SWA
SOLID WASTE AUTHORITY
YOUR PARTNER FOR
SOLID WASTE SOLUTIONS

August 5, 2013 *Electronic Submittal*

Joe Lurix
Florida Department of Environmental Protection
400 N. Congress Avenue, Suite 300
West Palm Beach, FL 33401

Subject: Biosolids Pelletization Facility (BPF)
PM/PM10 Compliance Testing & Annual VE 2013
Impingement Tray Scrubber and Cyclone Separator Retrofit Project
FDEP Exemption from Air Construction Permitting 0990234-026-AC
Title V Air Operation Permit No. 0990234-022-AV

Dear Joe:

The Solid Waste Authority of Palm Beach County (Authority) owns a Biosolids Pelletization Facility (BPF) that is collocated with the Authority's Palm Beach Renewable Energy Park (PBREP) in West Palm Beach, Florida. The BPF is operated by the New England Fertilizer Company (NEFCO) under FDEP Title V Air Operation Permit No. 0990234-022-AV.

On December 13, 2012, the Department issued an exemption from obtaining an Air Construction permit for the Impingement Tray Scrubber and Cyclone Separator Retrofit Project at the BPF. As part of the authorization, the BPF is required to conduct particulate matter (PM/PM10) and visible emissions (VE) tests on both dryers 180 days after the tray scrubber/cyclonic separator work is complete. As part of this permitting exemption, the BPF will now rely upon the venturi scrubbers for PM control to meet the PM/PM10 emission limits (BPF had not relied upon venturi scrubbers in the initial Title V permit application). Consequently, the Title V permit will be revised to include the venturi scrubbers in the CAM Plan.

As of May 10, 2013, construction was complete for both sludge dryer trains. On May 17, 2013, the Department issued a Letter of Authorization (0990234-027-AC) allowing the Authority to operate the venturi scrubber at variable flows/pressure drops during tuning (i.e. preliminary) stack testing to establish Compliance Assurance Monitoring (CAM) parameters. From June 24th – 26th, preliminary PM/PM10 testing was performed with variable venturi scrubber flow at 109 gpm, 55 gpm, 10 gpm, and 0 gpm. Compliance testing was performed June 27th on both trains with the venturi scrubber operating at 10 gpm and open throat.

As required by the Letter of Authorization, please find enclosed all the results from the tuning and compliance stack tests. PM/PM10 emissions are well below the permitted emission limit and also have not increased from the initial 2009 stack test.

Visible Emission tests were also conducted for both dryer trains (RTO stack) and material recycling bin/pellet silo (odor control scrubber). These VE tests satisfy the annual testing required by the Title V Air Permit.

If you have any questions or need additional information, please contact Mike Tyson at mtyson@swa.org or at (561) 640-4000 ext. 4616.

Sincerely,

Mark M

Mark Hammond
Executive Director

Enclosure

cc: Scott Sheplak, FDEP Tallahassee
Marc Bruner, SWA
Ray Schauer, SWA
Mark McLean, SWA
Jim Greer, SWA
Mary Beth Morrison, SWA
Mike Tyson, SWA
Manuel Irujo, NEFCO
Mike Thayer, NEFCO
Peter Kiproff, NEFCO
Cynthia Hibbard, CDMSmith
Sal Mohammad, Golder

NEFCO
Recycle, Renew, Restore

August 4, 2013

Mark Hammond
Executive Director
Solid Waste Authority of Palm Beach County
7501 North Jog Road
West Palm Beach, FL 33412

RE: Biosolids Pelletization Facility (BPF)
Impingent Tray Scrubber/Cyclone Retrofit Project 0990234-026-AC
CAM Testing Authorization – Venturi Scrubbers 0990234-027-AC

Dear Mr. Hammond:

Attached please find a report of the stack testing that was performed at the Biosolids Pelletization Facility during June 24-June 27, 2013. This testing was required by the Florida Department of Environmental Protection as a condition of making certain improvements to the air handling system of the dryers at the facility.

The letter authorizing the modifications by the Department is attached.

As predicted by modeling, PM emissions after these modifications have not increased over the permit values, nor have they increased over the initial 2009 stack testing. Further, the venturi scrubber has proved to be redundant, offering little in the way of PM removal over that provided by the remainder of the PM control devices, i.e. the three stage tray condenser/scrubbers. A summary of all the PM tests and test conditions, including preliminary "tuning tests" is located on the following page.

PM was much lower than the permit values during all of the tests and lower than initial stack testing on all of the tests except one. One preliminary test at 55 gpm water flow through the venturi scrubber was slightly higher than initial stack testing however all other tests were below, including zero water flow. NEFCO will work closely with the Solid Waste Authority to revise the CAM plan for PM.

Visible Emissions tests were also conducted for both the RTO stack and for the odor scrubbers. They exhibited zero visible emissions. The VE tests are intended to satisfy the annual permit requirement.

NEFCO would like to thank the department for its prompt review and assistance in our pursuit of safe and efficient biosolids processing for the Solid Waste Authority.

Sincerely,

Manuel J. Irujo

Manuel Irujo
Vice President of Operations

cc: Mary Beth Morrison, Environmental Programs Supervisor, Solid Waste Authority
Jim Greer, Manager Recovered Materials Processing, Solids Waste Authority
Mike Thayer, Technology Manager, NEFCO
Peter Kiproff, Plant Manager, NEFCO

Biosolids Pelletization Facility - Cyclone/Tray Scrubber Retrofit Project

Summary of June 2013 PM testing at SWA

Preliminary tests @ 109, 55, 10, & 0 gpm	Unit #1				Unit #2				Units
Date	6/25/2013	6/25/2013	6/25/2013	6/25/2013	6/24/2013	6/24/2013	6/25/2013	6/25/2013	
Run I.D.	U1-M5/202-Pre1	U1-M5-Pre2	U1-M5-Pre3	U1-M5/202-Pre4	U2-M5-Pre1	U2-M5-Pre2	U2-M5/202-Pre3	U2-M5/202-Pre4	
Start time	1317	1450	1615	1755	1718	1854	915	1055	hour
Measured PM/PM_{10} concentration	1.71	8.22	4.06	4.51	1.75	2.60	3.90	5.22	mg/dscm
Measured PM/PM_{10} rate	0.047	0.217	0.103	0.133	0.043	0.064	0.096	0.128	lb / hr
PM/PM_{10} rate permit limit	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	lb / hr
2009 PM/PM_{10} testing results	0.162	0.162	0.162	0.162	0.193	0.193	0.193	0.193	lb / hr
EPA Method	5/202	5	5	5/202	5	5	5/202	5/202	
Dryer average feed rate	13.3	13.7	13.6	13.3	13.5	13.3	13.8	13.3	tons / hr
Condenser/scrubber delta p	9.3	9.1	9.0	8.6	8.0	8.0	8.1	8.1	in wc
Condenser/scrubber flow	1,123	1,126	1,130	1,137	1,117	1,136	1,122	1,111	gpm
Venturi scrubber nominal delta p	6	6	wide open	wide open	6	wide open	6	wide open	in wc
Venturi scrubber average delta p	6.7	6.7	3.6	3.3	6.9	3.3	7.0	3.0	in wc
Venturi scrubber nominal flow	109	55	10	0	55	10	109	0	gpm
Venturi scrubber average flow	112	58	10	0	53.8	9	114	0	gpm
RTO average temperature	1,599	1,600	1,600	1,599	1,601	1,601	1,591	1,598	F
Heat input	28.449	30.510	32.771	31.254	27.555	28.449	28.278	30.224	MMBtu/hr
Stack flow rate	8,066	7,704	7,634	8,834	6,963	6,918	7,331	7,691	dscfm

Preliminary tests @ 10 gpm	Unit #1			Unit #2			Units
Date	6/26/2013	6/26/2013	6/26/2013	6/26/2013	6/26/2013	6/26/2013	
Run I.D.	U1-M5-Pre5	U1-M5-Pre6	U1-M5-Pre7	U2-M5-Pre5	U2-M5-Pre6	U2-M5-Pre7	
Start time	900	1020	1148	1332	1515	1634	hour
Measured PM/PM_{10} concentration	3.90	3.30	3.83	1.57	2.12	1.73	mg/dscm
Measured PM/PM_{10}	0.100	0.086	0.103	0.044	0.055	0.046	lb / hr
PM/PM_{10} permit limit	2.42	2.42	2.42	2.42	2.42	2.42	lb / hr
2009 PM/PM_{10} testing results	0.162	0.162	0.162	0.193	0.193	0.193	lb / hr
EPA Method	5	5	5	5	5	5	
Dryer average feed rate	13.7	13.7	13.5	13.3	13.2	13.6	tons / hr
Condenser/scrubber delta p	9.1	8.9	9.0	7.9	7.8	7.8	in wc
Condenser/scrubber flow	1,132	1,129	1,125	1,120	1,122	1,120	gpm
Venturi scrubber nominal delta p	wide open	wide open	wide open	wide open	wide open	wide open	in wc
Venturi scrubber average delta p	4.3	4.1	4.4	3.9	3.4	3.6	in wc
Venturi scrubber nominal flow	10	10	10	10	10	10	gpm
Venturi scrubber average flow	10.0	10.8	10.6	10.3	9.4	10.5	gpm
RTO average temperature	1,599	1,600	1,599	1,602	1,600	1,598	F
Heat input	31.998	33.080	29.397	21.848	29.650	30.616	MMBtu/hr
Stack flow rate	7,764	7,800	8,149	7,590	7,312	7,343	dscfm

Compliance test @ 10 gpm	Unit #1			Unit #2			Units
Date	6/27/2013	6/27/2013	6/27/2013	6/27/2013	6/27/2013	6/27/2013	
Run I.D.	U1-M5-R1	U1-M5-R2	U1-M5-R3	U2-M5-R1	U2-M5-R2	U2-M5-R3	
Start time	1340	1500	1620	812	933	1128	hour
Measured PM/PM_{10} concentration	3.26	3.06	1.56	2.11	1.55	3.88	mg/dscm
Measured PM/PM_{10}	0.085	0.083	0.043	0.054	0.040	0.103	lb / hr
PM/PM_{10} permit limit	2.42	2.42	2.42	2.42	2.42	2.42	lb / hr
2009 PM/PM_{10} testing results	0.162	0.162	0.162	0.193	0.193	0.193	lb / hr
EPA Method	5	5	5	5	5	5	
Dryer average feed rate	13.3	13.1	13.1	13.1	13.4	13.6	tons / hr
Condenser/scrubber delta p	9.2	9.0	8.8	7.9	8.0	7.9	in wc
Condenser/scrubber flow	1,117	1,125	1,133	1,120	1,123	1,122	gpm
Venturi scrubber nominal delta p	wide open	wide open	wide open	wide open	wide open	wide open	in wc
Venturi scrubber average delta p	3.8	4.1	4.0	3.6	3.5	3.8	in wc
Venturi scrubber nominal flow	10	10	10	10	10	10	gpm
Venturi scrubber average flow	10.3	10.7	10.1	10.7	10.3	10.2	gpm
RTO average temperature	1,598	1,598	1,600	1,598	1,601	1,600	F
Heat input	30.138	31.991	32.147	32.716	31.382	28.494	MMBtu/hr
Stack flow rate	7,975	7,974	8,162	7,182	7,156	7,059	dscfm

Florida Department of Environmental Protection
BOB MARTINEZ CENTER
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

RICK SCOTT
GOVERNOR

JENNIFER CARROLL
LT. GOVERNOR

HERSCHEL T. VINYARD JR.
SECRETARY

Sent by Electronic Mail - Received Receipt Requested

Mr. Mark Hammond, Executive Director
North County Regional Resource Recovery Facility
Solid Waste Authority of Palm Beach County
7501 North Jog Road
West Palm Beach, Florida 33412-2414

Re: North County Regional Resource Recovery Facility
Project No. 0990234-026-AC
Physical Changes Proposed to Tray Scrubbers and Cyclonic Separators at the Biosolids Pelletization Facility (Project)
Exemption from Requirement to Obtain an Air Construction Permit and Authorization

Dear Mr. Hammond:

This is a response to your letter dated December 7, 2012, regarding the proposed physical changes to tray scrubbers and cyclonic separators at the Biosolids Pelletization Facility (BPF) (project) at the North County Regional Resource Recovery Facility located in Palm Beach County at 7501 North Jog Road in West Palm Beach, Florida.

Determination: The permittee requested a case-by-case permitting exemption from an air construction (AC) permit for the proposed physical changes to scrubbers and cyclonic separators at the BPF (project).

Pursuant to Rule 62-4.040(1)(b) , F.A.C. and for the reasons stated in the Technical Evaluation, the Office of Permitting and Compliance hereby determines that the proposed activity (project) will not emit air pollutants "*... in sufficient quantity, with respect to its character, quality or content, and the circumstances surrounding its location, use and operation, as to contribute significantly to the pollution problems within the State, so that the regulation thereof is not reasonably justified.*" Therefore, the project is exempt from the requirement to obtain an AC permit. The permittee is authorized to conduct this activity.

For purposes of demonstrating compliance with the particulate matter (PM) and visible emission (VE) standards applicable to the sludge dryer train #1 and #2 in Permit No. 0990234-022-AV, a test for PM and VE shall be completed within 180 days after tray scrubber/cyclonic separator work is done.

Within 180 days after tray scrubber/cyclonic separator work is done, the applicant will need to submit a request to revise the Title V air operation permit to include the venturi scrubber(s) in the CAM Plan.

This determination may be revoked if the proposed activity is substantially modified or the basis for the exemption is determined to be materially incorrect. A copy of this letter shall be maintained at the site of the proposed activity. This permitting decision is made pursuant to Chapter 403, Florida Statutes.

Permitting Authority: Applications for air construction permits are subject to review in accordance with the provisions of Chapter 403, Florida Statutes (F.S.) and Chapters 62-4, 62-210 and 62-212, F.A.C. The Permitting Authority responsible for making a permit determination for this project is the Office of Permitting and Compliance in the Department of Environmental Protection's Division of Air Resource Management. The Permitting Authority's physical and mailing address is: 2600 Blair Stone Road, MS #5505, Tallahassee, Florida 32399-2400. The Permitting Authority's telephone number is 850/717-9000.

Petitions: A person whose substantial interests are affected by the 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 with (received by) the agency clerk in the Office of General Counsel of the Department of Environmental Protection, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. Petitions must be filed within 21 days of receipt of this exemption from air permitting requirements. A petitioner shall 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 (in a proceeding initiated by another party) will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205, F.A.C.

A petition that disputes the material facts on which the Permitting Authority's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner; the name, address and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of when and how each petitioner received notice of the agency action or proposed decision; (d) A statement of all disputed issues of material fact. If there are none, the petition must so state; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action including an explanation of how the alleged facts relate to the specific rules or statutes; and, (g) A statement of the relief sought by the petitioner, stating precisely the action the petitioner wishes the agency to take with respect to the agency's proposed action. A petition that does not dispute the material facts upon which the Permitting Authority's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301, F.A.C.

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

Mediation: Mediation is not available in this proceeding.

Effective Date: This permitting decision is final and effective on the date filed with the clerk of the Permitting Authority unless a petition is filed in accordance with the above paragraphs or unless a request for extension of time in which to file a petition is filed within the time specified for filing a petition pursuant to Rule 62-110.106, F.A.C., and the petition conforms to the content requirements of Rules 28-106.201 and 28-106.301, F.A.C. Upon timely filing of a petition of a request for extension of time, this action will not be effective until further order of the Permitting Authority.

Judicial Review: Any party to this permitting decision (order) has the right to seek judicial review of it under Section 120.68, F.S., by filing a notice of appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the clerk of the Department of Environmental Protection in the Office of General Counsel, Mail Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000, 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 must be filed within 30 days after this order is filed with the clerk of the Department.

Executed in Tallahassee, Florida

for Jeffery F. Koerner, Program Administrator
Office of Permitting and Compliance
Division of Air Resource Management

JFK/sa/sms

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this **Exemption from Air Construction Permit/Authorization** and the **Technical Evaluation** were sent by electronic mail, or a link to these documents made available electronically on a publicly accessible server, with received receipt requested before the close of business on the date indicated below to the persons listed below.

Mr. Mark Hammond, SWA: mhammond@swa.org
Ms. Mary Beth Morrison, SWA: mmorrison@swa.org
Mr. David S. Dee, Gardner, Bist, Wiener, Wadsworth, Bowden, Bush, Dee, LaVia & Wright, P.A.: ddee@gbwlegal.com
Mr. Lee Hoefert, P.E., DEP SED: lee.hoefert@dep.state.fl.us
Mr. James Stormer, PBCHD: james_stormer@doh.state.fl.us
Ms. Cindy Mulkey, DEP Siting: cindy.mulkey@dep.state.fl.us
Ms. Heather Ceron, U.S. EPA Region 4: ceron.heather@epa.gov
Ms. Katy R. Forney, U.S. EPA Region 4: forney.kathleen@epa.gov
Ms. Barbara Friday, DEP OPC: barbara.friday@dep.state.fl.us
Ms. Lynn Scearce, DEP OPC: lynn.scearce@dep.state.fl.us

Clerk Stamp

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

SOUTH FLORIDA ENVIRONMENTAL SERVICES
Air Quality Specialists

Final Report

PM/PM$_{10}$ & VE Compliance Testing -

Solid Waste Authority's Biosolids Pelletization Facility (Facility ID No. 0990234)

Prepared for . . .

Solid Waste Authority of Palm Beach County
West Palm Beach, Florida

Prepared by . . .

South Florida Environmental Services, LLC
Test Dates: June 27th, 2013
Project No. 13-527

CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDICES

SOLID WASTE AUTHORITY OF PALM BEACH COUNTY

BIOSOLIDS PELLETIZATION FACILITY

Title V Air Operation Permit No. 0990234-022-AV

Owner/Responsible Official Certification

I, the undersigned, am the Responsible Official as defined in Chapter 62-210.200 F.A.C. I herby certify, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

Mark M 8/5/13

Mark Hammond
Executive Director
Solid Waste Authority of Palm Beach County

Date

Statement of Certification

Report: **SWA Biosolids Pelletization Facility Final Report – Particulate Matter & Visible Emissions Compliance Testing**

I hereby certify that the contents of this report were gathered and prepared in accordance with the test methods and/or procedures outlined herein. Furthermore, all calculations, emission summaries and supporting data are accurate to the best of my knowledge. I was both the field team leader and primary individual responsible for the report preparation.

Andrew Seaha, QSTI
Vice President / General Manager
Eastmount Environmental, LLC

8/2/13
Date

Report Distribution List

Report: **SWA Biosolids Pelletization Facility Final Report – Particulate Matter & Visible Emissions Compliance Testing**

Date	Number of Paper Copies	Delivered To	Company/Agency
8/2/13	6	Manuel Irujo	NEFCO

Date	Number of Electronic Copies	Delivered To	Company/Agency
8/2/13	1	Manuel Irujo	NEFCO

Revision Description

Report: **SWA Biosolids Pelletization Facility Final Report – Particulate Matter & Visible Emissions Compliance Testing**

Revision Number	Revision Date	Revision Description

1.0 INTRODUCTION

1.1 Overview

South Florida Environmental Services, LLC of West Palm Beach, FL was retained by NEFCO to conduct a Particulate Matter (PM/PM_{10}) and Visible Emission (VE) test program at the Biosolids Pelletization Facility (BPF) plant located in West Palm Beach, Florida. The facility is owned by the Solid Waste Authority of Palm Beach County (SWA) and is operated by NEFCO. As part of recent modifications on the two existing dryer systems cyclones and scrubbers, the Florida Department of Environmental Protection (FDEP) has mandated that each system (Dryer Train #1 and #2) need to be retested for PM/PM_{10} within 180 days of completion of the upgrades. VE testing was completed as part of permit-required annual testing. As such, a compliance test date of June 27th, 2013 was chosen to verify compliance with the facility's permit. Per FDEP's approval, preliminary testing was performed on both Dryer Train Venturi Scrubbers to determine CAM operating parameters. A copy of the Testing Authorization letter is included in Appendix F. Preliminary testing was performed on June 24th, 25th, and 26th, 2013. A summary of the primary parties involved in this test program is presented in Table 1-1.

1.2 Program Scope

The objective of the program was twofold:

The first objective was to determine the optimum operating conditions of the "polishing" venturi scrubbers, by conducting a series of one-hour tests at water flows of 109, 55, 10, and 0 gpm and throat openings resulting in six inches of water column delta pressure and wide open. Eight individual tests were conducted, four per dryer. From these results, the optimum operating condition was established for compliance testing. Additionally, each dryer was then subjected to three additional test runs at its optimum operating condition, as determined through pretesting.

The second objective was to determine compliance with particulate matter and visible emissions requirements, as set forth by the FDEP (Permit 0990234-022-AV) for each of the two dryer systems. As stated in the permit, PM/PM_{10} and VE testing must be conducted in accordance with procedures set forth in Appendix A of 40 CFR 60. Testing consisted of three 60-minute test runs on each dryer / RTO unit while it was operated between 90 and 100% of the maximum permitted processing rate for each dryer (i.e. between 12.65 and 14.06 tons per hour) for PM/PM_{10} and one 60-minute test run for VE's.

1.3 Report Organization

The remainder of this Final Report is organized into four additional Sections. Section 2 provides a Summary of Results, while Section 3 presents a sampling point description. A description of the flue gas monitoring procedures is provided in Section 4, while Section 5 addresses the quality assurance/quality control aspects of the program. All reference method emissions data, laboratory data, facility process data sheets, cylinder gas certification and equipment calibration sheets and the facility permit is presented in Appendices A through F, respectively.

Table 1-1 Test Program Informational Summary

Source Information	
Facility Name:	Biosolids Pelletization Facility
Owned By:	Solid Waste Authority of Palm Beach County
Operated By:	New England Fertilizer Company (NEFCO)
Plant Address:	6600 – 45th Street West Palm Beach, FL 33412
Contact:	Mr. Mike Thayer (NEFCO)
Phone:	(617) 773-3131
Email:	sludgy@nefcobiosolids.com
Test Firm Information	
Test Firm Name:	South Florida Environmental Services, LLC
Address:	2257 Vista Parkway, Suite 25 West Palm Beach, FL 33412
Contact:	Mr. Andrew R. Seaha
Phone:	(978) 499-9300 x14
Email:	aseaha@eastmount.com
Regulatory Information	
Organization:	Florida Department of Environmental Protection (Division of Air Resource Management)
Address:	2600 Blair Stone Road, MS#5505 Tallahassee, FL 32399
Contact:	Mr. Scott Trainor
Phone:	(561) 681-6629
Email:	scott.trainor@dep.state.fl.us

2.0 SUMMARY OF RESULTS

2.1 Overview

This test program was conducted over four test days. Testing on each RTO was conducted while each dryer / RTO train was operated between 90 and 100% of the maximum permitted processing rate for each dryer. Each test was one-hour and comprised of sampling of the control device for the determination of particulate matter and flow rate (scfm). South Florida Environmental also verified that each drying train and scrubber met its visible emission standard.

2.2 Preliminary Test Results

South Florida Environmental Services (SFES) conducted the preliminary (or “tuning”) testing for the determination of concentrations for particulate matter while the drying trains were operating on natural gas and the RTOs were operating on landfill gas. Preliminary testing on each dryer train consisted of four test runs while each unit’s venturi scrubber was operated at different operating conditions. The results of these tests were used to determine the optimum operating conditions for the compliance testing. SFES utilized a transportable Continuous Emission Monitoring System (CEMS) to conduct all diluent monitoring (oxygen and carbon dioxide), while using a Clean Air Engineering (CAE) EPA Method 5 metering system to conduct particulate matter sampling. Also, for two runs on each dryer train (as outlined in the pretest protocol) partical sizing and condensable particulate matter testing was conducted. Tables 2-1 and 2-2 show the test results for each dryer train. All data can be found in Appendix A1 and A2 of this report. Please note that the particle size distribution data can be found in Appendix A5 of this report.

Table 2-1 Preliminary Test Results – Unit No. 1

NEFCO / SWA Biosolids Drying Facility
Summary of Preliminary "Tuning" Particulate Emission Test Results
RTO #1 Stack

Date		**25-Jun-13**	**25-Jun-13**	**25-Jun-13**	**25-Jun-13**			
Run I.D.		**U1-M5/202-Pre1**	**U1-M5-Pre2**	**U1-M5-Pre3**	**U1-M5/202-Pre4**			**2009**
Start Time		**13:17**	**14:50**	**16:15**	**17:55**		**PM/PM10**	**PM/PM10**
End Time		**14:23**	**15:53**	**17:18**	**19:00**	**AVERAGE**	**Limit**	**Results**
Venturi Scrubber Flow Setpoint	**gpm**	109	55	10	0			
Venturi Scrubber Flow	**gpm**	112.0	58.0	10.0	0.0			
Venturi Pressure Setpoint	**inches wc**	6.0	6.0	wide open	wide open			
Venturi Pressure	**inches wc**	6.7	6.7	3.6	3.3			
Tray Scrubber Flow Rate	**gpm**	1,123	1,126	1,130	1,137			
Tray Scrubber Delta P	**inches wc**	9.3	9.1	9.0	8.6			
Sludge Feed Rate Limit	**Wet Tons/hr**	14.0625	14.0625	14.0625	14.0625			
Sludge Feed Rate	**Wet Tons/hr**	13.3	13.7	13.6	13.3			
Heat Input	**MMBtu/hr**	28.449	30.510	32.771	31.254			
Isokinetics	**(%)**	87.2	103.7	107.7	79.2	94.5		
Stack Temp	**(°F)**	269.8	271.3	275.4	277.6	273.5		
Moisture	**% by Vol**	15.4%	16.8%	18.7%	19.0%	17.48%		
Velocity	**Ft./Sec**	30.94	30.10	30.68	35.75	31.87		
Stack Flow	**DSCFH**	483,940	462,211	458,049	530,053	483,563		
	DSCFM	8,066	7,704	7,634	8,834	8,059		
	ACFH	787,398	765,978	780,647	909,804	810,957		
	ACFM	13,123	12,766	13,011	15,163	13,516		
Oxygen	**(%)**	8.26	8.19	8.51	8.47	8.36		
Carbon Dioxide	**(%)**	7.64	7.65	7.48	7.54	7.58		
Condensible PM	**LB/HR**	0.797	n/a	n/a	1.245	1.021		
Particulate	**mg/dscm**	1.56	7.52	3.61	4.03	4.18		3.79
	mg/dscm @7% O2	1.71	8.22	4.06	4.51	4.63		-
	LB/HR	0.047	0.217	0.103	0.133	0.125	2.42	0.162

Table 2-2 Preliminary Test Results – Unit No. 2

NEFCO / SWA Biosolids Drying Facility
Summary of Preliminary "Tuning" Particulate Emission Test Results
RTO #2 Stack

Date		**24-Jun-13**	**24-Jun-13**	**25-Jun-13**	**25-Jun-13**			
Run I.D.		**U2-M5-Pre1**	**U2-M5-Pre2**	**U2-M5/202-Pre3**	**U2-M5/202-Pre4**			**2009**
Start Time		**17:18**	**18:54**	**9:15**	**10:55**		**PM/PM10**	**PM/PM10**
End Time		**18:23**	**20:03**	**10:22**	**12:04**	**AVERAGE**	**Limit**	**Results**
Venturi Scrubber Flow Setpoint	**gpm**	55	10	109	0			
Venturi Scrubber Flow	**gpm**	53.8	9.2	113.8	0.0			
Venturi Pressure Setpoint	**inches wc**	6	wide open	6	wide open			
Venturi Pressure	**inches wc**	6.9	3.3	7.0	3.0			
Tray Scrubber Flow Rate	**gpm**	1,117	1,136	1,122	1,111			
Tray Scrubber Delta P	**inches wc**	8.0	8.0	8.1	8.1			
Sludge Feed Rate Limit	**Wet Tons/hr**	14.0625	14.0625	14.0625	14.0625			
Sludge Feed Rate	**Wet Tons/hr**	13.5	13.3	13.8	13.3			
Heat Input	**MMBtu/hr**	27.555	28.449	28.278	30.224			
Isokinetics	**(%)**	108.3	105.1	94.7	87.1	98.8		
Stack Temp	**(°F)**	225.9	234.2	239.3	247.2	236.7		
Moisture	**% by Vol**	15.4%	16.8%	15.6%	20.2%	17.00%		
Velocity	**Ft./Sec**	25.09	25.66	27.00	30.28	27.01		
Stack Flow	**DSCFH**	417,801	415,073	439,854	461,438	433,542		
	DSCFM	6,963	6,918	7,331	7,691	7,226		
	ACFH	638,389	652,916	687,193	770,501	687,250		
	ACFM	10,640	10,882	11,453	12,842	11,454		
Oxygen	**(%)**	7.85	7.68	8.43	9.07	8.26		
Carbon Dioxide	**(%)**	7.97	8.11	7.72	7.32	7.78		
Condensible PM	**LB/HR**	n/a	n/a	0.589	1.011	0.800		
Particulate	**mg/dscm**	1.64	2.47	3.50	4.44	3.01		4.48
	mg/dscm @7% O2	1.75	2.60	3.90	5.22	3.37		-
	LB/HR	0.043	0.064	0.096	0.128	0.083	2.42	0.193

2.2.1 Preliminary Test Results – Venturi Flow at ~10 gpm

After preliminary particulate matter testing revealed that a venturi scrubber flow setting of approximately 10 gallons per minute and open venturi throat would be used to prove compliance, a total of three runs on each dryer train was conducted prior to actual compliance testing. A summary of the individual test runs are presented in Tables 2-3 and 2-4. All data can be found in Appendix A3 and A4 of this report.

