Furnace	7421	283.3	Poor recoveries	Matrix modifier, add 10 ul of phosphorus acid to 1 ml of prepared sample in sampler cup.
Mn	Aspiration	7460	279.5	403.1 nm alternate	Background correction required.
Ni	Aspiration	7520	232.0	352.4 nm alternate Fe, Co, and Cr.	Background correction required. Matrix matching or nitrous-oxide/acetylene flame.
				Nonlinear response	sample dilution or use 352.3 nm line.
Se	Furnace	7740	196.0	Volatility	Spike samples and reference materials and add nickel nitrate to minimize volatilization.
				Adsorption & scatter	Background correction is required and Zeeman background correction can be useful.
Ag	Aspiration	7760	328.1	Adsorption & Scatter AgCl insoluble.	Background correction is required. Avoid Hydrochloric acid unless silver is in solution as a chloride complex Sample and standards monitored for aspiration rate.
Tl	Aspiration	7840	276.8		Background correction is required. Hydrochloric acid should not be used.
Tl	Furnace	7841	276.8	Hydrochloric acid or chloride.	Background correction is required. Verify that losses are not occurring for volatization by spiked samples or standard addition; Palladium is a suitable matrix modifier.
Zn	Aspiration	7950	213.9	High Si, Cu, & P Contamination.	Strontium removes Cu and phosphate, Great care taken to avoid contamination.
Sb	Aspiration	7040	217.6	1000 mg/ml Pb Ni, Cu, or acid.	Use secondary wavelengths of 231.1.nm; match sample & standards acid concentration or use nitrous oxidefacetylene flame.
Sb	Furnace	7041	217.6	High Pb	Secondary Wavelength or Zeeman correction.
As	Furnace	7060	193.7	Arsenic volatilization	Spiked samples and add nickel nitrate solution to digestates prior to analysis.
				Aluminum	Use Zeeman background correction.
Ba	Aspiration 7080	7080	553.6	Calcium	High hollow cathode current and narrow band set.
				Barium ionization	2 ml of KCl per 100 ml of sample.
Be	Aspiration	7090	234.9	500 ppm Al High Mg and Si.	Add 0.1% fluoride. Use method of standard additions.
Be	Furnace	7091	234.9	Be in optical path	Optimize parameters to minimize effects.
Cd	Aspiration	7130	228.8	Absorption and light scattering.	Background correction is required.

TABLE 29–2.—APPLICABLE TECHNIQUES, METHODS AND MINIMIZATION OF INTERFERENCE FOR AAS ANALYSIS—Continued

Metal	Technique	SW–846[1] method No.	Wavelength (nm)	Interferences	
				Cause	Minimization
Cd	Furnace	7131	228.8	As above Excess Chloride Pipet tips	As above. Ammonium phosphate used as a matrix modifier. Use cadmium-free tips.
Cr	Aspiration	7190	357.9	Akali metal	KCl ionization suppressant in samples and standards—Consult mfgs literature.
Co	Furnace	7201	240.7	Excess chloride	Use Method of Standard Additions.
Cr	Furnace	7191	357.9	200 mg/L Ca and P	All calcium nitrate for a known constant effect and to eliminate effect of phosphate.
Cu	Aspiration	7210	324.7	Absorption & scatter	Consult manufacturer's manual.

[1] Refer to EPA publication SW–846 Third Edition (November 1986) including updates I, II, IIA, and IIB, as incorporated by reference in § 60.17(i).

5.4.3 CVAAS Hg analysis. Analyze Analytical Fractions 1B, 2B, 3A, 3B, and 3C separately for Hg using CVAAS following the method outlined in Method 7470 in EPA Publication SW–846 Third Edition (November 1986) including updates I, II, IIA and IIB, as incorporated by reference in § 60.17(l) or in *Standard Methods for the Examination of Water and Wastewater*, 16th Edition, (1985), Method 303F, as incorporated by reference in § 60.17, or, optionally using *NOTE No. 2* in this section. Set up the calibration curve (zero to 1000 ng) as described in Method 7470 or similar to Method 303F using 300-ml BOD bottles instead of Erlenmeyers. Perform the following for each Hg analysis. From each original sample, select and record an aliquot in the size range from 1 ml to 10 ml. If no prior knowledge of the expected amount of Hg in the sample exists, a 5 ml aliquot is suggested for the first dilution to 100 ml (see *NOTE No. 1* in this Section). The total amount of Hg in the aliquot shall be less than 1 μg and within the range (zero to 1000 ng) of the calibration curve. Place the sample aliquot into a separate 300-ml BOD bottle, and add enough water to make a total volume of 100 ml. Next add to it sequentially the sample digestion solutions and perform the sample preparation described in the procedures of Method 7470 or Method 303F. (See *NOTE No. 2* in this Section). If the maximum readings are off-scale (because Hg in the aliquot exceeded the calibration range; including the situation where only a 1-ml aliquot of the original sample was digested), then dilute the original sample (or a portion of it) with 0.15 percent HNO_3 (1.5 ml concentrated HNO_3 per liter aqueous solution) so that when a 1- to 10-ml aliquot of the "0.15 HNO_3 percent dilution of the original sample" is digested and analyzed by the procedures described above, it will yield an analysis within the range of the calibration curve.

NOTE NO. 1 TO SECTION 5.4.3. When Hg levels in the sample fractions are below the in-stack detection limit given in Table 29–1, select a 10 ml aliquot for digestion and analysis as described.

NOTE NO. 2 TO SECTION 5.4.3. Optionally, Hg can be analyzed by using the CVAAS analytical procedures given by some instrument manufacturer's directions. These include calibration and quality control procedures for the Leeman Model PS200, the Perkin Elmer FIAS systems, and similar models, if available, of other instrument manufacturers. For digestion and analyses by these instruments, perform the following two steps:

(1) Digest the sample aliquot through the addition of the aqueous hydroxylamine hydrochloride/sodium chloride solution the same as described in this Section 5.4.3.: (*The Leeman, Perkin Elmer, and similar instruments described in this note add automatically the necessary stannous chloride solution during the automated analysis of Hg.*) and

(2) Upon completion of the digestion described in paragraph (1), of this note, analyze the sample according to the instrument manufacturer's directions. This approach allows multiple (including duplicate) automated analyses of a digested sample aliquot.

6. Calibration

Maintain a laboratory log of all calibrations.

6.1 Sampling Train Calibration. Calibrate the sampling train components according to the indicated sections of Method 5: Probe Nozzle (Section 5.1); Pitot Tube (Section 5.2); Metering System (Section 5.3); Probe Heater (Section 5.4); Temperature ... 5.5); Leake-Check of the Metering System (Section 5.6); and Barometer (Section 5.7).

6.2 Industively Coupled Argon Plasma Spectrometer Calibration. Prepare standards as outlined in Section 4.5. Profile and calibrate the instrument according to the manufacturer's recommended procedures using those standards. Check the calibration once per hour. If the instrument does not reproduce the standard concentrations within 10 percent, perform the complete calibration procedures. Perform ICP–MS analysis by following Method 6020 in EPA Publication SW–846 Third Edition (November 1986) including updates I, II, IIA and IIB, as incorporated by reference in § 60.17(l).

6.3 Atomic Absorption Spectrometer—Direct Aspiration AAS, GFAAS, and CVAAS analyses. Prepare the standards as outlined in Section 4.5 and use them to calibrate the spectrometer. Calibration procedures are also outlined in the EPA methods referred to in Table 29–2 and in Method 7470 in EPA Publication SW–846 Third Edition (November 1986) including updates I, II, IIA and IIB, as incorporated by reference in § 60.17(i) or in *Standard Methods for the Examination of Water and Wastewater*, 16th Edition, (1985), Method 303F (for Hg) as incorporated by reference in § 60.17. Run each standard curve in duplicate and use the mean values to calculate the calibration line. Recalibrate the instrument approximately once every 10 to 12 samples.

7. Quality Control

7.1 Field Reagent Blanks, if analyzed. Perform the digestion and analysis of the blanks in Container Nos. 7 through 12 that were produced in Sections 5.2.11 through 5.2.17, respectively. For Hg field reagent blanks, use a 10 ml aliquot for digestion and analysis.

7.1.1 Digest and analyze one of the filters from Container No. 12 per Section 5.3.1, 100 ml from Container No. 7 per Section 5.3.2, and 100 ml from Container No. 8A per Section 5.3.3. This step produces blanks for Analytical Fractions 1A and 1B.

7.1.2 Combine 100 ml of Container No. 8A with 200 ml from Container No. 9, and digest and analyze the resultant volume per Section 5.3.4. This step produces blanks for Analytical Fractions 2A and 2B.

7.1.3 Digest and analyze a 100-ml portion of Container No. 8A to produce a blank for Analytical Fraction 3A.

7.1.4 Combine 100 ml from Container No. 10 with 33 ml from Container No. 8B to produce a blank for Analytical Fraction 3B. Filter the resultant 133 ml as described for Container No. 5B in Section 5.3.5, except do not dilute the 133ml. Analyze this blank for Hg within 48 hrs. of the filtration step, and use 400 ml as the blank volume when calculating the blank mass value. Use the actual when calculating their mass values.

7.1.5 Digest the filter that was used to remove any brown MnO_2 precipitate from the blank for Analytical Fraction 3B by the same procedure as described in Section 5.3.5 for the similar sample filter. Filter the digestate and the contents of Container No. 11 through Whatman 40 paper into a 500-ml volumetric flask, and dilute to volume with water. These steps produce a blank for Analytical Fraction 3C.

7.1.6 Analyze the blanks for Analytical Fraction Blanks 1A and 2A per Section 5.4.1 and/or Section 5.4.2. Analyze the blanks for Analytical Fractions 1B, 2B, 3A, 3B, and 3C per Section 5.4.3. Analysis of the blank for Analytical Fraction 1A produces the front-half reagent blank correction values for the desired metals except for Hg; Analysis of the blank for Analytical Fraction 1B produces the front-half reagent blank correction value for Hg. Analysis of the blank for Analytical Fraction 2A produces the back-half reagent blank correction values for all of the desired metals except for Hg, while separate analyses of the blanks for Analytical Fraction 2B, 3A, 3B, and 3C produce the back-half reagent blank correction value for Hg.

7.2 Quality Control Samples. Analyze the following quality control samples.

7.2.1 ICAP and ICP–MS Analysis. Follow the respective quality control descriptions in Section 8 of Methods 6010 and 6020 of EPA Publication SW–846 Third Edition (November 1986) including updates I, II, IIA and IIB, as incorporated by reference in § 60.17(l). For the purposes of a source test that consists of three sample runs, modify those requirements to include the following: two instrument check standard runs, two calibration blank runs, one interference check sample at the beginning of the analysis (analyze by Method of Standard Additions unless within 25 percent), one quality control sample to check the accuracy of the calibration standards (required to be within 25 percent of calibration), and one duplicate analysis (required to be within 20 percent of average or repeat all analyses).

7.2.2. Direct Aspiration AAS and/or GFAAS Analysis for Sb, As, Ba, Be, Cd, Cr, Co, Pb, Ni, Mn, Hg, P, Se, Ag, Tl, and Zn. Analyze all samples in duplicate. Perform a matrix spike on at least one front-half sample and one back-half sample, or one combined sample. If recoveries of less than 75 percent or greater than 125 percent are obtained for the matrix spike, analyze each sample by the Method of Standard Addition. Analyze a quality control sample to check the accuracy of the calibration standards. If the results are not within 20 percent, repeat the calibration.

7.2.3 CVAAS Analysis for Hg. Analyze all samples in duplicate. Analyze a quality control sample to check the accuracy of the

cent, repeat calibration). Perform a matrix spike on one sample (if not within 25 percent, analyze all samples by the Method of Standard Additions). Additional information on quality control can be obtained from Method 7470 of EPA Publication SW-846 Third Edition (November 1986) including updates I, II, IIA and IIB, as incorporated by reference in §60.17(i) or in *Standard Methods for the Examination of Water and Wastewater*, 16th Edition, (1985), Method 303F as incorporated by reference in §60.17.

8. Calculations

8.1 Dry Gas Volume. Using the data from this test, calculate $V_{m(std)}$, the dry gas sample volume at standard conditions as outlined in Section 6.3 of Method 5.

8.2 Volume of Water Vapor and Moisture Content. Using the total volume of condensate collected during the source sampling, calculate the volume of water vapor $V_{w(std)}$ and the moisture content B_{ws} of the stack gas. Use Equations 5-2 and 5-3 of Method 5.

8.3 Stack Gas Velocity. Using the data from this test and Equation 2-9 of Method 2, calculate the average stack gas velocity.

8.4 Metals (Except Hg) in Source Sample.

8.4.1 Analytical Fraction 1A, Front-Half, Metals (except Hg). Calculate separately the amount of each metal collected in Sample Fraction 1 of the sampling train using the following equation:

$M_{fh}=C_{a1}\ F_d\ V_{soln,1}$ Eq. 29-1

where:

M_{fh}=Total mass of each metal (except Hg) collected in the front half of the sampling train (Sample Fraction 1), μg.

C_{a1}=Concentration of metal in Analytical Fraction 1A as read from the standard curve, μg/ml.

F_d=Dilution factor (F_d = the inverse of the fractional portion of the concentrated sample in the solution actually used in the instrument to produce the reading C_{a1}. For example, if a 2 ml aliquot of Analytical Fraction 1A is diluted to 10 ml to place it in the calibration range, F_d = 5).

$V_{soln,1}$=Total volume of digested sample solution (Analytical Fraction 1), ml.

8.4.1.1 If Analytical Fractions 1A and 2A are combined, use proportional aliquots. Then make appropriate changes in Equations 29-1 through 29-3 to reflect this approach.

8.4.2 Analytical Fraction 2A, Back-Half, Metals (except Hg). Calculate separately the amount of each metal collected in Fraction 2 of the sampling train using the following equation.

$M_{bh}=C_{a2}\ F_a\ V_a$ Eq. 29-2

where:

M_{bh}=Total mass of each metal (except Hg) collected in the back-half of the sampling train (Sample Fraction 2), μg.

C_{a2}=Concentration of metal in Analytical Fraction 2A as read from the standard curve, (μg/ml).

F_a=Aliquot factor, volume of Sample Fraction 2 divided by volume of Sample Fraction 2A (*see Section 5.3.4.*)

V_a=Total volume of digested sample solution (Analytical Fraction 2A), ml (see Section 5.3.4.1 or 5.3.4.2, as applicable).

8.4.3 Total Train, Metals (except Hg). Calculate the total amount of each of the quantified metals collected in the sampling train as follows:

$M_t=(M_{fh}-M_{fhb})+(M_{bh}-M_{bhb})$ Eq. 29-3

where:

M_t=Total mass of each metal (separately stated for each metal) collected in the sampling train, μg.

M_{fhb}=Blank correction value for mass of metal detected in front-half field reagent blank, μg.

M_{bhb}=Blank correction value for mass of metal detected in back-half field reagent blank, μg.

8.4.3.1 If the measured blank value for the front half (M_{fhb}) is in the range 0.0 to "A" μg [where "A" μg equals the value determined by multiplying 1.4 μg/in.² times the actual area in in.² of the sample filter], use M_{fhb} to correct the emission sample value (M_{fh}); if M_{fhb} exceeds "A" μg, use the greater of I or II:

I. "A" μg.

II. the lesser of (a) M_{fhb}, or (b) 5 percent of M_{fh}.

If the measured blank value for the black-half (M_{bhb}) is in the range 0.0 to 1 μg, use M_{bhb} to correct the emission sample value (M_{bh}); if M_{bhb}) exceeds 1 μg, use the greater of I or II:

I. 1 μg.

II. the lesser of (a) M_{bhb} or (b) 5 percent of M_{bh}.

8.5 Hg in Source Sample.

8.5.1 Analytical Fraction 1B; Front-Half Hg. Calculate the amount of Hg collected in the front-half, Sample Fraction 1, of the sampling train by using Equation 29-4:

$$Hg_{fh}=\frac{Q_{fh}}{V_{f1B}}\left(V_{soln,1}\right) \qquad \text{Eq. } 29-4$$

where:

Hg_{fh}=Total mass of Hg collected in the front-half of the sampling train (Sample Fraction 1), μg.

Q_{fh}=Quantity of Hg, μg, *TOTAL in the ALIQUOT of Analytical Fraction 1B selected for digestion and analysis.*

8.5.1.1 For example, if a 10 ml aliquot of Analytical Fraction 1B is taken and digested and analyzed (according to Section 5.4.3 and its NOTES Nos. 1 and 2), then calculate and use the total amount of Hg in the 10 ml aliquot for Q_{fh}.

V_{f1B}=Volume of aliquot of Analytical Fraction 1B analyzed, ml.

8.5.1.2 For example, if a 1 ml aliquot of Analytical Fraction 1B was diluted to 50 ml with 0.15 percent HNO_3 as described in Section 5.4.3 to bring it into the proper analytical range, and then 1 ml of that 50-ml wa digested according to Section 5.4.3 and analyzed, V_{f1B} would be 0.02 ml.

8.5.2 Analytical Fractions 2B, 3A, 3B, and 3C; Back Half Hg.

8.5.2.1 Calculate the amount of Hg collected in Sample Fraction 2 by using Equation 29-5:

$$Hg_{bh2}=\frac{Q_{bh2}}{V_{f2B}}\left(V_{soln,2}\right) \qquad \text{Eq. } 29-5$$

where:

Hg_{bh2}=Total mass of Hg collected in Sample Fraction 2, μg.

$V_{soln,2}$=Total volume of Sample Fraction 2, ml.

V_{f2B}=Volume of Analytical Fraction 2B analyzed, ml.

8.5.2.1.2 For example, if 1 ml of Analytical Fraction 2B was diluted to 10 ml with 0.15 percent HNO_3 as described in Section 5.4.3 to bring it into the proper analytical range, and then 5 ml of that 10-ml was analyzed, V_{f2B} would be 0.5 ml.

8.5.2.2 Calculate each of the back-half Hg values for Analytical Fractions 3A, 3B, and 3C by using Equation 29-6:

$$Hg_{bh3(A,B,C)}=\frac{Q_{bh3(A,B,C)}}{V_{f3(A,B,C)}}\left(V_{soln,3(A,B,C)}\right) \qquad \text{Eq. } 29-6$$

where:

$Hg_{bh3\ (A,B,C)}$=Total mass of Hg collected separately in Fraction 3A, 3B, or 3C, μg.

$Q_{bh3\ (A,B,C)}$=Quantity of Hg, μg, *TOTAL, separately, in the ALIQUOT of Analytical Fraction 3A, 3B, and 3C selected for digestion and analysis*, (see previous notes in Sections 8.5.1 and 8.5.2 describing the quantity "Q" and calculate similarly).

$V_{f3\ (A,B,C)}$=Volume, separately, of Analytical Fraction 3A, 3B, or 3C analyzed, ml (see previous notes in Sections 8.5.1 and 8.5.2, describing the quantity "V" and calculate similarly).

$V_{soln,\ 3\ (A,B,C)}$=Total volume, separately, of Analytical Fraction 3A, 3B, or 3C, ml.

8.5.2.3 Calculate the total amount of Hg collected in the back-half of the sampling train by using Equation 29-7:

$Hg_{bh}=Hg_{bh2}+Hg_{bh3A}+Hg_{bh3B}+Hg_{bh3C}$ Eq. 29-7

where:

Hg_{bh}=Total mass of Hg collected in the back-half of the sampling train, μg.

8.5.3 Total Train Hg Catch. Calculate the total amount of Hg collected in the sampling train by using Equation 29-8:

$Hg_t=(Hg_{fh}-Hg_{fhb})+(Hg_{bh}-Hg_{bhb})$ Eq. 29-8

where:

Hg_t=Total mass of Hg collected in the sampling train, μg.

Hg_{fhb}=Blank correction value for mass of Hg detected in front-half field reagent blank, μg.

Hg_{bhb}=Blank correction value for mass of Hg detected in back-half field reagent blanks, μg.

8.5.4 If the total of the measured blank values ($Hg_{fhb}+Hg_{bhb}$) is in the range of 0.0 to 0.6 μg, then use the total to correct the sample value ($Hg_{fh}+Hg_{bh}$); if it exceeds 0.6 μg, use the greater of I. or II:

I. 0.6 μg.

II. the lesser of (a) ($Hg_{fhb}+Hg_{bhb}$), or (b) 5 percent of the sample value ($Hg_{fh}+Hg_{bh}$).

8.6 Individual Metal Concentrations in Stack Gas. Calculate the concentration of each metal in the stack gas (dry basis, adjusted to standard conditions) by using Equation 29-9:

$$C_s=\frac{K_4 M_t}{V_{m(std)}} \qquad \text{Eq. } 29-9$$

C_s=Concentration of a metal in the stack gas, mg/dscm.

K_4=10^{-3} mg/μg.

M_t=Total mass of that metal collected in the sampling train, μg; (substitute Hg_t for M_t for the Hg calculation).

$V_{m(std)}$=Volume of gas sample as measured by the dry gas meter, corrected to dry standard conditions, dscm.

8.7 Isokinetic Variation and Acceptable Results. Same as Method 5, Sections 6.11 and 6.12, respectively.

9. Bibliography

1. Method 303F in *Standard Methods for the Examination of Water Wastewater*, 16th Edition, 1985. Available from the American Pubic Health Association, 1015 18th Street NW., Washington, DC 20036.

2. EPA Methods 6010, 6020, 7000, 7041, 7060, 7131, 7421, 7470, 7740, and 7841, *Tesdt Methods for Evaluating Solid Waste: Physical/Chemical Methods*. SW-846, Third Edition, September 1986, with updates I, II, IIA and IIB. Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, DC 20460.

3. EPA Method 200.7, *Code of Federal Regulations*, Title 40, Part 136, Appendix C. July 1, 1987.

4. EPA Methods 1 through 5, *Code of Federal Regulations*, Title 40, Part 60, Appendix A. July 1, 1991.

5. EPA Method 101A, *Code of Federal Regulations*, Title 40, Part 61, Appendix B. July 1, 1991.

[36 FR 24877, Dec. 23, 1971]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting part 60, appendix A see the List of CFR Sections in the Finding Aids section of this volume.

APPENDIX B—PERFORMANCE SPECIFICATIONS

Performance Specification 1—Specifications and test procedures for opacity continuous emission monitoring systems in stationary sources

Performance Specification 2—Specifications and test procedures for SO_2 and NO_x continuous emission monitoring systems in stationary sources

Performance Specification 3—Specifications and test procedures for O_2 and CO_2 continuous emission monitoring systems in stationary sources

Performance Specification 4—Specifications and test procedures for carbon monoxide continuous emission monitoring systems in stationary sources

Performance Specification 4A—Specifications and test procedures for carbon monoxide continuous emission monitoring systems in stationary sources

Performance Specification 5—Specifications and test procedures for TRS continuous emission monitoring systems in stationary sources

Performance Specification 6—Specifications and test procedures for continuous emission rate monitoring systems in stationary sources

Performance Specification 7—Specifications and test procedures for hydrogen sulfide continuous emission monitoring systems in stationary sources

PERFORMANCE SPECIFICATION 1—SPECIFICATIONS AND TEST PROCEDURES FOR OPACITY CONTINUOUS EMISSION MONITORING SYSTEMS IN STATIONARY SOURCES

1. Applicability and Principle

1.1 Applicability. This specification contains requirements for the design, performance, and installation of instruments for opacity continuous emission monitoring systems (CEMS's) and data computation procedures for evaluating the acceptability of a CEMS. Certain design requirements and test procedures established in this specification may not apply to all instrument designs. In such instances, equivalent design requirements and test procedures may be used with prior approval of the Administrator.

Performance Specification 1 (PS 1) applies to opacity monitors installed after March 30, 1983. Opacity monitors installed before March 30, 1983, are required to comply with the provisions and requirements of PS 1 except for the following:

(a) Section 4. "Installation Specifications."

(b) Sections 5.1.4, 5.1.6, 5.1.7, and 5.1.8 of Section 5, "Design and Performance Specifications."

(c) Section 6.4 of Section 6 "Design Specifications Verification Procedure."

An opacity monitor installed before March 30, 1983, need not be tested to demonstrate compliance with PS 1 unless required by regulatory action other than the promulgation of PS 1. If an existing monitor is replaced with a new monitor, PS 1 shall apply except that the new monitor may be located at the old measurement location regardless of whether the location meets the requirements of Section 4. If a new measurement location is to be determined, the new location shall meet the requirements of Section 4.

1.2 Principle. The opacity of particulate matter in stack emissions is continuously monitored by a measurement system based upon the principle of transmissometry. Light having specific spectral characteristics is projected from a lamp through the effluent in the stack or duct, and the intensity of the projected light is measured by a sensor. The projected light is attenuated because of absorption and scattered by the particulate matter in the effluent; the percentage of visible light attenuated is defined as the opacity of the emission. Transparent stack emissions that do not attenuate light will have a transmittance of 100 percent or an opacity of zero percent. Opaque stack emissions that attenuate all of the visible light will have a transmittance of zero percent or an opacity of 100 percent.

This specification establishes specific design criteria for the transmissometer system. Any opacity CEMS that is expected to meet this specification is first checked to verify that the design specifications are met. Then, the opacity CEMS is calibrated, installed, and operated for a specified length of time. During this specified time period, the system is evaluated to determine conformance with the established performance specifications.

2. Definitions

2.1 Continuous Emission Monitoring System. The total equipment required for the determination of opacity. The system consists of the following major subsystems:

2.1.1 Sample Interface. That portion of CEMS that protects the analyzer from the effects of the stack effluent and aids in keeping the optical surfaces clean.

2.1.2 Analyzer. That portion of the CEMS that senses the pollutant and generates an output that is a function of the opacity.

2.1.3 Data Recorder. That portion of the CEMS that provides a permanent record of the analyzer output in terms of opacity. The data recorder may include automatic data-reduction capabilities.

2.2 Transmissometer. That portion of the CEMS that includes the sample interface and the analyzer.

2.3 Transmittance. The fraction of incident light that is transmitted through an optical medium.

2.4 Opacity. The fraction of incident light that is attenuated by an optical medium. Opacity (Op) and transmittance (Tr) are related by: $Op=1-Tr$.

2.5 Optical Density. A logarithmic measure of the amount of incident light attenuated. Optical density (D) is related to the transmittance and opacity as follows:

$D=-\log_{10} Tr=-\log_{10}(1-Op)$.

2.6 Peak Spectral Response. The wavelength of maximum sensitivity of the transmissometer.

2.7 Mean Spectral Response. The wavelength that is the arithmetic mean value of the wavelength distribution for the effective spectral response curve of the transmissometer.

2.8 Angle of View. The angle that contains all of the radiation detected by the photodetector assembly of the analyzer at a level greater than 2.5 percent of the peak detector response.

2.9 Angle of Projection. The angle that contains all of the radiation projected from the lamp assembly of the analyzer at a level of greater than 2.5 percent of the peak illuminance.

2.10 Span Value. The opacity value at which the CEMS is set to produce the maximum data display output as specified in the applicable subpart.

2.11 Upscale Calibration Value. The opacity value at which a calibration check of the CEMS is performed by simulating an upscale opacity condition as viewed by the receiver.

2.12 Calibration Error. The difference between the opacity values indicated by the CEMS and the known values of a series of calibration attenuators (filters or screens).

2.13 Zero Drift. The difference in the CEMS output readings from the zero calibration value after a stated period of normal continuous operation during which no unscheduled maintenance, repair, or adjustment took place. A calibration value of 10 percent opacity or less may be used in place of the zero calibration value.

2.14 Calibration Drift. The difference in the CEMS output readings from the upscale calibration value after a stated period of normal continuous operation during which no unscheduled maintenance, repair, or adjustment took place.

2.15 Response Time. The amount of time it takes the CEMS to display on the data recorder 95 percent of a step change in opacity.

2.16 Conditioning Period. A period of time (168 hours minimum) during which the CEMS is operated without any unscheduled maintenance, repair, or adjustment prior to initiation of the operational test period.

2.17 Operational Test Period. A period of time (168 hours) during which the CEMS is expected to operate within the established performance specifications without any unscheduled maintenance, repair, or adjustment.

2.18 Path Length. The depth of effluent in the light beam between the receiver and the transmitter of a single-pass transmissometer, or the depth of effluent between the transceiver and reflector of a double-pass transmissometer. Two path lengths are referenced by this specification as follows:

2.18.1 Monitor Path Length. The path length (depth of effluent) at the installed location of the CEMS.

2.18.2 Emission Outlet Path Length. The path length (depth of effluent) at the location where emissions are released to the atmosphere. For noncircular outlets, $D_e=(2LW)\div(L+W)$, where L is the length of the outlet and W is the width of the outlet. *Note that this definition does not apply to pressure baghouse outlets with multiple stacks, side discharge vents, ridge roof monitors, etc.*

3. Apparatus

3.1 Opacity Continuous Emission Monitoring System. Any opacity CEMS that is expected to meet the design and performance specifications in Section 5 and a suitable data recorder, such as an analog strip chart recorder or other suitable device (e.g., digital computer) with an input signal range compatible with the analyzer output.

MAILING CHECKLIST

DOCUMENTS NEEDED FOR AN AIR CONSTRUCTION PERMIT MODIFICATION:

Company Name/Permit Number: Wheelabrator North Broward Co. RRF PA 86-22 PSD-FL-112

DRAFT:

	Blank Filename	Your Filename
Memo from Permit Engineer (through Al) to Clair	Clair1.doc	clairmem
Cover letter addressed to Company	Cvrltr03.doc	cvrltr
Intent to Issue / Certificate of Service	Intent03.doc	INTENT
Public Notice of the Intent to Issue	Pnotice03.doc	PNOTC
Technical Evaluation and Preliminary Determination [if applicable]	Tepdfmt.doc	—
Permit with General Conditions [if applicable]	Permnew.doc	—
BACT / LAER / MACT Determination [if applicable]	Bactform.doc	—
Appendix CSC: Common Specific Conditions	Appdxcsc.doc	—
Appendix GC: General conditions	Gencond.doc	—
Letter to Company explaining the Department Action and Modification [if Permit and associated documents are not applicable]	Modltr.doc	Modltr
Seal of Approval on page with Al's signature and seal [if applicable]	Peseal.doc	—

FINAL

Memo from Permit Engineer (through Al and Clair) to Howard	Howard1.doc
Transmittal letter addressed to Company (Notice of Permit)	Finlnot3.doc
Certificate of Service	"
Final Determination / Letter of Explanation	Finldet3.doc
Permit with General Conditions [if applicable]	Permnew.doc
BACT / LAER / MACT Determination [if applicable]	Bactform.doc
Appendix CSC: Common Specific Conditions	Appdxcsc.doc
Appendix GC: General conditions	Gencond.doc
Attachments [if applicable]	

No, PPSC Logged into ARMS ?