Table 2-3 Preliminary Test Results – Unit No. 1 (10 gpm)

NEFCO / SWA Biosolids Drying Facility
Summary of Particulate Emission Test Results
RTO #1 Stack

Date		**26-Jun-13**	**26-Jun-13**	**26-Jun-13**	**AVERAGE**	**PM/PM10 Limit**	**2009 PM/PM10 Results**
Run I.D.		**U1-M5-Pre5**	**U1-M5-Pre6**	**U1-M5-Pre7**			
Start Time		**9:00**	**10:20**	**11:48**			
End Time		**10:03**	**11:27**	**12:52**			
Venturi Scrubber Flow Setpoint	**gpm**	10	10	10	10		
Venturi Scrubber Flow	**gpm**	10.0	10.8	10.6	10.5		
Venturi Pressure Setpoint	**inches wc**	wide open	wide open	wide open	wide open		
Venturi Pressure	**inches wc**	4.3	4.1	4.4	4.3		
Tray Scrubber Flow Rate	**gpm**	1,132	1,129	1,125	1,129		
Tray Scrubber Delta P	**inches wc**	9.1	8.9	9.0	9.0		
Sludge Feed Rate Limit	**Wet Tons/hr**	14.0625	14.0625	14.0625	14.0625		
Sludge Feed Rate	**Wet Tons/hr**	13.7	13.7	13.5	13.6		
Heat Input	**MMBtu/hr**	31.998	33.080	29.397	31.492		
Isokinetics	**(%)**	106.3	102.6	103.4	104.1		
Stack Temp	**(°F)**	273.1	272.4	271.7	272.4		
Moisture	**% by Vol**	20.1%	18.6%	19.5%	19.42%		
Velocity	**Ft./Sec**	31.77	31.31	33.05	32.04		
Stack Flow	**DSCFH**	465,846	468,007	488,963	474,272		
	DSCFM	7,764	7,800	8,149	7,905		
	ACFH	808,383	796,811	841,064	815,419		
	ACFM	13,473	13,280	14,018	13,590		
Oxygen	**(%)**	8.59	8.52	8.64	8.58		
Carbon Dioxide	**(%)**	7.52	7.54	7.42	7.49		
Particulate	**mg/dscm**	3.45	2.94	3.38	3.26		3.79
	mg/dscm @7% O2	3.90	3.30	3.83	3.68		-
	LB/HR	0.100	0.086	0.103	0.096	2.42	0.162

Table 2-4 Preliminary Test Results – Unit No. 2 (10 gpm)

NEFCO / SWA Biosolids Drying Facility
Summary of Particulate Emission Test Results
RTO #2 Stack

Date		**26-Jun-13**	**26-Jun-13**	**26-Jun-13**			
Run I.D.		**U2-M5-Pre5**	**U2-M5-Pre6**	**U2-M5-Pre7**			**2009**
Start Time		**13:32**	**15:15**	**16:34**		**PM/PM10**	**PM/PM10**
End Time		**14:34**	**16:17**	**17:37**	**AVERAGE**	**Limit**	**Results**
Venturi Scrubber Flow Setpoint	**gpm**	10	10	10	10		
Venturi Scrubber Flow	**gpm**	10.3	9.4	10.5	10.0		
Venturi Pressure Setpoint	**inches wc**	wide open	wide open	wide open	wide open		
Venturi Pressure	**inches wc**	3.9	3.4	3.6	3.6		
Tray Scrubber Flow Rate	**gpm**	1,120	1,122	1,120	1,121		
Tray Scrubber Delta P	**inches wc**	7.9	7.8	7.8	7.8		
Sludge Feed Rate Limit	**Wet Tons/hr**	14.0625	14.0625	14.0625	14.0625		
Sludge Feed Rate	**Wet Tons/hr**	13.3	13.2	13.6	13.4		
Heat Input	**MMBtu/hr**	21.848	29.650	30.616	27.371		
Isokinetics	**(%)**	105.3	104.9	106.4	105.5		
Stack Temp	**(°F)**	219.7	230.8	230.3	226.9		
Moisture	**% by Vol**	18.6%	18.3%	18.1%	18.32%		
Velocity	**Ft./Sec**	28.25	27.58	27.59	27.81		
Stack Flow	**DSCFH**	455,382	438,695	440,579	444,885		
	DSCFM	7,590	7,312	7,343	7,415		
	ACFH	718,857	701,783	702,021	707,554		
	ACFM	11,981	11,696	11,700	11,793		
Oxygen	**(%)**	7.23	7.65	7.53	7.47		
Carbon Dioxide	**(%)**	8.16	7.93	8.04	8.04		
Particulate	**mg/dscm**	1.55	2.02	1.66	1.74		4.48
	mg/dscm @7% O2	1.57	2.12	1.73	1.81		-
	LB/HR	0.044	0.055	0.046	0.048	2.42	0.193

2.3 Compliance Test Results

South Florida Environmental Services (SFES) conducted the compliance testing for the determination of concentrations for particulate matter while the drying trains were operated on natural gas and the RTOs were operated on landfill gas. Compliance testing on each dryer train consisted of three 60-minute test runs (with visible emissions being read on one of the runs) while each unit was operated between 90% and 100% of the maximum permitted feed rate. Venturi Scrubber operating parameters were 10 gpm water flow and wide open throat. The results of the tests show that the facilities emissions in units of standard are within the facility permit and lower than results from previous stack testing performed in 2009. SFES also utilized a transportable Continuous Emission Monitoring System (CEMS) to conduct all diluent monitoring (oxygen and carbon dioxide), while using a Clean Air Engineering (CAE) EPA Method 5 metering system to conduct particulate matter sampling. A summary of the individual test runs are presented in Tables 2-5 and 2-6. All data pertaining to this testing can be found in Appendix B of this report.

Table 2-5 Compliance Test Results – Unit No. 1

NEFCO / SWA Biosolids Drying Facility
Summary of Particulate Emission Test Results
RTO #1 Stack

Date		**27-Jun-13**	**27-Jun-13**	**27-Jun-13**			
Run I.D.		**U1-M5-R1**	**U1-M5-R2**	**U1-M5-R3**			**2009**
Start Time		**13:40**	**15:00**	**16:20**		**PM/PM10**	**PM/PM10**
End Time		**14:44**	**16:03**	**17:23**	**AVERAGE**	**Limit**	**Results**
Venturi Scrubber Flow Setpoint	**gpm**	10	10	10	10		
Venturi Scrubber Flow	**gpm**	10.3	10.7	10.1	10.4		
Venturi Pressure Setpoint	**inches wc**	wide open	wide open	wide open	wide open		
Venturi Pressure	**inches wc**	3.8	4.1	4.0	4.0		
Tray Scrubber Flow Rate	**gpm**	1,117	1,125	1,133	1,125		
Tray Scrubber Delta P	**inches wc**	9.2	9.0	8.8	9.0		
Sludge Feed Rate Limit	**Wet Tons/hr**	14.0625	14.0625	14.0625	14.0625		
Sludge Feed Rate	**Wet Tons/hr**	13.3	13.1	13.1	13.2		
Heat Input	**MMBtu/hr**	30.138	31.991	32.147	31.425		
Isokinetics	**(%)**	103.1	103.9	103.1	103.4		
Stack Temp	**(°F)**	247.8	254.4	260.0	254.1		
Moisture	**% by Vol**	18.6%	18.4%	17.9%	18.29%		
Velocity	**Ft./Sec**	30.91	31.15	31.91	31.32		
Stack Flow	**DSCFH**	478,505	478,448	489,738	482,230		
	DSCFM	7,975	7,974	8,162	8,037		
	ACFH	786,523	792,555	812,135	797,071		
	ACFM	13,109	13,209	13,536	13,285		
Oxygen	**(%)**	8.72	8.35	8.46	8.51		
Carbon Dioxide	**(%)**	7.23	7.40	7.29	7.31		
Particulate	**mg/dscm**	2.86	2.76	1.40	2.34		3.79
	mg/dscm @7% O2	3.26	3.06	1.56	2.63		-
	LB/HR	0.085	0.083	0.043	0.070	2.42	0.162

Table 2-6 Compliance Test Results – Unit No. 2

NEFCO / SWA Biosolids Drying Facility
Summary of Particulate Emission Test Results
RTO #2 Stack

Date		**27-Jun-13**	**27-Jun-13**	**27-Jun-13**	**AVERAGE**	**PM/PM10 Limit**	**2009 PM/PM10 Results**
Run I.D.		**U2-M5-R1**	**U2-M5-R2**	**U2-M5-R3**			
Start Time		**8:12**	**9:33**	**11:28**			
End Time		**9:15**	**11:08**	**12:33**			
Venturi Scrubber Flow Setpoint	**gpm**	10	10	10	10		
Venturi Scrubber Flow	**gpm**	10.7	10.3	10.2	10.4		
Venturi Pressure Setpoint	**inches wc**	wide open	wide open	wide open	wide open		
Venturi Pressure	**inches wc**	3.6	3.5	3.8	3.6		
Tray Scrubber Flow Rate	**gpm**	1,120	1,123	1,122	1,122		
Tray Scrubber Delta P	**inches wc**	7.9	8.0	7.9	7.9		
Sludge Feed Rate Limit	**Wet Tons/hr**	14.0625	14.0625	14.0625	14.0625		
Sludge Feed Rate	**Wet Tons/hr**	13.1	13.4	13.6	13.4		
Heat Input	**MMBtu/hr**	32.716	31.382	28.494	30.864		
Isokinetics	**(%)**	102.3	104.0	104.0	103.4		
Stack Temp	**(°F)**	240.7	242.3	242.9	242.0		
Moisture	**% by Vol**	15.6%	17.5%	19.2%	17.43%		
Velocity	**Ft./Sec**	26.57	27.17	27.40	27.05		
Stack Flow	**DSCFH**	430,938	429,360	423,532	427,943		
	DSCFM	7,182	7,156	7,059	7,132		
	ACFH	676,204	691,333	697,179	688,238		
	ACFM	11,270	11,522	11,620	11,471		
Oxygen	**(%)**	7.55	7.45	7.02	7.34		
Carbon Dioxide	**(%)**	7.86	7.90	8.16	7.97		
Particulate	**mg/dscm**	2.02	1.50	3.88	2.47		4.48
	mg/dscm @7% O2	2.11	1.55	3.88	2.51		-
	LB/HR	0.054	0.040	0.103	0.066	2.42	0.193

2.4 Visible Emissions Test Results

South Florida Environmental Services (SFES) also conducted compliance visible emissions testing on both drying trains as well as both building odor scrubbers. Table 2-7 below shows the results of this testing. All data pertaining to this testing can be found in Appendix B3.

Table 2-7 Visible Emissions Summary of Results

Source	Location	Date	Time	Max 6-min Average	Permit Limit %Opacity
RTO #2	Stack Exit	6/27/13	8:12 – 9:12	0.0	5.0
Scrubber #2	Stack Exit	6/27/13	8:12 – 9:12	0.0	5.0
RTO #1	Stack Exit	6/27/13	13:55 – 14:55	0.0	5.0
Scrubber #1	Stack Exit	6/27/13	13:55 – 14:55	0.0	5.0

3.0 SOURCE SUMMARY

3.1 Source Description

The SWA has selected NEFCO to operate the Biosolids Pelletization Facility located in West Palm Beach, FL. The facility consists of two identical, independent drying trains consisting of the following:

- A Baker Rulllman direct-fired rotary dryer equipped with a Maxon low NOx burner and separator cyclone;
- A Sly three stage impingement tray scrubber/condenser;
- A Sly variable throat venturi scrubber; and
- A Cycletherm Regenerative Thermal Oxidizer (RTO).

Each dryer train is permitted to process 337.5 wet tons of sludge per day (wtpd) and can either combust natural gas or landfill gas, which is available from the landfill near the facility. During both preliminary testing and compliance testing, sufficient landfill gas was not available to operate each dryer at 90 – 100% of the permitted rate, and all preliminary tests were conducted while the dryer used natural gas and the RTO used landfill gas. Each dryer has a rated capacity of 40 MMBTU/hr heat input (either from landfill or natural gas) plus an additional 2 MMBTU/hr heat input from each RTO for a total rated capacity of 84 MMBTU/hr heat input for the dryers and RTOs.

The facility also operates two odor scrubbers that treat ventilation air as well as baghouse exhaust. These scrubbers were tested for their annual Visible Emissions as part of this program.

All sampling (both PM/PM_{10} and VE) was conducted at the discharge end of the system at the stack location.

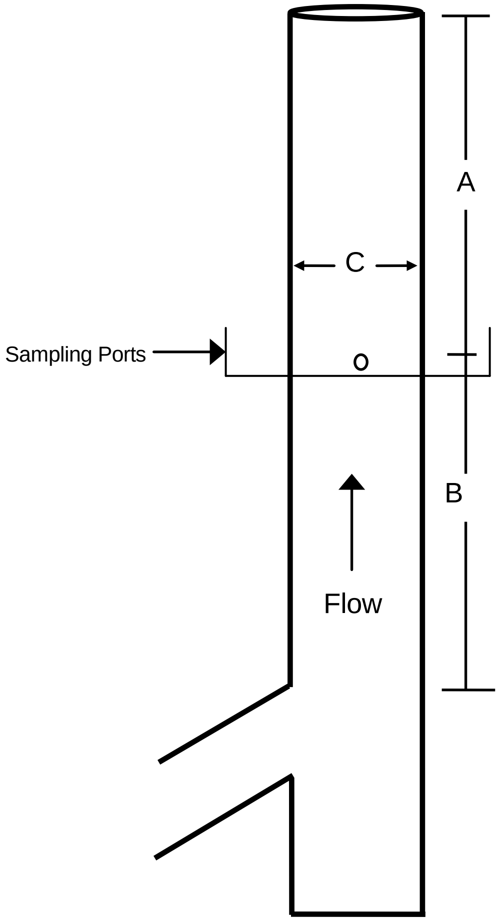
3.2 Process Operations During Testing

For each test run, NEFCO personnel recorded all pertinent operating data, or as appropriate. These include gas usage (i.e. estimated firing rates), feed rates, dryer temperatures and emission control parameters. This data can be found in Appendix D of this report.

3.3 Sample Point Description – Particulate Matter

All Particulate Matter test runs utilized two sampling ports located 90 degrees to each other on a vertical section of stack with an inside diameter of 36". The ports are located approximately 26' downstream and approximately 88' upstream from the closest bend or expected pollution concentration change (stack exit) and each test port is 4" in diameter. A summary of the traverse points are presented in Figure 3-1.

Figure 3-1 Sampling Schematic – RTO Outlet



Stack Configuration		
Description	**Distance**	**Equivalent Diameters**
Upstream (A)	~88'	~29.3
Downstream (B)	~28'	~9.3
Diameter (C)	36"	NA
Number of Ports	2	NA
PM/PM$_{10}$ Traverse Points (per diameter) – not including port sleeve		
Traverse Points	**% Diameter**	**Distance (inches)**
1	4.4	1.6
2	14.6	5.3
3	29.6	10.7
4	70.4	25.3
5	85.4	30.7
6	95.6	34.4
CEM Traverse Points		
Traverse Points	**% Diameter**	**Distance (inches)**
1	16.7	6.0
2	50.0	18.0
3	83.3	30.0
A stratification test was conducted at these traverse points prior to compliance testing to determine proper number of sampling points in accordance with Section 8.1.2 of EPA Method 7E.		

4.0 TEST PROCEDURES

4.1 Overview

Diagnostic testing for these sources consisted of concurrent reference method testing for particulate matter (either Method 5 or Method 202 with particle sizing) and instrumental monitoring for CEMS (O_2 and CO_2) while each dryer train was operated at the specified condition. The remainder of this section provides greater detail to each of the monitoring procedures that as a whole comprised that portion of the test program.

Compliance testing for these sources consisted of concurrent reference method testing for particulate matter (using Method 5 only) and instrumental monitoring for CEMS (O_2 and CO_2) while each dryer train was operated at greater than a 90% feed rate. The remainder of this section provides greater detail to each of the monitoring procedures that as a whole comprised the test program.

4.1.1 Particulate Matter Monitoring – Method 5

Particulate matter was measured using EPA Methods 1 through 5. Reference Method 5 (RM5) measurements include the determination of the proper number of sampling points and their locations in the stack (RM1), stack velocity and volumetric flow rate (RM2), stack gas molecular weight (RM3) and stack gas moisture content (RM4). The train was an EPA Method 5-type isokinetic sampling train. Sampling was conducted isokinetically for a period of 60 minutes per run, collecting a minimum of 30 dry standard cubic feet.

The sampling train consisted of a stainless steel nozzle, stainless steel union, heated glass-lined probe, a glass filter holder, heated quartz glass filter, Teflon filter support, and a series of impingers. Please refer to Section 4.1.4 for a description of the impinger configuration. All glassware was thoroughly cleaned and sealed as per EPA Methods 5 prior to mobilization.

All filters and beakers were weighed before and after sampling in strict accordance with the Method and the EPA Quality Assurance Handbook. They were desiccated for at least 24 hours, and then weighed at six-hour intervals until two consecutive weighings demonstrated a constant weight, ± 0.5 milligrams.

Prior to sampling, the K-factor was established, the train was assembled and leak checked. After the probe and filter box reached the desired operating temperature, the probe was placed in the stack, and isokinetic sampling took place.

At the completion of isokinetic sampling, the train was leaked checked, disassembled, and sealed. All train recovery procedures were conducted in accordance with EPA Method 5. The filter was carefully removed from the filter holder, placed in a labeled petri dish and stored in a portable desiccator. The nozzle, probe and filter holder front half were thoroughly brushed and rinsed with acetone into a container labeled for identification. Volumes were noted and liquid levels marked.

A set of reagent blanks were also taken for analysis along with the samples. The impinger condensate was measured in a graduated cylinder for determination of moisture in the flue gas.

Particulate samples were analyzed gravimetrically at South Florida Environmental's laboratory in accordance with the method. The acetone rinses were evaporated to dryness in tared beakers. All filters and beakers were desiccated before and after sampling for 24 hours, and weighed at 6-hour intervals until two consecutive weights are within ±0.5 mg.

4.1.2 Particulate Matter Monitoring – Methods 5/202 with Particle Sizing and CPM

$PM_{2.5/10}$ and condensable particulate matter (CPM) was measured using EPA Method 5/202. This involved using a combined train consisting of a nozzle, inertial impactor equipped with tared filter substrates and a tared filter, glass-lined heated probe, a filter bypass contained in a hot box, and a Method 202 type impinger condenser.

Particle size testing for $PM_{2.5/10}$ utilized an inertial impactor manufactured by Andersen Samplers, Inc. This is an 8-stage impactor equipped with eight tared substrate filters and a tared final collection filter. The flow rate in the inertial impactor was set to allow determination of both PM_{10} and $PM_{2.5}$ cut sizes while maintaining an approximate isokinetic sampling rate. The final stage filter is supported in a stainless steel in-stack filter holder located in the stack. CPM was collected in the impinger train and the probe (after the in-stack filter).

Before sampling, the appropriate nozzle size and sample rate was calculated in order to achieve a 2.5 and 10 micron cut size. After the train was assembled and leak checked, the impactor was placed in the stack for approximately ten minutes to allow the cyclone to heat up to the stack temperature.

Sampling was then conducted at a constant sampling rate under approximate isokinetic conditions for one hour. The required flow rate through the cyclone was very specific in order to achieve the proper cut size.

During sampling, specific CPM criteria was also maintained. Sample gas exiting the tared PM filter traveled through the probe to the external filter bypass. The gas exited the filter bypass, and was routed through a water-jacketed glass coil condenser which is designed to reduce the sample temperature to 65° - 85°F. Upon exiting the condenser coil, the sample passed through an empty knockout (short stem) impinger, an empty modified Greenburg Smith impinger, and then a dry, condensable PM filter (consisting of a glass filter holder, Teflon filter support, and an untared Teflon CPM filter). A thermocouple was located at the outlet of the dry filter holder to verify that the dry gas sample temperature was between 65°F and 85°F. The remainder of the sampling train consisted of a third impinger initially loaded with 100ml of DI H_20 and a fourth impinger initially loaded with a known amount of silica gel (200-300g).

After sampling was completed, the 8-stages of the impactor were recovered to their respective petri dishes with the filter tare weight and identification number. Extra care was taken to insure that any substrate filter fibers that remaining on the stages ring were recovered to the appropriate petri dish. The nozzle and portion of the impactor body prior to the first stage was rinsed with acetone into a labeled jar.

Also after sampling was completed, the CPM portion of the sampling train (dry impingers 1 and 2) were first measured for net condensate gain. The contents of the third and fourth impingers were also measured for moisture net gain, but then discarded as they are not considered part of the CPM sample.

The contents of the first two impingers (dry impingers) were then poured back into a single dry, modified G/S impinger before being purged with nitrogen (long stem impinger was placed first in the purge) for 60-minutes at a rate of at least 14 liters per minute. If there was not adequate moisture in the impinger to promote bubbling, then 100 ml of DI water may have been added to the impinger for the purge. A filter was placed between the nitrogen tank and the coil condenser inlet to remove any contaminant particulate. Purging of the coil condenser, CPM condensate, and dry filter then occured for 60 minutes.

Following the purge, the contents of the first two (dry) impingers were poured into a sample recovery bottle (CPM DI H2O fraction). Subsequently, each of the components in the dry impinger section (probe, filter bypass, offset 90°, condenser coil, two dry impingers, and the front half of the condensable PM filter housing) were rinsed twice with DI water into the same DI H2O sample jar. Lastly, each of these components were rinsed first with acetone (once) and then hexane (twice) into a separate sample recovery bottle (CPM acetone/hexane fraction). The dry CPM Teflon filter was placed in a separate sample jar. All three fractions were analyzed for condensable particulate matter (organic and inorganic).

The $PM_{2.5/10}$ samples were then analyzed gravimetrically by South Florida Environmental in accordance with the methods. Condensable particulate matter samples were shipped to Maxxam Analytics where they were analyzed in strict accordance with EPA Method 202.

4.1.3 Visible Emission Monitoring

EPA Reference Method 9 was adhered to for the determination of opacity emissions during this test program. During the compliance test, opacity emission readings were taken at fifteen-second intervals for a minimum of one-hour. Ten 6-minute averages were then calculated from the 15-second readings and the highest 6-minute average reported for compliance purposes. A certified observer recorded all opacity emissions.

4.1.4 Diluent Monitoring

In general, the sample was extracted, analyzed, and recorded in accordance with the applicable EPA sampling methods and performance specifications while following procedures delineated in the applicable instrumental analyzer procedures. All calibrations were conducted utilizing EPA Protocol G1 gases. The results of calibrations were used to determine the acceptability of the test data. Each analyzer that was used during this test program is detailed below.

4.1.4.1 Oxygen

During this test program, oxygen was monitored in accordance with both Performance Specification 3 (PS3) and EPA Method 3A, 40 CFR 60, Appendix A. SFES complied with instrumental analyzer procedure 3A by utilizing a Teledyne Model 326A oxygen analyzer operated on a 0-25% range.

4.1.4.2 Carbon Dioxide

During this test program, carbon dioxide was monitored in accordance with 40 CFR 60, Appendix A, Method 3A. SFES complied with instrumental analyzer procedure 3A by utilizing a Fuji Model 3400 non-dispersive infrared analyzer (NDIR) operated on a 0-20% range.

4.2 Particulate Matter Sampling System Description

Clean Air Engineering (CAE) manufactures the specific train that was used during this test. The design specifications of this train meet all the requirements of EPA's Reference Method 5 as found in the Federal Regulations under Section 40 CFR 60 Appendix A, as amended. The following is a description of the individual pieces of equipment that made up the train.

Nozzle - The nozzle was constructed of stainless steel of the buttonhook design. A range of sizes suitable for isokinetic sampling were available. All nozzles were calibrated before testing and the calibration data can be found in Appendix E of this report.

Probe - A 5-foot heated stainless steel probe with heated quartz or borosilicate glass liner was used at the stack.

Heating System - The filter temperature was regulated by maintaining the hot box temperature at 248^{o} + 25^{o}F. This temperature was constantly monitored by use of a thermocouple (located in the hot box) and temperature readout.

Pitot Tube - A Type S pitot tube attached to the probe was used to monitor the stack gas velocity. Since the pitot tube meets all of the dimensional criteria set forth in Method 2 of 40CFR60, a coefficient of 0.84 was used.

Filter Holder - A borosilicate glass type filter holder with a Teflon support was used for all isokinetic testing.

Condenser - Four impingers, connected in series with leak-free ground glass fittings, was used as the condenser. The first, third and fourth impingers were of the Greenburg-Smith design modified by replacing the tip with a 1/2" diameter glass tube extending to approximately 1/2" from the bottom of the flask. The second impinger was a standard Greenburg-Smith.

Metering System - A vacuum gauge, inclined manometer, leak-free pump, calibrated thermocouples, and a calibrated dry gas meter were the basic components used to meter the dry sample gas through the system. Meter box and thermocouple calibration sheets may be found in Appendix E of this report.

Gas Molecular Weight Determination - CEMS was used to determine O_2 and CO_2 content. They were used to calculate the molecular weight of the flue gas and for correcting results to a common diluent.

4.2.1 Isokinetic Sampling Procedures

All sampling procedures were conducted in strict accordance with the Methods prescribed in the Code of Federal Regulations as found in 40CFR60 as amended, where available. The following is the sequence of events that occurred prior to and during the actual test.

Traverse Points - The traverse points were calculated in accordance with Method 1 and the probe was marked accordingly.

Static Pressure - The static pressure of the ducts were checked and recorded.

Preliminary Traverse - A preliminary traverse was conducted. Readings included the pressure drops and gas temperatures.

Nomograph - Once the above information had been obtained, the nomograph for the actual test was set up to correlate the isokinetic relationships.

Barometric Pressure - Barometric pressure was obtained and recorded from a local weather station via the internet.

Sampling Train Set-Up:

(a) The filter was placed in the filter holder and visually checked. Filter number and tare weight was recorded on the field data sheets.

(b) The impingers were loaded with de-ionized water. Volumes were recorded on the field data sheets.

(c) Approximately 200 grams of silica gel was placed in the final impinger. Exact weights are logged on the field data sheets.

(d) Crushed ice was placed around the impingers.

(e) Once the entire train was assembled, the probe and hot box heaters were turned on.

Pre-Test Leak Check - Once the heater box was at the desired temperature for testing, the system was leak checked at fifteen inches of vacuum (15"Hg). A leak rate of less than 0.02 CFM was achieved prior to the start of sampling.

Final Check – When sampling was ready to commence, plant operations was checked to confirm that the facility was operating at the desired capacity.

Sampling - Isokinetic sampling, per the Reference Method then took place.

Post-Test Leak Check - Upon completion of each test run, the system was leak checked at the highest vacuum recorded during that run. All leak checks were less than 0.02 CFM.

Sample Recovery - All samples were recovered according to the respective Reference Method procedures. Because of the extreme importance of proper sample recovery techniques, details of the sample recovery procedures may be found in Sections 5 of this report.

Isokinetics - Once all sample recovery was completed (including moisture determination), calculations were conducted to determine the percent isokinetics of the test run.

4.3 CEMS Sampling System Description

What follows is a description of the individual components of South Florida's CEM system that was used to quantify each of the diluents/pollutants that comprised this test program.

4.3.1 Sample Delivery and Conditioning System

- **Sample Probe** – A stainless steel probe was used to reach the sampling points as described in Table 3-1.
- **Filter** - A spun glass fiber filter contained in a heated sheath. The filter was located between the sample probe and sample line; it was designed to remove particulate from the gas stream.
- **Sample Line** - 3/8" Teflon tubing in a heated sample line prior to the condenser designed to transport the sample gas from the probe to the sample conditioning system (in the CEMS trailer).
- **Condensers (2)** – A thermo-electric chiller was located just prior to the main sample pump for removal of moisture from the gas stream.
- **Sample Pump** - A diaphragm type vacuum pump was used to draw gas from the sample probe through the conditioning system before distributing the gas to the individual analyzers. The pump head is stainless steel while the valve disks are Viton and the diaphragm is Teflon coated.
- **Sample Distribution System** - A series of flow meters, valves and backpressure regulators allowed the operator to maintain constant flow and pressure conditions during sampling and calibration.

4.3.2 Calibration System

- **Calibration Gases** – Only EPA Protocol Gases certified in accordance with EPA Protocol G1 procedures were used.
- **Calibration Solenoid System** - A series of solenoids designed to deliver a specified gas either directly to an analyzer or through the entire sampling system by activating the appropriate solenoid.
- **Calibration Line** – Teflon line (1/4") run in parallel to the sample line.
- **Calibration Tee** - Stainless steel tee (3/8") located between the probe and the filter that allows the operator to inject calibration gas through the entire sampling system. Excess calibration gas exits the probe eliminating any potential over pressurization.

4.3.3 Data Acquisition System

- **Computer** – A Dell Vostro 1710, 2.50 GHz.
- **Software** – Iotech data acquisition system (Personnel Daq 55/56). This system is programmed to collect data once per 2 seconds, while reporting 1-minute averages. This software operates in a Windows environment.

5.0 QUALITY ASSURANCE/QUALITY CONTROL

5.1 Overview

Strict QA/QC protocols were followed during all phases of this project. These protocols include:

- QA objectives for measurement data;
- Data reduction;
- Internal QC;
- Calibration of equipment;
- Corrective action, if necessary; and
- Use of standardized field data sheets.

The following sections summarize specific aspects of the test program.

5.2 Particulate Matter QA

South Florida's meter boxes, pitot tubes, thermocouples and barometers are maintained in accordance with specifications set forth in EPA "Quality Assurance Handbook for Air Pollution Measurement Systems – Volume III Stationary Source Specific Methods" and with manufacturer's suggested procedures. A summary is presented below:

- **Dry Gas Meter and Orifice Meter/EPA Method 5** – All dry gas meters are calibrated against a GCA/Precision wet test meter that is calibrated against a spirometer. The orifice meters in the meter control box are calibrated against the wet test meter and checked against the dry gas meter to which it is attached.

- **Balance** – All analytical balances are calibrated against Class M weights. A daily onsite check is also conducted using a Class S weight.

- **Thermocouples** – All type K thermocouples are calibrated against ASTM mercury in glass thermometers at three points. The first point is in an ice bath and the second in ambient air and the third in boiling oil.

- **Pitot Tubes** – All standard and Type "S" stainless steel pitot tubes are designed to meet the dimensional criteria set forth in Method 2, therefore a coefficient of 0.99 (standard) or 0.84 (Type "S") was used.

Table 5-1 Particulate Sampling Procedural Summary

Task	Procedure
Filter/beaker preparation	1. Identify filters and beakers. Wash beakers in warm, soapy water, rinse with DI water and allow to air dry. 2. Desiccate filters and beaker for 24 hours. 3. Calibrate balance to within 0.5 mg of standard daily using 1 g. and 100 g. NIST traceable weights. 4. Weigh filter and beakers to nearest 0.1 mg every six hours until two consecutive weight agree within ± 0.5 mg
Glassware/Teflon Preparation	1. Wash all glassware and Teflon components in warm, soapy water. Rinse clean with tap water. Rinse thoroughly with DI water. 2. Allow to air dry and seal with parafilm. 3. Use only high purity quartz filters and glass or Teflon components.
Sampling Train Set up	1. Load/assemble sampling train components in field lab. Re-seal components and send up to stack. 2. Finish assembling train on stack.
Sampling Train Operation	1. Operate sampling train between 0.50 and 1.0 cfm. 2. After leak check, seal train components with parafilm.
Sampling Train Recovery	1. Rinse components from nozzle through front half of filter holder with reagent-grade acetone into container 1. 2. Remove filter and place in original petri dish. 3. Obtain reagent and filter blanks.
Sample Identification and Shipping	1. Identify all samples by stack, method, run no. fraction and contents. 2. Generate chain of custody form identifying all samples. 3. Ship samples to analytical laboratory.
Particulate Analysis	1. Desiccate filters for 24 hours. 2. Slowly evaporate acetone rinses in tared beakers. Desiccate beaker for 24 hours. 3. Calibrate balance to within 0.5 mg of standard daily using 1 g. and 100 g. NIST traceable weights. 4. Weigh filter and beakers to nearest 0.1 mg every six hours until two consecutive weight agree within ± 0.5 mg.
PM2.5/10	1. Evaporate acetone rinse in container #2 to dryness in tared beaker. 2. Place filter and beaker in desiccator and desiccate for 24 hour hours. 3. Weight at six hour intervals until two consecutive weights agree by +0.5 mg.
CPM Sample Analysis	1. Receive samples, verify chain of custody/contents. 2. Combine container #3 and #4 into separatory funnel and shake. Allow fractions to separate. Drain off organic fraction into a clean container. Rinse funnel with 75 ml of methylene chloride, shake, separate and drain. Repeat. 3. Evaporate organic fraction and inorganic fraction separately in tared beakers. 4. Evaporate front half acetone rinse in tared beaker. 5. Desiccate beakers for 24 hours. Weight at six hour intervals until two consecutive weights agree by +0.5 mg.

5.3 CEMS QA

Specific procedures were followed to ensure the validity of the CEMS data collected for this program. The following subsections outline the specific procedures and performance criteria that were utilized to maintain quality assurance throughout this program.

5.3.1 Calibration Gases

All calibration gases utilized for the emission testing were prepared according to EPA Protocol G1 quality standards. Gas specification sheets for all calibration gases utilized during this test program are presented in Appendix E.

5.3.2 Instrumental Monitoring

CEMS data quality was assured throughout the test program by following procedures delineated in Performance Spec 3 for O_2 and CO_2.

5.3.3 Sampling Setup

The following procedures were conducted during the initial phase of the program:

- **Leak Check** – Prior to the initiation of testing the reference method CEMS system wasleak checked from the end of the sample probe. If a leak was detected, it would be traced and fixed. The procedure would then repeated until successful.

- **System Response Time** – Prior to the initiation of sampling a Reference Method (RM) CEMS response time was determined. During the test program, the reference method CEMS was allowed to sample a minimum of 2.5 times the RM CEMS response time prior to the initiation of any sampling runs.

5.3.4 Calibration Criteria

The following subsections present the CEMS criteria that was adhered to throughout the conduct of the test program.

- **Analyzer Calibration Error (ACE)** – At the beginning of each test day an analyzer calibration error (direct calibration) was conducted for each analyzer by introducing zero and an upscale calibration gas upstream from the respective analyzers and calibrating the respective analyzers to the corresponding calibration gas value. A mid-range gas is then injected to the respective analyzers in order to demonstrate linearity. The maximum allowable calibration error is 2% of instrument span. If this limit were not achieved, corrective action would be taken and the procedure would be repeated until successful. Analyzer calibration error is calculated as follows:

$$ACE = \frac{(C_{Dir} - C_v)}{CS} \times 100$$

Where:

C_{Dir} = Measured concentration of a calibration gas (low, mid, or high) when introduced in direct calibration mode, ppmv.

C_v = Manufacturer certified concentration of a calibration gas (low, mid, or high), ppmv.

CS = Calibration span, ppmv.

- **Sampling System Bias (SB)** – Following the performance of the analyzer calibration error a system bias check was conducted by introducing sampling gas through the entire sampling system (system calibration) and comparing the response of the analyzer calibration error with that of the system calibration. The maximum allowable calibration error is 5% of instrument span. If this limit were not achieved, the test run would be voided and corrective action would be taken. If analyzer adjustments were made, the analyzer calibration error and system bias checks would be repeated until the calibration met the EPA Method 7E criteria. System bias is calculated as follows:

$$SB = \frac{(C_s - C_{Dir})}{CS} \times 100$$

Where:

C_s = Measured concentration of a calibration gas (low, mid, or high) when introduced in system calibration mode, ppmv.

- **Calibration Drift (D)** – Prior to and following each test run a system calibration was conducted in order to determine calibration drift during each test period. The maximum allowable calibration drift is 3% of instrument span. If the calibration drift were exceeded, corrective action would be taken. If any analyzer adjustments were made, a new analyzer calibration error and system bias check would be conducted. Calibration drift is calculated as follows:

$$D = \left| \; SB_{final} - SB_{iniital} \; \right| \times 100$$

5.3.5 Calibration Drift and System Bias Correction

Each instrumental analyzer method requires the correction of CEMS data for the system bias and calibration drift observed over each test period. All run averages are corrected for system bias and calibration drift as follows:

$$C_{Gas} = (C_{Avg} - C_o)\,[\frac{C_{MA}}{C_M - C_o}]$$

Where:

C_{Gas} = Average effluent gas concentration adjusted for bias, ppmv.

C_{Avg} = Average unadjusted gas concentration indicated by data recorder for test run.

C_o = Average of initial and final system calibration bias (or 2-point system calibration error) check responses from the low-level (or zero) calibration gas, ppmv.

C_M = Average of initial and final system calibration bias (or 2-point system calibration error) check responses for the upscale calibration gas, ppmv.

C_{MA} = Actual concentration of the upscale calibration gas, ppmv.

Appendix A

Reference Method Emissions Data – Preliminary Particulate Matter Emissions Data

A1

RTO / Dryer No. 1 "Tuning" Emissions Data (6/25/13)

PARTICULATE EMISSION CALCULATION SHEET

PLANT: **NEFCO / SWA Biosolids** RUN # : **U1-M5/202-Pre1**
LOCATION: **West Palm Beach, FL** DATE: **25-Jun-13**

			BLANKS	
	FILTER	BEAKER	FILTER	BEAKER
NUMBER :	PS3	9C	1445	B5-48
FINAL :	1.3905	69.9058	0.4408	67.0280
TARE :	1.3895	69.9054	0.4408	67.0279
NET :	0.0010	0.0004	0.0000	0.0001

VOLUME BLANK RINSE 130
VOLUME OF RINSE 60

Mn - Ar = Mn

Mn = 1.400
Ar = 0.046

Mn = 1.400 not blank corr

O2 = 8.26
CO2 = 7.64
Vs = 30.94 ft/sec
As = 7.07 ft2
Vm std = 31.73 DSCF

Qs	=	3600(1-Bwo)(Vs)(As)(17.64)(Ps/Ts)	=	483940	DSCFH
		3600 (Vs) (As)	=	787398	ACFH
		ACFH / 60	=	13123	ACFM
Cs	=	(2.205 E-6) (Mn) / (Vm Std)	=	9.73048E-08	LB/SCF
Cs'	=	0.0154 (Mn) /(VmStd)	=	0.0007	GRAINS/SCF
Cs'	=	Mn / VmStd	=	1.56	mg/dscm
Cs' @ 7% O2	=	Mn / VmStd x 20.9-7/20.9-O2%	=	1.71	mg/dscm @7% O2
PMR	=	Qs x Cs	=	0.047	LB/HR

PARTICULATE EMISSION CALCULATION SHEET

PLANT: **NEFCO / SWA Biosolids** RUN # : **U1-M5-Pre2**
LOCATION: **West Palm Beach, FL** DATE: **25-Jun-13**

			BLANKS	
	FILTER	**BEAKER**	**FILTER**	**BEAKER**
NUMBER :	1427	D3100	1445	B5-48
FINAL :	0.4468	70.2351	0.4408	67.0280
TARE :	0.4451	70.2271	0.4408	67.0279
NET :	0.0017	0.0080	0.0000	0.0001

VOLUME BLANK RINSE 130
VOLUME OF RINSE 110

Mn - Ar = Mn

Mn = 9.700
Ar = 0.085

Mn = 9.700 not blank corr

O2 = 8.19
CO2 = 7.65
Vs = 30.10 ft/sec
As = 7.07 ft2
Vm std = 45.56 DSCF

Qs = 3600(1-Bwo)(Vs)(As)(17.64)(Ps/Ts) = 462211 DSCFH
3600 (Vs) (As) = 765978 ACFH
ACFH / 60 = 12766 ACFM

Cs = (2.205 E-6) (Mn) / (Vm Std) = 4.6942E-07 LB/SCF

Cs' = 0.0154 (Mn) /(VmStd) = 0.0033 GRAINS/SCF

Cs' = Mn / VmStd = 7.52 mg/dscm

Cs' @ 7% O2 = Mn / VmStd x 20.9-7/20.9-O2% = 8.22 mg/dscm @7% O2

PMR = Qs x Cs = 0.217 LB/HR

PARTICULATE EMISSION CALCULATION SHEET

PLANT **NEFCO / SWA Biosolids** RUN # : **U1-M5-Pre3**
LOCATION **West Palm Beach, FL** DATE : **25-Jun-13**

			BLANKS	
	FILTER	**BEAKER**	**FILTER**	**BEAKER**
NUMBER :	1428	417	1445	B5-48
FINAL :	0.4398	68.7232	0.4408	67.0280
TARE :	0.4380	68.7202	0.4408	67.0279
NET :	0.0018	0.0030	0.0000	0.0001

VOLUME BLANK RINSE 130
VOLUME OF RINSE 125

Mn - Ar = Mn		O2 =	8.51
		CO2 =	7.48
Mn =	4.800	Vs =	30.68 ft/sec
Ar =	0.096	As =	7.07 ft2
		Vm std=	46.90 DSCF
Mn =	4.800 not blank corr		

Qs = 3600(1-Bwo)(Vs)(As)(17.64)(Ps/Ts)	=	458049	DSCFH
3600 (Vs) (As)	=	780647.4942	ACFH
ACFH / 60	=	13011	ACFM
Cs = (2.205 E-6) (Mn) / (Vm Std)	=	2.2568E-07	LB/SCF
Cs' = 0.0154 (Mn) /(VmSTD)	=	0.0016	GRAINS/SCF
Cs' = Mn / VmStd	=	3.61	mg/dscm
Cs' @ 7% O2 = Mn / VmStd x 20.9-7/20.9-O2%	=	4.06	mg/dscm @7% O2
PMR = Qs x Cs	=	0.103	LB/HR

PARTICULATE EMISSION CALCULATION SHEET

PLANT **NEFCO / SWA Biosolids** RUN # : **U1-M5/202-Pre4**
LOCATION **West Palm Beach, FL** DATE : **25-Jun-13**

			BLANKS	
	FILTER	**BEAKER**	**FILTER**	**BEAKER**
NUMBER :	PS4	BK2	1445	B5-48
FINAL :	1.3961	69.2838	0.4408	67.0280
TARE :	1.3950	69.2813	0.4408	67.0279
NET :	0.0011	0.0025	0.0000	0.0001

VOLUME BLANK RINSE 130
VOLUME OF RINSE 55

Mn - Ar = Mn

Mn = 3.600
Ar = 0.042

Mn = 3.600 not blank corr

O2 = 8.47
CO2 = 7.54
Vs = 35.75 ft/sec
As = 7.07 ft2
Vm std= 31.53 DSCF

Qs = 3600(1-Bwo)(Vs)(As)(17.64)(Ps/Ts) = 530053 DSCFH
3600 (Vs) (As) = 909804 ACFH
ACFH / 60 = 15163 ACFM

Cs = (2.205 E-6) (Mn) / (Vm Std) = 2.51787E-07 LB/SCF

Cs' = 0.0154 (Mn) /(VmSTD) = 0.0018 GRAINS/SCF

Cs' = Mn / VmStd = 4.03 mg/dscm

Cs' @ 7% O2 = Mn / VmStd x 20.9-7/20.9-O2% = 4.51 mg/dscm @7% O2

PMR = Qs x Cs = 0.133 LB/HR

Particulate Calculation Sheet - Back Half (Condensible)

PLANT :	NEFCO / SWA Biosolids	RUN NO.:	U1-M5/202-Pre1
LOCATION :	Unit No. 1	DATE:	25-Jun-13

Lab ID:

O_2 = 8.26

CO_2 = 7.64

Vs = 30.94 ft/sec

As = 7.07 ft^2

Vm std = 31.73 DSCF

Fractional Weights:

Inorganic (mg):	9.7
Organic (mg):	14.0
Total Gain (mg)	23.7

Qs	=	3600(1-Bwo)(Vs)(As)(17.64)(Ps/Ts)	=	483,940 DSCFH
		3600 (Vs) (As)	=	787,398 ACFH
		ACFH / 60	=	13,123 ACFM
Cs	=	(2.205 E-6) (Mn) / (Vm Std)	=	1.64723E-06 LB/SCF
Cs'	=	0.0154 (Mn) /(VmStd)	=	0.0115 GRAINS/SCF
PMR	=	Qs x Cs	=	0.797 LB/HR

Particulate Calculation Sheet - Back Half (Condensible)

PLANT :	NEFCO / SWA Biosolids	RUN NO.:	U1-M5/202-Pre4
LOCATION :	Unit No. 1	DATE:	25-Jun-13

Lab ID:		O_2	=	8.47	
		CO_2	=	7.54	
Fractional Weights:		Vs	=	30.94	ft/sec
Inorganic (mg):	18.0	As	=	7.07	ft^2
Organic (mg):	19.0	Vm std	=	31.73	DSCF
Total Gain (mg)	37.0				

Qs	=	3600 (1-Bwo)(Vs)(As)(17.64)(Ps/Ts) =	=	483,940	DSCFH
		3600 (Vs) (As)	=	787,398	ACFH
		ACFH / 60	=	13,123	ACFM
Cs	=	(2.205 E-6) (Mn) / (Vm Std)	=	2.57163E-06	LB/SCF
Cs'	=	0.0154 (Mn) /(VmSTD)	=	0.0180	GRAINS/SCF
PMR	=	Qs x Cs	=	1.245	LB/HR

INPUT DATA SHEET

PLANT: NEFCO / SWA Biosolids
RUN # : U1-M5/202-Pre1
LOCATION: West Palm Beach, FL
DATE : 25-Jun-13

As (SQFT) :	7.069
Dn (INCHES)	0.312
PITOT COEFFICIENT:	0.84
IMP-1 (INT) :	0
IMP-2 (INT) :	0
IMP-3 (INT) :	100
IMP-4 (INT) :	808.0
IMP-1 (FIN) :	108
IMP-2 (FIN) :	1
IMP-3 (FIN) :	106
IMP-4 (FIN) :	816.0
% CO2 (OUT):	7.64
% O2 (OUT) :	8.26
% CO (OUT) :	0
Pbar	30.1
Pstack	-0.42
NUMBER OF POINTS	12
TEST LENGTH	60
FINAL METER	527.044
INTIAL METER	493.151
BEGIN TIME	13:17
END TIME	14:23

TRAVERSE POINT	VELOCITY HEAD	SQUARE ROOT	DELTA H	DRY GAS METER IN	DRY GAS METER OUT	STACK TEMP (F)
A1	0.21	0.46	1.00	92	92	265
2	0.20	0.45	1.00	93	93	266
3	0.21	0.46	1.00	93	93	267
4	0.22	0.47	1.00	93	93	270
5	0.21	0.46	1.00	93	93	270
6	0.22	0.47	1.00	93	93	271
B1	0.20	0.45	1.00	93	93	270
2	0.21	0.46	1.00	93	93	272
3	0.23	0.48	1.00	94	94	269
4	0.21	0.46	1.00	94	94	271
5	0.22	0.47	1.00	94	94	273
6	0.21	0.46	1.00	93	93	274
AVERAGE:	0.21	0.46	1.00	93.2	93.2	269.8

INPUT DATA SHEET

PLANT:	NEFCO / SWA Biosolids	RUN # :	U1-M5-Pre2
LOCATION:	West Palm Beach, FL	DATE :	25-Jun-13

As (SQFT) :	7.069
Dn (INCHES)	0.351
PITOT COEFFICIENT:	0.84
IMP-1 (INT) :	100
IMP-2 (INT) :	100
IMP-3 (INT) :	0
IMP-4 (INT) :	798.0
IMP-1 (FIN) :	279
IMP-2 (FIN) :	107
IMP-3 (FIN) :	3
IMP-4 (FIN) :	804.5
% CO2 (OUT):	7.65
% O2 (OUT) :	8.19
% CO (OUT) :	0
Pbar	30.1
Pstack	-0.41
NUMBER OF POINTS	12
TEST LENGTH	60
FINAL METER	575.902
INTIAL METER	527.406
BEGIN TIME	14:50
END TIME	15:53

TRAVERSE POINT	VELOCITY HEAD	SQUARE ROOT	DELTA H	DRY GAS METER IN	DRY GAS METER OUT	STACK TEMP (F)
A1	0.16	0.40	1.68	92	92	251
2	0.20	0.45	2.10	92	92	272
3	0.22	0.47	2.31	93	93	277
4	0.22	0.47	2.31	93	93	280
5	0.21	0.46	2.21	93	93	281
6	0.20	0.45	2.10	93	93	281
B1	0.17	0.41	1.79	93	93	254
2	0.18	0.42	1.89	93	93	260
3	0.21	0.46	2.21	93	93	279
4	0.23	0.48	2.42	92	92	275
5	0.21	0.46	2.21	92	92	275
6	0.19	0.44	2.00	92	92	271
AVERAGE:	0.20	0.45	2.10	92.6	92.6	271.3

INPUT DATA SHEET

PLANT :	NEFCO / SWA Biosolids	RUN # :	U1-M5-Pre3
LOCATION :	West Palm Beach, FL	DATE :	25-Jun-13

As (SQFT) :	7.069
Dn (INCHES)	0.351
PITOT COEFFICIENT:	0.84
IMP-1 (INT) :	100
IMP-2 (INT) :	100
IMP-3 (INT) :	0
IMP-4 (INT) :	804.5
IMP-1 (FIN) :	310
IMP-2 (FIN) :	110
IMP-3 (FIN) :	4
IMP-4 (FIN) :	809.0
% CO2 (OUT):	7.48
% O2 (OUT) :	8.51
% CO (OUT) :	0
Pbar	30.1
Pstack	-0.38
NUMBER OF POINTS	12
TEST LENGTH	60
FINAL METER	625.923
INTIAL METER	576.171
BEGIN TIME	16:15
END TIME	17:18

TRAVERSE POINT	VELOCITY HEAD	SQUARE ROOT	DELTA H	DRY GAS METER IN	DRY GAS METER OUT	STACK TEMP (F)
A1	0.16	0.40	1.68	90	90	271
2	0.19	0.44	2.00	90	90	276
3	0.20	0.45	2.10	91	91	286
4	0.23	0.48	2.42	91	91	276
5	0.20	0.45	2.10	91	91	280
6	0.18	0.42	1.89	91	91	271
B1	0.22	0.47	2.31	91	91	267
2	0.22	0.47	2.31	91	91	270
3	0.23	0.48	2.42	91	91	273
4	0.23	0.48	2.42	91	91	286
5	0.22	0.47	2.31	91	91	274
6	0.18	0.42	1.89	91	91	275
AVERAGE:	**0.21**	**0.45**	**2.15**	**90.8**	**90.8**	**275.4**

INPUT DATA SHEET

PLANT : NEFCO / SWA Biosolids
RUN # : U1-M5/202-Pre4
LOCATION : West Palm Beach, FL
DATE : 25-Jun-13

As (SQFT) : 7.069
Dn (INCHES) 0.312
PITOT COEFFICIENT: 0.84

IMP-1 (INT) : 0

IMP-2 (INT) : 0

IMP-3 (INT) : 100

IMP-4 (INT) : 784.0

IMP-1 (FIN) : 130

IMP-2 (FIN) : 12

IMP-3 (FIN) : 108

IMP-4 (FIN) : 791.0

% CO2 (OUT): 7.54

% O2 (OUT) : 8.47

% CO (OUT) : 0

Pbar 30.1

Pstack -0.40

NUMBER OF POINTS 12

TEST LENGTH 60

FINAL METER 659.434

INTIAL METER 626.169

BEGIN TIME 17:55

END TIME 19:00

TRAVERSE POINT	VELOCITY HEAD	SQUARE ROOT	DELTA H	DRY GAS METER IN	DRY GAS METER OUT	STACK TEMP (F)
A1	0.24	0.49	1.00	87	87	264
2	0.26	0.51	1.00	87	87	278
3	0.28	0.53	1.00	86	86	276
4	0.27	0.52	1.00	86	86	284
5	0.28	0.53	1.00	86	86	277
6	0.28	0.53	1.00	87	87	288
B1	0.28	0.53	1.00	86	86	274
2	0.30	0.55	1.00	86	86	276
3	0.29	0.54	1.00	86	86	270
4	0.30	0.55	1.00	86	86	279
5	0.28	0.53	1.00	86	86	275
6	0.26	0.51	1.00	87	87	290
AVERAGE:	**0.28**	**0.53**	**1.00**	**86.3**	**86.3**	**277.6**