_____ Data/application entered into ARMS (or EARS) ?

_____ Events Entered into ARMS ?

_____ Emission Unit created / Linked ?

PSD-FL-112 PERMITTING HISTORY

Wheelabrator North Broward, Inc. **Facility ID No.: 0112120**
North Broward Waste-to-Energy Facility

PSD Permit History (for tracking purposes):

Permit No.	Issue Date	PERMITTING ACTION DESCRIPTION
PSD-FL-112	7/28/87	To construct/install 4 municipal solid waste units. A site certification (PA 86-22) issued on 2/9/89.
PSD-FL-112	2/09/89	EPA revision to change the number of units to 3 and to indicate the steam and heat input capacity accordingly.
PSD-FL-112A	5/22/97	Permit amendment to allow the use of EPA Method 29 in lieu of Method 101A.
PSD-FL-112A		Draft Modification to revise fuels allowed to be burned. Not issued (1998).
PSD-FL-112B	9/28/99	Permit modification to include the 40 CFR, Subpart Cb requirements and to describe in detail the waste allowed to be burn. Other minor permit modifications. Refer to specific conditions.

PSD-FL-105 PERMITTING HISTORY

Wheelabrator South Broward, Inc.
South Broward Waste-to-Energy Facility

Facility ID No.: 0112119

PSD Permit History (for tracking purposes):

Permit No.	Issue Date	PERMITTING ACTION DESCRIPTION
PSD-FL-105	5/15/87	To construct/install 3 municipal solid waste units. A site certification (PA 85-21) issued on 6/3/86.
PSD-FL-105A 0112119-001AC	5/22/97	To allow the use of EPA Method 29 in lieu of Method 101A.
PSD-FL-105A		Draft modification to clarify allowable fuel to be burned. Not issued (1998).
PSD-FL-105B	9/28/99	Permit modification to include the 40 CFR, Subpart Cb requirements and to describe in detail the waste allowed to be burn. Other minor permit modifications. Refer to specific conditions.

PSD-FL-112 PERMITTING HISTORY

Wheelabrator North Broward, Inc. **Facility ID No.: 0112120**
North Broward Waste-to-Energy Facility

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PSD-FL-112	2/09/89	EPA revision to change the number of units to 3 and to indicate the steam and heat input capacity accordingly.
PSD-FL-112A	5/22/97	Permit amendment to allow the use of EPA Method 29 in lieu of Method 101A.
PSD-FL-112A		Draft Modification to revise fuels allowed to be burned. Not issued (1998).
PSD-FL-112B	9/28/99	Permit modification to include the 40 CFR, Subpart Cb requirements and to describe in detail the waste allowed to be burn. Other minor permit modifications. Refer to specific conditions.

Appendix H-1, Permit History/ID Number Changes

Wheelabrator North Broward, Inc.
North Broward Waste-to-Energy Facility

Facility ID No.: 0112120

Permit History (for tracking purposes):

E.U. ID No.	Description	Permit No.	Issue Date	Expiration Date	ExtendedDate[1, 2]	Revised Date(s)
001, 002, 003	Municipal Solid Waste Combustors	PSD-FL-112	07/28/87			02/09/89; 05/22/97; 09/28/99
		PA 86-22	03/09/87			04/12/88; 02/01/89; 10/04/91; 11/30/92
004	Lime Silo	AC06-186998	03/12/91	02/28/92		
		AO06-208187	05/14/92	02/28/96		
005	Ash Handling System	AC06-186997	03/12/91	02/28/92		
		AO06-208187	05/14/92	02/28/96		

(if applicable) ID Number Changes (for tracking purposes):

From: **Facility ID No.**: 30BRO062120

To: **Facility ID No.**: 0112120

Notes:
1 - AO permit(s) automatic extension(s) in Rule 62-210.300(2)(a)3.a., F.A.C., effective 03/21/96.
2 - AC permit(s) automatic extension(s) in Rule 62-213.420(1)(a)4., F.A.C., effective 03/20/96.
{Rule 62-213.420(1)(b)2., F.A.C., allows Title V Sources to operate under existing valid permits that were in effect at the time of application until the Title V permit becomes effective}

Detail | Events | Facility | perMitted EU | Help | eXit

Permitting Application

Permit #:	PATS:	Issue:	Expire:

Project #/Name	Owner/Company	Type/Sub	Receive
001/WHEELABRATOR NORTH BROWAR	**WHEELABRATOR NORTH BROWARD,**	**AV /00**	**17-JUN-1996**
/NORTH BROWARD RESOURCE RE	WHEELABRATOR NORTH BROWARD,	AC /1E	27-SEP-1990
/NORTH BROWARD RESOURCE RE	WHEELABRATOR NORTH BROWARD,	AC /1E	27-SEP-1990
/WHEELABRATOR ENV. SYSTEMS	WHEELABRATOR NORTH BROWARD,	AO /2B	06-FEB-1992
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Your query has retrieved 4 records.

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WHEELABRATOR NORTH BROWARD, INC.
A WASTE MANAGEMENT COMPANY

2600 N.W. 48th Street
Pompano Beach, FL 33073
(954) 971-8701
(954) 971-8703 Fax

September 1, 2000

CERTIFIED MAIL #Z 239 397 930

Ms. Melissa L. Meeker
Florida Department of Environmental Protection
P.O. Box 15425
West Palm Beach, Florida 33416-5425

Subject: Wheelabrator North Broward
F.A.C. 62-296.416 Quarterly Mercury Testing
Third Quarter of 2000

Dear Ms. Meeker:

On August 9, 2000, this facility submitted notification to the Department that the third quarter mercury stack testing required by F.A.C. 62-296.416 was to be conducted on September 12, 2000. Due to a scheduling conflict with Clean Air Engineering, the testing has been rescheduled to Tuesday, September 19, 2000.

Tentatively, testing will be conducted on Unit 1.

If there are any questions, please contact this office at (954) 971-8701, extension 210.

Sincerely,

William B. Roberts
General Manager

cc: EPA, Region IV, Chief Air Radiation Technology Branch CERTIFIED MAIL #Z 239 397 931
FDEP, Tallahassee, Bureau of Air Regulation, New Source Review Section,
CERTIFIED MAIL #Z 239 397 932
Daniella Banu, Broward County Dept. of Natural Resources Protection, Air Quality Division,
CERTIFIED MAIL # Z 239 397 933
Jeff Turpin
Chuck Faller
Tim Porter
Paul Grego
Scott Shannon, MPI
Matt Killeen
File 3.7.2
5.1.3.2

s:0901001

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SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "*Return Receipt Requested*" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Thomas D. Kirk, Plant Mgr.
Wheelabrator N. Broward
2600 NW 48th Street
Pompano Beach, Fl
33073

4a. Article Number
P 265 659 186

4b. Service Type
☐ Registered ☒ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery
5/27

5. Received By: *(Print Name)*
Rudder Pearce

6. Signature: *(Addressee or Agent)*
X

8. Addressee's Address *(Only if requested and fee is paid)*

Is your RETURN ADDRESS completed on the reverse side?

Thank you for using Return Receipt Service.

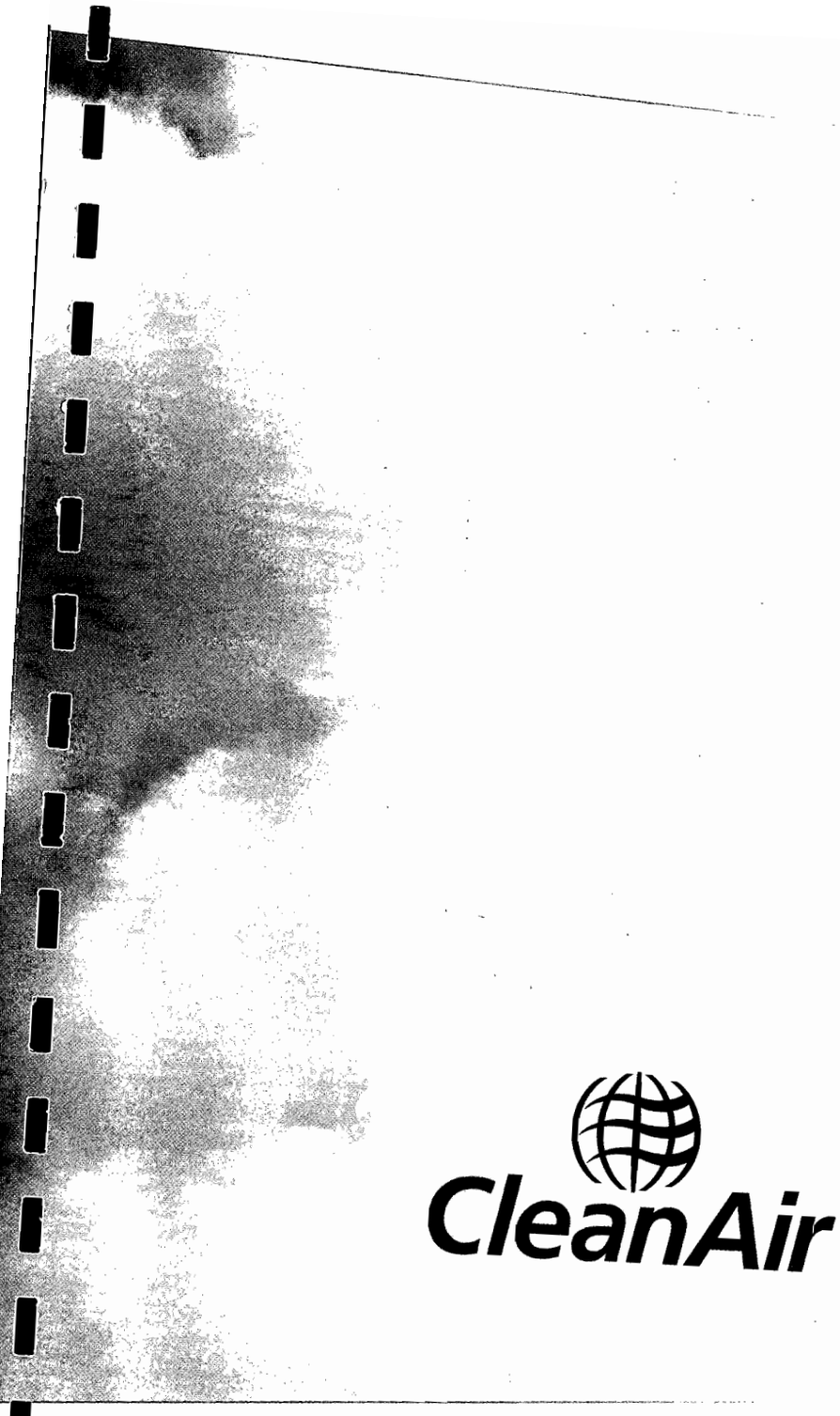
PS Form **3811**, December 1994 Domestic Return Receipt

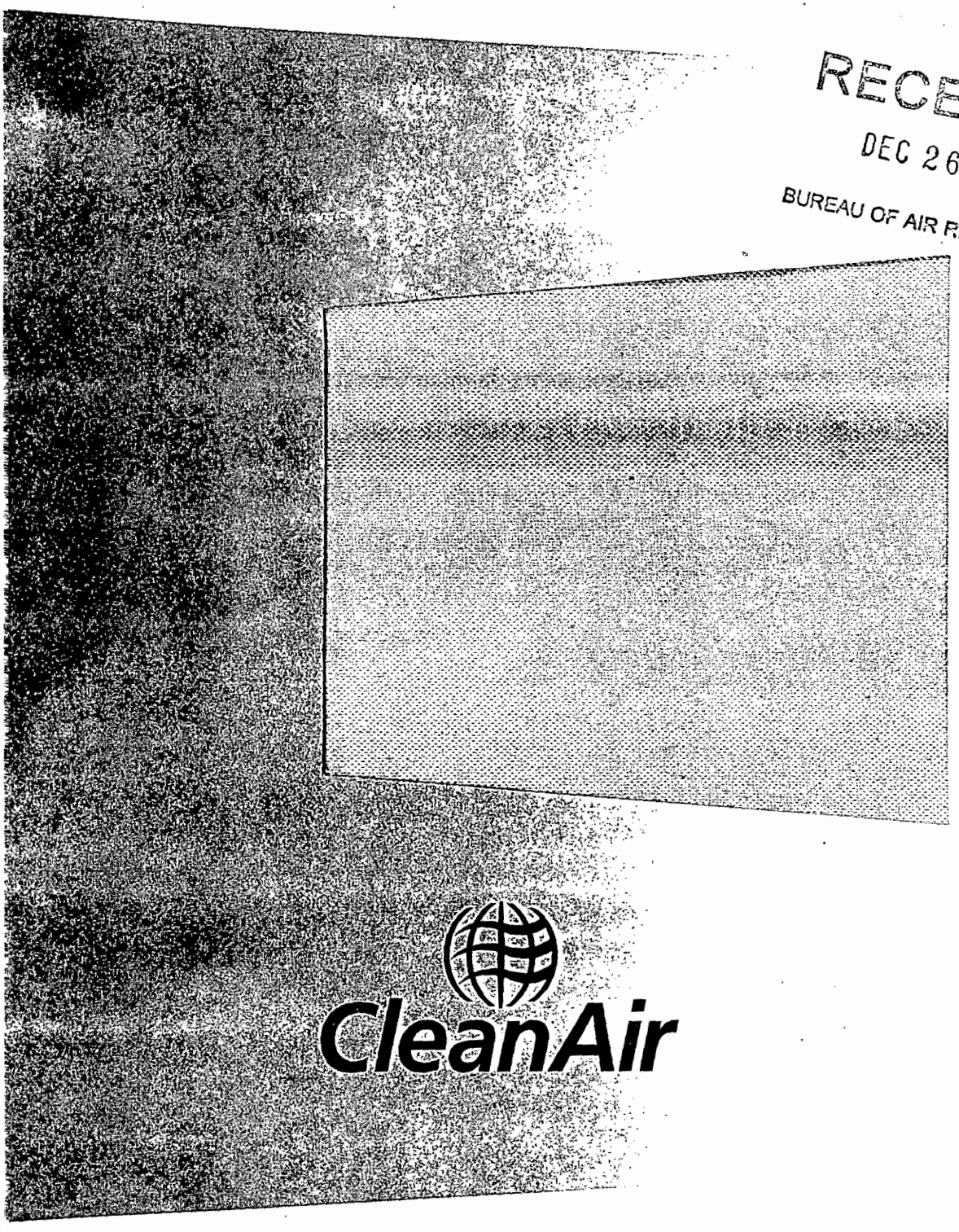
P 265 659 186

US Postal Service
Receipt for Certified Mail
No Insurance Coverage Provided.
Do not use for International Mail *(See reverse)*

Sent to Thomas Kirk	
Street & Number Wheelabrator North B.	
Post Office, State, & ZIP Code Pompano Bch, Fl	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date 5-22-97 PSD-Fl-112	

PS Form **3800**, April 1995





CleanAir

REPORT ON MERCURY TESTING

WHEELABRATOR NORTH BROWARD
UNIT 3 FF OUTLET
POMPANO BEACH, FLORIDA

CLIENT REFERENCE NO: 14200357
CLEANAIR PROJECT NO: 9156-3
REVISION 0: DECEMBER 18, 2002

01/2120
PSD-FL-112

CleanAir

CleanAir Engineering
500 W. Wood Street
Palatine, IL 60067-4975
800-627-0033
www.cleanair.com

Wheelabrator North Broward
2600 NW 48th Street
Pompano Beach, FL 33073

REPORT ON MERCURY TESTING

Performed for:
WHEELABRATOR NORTH BROWARD
UNIT 3 FF OUTLET
POMPANO BEACH, FLORIDA

Client Reference No: 14200357
CleanAir Project No: 9156-3
Revision 0: December 18, 2002

To the best of our knowledge, the data presented in this report are accurate, complete and error free, legible and representative of the actual emissions during the test program.

Submitted by,

Scott Brown

Reviewed by,

Peter Kaufmann

CONTENTS

PROJECT OVERVIEW

Wheelabrator North Broward, Inc. operates a Refuse to Energy Facility located in Pompano Beach, Florida. The facility's emission levels are regulated by the Florida Department of Environmental Protection. Wheelabrator North Broward, Inc. contracted Clean Air Engineering (CleanAir) to perform a compliance test program at their municipal waste combustor (MWC) facility in Pompano Beach, Florida. Testing was conducted in accordance with 40 CFR 60 Subpart Cb and applicable sections of PSD-FL-112(B) and PA86-22. The sampling was conducted at the Unit 3 Fabric Filter (FF) Outlet on December 3, 2002.

The testing included the determination of the following constituents:

- moisture (H_2O);
- oxygen (O_2);
- carbon dioxide (CO_2);
- total flow (dscfm);
- mercury (Hg).

Coordinating and observing the field portion of the program were:

C. Faller	- Wheelabrator North Broward, Inc.
K. O'Halloren	- CleanAir

The schedule of activities is shown in Table 1-1. A summary of the results is presented in Table 1-2 on page 1-2.

Table 1-1:
Schedule of Activities

Date (2002) Start Time	Stop Time	Unit	Location	Pollutant	Method	Run No.
December 3						
07:47	09:58	3	FF Outlet	Mercury	EPA 29	1
09:59	12:09	3	FF Outlet	Mercury	EPA 29	2
12:10	16:21	3	FF Outlet	Mercury	EPA 29	3

Table 1-2:
Summary of Test Results

Source Constituent (Units)	Sampling Method	Average Emission	Permit Limit[1]
Unit 3 FF Outlet			
Mercruy (µg/dscm @ 7% O_2)	EPA M29	18.3	70

[1] Limits obtained from 40 Code of Federal Register part 60 Subpart Cb - Emission Guidelines and Compliance Times for Large Municipal Waste Combustors That Are Constructed on or Before September 20, 1994 published in Federal Register as 62 FR 45123 on December 19, 1995 as modified on August 25, 1997, 40 CFR 60.33b (a) (3), Rule 62-296.416 (3) (b) and and PSD-FL-112.

The delay during Run 3 was due to the units load dropping below the required 90% of full load because of wet garbage.

The test conditions and results of analysis are presented in Table 2-1 on page 2-1 and the Quality Control and Quality Assurance Results are shown in Table 2-2 on page 2-2.

RESULTS

Table 2-1:
Unit 3 FF Outlet - Mercury

Run No.		1	2	3	Average
Date (2002)		Dec 3	Dec 3	Dec 3	
Start Time (approx.)		07:47	09:59	12:10	
Stop Time (approx.)		09:58	12:09	16:21	
Process Conditions					
R_P	Steam Flow - (Klbs/hour)	184.5	184.9	185.8	**185.1**
P_1	Fabric Filter Inlet Temperature (°F)	320.1	320.0	319.0	**319.7**
F_d	Oxygen-based F-factor (dscf/MMBtu)	9,570	9,570	9,570	**9,570**
F_c	Carbon dioxide-based F-factor (dscf/MMBtu)	1,820	1,820	1,820	**1,820**
Cap	Capacity factor (hours/year)	8,760	8,760	8,760	**8,760**
Gas Conditions					
O_2	Oxygen (dry volume %)	11.2	11.1	9.7	**10.7**
CO_2	Carbon dioxide (dry volume %)	8.1	8.7	8.9	**8.6**
T_s	Sample temperature (°F)	306	307	305	**306**
B_w	Actual water vapor in gas (% by volume)	20.55	21.43	20.41	**20.79**
Gas Flow Rate					
Q_a	Volumetric flow rate, actual (acfm)	190,450	186,853	194,453	**190,585**
Q_s	Volumetric flow rate, standard (scfm)	127,922	125,148	130,700	**127,923**
Q_{std}	Volumetric flow rate, dry standard (dscfm)	101,636	98,331	104,029	**101,332**
Sampling Data					
V_{mstd}	Volume metered, standard (dscf)	85.158	79.359	86.435	**83.651**
%I	Isokinetic sampling (%)	100.4	96.7	99.5	**98.9**
Laboratory Data					
$m_{n\text{-}1b}$	Fraction 1B Prorated (µg)	4.0337	5.4231	5.1659	**4.8743**
$m_{n\text{-}2b}$	Fraction 2B Prorated (µg)	22.7345	19.1375	35.8634	**25.9118**
$m_{n\text{-}3a}$	Fraction 3A Prorated (µg)	0.0000	0.0000	0.0000	**0.0000**
$m_{n\text{-}3b}$	Fraction 3B Prorated (µg)	0.0000	0.0000	0.0000	**0.0000**
$m_{n\text{-}3c}$	Fraction 3C Prorated (µg)	1.4422	1.6247	1.3634	**1.4768**
m_n	Total matter corrected for allowable blanks (µg)	28.2104	26.1853	42.3927	**32.2628**
Mercury Results - Total					
C_{sd}	Concentration (lb/dscf)	7.30E-10	7.28E-10	1.08E-09	**8.46E-10**
C_{sd7}	Concentration @7% O_2 (lb/dscf)	1.05E-09	1.03E-09	1.35E-09	**1.14E-09**
C_{sd}	Concentration (µg/dscm)	11.7	11.7	17.3	**13.6**
C_{sd7}	Concentration @7% O_2 (µg/dscm)	16.8	16.5	21.6	**18.3**
$E_{lb/hr}$	Rate (lb/hr)	4.45E-03	4.29E-03	6.75E-03	**5.17E-03**
E_{Fd}	Rate - Fd-based (lb/MMBtu)	1.51E-05	1.48E-05	1.94E-05	**1.64E-05**

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RESULTS

Table 2-2:
Quality Assurance and Quality Control
RPD RESULTS

Run Number	Front half	H_2O_2/HNO_3	Empty Impinger	KMnO4	HCl
North Run 1	1.6%	2.4%	NA	NA	0.4%
North Run 2	2.8%	1.1%	NA	NA	1.9%
North Run 3	2.7%	0.9%	NA	NA	2.8%
Field Blank	NA	NA	NA	NA	2.5%
Reagent Blank	NA	NA	NA	NA	4.7%

Sample Spike and Recovery

Run Number		Front half	H_2O_2/HNO_3	Empty Impinger	$KMnO_4$	HCl
North Run 3	# 1	123%	103%	98%	97%	105%
	# 2	117%	93%	99%	95%	103%

DESCRIPTION OF INSTALLATION

The North Broward Resource Recovery Facility operates three 750 tons per day municipal refuse fired, water wall boiler trains. The trains were manufactured by Babcock and Wilcox to produce electricity for sale to a local utility company. Each boiler is equipped a spray dryer absorber (SDA) for acid gas removal, followed by a fabric filter (FF) baghouse for the control of particulate emissions. The control equipment is manufactured by Wheelabrator Air Pollution Control, Inc. Each fabric filter baghouse is followed by an induced draft fan, which directs the flue gas to a dedicated flue in a common stack.

Figure 3-1 shows a general schematic for the facility. The testing occurred at the Unit 3 FF Outlet as shown in Figure 3-1.

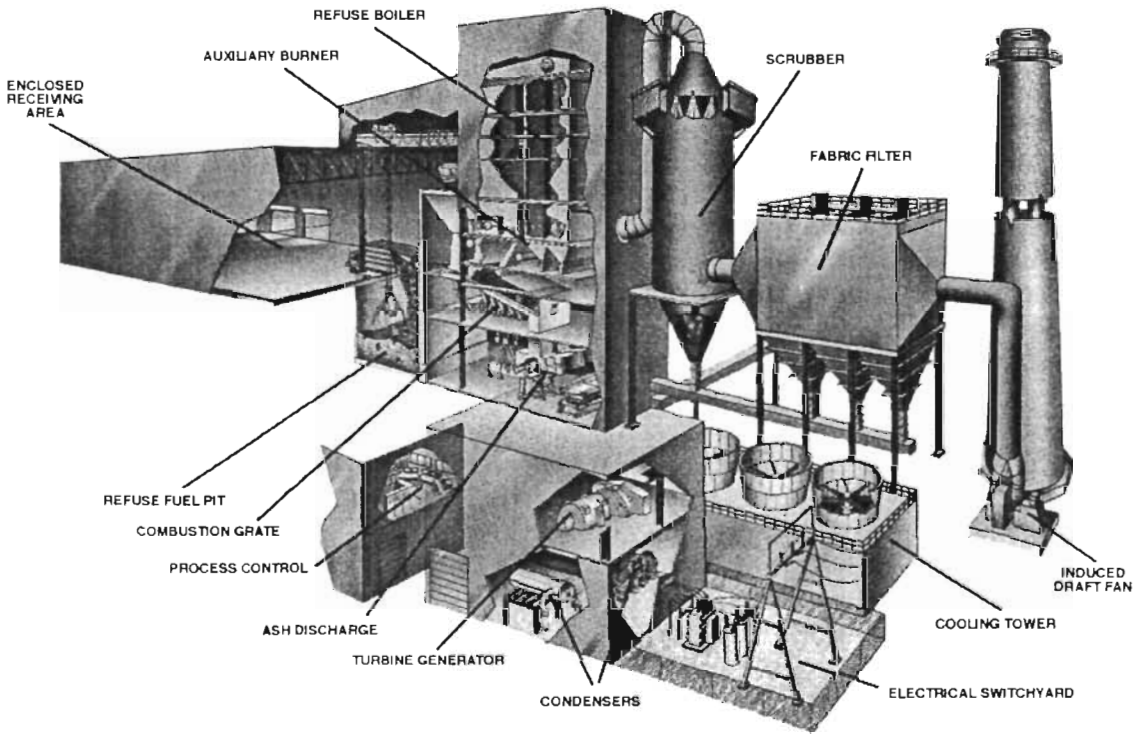


Figure 3-1: Process Schematic

DESCRIPTION OF INSTALLATION

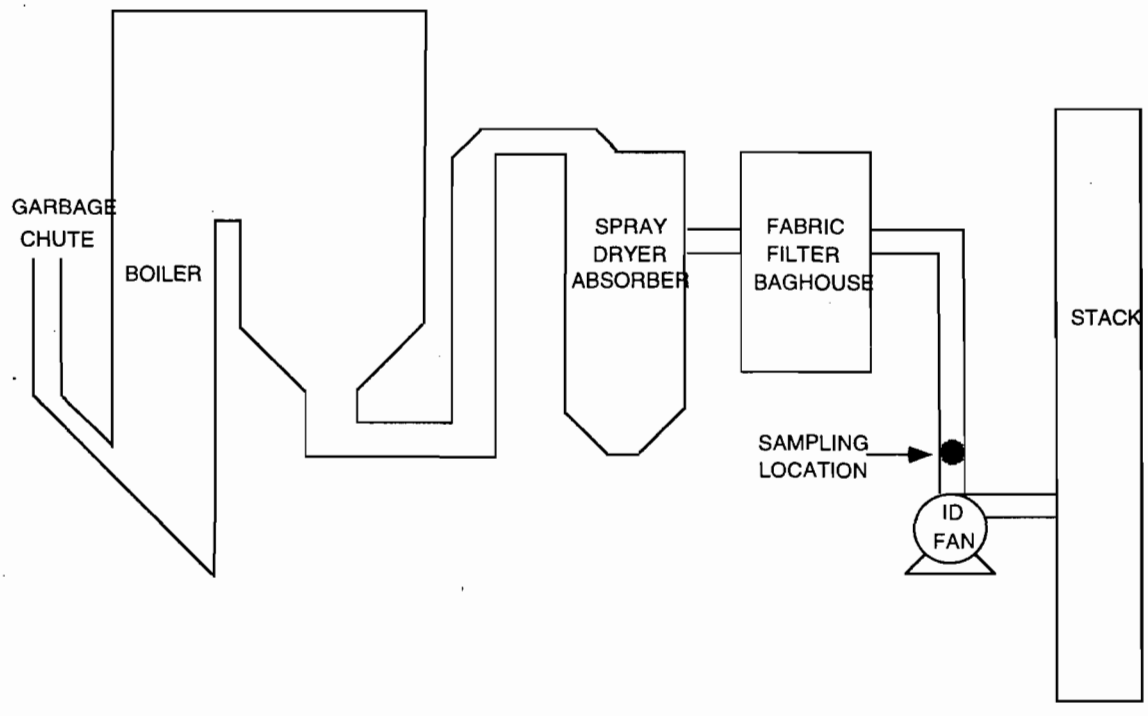


Figure 3-2: Process Schematic

METHODOLOGY

The sampling followed procedures as detailed in U.S. Environmental Protection Agency (EPA) Methods 1, 2, 3, 3B, 4 and 29. The following table summarizes the methods and their respective sources.

Table 4-1:
Summary of Sampling Procedures

Title 40 CFR Part 60 Appendix A	
Method 1	"Sample and Velocity Traverses for Stationary Sources"
Method 2	"Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube)"
Method 3	"Gas Analysis for the Determination of Dry Molecular Weight"
Method 3B	"Gas Analysis for the Determination of Emission Rate Correction Factor or Excess Air"
Method 4	"Determination of Moisture Content in Stack Gases"
Method 29	"Determination of Metals Emissions from Stationary Sources"

These methods appear in detail in Title 40 of the Code of Federal Regulations (CFR) and on the World Wide Web at http://www.cleanair.com.

These sampling, recovery and analytical procedures are summarized on pages 4-1 through 4-7.

The sampling nozzles were calibrated on site. All other equipment was calibrated at the Clean Air Engineering laboratory prior to shipment to the job site. A post-test calibration was performed on the meter boxes at the conclusion of testing to verify that calibration was maintained throughout the test program. Calibration sheets can be found in Appendix Section C.

SAMPLING POINT DETERMINATION - EPA METHOD 1

Sampling point locations were determined according to EPA Method 1.

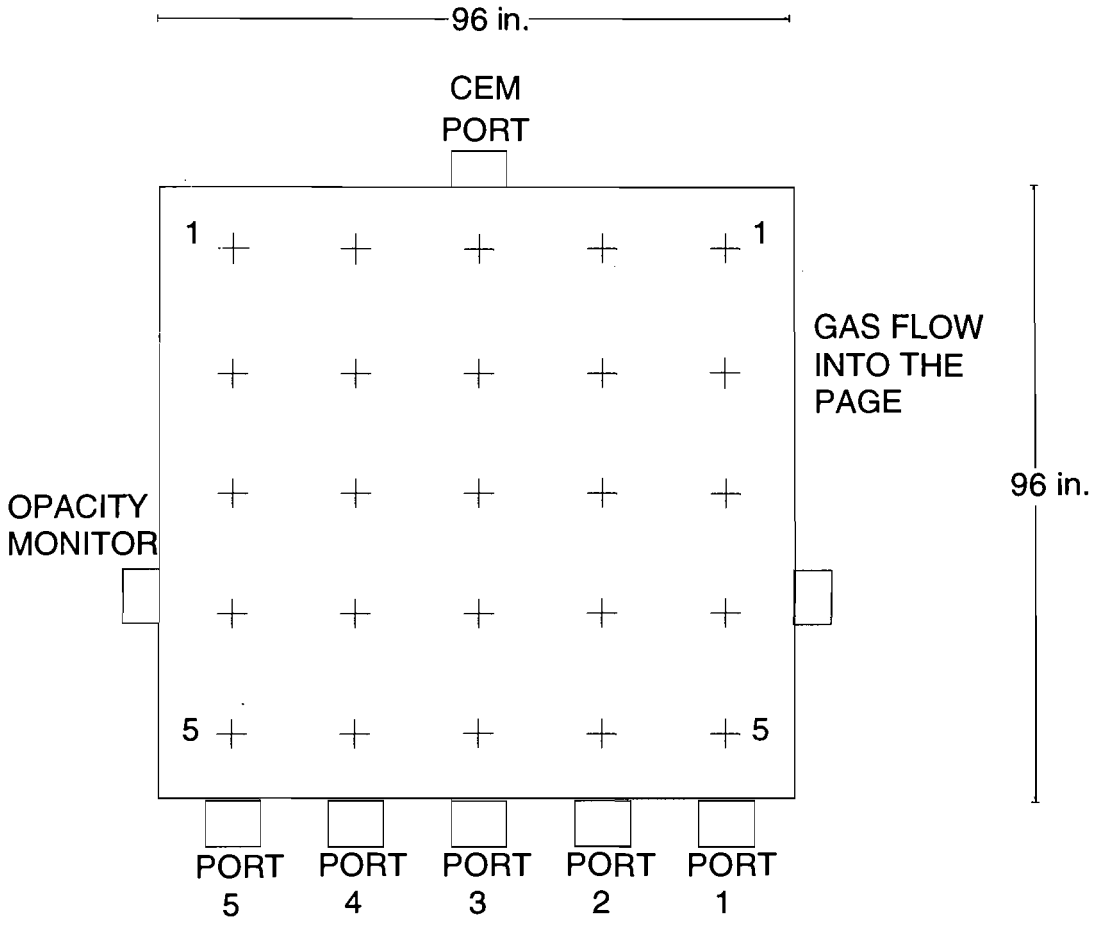
Table 4-2 outlines the sampling point configurations. Figure 4-1 illustrates the sampling points and orientation of sampling ports for the source tested in the program.