ISOKINETIC CALCULATION SHEET

PLANT : **NEFCO / SWA Biosolids** RUN # : **U1-M5/202-Pre1**
LOCATION : **West Palm Beach, FL** DATE : **25-Jun-13**

Ts (°F) =	269.8	% CO2 =	7.64	Vm (CF) =	33.893
Ts (°R) =	729.8	% O2 =	8.26	DELTA H (ABS) =	30.17
Tm (°F) =	93.2	% CO =	0	Ps (ABS) =	30.07
Tm (°R) =	553.2	% N2 =	84.10	SQRT DELTA P =	0.4609
VI (TOT) =	123.0	Cp =	0.84	Y =	0.9728
VI (adj) =	NA	TIME =	60	An =	0.000531

Vm std = $\frac{17.64\ (Vm)(Y)(DELTA\ H\ ABS)}{(Tm)}$ = 31.725 DSCF

Vw std = .04707 (VI TOT) = 5.790 CF

Bwo = Vw std / (Vw std) + (Vm std) = 0.154

Bwo = by steam tables = NA

1 - Bwo = 1 - Bwo = 0.846

Md (DRY)= 0.44 (% CO2) +
0.32 (% O2) +
0.28 (% CO) + = 29.552 LB/LB MOLE
0.28 (% N2)

Ms (WET)= MD (1-Bwo) + 18 (Bwo) = 27.769 LB/LB MOLE

G = SQRT (Ts/Ps/Ms) = 0.935

Vs = 85.49 (Cp) (G) (SQRT DELTA P) = 30.943 FPS

Qs = 3600 (1-Bwo)(Vs)(As)(17.64)(Ps/Ts) = 483940 DSCFH

% ISO = $\frac{100\ (Ts)\ (Vm\ std)\ (Pstd)}{60\ (Tstd)\ (\ Vs\ )\ (Time)\ (\ An)\ (Ps)\ (1\text{-}Bwo)}$ = 87.2

ISOKINETIC CALCULATION SHEET

PLANT : **NEFCO / SWA Biosolids** RUN # : **U1-M5-Pre2**
LOCATION : **West Palm Beach, FL** DATE : **25-Jun-13**

Ts (°F) =	271.3	% CO2 =	7.65	Vm (CF) =	48.496
Ts (°R) =	731.3	% O2 =	8.19	DELTA H (ABS) =	30.25
Tm (°F) =	92.6	% CO =	0	Ps (ABS) =	30.07
Tm (°R) =	552.6	% N2 =	84.17	SQRT DELTA P =	0.4466
VI (TOT) =	195.5	Cp =	0.84	Y =	0.9728
VI (adj) =	NA	TIME =	60	An =	0.000672

Vm std = $\frac{17.64\ (Vm)(Y)(\text{DELTA H ABS})}{(Tm)}$ = 45.564 DSCF

Vw std = .04707 (VI TOT) = 9.202 CF

Bwo = Vw std / (Vw std) + (Vm std) = 0.168

Bwo = by steam tables = NA

1 - Bwo = 1 - Bwo = 0.832

Md (DRY)= 0.44 (% CO2) +
0.32 (% O2) +
0.28 (% CO) + = 29.551 LB/LB MOLE
0.28 (% N2)

Ms (WET)= MD (1-Bwo) + 18 (Bwo) = 27.610 LB/LB MOLE

G = SQRT (Ts/Ps/Ms) = 0.939

Vs = 85.49 (Cp) (G) (SQRT DELTA P) = 30.101 FPS

Qs = 3600 (1-Bwo)(Vs)(As)(17.64)(Ps/Ts) = 462211 DSCFH

% ISO = $\frac{100\ (Ts)\ (Vm\ std)\ (Pstd)}{60\ (Tstd)\ (\ Vs\ )\ (Time)\ (\ An)\ (Ps)\ (1\text{-}Bwo)}$ = 103.7

ISOKINETIC CALCULATION SHEET

PLANT : **NEFCO / SWA Biosolids** RUN # : **U1-M5-Pre3**
LOCATION : **West Palm Beach, FL** (example) **25-Jun-13**

Ts (°F) =	275.4	% CO2 =	7.48	Vm (CF) =	49.752
Ts (°R) =	735.4	% O2 =	8.51	DELTA H (ABS) =	30.26
Tm (°F) =	90.8	% CO =	0	Ps (ABS) =	30.07
Tm (°R) =	550.8	% N2 =	84.01	SQRT DELTA P =	0.4521
VI (TOT) =	228.5	Cp =	0.84	Y =	0.9728
VI (adj) =	NA	TIME =	60	An =	0.000672

Vm std = $\frac{17.64\ (Vm)(Y)(\text{DELTA H ABS})}{(Tm)}$ = 46.898 DSCF

Vw std = .04707 (VI TOT) = 10.755 CF

Bwo = Vw std / (Vw std) + (Vm std) = 0.187

Bwo = by steam tables = NA

1 - Bwo = 1 - Bwo = 0.813

Ms (WET)= 0.44 (% CO2) +
0.32 (% O2) +
0.28 (% CO) + = 29.537 LB/LB MOLE
0.28 (% N2)

Ms (WET)= MD (1-Bwo) + 18 (Bwo) = 27.385 LB/LB MOLE

G = SQRT (Ts/Ps/Ms) = 0.945

Vs = 85.49 (Cp) (G) (SQRT DELTA P) = 30.678 FPS

Qs = 3600 (1-Bwo)(Vs)(As)(17.64)(Ps/Ts) = 458049 DSCFH

% ISO = $\frac{100\ (Ts)\ (Vm\ std)\ (Pstd)}{60\ (Tstd)\ (\ Vs\ )\ (Time)\ (\ An)\ (Ps)\ (1\text{-}Bwo)}$ = 107.7

ISOKINETIC CALCULATION SHEET

PLANT : **NEFCO / SWA Biosolids** RUN # : **U1-M5/202-Pre4**
LOCATION : **West Palm Beach, FL** (example) **25-Jun-13**

Ts (°F) =	277.6	% CO2 =	7.54	Vm (CF) =	33.265
Ts (°R) =	737.6	% O2 =	8.47	DELTA H (ABS) =	30.17
Tm (°F) =	86.3	% CO =	0	Ps (ABS) =	30.07
Tm (°R) =	546.3	% N2 =	83.99	SQRT DELTA P =	0.5258
Vl (TOT) =	157.0	Cp =	0.84	Y =	0.9728
Vl (adj) =	NA	TIME =	60	An =	0.000531

Vm std = $\frac{17.64\ (Vm)(Y)(\text{DELTA H ABS})}{(Tm)}$ = 31.527 DSCF

Vw std = .04707 (Vl TOT) = 7.390 CF

Bwo = Vw std / (Vw std) + (Vm std) = 0.190

Bwo = by steam tables = NA

1 - Bwo = 1 - Bwo = 0.810

Ms (WET)= 0.44 (% CO2) +
0.32 (% O2) +
0.28 (% CO) + = 29.545 LB/LB
0.28 (% N2) MOLE

Ms (WET)= MD (1-Bwo) + 18 (Bwo) = 27.352 LB/LB MOLE

G = SQRT (Ts/Ps/Ms) = 0.947

Vs = 85.49 (Cp) (G) (SQRT DELTA P) = 35.753 FPS

Qs = 3600 (1-Bwo)(Vs)(As)(17.64)(Ps/Ts) = 530053 DSCFH

% ISO = $\frac{100\ (Ts)\ (Vm\ std)\ (Pstd)}{60\ (Tstd)\ (\ Vs\ )\ (Time)\ (\ An)\ (Ps)\ (1\text{-}Bwo)}$ = 79.2

Analyzer Calibrations

PLANT :	NEFCO / SWA Biosolids	DATE :	25-Jun-13
LOCATION :	West Palm Beach, FL		

Diluent/Pollutant	O_2	CO_2			
Units	%	%			
Monitor Range Selected	25	20			
Monitor Range (Effective, per Method)	20.42	18.69			
--- Low Level Analyzer Calibration Error ---					
Cylinder Value ($C_{v,Low}$)	0.00	0.00			
Analyzer Response ($C_{Dir,Low}$)	0.10	0.21			
Analyzer Calibration Error (ACE$_{,Low)}$)	0.49	1.12			
Calibration Status (Pass/Fail)	Pass	Pass			
--- Mid Level Analyzer Calibration Error ---					
Cylinder Value ($C_{v,Mid}$)	10.49	9.45			
Analyzer Response ($C_{Dir,Mid}$)	10.50	9.41			
Analyzer Calibration Error (ACE$_{,Mid}$)	0.05	-0.21			
Calibration Status (Pass/Fail)	Pass	Pass			
--- High Level Analyzer Calibration Error ---					
Cylinder Value ($C_{v,High}$)	20.42	18.69			
Analzyer Response ($C_{Dir,High}$)	20.43	18.70			
Analyzer Calibration Error (ACE$_{,High}$)	0.05	0.05			
Calibration Status (Pass/Fail)	Pass	Pass			
--- Cylinder Gas Selected for Bias Checks ---					
Use Mid (M) or High (H) Span	M	M			
ZERO	0.10	0.21			
SPAN	10.5	9.41			
--- Mid Level Gas Range Assessment ---					
Cylinder Value (Mid)	10.49	9.45			
Cylinder Value (High/Span)	20.42	18.69			
Percentage of Span (%)	51.4	50.6			
Assessment Status (Pass/Fail)	Pass	Pass			

CEMS Calibrations and Calculations Sheet

PLANT : NEFCO / SWA Biosolids
LOCATION : West Palm Beach, FL

RUN # : U1-M5/202-Pre1
DATE : 25-Jun-13

	GAS
START TIME :	13:17
END TIME :	14:23

Diluent/Pollutant:	O_2 (%)	CO_2 (%)
Instrument Span =	20.42	18.69
Analyzer Zero Response =	0.10	0.21
Analyzer Span Response =	10.50	9.41
Initial Sytem Zero Response =	0.09	0.14
Final System Zero Response =	0.05	0.12
Average Zero Response (C_o) =	0.07	0.13
Initial Sytem Span Response =	10.51	9.42
Final System Span Response =	10.54	9.40
Average Span Response (C_m) =	10.53	9.41
Calibration gas values (C_{ma}) =	10.49	9.45
System Bias and Drift Calculations		
Initial Zero Bias (SB_i) =	0.05	0.37
Final Zero Bias (SB_{final}) =	0.24	0.48
Zero Drift (D) =	0.20	0.11
Initial Span Bias (SB_i) =	0.05	0.05
Final Span Bias (SB_{final}) =	0.20	0.05
Span Drift (D) =	0.15	0.11
Uncorrected Ave. ($\overline{C_{Avg}}$) =	8.30	7.63
Corrected Ave.=C_{gas} = $(\overline{C_{Avg}}-C_o)(C_{ma}/(C_m-C_o))$ =	8.26	7.64

PLANT DATA

CEMS Calibrations and Calculations Sheet

PLANT : NEFCO / SWA Biosolids
LOCATION : West Palm Beach, FL

RUN # : U1-M5-Pre2
DATE : 25-Jun-13

	GAS
START TIME :	14:50
END TIME :	15:53

Diluent/Pollutant:	O_2 (%)	CO_2 (%)
Instrument Span =	20.42	18.69
Analyzer Zero Response =	0.10	0.21
Analyzer Span Response =	10.50	9.41
Initial Sytem Zero Response =	0.05	0.12
Final System Zero Response =	0.09	0.13
Average Zero Response (C_o) =	0.07	0.13
Initial Sytem Span Response =	10.54	9.40
Final System Span Response =	10.55	9.38
Average Span Response (C_m) =	10.55	9.39
Calibration gas values (C_{ma}) =	10.49	9.45
<u>System Bias and Drift Calculations</u>		
Initial Zero Bias (SB_i) =	0.24	0.48
Final Zero Bias (SB_{final}) =	0.05	0.43
Zero Drift (D) =	0.20	0.05
Initial Span Bias (SB_i) =	0.20	0.05
Final Span Bias (SB_{final}) =	0.24	0.16
Span Drift (D) =	0.05	0.11
Uncorrected Ave. ($\overline{C_{Avg}}$) =	8.24	7.62
Corrected Ave.=C_{gas} = $(\overline{C_{Avg}}-C_o)(C_{ma}/(C_m-C_o))$ =	8.19	7.65

<u>PLANT DATA</u>

CEMS Calibrations and Calculations Sheet

PLANT : NEFCO / SWA Biosolids
LOCATION : West Palm Beach, FL
RUN # : U1-M5-Pre3
DATE : 25-Jun-13

	GAS
START TIME :	16:15
END TIME :	17:18

Diluent/Pollutant:	O_2 (%)	CO_2 (%)
Operating Range =	20.42	18.69
Analyzer Zero Response =	0.10	0.21
Analyzer Span Response =	10.50	9.41
Sytem Zero Response (Initial) =	0.09	0.13
System Zero Response (Final) =	0.10	0.09
Average Zero Response (C_o) =	0.10	0.11
Sytem Span Response (Initial) =	10.55	9.38
System Span Response (Final) =	10.60	9.36
Average Span Response (C_m) =	10.58	9.37
Calibration gas values (C_{ma}) =	10.49	9.45
System Bias and Drift Calculations:		
Initial Zero Bias (SB_i) =	0.05	0.43
Final Zero Bias (SB_{final}) =	0.00	0.64
Zero Drift (D) =	0.05	0.21
Initial Span Bias (SB_i) =	0.24	0.16
Final Span Bias (SB_{final}) =	0.49	0.27
Span Drift (D) =	0.24	0.11
Uncorrected Ave. ($\overline{C_{Avg}}$) =	8.60	7.44
Corrected Ave.=C_{gas} = ($\overline{C_{Avg}}$-C_o)(C_{ma}/(C_m-C_o)) =	8.51	7.48

PLANT DATA

CEMS Calibrations and Calculations Sheet

PLANT : NEFCO / SWA Biosolids
LOCATION : West Palm Beach, FL
RUN # : U1-M5/202-Pre4
DATE : 25-Jun-13

	GAS
START TIME :	17:55
END TIME :	19:00

Diluent/Pollutant:	O_2 (%)	CO_2 (%)
Operating Range =	20.42	18.69
Analyzer Zero Response =	0.10	0.21
Analyzer Span Response =	10.50	9.41
Sytem Zero Response (Initial) =	0.10	0.09
System Zero Response (Final) =	0.10	0.11
Average Zero Response (C_o) =	0.10	0.10
Sytem Span Response (Initial) =	10.60	9.36
System Span Response (Final) =	10.58	9.40
Average Span Response (C_m) =	10.59	9.38
Calibration gas values (C_{ma}) =	10.49	9.45
System Bias and Drift Calculations:		
Initial Zero Bias (SB_i) =	0.00	0.64
Final Zero Bias (SB_{final}) =	0.00	0.54
Zero Drift (D) =	0.00	0.11
Initial Span Bias (SB_i) =	0.49	0.27
Final Span Bias (SB_{final}) =	0.39	0.05
Span Drift (D) =	0.10	0.21
Uncorrected Ave. ($\overline{C_{Avg}}$) =	8.57	7.50
Corrected Ave.=C_{gas} = $(\overline{C_{Avg}}-C_o)(C_{ma}/(C_m-C_o))$ =	8.47	7.54

PLANT DATA

South Florida Environmental Services, LLC
Uncorrected CEMS Monitoring Results
Instrumental Reference Methods - 3A, 6C, 7E and 10

Facility/Site: NEFCO / SWA Biosolids **Date:** 06/25/13
Location: West Palm Beach, FL **Start Time:** 13:17
Run No.: U1-M5/202-Pre1 **Stop Time:** 14:23

Date/time	O_2 (%$_{vd}$)	CO_2 (%$_{vd}$)			
6/25/2013 1:17:03 PM	8.75	7.43			
6/25/2013 1:18:03 PM	8.71	7.46			
6/25/2013 1:19:03 PM	8.67	7.44			
6/25/2013 1:20:03 PM	8.96	7.41			
6/25/2013 1:21:03 PM	8.61	7.42			
6/25/2013 1:22:03 PM	9.16	7.32			
6/25/2013 1:23:03 PM	8.97	7.36			
6/25/2013 1:24:03 PM	8.82	7.32			
6/25/2013 1:25:03 PM	8.76	7.35			
6/25/2013 1:26:03 PM	8.73	7.49			
6/25/2013 1:27:03 PM	8.47	7.49			
6/25/2013 1:28:03 PM	8.52	7.50			
6/25/2013 1:29:03 PM	8.55	7.52			
6/25/2013 1:30:03 PM	8.60	7.52			
6/25/2013 1:31:03 PM	8.59	7.48			
6/25/2013 1:32:03 PM	8.65	7.51			
6/25/2013 1:33:03 PM	8.51	7.45			
6/25/2013 1:34:03 PM	8.50	7.51			
6/25/2013 1:35:03 PM	8.67	7.50			
6/25/2013 1:36:03 PM	8.49	7.51			
6/25/2013 1:37:03 PM	8.26	7.64			
6/25/2013 1:38:03 PM	8.10	7.76			
6/25/2013 1:39:03 PM	8.18	7.73			
6/25/2013 1:40:03 PM	8.15	7.74			
6/25/2013 1:41:03 PM	7.92	7.75			
6/25/2013 1:42:03 PM	7.87	7.77			
6/25/2013 1:43:03 PM	8.05	7.78			
6/25/2013 1:44:03 PM	8.17	7.74			
6/25/2013 1:45:03 PM	8.11	7.74			
6/25/2013 1:46:03 PM	8.15	7.71			
6/25/2013 1:47:03 PM					
6/25/2013 1:48:03 PM			Port Change		
6/25/2013 1:49:03 PM					
6/25/2013 1:50:03 PM					
6/25/2013 1:51:03 PM					
6/25/2013 1:52:03 PM					
6/25/2013 1:53:03 PM	8.19	7.66			
6/25/2013 1:54:03 PM	8.21	7.68			
6/25/2013 1:55:03 PM	8.14	7.74			
6/25/2013 1:56:03 PM	8.11	7.76			
6/25/2013 1:57:03 PM	7.86	7.73			
6/25/2013 1:58:03 PM	8.17	7.74			
6/25/2013 1:59:03 PM	8.04	7.72			
6/25/2013 2:00:03 PM	8.11	7.72			
6/25/2013 2:01:03 PM	8.10	7.71			
6/25/2013 2:02:03 PM	8.06	7.74			
6/25/2013 2:03:03 PM	8.06	7.73			
6/25/2013 2:04:03 PM	8.06	7.76			
6/25/2013 2:05:03 PM	8.32	7.74			
6/25/2013 2:06:03 PM	8.03	7.74			
6/25/2013 2:07:03 PM	8.21	7.72			
6/25/2013 2:08:03 PM	8.04	7.75			
6/25/2013 2:09:03 PM	8.03	7.77			
6/25/2013 2:10:03 PM	8.03	7.73			
6/25/2013 2:11:03 PM	8.09	7.72			
6/25/2013 2:12:03 PM	8.10	7.69			
6/25/2013 2:13:03 PM	8.06	7.73			
6/25/2013 2:14:03 PM	8.06	7.72			
6/25/2013 2:15:03 PM	8.12	7.70			
6/25/2013 2:16:03 PM	8.02	7.65			
6/25/2013 2:17:03 PM	8.22	7.70			
6/25/2013 2:18:03 PM	8.17	7.70			
6/25/2013 2:19:03 PM	8.17	7.67			
6/25/2013 2:20:03 PM	8.20	7.67			
6/25/2013 2:21:03 PM	8.16	7.67			
6/25/2013 2:22:03 PM	8.27	7.70			
Run Averages:	**8.30**	**7.63**			

South Florida Environmental Services, LLC
Uncorrected CEMS Monitoring Results
Instrumental Reference Methods - 3A, 6C, 7E and 10

Facility/Site: NEFCO / SWA Biosolids **Date:** 06/25/13
Location: West Palm Beach, FL **Start Time:** 14:50
Run No.: U1-M5-Pre2 **Stop Time:** 15:53

Date/time	O_2 ($\%_{vd}$)	CO_2 ($\%_{vd}$)			
6/25/2013 2:50:03 PM	8.24	7.60			
6/25/2013 2:51:03 PM	8.32	7.62			
6/25/2013 2:52:03 PM	8.55	7.60			
6/25/2013 2:53:03 PM	8.10	7.58			
6/25/2013 2:54:03 PM	8.54	7.61			
6/25/2013 2:55:03 PM	8.20	7.58			
6/25/2013 2:56:03 PM	8.36	7.61			
6/25/2013 2:57:03 PM	8.14	7.56			
6/25/2013 2:58:03 PM	8.30	7.58			
6/25/2013 2:59:03 PM	8.30	7.58			
6/25/2013 3:00:03 PM	8.28	7.62			
6/25/2013 3:01:03 PM	8.32	7.60			
6/25/2013 3:02:03 PM	8.25	7.60			
6/25/2013 3:03:03 PM	8.41	7.58			
6/25/2013 3:04:03 PM	8.10	7.58			
6/25/2013 3:05:03 PM	8.36	7.57			
6/25/2013 3:06:03 PM	8.23	7.63			
6/25/2013 3:07:03 PM	8.42	7.55			
6/25/2013 3:08:03 PM	8.32	7.59			
6/25/2013 3:09:03 PM	8.33	7.57			
6/25/2013 3:10:03 PM	8.32	7.59			
6/25/2013 3:11:03 PM	8.35	7.57			
6/25/2013 3:12:03 PM	8.31	7.58			
6/25/2013 3:13:03 PM	8.45	7.52			
6/25/2013 3:14:03 PM	8.34	7.58			
6/25/2013 3:15:03 PM	8.60	7.59			
6/25/2013 3:16:03 PM	8.43	7.62			
6/25/2013 3:17:03 PM	8.10	7.58			
6/25/2013 3:18:03 PM	8.24	7.59			
6/25/2013 3:19:03 PM	8.25	7.60			
6/25/2013 3:20:03 PM					
6/25/2013 3:21:03 PM			Port		
6/25/2013 3:22:03 PM			Change		
6/25/2013 3:23:03 PM					
6/25/2013 3:24:03 PM	8.58	7.54			
6/25/2013 3:25:03 PM	8.39	7.47			
6/25/2013 3:26:03 PM	8.36	7.56			
6/25/2013 3:27:03 PM	8.31	7.61			
6/25/2013 3:28:03 PM	8.10	7.69			
6/25/2013 3:29:03 PM	8.23	7.66			
6/25/2013 3:30:03 PM	8.20	7.69			
6/25/2013 3:31:03 PM	8.10	7.66			
6/25/2013 3:32:03 PM	8.28	7.66			
6/25/2013 3:33:03 PM	8.21	7.70			
6/25/2013 3:34:03 PM	8.33	7.67			
6/25/2013 3:35:03 PM	8.12	7.67			
6/25/2013 3:36:03 PM	8.04	7.67			
6/25/2013 3:37:03 PM	8.07	7.72			
6/25/2013 3:38:03 PM	8.22	7.57			
6/25/2013 3:39:03 PM	8.28	7.57			
6/25/2013 3:40:03 PM	8.21	7.59			
6/25/2013 3:41:03 PM	8.13	7.61			
6/25/2013 3:42:03 PM	8.09	7.61			
6/25/2013 3:43:03 PM	8.03	7.72			
6/25/2013 3:44:03 PM	7.97	7.67			
6/25/2013 3:45:03 PM	7.92	7.77			
6/25/2013 3:46:03 PM	8.03	7.77			
6/25/2013 3:47:03 PM	8.04	7.81			
6/25/2013 3:48:03 PM	7.98	7.77			
6/25/2013 3:49:03 PM	8.14	7.74			
6/25/2013 3:50:03 PM	8.29	7.66			
6/25/2013 3:51:03 PM	8.14	7.67			
6/25/2013 3:52:03 PM	8.15	7.62			
Run Averages:	**8.24**	**7.62**			

South Flordia Environmental Services, LLC
Uncorrected CEMS Monitoring Results
Instrumental Reference Methods - 3A, 6C, 7E and 10

Facility/Site: NEFCO / SWA Biosolids **Date:** 06/25/13
Location: West Palm Beach, FL **Start Time:** 16:15
Run No.: U1-M5-Pre3 **Stop Time:** 17:18

Date/time	O_2 (%$_{vd}$)	CO_2 (%$_{vd}$)			
6/25/2013 4:15:03 PM	10.46	6.41			
6/25/2013 4:16:03 PM	10.51	6.39			
6/25/2013 4:17:03 PM	10.49	6.37			
6/25/2013 4:18:03 PM	10.41	6.51			
6/25/2013 4:19:03 PM	10.35	6.54			
6/25/2013 4:20:03 PM	10.34	6.52			
6/25/2013 4:21:03 PM	10.31	6.55			
6/25/2013 4:22:03 PM	9.29	7.09			
6/25/2013 4:23:03 PM	10.78	6.24			
6/25/2013 4:24:03 PM	10.51	6.38			
6/25/2013 4:25:03 PM	10.18	6.59			
6/25/2013 4:26:03 PM	10.14	6.62			
6/25/2013 4:27:03 PM	10.32	6.43			
6/25/2013 4:28:03 PM	10.65	6.33			
6/25/2013 4:29:03 PM	10.66	6.41			
6/25/2013 4:30:03 PM	8.09	7.75			
6/25/2013 4:31:03 PM	7.92	7.77			
6/25/2013 4:32:03 PM	8.30	7.70			
6/25/2013 4:33:03 PM	8.24	7.70			
6/25/2013 4:34:03 PM	8.05	7.71			
6/25/2013 4:35:03 PM	8.22	7.67			
6/25/2013 4:36:03 PM	8.23	7.65			
6/25/2013 4:37:03 PM	8.52	7.53			
6/25/2013 4:38:03 PM	8.63	7.34			
6/25/2013 4:39:03 PM	10.38	6.52			
6/25/2013 4:40:03 PM	10.15	6.66			
6/25/2013 4:41:03 PM	9.97	6.64			
6/25/2013 4:42:03 PM	10.15	6.68			
6/25/2013 4:43:03 PM	10.19	6.61			
6/25/2013 4:44:03 PM	10.25	6.63			
6/25/2013 4:45:03 PM					
6/25/2013 4:46:03 PM			Port Change		
6/25/2013 4:47:03 PM					
6/25/2013 4:48:03 PM					
6/25/2013 4:49:03 PM	7.11	8.12			
6/25/2013 4:50:03 PM	7.04	8.15			
6/25/2013 4:51:03 PM	7.39	8.07			
6/25/2013 4:52:03 PM	7.52	8.10			
6/25/2013 4:53:03 PM	7.35	8.06			
6/25/2013 4:54:03 PM	7.47	8.05			
6/25/2013 4:55:03 PM	7.47	8.01			
6/25/2013 4:56:03 PM	7.45	8.01			
6/25/2013 4:57:03 PM	7.53	8.02			
6/25/2013 4:58:03 PM	7.60	8.00			
6/25/2013 4:59:03 PM	7.58	8.01			
6/25/2013 5:00:03 PM	7.50	7.99			
6/25/2013 5:01:03 PM	7.46	8.00			
6/25/2013 5:02:03 PM	7.54	8.01			
6/25/2013 5:03:03 PM	7.62	8.03			
6/25/2013 5:04:03 PM	7.45	8.00			
6/25/2013 5:05:03 PM	7.56	8.03			
6/25/2013 5:06:03 PM	7.45	8.01			
6/25/2013 5:07:03 PM	7.58	8.03			
6/25/2013 5:08:03 PM	7.36	8.00			
6/25/2013 5:09:03 PM	7.48	8.04			
6/25/2013 5:10:03 PM	7.29	8.01			
6/25/2013 5:11:03 PM	7.43	8.05			
6/25/2013 5:12:03 PM	7.81	8.01			
6/25/2013 5:13:03 PM	7.40	8.03			
6/25/2013 5:14:03 PM	7.53	8.00			
6/25/2013 5:15:03 PM	7.48	8.06			
6/25/2013 5:16:03 PM	7.62	8.02			
6/25/2013 5:17:03 PM	7.56	8.06			
Averages:	**8.60**	**7.44**			