Table 4-2:
Sampling Points

Location / Constituent	Method	Run No.	Ports	Points per Port	Minutes per Point	Total Minutes	Figure
Unit 3 FF Outlet							
Mercury	29	1-3	5	5	5	125	4-1

METHODOLOGY

SAMPLING POINT DETERMINATION (CONTINUED)



Sampling Point	Port to Point Distance (in.)
1	86.4
2	67.2
3	48.0
4	28.8
5	9.6

Diameters upstream from disturbance: 2 diameters Limit: 2
Diameters downstream from disturbance: 0.5 diameters Limit: 0.5

Figure 4-1: Unit 3 FF Outlet - Sampling Point Determination (EPA Method 1)

METHODOLOGY

VELOCITY AND VOLUMETRIC FLOW RATE - EPA METHOD 2

EPA Method 2 was used, in conjunction with the wet method testing, to determine the gas velocity and flow rate at the FF Outlet test location.

Each set of velocity determinations included the measurement of gas velocity pressure and gas temperature at each of the EPA Method 1 traverse points. The velocity pressures were measured with a Type S pitot tube. Gas temperature measurements were made using a Type K thermocouple and digital pyrometer. Figure 4-2 includes the components of the EPA Method 2 sampling apparatus.

GAS COMPOSITION AND MOLECULAR WEIGHT - EPA METHOD 3B

In order to determine the oxygen (O_2) concentration, carbon dioxide (CO_2) concentration and gas molecular weight, a time-integrated sample of the gas was obtained for each sampling train and analyzed in accordance with EPA Method 3B. The gas sample was collected into a vinyl sample bag from isokinetic test methods. The contents of the bag was analyzed for O_2 and CO_2 concentrations using an Orsat gas analyzer.

MOISTURE CONTENT - EPA METHOD 4

The flue gas moisture content at each of the test locations was determined in accordance with EPA Method 4, in conjunction with the mercury testing. Figure 4-2 includes the components of the EPA Method 4 sampling apparatus. The gas moisture was determined by quantitatively condensing the moisture in chilled impingers. The amount of moisture condensed was determined gravimetrically. A dry gas meter was used to measure the volume of gas sampled. The amount of water condensed and the volume of gas sampled were used to calculate the gas moisture content in accordance with EPA Method 4.

METHODOLOGY

MERCURY EMISSIONS - EPA METHOD 29

EPA Method 29 was used to measure mercury emissions at the Unit 3 FF Outlet. This method defines metal emissions as particulate and gaseous material isokinetically withdrawn through a temperature controlled probe and collected on a high-efficiency filter and in acidified absorbing solutions.

Figure 4-2 illustrates the EPA Method 29 sampling train which was used. The sampling apparatus contained a glass-lined temperature-controlled probe equipped with a pitot tube (for measuring stack flow rate) and a sharp-edged glass button-hook nozzle. The exit of the probe was connected to a high efficiency quartz fiber filter (Pallflex 2500QAT-UP) supported in a glass filter holder inside an oven. The exit of the filter holder connected directly to a series of seven full size impingers.

The first impinger of the sampling train was left empty to accommodate collection of the flue gas moisture. The second and third impingers of the sampling apparatus each contained 100 milliliters of 5% nitric acid/10% hydrogen peroxide solution. The fourth impinger was left empty. The fifth and sixth impingers each contained 100 milliliters of 4% potassium permanganate/10% sulfuric acid solution. The seventh impinger contained 200 to 300 grams of silica gel. All of the impingers were maintained at a temperature below 68°F for the duration of each test.

Procedures for selecting sampling locations and for the operation of the apparatus was derived from EPA Method 29 and associated EPA Methods 1 through 5. The entire sampling apparatus was leak-checked before and after each test run. Sampling was performed at an average isokinetic rate greater than 90% and less than 110%.

At the conclusion of each test run, the probe and nozzle was rinsed and brushed with 0.1 Normal nitric acid to remove any particulate matter. These rinses were collected into polyethylene sample containers. The quartz fiber filter was recovered and placed into a polyethylene sample container. The volume of liquid collected in each of the impingers was quantified.

The liquid from the first three impingers was transferred to a leak-free polyethylene storage container. The back-half of the filter housing, the first three impingers and all connecting glassware were rinsed with 0.1 Normal nitric acid which was be added to the storage container.

METHODOLOGY

MERCURY EMISSIONS (CONTINUED)

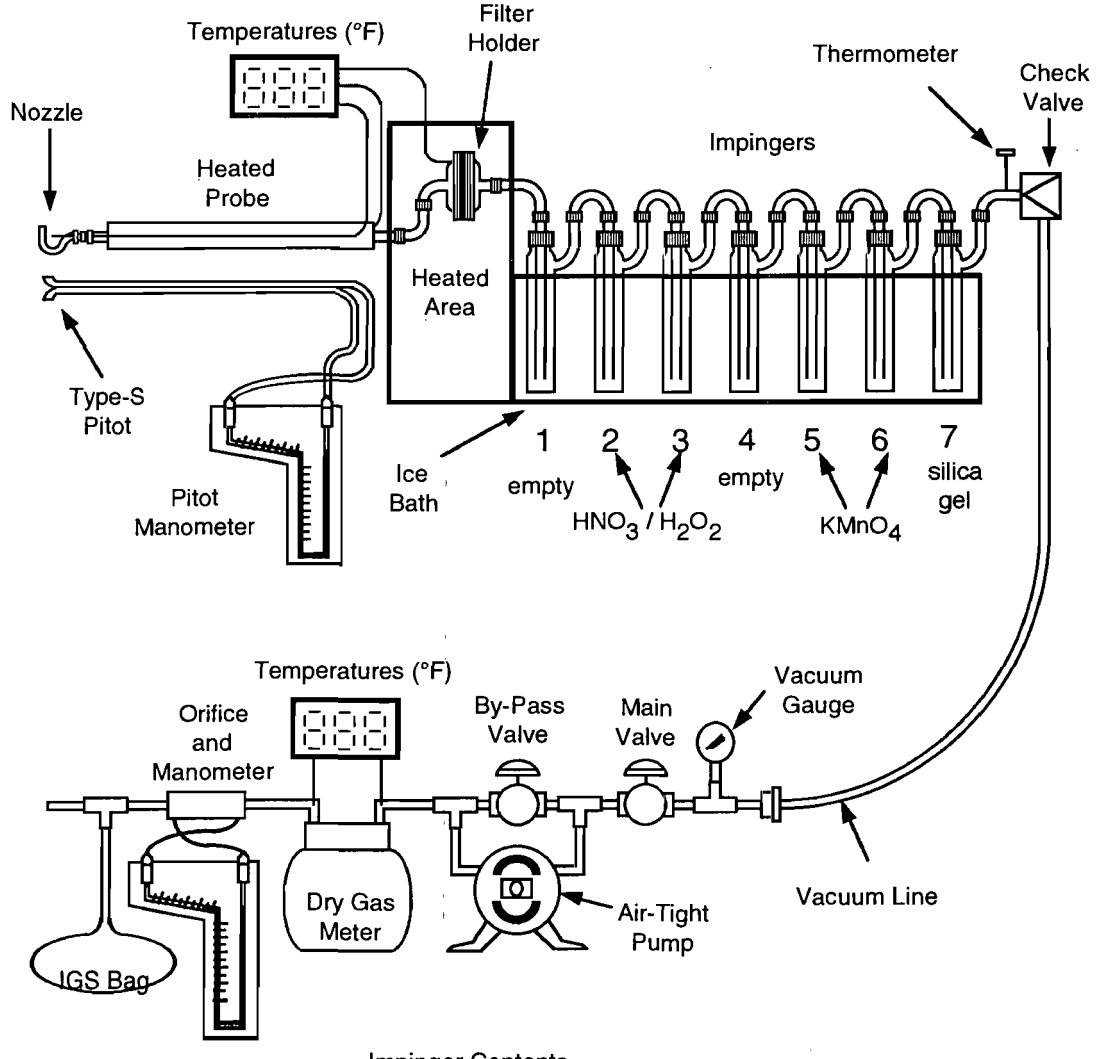
Any liquid collected in the fourth impinger was transferred to a separate polyethylene container, and the impinger was rinsed into the same container with 0.1 Normal nitric acid. The contents of impingers 5 and 6 were collected into an amber glass container. Both impingers 5 and 6 and the connecting glassware were then rinsed with acidified potassium permanganate followed by distilled water. These rinses were collected in the glass container. Any residual potassium permanganate retained by the impingers was removed using a rinse of 8 Normal hydrochloric acid, which was collected into a separate glass container. 200 milliliters of distilled water was used to rinse impingers 5 and 6 and added to the same container to also dilute the acid.

All containers were sealed, labeled and liquid levels marked prior to transport to the laboratory. The silica gel weight and the volume of condensate collected in the impingers were used to determine moisture content of the stack gas.

The nitric acid probe rinses, and samples recovered from impingers 1 through 3 were reduced to near dryness and digested with hydrofluoric acid and concentrated nitric acid. The filter was digested with hydrofluoric and nitric acids. The samples obtained from Impingers 4, 5 and 6 were digested separately with acidified potassium permanganate and subsequently analyzed only for mercury. The digested samples were analyzed by cold vapor atomic absorption spectroscopy (CVAAS per Method 7470 in EPA publication SW 846) for mercury by Element One, Inc of Wilmington, North Carolina.

METHODOLOGY

MERCURY EMISSIONS (CONTINUED)



Impinger Contents
1) empty
2) 100 ml 5% HNO_3/10% H_2O_2
3) 100 ml 5% HNO_3/10% H_2O_2
4) empty
5) 100 ml 4% $KMnO_4$/10% H_2SO_4
6) 100 ml 4% $KMnO_4$/10% H_2SO_4
7) 300 g silica gel

Figure 4-2: Metals Sampling Apparatus (EPA Method 29)

METHODOLOGY

QUALITY ASSURANCE AND QUALITY CONTROL

All testing followed the EPA quality assurance and quality control guidelines as outlined in the respective methods. Field blanks and matrix spikes for the mercury testing were done as shown in the following Table 4-3. The results of the analysis are shown in Table 2-2.

Table 4-3:
Method Field Blanks and Matrix Spikes

Method	Reagent Blank Sets	Field Blank	Duplicate Analysis	Matrix Spikes
EPA M29	1	1	On all analysis	1 predigested filter blank and 1 postdigested sample

WHEELABRATOR NORTH BROWARD
POMPANO BEACH, FLORIDA

Client Reference No: 14200357
CleanAir Project No: 9156-3

APPENDIX

SAMPLE CALCULATIONS

A

Wheelabrator North Broward, Inc.
Clean Air Project No: 9156-3
FF Outlet

EPA Method 1-4 Sample Calculations

Sample data taken from Run 1

Note: The tables presenting the results are generated electronically from raw data. It may not be possible to exactly duplicate these results using a calculator. The reference method data, results and all calculations are carried to sixteen decimal places throughtout. The final table is formatted to an appropriate number of significant figures.

121602 145711

1. Volume of water collected (wscf)

$$V_{wstd} = (0.04707)(V_{lc})$$

Where:

V_{lc}	= total volume of liquid collected in impingers and silica gel (ml)	=	467.9	ml
0.04707	= ideal gas conversion factor (ft^3 water vapor/ml or gm)	=	0.04707	ft^3/ml
V_{wstd}	= volume of water vapor collected at standard conditions (ft^3)	=	22.02	ft^3

2. Volume of gas metered, standard conditions (dscf)

$$V_{mstd} = \frac{(17.64)(V_m)\left(P_{bar} + \frac{\Delta H}{13.6}\right)(Y_d)}{(460 + T_m)}$$

Where:

P_{bar}	= barometric pressure (in. Hg)	=	30.10	in. Hg
T_m	= average dry gas meter temperature (°F)	=	77.70	°F
V_m	= volume of gas sample through the dry gas meter at meter conditions (dcf)		85.73	dcf
Y_d	= gas meter correction factor (dimensionless)	=	1.0024	
ΔH	= average pressure drop across meter box orifice (in. H_2O)	=	1.42	in. H_2O
17.64	= standard temperature to pressure ratio (°R/in. Hg)	=	17.64	°R/in. Hg
13.6	= conversion factor (in. H_2O/in. Hg)	=	13.6	in.H_2O/in. Hg
460	= °F to °R conversion constant	=	460	
V_{mstd}	= volume of gas sampled through the dry gas meter at standard conditions (dscf)	=	85.158	dscf

3. Sample gas pressure (in. Hg)

$$P_s = P_{bar} + \left(\frac{P_g}{13.6}\right)$$

Where:

P_{bar}	= barometric pressure (in. Hg)	=	30.10	in. Hg
P_g	= sample gas static pressure (in. H_2O)	=	-12.70	in. H_2O
13.6	= conversion factor (in. H_2O/in. Hg)	=	13.6	in. H_2O/in. Hg
P_s	= absolute sample gas pressure (in. Hg)	=	29.17	in. Hg

QA/QC _____
Date _____

Wheelabrator North Broward, Inc.
Clean Air Project No: 9156-3
FF Outlet

4. Actual water vapor pressure at sample gas temperature less than 212°F (in. Hg)

$$P_v = \frac{e^{\left(18.3036 - \frac{3816.44}{\frac{5}{9}(T_s - 32) + 273.15 - 46.13}\right)}}{25.4}$$

Where:

T_s	= average sample gas temperature (°F)	=	306.28	°F
18.3036	= Antoine coefficient	=	18.3036	°K
3816.44	= Antoine coefficient	=	3816.44	°K
273.15	= temperature conversion factor	=	273.15	°K
46.13	= Antoine coefficient	=	46.13	°K
25.4	= conversion factor	=	25.4	mm Hg/in. Hg
5/9	= Fahrenheit to Celsius conversion factor	=	5/9	°C/°F
32	= temerature conversion (°F)	=	32	°F
P_v	= vapor pressure, actual (in. Hg)	=	29.17	in. Hg

5. Water vapor pressure at gas temperature greater than 212°F (in. Hg)

$$P_v = P_s$$

Where:

P_s	= absolute sample gas pressure (in. Hg)	=	29.17	in. Hg
P_v	= water vapor pressure, actual (in. Hg)	=	29.17	in. Hg

6. Moisture measured in sample (% by volume)

$$B_{wo} = \frac{V_{wstd}}{(V_{mstd} + V_{wstd})}$$

Where:

V_{mstd}	= volume of gas sampled through the dry gas meter at standard conditions (dscf)	=	85.158	dscf
V_{wstd}	= volume of water collected at standard conditions (scf)	=	22.02	scf
B_{wo}	= proportion of water measured in the gas stream by volume	=	0.2055	
		=	20.55	%

7. Saturated moisture content (% by volume)

$$B_{ws} = \frac{P_v}{P_s}$$

Where:

P_s	= absolute sample gas pressure (in. Hg)	=	29.17	in. Hg
P_v	= water vapor pressure, actual (in. Hg)	=	29.17	in. Hg
B_{ws}	= proportion of water vapor in the gas stream by volume at saturated conditions		1.0000	
		=	100.00	%

QA/QC _____
Date _____

Wheelabrator North Broward, Inc.
Clean Air Project No: 9156-3
FF Outlet

8. Actual water vapor in gas (% by volume)

$$B_w = MINIMUM \quad [B_{wo}, B_{ws}]$$

Where:

B_{ws}	= proportion of water vapor in the gas stream by volume at saturated conditions	=	1.0000	
B_{wo}	= proportion of water measured in the gas stream by volume	=	0.2055	
B_w	= actual water vapor in gas	=	0.2055	
		=	20.55	%

9. Nitrogen (plus carbon monoxide) in gas stream (% by volume, dry)

$$N_2 + CO = 100 - CO_2 - O_2$$

Where:

CO_2	= proportion of carbon dioxide in the gas stream by volume (%)	=	8.1	%
O_2	= proportion of oxygen in the gas stream by volume (%)	=	11.2	%
100	= conversion factor (%)	=	100	%
N_2+CO	= proportion of nitrogen and CO in the gas stream by volume (%)	=	80.67	%

10. Molecular weight of dry gas stream (lb/lb·mole)

$$M_d = (M_{CO_2})\frac{(CO_2)}{(100)} + (M_{O_2})\frac{(O_2)}{(100)} + (M_{N_2+CO})\frac{(N_2+CO)}{(100)}$$

Where:

M_{CO2}	= molecular weight of carbon dioxide (lb/lb·mole)	=	44.00	lb/lb·mole
M_{O2}	= molecular weight of oxygen (lb/lb·mole)	=	32.00	lb/lb·mole
M_{N2+CO}	= molecular weight of nitrogen and carbon monoxide (lb/lb·mole)	=	28.00	lb/lb·mole
CO_2	= proportion of carbon dioxide in the gas stream by volume (%)	=	8.1	%
O_2	= proportion of oxygen in the gas stream by volume (%)	=	11.2	%
N_2+CO	= proportion of nitrogen and CO in the gas stream by volume (%)	=	80.7	%
100	= conversion factor (%)	=	100	%
M_d	= dry molecular weight of sample gas (lb/lb·mole)	=	29.75	%

11. Molecular weight of sample gas (lb/lb·mole)

$$M_s = (M_d)(1 - B_w) + (M_{H_2O})(B_w)$$

Where:

B_w	= proportion of water vapor in the gas stream by volume	=	0.2055	
M_d	= dry molecular weight of sample gas (lb/lb·mole)	=	29.75	lb/lb·mole
M_{H2O}	= molecular weight of water (lb/lb·mole)	=	18.00	lb/lb·mole
M_s	= molecular weight of sample gas, wet basis (lb/lb·mole)	=	27.34	lb/lb·mole

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12. Velocity of sample gas (ft/sec)

$$V_s = (K_p)(C_P)\left(\overline{\sqrt{\Delta P}}\right)\left(\sqrt{\frac{(\overline{T_s}+460)}{(M_s)(P_s)}}\right)$$

Where:

K_p	= velocity pressure constant	=	85.49	
C_p	= pitot tube coefficient	=	0.84	
M_s	= wet molecular weight of sample gas, wet basis (lb/lb·mole)	=	27.34	lb/lb·mole
P_s	= absolute sample gas pressure (in. Hg)	=	29.17	in. Hg
T_s	= average sample gas temperature (°F)	=	306.28	°F
$\sqrt{\Delta P}$	= average square roots of velocity heads of sample gas (in. H_2O)	=	0.704	$\sqrt{}$in. H_2O
460	= °F to °R conversion constant	=	460	
V_s	= sample gas velocity (ft/sec)	=	49.60	ft/sec

13. Volumetric flow rate of sample gas at actual gas conditions (acfm)

$$Q_a = (60)(A_s)(V_s)$$

Where:

A_s	= cross sectional area of sampling location (ft^2)	=	64.00	ft^2
V_s	= sample gas velocity (ft/sec)	=	49.60	ft/sec
60	conversion factor (sec/min)	=	60	sec/min
Q_a	= volumetric flow rate at actual conditions (acfm)	=	190,450	acfm

14. Total flow of sample gas (scfm)

$$Q_s = (Q_a)\left(\frac{P_s}{29.92}\right)\left(\frac{68+460}{T_s+460}\right)$$

Where:

Q_a	= volumetric flow rate at actual conditions (acfm)	=	190,450	acfm
P_s	= absolute sample gas pressure (in. Hg)	=	29.17	in. Hg
29.92	= standard pressure (in. Hg)	=	29.92	in. Hg
T_s	= average sample gas temperature (°F)	=	306.3	°F
68	= standard temperature (°F)	=	68	°F
460	= °F to °R conversion constant	=	460	
Q_s	= volumetric flow rate at standard conditions, wet basis (scfm)	=	127,922	scfm

15. Dry flow of sample gas (dscfm)

$$Q_{std} = (Q_s)(1 - B_w)$$

Where:

B_w	= proportion of water vapor in the gas stream by volume	=	0.2055	
Q_s	= volumetric flow rate at standard conditions, wet basis (scfm)	=	127,922	scfm
Q_{std}	= volumetric flow rate at standard conditions, dry basis (dscfm)	=	101,636	dscfm

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16. Dry flow of sample gas corrected to 7%O_2 (dscfm)

$$Q_{std\,7} = (Q_{std})\left(\frac{20.9 - O_2}{20.9 - 7}\right)$$

Where:

Q_{std}	= volumetric flow rate at standard conditions, dry basis (dscfm)	=	101,636	dscfm
O_2	= proportion of oxygen in the gas stream by volume (%)	=	11.2	%
20.9	= oxygen content of ambient air (%)	=	20.9	%
7	= oxygen content of corrected gas (%)	=	7.0	%
Q_{std7}	= volumetric flow rate at STP and 7%O_2, dry basis (dscfm)	=	70,926	dscfm

17. Hourly time basis conversion of volumetric flow rate (Q_{std} example)

$$Q_{std-hr} = (Q_{std-min})(60)$$

Where

$Q_{std-min}$	= volumetric flow rate, english units (ft^3/min)	=	101,636	dscfm
60	= conversion factor (min/hr)	=	60	min/hr
Q_{std-hr}	= volumetric flow rate, hourly basis (dscf/hr)	=	6,098,167	dscf/hr

18. Metric Conversion of Gas Volumes (Q_{std} example)

$$Q_{std-metric} = (Q_{std-english})\left(\frac{60}{35.31}\right)$$

Where:

$Q_{std-english}$	= volumetric flow rate, english units (ft^3/min)	=	101,636	dscfm
35.31	= conversion factor (ft^3/m^3)	=	35.31	ft^3/m^3
60	= conversion factor (min/hr)	=	60	min/hr
$Q_{std-metric}$	= volumetric flow rate, metric units (m^3/hr)	=	172,704	dry std m^3/hr

19. Standard to Normal Conversion of Gas Volumes (Q_{std} example)

$$Q_{Normal} = (Q_{std-metric})\left(\frac{32 + 460}{68 + 460}\right)$$

Where:

$Q_{std-metric}$	= volumetric flow rate, metric units (dry std m^3/hr)	=	172,704	dry std m^3/hr
32	= normal temperature (°F)	=	32	°F
68	standard temperature (°F)	=	68	°F
460	= standard temperature in Rankine (68°F)	=	460	
Q_{Normal}	= volumetric flow rate, metric units (dry Nm^3/hr)	=	160,928	dry Nm^3/hr

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20. Percent isokinetic (%)

$$I = \frac{(0.09450)(\overline{T_s} + 460)(V_{mstd})}{(P_s)(V_s)\left(\frac{(D_n)^2(\pi)}{(144)(4)}\right)(\Theta)(1 - B_w)}$$

Where:

D_n	= diameter of nozzle (in)	=	0.280	in.
B_w	= proportion of water vapor in the gas stream by volume	=	0.2055	
P_s	= absolute sample gas pressure (in. Hg)	=	29.17	in. Hg
T_s	= average sample gas temperature (°F)	=	306.3	°F
V_{mstd}	= volume of gas sample through the dry gas meter at standard conditions (dscf)	=	85.158	dscf
V_s	= sample gas velocity (ft/sec)	=	49.60	ft/sec
θ	= total sampling time (min)	=	125	min
0.0945	= conversion constant	=	0.0945	
460	= °F to °R conversion constant	=	460	
I	= percent of isokinetic sampling (%)	=	100.38	%

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EPA Method 29 Sample Calculations - Mercury Analytical Result

Sample data taken from Run 1

The tables presenting the results are generated electronically from raw data. It may not be possible to exactly duplicate these results using a calculator. The reference method data, results and all calculations are carried to sixteen decimal places throughtout. The final table is formatted to an appropriate number of significant figures.

Note: Please see the preceding page concerning treatment of minimum detection limits and mathematical operations on values that are below minimum detection limits.

121602 135720

1. Total blank amount (µg)

$$m_{total-B} = \sum_{i=1}^{n} m_{i-B}$$

Where:

m_{1b-B}	= mercury amount in blank for Fraction 1b	=	<0.1000	µg
m_{2b-B}	= mercury amount in blank for Fraction 2b	=	<0.3000	µg
m_{3a-B}	= mercury amount in blank for Fraction 3a	=	<0.2000	µg
m_{3b-B}	= mercury amount in blank for Fraction 3b	=	<0.4000	µg
m_{3c-B}	= mercury amount in blank for Fraction 3c	=	0.9431	µg
$m_{total-B}$	= total amount of mercury in blank	=	0.9431	µg

2. Total sample amount (µg)

$$m_{total-S} = \sum_{i=1}^{n} m_{i-S}$$

Where:

m_{1b-S}	= mercury amount in sample for Fraction 1b	=	4.1685	µg
m_{2b-S}	= mercury amount in sample for Fraction 2b	=	23.4945	µg
m_{3a-S}	= mercury amount in sample for Fraction 3a	=	<0.2000	µg
m_{3b-S}	= mercury amount in sample for Fraction 3b	=	<0.5000	µg
m_{3c-S}	= mercury amount in sample for Fraction 3c	=	1.4904	µg
$m_{total-S}$	= total amount of mercury in sample	=	29.1534	µg

3. Allowable blank correction (µg)

$$m_{T-B-allow} = m_{total-B} \text{ if } m_{total-B} \le 0.6$$

$$m_{T-B-allow} = MAX\ [0.6,\ \ MIN\ (m_{total-B},\ \ 0.05 \times m_{total-S})] \text{ if } m_{total-B} > 0.6$$

Where:

$m_{total-B}$	= total amount of mercury in blank	=	0.9431	µg
$m_{total-S}$	= total amount of mercury in sample	=	29.1534	µg
0.05 x $m_{total-S}$	= 5% of $m_{total-S}$	=	1.4577	µg
MAX	= Arithmetic operator that returns the maximum of two values			
MIN	= Arithmetic operator that returns the minimum of two values			
$m_{T-B-allow}$	= total allowable blank correction	=	0.9431	µg

NOTE: In this case, the second criteria applies.

4. Sample corrected for allowable blank - Total (µg)

$$m_n = m_{total-S} - m_{T-B-allow}$$

Where:

$m_{total-S}$	= total amount of mercury in sample	=	29.1534	µg
$m_{T-B-allow}$	= total allowable blank correction	=	0.9431	µg
m_n	= total mercury in sample corrected for allowable blank	=	28.2104	µg

EPA Method 29 Sample Calculations - Mercury Emissions Results

Sample data taken from Run 1

The tables presenting the results are generated electronically from raw data. It may not be possible to exactly duplicate these results using a calculator. The reference method data, results and all calculations are carried to sixteen decimal places throughtout. The final table is formatted to an appropriate number of significant figures.

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1. Mercury concentration (lb/dscf)

$$C_{sd} = \left(\frac{m_n}{V_{mstd}}\right)\left(\frac{2.205\times10^{-3}}{10^6}\right)$$

Where:

m_n	= Mercury collected in sample (total µg)	=	28.2104	µg
V_{mstd}	= volume metered, standard (dscf)	=	85.1579	dscf
2.205×10^{-3}	= conversion factor (lb/g)	=	2.205E-03	lb/g
10^6	= conversion factor (µg/g)	=	1.0E+06	µg/g
C_{sd}	= Mercury concentration (lb/dscf)	=	7.3045E-10	lb/dscf

2. Mercury concentration (µg/dscm)

$$C_{sd} = \left(\frac{m_n}{V_{mstd}}\right)(35.31)$$

Where:

m_n	= Mercury collected in sample (total µg)	=	28.2104	µg
V_{mstd}	= volume metered, standard (dscf)	=	85.1579	dscf
35.31	= conversion factor (dscf/dscm)	=	35.31	dscf/dscm
C_{sd}	= Mercury concentration (µg/dscm)	=	1.1697E+01	µg/dscm

3. Mercury concentration (mg/dscm)

$$C_{sd} = \left(\frac{m_n}{V_{mstd}}\right)\left(\frac{35.31}{1000}\right)$$

Where:

m_n	= Mercury collected in sample (total µg)	=	28.2104	µg
V_{mstd}	= volume metered, standard (dscf)	=	85.1579	dscf
35.31	= conversion factor (dscf/dscm)	=	35.31	dscf/dscm
1000	= conversion factor (µg/mg)	=	1000	µg/mg
C_{sd}	= Mercury concentration (mg/dscm)	=	1.1697E-02	mg/dscm

4. Mercury concentration (µg/Nm3 dry)

$$C_{sd} = \left(\frac{m_n}{V_{mstd}}\right)(35.31)\left(\frac{68 + 460}{32 + 460}\right)$$

Where:

m_n	= Mercury collected in sample (total µg)	=	28.2104	µg
V_{mstd}	= volume metered, standard (dscf)	=	85.1579	dscf
35.31	= conversion factor (dscf/dscm)	=	35.31	dscf/dscm
68	= standard temperature (°F)	=	68	°F
32	= normal temperature (°F)	=	32	°F
460	= °F to °R conversion constant	=	460	
C_{sd}	= Mercury concentration (µg/Nm3 dry)	=	1.2553E+01	µg/Nm³ dry

5. Mercury concentration corrected to x% oxygen (lb/dscf example)

$$C_{sdx} = C_{sd}\left(\frac{20.9 - x}{20.9 - O_2}\right)$$

Where:

C_{sd}	= Mercury concentration (lb/dscf)	=	7.3045E-10	lb/dscf
x	= oxygen content of corrected gas (%)	=	7.0	%
O_2	= proportion of oxygen in the gas stream by volume (%)	=	11.2	%
20.9	= oxygen content of ambient air (%)	=	20.9	%
C_{sdx}	= Mercury concentration corrected to x% oxygen (lb/dscf)	=	1.0467E-09	lb/dscf @ x%O_2

6. Mercury concentration corrected to y% carbon dioxide (lb/dscf example)

$$C_{sdy} = C_{sd}\left(\frac{y}{CO_2}\right)$$

Where:

C_{sd}	= Mercury concentration (lb/dscf)	=	7.3045E-10	lb/dscf
y	= carbon dioxide content of corrected gas (%)	=	12.0	%
CO_2	= proportion of carbon dioxide in the gas stream by volume (%)	=	8.1	%
C_{sdy}	= Mercury conc. corrected to y% carbon dioxide (lb/dscf)	=	1.0777E-09	lb/dscf @ y%CO_2

7. Mercury concentration at actual gas conditions (lb/acf example)

$$C_a = C_{sd}\left(\frac{Q_{std}}{Q_a}\right)$$

Where:

C_{sd}	= Mercury concentration (lb/dscf)	=	7.3045E-10	lb/dscf
Q_{std}	= volumetric flow rate at standard conditions, dry basis (dscfm)	=	101,636	dscfm
Q_a	= volumetric flow rate at actual conditions (acfm)	=	190,450	acfm
C_a	= Mercury concentration at actual gas conditions (lb/acf)	=	3.8982E-10	lb/acf

8. Mercury emission rate (lb/hr)

$$E_{lb/hr} = \left(\frac{m_n}{V_{mstd}}\right)\left(\frac{2.205\times10^{-3}}{10^6}\right)(Q_{std})(60)$$

Where:

m_n	= Mercury collected in sample (total µg)	=	28.2104	µg
V_{mstd}	= volume metered, standard (dscf)	=	85.1579	dscf
2.205×10^{-3}	= conversion factor (lb/g)	=	2.205E-03	lb/g
10^6	= conversion factor (µg/g)	=	1.0E+06	µg/g
Q_{std}	= volumetric flow rate at standard conditions, dry basis (dscfm)	=	101,636	dscfm
60	= conversion factor (min/hr)	=	60	min/hr
$E_{lb/hr}$	= Mercury emission rate (lb/hr)	=	4.4544E-03	lb/hr

9. Mercury emission rate (g/s)

$$E_{g/s} = \left(\frac{m_n}{V_{mstd}}\right)\left(\frac{Q_{std}}{(10^6)(60)}\right)$$

Where:

m_n	= Mercury collected in sample (total µg)	=	28.2104	µg
V_{mstd}	= volume metered, standard (dscf)	=	85.1579	dscf
Q_{std}	= volumetric flow rate at standard conditions, dry basis (dscfm)	=	101,636	dscfm
10^6	= conversion factor (µg/g)	=	1.0E+06	µg/g
60	= conversion factor (sec/min)	=	60	sec/min
$E_{g/s}$	= Mercury emission rate (g/s)	=	5.6115E-04	g/s

10. Mercury emission rate (Ton/yr)

$$E_{T/yr} = \left(\frac{m_n}{V_{mstd}}\right)\left(\frac{2.205\times10^{-3}}{10^6}\right)(Q_{std})(60)\left(\frac{Cap}{2000}\right)$$

Where:

m_n	= Mercury collected in sample (total µg)	=	28.2104	µg
V_{mstd}	= volume metered, standard (dscf)	=	85.1579	dscf
2.205×10^{-3}	= conversion factor (lb/g)	=	2.205E-03	lb/g
10^6	= conversion factor (µg/g)	=	1.0E+06	µg/g
Q_{std}	= volumetric flow rate at standard conditions, dry basis (dscfm)	=	101,636	dscfm
60	= conversion factor (min/hr)	=	60	min/hr
Cap	= capacity factor for process (hours operated/year)	=	8,760	hours/yr
2000	= conversion factor (lb/Ton)	=	2000	lb/Ton
$E_{T/yr}$	= Mercury emission rate (Ton/yr)	=	1.9510E-02	Ton/yr

11. Mercury emission rate - Fd-based (lb/MMBtu)

$$E_{Fd} = \left(\frac{m_n}{V_{mstd}}\right)\left(\frac{2.205 \times 10^{-3}}{10^6}\right)(F_d)\left(\frac{20.9}{20.9 - O_2}\right)$$

Where:

m_n	= Mercury collected in sample (total µg)	=	28.2104	µg
V_{mstd}	= volume metered, standard (dscf)	=	85.1579	dscf
2.205×10^{-3}	= conversion factor (lb/g)	=	2.205E-03	lb/g
10^6	= conversion factor (µg/g)	=	1.0E+06	µg/g
F_d	= ratio of gas volume to heat content of fuel (dscf/MMBtu)	=	9,570	dscf/MMBtu
O_2	= proportion of oxygen in the gas stream by volume (%)	=	11.2	%
20.9	= oxygen content of ambient air (%)	=	20.9	%
E_{Fd}	= Mercury emission rate - Fd-based (lb/MMBtu)	=	1.5062E-05	lb/MMBtu

12. Mercury emission rate - Fc-based (lb/MMBtu)

$$E_{Fc} = \left(\frac{m_n}{V_{mstd}}\right)\left(\frac{2.205 \times 10^{-3}}{10^6}\right)(F_c)\left(\frac{100}{CO_2}\right)$$

Where:

m_n	= Mercury collected in sample (total µg)	=	28.2104	µg
V_{mstd}	= volume metered, standard (dscf)	=	85.1579	dscf
2.205×10^{-3}	= conversion factor (lb/g)	=	2.205E-03	lb/g
10^6	= conversion factor (µg/g)	=	1.0E+06	µg/g
F_c	= ratio of gas volume to heat content of fuel (dscf/MMBtu)	=	1,820	dscf/MMBtu
CO_2	= proportion of oxygen in the gas stream by volume (%)	=	8.1	%
100	= conversion factor	=	100	
E_{Fc}	= Mercury emission rate - Fc-based (lb/MMBtu)	=	1.6345E-05	lb/MMBtu

13. Mercury emission rate - Heat Input-based (lb/MMBtu)

$$E_{Hi} = \left(\frac{m_n}{V_{mstd}}\right)\left(\frac{2.205 \times 10^{-3}}{10^6}\right)\left(\frac{(Q_{std})(60)}{H_i}\right)$$

Where:

m_n	= Mercury collected in sample (total µg)	=	28.2104	µg
V_{mstd}	= volume metered, standard (dscf)	=	85.1579	dscf
2.205×10^{-3}	= conversion factor (lb/g)	=	2.205E-03	lb/g
10^6	= conversion factor (µg/g)	=	1.0E+06	µg/g
Q_{std}	= volumetric flow rate at standard conditions, dry basis (dscfm)	=	101,636	dscfm
60	= conversion factor (min/hr)	=	60	min/hr
H_i	= actual heat input (MMBtu/hr)	=		MMBtu/hr
E_{Hi}	= Mercury emission rate - Heat Input-based (lb/MMBtu)	=	N/A	lb/MMBtu

14. Mercury Emission Rate - Production-based (lb/unit)

$$E_{RP} = \left(\frac{m_n}{V_{mstd}}\right)\left(\frac{2.205\times10^{-3}}{10^6}\right)\left(\frac{(Q_{std})(60)}{R_p}\right)$$

Where:

m_n	= Mercury collected in sample (total µg)	=	28.2104	µg
V_{mstd}	= volume metered, standard (dscf)	=	85.1579	dscf
2.205×10^{-3}	= conversion factor (lb/g)	=	2.205E-03	lb/g
10^6	= conversion factor (µg/g)	=	1.0E+06	µg/g
Q_{std}	= volumetric flow rate at standard conditions, dry basis (dscfm)	=	101,636	dscfm
60	= conversion factor (min/hr)	=	60	min/hr
R_p	= production rate (units/hr)	=	184	units/hour
E_{RP}	= Mercury emission rate - production-based (lb/xxxxx)	=	2.4147E-05	lb/unit

15. Mercury Emission Rate - Production-based (g/unit)

$$E_{RP} = \left(\frac{m_n}{V_{mstd}}\right)\left(\frac{(Q_{std})(60)}{(10^6)(R_p)}\right)$$

Where:

m_n	= Mercury collected in sample (total µg)	=	28.2104	µg
V_{mstd}	= volume metered, standard (dscf)	=	85.1579	dscf
10^6	= conversion factor (µg/g)	=	1.0E+06	µg/g
Q_{std}	= volumetric flow rate at standard conditions, dry basis (dscfm)	=	101,636	dscfm
60	= conversion factor (min/hr)	=	60	min/hr
R_p	= production rate (units/hr)	=	184	units/hour
E_{RP}	= Mercury emission rate - production-based (g/xxxxx)	=	1.0951E-02	g/unit

5. Sample corrected for allowable blank - Prorated for each fraction (µg)

$$m_{n-i} = \left(\frac{m_{i-S}}{m_{total\text{-}S}}\right)(m_n)$$

Where:

m_n	= total mercury in sample corrected for allowable blank	=	28.2104	µg
$m_{1b\text{-}S}$	= mercury amount in sample for Fraction 1b	=	4.1685	µg
$m_{2b\text{-}S}$	= mercury amount in sample for Fraction 2b	=	23.4945	µg
$m_{3a\text{-}S}$	= mercury amount in sample for Fraction 3a	=	<0.2000	µg
$m_{3b\text{-}S}$	= mercury amount in sample for Fraction 3b	=	<0.5000	µg
$m_{3c\text{-}S}$	= mercury amount in sample for Fraction 3c	=	1.4904	µg
$m_{total\text{-}S}$	= total amount of mercury in sample	=	29.1534	µg
$m_{n\text{-}1b}$	= mercury corrected for blank - prorated for Fraction 1b	=	4.0337	µg
$m_{n\text{-}2b}$	= mercury corrected for blank - prorated for Fraction 2b	=	22.7345	µg
$m_{n\text{-}3a}$	= mercury corrected for blank - prorated for Fraction 3a	=	0.0000	µg
$m_{n\text{-}3b}$	= mercury corrected for blank - prorated for Fraction 3b	=	0.0000	µg
$m_{n\text{-}3c}$	= mercury corrected for blank - prorated for Fraction 3c	=	1.4422	µg

LOGIC FOR TREATING DETECTION LIMITS

(mercury only)

1. Logic for Determining Total Blank ($m_{Total-B}$) from 5 Fractions

	CASE 1 All 5 fractions are D.	CASE 2 1 to 4 fractions are ND	CASE 3 All 5 fractions are ND
Rule			
ND = 0	$m_{Total-B}$ = Sum D, 1-5	$m_{Total-B}$ = Sum D	$m_{Total-B}$ = < Sum ND
ND=1x	$m_{Total-B}$ = Sum D, 1-5	$m_{Total-B}$ = Sum D	$m_{Total-B}$ = < Sum ND
ND=0.5x	$m_{Total-B}$ = Sum D, 1-5	$m_{Total-B}$ = Sum D	$m_{Total-B}$ = < 0.5 Sum ND

2. Logic for Determining Total Sample ($m_{Total-S}$) from 5 Fractions

	CASE 1 All 5 fractions are D.	CASE 2 1 to 4 fractions are ND	CASE 3 All 5 fractions are ND
Rule			
ND = 0	$m_{Total-S}$ = Sum D, 1-5	$m_{Total-S}$ = Sum D	$m_{Total-S}$ = < Sum ND
ND=1x	$m_{Total-S}$ = Sum D, 1-5	$m_{Total-S}$ = < [Sum D + Sum ND]	$m_{Total-S}$ = < Sum ND
ND=0.5x	$m_{Total-S}$ = Sum D, 1-5	$m_{Total-S}$ = < [SumD+0.5 SumND]	$m_{Total-S}$ = < 0.5 Sum ND

3. Logic for Determining Maximum Allowable Blank Correction ($m_{T-B-allow}$)

	CASE 1 All 5 fractions are D. $m_{Total-B}$ = D	CASE 2 1 to 4 sample fractions are ND $m_{Total-B}$ = D	CASE 3 All 5 fractions are ND $m_{Total-B}$ = D	CASE 4 Any type of fractions $m_{Total-B}$ = ND
Rule				
ND = 0	$m_{T-B-allow}$ = M29 Rule	$m_{T-B-allow}$ = M29 Rule*	$m_{T-B-allow}$ = 0	$m_{T-B-allow}$ = 0
ND=1x	$m_{T-B-allow}$ = M29 Rule	$m_{T-B-allow}$ = M29 Rule*	$m_{T-B-allow}$ = 0	$m_{T-B-allow}$ = 0
ND=0.5x	$m_{T-B-allow}$ = M29 Rule	$m_{T-B-allow}$ = M29 Rule*	$m_{T-B-allow}$ = 0	$m_{T-B-allow}$ = 0

* M29 rule using only detected sample quantities for logical comparisons.

4. Logic for Determining Blank-Corrected Sample Amount (m_n)

	CASE 1 All 5 fractions are D. $m_{Total-S} - m_{T-B-allow} \geq$ MIN(MDL)	CASE 2 1 to 4 sample fractions are ND $m_{Total-S} - m_{T-B-allow} \geq$ MIN(MDL)	CASE 3 All 5 fractions are ND $m_{Total-S}$ and $m_{T-B-allow}$ anything	CASE 4 Any type of fractions $m_{Total-S} - m_{T-B-allow}$ < MIN(MDL)
Rule				
ND = 0	$m_n = m_{Total-S} - m_{T-B-allow}$	$m_n = m_{Total-S} - m_{T-B-allow}$	m_n = < $m_{Total-S}$	m_n = < MIN[MDL]
ND=1x	$m_n = m_{Total-S} - m_{T-B-allow}$	m_n = < [$m_{Total-S} - m_{T-B-allow}$]	m_n = < $m_{Total-S}$	m_n = < MIN[MDL]
ND=0.5x	$m_n = m_{Total-S} - m_{T-B-allow}$	m_n = < [$m_{Total-S} - m_{T-B-allow}$]	m_n = < $m_{Total-S}$	m_n = < MIN[MDL]

Definitions and Notes

The term "Rule" refers to the rule being implemented for handling non-detectable quantities in summations.
MDL = minimum detection limit.
D = Detectable quantity reported as D.
ND = Non-Detectable quantity reported at a value of ND.
MIN[MDL] = lowest quantity of all detection limits for 5 fractions.

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SS Metals-1 Version 10-2002

PARAMETERS		B

Wheelabrator North Broward, Inc.
Clean Air Project No: 9156-3
FF Outlet

USEPA Method 29
Sampling, Velocity and Moisture Parameters

Run No.		1	2	3	Average
Date (2002)		December 3	December 3	December 3	
Start Time (approx.)		07:47	09:59	12:10	
Stop Time (approx.)		09:58	12:09	16:21	
Sampling Conditions					
Y_d	Dry gas meter correction factor	0.9956	0.9956	0.9956	
C_p	Pitot tube coefficient	0.84	0.84	0.84	
P_g	Static pressure (in. H_2O)	-12.7000	-13.4000	-13.3000	
A_s	Sample location area (ft^2)	64.0000	64.0000	64.0000	
P_{bar}	Barometric pressure (in. Hg)	30.10	30.10	30.10	**30.1000**
D_n	Nozzle diameter (in.)	0.2800	0.2800	0.2800	
O_2	Oxygen (dry volume %)	11.2000	11.0667	9.7333	**10.6667**
CO_2	Carbon dioxide (dry volume %)	8.1333	8.6667	8.8667	**8.5556**
N_2+CO	Nitrogen plus carbon monoxide (dry volume %)	80.6667	80.2667	81.4000	**80.7778**
V_{lc}	Total Liquid collected (ml)	467.90	459.80	470.80	
V_m	Volume metered, meter conditions (ft^3)	85.7340	81.9500	88.8080	
T_m	Dry gas meter temperature (°F)	77.7000	87.7400	88.8400	
T_s	Sample temperature (°F)	306.2800	307.1200	304.6000	**306.0000**
ΔH	Meter box orifice pressure drop (in. H_2O)	1.4220	1.3920	1.4912	
θ	Total sampling time (min)	125.0	125.0	125.0	
Flow Results					
V_{wstd}	Volume of water collected (ft^3)	22.0241	21.6428	22.1606	**21.9425**
V_{mstd}	Volume metered, standard (dscf)	84.5803	79.3595	85.8490	**83.2629**
P_s	Sample gas pressure, absolute (in. Hg)	29.1662	29.1147	29.1221	**29.1343**
P_v	Vapor pressure, actual (in. Hg)	29.1662	29.1147	29.1221	**29.1343**
B_{wo}	Moisture measured in sample (% by volume)	20.6596	21.4280	20.5172	**20.8683**
B_{ws}	Saturated moisture content (% by volume)	100.0000	100.0000	100.0000	**100.0000**
B_w	Actual water vapor in gas (% by volume)	20.6596	21.4280	20.5172	**20.8683**
$\sqrt{\Delta P}$	Velocity head ($\sqrt{}$in. H_2O)	0.7045	0.6897	0.7204	**0.7048**
M_d	MW of sample gas, dry (lb/lb-mole)	29.7493	29.8293	29.8080	**29.7956**
M_s	MW of sample gas, wet (lb/lb-mole)	27.3220	27.2945	27.3853	**27.3339**
V_s	Velocity of sample (ft/sec)	49.6082	48.6597	50.6509	**49.6396**
%I	Isokinetic sampling (%)	99.8178	96.6920	98.9842	**98.4980**
Q_a	Volumetric flow rate, actual (acfm)	190,495	186,853	194,499	**190,616**
Q_s	Volumetric flow rate, standard (scfm)	127,952	125,148	130,731	**127,944**
Q_{std}	Volumetric flow rate, dry standard (dscfm)	101,518	98,331	103,909	**101,253**
Q_{std7}	Volumetric flow rate, dry std@7%O_2 (dscfm)	70,843	69,563	83,476	**74,627**
Q_a	Volumetric flow rate, actual (acf/hr)	11,429,719	11,211,205	11,669,966	**11,436,963**
Q_s	Volumetric flow rate, standard (scf/hr)	7,677,148	7,508,855	7,843,858	**7,676,620**
Q_{std}	Volumetric flow rate, dry standard (dscf/hr)	6,091,078	5,899,856	6,234,517	**6,075,150**
Q_a	Volumetric flow rate, actual (m^3/hr)	323,696	317,508	330,500	**323,902**
Q_s	Volumetric flow rate, standard (m^3/hr)	217,421	212,655	222,143	**217,406**
Q_{std}	Volumetric flow rate, dry standard (dry m^3/hr)	172,503	167,087	176,565	**172,052**
Q_{std7}	Volumetric flow rate, dry std@7%O_2 (dry m^3/hr)	120,380	118,203	141,845	**126,809**
Q_s	Volumetric flow rate, normal (Nm^3/hr)	202,597	198,156	206,997	**202,583**
Q_{std}	Volumetric flow rate, dry normal (Nm^3/hr)	160,741	155,695	164,527	**160,321**
Q_{std7}	Volumetric flow rate, dry normal @7%O_2 (Nm^3/hr)	112,172	110,144	132,174	**118,163**

Comments:
None

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Wheelabrator North Broward, Inc.
Clean Air Project No: 9156-3
FF Outlet

USEPA Method 29
Mercury (Hg) Laboratory Parameters

Blank Analysis				
m_{1b-B}	Fraction 1B Blank (µg)	<0.1000		
m_{2b-B}	Fraction 2B Blank (µg)	<0.3000		
m_{3a-B}	Fraction 3A Blank (µg)	<0.2000		
m_{3b-B}	Fraction 3B Blank (µg)	<0.4000		
m_{3c-B}	Fraction 3C Blank (µg)	0.9431		
$m_{total-B}$	Total Blank Amount (ND counted as zero) (µg)	0.9431		
Run No.		**1**	**2**	**3**
Date (2002)		Dec 3	Dec 3	Dec 3
Start Time (approx.)		07:47	09:59	12:10
Stop Time (approx.)		09:58	12:09	16:21
Sample Analysis				
m_{1b-S}	Fraction 1B Sample (µg)	4.1685	5.6185	5.2809
m_{2b-S}	Fraction 2B Sample (µg)	23.4945	19.8268	36.6612
m_{3a-S}	Fraction 3A Sample (µg)	<0.2000	<0.2000	<0.2000
m_{3b-S}	Fraction 3B Sample (µg)	<0.5000	<0.5000	<0.5000
m_{3c-S}	Fraction 3C Sample (µg)	1.4904	1.6832	1.3938
$m_{total-S}$	Total Sample Amount (µg)	29.1534	27.1284	43.3358
Allowable Blank				
$m_{T-B-allow}$	Total Allowable Blank (µg)	0.9431	0.9431	0.9431
Sample Corrected for Blank				
m_n	Total Sample Amount (µg)	28.2104	26.1853	42.3927
Sample Corrected for Blank - Prorated Fractions				
m_{n-1b}	Fraction 1B Prorated (µg)	4.0337	5.4231	5.1659
m_{n-2b}	Fraction 2B Prorated (µg)	22.7345	19.1375	35.8634
m_{n-3a}	Fraction 3A Prorated (µg)	0.0000	0.0000	0.0000
m_{n-3b}	Fraction 3B Prorated (µg)	0.0000	0.0000	0.0000
m_{n-3c}	Fraction 3C Prorated (µg)	1.4422	1.6247	1.3634

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Wheelabrator North Broward, Inc.
Clean Air Project No: 9156-3
FF Outlet

USEPA Method 29
Mercury (Hg) Emission Parameters

Run No.		1	2	3	Average
Date (2002)		Dec 3	Dec 3	Dec 3	
Start Time (approx.)		07:47	09:59	12:10	
Stop Time (approx.)		09:58	12:09	16:21	
Process Conditions					
R_P	Steam Flow - (Klbs/hour)	184.4700	184.8800	185.8000	**185.0500**
P_1	Fabric Filter Inlet Temperature (°F)	320.1100	320.0300	319.0000	**319.7133**
F_d	Oxygen-based F-factor (dscf/MMBtu)	9,570	9,570	9,570	**9,570**
F_c	Carbon dioxide-based F-factor (dscf/MMBtu)	1,820	1,820	1,820	**1,820**
Cap	Capacity factor (hours/year)	8,760	8,760	8,760	**8,760**
Gas Conditions					
O_2	Oxygen (dry volume %)	11.2000	11.0667	9.7333	**10.6667**
CO_2	Carbon dioxide (dry volume %)	8.1333	8.6667	8.8667	**8.5556**
T_s	Sample temperature (°F)	306.2800	307.1200	304.6000	**306.0000**
B_w	Actual water vapor in gas (% by volume)	20.5483	21.4280	20.4064	**20.7942**
Gas Flow Rate					
Q_a	Volumetric flow rate, actual (acfm)	190,450	186,853	194,453	**190,585**
Q_s	Volumetric flow rate, standard (scfm)	127,922	125,148	130,700	**127,923**
Q_{std}	Volumetric flow rate, dry standard (dscfm)	101,636	98,331	104,029	**101,332**
Q_{std7}	Volumetric flow rate, dry std@7%O_2 (dscfm)	70,926	69,563	83,572	**74,687**
Q_a	Volumetric flow rate, actual (acf/hr)	11,426,984	11,211,205	11,667,180	**11,435,123**
Q_s	Volumetric flow rate, standard (scf/hr)	7,675,310	7,508,855	7,841,985	**7,675,384**
Q_{std}	Volumetric flow rate, dry standard (dscf/hr)	6,098,167	5,899,856	6,241,716	**6,079,913**
Q_a	Volumetric flow rate, actual (m^3/hr)	323,619	317,508	330,421	**323,849**
Q_s	Volumetric flow rate, standard (m^3/hr)	217,369	212,655	222,090	**217,371**
Q_{std}	Volumetric flow rate, dry standard (dry m^3/hr)	172,704	167,087	176,769	**172,187**
Q_{std7}	Volumetric flow rate, dry std@7%O_2 (dry m^3/hr)	120,520	118,203	142,009	**126,911**
Q_s	Volumetric flow rate, normal (Nm^3/hr)	202,549	198,156	206,947	**202,551**
Q_{std}	Volumetric flow rate, dry normal (Nm^3/hr)	160,928	155,695	164,717	**160,447**
Q_{std7}	Volumetric flow rate, dry normal @7%O_2 (Nm^3/hr)	112,303	110,144	132,326	**118,258**
Sampling Data					
V_{mstd}	Volume metered, standard (dscf)	85.1579	79.3595	86.4354	**83.6509**
%I	Isokinetic sampling (%)	100.3827	96.6920	99.5453	**98.8733**
Laboratory Data					
$m_{n\text{-}1b}$	Fraction 1B Prorated (µg)	4.0337	5.4231	5.1659	**4.8743**
$m_{n\text{-}2b}$	Fraction 2B Prorated (µg)	22.7345	19.1375	35.8634	**25.9118**
$m_{n\text{-}3a}$	Fraction 3A Prorated (µg)	0.0000	0.0000	0.0000	**0.0000**
$m_{n\text{-}3b}$	Fraction 3B Prorated (µg)	0.0000	0.0000	0.0000	**0.0000**
$m_{n\text{-}3c}$	Fraction 3C Prorated (µg)	1.4422	1.6247	1.3634	**1.4768**
m_n	Total matter corrected for allowable blanks (µg)	28.2104	26.1853	42.3927	**32.2628**
Mercury Results - Total					
C_{sd}	Concentration (lb/dscf)	7.3045E-10	7.2756E-10	1.0815E-09	**8.4649E-10**
C_{sd7}	Concentration @7% O_2 (lb/dscf)	1.0467E-09	1.0284E-09	1.3462E-09	**1.1404E-09**
C_{sd12}	Concentration @12% CO_2 (lb/dscf)	1.0777E-09	1.0074E-09	1.4636E-09	**1.1829E-09**
C_a	Concentration (lb/acf)	3.8982E-10	3.8288E-10	5.7856E-10	**4.5042E-10**
C_{sd}	Concentration (µg/dscm)	1.1697E+01	1.1651E+01	1.7318E+01	**1.3555E+01**
C_{sd7}	Concentration @7% O_2 (µg/dscm)	1.6762E+01	1.6469E+01	2.1557E+01	**1.8263E+01**
C_{sd12}	Concentration @12% CO_2 (µg/dscm)	1.7258E+01	1.6132E+01	2.3438E+01	**1.8943E+01**
C_{sd}	Concentration (mg/dscm)	1.1697E-02	1.1651E-02	1.7318E-02	**1.3555E-02**
C_{sd7}	Concentration @7% O_2 (mg/dscm)	1.6762E-02	1.6469E-02	2.1557E-02	**1.8263E-02**
C_{sd12}	Concentration @12% CO_2 (mg/dscm)	1.7258E-02	1.6132E-02	2.3438E-02	**1.8943E-02**
C_a	Concentration (µg/m^3 (actual,wet))	6.2424E+00	6.1312E+00	9.2648E+00	**7.2128E+00**
C_{sd}	Concentration (µg/Nm^3 dry)	1.2553E+01	1.2503E+01	1.8585E+01	**1.4547E+01**
C_{sd7}	Concentration @7% O_2 (µg/Nm^3 dry)	1.7988E+01	1.7674E+01	2.3134E+01	**1.9599E+01**
C_{sd12}	Concentration @12% CO_2 (µg/Nm^3 dry)	1.8521E+01	1.7312E+01	2.5153E+01	**2.0329E+01**
$E_{lb/hr}$	Rate (lb/hr)	4.4544E-03	4.2925E-03	6.7501E-03	**5.1657E-03**
$E_{g/s}$	Rate (g/s)	5.6115E-04	5.4075E-04	8.5036E-04	**6.5075E-04**
$E_{T/yr}$	Rate (Ton/yr)	1.9510E-02	1.8801E-02	2.9566E-02	**2.2626E-02**
E_{Fd}	Rate - Fd-based (lb/MMBtu)	1.5062E-05	1.4799E-05	1.9371E-05	**1.6410E-05**
E_{Fc}	Rate - Fc-based (lb/MMBtu)	1.6345E-05	1.5279E-05	2.2198E-05	**1.7941E-05**

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Wheelabrator North Broward, Inc.
Clean Air Project No: 9156-3
FF Outlet

USEPA Method 29
Mercury (Hg) Emission Parameters (continued)
Separate Front Half Results

Run No.		1	2	3	Average
Date (2002)		Dec 3	Dec 3	Dec 3	
Start Time (approx.)		07:47	09:59	12:10	
Stop Time (approx.)		09:58	12:09	16:21	
Mercury Results - Front Half					
C_{sd}	Concentration (lb/dscf)	1.0444E-10	1.5068E-10	1.3179E-10	**1.2897E-10**
C_{sd7}	Concentration @7% O_2 (lb/dscf)	1.4967E-10	2.1300E-10	1.6404E-10	**1.7557E-10**
C_{sd12}	Concentration @12% CO_2 (lb/dscf)	1.5410E-10	2.0864E-10	1.7836E-10	**1.8036E-10**
C_a	Concentration (lb/acf)	5.5738E-11	7.9296E-11	7.0502E-11	**6.8512E-11**
C_{sd}	Concentration (µg/dscm)	1.6725E+00	2.4130E+00	2.1104E+00	**2.0653E+00**
C_{sd7}	Concentration @7% O_2 (µg/dscm)	2.3967E+00	3.4109E+00	2.6269E+00	**2.8115E+00**
C_{sd12}	Concentration @12% CO_2 (µg/dscm)	2.4677E+00	3.3410E+00	2.8561E+00	**2.8883E+00**
C_{sd}	Concentration (mg/dscm)	1.6725E-03	2.4130E-03	2.1104E-03	**2.0653E-03**
C_{sd7}	Concentration @7% O_2 (mg/dscm)	2.3967E-03	3.4109E-03	2.6269E-03	**2.8115E-03**
C_{sd12}	Concentration @12% CO_2 (mg/dscm)	2.4677E-03	3.3410E-03	2.8561E-03	**2.8883E-03**
C_a	Concentration (µg/m³ (actual,wet))	8.9257E-01	1.2698E+00	1.1290E+00	**1.0971E+00**
C_{sd}	Concentration (µg/Nm³ dry)	1.7949E+00	2.5895E+00	2.2648E+00	**2.2164E+00**
C_{sd7}	Concentration @7% O_2 (µg/Nm³ dry)	2.5721E+00	3.6604E+00	2.8191E+00	**3.0172E+00**
C_{sd12}	Concentration @12% CO_2 (µg/Nm³ dry)	2.6482E+00	3.5855E+00	3.0651E+00	**3.0996E+00**
$E_{lb/hr}$	Rate (lb/hr)	6.3692E-04	8.8900E-04	8.2257E-04	**7.8283E-04**
$E_{g/s}$	Rate (g/s)	8.0237E-05	1.1199E-04	1.0362E-04	**9.8618E-05**
$E_{T/yr}$	Rate (Ton/yr)	2.7897E-03	3.8938E-03	3.6028E-03	**3.4288E-03**
E_{Fd}	Rate - Fd-based (lb/MMBtu)	2.1536E-06	3.0649E-06	2.3605E-06	**2.5263E-06**
E_{Fc}	Rate - Fc-based (lb/MMBtu)	2.3372E-06	3.1643E-06	2.7051E-06	**2.7355E-06**
E_{Hi}	Rate - Heat Input-based (lb/MMBtu)	N/A	N/A	N/A	
E_{Rp}	Rate - Production-based (lb/xxxxx)	3.4527E-06	4.8085E-06	4.4272E-06	**4.2295E-06**
E_{Rp}	Rate - Production-based (g/xxxxx)	1.5659E-03	2.1807E-03	2.0078E-03	**1.9181E-03**

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QA/QC _____
Date _____

Wheelabrator North Broward, Inc.
Clean Air Project No: 9156-3
FF Outlet

USEPA Method 29
Mercury (Hg) Emission Parameters (continued)
Separate Impinger 1-3 Results