South Florida Environmental Services, LLC
Uncorrected CEMS Monitoring Results
Instrumental Reference Methods - 3A, 6C, 7E and 10

Facility/Site: NEFCO / SWA Biosolids **Date:** 06/25/13
Location: West Palm Beach, FL **Start Time:** 17:55
Run No.: U1-M5/202-Pre4 **Stop Time:** 19:00

Date/time	O_2 ($\%_{vd}$)	CO_2 ($\%_{vd}$)			
6/25/2013 5:55:03 PM	8.40	7.60			
6/25/2013 5:56:03 PM	8.39	7.63			
6/25/2013 5:57:03 PM	8.38	7.60			
6/25/2013 5:58:03 PM	8.37	7.64			
6/25/2013 5:59:03 PM	8.39	7.58			
6/25/2013 6:00:03 PM	8.33	7.63			
6/25/2013 6:01:03 PM	8.43	7.55			
6/25/2013 6:02:03 PM	8.55	7.60			
6/25/2013 6:03:03 PM	8.40	7.54			
6/25/2013 6:04:03 PM	8.33	7.61			
6/25/2013 6:05:03 PM	8.44	7.53			
6/25/2013 6:06:03 PM	8.43	7.55			
6/25/2013 6:07:03 PM	8.47	7.52			
6/25/2013 6:08:03 PM	8.60	7.49			
6/25/2013 6:09:03 PM	8.46	7.47			
6/25/2013 6:10:03 PM	8.47	7.54			
6/25/2013 6:11:03 PM	8.66	7.51			
6/25/2013 6:12:03 PM	8.52	7.50			
6/25/2013 6:13:03 PM	8.77	7.46			
6/25/2013 6:14:03 PM	8.59	7.47			
6/25/2013 6:15:03 PM	8.70	7.50			
6/25/2013 6:16:03 PM	8.92	7.48			
6/25/2013 6:17:03 PM	8.77	7.46			
6/25/2013 6:18:03 PM	8.54	7.47			
6/25/2013 6:19:03 PM	8.56	7.44			
6/25/2013 6:20:03 PM	8.55	7.45			
6/25/2013 6:21:03 PM	8.70	7.38			
6/25/2013 6:22:03 PM	8.72	7.41			
6/25/2013 6:23:03 PM	8.63	7.45			
6/25/2013 6:24:03 PM	8.66	7.46			
6/25/2013 6:25:03 PM					
6/25/2013 6:26:03 PM					
6/25/2013 6:27:03 PM			Port Change		
6/25/2013 6:28:03 PM					
6/25/2013 6:29:03 PM					
6/25/2013 6:30:03 PM	8.92	7.28			
6/25/2013 6:31:03 PM	8.87	7.36			
6/25/2013 6:32:03 PM	8.71	7.42			
6/25/2013 6:33:03 PM	8.72	7.44			
6/25/2013 6:34:03 PM	8.65	7.47			
6/25/2013 6:35:03 PM	8.48	7.48			
6/25/2013 6:36:03 PM	8.60	7.41			
6/25/2013 6:37:03 PM	8.80	7.45			
6/25/2013 6:38:03 PM	8.52	7.51			
6/25/2013 6:39:03 PM	8.59	7.55			
6/25/2013 6:40:03 PM	8.48	7.56			
6/25/2013 6:41:03 PM	8.55	7.53			
6/25/2013 6:42:03 PM	8.51	7.50			
6/25/2013 6:43:03 PM	8.59	7.49			
6/25/2013 6:44:03 PM	8.59	7.44			
6/25/2013 6:45:03 PM	8.52	7.43			
6/25/2013 6:46:03 PM	8.52	7.46			
6/25/2013 6:47:03 PM	8.69	7.53			
6/25/2013 6:48:03 PM	8.53	7.52			
6/25/2013 6:49:03 PM	8.70	7.53			
6/25/2013 6:50:03 PM	8.65	7.49			
6/25/2013 6:51:03 PM	8.63	7.45			
6/25/2013 6:52:03 PM	8.45	7.45			
6/25/2013 6:53:03 PM	8.64	7.46			
6/25/2013 6:54:03 PM	8.60	7.49			
6/25/2013 6:55:03 PM	8.58	7.55			
6/25/2013 6:56:03 PM	8.55	7.57			
6/25/2013 6:57:03 PM	8.56	7.59			
6/25/2013 6:58:03 PM	8.57	7.54			
6/25/2013 6:59:03 PM	8.53	7.53			
Averages:	**8.57**	**7.50**			

TRAVERSE DATA SHEET

PLANT: NEFCO / SWA Biosolids
RUN #: U1- MS/202 PRE1
LOCATION: West Palm Beach, FL / Unit 1
DATE: 6/25/13
Filter No.:
Filter Tare Wt.:
Trap No.:

IMP-1 (INT)	0
IMP-2 (INT)	0
IMP-3 (INT)	100
IMP-4 (INT)	809
IMP-5 (INT)	—
IMP-6 (INT)	—
IMP-7 (INT)	—
IMP-1 (FIN)	108
IMP-2 (FIN)	81
IMP-3 (FIN)	106
IMP-4 (FIN)	816
IMP-5 (FIN)	—
IMP-6 (FIN)	—
IMP-7 (FIN)	—
Pstack	-.42
BaroPres	30.1
TEST LENGTH	60
FINAL METER	522.044
INTIAL METER	493.151
BEGIN TIME	1317
END TIME	1423

TRAVERSE POINT	DELTA P	DELTA H	DRY GAS METER IN	DRY GAS METER OUT	STACK TEMP(F)	METER READING	Box(1/2 Filter	PROBE TEMP	TRAP TEMP	IMP TEMP	VAC
A1	.21	1.0	92	92	265	—	244	245	83	65	2
2	.20		93	93	266	496.3	249	242	82	61	2
3	.21		93	93	267	499.0	248	241	81	62	2
4	.22		93	93	270	501.8	249	244	79	62	2
5	.21		93	93	270	504.6	249	246	79	63	2
6	.22		93	93	271	507.4	249	242	82	63	2
B1	.20		93	93	270	509.9	250	241	83	64	2
2	.21		93	93	272	512.1	251	249	82	58	2
3	.23		94	94	269	516.0	249	247	83	56	2
4	.21		94	94	271	518.6	250	241	84	55	2
5	.22		94	94	273	521.8	249	244	83	56	2
6	.21		93	93	274	524.2	249	241	85	57	2

Relationship	N/A	Pre Leak Check	0.015	@	15	"Hg	
Box #	4	Post Leak Check	N/A	@	N/A	"Hg	
Y	.9728	Pre Pitot Check	0.0	@	>3	"H2O	
Delta H	2.04	Post Pitot Check	0.0	@	>3	"H2O	
Box Op.	AS	Noz. ID No.	4	Probe No.	P-5-1		
Probe Op.	JJ	Noz. Diam.	.312				

Notes:
Pause test @ 1347
Restart test @

TRAVERSE DATA SHEET

PLANT: NEFCO / SWA Biosolids
RUN #: U1- M5 - Pre 2
LOCATION: West Palm Beach, FL / Unit #1
DATE: 6/25/13
Filter No.:
Filter Tare Wt.:
Trap No.: N/A

IMP-1 (INT): 100
IMP-2 (INT): 100
IMP-3 (INT): 0
IMP-4 (INT): 792.0
IMP-5 (INT): —
IMP-6 (INT): —
IMP-7 (INT): —

IMP-1 (FIN): 279
IMP-2 (FIN): 107
IMP-3 (FIN): 3
IMP-4 (FIN): 804.5
IMP-5 (FIN): —
IMP-6 (FIN): —
IMP-7 (FIN): —

Pstack: -.41
Baro. Pres.: 30.1
TEST LENGTH: 60
FINAL METER: 575.902
INITIAL METER: 527.406
BEGIN TIME: 1450
END TIME: 1553

TRAVERSE POINT	DELTA P	DELTA H	DRY GAS METER IN	DRY GAS METER OUT	STACK TEMP (F)	METER READING	[illegible] FILT	PROBE TEMP	TRAP TEMP	IMP TEMP	VAC
A 1	.16	168	92	92	251	—	248	236	N/A	65	2
2	.20	2.10	92	92	272	531.3	249	246		60	3
3	0.22	2.31	93	93	277	535.2	250	241		58	3
4	0.22	2.31	93	93	280	538.8	240	255		57	3
5	0.21	2.21	93	93	281	543.4	240	249		57	3
6	.20	2.10	93	93	281	547.6	252	237		56	3
B 1	.17	1.79	93	93	254	551.7	242	241		64	2
2	.18	1.89	93	93	260	5551	249	239		56	2
3	.21	2.21	93	93	279	559.2	249	247		56	2
4	.23	2.42	92	92	275	563.0	252	242		56	3
5	.21	2.21	92	92	275	567.9	238	246		56	3
6	.19	2.00	92	92	271	572.0	246	246		57	3

Relationship: RS
Box #: 5
Y: 0.9728
Delta H: 2.04
Box Op.: AS
Probe Op.: JJ

Pre Leak Check	0.002	@	10	"Hg
Post Leak Check	0.002	@	8	"Hg
Pre Pitot Check	0.0	@	>3	"H2O
Post Pitot Check	0.0	@	>3	"H2O

Noz. ID No.:
Probe No.: RS-1
Noz. Diam.: .351

Notes:
Pause test @ 1520
Restart test @ 1523

TRAVERSE DATA SHEET

PLANT: NEFCO / SWA Biosolids

RUN #: U1- MS - Pre 3

LOCATION: West Palm Beach, FL / Unit #1

DATE: 6/25/13

Filter No.:

Filter Tare Wt.:

Trap No.:

IMP-1 (INT): 100
IMP-2 (INT): 100
IMP-3 (INT): 0
IMP-4 (INT): 804.5
IMP-5 (INT): —
IMP-6 (INT): —
IMP-7 (INT): —

IMP-1 (FIN): 310
IMP-2 (FIN): 110
IMP-3 (FIN): 4
IMP-4 (FIN): 809.0
IMP-5 (FIN): —
IMP-6 (FIN): —
IMP-7 (FIN): —

Pstack: -.38

Baro. Press: 30.1

TEST LENGTH: 60

FINAL METER: 625 ~~652~~.923

INITIAL METER: 576.171

BEGIN TIME: 1615

END TIME: 1718

TRAVERSE POINT	DELTA P	DELTA H	DRY GAS METER IN	DRY GAS METER OUT	STACK TEMP (F)	METER READING	Back 1/2 Filter	PROBE TEMP	TRAP TEMP	IMP TEMP	VAC
A 1	.16	1.68	90	90	271	—	248	237	N/A	55	3
2	.19	2.00	90	90	276	580.1	249	239		53	3
3	.20	2.10	91	91	286	584.0	248	236		55	3
4	.23	2.42	91	91	276	588.1	249	239		54	4
5	.20	2.10	91	91	280	592.2	250	240		54	4
6	.18	1.89	91	91	271	596.3	253	243		54	4
B 1	.22	2.31	91	91	267	600.5	250	241		55	4
2	.22	2.31	91	91	270	604.6	249	248		55	4
3	.23	2.42	91	91	273	608.8	250	248		56	4
4	.23	2.42	91	91	286	613.1	250	238		57	4
5	.22	2.31	91	91	274	617.7	250	240		56	4
6	.18	1.89	91	91	275	622.0	249	244		56	4

Relationship:	10.5
Box #:	5
Y:	.9728
Delta H:	2.04
Box Op.:	AS
Probe Op.:	JJ

Pre Leak Check	0.000	@	8	"Hg
Post Leak Check	0.000	@	8	"Hg
Pre Pitot Check	0.0	@	73	"H2O
Post Pitot Check	0.0	@	73	"H2O
Noz. ID No.		Probe No.	P-5-1	
Noz. Diam.	.351			

Notes:
Pause test @ 1645
Restart test @ 1648

TRAVERSE DATA SHEET

PLANT: NEFCO / SWA Biosolids
RUN #: U1 - MS/202 - PRE 4
LOCATION: West Palm Beach, FL / Unit # 1
DATE: 6/25/13
Filter No.:
Filter Tare Wt.:
Trap No.: N/A

IMP-1 (INT): 0
IMP-2 (INT): 0
IMP-3 (INT): 100
IMP-4 (INT): 789
IMP-5 (INT): —
IMP-6 (INT): —
IMP-7 (INT): —

IMP-1 (FIN): 130
IMP-2 (FIN): 12
IMP-3 (FIN): 108
IMP-4 (FIN): 791
IMP-5 (FIN): —
IMP-6 (FIN): —
IMP-7 (FIN): —

Pstack: -.40
Baro. Pres.: 30.1
TEST LENGTH: 60
FINAL METER: 659.434
INTIAL METER: 626.169
BEGIN TIME: 1755
END TIME: 1900

TRAVERSE POINT	DELTA P	DELTA H	DRY GAS METER IN	DRY GAS METER OUT	STACK TEMP (F)	METER READING	FILTER BOX	PROBE TEMP	DRY FILTER	IMP TEMP	VAC
A1	.24	1.0	87	87	264	—	240	241	81	66	2
2	.26		87	87	278	629.0	250	244	77	64	2
3	.28		86	86	276	631.2	248	246	75	62	2
4	.27		86	86	284	634.5	249	245	75	62	2
5	.28		86	86	277	637.6	250	241	75	60	2
6	.28		87	87	288	640.3	248	251	76	61	2
B1	.28		86	86	274	642.9	248	249	80	64	2
2	.30		86	86	276	645.6	248	243	78	57	2
3	.29		86	86	270	647.6	249	248	77	58	2
4	.30		86	86	279	250.1	249	244	78	59	2
5	.28		86	86	275	653.7	250	249	78	60	2
6	.26		87	87	290	656.6	247	242	80	60	2

Relationship	N/A	Pre Leak Check	0,004	@	10	"Hg
Box #	5	Post Leak Check	N/A	@		"Hg
Y	.9928	Pre Pitot Check	0.0	@	73	"H2O
Delta H	2.04	Post Pitot Check	0.0	@	73	"H2O
Box Op.	AS	Noz. ID No.	4	Probe No.	P-5-1	
Probe Op.	JJ	Noz. Diam.	.312			

Notes:

Client/Site: NEFCO /SWA Biosolids

Source: RTO #2 & #1

RM Response Time: Upscale (seconds): 20

Operator: Andrew Seaha

Date: 6/25/13

Downscale (seconds): 20

Note: System Response Time is the longer of the upscale and downscale response times. Performed during initial zero and bias checks:

Analyzer Calibration Error (ACE) – Reference Method

Pollutant/Diluent	Low		Mid		High/Full Scale (CS)	
	Cylinder Value (C_v)	Analyzer Response (C_{DIR})	Cylinder Value (C_v)	Analyzer Response (C_{DIR})	Cylinder Value (C_v)	Analyzer Response (C_{DIR})
Oxygen	0.00	0.10	10.49	10.50	20.42	20.43
Carbon Dioxide	0.00	0.21	9.45	9.41	18.69	18.70

<u>**Range selected for analyzer operation:**</u>

O_2 (%)	CO_2 (%)	CO (ppm)	NO_x (ppm)	SO_2 (ppm)
25	20	—	—	—

Protocol Gases Used During Program:

Cylinder No.	Diluent/Pollutant Concentrations(s)	Expiration Date
CC421863	20.42 O_2 / 18.69 CO_2	11/2/20
CC421656	10.49 O_2 / 9.45 CO_2	11/2/20

Analyzer Calibration Error (ACE) Acceptance Criteria: ≤ ± 2%

Where: ACE = $[(C_{Dir} - C_v)/CS] * 100\%$

Client/Site: NEFCO / SWA Biosolids

Source: RTO #1 Stack

Operator: A. Seah

Date: 6/25/13

Run Number: U1-M5/202 - Pre1

Start Time: 1317

End Time: 1423

System Bias (SB)/Drift (D) Assessments – Reference Method

Pollutant/Diluent	Start Zero		Start Span (C_{MA})		Final Zero		Final Span (C_{MA})	
	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)
Oxygen	0.00	0.09	10.49	10.51	0.00	0.05	10.49	10.54
Carbon Dioxide	0.00	0.14	9.45	9.42	0.00	0.12	9.45	9.40

O_2 (%)	CO_2 (%)	CO (ppm)	NO_x (ppm)	SO_2 (ppm)
25	20	–	–	–

Sampling System Bias (SB) Criteria: ≤± 5% of span for zero and upscale gas, where:

Where: $SB = [(C_s - C_{Dir})/CS] * 100\%$

Zero and Calibration Drift (D) Criteria: ≤± 3% of span, where

$D = |SB_{final} - SB_i|$

Client/Site: NEFCO / SWA Biosolids

Source: RTO #1 Stack

Operator: A Seche

Date: 4/25/13

Run Number: U1-MS/202 - Pre 2

Start Time: 1450

End Time: 1553

System Bias (SB)/Drift (D) Assessments – Reference Method

Pollutant/Diluent	Start Zero		Start Span (C_{MA})		Final Zero		Final Span (C_{MA})	
	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)
Oxygen	0.00	0.05	10.49	10.54	0.00	0.09	10.49	10.55
Carbon Dioxide	0.00	0.12	9.45	9.40	0.00	0.13	9.45	9.38

O_2 (%)	CO_2 (%)	CO (ppm)	NO_x (ppm)	SO_2 (ppm)
25	20	-	-	-

Sampling System Bias (SB) Criteria: ≤± 5% of span for zero and upscale gas, where:

Where: $SB = [(C_s - C_{Dir})/CS] * 100\%$

Zero and Calibration Drift (D) Criteria: ≤± 3% of span, where

$D = |SB_{final} - SB_i|$

Client/Site: NEFCo / SWA Biosolids

Source: RTO #1 Stack

Operator: A. Seale

Date: 6/25/13

Run Number: U1 - M5 - Pre 3

Start Time: 1615

End Time: 1718

System Bias (SB)/Drift (D) Assessments – Reference Method

Pollutant/Diluent	Start Zero		Start Span (C_{MA})		Final Zero		Final Span (C_{MA})	
	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)
Oxygen	0.00	0.09	10.49	10.55	0.00	0.10	10.49	10.60
Carbon Dioxide	0.00	0.13	9.45	9.38	0.00	0.09	9.45	9.36

O_2 (%)	CO_2 (%)	CO (ppm)	NO_x (ppm)	SO_2 (ppm)
25	20	—	—	—

Sampling System Bias (SB) Criteria: ≤± 5% of span for zero and upscale gas, where:

Where: $SB = [(C_s - C_{Dir})/CS] * 100\%$

Zero and Calibration Drift (D) Criteria: ≤± 3% of span, where

$D = |SB_{final} - SB_i|$

Client/Site: NEFCO / SWA Biosolids

Source: RTO #1 Stack

Operator: A. Seake

Date: 6/25/13

Run Number: R1-MS-Pre 4

Start Time: 1755

End Time: 1900

System Bias (SB)/Drift (D) Assessments – Reference Method

Pollutant/Diluent	Start Zero		Start Span (C_{MA})		Final Zero		Final Span (C_{MA})	
	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)
Oxygen	0.00	0.10	10.49	10.60	0.00	0.10	10.49	10.58
Carbon Dioxide	0.00	0.09	9.45	9.36	0.00	0.11	9.45	9.40

O_2 (%)	CO_2 (%)	CO (ppm)	NO_x (ppm)	SO_2 (ppm)
25	20	–	–	–

Sampling System Bias (SB) Criteria: ≤± 5% of span for zero and upscale gas, where:

Where: $SB = [(C_s - C_{Dir})/CS] * 100\%$

Zero and Calibration Drift (D) Criteria: ≤± 3% of span, where

$D = |SB_{final} - SB_i|$

A2

RTO / Dryer No. 2 "Tuning" Emissions Data (6/24/13 & 6/25/13)

PARTICULATE EMISSION CALCULATION SHEET

PLANT: **NEFCO / SWA Biosolids** RUN # : **U2-M5-Pre1**
LOCATION: **West Palm Beach, FL** DATE: **24-Jun-13**

			BLANKS	
	FILTER	**BEAKER**	**FILTER**	**BEAKER**
NUMBER :	1425	03-12	1445	B5-48
FINAL :	0.4399	70.7995	0.4408	67.0280
TARE :	0.4391	70.7983	0.4408	67.0279
NET :	0.0008	0.0012	0.0000	0.0001

VOLUME BLANK RINSE 130
VOLUME OF RINSE 120

Mn - Ar = Mn

Mn = 2.000
Ar = 0.092

Mn = 2.000 not blank corr

O2 = 7.85
CO2 = 7.97
Vs = 25.09 ft/sec
As = 7.07 ft2
Vm std = 43.02 DSCF

Qs =	3600(1-Bwo)(Vs)(As)(17.64)(Ps/Ts)	=	417801	DSCFH
	3600 (Vs) (As)	=	638389	ACFH
	ACFH / 60	=	10640	ACFM
Cs =	(2.205 E-6) (Mn) / (Vm Std)	=	1.02518E-07	LB/SCF
Cs' =	0.0154 (Mn) /(VmStd)	=	0.0007	GRAINS/SCF
Cs' =	Mn / VmStd	=	1.64	mg/dscm
Cs' @ 7% O2 =	Mn / VmStd x 20.9-7/20.9-O2%	=	1.75	mg/dscm @7% O2
PMR =	Qs x Cs	=	0.043	LB/HR

PARTICULATE EMISSION CALCULATION SHEET

PLANT	**NEFCO / SWA Biosolids**	RUN # :	**U2-M5-Pre2**
LOCATION	**West Palm Beach, FL**	DATE :	**24-Jun-13**

			BLANKS	
	FILTER	**BEAKER**	**FILTER**	**BEAKER**
NUMBER :	1426	411	1445	B5-48
FINAL :	0.4496	67.5175	0.4408	67.0280
TARE :	0.4473	67.5169	0.4408	67.0279
NET :	0.0023	0.0006	0.0000	0.0001

VOLUME BLANK RINSE 130

VOLUME OF RINSE 110

Mn - Ar = Mn

Mn = 2.900

Ar = 0.085

Mn = 2.900 not blank corr

O2 = 7.68

CO2 = 8.11

Vs = 25.66 ft/sec

As = 7.07 ft2

Vm std= 41.47 DSCF

Qs	= 3600(1-Bwo)(Vs)(As)(17.64)(Ps/Ts)	=	415073	DSCFH
	3600 (Vs) (As)	=	652916.0411	ACFH
	ACFH / 60	=	10882	ACFM
Cs	= (2.205 E-6) (Mn) / (Vm Std)	=	1.54179E-07	LB/SCF
Cs'	= 0.0154 (Mn) /(VmSTD)	=	0.0011	GRAINS/SCF
Cs'	= Mn / VmStd	=	2.47	mg/dscm
Cs' @ 7% O2	= Mn / VmStd x 20.9-7/20.9-O2%	=	2.60	mg/dscm @7% O2
PMR	= Qs x Cs	=	0.064	LB/HR

PARTICULATE EMISSION CALCULATION SHEET

PLANT: **NEFCO / SWA Biosolids** RUN # : **U2-M5/202-Pre3**
LOCATION: **West Palm Beach, FL** DATE: **25-Jun-13**

			BLANKS	
	FILTER	**BEAKER**	**FILTER**	**BEAKER**
NUMBER :	PS1	7C	1445	B5-48
FINAL :	1.3880	69.9648	0.4408	67.0280
TARE :	1.3865	69.9632	0.4408	67.0279
NET :	0.0015	0.0016	0.0000	0.0001
		VOLUME BLANK RINSE		130
		VOLUME OF RINSE		55

Mn - Ar = Mn
Mn = 3.100
Ar = 0.042
Mn = 3.100 not blank corr

O2 = 8.43
CO2 = 7.72
Vs = 27.00 ft/sec
As = 7.07 ft2
Vm std = 31.30 DSCF

Qs = 3600(1-Bwo)(Vs)(As)(17.64)(Ps/Ts) = 439854 DSCFH
3600 (Vs) (As) = 687193 ACFH
ACFH / 60 = 11453 ACFM

Cs = (2.205 E-6) (Mn) / (Vm Std) = 2.18376E-07 LB/SCF

Cs' = 0.0154 (Mn) /(VmStd) = 0.0015 GRAINS/SCF

Cs' = Mn / VmStd = 3.50 mg/dscm

Cs' @ 7% O2 = Mn / VmStd x 20.9-7/20.9-O2% = 3.90 mg/dscm @7% O2

PMR = Qs x Cs = 0.096 LB/HR

PARTICULATE EMISSION CALCULATION SHEET

PLANT	**NEFCO / SWA Biosolids**	RUN # :	**U2-M5/202-Pre4**
LOCATION	**West Palm Beach, FL**	DATE :	**25-Jun-13**

			BLANKS	
	FILTER	**BEAKER**	**FILTER**	**BEAKER**
NUMBER :	PS2	BK5	1445	B5-48
FINAL :	1.3997	67.1995	0.4408	67.0280
TARE :	1.3984	67.1970	0.4408	67.0279
NET :	0.0013	0.0025	0.0000	0.0001
		VOLUME BLANK RINSE		130
		VOLUME OF RINSE		55

Mn - Ar = Mn

Mn = 3.800

Ar = 0.042

Mn = 3.800 not blank corr

O2 = 9.07

CO2 = 7.32

Vs = 30.28 ft/sec

As = 7.07 ft2

Vm std= 30.20 DSCF

Qs = 3600(1-Bwo)(Vs)(As)(17.64)(Ps/Ts) = 461438 DSCFH

3600 (Vs) (As) = 770500.6962 ACFH

ACFH / 60 = 12842 ACFM

Cs = (2.205 E-6) (Mn) / (Vm Std) = 2.77424E-07 LB/SCF

Cs' = 0.0154 (Mn) /(VmSTD) = 0.0019 GRAINS/SCF

Cs' = Mn / VmStd = 4.44 mg/dscm

Cs' @ 7% O2 = Mn / VmStd x 20.9-7/20.9-O2% = 5.22 mg/dscm @7% O2

PMR = Qs x Cs = 0.128 LB/HR

Particulate Calculation Sheet - Back Half (Condensible)

Facility/Site: NEFCO / SWA Biosolids
Source: Unit No. 2
Run No.: U2-M5/202-Pre3
Date: 25-Jun-13

Lab ID:

O_2 = 8.43
CO_2 = 7.72
Vs = 27.00 ft/sec
As = 7.07 ft^2
Vm std = 31.30 DSCF

Fractional Weights:

Inorganic (mg):	13.0
Organic (mg):	6.0
Total Gain (mg)	19.0

Qs	=	3600(1-Bwo)(Vs)(As)(17.64)(Ps/Ts)	=	439,854 DSCFH
		3600 (Vs) (As)	=	687,193 ACFH
		ACFH / 60	=	11,453 ACFM
Cs	=	(2.205 E-6) (Mn) / (Vm Std)	=	1.33843E-06 LB/SCF
Cs'	=	0.0154 (Mn) /(VmStd)	=	0.0093 GRAINS/SCF
PMR	=	Qs x Cs	=	0.589 LB/HR

Particulate Calculation Sheet - Back Half (Condensible)

Facility/Site:	NEFCO / SWA Biosolids	Run No.:	U2-M5/202-Pre4
Source:	Unit No. 2	Date:	25-Jun-13

Lab ID:

Fractional Weights:

Inorganic (mg):	18.0
Organic (mg):	12.0
Total Gain (mg)	30.0

O_2 = 9.07

CO_2 = 7.32

Vs = 30.28 ft/sec

As = 7.07 ft^2

Vm std = 30.20 DSCF

Qs	=	3600 (1-Bwo)(Vs)(As)(17.64)(Ps/Ts) =	=	461,438	DSCFH
		3600 (Vs) (As)	=	770,501	ACFH
		ACFH / 60	=	12,842	ACFM
Cs	=	(2.205 E-6) (Mn) / (Vm Std)	=	2.19019E-06	LB/SCF
Cs'	=	0.0154 (Mn) /(VmSTD)	=	0.0153	GRAINS/SCF
PMR	=	Qs x Cs	=	1.011	LB/HR

INPUT DATA SHEET

PLANT:	NEFCO / SWA Biosolids	RUN # :	U2-M5-Pre1
LOCATION:	West Palm Beach, FL	DATE :	24-Jun-13

As (SQFT) :	7.069
Dn (INCHES)	0.351
PITOT COEFFICIENT:	0.84
IMP-1 (INT) :	100
IMP-2 (INT) :	100
IMP-3 (INT) :	0
IMP-4 (INT) :	794.0
IMP-1 (FIN) :	245
IMP-2 (FIN) :	113
IMP-3 (FIN) :	1
IMP-4 (FIN) :	801.0
% CO2 (OUT):	7.97
% O2 (OUT) :	7.85
% CO (OUT) :	0
Pbar	30.1
Pstack	-0.40
NUMBER OF POINTS	12
TEST LENGTH	60
FINAL METER	378.912
INTIAL METER	333.565
BEGIN TIME	17:18
END TIME	18:23

TRAVERSE POINT	VELOCITY HEAD	SQUARE ROOT	DELTA H	DRY GAS METER IN	OUT	STACK TEMP (F)
A1	0.13	0.36	1.64	87	87	217
2	0.14	0.37	1.76	87	87	219
3	0.14	0.37	1.76	87	87	223
4	0.16	0.40	2.02	87	87	229
5	0.15	0.39	1.89	87	87	226
6	0.15	0.39	1.89	87	87	227
B1	0.12	0.35	1.51	87	87	220
2	0.14	0.37	1.76	87	87	224
3	0.16	0.40	2.02	87	87	233
4	0.17	0.41	2.14	87	87	229
5	0.17	0.41	2.14	87	87	235
6	0.16	0.40	2.02	87	87	229
AVERAGE:	0.15	0.39	1.88	87.0	87.0	225.9

INPUT DATA SHEET

PLANT : NEFCO / SWA Biosolids — RUN # : U2-M5-Pre2

LOCATION : West Palm Beach, FL — DATE : 24-Jun-13

As (SQFT) :	7.069
Dn (INCHES)	0.351
PITOT COEFFICIENT:	0.84
IMP-1 (INT) :	100
IMP-2 (INT) :	100
IMP-3 (INT) :	0
IMP-4 (INT) :	794.5
IMP-1 (FIN) :	262
IMP-2 (FIN) :	106
IMP-3 (FIN) :	4
IMP-4 (FIN) :	800.5
% CO2 (OUT):	8.11
% O2 (OUT) :	7.68
% CO (OUT) :	0
Pbar	30.1
Pstack	-0.40
NUMBER OF POINTS	12
TEST LENGTH	60
FINAL METER	423.903
INTIAL METER	380.308
BEGIN TIME	18:54
END TIME	20:03

TRAVERSE POINT	VELOCITY HEAD	SQUARE ROOT	DELTA H	DRY GAS METER IN	DRY GAS METER OUT	STACK TEMP (F)
A1	0.14	0.37	1.54	85	85	231
2	0.16	0.40	1.76	85	85	231
3	0.16	0.40	1.76	85	85	229
4	0.16	0.40	1.76	86	86	240
5	0.16	0.40	1.76	86	86	234
6	0.15	0.39	1.65	85	85	236
B1	0.11	0.33	1.21	85	85	234
2	0.15	0.39	1.65	85	85	237
3	0.16	0.40	1.76	85	85	234
4	0.16	0.40	1.76	85	85	234
5	0.17	0.41	1.87	85	85	235
6	0.16	0.40	1.76	85	85	235
AVERAGE:	0.15	0.39	1.69	85.2	85.2	234.2

INPUT DATA SHEET

PLANT: NEFCO / SWA Biosolids
RUN # : U2-M5/202-Pre3
LOCATION: West Palm Beach, FL
DATE : 25-Jun-13

As (SQFT) :	7.069
Dn (INCHES)	0.312
PITOT COEFFICIENT:	0.84
IMP-1 (INT) :	0
IMP-2 (INT) :	0
IMP-3 (INT) :	100
IMP-4 (INT) :	800.0
IMP-1 (FIN) :	106
IMP-2 (FIN) :	1
IMP-3 (FIN) :	108
IMP-4 (FIN) :	808.0
% CO2 (OUT):	7.72
% O2 (OUT) :	8.43
% CO (OUT) :	0
Pbar	30.1
Pstack	-0.42
NUMBER OF POINTS	12
TEST LENGTH	60
FINAL METER	458.203
INTIAL METER	424.838
BEGIN TIME	9:15
END TIME	10:22

TRAVERSE POINT	VELOCITY HEAD	SQUARE ROOT	DELTA H	DRY GAS METER IN	DRY GAS METER OUT	STACK TEMP (F)
A1	0.14	0.37	1.00	94	94	239
2	0.15	0.39	1.00	93	93	233
3	0.16	0.40	1.00	93	93	240
4	0.17	0.41	1.00	92	92	236
5	0.17	0.41	1.00	92	92	238
6	0.18	0.42	1.00	92	92	242
B1	0.16	0.40	1.00	90	90	234
2	0.18	0.42	1.00	91	91	241
3	0.20	0.45	1.00	91	91	244
4	0.17	0.41	1.00	91	91	242
5	0.17	0.41	1.00	92	92	239
6	0.18	0.42	1.00	92	92	244
AVERAGE:	**0.17**	**0.41**	**1.00**	**91.9**	**91.9**	**239.3**

INPUT DATA SHEET

PLANT : NEFCO / SWA Biosolids
RUN # : U2-M5/202-Pre4
LOCATION : West Palm Beach, FL
DATE : 25-Jun-13

As (SQFT) :	7.069
Dn (INCHES)	0.312
PITOT COEFFICIENT:	0.84
IMP-1 (INT) :	0
IMP-2 (INT) :	0
IMP-3 (INT) :	100
IMP-4 (INT) :	778.0
IMP-1 (FIN) :	149
IMP-2 (FIN) :	1
IMP-3 (FIN) :	106
IMP-4 (FIN) :	784.0
% CO2 (OUT):	7.32
% O2 (OUT) :	9.07
% CO (OUT) :	0
Pbar	30.1
Pstack	-0.41
NUMBER OF POINTS	12
TEST LENGTH	60
FINAL METER	492.724
INTIAL METER	460.501
BEGIN TIME	10:55
END TIME	12:04

TRAVERSE POINT	VELOCITY HEAD	SQUARE ROOT	DELTA H	DRY GAS METER IN	DRY GAS METER OUT	STACK TEMP (F)
A1	0.19	0.44	1.00	90	90	242
2	0.19	0.44	1.00	91	91	245
3	0.20	0.45	1.00	91	91	252
4	0.20	0.45	1.00	92	92	254
5	0.21	0.46	1.00	92	92	245
6	0.20	0.45	1.00	92	92	248
B1	0.21	0.46	1.00	93	93	244
2	0.20	0.45	1.00	93	93	243
3	0.21	0.46	1.00	93	93	242
4	0.21	0.46	1.00	94	94	249
5	0.22	0.47	1.00	94	94	252
6	0.23	0.48	1.00	94	94	250
AVERAGE:	**0.21**	**0.45**	**1.00**	**92.4**	**92.4**	**247.2**

ISOKINETIC CALCULATION SHEET

PLANT : **NEFCO / SWA Biosolids** RUN # : **U2-M5-Pre1**
LOCATION : **West Palm Beach, FL** DATE : **24-Jun-13**

Ts (°F) =	225.9	% CO2 =	7.97	Vm (CF) =	45.347
Ts (°R) =	685.9	% O2 =	7.85	DELTA H (ABS) =	30.24
Tm (°F) =	87.0	% CO =	0	Ps (ABS) =	30.07
Tm (°R) =	547.0	% N2 =	84.17	SQRT DELTA P =	0.3857
VI (TOT) =	166.0	Cp =	0.84	Y =	0.9728
VI (adj) =	NA	TIME =	60	An =	0.000672

Vm std =	$\frac{\text{17.64 (Vm)(Y)(DELTA H ABS)}}{\text{(Tm)}}$	=	43.017 DSCF
Vw std =	.04707 (VI TOT)	=	7.814 CF
Bwo =	Vw std / (Vw std) + (Vm std)	=	0.154
Bwo =	by steam tables	=	NA
1 - Bwo =	1 - Bwo	=	0.846
Md (DRY)=	0.44 (% CO2) + 0.32 (% O2) + 0.28 (% CO) + 0.28 (% N2)	=	29.589 LB/LB MOLE
Ms (WET)=	MD (1-Bwo) + 18 (Bwo)	=	27.808 LB/LB MOLE
G =	SQRT (Ts/Ps/Ms)	=	0.906
Vs =	85.49 (Cp) (G) (SQRT DELTA P)	=	25.087 FPS
Qs =	3600 (1-Bwo)(Vs)(As)(17.64)(Ps/Ts)	=	417801 DSCFH
% ISO =	$\frac{\text{100 (Ts) (Vm std) (Pstd)}}{\text{60 (Tstd) (Vs) (Time) (An) (Ps) (1-Bwo)}}$	=	108.3

ISOKINETIC CALCULATION SHEET

PLANT : **NEFCO / SWA Biosolids** RUN # : **U2-M5-Pre2**
LOCATION : **West Palm Beach, FL** (example) **24-Jun-13**

Ts (°F) =	234.2	% CO2 =	8.11	Vm (CF) =	43.595
Ts (°R) =	694.2	% O2 =	7.68	DELTA H (ABS) =	30.22
Tm (°F) =	85.2	% CO =	0	Ps (ABS) =	30.07
Tm (°R) =	545.2	% N2 =	84.21	SQRT DELTA P =	0.3911
Vl (TOT) =	178.0	Cp =	0.84	Y =	0.9728
Vl (adj) =	NA	TIME =	60	An =	0.000672

Vm std = $\frac{\text{17.64 (Vm)(Y)(DELTA H ABS)}}{\text{(Tm)}}$ = 41.475 DSCF

Vw std = .04707 (Vl TOT) = 8.378 CF

Bwo = Vw std / (Vw std) + (Vm std) = 0.168

Bwo = by steam tables = NA

1 - Bwo = 1 - Bwo = 0.832

Ms (WET)= 0.44 (% CO2) +
0.32 (% O2) +
0.28 (% CO) +
0.28 (% N2) = 29.604 LB/LB MOLE

Ms (WET)= MD (1-Bwo) + 18 (Bwo) = 27.654 LB/LB MOLE

G = SQRT (Ts/Ps/Ms) = 0.914

Vs = 85.49 (Cp) (G) (SQRT DELTA P) = 25.658 FPS

Qs = 3600 (1-Bwo)(Vs)(As)(17.64)(Ps/Ts) = 415073 DSCFH

% ISO = $\frac{\text{100 (Ts) (Vm std) (Pstd)}}{\text{60 (Tstd) (Vs) (Time) (An) (Ps) (1-Bwo)}}$ = 105.1

ISOKINETIC CALCULATION SHEET

PLANT : **NEFCO / SWA Biosolids** RUN # : **U2-M5/202-Pre3**
LOCATION : **West Palm Beach, FL** DATE : **25-Jun-13**

Ts (°F) =	239.3	% CO2 =	7.72	Vm (CF) =	33.365
Ts (°R) =	699.3	% O2 =	8.43	DELTA H (ABS) =	30.17
Tm (°F) =	91.9	% CO =	0	Ps (ABS) =	30.07
Tm (°R) =	551.9	% N2 =	83.85	SQRT DELTA P =	0.4109
Vl (TOT) =	123.0	Cp =	0.84	Y =	0.9728
Vl (adj) =	NA	TIME =	60	An =	0.000531

Vm std = $\frac{17.64\ (Vm)(Y)(DELTA\ H\ ABS)}{(Tm)}$ = 31.302 DSCF

Vw std = .04707 (Vl TOT) = 5.790 CF

Bwo = Vw std / (Vw std) + (Vm std) = 0.156

Bwo = by steam tables = NA

1 - Bwo = 1 - Bwo = 0.844

Md (DRY)= 0.44 (% CO2) + 0.32 (% O2) + 0.28 (% CO) + 0.28 (% N2) = 29.573 LB/LB MOLE

Ms (WET)= MD (1-Bwo) + 18 (Bwo) = 27.767 LB/LB MOLE

G = SQRT (Ts/Ps/Ms) = 0.915

Vs = 85.49 (Cp) (G) (SQRT DELTA P) = 27.005 FPS

Qs = 3600 (1-Bwo)(Vs)(As)(17.64)(Ps/Ts) = 439854 DSCFH

% ISO = $\frac{100\ (Ts)\ (Vm\ std)\ (Pstd)}{60\ (Tstd)\ (\ Vs\ )\ (Time)\ (\ An)\ (Ps)\ (1\text{-}Bwo)}$ = 94.7

ISOKINETIC CALCULATION SHEET

PLANT : **NEFCO / SWA Biosolids** RUN # : **U2-M5/202-Pre4**
LOCATION : **West Palm Beach, FL** (example) **25-Jun-13**

Ts (°F) =	247.2	% CO2 =	7.32	Vm (CF) =	32.223
Ts (°R) =	707.2	% O2 =	9.07	DELTA H (ABS) =	30.17
Tm (°F) =	92.4	% CO =	0	Ps (ABS) =	30.07
Tm (°R) =	552.4	% N2 =	83.61	SQRT DELTA P =	0.4535
Vl (TOT) =	162.0	Cp =	0.84	Y =	0.9728
Vl (adj) =	NA	TIME =	60	An =	0.000531

Vm std = $\frac{17.64\ (Vm)(Y)(\text{DELTA H ABS})}{(Tm)}$ = 30.203 DSCF

Vw std = .04707 (Vl TOT) = 7.625 CF

Bwo = Vw std / (Vw std) + (Vm std) = 0.202

Bwo = by steam tables = NA

1 - Bwo = 1 - Bwo = 0.798

Ms (WET)= 0.44 (% CO2) +
0.32 (% O2) +
0.28 (% CO) +
0.28 (% N2) = 29.533 LB/LB MOLE

Ms (WET)= MD (1-Bwo) + 18 (Bwo) = 27.208 LB/LB MOLE

G = SQRT (Ts/Ps/Ms) = 0.930

Vs = 85.49 (Cp) (G) (SQRT DELTA P) = 30.279 FPS

Qs = 3600 (1-Bwo)(Vs)(As)(17.64)(Ps/Ts) = 461438 DSCFH

% ISO = $\frac{100\ (Ts)\ (Vm\ std)\ (Pstd)}{60\ (Tstd)\ (\ Vs\ )\ (Time)\ (\ An)\ (Ps)\ (1-Bwo)}$ = 87.1

Analyzer Calibrations

PLANT :	NEFCO / SWA Biosolids	DATE :	25-Jun-13
LOCATION :	West Palm Beach, FL		

Diluent/Pollutant	O_2	CO_2			
Units	%	%			
Monitor Range Selected	25	20			
Monitor Range (Effective, per Method)	20.42	18.69			
--- Low Level Analyzer Calibration Error ---					
Cylinder Value ($C_{v,Low}$)	0.00	0.00			
Analyzer Response ($C_{Dir,Low}$)	0.10	0.21			
Analyzer Calibration Error ($ACE_{,Low}$)	0.49	1.12			
Calibration Status (Pass/Fail)	Pass	Pass			
--- Mid Level Analyzer Calibration Error ---					
Cylinder Value ($C_{v,Mid}$)	10.49	9.45			
Analyzer Response ($C_{Dir,Mid}$)	10.50	9.41			
Analyzer Calibration Error ($ACE_{,Mid}$)	0.05	-0.21			
Calibration Status (Pass/Fail)	Pass	Pass			
--- High Level Analyzer Calibration Error ---					
Cylinder Value ($C_{v,High}$)	20.42	18.69			
Analzyer Response ($C_{Dir,High}$)	20.43	18.70			
Analyzer Calibration Error ($ACE_{,High}$)	0.05	0.05			
Calibration Status (Pass/Fail)	Pass	Pass			
--- Cylinder Gas Selected for Bias Checks ---					
Use Mid (M) or High (H) Span	M	M			
ZERO	0.10	0.21			
SPAN	10.5	9.41			
--- Mid Level Gas Range Assessment ---					
Cylinder Value (Mid)	10.49	9.45			
Cylinder Value (High/Span)	20.42	18.69			
Percentage of Span (%)	51.4	50.6			
Assessment Status (Pass/Fail)	Pass	Pass			

CEMS Calibrations and Calculations Sheet

PLANT : NEFCO / SWA Biosolids
LOCATION : West Palm Beach, FL
RUN # : U2-M5/202-Pre3
DATE : 25-Jun-13

	GAS
START TIME :	9:15
END TIME :	10:22

Diluent/Pollutant:	O_2 (%)	CO_2 (%)
Instrument Span =	20.42	18.69
Analyzer Zero Response =	0.10	0.21
Analyzer Span Response =	10.50	9.41
Initial Sytem Zero Response =	0.05	0.11
Final System Zero Response =	0.11	0.10
Average Zero Response (C_o) =	0.08	0.11
Initial Sytem Span Response =	10.50	9.41
Final System Span Response =	10.52	9.39
Average Span Response (C_m) =	10.51	9.40
Calibration gas values (C_{ma}) =	10.49	9.45
System Bias and Drift Calculations		
Initial Zero Bias (SB_i) =	0.24	0.54
Final Zero Bias (SB_{final}) =	0.05	0.59
Zero Drift (D) =	0.29	0.05
Initial Span Bias (SB_i) =	0.00	0.00
Final Span Bias (SB_{final}) =	0.10	0.11
Span Drift (D) =	0.10	0.11
Uncorrected Ave. ($C_{\overline{Avg}}$) =	8.46	7.70
Corrected Ave.=C_{gas} = ($C_{\overline{Avg}}$-C_o)(C_{ma}/(C_m-C_o)) =	8.43	7.72

PLANT DATA

CEMS Calibrations and Calculations Sheet

PLANT : NEFCO / SWA Biosolids
LOCATION : West Palm Beach, FL
RUN # : U2-M5/202-Pre4
DATE : 25-Jun-13

	GAS
START TIME :	10:55
END TIME :	12:04

Diluent/Pollutant:	O_2 (%)	CO_2 (%)
Operating Range =	20.42	18.69
Analyzer Zero Response =	0.10	0.21
Analyzer Span Response =	10.50	9.41
Sytem Zero Response (Initial) =	0.11	0.10
System Zero Response (Final) =	0.09	0.14
Average Zero Response (C_o) =	0.10	0.12
Sytem Span Response (Initial) =	10.52	9.39
System Span Response (Final) =	10.51	9.42
Average Span Response (C_m) =	10.52	9.41
Calibration gas values (C_{ma}) =	10.49	9.45
System Bias and Drift Calculations:		
Initial Zero Bias (SB_i) =	0.05	0.59
Final Zero Bias (SB_{final}) =	0.05	0.37
Zero Drift (D) =	0.10	0.21
Initial Span Bias (SB_i) =	0.10	0.11
Final Span Bias (SB_{final}) =	0.05	0.05
Span Drift (D) =	0.05	0.16
Uncorrected Ave. ($C_{\overline{Avg}}$) =	9.11	7.31
Corrected Ave.=C_{gas} = $(C_{\overline{Avg}}-C_o)(C_{ma}/(C_m-C_o))$ =	9.07	7.32

PLANT DATA

Analyzer Calibrations

PLANT :	NEFCO / SWA Biosolids	DATE :	24-Jun-13
LOCATION :	West Palm Beach, FL		

Diluent/Pollutant	O_2	CO_2			
Units	%	%			
Monitor Range Selected	25	20			
Monitor Range (Effective, per Method)	20.42	18.69			
--- Low Level Analyzer Calibration Error ---					
Cylinder Value ($C_{v,Low}$)	0.00	0.00			
Analyzer Response ($C_{Dir,Low}$)	0.11	0.05			
Analyzer Calibration Error ($ACE_{,Low)}$)	0.54	0.27			
Calibration Status (Pass/Fail)	Pass	Pass			
--- Mid Level Analyzer Calibration Error ---					
Cylinder Value ($C_{v,Mid}$)	10.49	9.45			
Analyzer Response ($C_{Dir,Mid}$)	10.53	9.40			
Analyzer Calibration Error ($ACE_{,Mid}$)	0.20	-0.27			
Calibration Status (Pass/Fail)	Pass	Pass			
--- High Level Analyzer Calibration Error ---					
Cylinder Value ($C_{v,High}$)	20.42	18.69			
Analzyer Response ($C_{Dir,High}$)	20.41	18.69			
Analyzer Calibration Error ($ACE_{,High}$)	-0.05	0.00			
Calibration Status (Pass/Fail)	Pass	Pass			
--- Cylinder Gas Selected for Bias Checks ---					
Use Mid (M) or High (H) Span	M	M			
ZERO	0.11	0.05			
SPAN	10.53	9.4			
--- Mid Level Gas Range Assessment ---					
Cylinder Value (Mid)	10.49	9.45			
Cylinder Value (High/Span)	20.42	18.69			
Percentage of Span (%)	51.4	50.6			
Assessment Status (Pass/Fail)	Pass	Pass			

CEMS Calibrations and Calculations Sheet

PLANT : NEFCO / SWA Biosolids
LOCATION : West Palm Beach, FL

RUN # : U2-M5-Pre1
DATE : 24-Jun-13

	GAS
START TIME :	17:18
END TIME :	18:23

Diluent/Pollutant:	O_2 (%)	CO_2 (%)
Instrument Span =	20.42	18.69
Analyzer Zero Response =	0.11	0.05
Analyzer Span Response =	10.53	9.40
Initial Sytem Zero Response =	0.15	0.14
Final System Zero Response =	0.14	0.05
Average Zero Response (C_o) =	0.15	0.10
Initial Sytem Span Response =	10.57	9.40
Final System Span Response =	10.61	9.37
Average Span Response (C_m) =	10.59	9.39
Calibration gas values (C_{ma}) =	10.49	9.45
System Bias and Drift Calculations		
Initial Zero Bias (SB_i) =	0.20	0.48
Final Zero Bias (SB_{final}) =	0.15	0.00
Zero Drift (D) =	0.05	0.48
Initial Span Bias (SB_i) =	0.20	0.00
Final Span Bias (SB_{final}) =	0.39	0.16
Span Drift (D) =	0.20	0.16
Uncorrected Ave. ($\overline{C_{Avg}}$) =	7.97	7.93
Corrected Ave.=C_{gas} = $(\overline{C_{Avg}}-C_o)(C_{ma}/(C_m-C_o))$ =	7.85	7.97

PLANT DATA

CEMS Calibrations and Calculations Sheet

PLANT : NEFCO / SWA Biosolids
LOCATION : West Palm Beach, FL
RUN # : U2-M5-Pre2
DATE : 24-Jun-13

	GAS
START TIME :	18:54
END TIME :	20:03

Diluent/Pollutant:	O_2 (%)	CO_2 (%)
Operating Range =	20.42	18.69
Analyzer Zero Response =	0.11	0.05
Analyzer Span Response =	10.53	9.40
Sytem Zero Response (Initial) =	0.14	0.05
System Zero Response (Final) =	0.12	0.07
Average Zero Response (C_o) =	0.13	0.06
Sytem Span Response (Initial) =	10.61	9.37
System Span Response (Final) =	10.57	9.36
Average Span Response (C_m) =	10.59	9.37
Calibration gas values (C_{ma}) =	10.49	9.45
System Bias and Drift Calculations:		
Initial Zero Bias (SB_i) =	0.15	0.00
Final Zero Bias (SB_{final}) =	0.05	0.11
Zero Drift (D) =	0.10	0.11
Initial Span Bias (SB_i) =	0.39	0.16
Final Span Bias (SB_{final}) =	0.20	0.21
Span Drift (D) =	0.20	0.05
Uncorrected Ave. ($\overline{C_{Avg}}$) =	7.79	8.04
Corrected Ave.=C_{gas} = ($\overline{C_{Avg}}$-C_o)(C_{ma}/(C_m-C_o)) =	7.68	8.11

Molecular Weights (MW):

NO- 46.006
CO- 28.01
SO2- 64.04

F-Factor:

F_d = 9,600

PLANT DATA

South Florida Environmental Services, LLC
Uncorrected CEMS Monitoring Results
Instrumental Reference Methods - 3A, 6C, 7E and 10

Facility/Site: NEFCO / SWA Biosolids **Date:** 06/24/13
Location: West Palm Beach, FL **Start Time:** 17:18
Run No.: U2-M5-Pre1 **Stop Time:** 18:23