Run No.		1	2	3	Average
Date (2002)		Dec 3	Dec 3	Dec 3	
Start Time (approx.)		07:47	09:59	12:10	
Stop Time (approx.)		09:58	12:09	16:21	
Mercury Results - Impingers 1-3 Solution					
C_{sd}	Concentration (lb/dscf)	5.8867E-10	5.3173E-10	9.1489E-10	**6.7843E-10**
C_{sd7}	Concentration @7% O_2 (lb/dscf)	8.4355E-10	7.5164E-10	1.1388E-09	**9.1134E-10**
C_{sd12}	Concentration @12% CO_2 (lb/dscf)	8.6852E-10	7.3625E-10	1.2382E-09	**9.4766E-10**
C_a	Concentration (lb/acf)	3.1415E-10	2.7982E-10	4.8945E-10	**3.6114E-10**
C_{sd}	Concentration (µg/dscm)	9.4267E+00	8.5150E+00	1.4651E+01	**1.0864E+01**
C_{sd7}	Concentration @7% O_2 (µg/dscm)	1.3508E+01	1.2036E+01	1.8237E+01	**1.4594E+01**
C_{sd12}	Concentration @12% CO_2 (µg/dscm)	1.3908E+01	1.1790E+01	1.9828E+01	**1.5175E+01**
C_{sd}	Concentration (mg/dscm)	9.4267E-03	8.5150E-03	1.4651E-02	**1.0864E-02**
C_{sd7}	Concentration @7% O_2 (mg/dscm)	1.3508E-02	1.2036E-02	1.8237E-02	**1.4594E-02**
C_{sd12}	Concentration @12% CO_2 (mg/dscm)	1.3908E-02	1.1790E-02	1.9828E-02	**1.5175E-02**
C_a	Concentration (µg/m³ (actual,wet))	5.0307E+00	4.4810E+00	7.8378E+00	**5.7832E+00**
C_{sd}	Concentration (µg/Nm³ dry)	1.0116E+01	9.1380E+00	1.5723E+01	**1.1659E+01**
C_{sd7}	Concentration @7% O_2 (µg/Nm³ dry)	1.4497E+01	1.2917E+01	1.9571E+01	**1.5662E+01**
C_{sd12}	Concentration @12% CO_2 (µg/Nm³ dry)	1.4926E+01	1.2653E+01	2.1279E+01	**1.6286E+01**
$E_{lb/hr}$	Rate (lb/hr)	3.5898E-03	3.1372E-03	5.7105E-03	**4.1458E-03**
$E_{g/s}$	Rate (g/s)	4.5223E-04	3.9521E-04	7.1938E-04	**5.2227E-04**
$E_{T/yr}$	Rate (Ton/yr)	1.5723E-02	1.3741E-02	2.5012E-02	**1.8159E-02**
E_{Fd}	Rate - Fd-based (lb/MMBtu)	1.2138E-05	1.0816E-05	1.6387E-05	**1.3114E-05**
E_{Fc}	Rate - Fc-based (lb/MMBtu)	1.3173E-05	1.1166E-05	1.8779E-05	**1.4373E-05**
E_{Hi}	Rate - Heat Input-based (lb/MMBtu)	N/A	N/A	N/A	
E_{Rp}	Rate - Production-based (lb/xxxxx)	1.9460E-05	1.6969E-05	3.0735E-05	**2.2388E-05**
E_{Rp}	Rate - Production-based (g/xxxxx)	8.8254E-03	7.6955E-03	1.3939E-02	**1.0153E-02**

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Wheelabrator North Broward, Inc.
Clean Air Project No: 9156-3
FF Outlet

USEPA Method 29
Mercury (Hg) Emission Parameters (continued)
Separate Impinger 4 Results

Run No.		1	2	3	Average
Date (2002)		Dec 3	Dec 3	Dec 3	
Start Time (approx.)		07:47	09:59	12:10	
Stop Time (approx.)		09:58	12:09	16:21	
Mercury Results - Impinger 4 Solution					
C_{sd}	Concentration (lb/dscf)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
C_{sd7}	Concentration @7% O_2 (lb/dscf)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
C_{sd12}	Concentration @12% CO_2 (lb/dscf)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
C_a	Concentration (lb/acf)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
C_{sd}	Concentration (µg/dscm)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
C_{sd7}	Concentration @7% O_2 (µg/dscm)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
C_{sd12}	Concentration @12% CO_2 (µg/dscm)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
C_{sd}	Concentration (mg/dscm)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
C_{sd7}	Concentration @7% O_2 (mg/dscm)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
C_{sd12}	Concentration @12% CO_2 (mg/dscm)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
C_a	Concentration (µg/m³ (actual,wet))	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
C_{sd}	Concentration (µg/Nm³ dry)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
C_{sd7}	Concentration @7% O_2 (µg/Nm³ dry)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
C_{sd12}	Concentration @12% CO_2 (µg/Nm³ dry)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
$E_{lb/hr}$	Rate (lb/hr)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
$E_{g/s}$	Rate (g/s)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
$E_{T/yr}$	Rate (Ton/yr)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
E_{Fd}	Rate - Fd-based (lb/MMBtu)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
E_{Fc}	Rate - Fc-based (lb/MMBtu)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
E_{Hi}	Rate - Heat Input-based (lb/MMBtu)	N/A	N/A	N/A	
E_{Rp}	Rate - Production-based (lb/xxxxx)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
E_{Rp}	Rate - Production-based (g/xxxxx)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**

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Date _____

Wheelabrator North Broward, Inc.
Clean Air Project No: 9156-3
FF Outlet

USEPA Method 29
Mercury (Hg) Emission Parameters (continued)
Separate Impinger 5-6 Results

Run No.		1	2	3	Average
Date (2002)		Dec 3	Dec 3	Dec 3	
Start Time (approx.)		07:47	09:59	12:10	
Stop Time (approx.)		09:58	12:09	16:21	
Mercury Results - Filtered Permanganate Solution					
C_{sd}	Concentration (lb/dscf)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
C_{sd7}	Concentration @7% O_2 (lb/dscf)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
C_{sd12}	Concentration @12% CO_2 (lb/dscf)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
C_a	Concentration (lb/acf)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
C_{sd}	Concentration (µg/dscm)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
C_{sd7}	Concentration @7% O_2 (µg/dscm)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
C_{sd12}	Concentration @12% CO_2 (µg/dscm)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
C_{sd}	Concentration (mg/dscm)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
C_{sd7}	Concentration @7% O_2 (mg/dscm)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
C_{sd12}	Concentration @12% CO_2 (mg/dscm)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
C_a	Concentration (µg/m³ (actual,wet))	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
C_{sd}	Concentration (µg/Nm³ dry)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
C_{sd7}	Concentration @7% O_2 (µg/Nm³ dry)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
C_{sd12}	Concentration @12% CO_2 (µg/Nm³ dry)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
$E_{lb/hr}$	Rate (lb/hr)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
$E_{g/s}$	Rate (g/s)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
$E_{T/yr}$	Rate (Ton/yr)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
E_{Fd}	Rate - Fd-based (lb/MMBtu)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
E_{Fc}	Rate - Fc-based (lb/MMBtu)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
E_{Hi}	Rate - Heat Input-based (lb/MMBtu)	N/A	N/A	N/A	
E_{Rp}	Rate - Production-based (lb/xxxxx)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
E_{Rp}	Rate - Production-based (g/xxxxx)	0.0000E+00	0.0000E+00	0.0000E+00	**0.0000E+00**
Mercury Results - HCl Rinse + HCl/MnO2 Precipitate					
C_{sd}	Concentration (lb/dscf)	3.7342E-11	4.5142E-11	3.4781E-11	**3.9089E-11**
C_{sd7}	Concentration @7% O_2 (lb/dscf)	5.3511E-11	6.3811E-11	4.3295E-11	**5.3539E-11**
C_{sd12}	Concentration @12% CO_2 (lb/dscf)	5.5095E-11	6.2504E-11	4.7073E-11	**5.4891E-11**
C_a	Concentration (lb/acf)	1.9928E-11	2.3756E-11	1.8607E-11	**2.0764E-11**
C_{sd}	Concentration (µg/dscm)	5.9798E-01	7.2289E-01	5.5698E-01	**6.2595E-01**
C_{sd7}	Concentration @7% O_2 (µg/dscm)	8.5690E-01	1.0218E+00	6.9331E-01	**8.5735E-01**
C_{sd12}	Concentration @12% CO_2 (µg/dscm)	8.8227E-01	1.0009E+00	7.5380E-01	**8.7900E-01**
C_{sd}	Concentration (mg/dscm)	5.9798E-04	7.2289E-04	5.5698E-04	**6.2595E-04**
C_{sd7}	Concentration @7% O_2 (mg/dscm)	8.5690E-04	1.0218E-03	6.9331E-04	**8.5735E-04**
C_{sd12}	Concentration @12% CO_2 (mg/dscm)	8.8227E-04	1.0009E-03	7.5380E-04	**8.7900E-04**
C_a	Concentration (µg/m³ (actual,wet))	3.1912E-01	3.8042E-01	2.9797E-01	**3.3250E-01**
C_{sd}	Concentration (µg/Nm³ dry)	6.4174E-01	7.7578E-01	5.9773E-01	**6.7175E-01**
C_{sd7}	Concentration @7% O_2 (µg/Nm³ dry)	9.1960E-01	1.0966E+00	7.4404E-01	**9.2008E-01**
C_{sd12}	Concentration @12% CO_2 (µg/Nm³ dry)	9.4682E-01	1.0742E+00	8.0896E-01	**9.4331E-01**
$E_{lb/hr}$	Rate (lb/hr)	2.2772E-04	2.6633E-04	2.1710E-04	**2.3705E-04**
$E_{g/s}$	Rate (g/s)	2.8687E-05	3.3552E-05	2.7349E-05	**2.9863E-05**
$E_{T/yr}$	Rate (Ton/yr)	9.9741E-04	1.1665E-03	9.5088E-04	**1.0383E-03**
E_{Fd}	Rate - Fd-based (lb/MMBtu)	7.6999E-07	9.1820E-07	6.2299E-07	**7.7039E-07**
E_{Fc}	Rate - Fc-based (lb/MMBtu)	8.3561E-07	9.4798E-07	7.1393E-07	**8.3251E-07**
E_{Hi}	Rate - Heat Input-based (lb/MMBtu)	N/A	N/A	N/A	
E_{Rp}	Rate - Production-based (lb/xxxxx)	1.2344E-06	1.4406E-06	1.1684E-06	**1.2811E-06**
E_{Rp}	Rate - Production-based (g/xxxxx)	5.5984E-04	6.5332E-04	5.2990E-04	**5.8102E-04**

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Date _____

CALIBRATION DATA

C

Nozzle Calibration Sheet

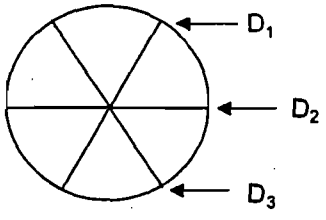
Client Wheelabrator N. Broward	Project Number 9156
Calibrated by K. OHalloren	Unit 3 FF Outlet
Date 12/2/2002	Runs 6 (1-6)

Nozzle Identification	D_1 (inches)	D_2 (inches)	D_3 (inches)	ΔD (inches)	ΔD_{ave} (inches)
FF Outlet #1	0.280	0.280	0.280	0	0.280
FF Outlet #2	0.281	0.280	0.280	0.001	0.280

D_1, D_2, D_3 = three nozzle diameter measurements

ΔD = maximum difference between any two diameters
$\Delta D \leq 0.004$ inches*

ΔD_{ave} = average of D_1, D_2, D_3



* (40 CFR 60, Appendix A, Method 5, Section 5.1)

QA/QC_____
Date_____

CleanAir ENGINEERING

Meter Box Full Test Calibration

Meter Box No: 66-10

Date of Calibration: 10/24/2001

Meter Box Y_d: 1.0024

Calibration conducted by: R.R.

Meter Box ?H@: 1.6830

Barometric Pressure: 28.83

Signature

				Standard Meter Gas Volume (ft^3)			Meter Box Gas Volume (ft^3)			Std. Meter Temperature (°F)			Meter Box Temperature (°F)			Time (min.)	Calibration Results	
Q	?H	?P	Y_{ds}	Initial	Final	V_{ds} Net	Initial	Final	V_d Net	In	Out	T_{ds} Avg.	In	T_o Out	T_d Avg.	Θ	Y_d	?H@
0.973	3.00	-1.80	1.0000	0.000	10.000	10.000	406.142	416.224	10.082	70.0	70.0	70.00	86.0	78.0	82.00	9.86	1.0020	1.6850
0.973	3.00	-1.80	1.0000	0.000	10.000	10.000	416.224	426.307	10.083	70.0	70.0	70.00	86.0	78.0	82.00	9.86	1.0019	1.6850
0.394	0.50	-1.10	1.0000	0.000	5.000	5.000	438.167	443.211	5.044	70.0	70.0	70.00	80.0	77.0	78.50	12.18	1.0031	1.7173
0.394	0.50	-1.10	1.0000	0.000	5.000	5.000	443.211	448.255	5.044	70.0	70.0	70.00	81.0	78.0	79.50	12.19	1.0049	1.7169
0.696	1.50	-1.40	1.0000	0.000	10.000	10.000	452.329	462.435	10.106	70.0	70.0	70.00	84.0	77.0	80.50	13.78	1.0017	1.6486
0.696	1.50	-1.40	1.0000	0.000	10.000	10.000	462.435	472.560	10.125	70.0	70.0	70.00	84.0	78.0	81.00	13.78	1.0007	1.6455

Averages 1.00238 1.68305

Nomenclature

P_b	Barometric Pressure (in. Hg)
Q	Flow Rate (cfm)
?H	Orifice Pressure differential (in. H_2O)
?P	Inlet Pressure Differential (in. H_2O)
V_d	Gas Meter Volume - Dry (ft^3)
V_{ds}	Standard Meter Volume - Dry (ft^3)
T_d	Average Meter Box Temperature (°F)
T_o	Outlet Meter Box Temperature (°F)
T_{ds}	Average Standard Meter Temperature (°F)
Y_d	Meter Correction Factor (unitless)
Y_{ds}	Standard Meter Correction Factor (unitless)
?H@	Orifice Pressure Differential giving 0.75 cfm of air at 68°F and 29.92 in. Hg (in. H_2O)
Θ	Duration of Run (minutes)

Equations

$$Y_d = (Y_{ds})\left[\frac{V_{ds}}{V_d}\right]\left[\frac{T_d + 460}{T_{ds} + 460}\right]\left[\frac{P_b + \Delta P/13.6}{P_b + \Delta H/13.6}\right]$$

$$\Delta H@ = \frac{(0.0319)(\Delta H)}{P_b(T_o + 460)}\left[\frac{(T_{ds} + 460)\Theta}{(V_{ds})(Y_{ds})}\right]^2$$

$$Q = \frac{17.64(V_{ds})(P_b)}{(T_{ds} + 460)(\Theta)}$$

Vacuum Gauge		DGM Thermocouples		
Standard (in.Hg)	Gauge (in.Hg)	Standard (°F)	Inlet (°F)	Outlet (°F)
5.5	5.0			
10.5	10.0			
15.5	15.0			
20.5	20.0			
24.5	24.0			

CleanAir ENGINEERING

Pyrometer Calibration Test Report

Pyrometer No.:	66-10	Office:	Palatine, Il
Calibrated By:	R.R.	Client:	
Date:	10/24/2001	Job Number:	

Calibration Reference Settings for Fahrenheit Scale	Pyrometer Reading
50 °F	51 °F
100 °F	100 °F
150 °F	150 °F
200 °F	201 °F
250 °F	252 °F
300 °F	301 °F
350 °F	351 °F
400 °F	400 °F
450 °F	449 °F
500 °F	499 °F
550 °F	549 °F
600 °F	600 °F

Calibration Reference Information

Reference Used:	Omega CL23A	Serial No:	T-225950
Calibrated By:	Omega Engineering, Inc.	Date:	3/15/2001
Report No:	RF-T-225950		

CleanAir ENGINEERING

Meter Box Critical Orifice Post-Test Calibration Data

Project No.	9156/9157	Meter No.	66-10	Orifice	66-N-2
Location	Unit 3 FF Outlet	Meter Yd	1.0024	Orifice K'	0.3890
Test Date	12/6/2002	Meter ΔH@	1.6830	Orifice Cal. Date	10/15/2002
Operator	M. Ambler	Full Test Cal. Date	10/17/2002		

Leak Checks

Negative Pressure ☑ Pass

No movement of manometer in one-minute

Positive Pressure ☑ Pass

No movement of manometer in one-minute

Important: All leak checks must pass in order for calibration to be valid.

Barom. Press. (P_b) 30.00 in. Hg

Run	Elapsed Time (minutes)	Meter Volume (dcf)	Meter Temperature Inlet (°F)	Meter Temperature Outlet (°F)	Ambient Temp. - T_{amb} (°F)	Orifice ΔH (in. W.C.)	Vacuum (in. Hg)	Net Run Time - θ (minutes)	Net Meter Volume for Run - V_m (dcf)	Avg Meter Temp. for Run - T_m (°F)	DGM Calibration Factor - Y_i	Percent Variation - ΔY_i
	0.0	786.30	89	87								
1	5.0	788.92	89	87	84	0.79	21.5	5.0	2.62	88.0	0.9869	-0.2%
2	10.0	791.54	87	86	82	0.79	21.5	5.0	2.62	87.3	0.9873	-0.1%
3	15.0	794.15	87	86	80	0.79	21.5	5.0	2.61	86.5	0.9916	0.3%
										Average Y_i	0.9886	
										Cal. Error	-1.4%	

Calculations and Specifications

$$Y_i = \frac{K' \times P_b \times (T_m + 460) \times \theta}{17.64 \times V_m \times \left(P_b + {}^{\Delta H}/_{13.6}\right) \times \sqrt{T_{amb} + 460}}$$

$$\Delta Y_i = \frac{Y_i - \overline{Y}_i}{\overline{Y}_i} \times 100 \qquad \text{Spec.: } \Delta Y_i \le \pm 2\%$$

$$Cal.Error = \frac{\overline{Y}_i - Y_d}{Y_d} \times 100 \qquad \text{Spec.: } Cal.Error \le \pm 5\%$$

CleanAir ENGINEERING

Meter Box Full Test Calibration

Meter Box No: 66-13

Date of Calibration: 10/24/2002

Meter Box Y_d: 0.9956

Calibration conducted by: M.V.

Meter Box ?H@: 1.7701

Barometric Pressure: 29.68

Signature

				Standard Meter Gas Volume (ft^3)			Meter Box Gas Volume (ft^3)			Std. Meter Temperature (°F)			Meter Box Temperature (°F)			Time (min.)	Calibration Results	
Q	?H	?P	Y_{ds}	Initial	Final	V_{ds} Net	Initial	Final	V_d Net	In	Out	T_{ds} Avg.	In	T_o Out	T_d Avg.	Θ	Y_d	?H@
0.968	3.00	-1.90	1.0000	0.000	10.000	10.000	493.734	503.874	10.140	67.5	67.5	67.50	89.0	72.0	80.50	10.25	0.9983	1.7719
0.967	3.00	-1.90	1.0000	0.000	10.000	10.000	503.874	514.046	10.172	67.5	67.5	67.50	90.0	72.0	81.00	10.26	0.9961	1.7753
0.394	0.50	-1.10	1.0000	0.000	5.000	5.000	517.929	523.003	5.074	67.5	67.5	67.50	81.0	70.0	75.50	12.61	0.9964	1.7946
0.394	0.50	-1.10	1.0000	0.000	5.000	5.000	523.003	528.087	5.084	67.5	67.5	67.50	81.0	70.0	75.50	12.61	0.9944	1.7946
0.692	1.50	-1.40	1.0000	0.000	10.500	10.500	535.628	546.324	10.696	67.5	67.5	67.50	86.0	70.0	78.00	15.06	0.9940	1.7412
0.692	1.50	-1.40	1.0000	0.000	10.000	10.000	546.324	556.509	10.185	67.5	67.5	67.50	86.0	70.0	78.00	14.35	0.9942	1.7430

Averages 0.99559 1.77008

Nomenclature

P_b	Barometric Pressure (in. Hg)
Q	Flow Rate (cfm)
?H	Orifice Pressure differential (in. H_2O)
?P	Inlet Pressure Differential (in. H_2O)
V_d	Gas Meter Volume - Dry (ft^3)
V_{ds}	Standard Meter Volume - Dry (ft^3)
T_d	Average Meter Box Temperature (°F)
T_o	Outlet Meter Box Temperature (°F)
T_{ds}	Average Standard Meter Temperature (°F)
Y_d	Meter Correction Factor (unitless)
Y_{ds}	Standard Meter Correction Factor (unitless)
?H@	Orifice Pressure Differential giving 0.75 cfm of air at 68°F and 29.92 in. Hg (in. H_2O)
Θ	Duration of Run (minutes)

Equations

$$Y_d = (Y_{ds})\left[\frac{V_{ds}}{V_d}\right]\left[\frac{T_d + 460}{T_{ds} + 460}\right]\left[\frac{P_b + \Delta P/13.6}{P_b + \Delta H/13.6}\right]$$

$$\Delta H@ = \frac{(0.0319)(\Delta H)}{P_b(T_o + 460)}\left[\frac{(T_{ds} + 460)\Theta}{(V_{ds})(Y_{ds})}\right]^2$$

$$Q = \frac{17.64(V_{ds})(P_b)}{(T_{ds} + 460)(\Theta)}$$

Vacuum Gauge		DGM Thermocouples		
Standard (in.Hg)	Gauge (in.Hg)	Standard (°F)	Inlet (°F)	Outlet (°F)
5.0	5.2			
10.0	10.2			
15.0	15.3			
20.0	20.3			
25.0	25.0			

CleanAir ENGINEERING

Pyrometer Calibration Test Report

Pyrometer No.:	66-13	Office:	Palatine, Il
Calibrated By:	M.V.	Client:	
Date:	10/24/2002	Job Number:	

Calibration Reference Settings for Fahrenheit Scale	Pyrometer Reading
50 °F	48 °F
100 °F	98 °F
150 °F	148 °F
200 °F	199 °F
250 °F	250 °F
300 °F	300 °F
350 °F	349 °F
400 °F	398 °F
450 °F	448 °F
500 °F	498 °F
550 °F	548 °F
600 °F	599 °F

Calibration Reference Information

Reference Used:	Omega CL23A	Serial No:	T-225950
Calibrated By:	Omega Engineering, Inc.	Date:	8/28/2003
Report No:	R 044791		

CleanAir ENGINEERING

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Meter Box Critical Orifice Post-Test Calibration Data

Project No.	9156/9157	Meter No.	66-13	Orifice	66-N-3
Location	Unit 3 FF Outlet	Meter Yd	0.9956	Orifice K'	0.5700
Test Date	12/6/2002	Meter ΔH@	1.7701	Orifice Cal. Date	10/15/2002
Operator	M. Ambler	Full Test Cal. Date	10/24/2002		

Barom. Press. (P_b) 30.00 in. Hg

Leak Checks

Negative Pressure

No movement of manometer in one-minute ☑ Pass

Positive Pressure

No movement of manometer in one-minute ☑ Pass

Important: All leak checks must pass in order for calibration to be valid.

Run	Elapsed Time (minutes)	Meter Volume (dcf)	Meter Temperature		Ambient Temp. - T_{amb} (°F)	Orifice ΔH (in. W.C.)	Vacuum (in. Hg)	Net Run Time - θ (minutes)	Net Meter Volume for Run - V_m (dcf)	Avg Meter Temp. for Run - T_m (°F)	DGM Calibration Factor - Y_i	Percent Variation - ΔY_i
			Inlet (°F)	Outlet (°F)								
	0.0	62.00	93	87								
1	5.0	65.82	93	87	84	1.80	19.5	5.0	3.82	90.0	0.9930	-0.1%
2	10.0	69.63	93	88	84	1.80	19.5	5.0	3.81	90.3	0.9960	0.2%
3	15.0	73.46	95	90	84	1.80	19.5	5.0	3.83	91.5	0.9931	-0.1%
										Average Y_i	0.9940	
										Cal. Error	-0.2%	

Calculations and Specifications

$$Y_i = \frac{K' \times P_b \times (T_m + 460) \times \theta}{17.64 \times V_m \times \left(P_b + \Delta H / 13.6\right) \times \sqrt{T_{amb} + 460}}$$

$$\Delta Y_i = \frac{Y_i - \overline{Y}_i}{\overline{Y}_i} \times 100 \qquad \text{Spec.: } \Delta Y_i \le \pm 2\%$$

$$Cal.Error = \frac{\overline{Y}_i - Y_d}{Y_d} \times 100 \qquad \text{Spec.: } Cal.Error \le \pm 5\%$$

CleanAir ENGINEERING

Sample Probe Calibration

Probe Type: 8' MS type S Pitot **I.D. Number:** 67-8-13

Thermocouple Calibration

Reference Type: ______ Reference I.D. No: ______ Pyrometer I.D. No: ______ Degrees:

Point No.	Target Temp.	Reference Temp.	Indicated Temp.	Temp. Difference	% Difference*
1	Ice-32F				
2	Ambient-70F				
3	Hot Oil-150F				
4	Boiling H_2O-212F				
5	Hot Oil-320F				

Specification: %Difference ≤ 1.5

* Based on Absolute Temperature (Rankine)

Does assembly meet specifications?

Geometric Pitot Calibration

"S" Pitot

Measurement				Specification
α1(°)=	.000	α2(°)=	1.00	≤10°
β1(°)=	.000	β2(°)=	.000	≤05°
γ(°)=	1.00	θ (°)=	.000	
Pa(")=	.373	Pb(")=	.373	Pa + Pb = A
A(")=	.746	Dt(")=	.250	

Calculations

		Specification
Z(")= A sin γ =	.0130	≤ 0.125"
W(")= A sin θ =	.000	≤ 0.03125"

Standard Pitot

Measurement (inches)		Specification
Tube O.D.		(D)
Static Hole I.D.		≈ 0.1 x (D)
Length:		
Tip to Static		≥ 6 x (D)
Static to Bend		≥ 8 x (D)

Does assembly meet specifications? yes → **If "Yes", "S" pitot Cp=0.84; Std. Pitot=0.99. If "No", wind tunnel calibration is required.**

Wind Tunnel Calibration

Reference Pitot I.D. No: ______ Reference Pitot Cp: ______

Pitot Side 'A':

Trial No.	Reference ΔP	Probe ΔP	Probe Cp*	Deviation from Average Cp*
1				
2				
3				

Side 'A' Average Probe Cp= ______

Specification: Cp Deviations ≤ 0.01

Pitot Side 'B':

Trial No.	Reference ΔP	Probe ΔP	Probe Cp*	Deviation from Average Cp*
1				
2				
3				

Side 'B' Average Probe Cp= ______

Specification: Cp Deviations ≤ 0.01

*Probe Cp= (Reference Cp)√(Reference ΔP/ Probe ΔP); Cp Deviation= Trial Cp - Average Probe Cp

'A' Average Cp ______ − **'B' Average Cp** ______ = **Difference** ______ |Difference| ≤ 0.01

Does assembly meet specifications? → **If "Yes", Cp= Average of Side 'A' and 'B' Cp values. If "No", Pitot must be replaced.**

All specifications are from EPA 600/9-76-005 section 3.1

Probe Cp= 0.84 Calibrated by: M. Ambler Date: 2/18/02

Sample Probe Calibration

Probe Type: STF. M5 **I.D. Number:** M-8-2

Thermocouple Calibration

Reference Type: _____ Reference I.D. No: _____ Pyrometer I.D. No: _____ Degrees:

Point No.	Target Temp.	Reference Temp.	Indicated Temp.	Temp. Difference	% Difference*	Specification
1	Ice-32F					
2	Ambient-70F					%Difference ≤ 1.5
3	Hot Oil-150F					
4	Boiling H_2O-212F					
5	Hot Oil-320F					

* Based on Absolute Temperature (Rankine)

Does assembly meet specifications?