Date/time	O_2 (%$_{vd}$)	CO_2 (%$_{vd}$)			
6/24/2013 5:18:00 PM	8.11	7.87			
6/24/2013 5:19:00 PM	8.12	7.86			
6/24/2013 5:20:00 PM	8.22	7.83			
6/24/2013 5:21:00 PM	8.16	7.84			
6/24/2013 5:22:00 PM	8.16	7.84			
6/24/2013 5:23:00 PM	8.07	7.88			
6/24/2013 5:24:00 PM	8.07	7.90			
6/24/2013 5:25:00 PM	8.16	7.89			
6/24/2013 5:26:00 PM	8.16	7.91			
6/24/2013 5:27:00 PM	8.27	7.88			
6/24/2013 5:26:00 PM	8.16	7.83			
6/24/2013 5:29:00 PM	8.13	7.81			
6/24/2013 5:30:00 PM	8.15	7.88			
6/24/2013 5:31:00 PM	8.32	7.93			
6/24/2013 5:32:00 PM	7.95	7.93			
6/24/2013 5:33:00 PM	7.89	7.93			
6/24/2013 5:34:00 PM	8.04	7.93			
6/24/2013 5:35:00 PM	7.98	7.95			
6/24/2013 5:36:00 PM	7.77	7.92			
6/24/2013 5:37:00 PM	8.02	7.87			
6/24/2013 5:36:00 PM	8.10	7.84			
6/24/2013 5:39:00 PM	8.15	7.82			
6/24/2013 5:40:00 PM	7.94	7.85			
6/24/2013 5:41:00 PM	8.23	7.89			
6/24/2013 5:42:00 PM	6.16	7.93			
6/24/2013 5:43:00 PM	6.09	7.92			
6/24/2013 5:44:00 PM	8.04	7.91			
6/24/2013 5:45:00 PM	8.04	7.86			
6/24/2013 5:46:00 PM	6.03	7.90			
6/24/2013 5:47:00 PM	7.69	7.89			
6/24/2013 5:48:00 PM					
6/24/2013 5:49:00 PM			Port Change		
6/24/2013 5:50:00 PM					
6/24/2013 5:51:00 PM					
6/24/2013 5:52:00 PM					
6/24/2013 5:53:00 PM	7.77	8.00			
6/24/2013 5:54:00 PM	7.72	8.04			
6/24/2013 5:55:00 PM	7.89	7.97			
6/24/2013 5:56:00 PM	7.87	7.96			
6/24/2013 5:57:00 PM	7.94	7.97			
6/24/2013 5:58:00 PM	7.68	6.00			
6/24/2013 5:59:00 PM	7.83	7.99			
6/24/2013 6:00:00 PM	7.84	8.02			
6/24/2013 6:01:00 PM	7.60	6.00			
6/24/2013 6:02:00 PM	7.85	6.07			
6/24/2013 6:03:00 PM	7.75	7.98			
6/24/2013 6:04:00 PM	7.78	8.02			
6/24/2013 6:05:00 PM	7.86	7.94			
6/24/2013 6:06:00 PM	7.86	6.01			
6/24/2013 6:07:00 PM	7.77	7.98			
6/24/2013 6:08:00 PM	7.67	7.99			
6/24/2013 6:09:00 PM	7.87	7.99			
6/24/2013 6:10:00 PM	7.77	7.98			
6/24/2013 6:11:00 PM	7.61	7.96			
6/24/2013 6:12:00 PM	7.67	7.96			
6/24/2013 6:13:00 PM	7.82	8.00			
6/24/2013 6:14:00 PM	7.68	7.98			
6/24/2013 6:15:00 PM	7.97	7.91			
6/24/2013 6:16:00 PM	7.99	7.92			
6/24/2013 6:17:00 PM	7.89	7.95			
6/24/2013 6:18:00 PM	7.90	7.95			
6/24/2013 6:19:00 PM	7.88	7.92			
6/24/2013 6:20:00 PM	7.85	7.98			
6/24/2013 6:21:00 PM	7.67	7.96			
6/24/2013 6:22:00 PM	7.94	7.94			
Run Averages:	**7.97**	**7.93**			

South Florida Environmental Services, LLC
Uncorrected CEMS Monitoring Results
Instrumental Reference Methods - 3A, 6C, 7E and 10

Facility/Site: NEFCO / SWA Biosolids
Location: West Palm Beach, FL
Run No.: U2-M5-Pre2
Date: 06/24/13
Start Time: 18:54
Stop Time: 20:03

Date/time	O_2 ($\%_{vd}$)	CO_2 ($\%_{vd}$)			
6/24/2013 6:54:00 PM	7.95	7.97			
6/24/2013 6:55:00 PM	7.82	8.01			
6/24/2013 6:56:00 PM	7.65	8.00			
6/24/2013 6:57:00 PM	7.97	8.01			
6/24/2013 6:58:00 PM	7.73	8.01			
6/24/2013 6:59:00 PM	7.83	8.01			
6/24/2013 7:00:00 PM	7.74	8.03			
6/24/2013 7:01:00 PM	7.75	8.01			
6/24/2013 7:02:00 PM	7.81	8.00			
6/24/2013 7:03:00 PM	7.82	8.00			
6/24/2013 7:04:00 PM	8.02	8.03			
6/24/2013 7:05:00 PM	7.75	8.04			
6/24/2013 7:06:00 PM	7.82	8.02			
6/24/2013 7:07:00 PM	7.79	8.03			
6/24/2013 7:08:00 PM	7.91	8.03			
6/24/2013 7:09:00 PM	7.65	8.06			
6/24/2013 7:10:00 PM	7.62	8.06			
6/24/2013 7:11:00 PM	7.81	7.98			
6/24/2013 7:12:00 PM	8.14	7.98			
6/24/2013 7:13:00 PM	7.77	8.00			
6/24/2013 7:14:00 PM	7.77	8.02			
6/24/2013 7:15:00 PM	7.76	8.00			
6/24/2013 7:16:00 PM	7.77	8.06			
6/24/2013 7:17:00 PM	7.76	8.05			
6/24/2013 7:18:00 PM	7.81	8.04			
6/24/2013 7:19:00 PM	7.62	8.02			
6/24/2013 7:20:00 PM	7.80	8.04			
6/24/2013 7:21:00 PM	7.81	7.99			
6/24/2013 7:22:00 PM	7.82	7.99			
6/24/2013 7:23:00 PM	7.77	8.01			
6/24/2013 7:24:00 PM	7.88	8.02			
6/24/2013 7:25:00 PM					
6/24/2013 7:26:00 PM			Port Change		
6/24/2013 7:27:00 PM					
6/24/2013 7:28:00 PM					
6/24/2013 7:29:00 PM	7.87	8.04			
6/24/2013 7:30:00 PM	7.81	8.02			
6/24/2013 7:31:00 PM	7.74	8.02			
6/24/2013 7:32:00 PM	7.83	8.05			
6/24/2013 7:33:00 PM	7.79	8.08			
6/24/2013 7:34:00 PM	7.70	8.08			
6/24/2013 7:35:00 PM	7.97	8.09			
6/24/2013 7:36:00 PM	7.67	8.08			
6/24/2013 7:37:00 PM	7.80	8.08			
6/24/2013 7:38:00 PM	7.74	8.11			
6/24/2013 7:39:00 PM	7.73	8.07			
8/24/2013 7:40:00 PM	7.68	8.05			
6/24/2013 7:41:00 PM	7.73	8.06			
6/24/2013 7:42:00 PM	7.94	8.06			
6/24/2013 7:43:00 PM	7.55	8.08			
6/24/2013 7:44:00 PM	7.80	8.07			
6/24/2013 7:45:00 PM	7.70	8.07			
6/24/2013 7:46:00 PM	7.74	8.06			
6/24/2013 7:47:00 PM	7.79	8.05			
6/24/2013 7:48:00 PM	7.80	8.01			
6/24/2013 7:49:00 PM	7.76	8.04			
6/24/2013 7:50:00 PM	7.80	8.04			
6/24/2013 7:51:00 PM	7.64	8.08			
6/24/2013 7:52:00 PM	7.95	8.08			
6/24/2013 7:53:00 PM	7.80	8.09			
6/24/2013 7:54:00 PM	7.85	8.04			
6/24/2013 7:55:00 PM	7.80	8.06			
6/24/2013 7:56:00 PM	7.77	8.03			
6/24/2013 7:57:00 PM	8.01	8.03			
6/24/2013 7:58:00 PM	7.62	8.05			
6/24/2013 7:59:00 PM	7.75	8.09			
6/24/2013 8:00:00 PM	7.75	8.09			
6/24/2013 8:01:00 PM	7.75	8.11			
6/24/2013 8:02:00 PM	7.73	8.08			
Averages:	7.79	8.04			

South Florida Environmental Services, LLC
Uncorrected CEMS Monitoring Results
Instrumental Reference Methods - 3A, 6C, 7E and 10

Facility/Site: NEFCO / SWA Biosolids **Date:** 06/25/13
Location: West Palm Beach, FL **Start Time:** 9:15
Run No.: U2-M5/202-Pre3 **Stop Time:** 10:22

Date/time	O_2 ($\%_{vd}$)	CO_2 ($\%_{vd}$)			
6/25/2013 9:15:03 AM	8.96	7.33			
6/25/2013 9:16:03 AM	9.23	7.29			
6/25/2013 9:17:03 AM	9.26	7.25			
6/25/2013 9:18:03 AM	8.58	7.64			
6/25/2013 9:19:03 AM	8.21	7.87			
6/25/2013 9:20:03 AM	8.74	7.71			
6/25/2013 9:21:03 AM	8.63	7.67			
6/25/2013 9:22:03 AM	8.80	7.63			
6/25/2013 9:23:03 AM	8.99	7.42			
6/25/2013 9:24:03 AM	9.17	7.27			
6/25/2013 9:25:03 AM	9.36	7.21			
6/25/2013 9:26:03 AM	9.08	7.36			
6/25/2013 9:27:03 AM	8.98	7.44			
6/25/2013 9:28:03 AM	9.28	7.33			
6/25/2013 9:29:03 AM	9.34	7.32			
6/25/2013 9:30:03 AM	9.42	7.24			
6/25/2013 9:31:03 AM	9.84	7.02			
6/25/2013 9:32:03 AM	9.46	7.15			
6/25/2013 9:33:03 AM	9.61	7.07			
6/25/2013 9:34:03 AM	8.93	7.41			
6/25/2013 9:35:03 AM	8.25	7.77			
6/25/2013 9:36:03 AM	8.24	7.95			
6/25/2013 9:37:03 AM	7.96	8.01			
6/25/2013 9:38:03 AM	8.07	7.99			
6/25/2013 9:39:03 AM	8.29	7.86			
6/25/2013 9:40:03 AM	8.41	7.72			
6/25/2013 9:41:03 AM	8.54	7.63			
6/25/2013 9:42:03 AM	8.36	7.60			
6/25/2013 9:43:03 AM	8.47	7.70			
6/25/2013 9:44:03 AM	8.20	7.84			
6/25/2013 9:45:03 AM	8.04	7.94			
6/25/2013 9:46:03 AM					
6/25/2013 9:47:03 AM					
6/25/2013 9:48:03 AM					
6/25/2013 9:49:03 AM					
6/25/2013 9:50:03 AM			Port Change		
6/25/2013 9:51:03 AM					
6/25/2013 9:52:03 AM	8.39	7.80			
6/25/2013 9:53:03 AM	9.01	7.50			
6/25/2013 9:54:03 AM	8.83	7.57			
6/25/2013 9:55:03 AM	9.03	7.58			
6/25/2013 9:56:03 AM	7.80	8.13			
6/25/2013 9:57:03 AM	7.48	8.15			
6/25/2013 9:58:03 AM	7.71	8.06			
6/25/2013 9:59:03 AM	7.73	8.04			
6/25/2013 10:00:03 AM	7.58	8.11			
6/25/2013 10:01:03 AM	7.53	8.24			
6/25/2013 10:02:03 AM	7.24	8.32			
6/25/2013 10:03:03 AM	7.35	8.32			
6/25/2013 10:04:03 AM	8.32	7.70			
6/25/2013 10:05:03 AM	8.94	7.48			
6/25/2013 10:06:03 AM	8.51	7.68			
6/25/2013 10:07:03 AM	8.19	7.79			
6/25/2013 10:08:03 AM	8.49	7.67			
6/25/2013 10:09:03 AM	7.91	7.93			
6/25/2013 10:10:03 AM	7.88	7.97			
6/25/2013 10:11:03 AM	7.82	8.10			
6/25/2013 10:12:03 AM	7.84	8.03			
6/25/2013 10:13:03 AM	7.86	8.03			
6/25/2013 10:14:03 AM	8.04	7.85			
6/25/2013 10:15:03 AM	8.13	7.73			
6/25/2013 10:16:03 AM	8.28	7.72			
6/25/2013 10:17:03 AM	8.67	7.64			
6/25/2013 10:18:03 AM	8.41	7.63			
6/25/2013 10:19:03 AM	8.35	7.78			
6/25/2013 10:20:03 AM	8.04	7.82			
6/25/2013 10:21:03 AM	8.11	7.83			
Run Averages:	**8.46**	**7.70**			

South Florida Environmental Services, LLC
Uncorrected CEMS Monitoring Results
Instrumental Reference Methods - 3A, 6C, 7E and 10

Facility/Site: NEFCO / SWA Biosolids **Date:** 06/25/13
Location: West Palm Beach, FL **Start Time:** 10:55
Run No.: U2-M5/202-Pre4 **Stop Time:** 12:04

Date/time	O_2 ($\%_{vd}$)	CO_2 ($\%_{vd}$)			
6/25/2013 10:55:03 AM	9.09	7.40			
6/25/2013 10:56:03 AM	8.81	7.47			
6/25/2013 10:57:03 AM	9.00	7.32			
6/25/2013 10:58:03 AM	8.87	7.27			
6/25/2013 10:59:03 AM	9.00	7.20			
6/25/2013 11:00:03 AM	8.97	7.32			
6/25/2013 11:01:03 AM	8.77	7.64			
6/25/2013 11:02:03 AM	7.87	8.01			
6/25/2013 11:03:03 AM	7.63	8.04			
6/25/2013 11:04:03 AM	8.44	7.62			
6/25/2013 11:05:03 AM	9.21	7.26			
6/25/2013 11:06:03 AM	9.09	7.26			
6/25/2013 11:07:03 AM	9.01	7.25			
6/25/2013 11:08:03 AM	9.02	7.20			
6/25/2013 11:09:03 AM	9.21	7.25			
6/25/2013 11:10:03 AM	9.07	7.27			
6/25/2013 11:11:03 AM	9.03	7.28			
6/25/2013 11:12:03 AM	8.94	7.35			
6/25/2013 11:13:03 AM	8.98	7.34			
6/25/2013 11:14:03 AM	8.00	7.85			
6/25/2013 11:15:03 AM	8.42	8.30			
6/25/2013 11:16:03 AM	9.58	8.66			
6/25/2013 11:17:03 AM	7.91	7.86			
6/25/2013 11:18:03 AM	7.99	7.88			
6/25/2013 11:19:03 AM	8.57	7.54			
6/25/2013 11:20:03 AM	8.78	7.39			
6/25/2013 11:21:03 AM	8.64	7.53			
6/25/2013 11:22:03 AM	8.56	7.60			
6/25/2013 11:23:03 AM	8.19	7.81			
6/25/2013 11:24:03 AM	8.31	7.70			
6/25/2013 11:25:03 AM					
6/25/2013 11:26:03 AM					
6/25/2013 11:27:03 AM					
6/25/2013 11:28:03 AM			Port		
6/25/2013 11:29:03 AM			Change		
6/25/2013 11:30:03 AM					
6/25/2013 11:31:03 AM					
6/25/2013 11:32:03 AM					
6/25/2013 11:33:03 AM					
6/25/2013 11:34:03 AM	7.76	8.01			
6/25/2013 11:35:03 AM	8.34	7.63			
6/25/2013 11:36:03 AM	10.36	6.58			
6/25/2013 11:37:03 AM	10.35	6.61			
6/25/2013 11:38:03 AM	10.85	6.30			
6/25/2013 11:39:03 AM	10.14	6.79			
6/25/2013 11:40:03 AM	9.46	7.04			
6/25/2013 11:41:03 AM	9.53	7.05			
6/25/2013 11:42:03 AM	9.59	7.05			
6/25/2013 11:43:03 AM	9.63	7.04			
6/25/2013 11:44:03 AM	9.53	7.06			
6/25/2013 11:45:03 AM	9.37	7.08			
6/25/2013 11:46:03 AM	9.39	7.11			
6/25/2013 11:47:03 AM	9.28	7.12			
6/25/2013 11:48:03 AM	9.44	7.08			
6/25/2013 11:49:03 AM	9.66	7.11			
6/25/2013 11:50:03 AM	9.40	7.09			
6/25/2013 11:51:03 AM	9.47	7.11			
6/25/2013 11:52:03 AM	9.50	7.07			
6/25/2013 11:53:03 AM	9.51	7.09			
6/25/2013 11:54:03 AM	9.75	7.02			
6/25/2013 11:55:03 AM	9.35	7.05			
6/25/2013 11:56:03 AM	9.44	7.05			
6/25/2013 11:57:03 AM	9.53	7.06			
6/25/2013 11:58:03 AM	9.37	7.10			
6/25/2013 11:59:03 AM	9.55	7.09			
6/25/2013 12:00:03 PM	9.51	7.08			
6/25/2013 12:01:03 PM	9.57	7.04			
6/25/2013 12:02:03 PM	9.48	7.05			
6/25/2013 12:03:03 PM	9.44	7.01			
Averages:	**9.11**	**7.31**			

TRAVERSE DATA SHEET

PLANT: NEFCO / SWA Biosolids
RUN #: U2- M5-PRE1
LOCATION: Unit #2
DATE: 6/24/13
Filter No. 1425
Filter Tare Wt. .4391
Trap No. N/A

IMP-1 (INT): 7/100
IMP-2 (INT): 100
IMP-3 (INT): 0
IMP-4 (INT): 794.0
IMP-5 (INT): –
IMP-6 (INT): —
IMP-7 (INT): —

IMP-1 (FIN): 246
IMP-2 (FIN): 113
IMP-3 (FIN): 1
IMP-4 (FIN): 801.0
IMP-5 (FIN): —
IMP-6 (FIN): —
IMP-7 (FIN): ~

Pstack: -.40
Baro. Pres. 30.1
TEST LENGTH: 60
FINAL METER: 370.912
INITIAL METER: 333.565
BEGIN TIME: 1818
END TIME: 1823

TRAVERSE POINT	DELTA P	DELTA H	DRY GAS METER IN	DRY GAS METER OUT	STACK TEMP (F)	METER READING	Back 1/2 Filter	PROBE TEMP	TRAP TEMP	IMP TEMP	VAC
A 1	.13	1.64	87	87	217	—	255	254	N/A	58	1
2	.14	1.76	87	87	219	338.1	255	253			51	1
3	.14	1.76	87	87	223	341.4	255	256			51	1
4	.16	2.62	87	87	229	345.1	257	254			49	2
5	.15	1.89	87	87	226	348.8	255	255			49	2
6	.15	1.89	87	87	227	352.6	256	255			50	2
B 1	.12	1.51	87	87	220	356.7	251	249			50	2
2	.14	1.76	87	87	224	361.2	250	250			51	2
3	.16	2.02	87	87	233	364.1	249	249			52	2
4	.17	2.14	87	87	229	367.5	248	247			52	2
5	.17	2.14	87	87	235	371.0	249	249			53	2
6	.16	2.02	87	87	229	375.8	249	246			53	3

Relationship	12.6	Pre Leak Check	0.004	@	16	"Hg	
Box #		Post Leak Check	0.006	@	12	"Hg	
Y	.9728	Pre Pitot Check	0.0	@	>3	"H2O	
Delta H	2.04	Post Pitot Check	0.0	@	>3	"H2O	
Box Op.	AB	Noz. ID No.		Probe No.	P-S-1		
Probe Op.	JJ	Noz. Diam.	.351				

Notes:

TRAVERSE DATA SHEET

PLANT: NEFCO / SWA Biosolids
RUN #: U2 - MS - Pre 2
LOCATION: West Palm Beach, FL
DATE: 6/24/13
Filter No.:
Filter Tare Wt.:
Trap No.: N/A

IMP 1 (INT): 100
IMP 2 (INT): 100
IMP 3 (INT): 0
IMP 4 (INT): 794.5
IMP 5 (INT): –
IMP 6 (INT): –
IMP 7 (INT): –

IMP 1 (FIN): 262
IMP 2 (FIN): 106
IMP 3 (FIN): 4
IMP 4 (FIN): 800.5
IMP 5 (FIN): –
IMP 6 (FIN): –
IMP 7 (FIN): –

Pstack: -.40
Baro. Pres.: 30.1
TEST LENGTH: 60
FINAL METER: 423.903
INITIAL METER: 380.308
BEGIN TIME: 1854
END TIME: 2003

TRAVERSE POINT	DELTA P	DELTA H	DRY GAS METER IN	DRY GAS METER OUT	STACK TEMP (F)	METER READING	Back 1/2 Filter	PROBE TEMP	TRAP TEMP	IMP TEMP	VAC
A1	.14	1.54	85	85	231	—	239	256	N/A	60	1
2	.16	1.76	85	85	231	384.0	246	251		57	1
3	.16	1.76	85	85	229	387.7	249	250		55	1
4	.16	1.76	86	86	240	392.5	250	254		52	1
5	.16	1.76	86	86	234	395.4	249	243		52	1
6	.15	1.65	85	85	236	399.0	249	255		53	1
B1	.11	1.21	85	85	234	402.5	250	252		52	1
2	.15	1.65	85	85	237	405.5	250	254		51	1
3	.16	1.76	85	85	234	409.0	249	252		52	2
4	.16	1.76	85	85	234	412.8	252	256		53	2
5	.17	1.87	85	85	235	416.4	250	253		54	2
6	.16	1.76	85	85	235	420.2	250	251		54	2

Relationship: 11.0
Box #:
Y: .9728
Delta H: 2.04
Box Op.: RS
Probe Op.: JJ

Pre Leak Check: 0.004 @ 12 "Hg
Post Leak Check: 0.004 @ 10 "Hg
Pre Pitot Check: 0.0 @ >3 "H2O
Post Pitot Check: 0.0 @ >3 "H2O
Noz. ID No.:
Probe No.: P-5-1
Noz. Diam.: .351

Notes:

TRAVERSE DATA SHEET

PLANT	NEFCO / SWA Biosolids	RUN #	12- M5/202- Pre 3
LOCATION	West Palm Beach, FL	DATE	6/25/13
Filter No.	N/A	Filter Tare Wt.	
Trap No.	N/A		

IMP 1 (INT)	0
IMP 2 (INT)	0
IMP 3 (INT)	100
IMP 4 (INT)	800
IMP 5 (INT)	—
IMP 6 (INT)	—
IMP 7 (INT)	—
IMP 1 (FIN)	106
IMP 2 (FIN)	1
IMP 3 (FIN)	108
IMP 4 (FIN)	808
IMP 5 (FIN)	—
IMP 6 (FIN)	—
IMP 7 (FIN)	—
Pstack	-.42
Baro. Pres	30.1
TEST LENGTH	60
FINAL METER	458.203
INTIAL METER	424.~~579~~ 838 (AS)
BEGIN TIME	0915
END TIME	1022

TRAVERSE POINT	DELTA P	DELTA H	DRY GAS METER IN	DRY GAS METER OUT	STACK TEMP (F)	METER READING	FILTER BOX	PROBE TEMP	DRY FILTER	IMP TEMP	VAC
A1	.14	1.0	94	94	239	–	248	250	83	64	2
2	.15		93	93	233	427.8	246	246	81	59	2
3	.16		93	93	240	430.7	249	249	81	56	2
4	.17		92	92	236	433.9	248	249	80	56	2
5	.17		92	92	238	436.0	248	249	79	57	2
6	.18		92	92	242	438.7	250	247	80	57	2
B1	.16		90	90	234	441.7	247	246	82	60	2
2	.18		91	91	241	445.0	251	248	83	59	2
3	.20		91	91	244	447.4	247	246	82	59	2
4	.17		91	91	242	450.1	243	245	84	55	2
5	.17		92	92	239	453.0	248	246	83	56	2
6	.18		92	92	244	455.5	251	246	83	55	2

Relationship	N/A	Pre Leak Check	0.016	@	12	"Hg	
Box #		Post Leak Check	N/A	@	N/A	"Hg	
Y	.9728	Pre Pitot Check	0.0	@	73	"H2O	
Delta H	2.04	Post Pitot Check	0.0	@	73	"H2O	
Box Op.	AS	Noz. ID No.	4	Probe No.	P-5-1		
Probe Op.	FM	Noz. Diam.	.312				

Notes:

Pause test (port change) 945

Restart test at 952

TRAVERSE DATA SHEET

PLANT: NEFCO / SWA Biosolids
RUN #: V2 - MS/202 - Pre 4
LOCATION: West Palm Beach, FL / Unit 2
DATE: 6/25/13
Filter No.:
Filter Tare Wt.:
Trap No.:

IMP-1 (INT): [illegible]
IMP-2 (INT): [illegible]
IMP-3 (INT): 100
IMP-4 (INT): ~~200~~ 778
IMP-5 (INT):
IMP-6 (INT):
IMP-7 (INT):

IMP-1 (FIN): 149
IMP-2 (FIN): 1
IMP-3 (FIN): 106
IMP-4 (FIN): 784
IMP-5 (FIN):
IMP-6 (FIN):
IMP-7 (FIN):

Pstack: -.41
Baro. Pres: 30.1
TEST LENGTH: 60
FINAL METER: 492.724
INTIAL METER: 460.501
BEGIN TIME: 1055
END TIME: 1204

TRAVERSE POINT	DELTA P	DELTA H	DRY GAS METER IN	DRY GAS METER OUT	STACK TEMP (F)	METER READING	FILTER BOX	PROBE TEMP	DRY FILTER	IMP TEMP	VAC
A1	.19	1.0	90	90	242	—	242	246	84	66	2
2	.19		91	91	245	462.6	240	247	83	62	2
3	.20		91	91	252	464.7	248	246	81	62	2
4	.20		92	92	254	467.8	247	244	79	63	2
5	.21		92	92	245	4704	240	244	78	63	2
6	.20		92	92	248	473.2	247	246	80	64	2
B1	.21		93	93	244	475.9	249	242	81	68	2
2	.20		93	93	243	479.0	249	244	83	60	2
3	.21		93	93	242	481.6	249	244	83	61	2
4	.21		94	94	249	484.8	248	245	80	60	2
5	.22		94	94	252	486.9	246	245	80	60	2
6	.23		94	94	250	489.9	247	247	79	61	2

Relationship: N/A
Box #:
Y: 0.9728
Delta H: 2.04
Box Op.: AG
Probe Op.: JJ

Pre Leak Check	0.015	@	12	"Hg
Post Leak Check	N/A	@	N/A	"Hg
Pre Pitot Check	0.0	@	>3	"H2O
Post Pitot Check	0.0	@	>3	"H2O
Noz. ID No.	4	**Probe No.**	P-5-1	
Noz. Diam.	.312			

Notes:
Pause @ 1025 (Port change)
Restart @ 1124

Client/Site: NEFCO / SWA Biosolids

Source: RTO #2 Stack

RM Response Time: Upscale (seconds): 20

Operator: Andrew Seele

Date: 6/24/13

Downscale (seconds): 20

Note: System Response Time is the longer of the upscale and downscale response times. Performed during initial zero and bias checks:

Analyzer Calibration Error (ACE) – Reference Method

Pollutant/Diluent	Low		Mid		High/Full Scale (CS)	
	Cylinder Value (C_v)	Analyzer Response (C_{DIR})	Cylinder Value (C_v)	Analyzer Response (C_{DIR})	Cylinder Value (C_v)	Analyzer Response (C_{DIR})
Oxygen	0.00	0.11	10.49	10.53	20.42	20.41
Carbon Dioxide	0.00	0.05	9.45	9.40	18.69	18.69

Range selected for analyzer operation:

O_2 (%)	CO_2 (%)	CO (ppm)	NO_x (ppm)	SO_2 (ppm)
25	20	—	—	—

Protocol Gases Used During Program:

Cylinder No.	Diluent/Pollutant Concentrations(s)	Expiration Date
CC421863	20.42 O_2 / 18.69 CO_2	11/2/20
CC421656	10.49 O_2 / 9.45 CO_2	11/2/20