Geometric Pitot Calibration

"S" Pitot

Measurement			Specification
α1(°)= 2	α2(°)= 1		≤10°
β1(°)= 1	β2(°)= 0		≤05°
γ(°)= 0	θ(°)= 2		
Pa(")= .360	Pb(")= .368		Pa + Pb = A
A(")= 0.728	Dt(")= .250		

Calculations

Z(")= A sin γ = 0.00000 ≤ 0.125"

W(")= A sin θ = 0.02541 ≤ 0.03125"

Standard Pitot

Measurement (inches)		Specification
Tube O.D.		(D)
Static Hole I.D.		= 0.1 x (D)
Length:		
Tip to Static		≥ 6 x (D)
Static to Bend		≥ 8 x (D)

Does assembly meet specifications? yes → **If "Yes", "S" pitot Cp=0.84; Std. Pitot=0.99. If "No", wind tunnel calibration is required.**

Wind Tunnel Calibration

Reference Pitot I.D. No: _____ Reference Pitot Cp: _____

Pitot Side 'A':

Trial No.	Reference ΔP	Probe ΔP	Probe Cp*	Deviation from Average Cp*
1				
2				
3				
Side 'A' Average Probe Cp=				

Specification: Cp Deviations ≤ 0.01

Pitot Side 'B':

Trial No.	Reference ΔP	Probe ΔP	Probe Cp*	Deviation from Average Cp*
1				
2				
3				
Side 'B' Average Probe Cp=				

Specification: Cp Deviations ≤ 0.01

*Probe Cp= (Reference Cp)√(Reference ΔP/ Probe ΔP); Cp Deviation= Trial Cp - Average Probe Cp

'A' Average Cp		'B' Average Cp		Difference	
	—		=		|Difference| ≤ 0.01

Does assembly meet specifications? → **If "Yes", Cp= Average of Side 'A' and 'B' Cp values. If "No", Pitot must be replaced.**

All specifications are from EPA 600/8-76-005, section 4.1

Probe Cp= 0.84 Calibrated by: _____ Date: 2-25-02

Wheelabrator North Broward, Inc.
Clean Air Project No: 9156-3
FF Outlet

USEPA Method 29
QA/QC Results

Run No.		1	2	3
Date (2002)		December 3	December 3	December 3
Start Time (approx.)		07:47	09:59	12:10
Stop Time (approx.)		09:58	12:09	16:21
Total Duration of Test Run (min.)		131	130	251
Net Sampling Time (min.)		125	125	125
Sampling System Calibration Summary				
	Nozzle ID No:	280-66-1	280-66-2	280-66-1
D_n	Nozzle Diameter (in):	0.280	0.280	0.280
	Probe ID No:	67-8-13	M-8-2	67-8-13
C_p	Pitot Coefficient:	0.84	0.84	0.84
	Meter Box ID. No:	66-10	66-13	66-10
Y_d	Meter Box Yd - Field Sheet	1.0024	0.9956	1.0024
	Meter Box Yd - Database	1.0024	0.9956	1.0024
	Meter Box ΔH@ - Field Sheet	1.6830	1.7701	1.6830
	Meter Box ΔH@ - Database	1.6830	1.7701	1.6830
QA/QC				
	Final Leak Check			
	(a) 4% of Sampling Rate (cfm)	0.0274	0.0262	0.0284
	(b) Allowable Rate from Method (cfm)	0.0200	0.0200	0.0200
	Allowable Limit - minimum of a and b (cfm)	0.0200	0.0200	0.0200
	Actual Final Leak Rate (cfm)	0.0010	0.0010	0.0010
	Sample Volume			
	Minimum Volume Required (dscf)	60.00	60.00	60.00
V_{mstd}	Actual Sample Volume (dscf)	85.16	79.36	86.44
	Mean Isokinetic Sampling Rate Variation			
	Minimum Allowable (%)	90	90	90
	Maximum Allowable (%)	110	110	110
%I	Actual Variation (%)	100.38	96.69	99.55
	Point-by-Point Isokinetic Variation			
	Number of points <90%	0	0	0
	Number of points >110%	0	0	0
	Number of points <80%	0	0	0
	Number of points >120%	0	0	0

121602 151147

QA/QC _____
Date _____

FIELD DATA

D

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TEST LOCATION: FF Outlet

Hg TESTING
FIELD DATA SHEET

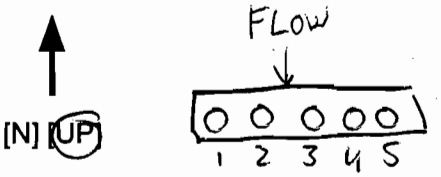
METHOD: 29 **PAGE** 1 **OF** 2

UNIT: 3 **RUN:** 1

Client Wheelabrator	Project No. 9156
Plant N Broward	Date 12/3/02
Meter Operator M Ambler	
Probe Operator M Ambler	

Meter Box No. 66-10	Sample Box No. 67-26
Meter Yd 1.0024 ~~1.0056~~ SB	Meter ΔH@ SB ~~1.7316~~ 1.683
K Factor 2.85	Pitot Cp 0.84
Leak Rate Before .006	(cfm) [Lpm] @ 6 (in.Hg)
Leak Rate After .001	(cfm) [Lpm] @ 5 (in.Hg)
Pitot Leak Check Before: ☒	After: Good ☒ Bad ☐

Cross-Section of Test Location



Duct Dimensions (in.) 96x96			
Static Press. (in. H_2O)	Port Len. (in.)	Gas Flow [In] [Out] ~~of page~~	First point all the way (In) [Out]
-12.7	10		

Amb. Temp. (°F) 68	Bar. Press. 30.10 (in. Hg) [mbar]
Probe I.D. No. 67-8-13	
Liner Material Glass	

Filter No. n/a		
Thimble No. n/a		
Nozzle Diameter .280	Nozzle I.D. 280-66-1	

H_2O [ml] [gm]	Silica Gel (gm)
Total V_{lc}	

Start Time: 7:47	Stop Time: 9:58

Traverse Point Number	Min/pt 5.0 Elapsed Time	Velocity Head ΔP's (in. H_2O)	Orifice Setting ΔH (in. H_2O)	Gas Sample Volume - V_m Init. Vol. (ft³) [L] 260.266	Stack Temp. T_s (°F)	Probe T_p (°F) Set Points 250	Filter T_f (°F) Set Points 250	Cond. Temp. T_c (°F)	DGM Inlet T_{min} (°F)	DGM Outlet T_{mout} (°F)	Pump Vacuum (in. Hg)	XAD Trap Temp T_t (°F)	Notes
1-1	5	.40	1.15	263.38	305	239	243	58	65	63	3.0	n/a	
2	10	.40	1.15	266.41	307	249	246	53	68	64	3.0		
3	15	.43	1.25	269.63	306	250	246	52	72	66	3.0		
4	20	.43	1.25	272.79	306	250	247	51	75	67	3.0		
5	25	.39	1.10	275.80	304	249	248	52	76	68	3.0		Pt=275.87 = .07
2-1	30	.46	1.30	279.14	303	249	249	54	77	69	3.0		
2	35	.56	1.60	282.73	307	252	250	52	79	70	3.5		
3	40	.43	1.25	285.99	308	251	249	48	81	71	3.0		
4	45	.48	1.35	289.34	308	250	250	47	82	72	3.5		
5	50	.48	1.35	292.68	309	250	250	47	83	74	3.5		Pt=292.77 = .09
3-1	55	.44	1.25	296.00	306	249	249	49	82	74	3.5		
2	60	.57	1.60	299.63	307	250	250	48	83	74	4.0		
	Total	8.0872	15.6000	85.7340	3676.0000				923	832			
	Average	.6739	1.4220		306.2800				77.7000				

DS 001 General
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* Sum of square roots. (.7045)

Circle correct bracketed units on data sheet.

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TEST LOCATION: FF Outlet

UNIT: 3 **RUN:** 1

Hg TESTING FIELD DATA SHEET

METHOD: 29 **PAGE** 2 **OF** 2

Client: Wheelabrator	Project No.: 9156
Plant: N Brevard	Date: 12/3/02
Meter Operator: M Ambler	
Probe Operator: M Ambler	

Meter Box No.	Sample Box No.
Meter Yd	Meter ΔH@
K Factor	Pitot Cp
Leak Rate Before	[cfm] [Lpm] @ (in.Hg)
Leak Rate After	[cfm] [Lpm] @ (in.Hg)
Pitot Leak Check Before: ☐	After: Good ☐ Bad ☐

Cross-Section of Test Location

[N] [UP]

Duct Dimensions (in.)

Static Press. (in. H_2O)	Port Len. (in.)	Gas Flow [In] [Out] of page	First point all the way [In] [Out]

Amb. Temp. (°F)	Bar. Press. [in. Hg] [mbar]
Probe I.D. No.	
Liner Material	

Filter No.		
Thimble No.		
Nozzle Diameter	Nozzle I.D.	

H_2O [ml] [gm]	Silica Gel (gm)
Total V_{lc}	

Start Time:	Stop Time:

Traverse Point Number	Min/pt 5.0 Elapsed Time	Velocity Head ΔP's (in. H_2O)	Orifice Setting ΔH (in. H_2O)	Gas Sample Volume - V_m Init. Vol. (ft³) [L] 260.266	Stack Temp. T_s (°F)	Probe T_p (°F) Set Points 250	Filter T_f (°F) Set Points 250	Cond. Temp. T_c (°F)	DGM Inlet T_{min} (°F)	DGM Outlet T_{mout} (°F)	Pump Vacuum (in. Hg)	XAD Trap Temp T_t (°F)	Notes
3-3	65	.53	1.50	~~299~~ 303.17	309	251	247	48	84	75	3.5	n/a	
4	70	.47	1.35	306.52	308	250	247	48	84	76	3.5		
5	75	.44	1.25	309.77	308	250	245	45	85	76	3.5		Pt: 309.95 = .18
4-1	80	.66	1.90	313.89	303	249	246	45	84	77	4.0		
2	85	.58	1.65	317.61	309	250	246	45	86	77	4.0		
3	90	.54	1.55	321.24	308	251	248	47	86	78	4.0		
4	95	.60	1.70	325.02	306	250	247	48	86	78	4.0		
5	100	.60	1.70	328.77	311	250	248	50	87	79	4.0		Pt: 328.88 = .11
5-1	105	.41	1.15	332.00	307	248	249	54	85	79	3.5		
2	110	.48	1.35	335.37	303	251	249	54	86	79	4.0		
3	115	.52	1.50	339.01	296	250	250	54	87	80	4.0		
4	120	.55	1.55	342.55	307	250	248	54	88	80	4.0		
5	125 Total	*.63	1.80	346.450	306	249	248	55	88	80	4.5		
	Average	9.5245	19.9500		3981.0000				1116	1014			

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* Sum of square roots

Circle correct bracketed units on data sheet.

-45

TEST LOCATION: FF Outlet

UNIT: 3 **RUN:** 2

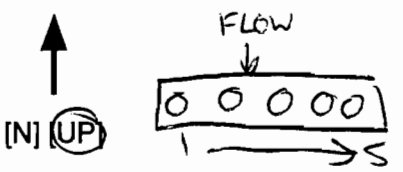
Hg TESTING FIELD DATA SHEET

METHOD: 29 **PAGE** 1 **OF** 2

Client Wheelabrator	Project No. 9156
Plant N Broward	Date 12/3/02
Meter Operator M Ambler	
Probe Operator M Ambler	

Meter Box No. 66-13	Sample Box No. 67-98
Meter Yd .9956	Meter ΔH@ 1.7701
K Factor 2.92	Pitot Cp 0.84
Leak Rate Before .002 [cfm] [Lpm] @ 15 (in.Hg)	
Leak Rate After .001 [cfm] [Lpm] @ 6.0 (in.Hg)	
Pitot Leak Check Before: ☒	After: Good ☒ Bad ☐

Cross-Section of Test Location



Duct Dimensions (in.) 96x96			
Static Press. (in. H_2O)	Port Len. (in.)	Gas Flow [In] [Out] of page	First point all the way [In] [Out]
-13.4	10		(In)

Amb. Temp. (°F) 74	Bar. Press. 30.10 [in. Hg] [mbar]
Probe I.D. No. M-8-2	
Liner Material Glass	

Filter No. n/a		
Thimble No. n/a		
Nozzle Diameter .280	Nozzle I.D. 280-66-2	

H_2O [ml] [gm]	Silica Gel (gm)
Total V_{lc}	

Start Time: 9:59	Stop Time: 12:09

Traverse Point Number	Min/pt 5.0 Elapsed Time	Velocity Head ΔP's (in. H_2O)	Orifice Setting ΔH (in. H_2O)	Gas Sample Volume - V_m Init. Vol. [ft³] [L] 558.215	Stack Temp. T_s (°F)	Probe T_p (°F) Set Points 250	Filter T_f (°F) Set Points 250	Cond. Temp. T_c (°F)	DGM Inlet T_{min} (°F)	DGM Outlet T_{mout} (°F)	Pump Vacuum (in. Hg)	XAD Trap Temp T_t (°F)	Notes
1-1	5	.40	1.15	561.34	310	248	246	65	76	82	3.5	n/a	
2	10	.47	1.35	564.48	308	253	259	46	80	82	3.5		
3	15	.45	1.30	568.61	309	252	252	47	86	81	3.5		
4	20	.45	1.30	570.77	309	251	251	50	89	81	3.5		
5	25	.39	1.15	573.74	308	251	246	50	90	81	3.0		Pnt = 573.84 = .10
2-1	30	.52	1.50	577.19	306	245	245	55	90	82	3.5		
2	35	.43	1.25	580.33	308	248	249	56	92	82	3.5		
3	40	.49	1.45	583.62	310	251	246	58	93	82	3.5		
4	45	.45	1.30	586.82	310	251	248	58	94	82	3.5		
5	50	.42	1.25	589.95	307	251	247	48	94	82	3.5		Pnt = 590.01 = .06
3-1	55	.40	1.15	593.01	307	248	242	48	92	82	3.5		
2	60	.40	1.15	596.00	309	249	247	47	94	83	3.6		
	Total	*7.9448	15.3000	81.9500	3701.0000				1070	982			
	Average	.6897	1.3920		307.1200					87.7400			

DS 001 General
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* Sum of square roots.

Circle correct bracketed units on data sheet.

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TEST LOCATION: FF Outlet

UNIT: 3 **RUN:** 2

Hg TESTING FIELD DATA SHEET

METHOD: 29 **PAGE** 2 **OF** 2

Client Wheelabrator	Project No. 9156
Plant NBrenard	Date 12/3/02
Meter Operator MAmbler	
Probe Operator MAmbler	

Meter Box No.	Sample Box No.	
Meter Yd	Meter ΔH@	
K Factor	Pitot Cp	
Leak Rate Before	[cfm] [Lpm] @	(in.Hg)
Leak Rate After	[cfm] [Lpm] @	(in.Hg)
Pitot Leak Check Before: ☐	After: Good ☐ Bad ☐	

Cross-Section of Test Location

[N] [UP]

Duct Dimensions (in.)

Static Press. (in. H_2O)	Port Len. (in.)	Gas Flow [In] [Out] of page	First point all the way [In] [Out]

Amb. Temp. (°F)	Bar. Press. [in. Hg] [mbar]
Probe I.D. No.	
Liner Material	

Filter No.		
Thimble No.		
Nozzle Diameter	Nozzle I.D.	

H_2O [ml] [gm]	Silica Gel (gm)
Total V_{lc}	

Start Time:	Stop Time:

Traverse Point Number	Min/pt 5.0 Elapsed Time	Velocity Head ΔP's (in. H_2O)	Orifice Setting ΔH (in. H_2O)	Gas Sample Volume - V_m Init. Vol. (ft³) [L] 558.215	Stack Temp. T_s (°F)	Probe T_p (°F) Set Points 250	Filter T_f (°F) Set Points 250	Cond. Temp. T_c (°F)	DGM Inlet T_{min} (°F)	DGM Outlet T_{mout} (°F)	Pump Vacuum (in. Hg)	XAD Trap Temp T_t (°F)	Notes
3-3	65	.54	1.60	599.49	308	251	246	47	95	84	4.0	n/a	
4	70	.47	1.35	602.73	307	251	249	48	96	83	3.5		
5	75	.42	1.25	605.91	308	250	251	50	96	83	3.5		Pit: 605.95 ≤.04
4-1	80	.71	2.05	609.88	307	247	243	54	95	83	4.5		
2	85	.54	1.60	613.42	311	250	250	52	97	82	4.0		
3	90	.57	1.65	617.00	308	251	252	54	97	82	4.5		
4	95	.50	1.45	620.43	307	251	249	56	97	82	4.0		
5	100	.46	1.35	623.70	309	250	252	54	97	82	4.0		Pit: 623.79 ≤.09
5-1	105	.43	1.25	626.93	296	248	243	57	95	83	4.0		
2	110	.48	1.40	630.22	300	250	251	54	97	84	4.0		
3	115	.48	1.40	633.53	301	250	244	55	97	84	4.0		
4	120	.57	1.65	636.99	306	251	246	56	98	84	4.5		
5	125 Total	.51	1.50	640.455	309	250	246	57	98	84	4.0		
	Average	9.2968	19.5000		3077.0000				1255	1080			

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* Sum of square roots.

Circle correct bracketed units on data sheet.

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TEST LOCATION: FF Outlet

Hg TESTING
FIELD DATA SHEET

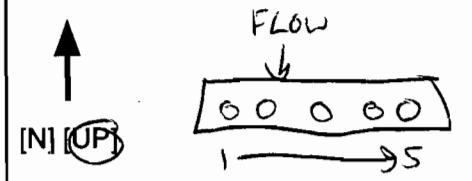
METHOD: 29 PAGE 1 OF 2

UNIT: 3 RUN: 3

Client Wheelabrator	Project No. 9156
Plant N Broward	Date 12/13/02
Meter Operator M Ambler	
Probe Operator M Ambler	

Meter Box No. 66-10	Sample Box No. 67-26
Meter Yd 1.0024 ~~.9956~~	Meter ΔH@ ~~1.2316~~ 1.6830
K Factor 2.85	Pitot Cp 0.84
Leak Rate Before .002	[cfm] [Lpm] @ 15.5 (in.Hg)
Leak Rate After .001	[cfm] [Lpm] @ 5.0 (in.Hg)
Pitot Leak Check Before: ☒	After: Good ☒ Bad ☐

Cross-Section of Test Location



Duct Dimensions (in.) 96×96

Static Press. (in. H_2O)	Port Len. (in.)	Gas Flow [In] [Out] of page	First point all the way [In] [Out]
-13.3	16		[In]

Amb. Temp. (°F) 74	Bar. Press. 30.10 [in. Hg] [mbar]
Probe I.D. No. 67-8-13	
Liner Material Glass	

Filter No. N/a		
Thimble No. N/a		
Nozzle Diameter .280	Nozzle I.D. 280-66-1	

H_2O [ml] [gm]	Silica Gel (gm)
Total V_{lc}	

Start Time: 12:10	Stop Time: 16:21

Traverse Point Number	Min/pt 5.0 Elapsed Time	Velocity Head ΔP's (in. H_2O)	Orifice Setting ΔH (in. H_2O)	Gas Sample Volume - V_m Init. Vol. [ft³] [L] 347.052	Stack Temp. T_s (°F)	Probe T_p (°F) Set Points 250	Filter T_f (°F) Set Points 250	Cond. Temp. T_c (°F)	DGM Inlet T_{min} (°F)	DGM Outlet T_{mout} (°F)	Pump Vacuum (in. Hg)	XAD Trap Temp T_t (°F)	Notes
1-1	5	.46	1.30	350.42	306	245	246	66	79	77	3.0	N/a	
2	10	.50	1.45	353.77	306	252	248	54	84	79	3.5		
3	15	.57	1.60	357.53	306	251	248	54	88	80	4.0		
4	20	.51	1.45	361.10	306	250	249	56	91	81	3.5		
5	25	.44	1.25	364.32	306	250	249	61	93	83	3.5		Pit= 364.46 = .14
2-1	30	.50	~~.86~~ 1.45	367.63	303	251	249	66	93	84	3.5		Stop 12:40 Unit problems Start 13:22
2	35	.53	1.50	371.27	304	241	249	56	87	85	3.5		
3	40	.54	1.55	374.90	305	251	250	52	92	~~86~~	3.5		
4	45	.47	1.35	378.34	306	251	251	49	94	87	3.5		
5	50	.47	1.35	381.71	305	250	251	50	94	87	3.5		Pit= 381.80 = .09
3-1	55	.46	1.30	385.13	303	248	250	55	93	87	3.5		
2	60	.60	1.70	388.99	305	250	249	56	94	87	4.0		
	Total	8.5117	17.2500	88.8080	3661.0000				1082	1003			
	Average	.7204	1.4912		304.6000					88.8400			

* Sum of square roots.

Circle correct bracketed units on data sheet.

Clean Air Engineering
500 West Wood Street
Palatine, IL 60067
800-627-0033 Fax (847) 991-3385

TEST LOCATION: FF Outlet

UNIT: 3 **RUN:** 3

Hg TESTING FIELD DATA SHEET

METHOD: 29 **PAGE** 2 **OF** 2

Client Wheelabrator	Project No. 9156
Plant N Broward	Date 12/3/02
Meter Operator MAmbler	
Probe Operator MAmbler	

Meter Box No.	Sample Box No.
Meter Yd	Meter ΔH@
K Factor	Pitot Cp
Leak Rate Before	[cfm] [Lpm] @ (in.Hg)
Leak Rate After	[cfm] [Lpm] @ (in.Hg)
Pitot Leak Check Before: ☐	After: Good ☐ Bad ☐

Cross-Section of Test Location

[N] [UP]

Duct Dimensions (in.)

Static Press. (in. H_2O)	Port Len. (in.)	Gas Flow [In] [Out] of page	First point all the way [In] [Out]

Amb. Temp. (°F)	Bar. Press. [in. Hg] [mbar]
Probe I.D. No.	
Liner Material	

Filter No.		
Thimble No.		
Nozzle Diameter	Nozzle I.D.	

H_2O [ml] [gm]	Silica Gel (gm)
Total V_{lc}	

Start Time:	Stop Time:

Traverse Point Number	Min/pt 5.0 Elapsed Time	Velocity Head ΔP's (in. H_2O)	Orifice Setting ΔH (in. H_2O)	Gas Sample Volume - V_m Init. Vol. [ft³] [L] 347.052	Stack Temp. T_s (°F)	Probe T_p (°F) Set Points 250	Filter T_f (°F) Set Points 250	Cond. Temp. T_c (°F)	DGM Inlet T_{min} (°F)	DGM Outlet T_{mout} (°F)	Pump Vacuum (in. Hg)	XAD Trap Temp T_t (°F)	Notes
3-3	65	.57	1.60	392.72	306	251	250	57	94	87	4.0	N/A	
4	70	.52	1.50	396.33	307	250	250	53	95	88	4.0		
5	75	.50	1.45	399.90	306	249	249	52	96	88	4.0		Pit: 400.03 ≤13
4-1	80	.68	1.95	404.13	303	250	250	54	96	88	4.5		
2	85	.68	1.95	408.23	306	250	250	53	97	89	4.5		NV: 408.86 = .53
3	90	.60	1.70	412.62	305	251	250	54	98	89	4.0		Stop 14:23 Start 15:38
4	95	.60	1.70	416.43	305	250	250	53	89	86	4.0		
5	100	.50	1.45	419.94	304	250	251	47	92	86	4.0		Pit: 420.14 = .20
5-1	105	.31	.88	422.87	303	249	250	52	92	86	3.5		
2	110	.50	1.45	426.40	299	251	250	52	92	86	4.0		sampled @ pt. 3 because T-beam in way
3	115	.43	1.25	429.66	298	250	249	53	94	87	4.0		
4	120	.51	1.45	433.15	305	250	250	55	94	87	4.0		
5	125 Total	*.60	1.70	436.950	305	250	250	55	94	87			
	Average	9.4971	20.0300		3954.0000				1223	1134			

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* Sum of square roots.

Circle correct bracketed units on data sheet.

Impinger Weight Sheet

Client: Wheelabrator Unit Name: 3 FF Outlet

Plant: North Broward Job #: 9156 Method: 29

Sample Box #: L7-26 Date: 12/3/2002

Run #: 1

	Contents	Gross Weight	Tare Weight	Net Weight Gain	Total Weight
Impinger 1	empty	732.7	441.2	291.5	
Impinger 2	100 mL 5%/10%	664.6	534.8	129.8	
Impinger 3	100 mL 5%/10%	547.7	528.0	19.7	
Impinger 4	empty	462.4	457.8	4.6	
Impinger 5	100 mL 4%/10%	545.9	543.9	2.0	
Impinger 6	100 mL 4%/10%	558.9	557.0	1.9	449.5
Impinger 7	Silica gel	782.8	764.4	18.4	467.9

Sample Box #: L7-96 ? Date: 12/3/2002

Run #: 2

	Contents	Gross Weight	Tare Weight	Net Weight Gain	Total Weight
Impinger 1	empty	757.5	439.6	317.9	
Impinger 2	100 mL 5%/10%	635.8	537.2	98.6	
Impinger 3	100 mL 5%/10%	549.4	530.9	18.5	
Impinger 4	empty	442.8	439.3	3.5	
Impinger 5	100 mL 4%/10%	552.7	548.3	4.4	
Impinger 6	100 mL 4%/10%	539.2	538.2	1.0	443.9
Impinger 7	Silica gel	774.3	758.4	15.9	459.8

Sample Box #: L7-26 Date: 12/3/2002

Run #: 3

	Contents	Gross Weight	Tare Weight	Net Weight Gain	Total Weight
Impinger 1	empty	450.3	443.0	7.3	
Impinger 2	100 mL 5%/10%	808.6	537.8	270.8	
Impinger 3	100 mL 5%/10%	701.9	532.1	169.8	
Impinger 4	empty	464.3	459.2	5.1	
Impinger 5	100 mL 4%/10%	550.4	548.5	1.9	
Impinger 6	100 mL 4%/10%	559.9	559.1	0.8	455.7
Impinger 7	Silica gel	797.6	782.5	15.1	470.8

ORSAT READINGS

TEST LOCATION: FF Outlet **PAGE** 1 **OF** _____

Client: Wheelabrator	Project Number: 9156	$Fo = \frac{20.9 - \%O_2}{\%CO_2}$	
Plant: North Brevard	Unit: 3		
Orsat ID: #11	Fuel Type:	Leak Check Passed ☑	

Run Number	Method Number	Trial	Percent CO_2	Percent O_2+CO_2	Percent O_2	Fo	Analyst	Analysis Date	Analysis Time
1	29	1	8.0	19.2	11.2	1.1975	KO	12/3	14:00
		2	8.2	19.4	11.2				
		3	8.2	19.4	11.2				
		Avg	8.1	19.3	11.2				
2	29	1	8.8	19.8	11.0	1.1264	KO	12/3	14:30
		2	8.6	19.8	11.2				
		3	8.6	19.6	11.2				
		Avg	8.7	19.7	11.1				
3	29	1	9.0	18.8	9.8	1.2584	MA	12/3	16:50
		2	8.8	18.6	9.8				
		3	8.8	18.4	9.6				
		Avg	8.9	18.6	9.7				
4	29	1	9.0	19.0	10.0	1.2135	KO	12/4	9:40
		2	8.8	19.0	10.2				
		3	9.0	19.0	10.0				
		Avg	8.9	19.0	10.1				
5	29	1	9.0	19.2	10.2	1.1889	KO	12/4	11:55
		2	9.0	19.2	10.2				
		3	9.0	19.2	10.2				
		Avg	9.0	19.2	10.2				
6	29	1	8.8	19.6	10.8				
		2	8.8	19.4	10.6				
		3	8.8	19.6	10.8				
		Avg	8.8	19.5	10.7				

Repeat the analysis procedure until the results of any three analyses differ by no more than 0.2 percent by volume. Average the three acceptable values and report the results to the nearest 0.1 percent. Calculate Fo to verify results.

Acceptable ranges for Fo:

Coal:	Anthracite and lignite	1.016-1.130	Gas:	Natural	1.600-1.836
	Bituminous	1.083-1.230		Propane	1.434-1.586
Oil:	Distillate	1.260-1.413		Butane	1.405-1.553
	Residual	1.210-1.370	Wood:		1.000-1.120

QA/QC_____
Date_____

CleanAir ENGINEERING

FIELD DATA PRINTOUTS

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Field Data Printout

Test Method: **USEPA Method 29**
Analyte: **Mercury**

Location: FF Outlet
Test Run: 1
Client: Wheelabrator North Broward, Inc.
Project No: 9156-3
Source Area (ft^2): 64.00000

Test Date: 12/03/02
Start Time: 07:47
Stop Time: 09:58
Leak Rate Before: 0.006 cfm @ 16 "Hg
Leak Rate After: 0.001 cfm @ 5 "Hg

Bar. Press. (in. Hg): 30.10
Static P: -12.7
O_2 (dry volume %): 11.20
CO_2 (dry volume %): 8.13
N_2+CO (dry volume %): 80.67

H_2O (condensate, ml or gm): 449.5
H_2O (silica, g): 18.4
Actual Moisture (%): 20.55

Nozzle ID No: 280-66-1
Nozzle Diameter (D_n): 0.280
Probe ID No: 67-8-13
Pitot C_p: 0.84
Pitot Leak Check: ☑ Pass ☐ Fail

Meter Box ID. No: 66-10
Meter ΔH@: 1.68300
Meter Y_d: 1.00240

Traverse Point	Run Time 5.0 min/read	Pitot ΔP_s (in. H_2O)	Sample ΔH (in. H_2O)	Metered (dcf)	Stack T_s (°F)	Dry Gas Meter $T_{m\text{-}in}$ (°F)	Dry Gas Meter $T_{m\text{-}out}$ (°F)	$\sqrt{\Delta P_s}$ (calculated) ($\sqrt{in.\ H_2O}$)	Volume (calculated) (ft^3)	Isokinetics (calculated) (%)
	0.0			260.27						
1-01	5.0	0.40	1.15	263.38	305	65	63	0.63	3.11	104.0
1-02	10.0	0.40	1.15	266.41	307	68	64	0.63	3.03	101.0
1-03	15.0	0.43	1.25	269.63	306	72	66	0.66	3.22	102.9
1-04	20.0	0.43	1.25	272.79	306	75	67	0.66	3.16	100.6
1-05	25.0	0.39	1.10	275.80	304	76	68	0.62	3.01	100.2
Leak Check	25.0			275.87						
2-01	30.0	0.46	1.30	279.14	303	77	69	0.68	3.27	100.1
2-02	35.0	0.56	1.60	282.73	307	79	70	0.75	3.59	99.6
2-03	40.0	0.43	1.25	285.99	308	81	71	0.66	3.26	102.9
2-04	45.0	0.48	1.35	289.34	308	82	72	0.69	3.35	99.9
2-05	50.0	0.48	1.35	292.68	309	83	74	0.69	3.34	99.4
Leak Check	50.0			292.77						
3-01	55.0	0.44	1.25	296.00	306	82	74	0.66	3.23	100.3
3-02	60.0	0.57	1.60	299.63	307	83	74	0.75	3.63	99.1
3-03	65.0	0.53	1.50	303.17	309	84	75	0.73	3.54	100.1
3-04	70.0	0.47	1.35	306.52	308	84	76	0.69	3.35	100.4
3-05	75.0	0.44	1.25	309.77	308	85	76	0.66	3.25	100.6
Leak Check	75.0			309.95						
4-01	80.0	0.66	1.90	313.89	303	84	77	0.81	3.94	99.4
4-02	85.0	0.58	1.65	317.61	309	86	77	0.76	3.72	100.3
4-03	90.0	0.54	1.55	321.24	308	86	78	0.73	3.63	101.2
4-04	95.0	0.60	1.70	325.02	306	86	78	0.77	3.78	99.9
4-05	100.0	0.60	1.70	328.77	311	87	79	0.77	3.75	99.2
Leak Check	100.0			328.88						
5-01	105.0	0.41	1.15	332.00	307	85	79	0.64	3.12	99.7
5-02	110.0	0.48	1.35	335.37	303	86	79	0.69	3.37	99.2
5-03	115.0	0.52	1.50	339.01	296	87	80	0.72	3.64	102.3
5-04	120.0	0.55	1.55	342.55	307	88	80	0.74	3.54	97.4
5-05	125.0	0.63	1.80	346.45	306	88	80	0.79	3.90	100.2
Final	125.0		1.42200	85.73400	306.28000	77.70000		0.70447	85.73400	
25 points sampled		Sq.Rt.ΔP								
QC-Check: Field Averages		0.7045	1.4220	85.7340	306.2800	77.7000				
		☐ Avg. OK	☑ Avg. OK	☑ Avg. OK	☑ Avg. OK	☑ Avg. OK				

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QA/QC _____
Date _____

Field Data Printout

Test Method: **USEPA Method 29**
Analyte: **Mercury**

Location: FF Outlet
Test Run: 2
Client: Wheelabrator North Broward, Inc.
Project No: 9156-3
Source Area (ft^2): 64.00000

Test Date: 12/03/02
Start Time: 09:59
Stop Time: 12:09
Leak Rate Before: 0.002 cfm @ 15 "Hg
Leak Rate After: 0.001 cfm @ 6 "Hg

Bar. Press. (in. Hg): 30.10
Static P: -13.4
O_2 (dry volume %): 11.07
CO_2 (dry volume %): 8.67
N_2+CO (dry volume %): 80.27

H_2O (condensate, ml or gm): 443.9
H_2O (silica, g): 15.9
Actual Moisture (%): 21.43

Nozzle ID No: 280-66-2
Nozzle Diameter (D_n): 0.280
Probe ID No: M-8-2
Pitot C_p: 0.84
Pitot Leak Check: ☑ Pass ☐ Fail

Meter Box ID. No: 66-13
Meter ΔH@: 1.77010
Meter Y_d: 0.99560

Traverse Point	Run Time 5.0 min/read	Pitot ΔP_s (in. H_2O)	Sample ΔH (in. H_2O)	Metered (dcf)	Stack T_s (°F)	Dry Gas Meter $T_{m\text{-}in}$ (°F)	Dry Gas Meter $T_{m\text{-}out}$ (°F)	$\sqrt{\Delta P_s}$ (calculated) ($\sqrt{}$in. H_2O)	Volume (calculated) (ft^3)	Isokinetics (calculated) (%)
	0.0			558.22						
1-01	5.0	0.40	1.15	561.34	310	76	82	0.63	3.13	102.3
1-02	10.0	0.47	1.35	564.48	308	80	82	0.69	3.14	94.4
1-03	15.0	0.45	1.30	567.61	309	86	81	0.67	3.13	95.8
1-04	20.0	0.45	1.30	570.77	309	89	81	0.67	3.16	96.4
1-05	25.0	0.39	1.15	573.74	308	90	81	0.62	2.97	97.1
Leak Check	25.0			573.84						
2-01	30.0	0.52	1.50	577.19	306	90	82	0.72	3.35	94.8
2-02	35.0	0.43	1.25	580.33	308	92	82	0.66	3.14	97.6
2-03	40.0	0.49	1.45	583.62	310	93	82	0.70	3.29	95.8
2-04	45.0	0.45	1.30	586.82	310	94	82	0.67	3.20	97.2
2-05	50.0	0.42	1.25	589.95	307	94	82	0.65	3.13	98.2
Leak Check	50.0			590.01						
3-01	55.0	0.40	1.15	593.01	307	92	82	0.63	3.00	96.6
3-02	60.0	0.40	1.15	596.00	309	94	83	0.63	2.99	96.1
3-03	65.0	0.54	1.60	599.49	308	95	84	0.73	3.49	96.4
3-04	70.0	0.47	1.35	602.73	307	96	83	0.69	3.24	95.8
3-05	75.0	0.42	1.25	605.91	308	96	83	0.65	3.18	99.5
Leak Check	75.0			605.95						
4-01	80.0	0.71	2.05	609.88	307	95	83	0.84	3.93	94.8
4-02	85.0	0.54	1.60	613.42	311	97	82	0.73	3.54	98.0
4-03	90.0	0.57	1.65	617.00	308	97	82	0.75	3.58	96.3
4-04	95.0	0.50	1.45	620.43	307	97	82	0.71	3.43	98.4
4-05	100.0	0.46	1.35	623.70	309	97	82	0.68	3.27	97.9
Leak Check	100.0			623.79						
5-01	105.0	0.43	1.25	626.93	296	95	83	0.66	3.14	96.4
5-02	110.0	0.48	1.40	630.22	300	97	84	0.69	3.29	95.7
5-03	115.0	0.48	1.40	633.53	301	97	84	0.69	3.31	96.3
5-04	120.0	0.57	1.65	636.99	306	98	84	0.75	3.46	92.7
5-05	125.0	0.51	1.50	640.46	309	98	84	0.71	3.47	98.3
Final	125.0		1.39200	81.95000	307.12000	87.74000		0.68966	81.95000	
25 points sampled		Sq.Rt.ΔP								
QC-Check: Field Averages		0.6897	1.3920	81.9500	307.1200	87.7400				
		☑ Avg. OK	☑ Avg. OK	☑ Avg. OK	☑ Avg. OK	☑ Avg. OK				

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QA/QC _____
Date _____

Field Data Printout

Test Method: **USEPA Method 29**
Analyte: **Mercury**

Location: FF Outlet
Test Run: 3
Client: Wheelabrator North Broward, Inc.
Project No: 9156-3
Source Area (ft^2): 64.00000

Test Date: 12/03/02
Start Time: 12:10
Stop Time: 16:21
Leak Rate Before: 0.002 cfm @ 16 "Hg
Leak Rate After: 0.001 cfm @ 5 "Hg

Bar. Press. (in. Hg): 30.10
Static P: -13.3
O_2 (dry volume %): 9.73
CO_2 (dry volume %): 8.87
N_2+CO (dry volume %): 81.40

H_2O (condensate, ml or gm): 455.7
H_2O (silica, g): 15.1
Actual Moisture (%): 20.41

Nozzle ID No: 280-66-1
Nozzle Diameter (D_n): 0.280
Probe ID No: 67-8-13
Pitot C_p: 0.84
Pitot Leak Check: ☑ Pass ☐ Fail

Meter Box ID. No: 66-10
Meter ΔH@: 1.68300
Meter Y_d: 1.00240

Traverse Point	Run Time 5.0 min/read	Pitot ΔP_s (in. H_2O)	Sample ΔH (in. H_2O)	Metered (dcf)	Stack T_s (°F)	Dry Gas Meter $T_{m\text{-}in}$ (°F)	Dry Gas Meter $T_{m\text{-}out}$ (°F)	$\sqrt{\Delta P_s}$ (calculated) ($\sqrt{}$in. H_2O)	Volume (calculated) (ft^3)	Isokinetics (calculated) (%)
	0.0			347.05						
1-01	5.0	0.46	1.30	350.42	306	79	77	0.68	3.37	102.3
1-02	10.0	0.50	1.45	353.77	306	84	79	0.71	3.35	97.0
1-03	15.0	0.57	1.60	357.53	306	88	80	0.75	3.76	101.5
1-04	20.0	0.51	1.45	361.10	306	91	81	0.71	3.57	101.5
1-05	25.0	0.44	1.25	364.32	306	93	83	0.66	3.22	98.2
Leak Check	25.0			364.46						
2-01	30.0	0.50	1.45	367.63	303	93	84	0.71	3.17	90.4
2-02	35.0	0.53	1.50	371.27	304	87	85	0.73	3.64	101.4
2-03	40.0	0.54	1.55	374.90	305	92	86	0.73	3.63	99.7
2-04	45.0	0.47	1.35	378.34	306	94	87	0.69	3.44	101.0
2-05	50.0	0.47	1.35	381.71	305	94	87	0.69	3.37	98.9
Leak Check	50.0			381.80						
3-01	55.0	0.46	1.30	385.13	303	93	87	0.68	3.33	98.8
3-02	60.0	0.60	1.70	388.99	305	94	87	0.77	3.86	100.4
3-03	65.0	0.57	1.60	392.72	306	94	87	0.75	3.73	99.5
3-04	70.0	0.52	1.50	396.33	307	95	88	0.72	3.61	100.7
3-05	75.0	0.50	1.45	399.90	306	96	88	0.71	3.57	101.4
Leak Check	75.0			400.03						
4-01	80.0	0.68	1.95	404.13	303	96	88	0.82	4.10	99.8
4-02	85.0	0.68	1.95	408.23	306	97	89	0.82	4.10	99.8
Leak Check	85.0			408.76						
4-03	90.0	0.60	1.70	412.62	305	98	89	0.77	3.86	99.8
4-04	95.0	0.60	1.70	416.43	305	89	86	0.77	3.81	99.6
4-05	100.0	0.50	1.45	419.94	304	92	86	0.71	3.51	100.1
Leak Check	100.0			420.14						
5-01	105.0	0.31	0.88	422.87	305	92	86	0.56	2.73	98.8
5-02	110.0	0.50	1.45	426.40	299	92	86	0.71	3.53	100.4
5-03	115.0	0.43	1.25	429.66	298	94	87	0.66	3.26	99.6
5-04	120.0	0.51	1.45	433.15	305	94	87	0.71	3.49	98.4
5-05	125.0	0.60	1.70	436.95	305	94	87	0.77	3.80	98.8
Final	125.0		1.49120	88.80800	304.60000	88.84000		0.72035	88.80800	
25 points sampled		Sq.Rt.ΔP								
QC-Check: Field Averages		0.7204	1.4912	88.8080	304.6000	88.8400				
		☑ Avg. OK	☑ Avg. OK	☑ Avg. OK	☑ Avg. OK	☑ Avg. OK				

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QA/QC _____
Date _____

USEPA Method 3 Laboratory Data

Test Method: USEPA Method 29
Analyte: Mercury

Location: FF Outlet
Client: Wheelabrator North Broward, Inc.
Project No: 9156-3
Method: EPA Method 3
Fuel Type: Municipal Waste
F_o for Fuel: 1.03 to 1.3

Run Number	Trial	Percent CO_2	Percent O_2+CO_2	Percent O_2	Percent N_2	Dry Mol. Weight	F_o	Method of Analysis: Orsat
1	1	8.0	19.2	11.2	80.8	29.73		
	2	8.2	19.4	11.2	80.6	29.76		
	3	8.2	19.4	11.2	80.6	29.76		
	Avg.	8.13333		11.20000	80.66667	29.75	1.19262	*All measurements in spec.*
CEM or Other Avg:								☑ Fo value within expected range.

Run Number	Trial	Percent CO_2	Percent O_2+CO_2	Percent O_2	Percent N_2	Dry Mol. Weight	F_o	Method of Analysis: Orsat
2	1	8.8	19.8	11.0	80.2	29.85		
	2	8.6	19.8	11.2	80.2	29.82		
	3	8.6	19.6	11.0	80.4	29.82		
	Avg.	8.66667		11.06667	80.26667	29.83	1.13462	*All measurements in spec.*
CEM or Other Avg:								☑ Fo value within expected range.

Run Number	Trial	Percent CO_2	Percent O_2+CO_2	Percent O_2	Percent N_2	Dry Mol. Weight	F_o	Method of Analysis: Orsat
3	1	9.0	18.8	9.8	81.2	29.83		
	2	8.8	18.6	9.8	81.4	29.80		
	3	8.8	18.4	9.6	81.6	29.79		
	Avg.	8.86667		9.73333	81.40000	29.81	1.25940	*All measurements in spec.*
CEM or Other Avg:								☑ Fo value within expected range.

Run Number	Trial	Percent CO_2	Percent O_2+CO_2	Percent O_2	Percent N_2	Dry Mol. Weight	F_o	Method of Analysis: Orsat
	1							
	2							
	3							
	Avg.							
CEM or Other Avg:								☐ Fo value within expected range.

121802 101815

QA/QC _____
Date _____

USEPA Method 4 Laboratory Data

Location: FF Outlet
Client: Wheelabrator North Broward, Inc.
Project No: 9156-3

Test Method: USEPA Method 29
Analyte: Mercury

Test Run: 1

	Contents	Gross (gm)	Tare (gm)	Net (gm)
Impinger 1	Empty	732.7	441.2	291.5
Impinger 2	5%HNO3/10%H2O2	664.6	534.8	129.8
Impinger 3	5%HNO3/10%H2O2	547.7	528.0	19.7
Impinger 4	Empty	462.4	457.8	4.6
Impinger 5	4%KMnO4/10%H2SO4	545.9	543.9	2.0
Impinger 6	4%KMnO4/10%H2SO4	558.9	557.0	1.9
Impinger 7	Silica Gel	782.8	764.4	18.4
Impinger 8				

Rinse: (ml or gm)

		Field Data Check	
449.5	Liquid (gm)		
0.0	less rinse (gm)		
449.5	Net Liquid (gm)	449.5	☑ QA/QC OK
+ 18.4	Silica Gel (gm)	18.4	☑ QA/QC OK
467.9	Total Vlc (gm)	467.9	☑ QA/QC OK

Test Run: 2

	Contents	Gross (gm)	Tare (gm)	Net (gm)
Impinger 1	Empty	757.5	439.6	317.9
Impinger 2	5%HNO3/10%H2O2	635.8	537.2	98.6
Impinger 3	5%HNO3/10%H2O2	549.4	530.9	18.5
Impinger 4	Empty	442.8	439.3	3.5
Impinger 5	4%KMnO4/10%H2SO4	552.7	548.3	4.4
Impinger 6	4%KMnO4/10%H2SO4	539.2	538.2	1.0
Impinger 7	Silica Gel	774.3	758.4	15.9
Impinger 8				

Rinse: (ml or gm)

		Field Data Check	
443.9	Liquid (gm)		
0.0	less rinse (gm)		
443.9	Net Liquid (gm)	443.9	☑ QA/QC OK
+ 15.9	Silica Gel (gm)	15.9	☑ QA/QC OK
459.8	Total Vlc (gm)	459.8	☑ QA/QC OK

Test Run: 3

	Contents	Gross (gm)	Tare (gm)	Net (gm)
Impinger 1	Empty	450.3	443.0	7.3
Impinger 2	5%HNO3/10%H2O2	808.6	537.8	270.8
Impinger 3	5%HNO3/10%H2O2	701.9	532.1	169.8
Impinger 4	Empty	464.3	459.2	5.1
Impinger 5	4%KMnO4/10%H2SO4	550.4	548.5	1.9
Impinger 6	4%KMnO4/10%H2SO4	559.9	559.1	0.8
Impinger 7	Silica Gel	797.6	782.5	15.1
Impinger 8				

Rinse: (ml or gm)

		Field Data Check	
455.7	Liquid (gm)		
0.0	less rinse (gm)		
455.7	Net Liquid (gm)	455.7	☑ QA/QC OK
+ 15.1	Silica Gel (gm)	15.1	☑ QA/QC OK
470.8	Total Vlc (gm)	470.8	☑ QA/QC OK

Test Run:

	Contents	Gross (gm)	Tare (gm)	Net (gm)
Impinger 1	Empty			
Impinger 2	5%HNO3/10%H2O2			
Impinger 3	5%HNO3/10%H2O2			
Impinger 4	Empty			
Impinger 5	4%KMnO4/10%H2SO4			
Impinger 6	4%KMnO4/10%H2SO4			
Impinger 7	Silica Gel			
Impinger 8				

Rinse: (ml or gm)

		Field Data Check	
	Liquid (gm)		
	less rinse (gm)		
	Net Liquid (gm)		☐ QA/QC OK
	Silica Gel (gm)		☐ QA/QC OK
	Total Vlc (gm)		☐ QA/QC OK

121802 101815

QA/QC _____
Date _____

LABORATORY DATA

F

Clean Air Engineering, Inc.

500 West Wood Street
Palatine, IL 60067

Project Number: 9156

Mercury

EPA Method 29 Analysis

Analytical Report
1181

Element One, Inc.
5022-C Wrightsville Av., Wilmington, NC 28403
910-793-0128 FAX:910-792-6853 e1lab@hotmail.com

I have reviewed the following data for completeness, accuracy, adherence to method protocol, and compliance with quality assurance guidelines.

Quality assurance review by Bruce Hawks

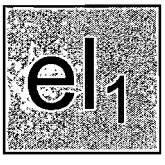
el1

SUMMARY OF RESULTS

Summary of Mercury Analysis

Run Number		Average Total Catch, µg	Front half µg	H_2O_2 /HNO_3 µg	Empty Impinger µg	$KMnO_4$ µg	HCl µg
North Run 1	# 1	28.8	4.17	23.5	< 0.2	< 0.5	1.49
	# 2		4.10	22.9	< 0.2	< 0.5	1.50
North Run 2	# 1	26.9	5.62	19.8	< 0.2	< 0.5	1.68
	# 2		5.46	19.6	< 0.2	< 0.5	1.65
North Run 3	# 1	43.1	5.28	36.7	< 0.2	< 0.5	1.39
	# 2		5.14	36.3	< 0.2	< 0.5	1.36
Field Blank	# 1	0.88	< 0.1	< 0.3	< 0.2	< 0.5	0.87
	# 2		< 0.1	< 0.3	< 0.2	< 0.5	0.89
Reagent Blank	# 1	0.92	< 0.1	< 0.3	< 0.2	< 0.4	0.94
	# 2		< 0.1	< 0.3	< 0.2	< 0.4	0.90

ANALYTICAL NARRATIVE



Element One Analytical Narrative

Client	Clean Air Engineering	Element One #:	1181
Client ID:	9156	Analyst:	IJJ
Date Received	12/9/02	Method:	M29
Analytes	Hg	Dates Analyzed	12/11-12/02

Summary of Analysis

The samples were digested, prepared and analyzed according to Method 29 protocol. Samples were analyzed for mercury on a PerkinElmer FIMS-100 CVAA mercury analyzer.

Detection Limits

The FIMS-100 CVAA instrument reporting limit for mercury was 0.001 µg/ml.

Analysis QA/QC

Duplicate analyses relative percent difference (RPD) and spike sample recovery data are summarized on the following pages. All QA/QC data was within the criteria of the method.

Additional Comments

The reported results have not been corrected for any blank values or spike recovery values. Nothing unusual was noticed with any of the samples or analyses.

Mercury Duplicate Analysis RPD

Run Number	Front half	H_2O_2/HNO_3	Empty Imp	$KMnO_4$	HCl
North Run 1	1.6%	2.4%	NA	NA	0.4%
North Run 2	2.8%	1.1%	NA	NA	1.9%
North Run 3	2.7%	0.9%	NA	NA	2.8%
Field Blank	NA	NA	NA	NA	2.5%
Reagent Blank	NA	NA	NA	NA	4.7%

Mercury Spike Recoveries

Run Number		Front half	H_2O_2/HNO_3	Empty Imp	KMnO4	HCl
North Run 3	# 1	123%	103%	98%	97%	105%
	# 2	117%	93%	99%	95%	103%

SAMPLE CUSTODY

CHAIN OF CUSTODY FORM

CLIENT: Wheelabrator
PLANT: North Broward
PROJECT MANAGER: Scott Brown
PROJECT NO.: 1156
DEPT.: 66

CLEANAIR LAB NO.	RUN NO.	TEST LOCATION	DATE	SAMPLE MATRIX	NO. OF CONTAINERS	ORIGINAL VOLUME	ANALYSIS REQUESTED: Hg	ANALYSIS REQUESTED	ANALYSIS REQUESTED	ANALYSIS REQUESTED	ADDITIONAL INFORMATION
	1	Unit 3 FF Outlet	12/3	Filter	1		X				
	↓	↓	↓	Front-Half 0.1N HNO3 Rinse	1		X				
				Imp. 1,2,3 + 0.1N HNO3 Rinse	1		X				
				Imp. 4 + 0.1N HNO3 Rinse	1		X				
				Imp. 5,6 KMnO4+H2O Rinse	1		X				
				Imp. 5,6 HCl Rinse	1		X				
	2	Unit 3 FF Outlet	12/3	Filter	1		X				
	↓	↓	↓	Front-Half 0.1N HNO3 Rinse	1		X				
				Imp. 1,2,3 + 0.1N HNO3 Rinse	1		X				
				Imp. 4 + 0.1N HNO3 Rinse	1		X				
				Imp. 5,6 KMnO4+H2O Rinse	1		X				
				Imp. 5,6 HCl Rinse	1		X				

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time	Relinquished by: (Signature)	Date / Time
Ken OHalloren	12/6/2002 18:00				
Courier:	**Date / Time**	**Relinquished by: (Signature)**	**Date / Time**	**Received for Analysis by:**	**Date / Time**
				Ken Smith	12-9-02 10:30

Special Handling Instructions

Forwarding Lab:

PO Number:

This form was completed by:

Kevin OHalloren

Signature: Ken OHalle Date: 12/6/2002

CleanAir ENGINEERING
500 West Wood Street
Palatine, IL 60067
(800) 627-0033 ph
(847) 991-3385 fax
www.cleanair.com

CHAIN OF CUSTODY FORM

CLIENT: wheelabrator
PLANT: North Broward
PROJECT MANAGER: Scott Brown
PROJECT NO.: 9156
DEPT.: 66

CLEANAIR LAB NO.	RUN NO.	TEST LOCATION	DATE	SAMPLE MATRIX	NO. OF CONTAINERS	ORIGINAL VOLUME	ANALYSIS REQUESTED: 1/9				ADDITIONAL INFORMATION
	3	Unit 3 FF Outlet	12/3	Filter	1		X				
				Front-Half 0.1N HNO3 Rinse	1		X				
				Imp. 1,2,3 + 0.1N HNO3 Rinse	1		X				
				Imp. 4 + 0.1N HNO3 Rinse	1		X				
				Imp. 5,6 KMnO4+H2O Rinse	1		X				
				Imp. 5,6 HCl Rinse	1		X				
	4	Unit 3 FF Outlet	12/4	Filter	1		X				
				Front-Half 0.1N HNO3 Rinse	1		X				
				Imp. 1,2,3 + 0.1N HNO3 Rinse	1		X				
				Imp. 4 + 0.1N HNO3 Rinse	1		X				
				Imp. 5,6 KMnO4+H2O Rinse	1		X				
				Imp. 5,6 HCl Rinse	1		X				

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time	Relinquished by: (Signature)	Date / Time
Kevin OHalloren	12/6/2002 18:00				
Courier:	Date / Time	Relinquished by: (Signature)	Date / Time	Received for Analysis by:	Date / Time
				Ken Smith	12-9-02 10:30

Special Handling Instructions

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Signature: Kevin OHalloren Date: 12/6/2002

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CHAIN OF CUSTODY FORM

CLIENT: Wheelabrator
PLANT: North Broward
PROJECT MANAGER: Scott Brown
PROJECT NO.: 9156
DEPT.: 66

CLEANAIR LAB NO.	RUN NO.	TEST LOCATION	DATE	SAMPLE MATRIX	NO. OF CONTAINERS	ORIGINAL VOLUME	ANALYSIS REQUESTED: Hg	ADDITIONAL INFORMATION
	5	Unit 3 FF Outlet	12/4	Filter	1		X	
				Front-Half 0.1N HNO3 Rinse	1		X	
				Imp. 1,2,3 + 0.1N HNO3 Rinse	1		X	
				Imp. 4 + 0.1N HNO3 Rinse	1		X	
				Imp. 5,6 KMnO4+H2O Rinse	1		X	
				Imp. 5,6 HCl Rinse	1		X	
	6	Unit 3 FF Outlet	12/4	Filter	1		X	
				Front-Half 0.1N HNO3 Rinse	1		X	
				Imp. 1,2,3 + 0.1N HNO3 Rinse	1		X	
				Imp. 4 + 0.1N HNO3 Rinse	1		X	
				Imp. 5,6 KMnO4+H2O Rinse	1		X	
				Imp. 5,6 HCl Rinse	1		X	

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time	Relinquished by: (Signature)	Date / Time
Ken O'Halloren	12/6/2002 18:00				
Courier:	Date / Time	Relinquished by: (Signature)	Date / Time	Received for Analysis by:	Date / Time
				[signature]	12-9-02 1030

Special Handling Instructions

Forwarding Lab:

PO Number:

This form was completed by: Kevin OHalloren

Signature: Ken O'Halloren Date: 12/6/2002

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CHAIN OF CUSTODY FORM

CLIENT Wheelabrator
PLANT North Broward
PROJECT MANAGER Scott Brown
PROJECT NO. 9156
DEPT. 66

CLEANAIR LAB NO.	RUN NO.	TEST LOCATION	DATE	SAMPLE MATRIX	NO. OF CONTAINERS	ORIGINAL VOLUME	ANALYSIS REQUESTED 49				ADDITIONAL INFORMATION
	Field Blank	Unit 3 FF Outlet	12/3	Filter	1		X				
				Front-Half 0.1N HNO3 Rinse	1		X				
				Imp. 1,2,3 + 0.1N HNO3 Rinse	1		X				
				Imp. 4 + 0.1N HNO3 Rinse	1		X				
				Imp. 5,6 KMnO4+H2O Rinse	1		X				
				Imp. 5,6 HCl Rinse	1		X				
				Filter							
				Front-Half 0.1N HNO3 Rinse							
				Imp. 1,2,3 + 0.1N HNO3 Rinse							
				Imp. 4 + 0.1N HNO3 Rinse							
				Imp. 5,6 KMnO4+H2O Rinse							
				Imp. 5,6 HCl Rinse							

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time	Relinquished by: (Signature)	Date / Time
Ken OHalloren	12/6/2002 18:00				
Courier:	Date / Time	Relinquished by: (Signature)	Date / Time	Received for Analysis by:	Date / Time
				Ken Smith	12-9-02 1030

Special Handling Instructions

Forwarding Lab: _____

PO Number: _____

This form was completed by:

Kevin OHalloren

Signature: Ken OHalloren Date: 12/6/2002

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CHAIN OF CUSTODY FORM

CLIENT Wheelabrator
PLANT North Broward
PROJECT MANAGER Scott Brown
PROJECT NO. 9156
DEPT. 66

CLEANAIR LAB NO.	RUN NO.	TEST LOCATION	DATE	SAMPLE MATRIX	NO. OF CONTAINERS	ORIGINAL VOLUME	ANALYSIS REQUESTED Hg				ADDITIONAL INFORMATION
	NA	Reagent Blank	12/3	Quartz Filters	1	NA	X				9157's RB has 3 filters; please analyze that one
	NA	Reagent Blank		0.1N HNO3	1	~~300~~ 200	X				
	NA	Reagent Blank		DI H_2O	1	~~100~~ 200	X				
	NA	Reagent Blank		5% HNO_3 / 10% H_2O_2	1	200	X				
	NA	Reagent Blank		4% $KMnO_4$ / 10% H_2SO_4	1	~~100~~ 300	X				
	NA	Reagent Blank	↓	8 N HCl / DI H_2O	1	225	X				

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time	Relinquished by: (Signature)	Date / Time
Ken OHalloren	12/6/2002 18:00				
Courier:	Date / Time	Relinquished by: (Signature)	Date / Time	Received for Analysis by:	Date / Time
				Ken Smith	12-9-02 1030

Special Handling Instructions

Forwarding Lab: _____

PO Number: _____

This form was completed by:

Kevin OHalloren

Signature: Ken OHalloren Date: 12/6/2002

CleanAir ENGINEERING
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(800) 627-0033 ph
(847) 991-3385 fax
www.cleanair.com

ANALYTICAL DATA

elementOne **AIR TESTING SAMPLE SUBMISSION FORM** Lab ID # **e1181**

Client ID/PO#: 9156	Date Received: 12/9/02	Page: 1	of 1
Customer: Clean Air	Results Requested: 12/23/02	Time Rec:	
Address:	Contact: Scott Brown	Rec by: BGH	
	Email:	Via:	
	Phone:	Fax:	

HNO_3 Lot: 1162020	HF Lot: 5101120	HCl Lot: 4102020	
Volume Marked (Y) / N	Volume Loss Y / (N) / ?	pH < 2.0 (Y) / N	Ref. Method: 29

	Sample Identification		Sample Identification
1	North Broward Run 1	7	North Broward Run 4
2	North Broward Run 2	8	North Broward Run 5
3	North Broward Run 3	9	North Broward Run 6
4	North Broward Run 3 Spike		
5	Field Blank		
6	Reagent Blank		

Elements to Analyze: **Hg – Only analyze sample 1-6; Archive Sample 7-9**

	Front Half		Back Half			HNO_3 (A)		$KMnO_4$ (B)		HCl (C)	
SAMPLE	BV, ml	FV, ml	BV, ml	Used	FV, ml	BV, ml	FV, ml	BV, ml	FV, ml	BV, ml	FV, ml
1	132ml	100ml	~~112ml~~ 750ml	—	—	112ml	200ml	565ml	600ml	230ml	400ml
2	104ml	↓	~~110ml~~ 760ml	12.9.02 ISJ —	—	110ml	↓	555ml	↓	225ml	↓
3/4	100ml	↓	750ml	—	—	108ml	↓	580ml	↓	225ml	↓
~~4~~ 5	74ml	↓	300ml	—	—	104ml	↓	545ml	↓	230ml	↓
6	100ml	↓	200ml H_2O_2 100ml 1N HNO_3	—	—	200ml	↓	100ml KMnO4 300ml DI	Calculate as 400ml	225ml	↓

Comments: FH·BLK· F.V. = 100ml

Element One, Inc. Form 118 - Revision 6.0

FH·BLK·SPK @ 5ug
spk·lot: 021402·A (25ppm)
12·10·02 ISJ

Mercury Perkin-Elmer AAWinLab

ID #	Sample_ID	Sam_Date	Sam_Time	Mean_Sig	Mean_ST	Mean_SA	Units	Wt	Dilu
1	Calib Blank	12/11/2002	9:14:18	0.000375			mg/L		
2	STD1=.100ug	12/11/2002	9:15:18	0.011536			mg/L		
3	STD2=.200ug	12/11/2002	9:16:20	0.023397			mg/L		
4	STD3=.300ug	12/11/2002	9:17:27	0.03434			mg/L		
5	STD4=.400ug	12/11/2002	9:18:32	0.042391			mg/L		
6	STD5=.500ug	12/11/2002	9:19:37	0.056106			mg/L		
7	Reagent Blank	12/11/2002	9:21:09	-6.85E-05	-0.00058	-0.00058	mg/L	10	100
8	0.010 = DL	12/11/2002	9:22:12	0.001098	0.009289	0.009289	mg/L		
9	0.200 = QC STD 2	12/11/2002	9:23:20	0.024286	0.212023	0.212023	mg/L		
10	0.200 = QC STD 3	12/11/2002	9:24:24	0.024129	0.210608	0.210608	mg/L		
11	0.020 = DL	12/11/2002	9:25:30	0.002124	0.017994	0.017994	mg/L		
12	0.020 = DL	12/11/2002	9:26:37	0.000119	0.00101	0.00101	mg/L	10	100
13	REAGENT BLANK	12/11/2002	9:27:41	-1.29E-05	-0.00011	-0.00011	mg/L	10	100
14	1181-A-001	12/11/2002	9:29:10	0.000293	0.002477	0.049533	mg/L	10	200
15	1181-A-002	12/11/2002	9:30:40	0.000131	0.001111	0.022215	mg/L	10	200
16	1181-A-003	12/11/2002	9:32:15	0.00065	0.005497	0.109944	mg/L	10	200
17	1181-A-004-SPK	12/11/2002	9:33:47	0.022588	0.196741	3.934813	mg/L	10	200
18	1181-A-005	12/11/2002	9:35:19	-4.9E-06	-4.2E-05	-0.00083	mg/L	10	200
19	1181-A-006	12/11/2002	9:36:53	0.000991	0.00839	0.167807	mg/L	10	200
20	0.010 = DL	12/11/2002	9:44:11	0.001045	0.008837	0.008837	mg/L	10	200
21	0.010 = DL	12/11/2002	9:45:17	0.001109	0.009381	0.009381	mg/L	10	200
22	0.200 = QC STD 2	12/11/2002	9:46:22	0.025198	0.220261	0.220261	mg/L	10	200
23	0.200 = QC STD 2	12/11/2002	9:47:29	0.031517	0.277921	0.277921	mg/L	10	200
24	REAGENT BLANK	12/11/2002	9:48:31	0.000548	0.004636	0.004636	mg/L	10	100
25	Calib Blank	12/11/2002	14:45:14	0.000362			mg/L	10	200
26	STD1=.100ug	12/11/2002	14:46:16	0.010789			mg/L	10	200
27	STD2=.200ug	12/11/2002	14:47:18	0.022022			mg/L	10	200
28	STD3=.300ug	12/11/2002	14:48:24	0.032833			mg/L	10	200
29	STD4=.400ug	12/11/2002	14:49:28	0.041535			mg/L	10	200
30	STD5=.500ug	12/11/2002	14:50:33	0.053683			mg/L	10	200
31	Reagent Blank	12/11/2002	14:52:25	6.44E-06	5.86E-05	5.86E-05	mg/L	10	100
32	0.010 = DL	12/11/2002	14:53:28	0.001043	0.00949	0.00949	mg/L	10	200
33	0.200 = QC STD 2	12/11/2002	14:54:33	0.023012	0.2123	0.2123	mg/L	10	200
34	0.200 = QC STD 3	12/11/2002	14:55:38	0.022989	0.212087	0.212087	mg/L	10	200
35	0.020 = DL	12/11/2002	14:56:44	0.002117	0.01928	0.01928	mg/L	10	200
36	REAGENT BLANK	12/11/2002	14:57:49	0.000147	0.001341	0.001341	mg/L	10	100
37	1181-A-006	12/11/2002	14:59:20	-7.56E-05	-0.00069	-0.01375	mg/L	10	200
38	0.010 = DL	12/11/2002	15:14:14	0.000752	0.00684	0.00684	mg/L	10	400
39	0.010 = DL	12/11/2002	15:15:20	0.001918	0.017461	0.017461	mg/L	10	400
40	0.200 = QC STD 2	12/11/2002	15:16:28	0.022685	0.209241	0.209241	mg/L	10	400
41	REAGENT BLANK	12/11/2002	15:17:30	0.000406	0.003695	0.003695	mg/L	10	100
42	Calib Blank	12/11/2002	16:33:09	0.00017			mg/L		
43	STD1=.100ug	12/11/2002	16:34:11	0.012471			mg/L		
44	STD2=.200ug	12/11/2002	16:35:13	0.025595			mg/L		
45	STD3=.300ug	12/11/2002	16:36:16	0.038457			mg/L		
46	STD4=.400ug	12/11/2002	16:37:20	0.048525			mg/L		

ID #	Sig 1	Std_U 1	Smp_U 1	Sig 2	Std_U 2	Smp_U 2
[redacted]	0.00037485					
[redacted]	0.01153642					
3	0.02339661					
[redacted]	0.03434042					
5	0.04239088					
[redacted]	0.05610624					
[redacted]	-0.0001743	-0.0014726	-0.0014726	0.00003716	0.000314	0.00031401
8	0.00109792	0.00928923	0.00928923			
[redacted]	0.02428567	0.21202308	0.21202308			
10	0.0241288	0.21060814	0.21060814			
[redacted]	0.00212381	0.01799362	0.01799362			
[redacted]	0.00011947	0.00100954	0.00100954			
13	-0.0000129	-0.0001094	-0.0001094			
[redacted]	0.00040512	0.00342453	0.06849065	0.0001809	0.0015288	0.03057523
[redacted]	0.00015605	0.00131871	0.02637439	0.00010684	0.0009028	0.0180562
16	0.00065012	0.00549729	0.10994588	0.0006501	0.0054971	0.10994243
[redacted]	0.02248628	0.19582948	3.91658968	0.02268922	0.1976518	3.95303577
18	0.00001054	0.00008907	0.0017814	-0.0000203	-0.0001723	-0.0034465
[redacted]	0.00032893	0.00278016	0.05560324	0.00165354	0.0140006	0.28001158
[redacted]	0.00104453	0.00883695	0.00883695			
21	0.00110875	0.00938099	0.00938099			
[redacted]	0.02519765	0.22026108	0.22026108			
23	0.03151735	0.27792063	0.27792063			
24	0.0005483	0.00463567	0.00463567			
[redacted]	0.00036221					
26	0.01078862					
[redacted]	0.02202167					
[redacted]	0.03283338					
29	0.04153504					
[redacted]	0.05368322					
31	0.00001761	0.00016016	0.00016016	-0.0000047	-0.0000429	-0.0000429
[redacted]	0.00104301	0.00949045	0.00949045			
[redacted]	0.02301185	0.21229993	0.21229993			
34	0.02298909	0.21208695	0.21208695			
[redacted]	0.00211748	0.01928003	0.01928003			
36	0.00014745	0.00134097	0.00134097			
37	-0.0000707	-0.0006432	-0.0128656	-0.0000804	-0.0007316	-0.0146336
[redacted]	0.00075181	0.00683955	0.00683955			
39	0.00191799	0.01746145	0.01746145			
[redacted]	0.02268495	0.20924074	0.20924074			
[redacted]	0.00040629	0.00369541	0.00369541			
42	0.00017009					
[redacted]	0.01247144					
44	0.02559452					
[redacted]	0.03845659					
[redacted]	0.04852478					

Mercury Perkin-Elmer AAWinLab

ID #	Sample_ID	Sam_Date	Sam_Time	Mean_Sig	Mean_ST	Mean_SA	Units	Wt	Dilu
47	STD5=.500ug	12/11/2002	16:38:28	0.064361			mg/L		
48	Reagent Blank	12/11/2002	16:40:00	8.29E-05	0.000659	0.000659	mg/L	10	100
49	0.010 = DL	12/11/2002	16:41:03	0.001334	0.010605	0.010605	mg/L		
50	0.200 = QC STD 2	12/11/2002	16:42:08	0.027294	0.216424	0.216424	mg/L		
51	0.200 = QC STD 3	12/11/2002	16:43:12	0.025753	0.204242	0.204242	mg/L		
52	0.020 = DL	12/11/2002	16:44:20	0.002446	0.019446	0.019446	mg/L		
53	REAGENT BLANK	12/11/2002	16:45:27	0.000102	0.000811	0.000811	mg/L	10	100
54	1181-B-001	12/11/2002	17:10:48	0.000224	0.001784	0.08921	mg/L	10	500
55	1181-B-002	12/11/2002	17:12:21	0.000269	0.002137	0.106863	mg/L	10	500
56	1181-B-003	12/11/2002	17:13:52	9.27E-05	0.000737	0.036834	mg/L	10	500
57	1181-B-004-SPK	12/11/2002	17:15:24	0.02428	0.192586	9.629309	mg/L	10	500
58	1181-B-005	12/11/2002	17:16:56	-4.32E-05	-0.00034	-0.0172	mg/L	10	500
59	1181-B-006	12/11/2002	17:18:32	8.74E-06	6.95E-05	0.002781	mg/L	10	400
60	0.010 = DL	12/11/2002	17:22:45	0.001208	0.009608	0.009608	mg/L	10	500
61	0.200 = QC STD 2	12/11/2002	17:23:49	0.026401	0.209366	0.209366	mg/L	10	500
62	REAGENT BLANK	12/11/2002	17:24:51	0.00099	0.007868	0.007868	mg/L	10	100
63	REAGENT BLANK	12/11/2002	17:25:54	0.001073	0.008533	0.008533	mg/L	10	100
64	1181-C-001	12/11/2002	17:33:36	0.004697	0.037325	1.492996	mg/L	10	400
65	1181-C-002	12/11/2002	17:35:08	0.005245	0.041683	1.667324	mg/L	10	400
66	1181-C-003	12/11/2002	17:36:37	0.00171	0.013591	0.543639	mg/L	10	400
67	1181-C-004-SPK	12/11/2002	17:38:07	0.028794	0.228284	9.131356	mg/L	10	400
68	1181-C-005	12/11/2002	17:39:38	0.002769	0.022008	0.880315	mg/L	10	400
69	1181-C-006	12/11/2002	17:41:08	0.002898	0.023038	0.921507	mg/L	10	400
70	0.010 = DL	12/11/2002	17:42:13	0.001294	0.010286	0.010286	mg/L	10	400
71	0.200 = QC STD 2	12/11/2002	17:43:22	0.024536	0.194608	0.194608	mg/L	10	400
72	REAGENT BLANK	12/11/2002	17:44:24	-9.41E-05	-0.00075	-0.00075	mg/L	10	100
73	1181-BH-001	12/11/2002	17:55:15	0.039077	0.309502	23.21263	mg/L	10	750
74	1181-BH-002	12/11/2002	17:56:49	0.032734	0.259422	19.71608	mg/L	10	760
75	1181-BH-003	12/11/2002	17:58:24	0.061572	0.486584	36.4938	mg/L	10	750
76	1181-BH-004-SPK	12/11/2002	17:59:55	0.086568	0.682437	51.18275	mg/L	10	750
77	0.010 = DL	12/11/2002	18:01:01	0.001094	0.008701	0.008701	mg/L	10	750
78	0.010 = DL	12/11/2002	18:02:07	0.001285	0.010217	0.010217	mg/L	10	750
79	0.200 = QC STD 2	12/11/2002	18:03:13	0.024675	0.195711	0.195711	mg/L	10	750
80	REAGENT BLANK	12/11/2002	18:04:14	2.86E-05	0.000227	0.000227	mg/L	10	100
81	1181-BH-005	12/11/2002	18:05:44	0.000842	0.006692	0.200773	mg/L	10	300
82	1181-BH-006	12/11/2002	18:07:12	0.00026	0.002071	0.062119	mg/L	10	300
83	1181-FH-BLK	12/11/2002	18:17:52	8.49E-05	0.000675	0.006749	mg/L	10	100
84	1181-FH-BLK-SPK	12/11/2002	18:19:24	0.026063	0.206693	5.167319	mg/L	4	100
85	0.010 = DL	12/11/2002	18:20:29	0.001207	0.009592	0.009592	mg/L	4	100
86	0.200 = QC STD 2	12/11/2002	18:21:34	0.024702	0.195926	0.195926	mg/L	4	100
87	REAGENT BLANK	12/11/2002	18:22:36	-6.63E-05	-0.00053	-0.00053	mg/L	10	100
88	1181-FH-001	12/11/2002	18:24:07	0.052292	0.413628	4.13628	mg/L	10	100
89	1181-FH-002	12/11/2002	18:25:43	0.070177	0.554118	5.541175	mg/L	10	100
90	1181-FH-003	12/11/2002	18:27:19	0.06597	0.521109	5.211094	mg/L	10	100
91	1181-FH-004-SPK	12/11/2002	18:28:53	0.096625	0.760969	7.609687	mg/L	10	100
92	1181-FH-005	12/11/2002	18:30:24	-7.39E-05	-0.00059	-0.00588	mg/L	10	100

ID #	Sig 1	Std_U 1	Smp_U 1	Sig 2	Std_U 2	Smp_U 2
[redacted]7	0.06436087					
48	0.00006334	0.00050361	0.00050361	0.0001025	0.000815	0.00081497
49	0.00133392	0.01060458	0.01060458			
[redacted]0	0.02729368	0.21642446	0.21642446			
51	0.02575334	0.2042415	0.2042415			
[redacted]2	0.00244637	0.01944625	0.01944625			
[redacted]3	0.00010198	0.00081083	0.00081083			
54	0.0003198	0.00254267	0.12713353	0.000129	0.0010257	0.05128639
[redacted]5	0.0002558	0.0020338	0.10169012	0.00028182	0.0022407	0.112036
56	0.00012201	0.0009701	0.04850517	0.00006329	0.0005033	0.02516299
[redacted]7	0.02450307	0.19435004	9.71750204	0.02405724	0.1908223	9.54111528
[redacted]8	-0.000024	-0.0001915	-0.0095793	-0.0000624	-0.0004963	-0.024818
59	0.00001224	0.00009734	0.00389383	0.00000524	0.0000417	0.00166834
[redacted]0	0.00120849	0.00960753	0.00960753			
[redacted]1	0.02640126	0.20936647	0.20936647			
62	0.00098969	0.0078682	0.0078682			
[redacted]3	0.00107334	0.00853315	0.00853315			
64	0.00468834	0.03725943	1.49037758	0.00470482	0.0373904	1.49561433
[redacted]5	0.00529526	0.04208025	1.68321009	0.00519526	0.041286	1.65143828
[redacted]6	0.00369264	0.02934927	1.17397092	-0.0002725	-0.0021673	-0.0866933
67	0.02922021	0.23165667	9.26626683	0.02836697	0.2249112	8.99644616
[redacted]8	0.00273358	0.02172869	0.86914783	0.00280384	0.022287	0.89148122
69	0.00296621	0.02357722	0.94308892	0.00283041	0.0224981	0.89992451
70	0.00129381	0.0102857	0.0102857			
[redacted]1	0.0245357	0.1946082	0.1946082			
72	-0.0000941	-0.0007486	-0.0007486			
[redacted]3	0.03955373	0.31326018	23.4945135	0.03860099	0.3057433	22.9307505
[redacted]4	0.03291816	0.26087838	19.826757	0.03254947	0.2579659	19.6054069
75	0.06185631	0.48881624	36.6612186	0.06128793	0.4843518	36.3263857
[redacted]6	0.08790825	0.69291046	51.9682846	0.08522819	0.6719628	50.3972126
77	0.00109449	0.00870128	0.00870128			
[redacted]8	0.00128512	0.01021664	0.01021664			
[redacted]9	0.02467504	0.19571071	0.19571071			
80	0.00002859	0.00022733	0.00022733			
[redacted]1	0.00084303	0.00670236	0.20107097	0.00084053	0.0066825	0.2004743
[redacted]2	0.0003129	0.00248781	0.07463445	0.00020795	0.0016534	0.04960274
[redacted]3	0.00008526	0.00067791	0.0067791	0.00008451	0.000672	0.00671985
[redacted]4	0.02641848	0.20950266	5.23756662	0.02570801	0.2038829	5.0970721
85	0.00120657	0.00959229	0.00959229			
[redacted]6	0.02470221	0.19592565	0.19592565			
[redacted]7	-0.0000663	-0.0005274	-0.0005274			
88	0.05270248	0.4168548	4.16854808	0.05188234	0.4104011	4.10401105
[redacted]9	0.07116301	0.56184638	5.61846384	0.06919171	0.5463887	5.46388697
90	0.06685864	0.52808647	5.28086471	0.06508058	0.5141324	5.14132414
[redacted]1	0.09740678	0.76706329	7.6706329	0.0958442	0.754874	7.54874049
[redacted]2	-0.0001021	-0.000812	-0.00812	-0.0000458	-0.0003647	-0.0036473

Mercury Perkin-Elmer AAWinLab

ID #	Sample_ID	Sam_Date	Sam_Time	Mean_Sig	Mean_ST	Mean_SA	Units	Wt	Dilu
93	1181-FH-006	12/11/2002	18:31:53	0.000128	0.001021	0.010215	mg/L	10	100
94	0.010 = DL	12/11/2002	18:38:53	0.001139	0.009053	0.009053	mg/L	10	100
95	0.200 = QC STD 2	12/11/2002	18:39:58	0.024884	0.197367	0.197367	mg/L	10	100
96	REAGENT BLANK	12/11/2002	18:41:04	0.001089	0.008655	0.008655	mg/L	10	100
97	REAGENT BLANK	12/11/2002	18:42:04	3.02E-05	0.00024	0.00024	mg/L	10	100
98	Calib Blank	12/12/2002	16:32:23	0.000463			mg/L		
99	STD1=.100ug	12/12/2002	16:33:25	0.013082			mg/L		
100	STD2=.200ug	12/12/2002	16:34:27	0.026004			mg/L		
101	STD3=.300ug	12/12/2002	16:35:30	0.038258			mg/L		
102	STD4=.400ug	12/12/2002	16:36:34	0.048725			mg/L		
103	STD5=.500ug	12/12/2002	16:37:42	0.064785			mg/L		
104	Reagent Blank	12/12/2002	16:39:15	-7.11E-05	-0.00054	-0.00054	mg/L	10	100
105	0.010 = DL	12/12/2002	16:40:18	0.001276	0.009732	0.009732	mg/L		
106	0.200 = QC STD 2	12/12/2002	16:41:24	0.025551	0.197983	0.197983	mg/L		
107	0.200 = QC STD 3	12/12/2002	16:42:29	0.025936	0.201009	0.201009	mg/L		
108	0.020 = DL	12/12/2002	16:43:35	0.002447	0.018685	0.018685	mg/L		
109	REAGENT BLANK	12/12/2002	16:44:41	7.14E-05	0.000545	0.000545	mg/L	10	100
110	1181-C-003	12/12/2002	17:52:11	0.004495	0.034366	1.374639	mg/L	10	400
111	1181-C-004-SPK	12/12/2002	17:53:45	0.031167	0.242363	9.694534	mg/L	10	400
112	0.010 = DL	12/12/2002	17:57:53	0.001279	0.00976	0.00976	mg/L	2.5	1
113	0.200 = QC STD 2	12/12/2002	17:58:58	0.025841	0.200265	0.200265	mg/L	2.5	1
114	REAGENT BLANK	12/12/2002	18:00:02	6.74E-06	5.14E-05	5.14E-05	mg/L	10	100

ID #	Sig 1	Std_U 1	Smp_U 1	Sig 2	Std_U 2	Smp_U 2
[redacted]3	0.00016341	0.00129925	0.01299251	0.00009354	0.0007437	0.00743744
[redacted]4	0.00113867	0.00905252	0.00905252			
[redacted]5	0.02488444	0.19736749	0.19736749			
[redacted]6	0.00108861	0.00865458	0.00865458			
[redacted]97	0.00003018	0.00024002	0.00024002			
[redacted]8	0.00046252					
[redacted]9	0.01308209					
[redacted]100	0.02600374					
[redacted]01	0.03825789					
[redacted]102	0.04872504					
[redacted]103	0.06478512					
[redacted]04	-0.0001247	-0.000951	-0.000951	-0.0000176	-0.0001341	-0.0001341
[redacted]105	0.0012755	0.00973214	0.00973214			
[redacted]06	0.02555141	0.19798339	0.19798339			
[redacted]107	0.02593553	0.20100902	0.20100902			
[redacted]108	0.00244702	0.0186846	0.0186846			
[redacted]09	0.00007144	0.0005447	0.0005447			
[redacted]110	0.00455723	0.03484382	1.39375283	0.00443259	0.0338881	1.35552461
[redacted]111	0.03146253	0.24470998	9.78839932	0.03087083	0.2400167	9.60066773
[redacted]12	0.00127915	0.00976001	0.00976001			
[redacted]113	0.02584106	0.20026475	0.20026475			
[redacted]14	0.00000674	0.0000514	0.0000514			

OPERATING DATA

G

Wheelabrator
NORTH BROWARD
Emission Test Log

Date: 12/3/02
Start Time: 7:47:00
End Time: 9:58:00

	SDA INLET TEMP	SDA OUTLET TEMP	TOTAL SLURRY FL	DIL WATER FLOW	TOTAL LIME	LIME CONC	FF OUT TEMP	FF DP	ID INLET PRESS
	DEG F	DEG F	GPM	GPM	GAL	%	DEG F	" H2O	" H2O
Unit 1	493.44	320.16	31.74	25.26	6.48	18.26	304.28	9.16	-11.33
Unit 2	523.08	319.76	43.22	36.82	6.40	13.69	294.45	6.24	-10.94
Unit 3	515.93	320.11	40.21	31.86	8.35	14.43	305.95	8.25	-11.90

	FEED H2O FLOW	SH OUT STM PRESS	FINAL STM TEMP	TOT AIR FLOW	FURNACE DRAFT	ECONO OUT TEMP	SH ROLL AVG	SNCR CHEM FLOW	STEAM FLOW
	KLBs/hr	DEG F	DEG F	KSCFM	" H2O	DEG F	DEG F	GPH	KLBs/hr
Unit 1	184.93	878.15	829.83	80.35	-0.10	271.94	1077.53	7.83	184.01
Unit 2	193.39	859.31	829.91	74.69	-0.10	274.27	1172.40	12.15	179.26
Unit 3	188.92	903.14	828.57	74.95	-0.10	278.74	1205.65	9.63	184.47

Wheelabrator
NORTH BROWARD
Emission Test Log

Date: 12/3/02
Start Time: 9:59:00
End Time: 12:09:00

	SDA INLET TEMP	SDA OUTLET TEMP	TOTAL SLURRY FL	DIL WATER FLOW	TOTAL LIME	LIME CONC	FF OUT TEMP	FF DP	ID INLET PRESS
	DEG F	DEG F	GPM	GPM	GAL	%	DEG F	" H2O	" H2O
Unit 1	501.96	319.95	34.39	23.58	10.81	16.84	309.16	9.44	-11.67
Unit 2	516.14	319.92	40.25	23.22	17.03	14.54	287.03	6.98	-11.25
Unit 3	517.89	320.03	41.45	30.98	10.47	13.99	305.85	8.14	-11.77

	FEED H2O FLOW	SH OUT STM PRESS	FINAL STM TEMP	TOT AIR FLOW	FURNACE DRAFT	ECONO OUT TEMP	SH ROLL AVG	SNCR CHEM FLOW	STEAM FLOW
	KLBs/hr	DEG F	DEG F	KSCFM	" H2O	DEG F	DEG F	GPH	KLBs/hr
Unit 1	185.85	878.79	827.09	82.07	-0.10	272.57	1061.68	9.14	185.17
Unit 2	198.49	859.80	829.68	73.01	-0.08	275.09	1182.99	7.00	184.12
Unit 3	189.40	903.17	827.23	74.96	-0.10	279.50	1208.50	11.58	184.88

Wheelabrator
NORTH BROWARD
Emission Test Log

Date: 12/3/02
Start Time: 12:10:00
End Time: 12:37:00

	SDA INLET TEMP	SDA OUTLET TEMP	TOTAL SLURRY FL	DIL WATER FLOW	TOTAL LIME	LIME CONC	FF OUT TEMP	FF DP	ID INLET PRESS
	DEG F	DEG F	GPM	GPM	GAL	%	DEG F	" H2O	" H2O
Unit 1	503.55	320.08	33.99	26.89	7.10	17.04	309.77	9.17	-11.38
Unit 2	516.27	319.78	40.64	32.08	8.56	14.35	282.87	5.10	-9.39
Unit 3	518.71	320.19	43.25	32.62	10.64	13.39	305.66	8.31	-11.83

	FEED H2O FLOW	SH OUT STM PRESS	FINAL STM TEMP	TOT AIR FLOW	FURNACE DRAFT	ECONO OUT TEMP	SH ROLL AVG	SNCR CHEM FLOW	STEAM FLOW
	KLBs/hr	DEG F	DEG F	KSCFM	" H2O	DEG F	DEG F	GPH	KLBs/hr
Unit 1	176.23	878.50	828.82	83.03	-0.11	272.55	1065.53	9.28	183.78
Unit 2	188.47	859.42	830.10	70.30	-0.17	275.22	1192.19	8.81	185.15
Unit 3	178.03	902.22	827.71	75.76	-0.10	279.62	1220.86	8.23	183.24

Plant Name: NBWD

General Average Report

Reporting Period: 12/03/2002 to 12/03/2002

Site Name: UNIT3

Data Averaging Type: 1m

Time of Report: 12/04/02 15:48

Rolling Average Interval: 1

Date	Time	STMDISP3 (K#/HR)
12/03/02	13:22	181.4
	13:23	182.2
	13:24	182.6
	13:25	182.2
	13:26	182.4
	13:27	181.9
	13:28	182.1
	13:29	183.7
	13:30	183.2
	13:31	182.0
	13:32	180.8
	13:33	180.3
	13:34	182.0
	13:35	183.4
	13:36	182.9
	13:37	184.6
	13:38	185.1
	13:39	185.4
	13:40	184.7
	13:41	183.7
	13:42	183.6
	13:43	183.3
	13:44	183.8
	13:45	185.7
	13:46	188.0
	13:47	188.5
	13:48	186.5
	13:49	185.5
	13:50	182.7
	13:51	181.2
	13:52	181.6
	13:53	181.3
	13:54	182.1
	13:55	182.7
	13:56	183.6
	13:57	183.4
	13:58	181.6
	13:59	180.6
	14:00	181.3
	14:01	183.9
	14:02	183.3
	14:03	181.1
	14:04	181.8
	14:05	181.7
	14:06	180.5
	14:07	179.1
	14:08	178.1
	14:09	175.9
	14:10	173.7
	14:11	171.0

General Average Report

Reporting Period: 12/03/2002 to 12/03/2002

te Name: UNIT3
ta Averaging Type: 1m

Time of Report: 12/04/02 15:48
Rolling Average Interval: 1

Date	Time	STMDISP3 (K#/HR)
12/03/02	14:12	171.7
	14:13	175.3
	14:14	176.3
	14:15	176.8
	14:16	175.7
	14:17	173.6
	14:18	171.9
	14:19	171.3
	14:20	171.6
	14:21	171.0
	14:22	168.8

Average =	180.6
eometric Avg. =	180.6
Maximum =	188.5
Minimum =	168.8
ossible Values =	61
cluded Values =	61
Total =	11017.6

- excluded values (missing, OOC, invalid, suspect)
< - missing
T - out-of-control
(- invalid
- suspect
H - exceedance
- stack not operating
- invalid (PADER)
U - missing data substituted
-999 - missing value
88 - value could not be calculated

Plant Name: NBWD

General Average Report

Reporting Period: 12/03/2002 to 12/03/2002

Site Name: UNIT3

Data Averaging Type: 1m

Time of Report: 12/04/02 15:49

Rolling Average Interval: 1

Date	Time	STMDISP3 (K#/HR)
12/03/02	15:38	182.5
	15:39	183.5
	15:40	184.1
	15:41	183.1
	15:42	182.5
	15:43	182.2
	15:44	183.4
	15:45	184.9
	15:46	184.4
	15:47	183.4
	15:48	184.6
	15:49	185.9
	15:50	183.8
	15:51	182.3
	15:52	181.5
	15:53	183.0
	15:54	184.3
	15:55	185.1
	15:56	184.3
	15:57	183.8
	15:58	184.2
	15:59	187.0
	16:00	186.4
	16:01	188.3
	16:02	187.8
	16:03	185.3
	16:04	185.0
	16:05	186.3
	16:06	187.3
	16:07	185.9
	16:08	186.8
	16:09	187.7
	16:10	185.0
	16:11	188.3
	16:12	191.1
	16:13	192.1
	16:14	191.2
	16:15	189.3
	16:16	189.0
	16:17	189.8
	16:18	189.2
	16:19	187.5
	16:20	185.6
	16:21	185.4

Average =	185.8
Geometric Avg. =	185.8
Maximum =	192.1
Minimum =	181.5
Possible Values =	44
Included Values =	44
Total =	8173.9

* - excluded values (missing, OOC, invalid, suspect)

< - missing

T - out-of-control

I - invalid

Plant Name: NBWD
General Average Report
Reporting Period: 12/03/2002 to 12/03/2002

[redacted]c Name: UNIT3
Data Averaging Type: 1m

Time of Report: 12/16/02 13:10
Rolling Average Interval: 1

Date	Time	FFTMPI_3 (DEGF)
12/03/02	12:10	318
	12:11	322
	12:12	323
	12:13	322
	12:14	321
	12:15	319
	12:16	318
	12:17	318
	12:18	319
	12:19	320
	12:20	322
	12:21	323
	12:22	321
	12:23	320
	12:24	319
	12:25	319
	12:26	318
	12:27	317
	12:28	318
	12:29	319
	12:30	320
	12:31	321
	12:32	320
	12:33	319
	12:34	319
	12:35	319
	12:36	319
	12:37	321
	12:38	321
	12:39	317
	12:40	308

Average =	319
Geometric Avg. =	319
Maximum =	323
Minimum =	308
Possible Values =	31
Included Values =	31
Total =	9901

* - excluded values (missing, OOC, invalid, suspect)
[redacted] - missing
[redacted] - out-of-control
I - invalid
[redacted] - suspect
[redacted] - exceedance
P - stack not operating
B - invalid (PADER)
[redacted] - missing data substituted
-999 - missing value
-888 - value could not be calculated

Plant Name: NBWD
General Average Report
Reporting Period: 12/03/2002 to 12/03/2002

Time of Report: 12/16/02 13:10
Rolling Average Interval: 1

Site Name: UNIT3
Data Averaging Type: 1m

Date	Time	FFTMPI_3 (DEGF)
12/03/02	13:22	321
	13:23	322
	13:24	322
	13:25	322
	13:26	323
	13:27	322
	13:28	322
	13:29	322
	13:30	322
	13:31	321
	13:32	321
	13:33	321
	13:34	322
	13:35	322
	13:36	322
	13:37	322
	13:38	322
	13:39	322
	13:40	321
	13:41	320
	13:42	320
	13:43	320
	13:44	320
	13:45	321
	13:46	321
	13:47	321
	13:48	320
	13:49	320
	13:50	319
	13:51	319
	13:52	319
	13:53	319
	13:54	319
	13:55	319
	13:56	320
	13:57	320
	13:58	320
	13:59	319
	14:00	319
	14:01	320
	14:02	321
	14:03	321
	14:04	321
	14:05	322
	14:06	322
	14:07	321
	14:08	320
	14:09	320
	14:10	319
	14:11	319

Plant Name: NEWD
General Average Report
Reporting Period: 12/03/2002 to 12/03/2002

tc Name: UNIT3
Data Averaging Type: 1m

Time of Report: 12/16/02 13:10
Rolling Average Interval: 1

Date	Time	FFTMPI_3 (DEGF)
12/03/02	14:12	320
	14:13	319
	14:14	319
	14:15	318
	14:16	317
	14:17	317
	14:18	318
	14:19	319
	14:20	319
	14:21	319
	14:22	320
	14:23	319
	14:24	319
	14:25	317
	14:26	315
	14:27	312
	14:28	311
	14:29	311
	14:30	313
	14:31	315
	14:32	317
	14:33	317
	14:34	318
	14:35	318
	14:36	318
	14:37	317
	14:38	317
	14:39	316
	14:40	317
	14:41	318
	14:42	319
	14:43	319
	14:44	319
	14:45	318
	14:46	317
	14:47	318
	14:48	317
	14:49	317
	14:50	318
	14:51	318
	14:52	319
	14:53	319
	14:54	319
	14:55	319
	14:56	319
	14:57	319
	14:58	318
	14:59	317
	15:00	317
	15:01	318

Plant Name: NBWD
General Average Report
Reporting Period: 12/03/2002 to 12/03/2002

Site Name: UNIT3
Data Averaging Type: lm

Time of Report: 12/16/02 13:10
Rolling Average Interval: 1

Date	Time	FFTMPI_3 (DEGF)
12/03/02	15:02	318
	15:03	319
	15:04	319
	15:05	318
	15:06	318
	15:07	318
	15:08	317
	15:09	316
	15:10	315
	15:11	315
	15:12	315
	15:13	314
	15:14	313
	15:15	313
	15:16	313
	15:17	314
	15:18	314
	15:19	314
	15:20	314
	15:21	315
	15:22	316
	15:23	316
	15:24	317
	15:25	317
	15:26	319
	15:27	320
	15:28	321
	15:29	322
	15:30	322
	15:31	324
	15:32	325
	15:33	326
	15:34	328
	15:35	328
	15:36	326
	15:37	324
	15:38	322
	15:39	321
	15:40	320
	15:41	320
	15:42	320
	15:43	320
	15:44	321
	15:45	320
	15:46	321
	15:47	320
	15:48	320
	15:49	321
	15:50	320
	15:51	319

General Average Report

Reporting Period: 12/03/2002 to 12/03/2002

Site Name: UNIT3
Time of Report: 12/16/02 13:10

Data Averaging Type: 1m
Rolling Average Interval: 1

Date	Time	FFTMPI_3 (DEGF)
12/03/02	15:52	319
	15:53	320
	15:54	320
	15:55	320
	15:56	320
	15:57	321
	15:58	321
	15:59	321
	16:00	320
	16:01	319
	16:02	319
	16:03	319
	16:04	319
	16:05	319
	16:06	319
	16:07	319
	16:08	319
	16:09	319
	16:10	319
	16:11	319
	16:12	319
	16:13	319
	16:14	319
	16:15	319
	16:16	318
	16:17	318
	16:18	319
	16:19	320
	16:20	321
	16:21	322

Average =	319
Geometric Avg. =	319
Maximum =	328
Minimum =	311
Possible Values =	180
Included Values =	180
Total =	57429

* - excluded values (missing, OOC, invalid, suspect)
< - missing
C - out-of-control
I - invalid
S - suspect
E - exceedance
? - stack not operating
B - invalid (PADER)
U - missing data substituted
-999 - missing value
-888 - value could not be calculated