Analyzer Calibration Error (ACE) Acceptance Criteria: ≤ ± 2%

Where: ACE = $[(C_{Dir} - C_v)/CS] * 100\%$

Client/Site: NEFCO / SWA

Source: RTO #2 Stack

Operator: A. Sech

Date: 6/24/13

Run Number: U2 - M5 - PRE1

Start Time: 1718

End Time: 1823

System Bias (SB)/Drift (D) Assessments – Reference Method

Pollutant/Diluent	Start Zero		Start Span (C_{MA})		Final Zero		Final Span (C_{MA})	
	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)
Oxygen	0.00	0.15	10.49	10.57	0.00	0.14	10.49	10.61
Carbon Dioxide	0.00	0.14	9.45	9.40	0.00	0.05	9.45	9.37

O_2 (%)	CO_2 (%)	CO (ppm)	NO_x (ppm)	SO_2 (ppm)
25	20	—	—	—

Sampling System Bias (SB) Criteria: ≤± 5% of span for zero and upscale gas, where:

Where: $SB = [(C_s - C_{Dir})/CS] * 100\%$

Zero and Calibration Drift (D) Criteria: ≤± 3% of span, where

$D = |SB_{final} - SB_i|$

Client/Site: NEFCO / SWA

Source: RTO #2 Stack

Operator:

Date: 6/24/13

Run Number: U2- M5 PRE 2

Start Time: 1854

End Time: 2003

System Bias (SB)/Drift (D) Assessments – Reference Method

Pollutant/Diluent	Start Zero		Start Span (C_{MA})		Final Zero		Final Span (C_{MA})	
	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)
Oxygen	0.00	0.14	10.49	10.61	0.00	0.12	10.49	10.57
Carbon Dioxide	0.00	0.05	9.45	9.37	0.00	0.07	9.45	9.36

O_2 (%)	CO_2 (%)	CO (ppm)	NO_x (ppm)	SO_2 (ppm)
25	20	—	—	—

Sampling System Bias (SB) Criteria: ≤± 5% of span for zero and upscale gas, where:

Where: $SB = [(C_s - C_{Dir})/CS] * 100\%$

Zero and Calibration Drift (D) Criteria: ≤± 3% of span, where

$D = |SB_{final} - SB_i|$

Client/Site: NEFCO / SWA Biosolids

Source: RTO #2 & #1

RM Response Time: Upscale (seconds): 20

Operator: Andrew Seaha

Date: 6/25/13

Downscale (seconds): 20

Note: System Response Time is the longer of the upscale and downscale response times. Performed during initial zero and bias checks:

Analyzer Calibration Error (ACE) – Reference Method

Pollutant/Diluent	Low		Mid		High/Full Scale (CS)	
	Cylinder Value (C_v)	Analyzer Response (C_{DIR})	Cylinder Value (C_v)	Analyzer Response (C_{DIR})	Cylinder Value (C_v)	Analyzer Response (C_{DIR})
Oxygen	0.00	0.10	10.49	10.50	20.42	20.43
Carbon Dioxide	0.00	0.21	9.45	9.41	18.69	18.70

Range selected for analyzer operation:

O_2 (%)	CO_2 (%)	CO (ppm)	NO_x (ppm)	SO_2 (ppm)
25	20	—	—	—

Protocol Gases Used During Program:

Cylinder No.	Diluent/Pollutant Concentrations(s)	Expiration Date
CC421863	20.42 O_2 / 18.69 CO_2	11/2/20
CC421656	10.49 O_2 / 9.45 CO_2	11/2/20

Analyzer Calibration Error (ACE) Acceptance Criteria: ≤ ± 2%

Where: ACE = $[(C_{Dir} - C_v)/CS] * 100\%$

Client/Site: NEFCO / SWA Biosolids

Source: RTO #2 Stack

Operator: A. Seahu

Date: 6/25/13

Run Number: U2-M5/202-Pre 3

Start Time: 915

End Time: 1022

System Bias (SB)/Drift (D) Assessments – Reference Method

Pollutant/Diluent	Start Zero		Start Span (C_{MA})		Final Zero		Final Span (C_{MA})	
	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)
Oxygen	0.00	0.05	10.49	10.50	0.00	0.11	10.49	10.52
Carbon Dioxide	0.00	0.11	9.45	9.41	0.00	0.10	9.45	9.39

O_2 (%)	CO_2 (%)	CO (ppm)	NO_x (ppm)	SO_2 (ppm)
25	20	–	–	–

Sampling System Bias (SB) Criteria: ≤± 5% of span for zero and upscale gas, where:

Where: $SB = [(C_s - C_{Dir})/CS] * 100\%$

Zero and Calibration Drift (D) Criteria: ≤± 3% of span, where

$D = |SB_{final} - SB_i|$

Client/Site: NEFCO/ SWA Biosolids
Source: RTO #2 Stack

Operator: A. Seche
Date: 6/25/13

Run Number: U2 - M5|202 - PRE4
Start Time: 1055
End Time: 1204

System Bias (SB)/Drift (D) Assessments – Reference Method

Pollutant/Diluent	Start Zero		Start Span (C_{MA})		Final Zero		Final Span (C_{MA})	
	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)
Oxygen	0.00	0.11	10.49	1052	0.00	609	10.49	10.51
Carbon Dioxide	0.00	0.10	9.45	9.39	0.00	0.14	9.45	9.42

O_2 (%)	CO_2 (%)	CO (ppm)	NO_x (ppm)	SO_2 (ppm)
25	20	–	–	–

Sampling System Bias (SB) Criteria: ≤± 5% of span for zero and upscale gas, where:

Where: $SB = [(C_s - C_{Dir})/CS] * 100\%$

Zero and Calibration Drift (D) Criteria: ≤± 3% of span, where

$D = |SB_{final} - SB_i|$

A3
RTO / Dryer No. 1 Pre-Compliance Emissions Data (6/26/13)

PARTICULATE EMISSION CALCULATION SHEET

PLANT: **NEFCO / SWA Biosolids** RUN # : **U1-M5-Pre5**
LOCATION: **West Palm Beach, FL** DATE: **26-Jun-13**

			BLANKS	
	FILTER	**BEAKER**	**FILTER**	**BEAKER**
NUMBER :	1429	Z1	1445	B5-48
FINAL :	0.4425	70.0041	0.4408	67.0280
TARE :	0.4397	70.0023	0.4408	67.0279
NET :	0.0028	0.0018	0.0000	0.0001

VOLUME BLANK RINSE 130
VOLUME OF RINSE 120

Mn - Ar = Mn
Mn = 4.600
Ar = 0.092
Mn = 4.600 not blank corr

O2 = 8.59
CO2 = 7.52
Vs = 31.77 ft/sec
As = 7.07 ft2
Vm std = 47.09 DSCF

Qs = 3600(1-Bwo)(Vs)(As)(17.64)(Ps/Ts) = 465846 DSCFH
3600 (Vs) (As) = 808383 ACFH
ACFH / 60 = 13473 ACFM

Cs = (2.205 E-6) (Mn) / (Vm Std) = 2.15396E-07 LB/SCF

Cs' = 0.0154 (Mn) /(VmStd) = 0.0015 GRAINS/SCF

Cs' = Mn / VmStd = 3.45 mg/dscm

Cs' @ 7% O2 = Mn / VmStd x 20.9-7/20.9-O2% = 3.90 mg/dscm @7% O2

PMR = Qs x Cs = 0.100 LB/HR

PARTICULATE EMISSION CALCULATION SHEET

PLANT	**NEFCO / SWA Biosolids**	RUN # :	**U1-M5-Pre6**
LOCATION	**West Palm Beach, FL**	DATE :	**26-Jun-13**

			BLANKS	
	FILTER	**BEAKER**	**FILTER**	**BEAKER**
NUMBER :	1435	BS-8	1445	B5-48
FINAL :	0.4559	69.8986	0.4408	67.0280
TARE :	0.4538	69.8969	0.4408	67.0279
NET :	0.0021	0.0017	0.0000	0.0001
		VOLUME BLANK RINSE		130
		VOLUME OF RINSE		110

Mn - Ar = Mn			O2 =	8.52	
			CO2 =	7.54	
Mn =	3.800		Vs =	31.31	ft/sec
Ar =	0.085		As =	7.07	ft2
			Vm std=	45.65	DSCF
Mn =	3.800	not blank corr			

Qs	=	3600 (1-Bwo)(Vs)(As)(17.64)(Ps/Ts)	=	468007	DSCFH
		3600 (Vs) (As)	=	796811.376	ACFH
		ACFH / 60	=	13280	ACFM
Cs	=	(2.205 E-6) (Mn) / (Vm Std)	=	1.83545E-07	LB/SCF
Cs'	=	0.0154 (Mn) /(VmSTD)	=	0.0013	GRAINS/SCF
Cs'	=	Mn / VmStd	=	2.94	mg/dscm
Cs' @ 7% O2	=	Mn / VmStd x 20.9-7/20.9-O2%	=	3.30	mg/dscm @7% O2
PMR	=	Qs x Cs	=	0.086	LB/HR

PARTICULATE EMISSION CALCULATION SHEET

PLANT	**NEFCO / SWA Biosolids**	RUN # :	**U1-M5-Pre7**
LOCATION	**West Palm Beach, FL**	DATE :	**26-Jun-13**

			BLANKS	
	FILTER	**BEAKER**	**FILTER**	**BEAKER**
NUMBER :	1436	03-14	1445	B5-48
FINAL :	0.4610	67.4111	0.4408	67.0280
TARE :	0.4574	67.4101	0.4408	67.0279
NET :	0.0036	0.0010	0.0000	0.0001

VOLUME BLANK RINSE 130

VOLUME OF RINSE 125

Mn - Ar = Mn

Mn = 4.600

Ar = 0.096

Mn = 4.600 not blank corr

O2 = 8.64

CO2 = 7.42

Vs = 33.05 ft/sec

AS = 7.07 ft2

Vm std= 48.06 DSCF

Qs = 3600 (1-Bwo)(Vs)(As)(17.64)(Ps/Ts) = 488963 DSCFH

3600 (Vs) (As) = 841063.8901 ACFH

ACFH / 60 = 14018 ACFM

Cs = (2.205 E-6) (Mn) / (Vm Std) = 2.1105E-07 LB/SCF

Cs' = 0.0154 (Mn) /(VmSTD) = 0.0015 GRAINS/SCF

Cs' = Mn / VmStd = 3.38 mg/dscm

Cs' @ 7% O2 = Mn / VmStd x 20.9-7/20.9-O2% = 3.83 mg/dscm @7% O2

PMR = Qs x Cs = 0.103 LB/HR

INPUT DATA SHEET

PLANT: NEFCO / SWA Biosolids
RUN # : U1-M5-Pre5
LOCATION: West Palm Beach, FL
DATE : 26-Jun-13

As (SQFT) :	7.069
Dn (INCHES)	0.351
PITOT COEFFICIENT:	0.84
IMP-1 (INT) :	100
IMP-2 (INT) :	100
IMP-3 (INT) :	0
IMP-4 (INT) :	811.5
IMP-1 (FIN) :	331
IMP-2 (FIN) :	112
IMP-3 (FIN) :	4
IMP-4 (FIN) :	816.0
% CO2 (OUT):	7.52
% O2 (OUT) :	8.59
% CO (OUT) :	0
Pbar	30.0
Pstack	-0.42
NUMBER OF POINTS	12
TEST LENGTH	60
FINAL METER	710.099
INTIAL METER	659.777
BEGIN TIME	9:00
END TIME	10:03

TRAVERSE	VELOCITY	SQUARE	DELTA	DRY GAS METER		STACK
POINT	HEAD	ROOT	H	IN	OUT	TEMP (F)
A1	0.18	0.42	1.80	94	94	245
2	0.23	0.48	2.30	94	94	272
3	0.23	0.48	2.30	94	94	279
4	0.25	0.50	2.50	93	93	294
5	0.22	0.47	2.20	94	94	279
6	0.18	0.42	1.80	94	94	271
B1	0.20	0.45	2.00	93	93	262
2	0.22	0.47	2.20	93	93	284
3	0.22	0.47	2.20	92	92	271
4	0.24	0.49	2.40	92	92	273
5	0.23	0.48	2.30	92	92	280
6	0.22	0.47	2.20	92	92	267
AVERAGE:	**0.22**	**0.47**	**2.18**	**93.1**	**93.1**	**273.1**

INPUT DATA SHEET

PLANT : NEFCO / SWA Biosolids RUN # : U1-M5-Pre6
LOCATION : West Palm Beach, FL DATE : 26-Jun-13

As (SQFT) :	7.069
Dn (INCHES)	0.351
PITOT COEFFICIENT:	0.84
IMP-1 (INT) :	100
IMP-2 (INT) :	100
IMP-3 (INT) :	0
IMP-4 (INT) :	805.0
IMP-1 (FIN) :	300
IMP-2 (FIN) :	112
IMP-3 (FIN) :	4
IMP-4 (FIN) :	811.0
% CO2 (OUT):	7.54
% O2 (OUT) :	8.52
% CO (OUT) :	0
Pbar	30.0
Pstack	-0.42
NUMBER OF POINTS	12
TEST LENGTH	60
FINAL METER	759.140
INTIAL METER	710.371
BEGIN TIME	10:20
END TIME	11:27

TRAVERSE POINT	VELOCITY HEAD	SQUARE ROOT	DELTA H	DRY GAS METER IN	DRY GAS METER OUT	STACK TEMP (F)
A1	0.22	0.47	2.20	92	92	279
2	0.22	0.47	2.20	91	91	272
3	0.21	0.46	2.02	92	92	283
4	0.22	0.47	2.11	92	92	268
5	0.21	0.46	2.02	92	92	266
6	0.18	0.42	1.73	92	92	273
B1	0.22	0.47	2.11	93	93	270
2	0.22	0.47	2.11	93	93	271
3	0.23	0.48	2.21	94	94	277
4	0.22	0.47	2.11	94	94	270
5	0.21	0.46	2.02	94	94	271
6	0.20	0.45	1.92	94	94	269
AVERAGE:	**0.21**	**0.46**	**2.06**	**92.8**	**92.8**	**272.4**

INPUT DATA SHEET

PLANT : NEFCO / SWA Biosolids **RUN # :** U1-M5-Pre7
LOCATION : West Palm Beach, FL **DATE :** 26-Jun-13

As (SQFT) :	7.069
Dn (INCHES)	0.351
PITOT COEFFICIENT:	0.84
IMP-1 (INT) :	100
IMP-2 (INT) :	100
IMP-3 (INT) :	0
IMP-4 (INT) :	816.0
IMP-1 (FIN) :	324
IMP-2 (FIN) :	114
IMP-3 (FIN) :	2
IMP-4 (FIN) :	824.0
% CO2 (OUT):	7.42
% O2 (OUT) :	8.64
% CO (OUT) :	0
Pbar	30.0
Pstack	-0.40
NUMBER OF POINTS	12
TEST LENGTH	60
FINAL METER	810.801
INTIAL METER	759.393
BEGIN TIME	11:48
END TIME	12:52

TRAVERSE POINT	VELOCITY HEAD	SQUARE ROOT	DELTA H	DRY GAS METER IN	DRY GAS METER OUT	STACK TEMP (F)
A1	0.20	0.45	1.92	93	93	262
2	0.18	0.42	1.73	93	93	269
3	0.22	0.47	2.11	94	94	270
4	0.24	0.49	2.30	93	93	268
5	0.24	0.49	2.30	94	94	281
6	0.25	0.50	2.40	94	94	279
B1	0.27	0.52	2.59	94	94	280
2	0.27	0.52	2.59	94	94	271
3	0.26	0.51	2.50	94	94	272
4	0.26	0.51	2.50	94	94	272
5	0.24	0.49	2.30	94	94	266
6	0.22	0.47	2.11	94	94	270
AVERAGE:	**0.24**	**0.49**	**2.28**	**93.8**	**93.8**	**271.7**

ISOKINETIC CALCULATION SHEET

PLANT : **NEFCO / SWA Biosolids** RUN # : **U1-M5-Pre5**
LOCATION : **West Palm Beach, FL** DATE : **26-Jun-13**

Ts (°F) =	273.1	% CO2 =	7.52	Vm (CF) =	50.322
Ts (°R) =	733.1	% O2 =	8.59	DELTA H (ABS) =	30.16
Tm (°F) =	93.1	% CO =	0	Ps (ABS) =	29.97
Tm (°R) =	553.1	% N2 =	83.89	SQRT DELTA P =	0.4667
VI (TOT) =	251.5	Cp =	0.84	Y =	0.9728
VI (adj) =	NA	TIME =	60	An =	0.000672

Vm std = $\frac{17.64\ (Vm)(Y)(DELTA\ H\ ABS)}{(Tm)}$ = 47.090 DSCF

Vw std = .04707 (VI TOT) = 11.838 CF

Bwo = Vw std / (Vw std) + (Vm std) = 0.201

Bwo = by steam tables = NA

1 - Bwo = 1 - Bwo = 0.799

Md (DRY)= 0.44 (% CO2) + 0.32 (% O2) + 0.28 (% CO) + 0.28 (% N2) = 29.547 LB/LB MOLE

Ms (WET)= MD (1-Bwo) + 18 (Bwo) = 27.227 LB/LB MOLE

G = SQRT (Ts/Ps/Ms) = 0.948

Vs = 85.49 (Cp) (G) (SQRT DELTA P) = 31.767 FPS

Qs = 3600 (1-Bwo)(Vs)(As)(17.64)(Ps/Ts) = 465846 DSCFH

% ISO = $\frac{100\ (Ts)\ (Vm\ std)\ (Pstd)}{60\ (Tstd)\ (\ Vs\ )\ (Time)\ (\ An)\ (Ps)\ (1\text{-}Bwo)}$ = 106.3

ISOKINETIC CALCULATION SHEET

PLANT : **NEFCO / SWA Biosolids** RUN # : **U1-M5-Pre6**
LOCATION : **West Palm Beach, FL** (example) **26-Jun-13**

Ts (°F) =	272.4	% CO2 =	7.54	Vm (CF) =	48.769
Ts (°R) =	732.4	% O2 =	8.52	DELTA H (ABS) =	30.15
Tm (°F) =	92.8	% CO =	0	Ps (ABS) =	29.97
Tm (°R) =	552.8	% N2 =	83.93	SQRT DELTA P =	0.4617
Vl (TOT) =	222.0	Cp =	0.84	Y =	0.9728
Vl (adj) =	NA	TIME =	60	An =	0.000672

Vm std = 17.64 (Vm)(Y)(DELTA H ABS) / (Tm) = 45.651 DSCF

Vw std = .04707 (Vl TOT) = 10.450 CF

Bwo = Vw std / (Vw std) + (Vm std) = 0.186

Bwo = by steam tables = NA

1 - Bwo = 1 - Bwo = 0.814

Ms (WET)= 0.44 (% CO2) +
0.32 (% O2) +
0.28 (% CO) + = 29.548 LB/LB
0.28 (% N2) MOLE

Ms (WET)= MD (1-Bwo) + 18 (Bwo) = 27.397 LB/LB MOLE

G = SQRT (Ts/Ps/Ms) = 0.944

Vs = 85.49 (Cp) (G) (SQRT DELTA P) = 31.313 FPS

Qs = 3600 (1-Bwo)(Vs)(As)(17.64)(Ps/Ts) = 468007 DSCFH

% ISO = 100 (Ts) (Vm std) (Pstd) / 60 (Tstd) (Vs) (Time) (An) (Ps) (1-Bwo) = 102.6

ISOKINETIC CALCULATION SHEET

PLANT :	**NEFCO / SWA Biosolids**	RUN # :	**U1-M5-Pre7**
LOCATION :	**West Palm Beach, FL**	DATE :	**26-Jun-13**

Ts (°F) =	271.7	% CO2 =	7.42	Vm (CF) =	51.408
Ts (°R) =	731.7	% O2 =	8.64	DELTA H (ABS) =	30.17
Tm (°F) =	93.8	% CO =	0	Ps (ABS) =	29.97
Tm (°R) =	553.8	% N2 =	83.94	SQRT DELTA P =	0.4865
Vl (TOT) =	248.0	Cp =	0.84	Y =	0.9728
Vl (adj) =	NA	TIME =	60	An =	0.000672

Vm std = $\dfrac{17.64\ (Vm)(Y)(\text{DELTA H ABS})}{(Tm)}$ = 48.060 DSCF

Vw std = .04707 (Vl TOT) = 11.673 CF

Bwo = Vw std / (Vw std) + (Vm std) = 0.195

Bwo = by steam tables = NA

1 - Bwo = 1 - Bwo = 0.805

Ms (WET)= 0.44 (% CO2) + 0.32 (% O2) + 0.28 (% CO) + 0.28 (% N2) = 29.533 LB/LB MOLE

Ms (WET)= MD (1-Bwo) + 18 (Bwo) = 27.279 LB/LB MOLE

G = SQRT (Ts/Ps/Ms) = 0.946

Vs = 85.49 (Cp) (G) (SQRT DELTA P) = 33.052 FPS

Qs = 3600 (1-Bwo)(Vs)(As)(17.64)(Ps/Ts) = 488963 DSCFH

% ISO = $\dfrac{100\ (Ts)\ (\text{Vm std})\ (\text{Pstd})}{60\ (\text{Tstd})\ (Vs)\ (\text{Time})\ (An)\ (Ps)\ (1\text{-}Bwo)}$ = 103.4

Analyzer Calibrations

PLANT :	NEFCO / SWA Biosolids	DATE :	26-Jun-13
LOCATION :	West Palm Beach, FL		

Diluent/Pollutant	O_2	CO_2			
Units	%	%			
Monitor Range Selected	25	20			
Monitor Range (Effective, per Method)	20.42	18.69			
--- Low Level Analyzer Calibration Error ---					
Cylinder Value ($C_{v,Low}$)	0.00	0.00			
Analyzer Response ($C_{Dir,Low}$)	0.09	0.14			
Analyzer Calibration Error (ACE$_{,Low)}$)	0.44	0.75			
Calibration Status (Pass/Fail)	Pass	Pass			
--- Mid Level Analyzer Calibration Error ---					
Cylinder Value ($C_{v,Mid}$)	10.49	9.45			
Analyzer Response ($C_{Dir,Mid}$)	10.55	9.44			
Analyzer Calibration Error (ACE$_{,Mid}$)	0.29	-0.05			
Calibration Status (Pass/Fail)	Pass	Pass			
--- High Level Analyzer Calibration Error ---					
Cylinder Value ($C_{v,High}$)	20.42	18.69			
Analzyer Response ($C_{Dir,High}$)	20.43	18.68			
Analyzer Calibration Error (ACE$_{,High}$)	0.05	-0.05			
Calibration Status (Pass/Fail)	Pass	Pass			
--- Cylinder Gas Selected for Bias Checks ---					
Use Mid (M) or High (H) Span	M	M			
ZERO	0.09	0.14			
SPAN	10.55	9.44			
--- Mid Level Gas Range Assessment ---					
Cylinder Value (Mid)	10.49	9.45			
Cylinder Value (High/Span)	20.42	18.69			
Percentage of Span (%)	51.4	50.6			
Assessment Status (Pass/Fail)	Pass	Pass			

CEMS Calibrations and Calculations Sheet

PLANT	: NEFCO / SWA Biosolids	RUN #	: U1-M5-Pre5
LOCATION	: West Palm Beach, FL	DATE	: 26-Jun-13

	GAS
START TIME :	9:00
END TIME :	10:03

Diluent/Pollutant:	O_2 (%)	CO_2 (%)
Instrument Span =	20.42	18.69
Analyzer Zero Response =	0.09	0.14
Analyzer Span Response =	10.55	9.44
Initial Sytem Zero Response =	0.10	0.12
Final System Zero Response =	0.09	0.10
Average Zero Response (C_o) =	0.10	0.11
Initial Sytem Span Response =	10.52	9.45
Final System Span Response =	10.55	9.41
Average Span Response (C_m) =	10.54	9.43
Calibration gas values (C_{ma}) =	10.49	9.45
System Bias and Drift Calculations		
Initial Zero Bias (SB_i) =	0.05	0.11
Final Zero Bias (SB_{final}) =	0.00	0.21
Zero Drift (D) =	0.05	0.11
Initial Span Bias (SB_i) =	0.15	0.05
Final Span Bias (SB_{final}) =	0.00	0.16
Span Drift (D) =	0.15	0.21
Uncorrected Ave. ($\overline{C}_{Avg}$) =	8.64	7.53
Corrected Ave.=C_{gas} = ($\overline{C}_{Avg}$-C_o)(C_{ma}/(C_m-C_o)) =	8.59	7.52

PLANT DATA

CEMS Calibrations and Calculations Sheet

PLANT : NEFCO / SWA Biosolids
LOCATION : West Palm Beach, FL

RUN # : U1-M5-Pre6
DATE : 26-Jun-13

	GAS
START TIME :	10:20
END TIME :	11:27

Diluent/Pollutant:	O_2 (%)	CO_2 (%)
Operating Range =	20.42	18.69
Analyzer Zero Response =	0.09	0.14
Analyzer Span Response =	10.55	9.44
Sytem Zero Response (Initial) =	0.09	0.10
System Zero Response (Final) =	0.10	0.12
Average Zero Response (C_o) =	0.10	0.11
Sytem Span Response (Initial) =	10.55	9.41
System Span Response (Final) =	10.56	9.41
Average Span Response (C_m) =	10.56	9.41
Calibration gas values (C_{ma}) =	10.49	9.45
System Bias and Drift Calculations:		
Initial Zero Bias (SB_i) =	0.00	0.21
Final Zero Bias (SB_{final}) =	0.05	0.11
Zero Drift (D) =	0.05	0.11
Initial Span Bias (SB_i) =	0.00	0.16
Final Span Bias (SB_{final}) =	0.05	0.16
Span Drift (D) =	0.05	0.00
Uncorrected Ave. ($\overline{C}_{Avg}$) =	8.59	7.53
Corrected Ave.=C_{gas} = ($\overline{C}_{Avg}$-C_o)(C_{ma}/(C_m-C_o)) =	8.52	7.54

PLANT DATA

CEMS Calibrations and Calculations Sheet

PLANT : NEFCO / SWA Biosolids
LOCATION : West Palm Beach, FL

RUN # : U1-M5-Pre7
DATE : 26-Jun-13

	GAS
START TIME :	11:48
END TIME :	12:52

Diluent/Pollutant:	O_2 (%)	CO_2 (%)
Operating Range =	20.42	18.69
Analyzer Zero Response =	0.09	0.14
Analyzer Span Response =	10.55	9.44
Sytem Zero Response (Initial) =	0.10	0.12
System Zero Response (Final) =	0.10	0.10
Average Zero Response (C_o) =	0.10	0.11
Sytem Span Response (Initial) =	10.56	9.41
System Span Response (Final) =	10.57	9.39
Average Span Response (C_m) =	10.57	9.40
Calibration gas values (C_{ma}) =	10.49	9.45
System Bias and Drift Calculations:		
Initial Zero Bias (SB_i) =	0.05	0.11
Final Zero Bias (SB_{final}) =	0.05	0.21
Zero Drift (D) =	0.00	0.11
Initial Span Bias (SB_i) =	0.05	0.16
Final Span Bias (SB_{final}) =	0.10	0.27
Span Drift (D) =	0.05	0.11
Uncorrected Ave. ($\overline{C_{Avg}}$) =	8.72	7.40
Corrected Ave.=C_{gas} = $(\overline{C_{Avg}}-C_o)(C_{ma}/(C_m-C_o))$ =	8.64	7.42

PLANT DATA

South Florida Environmental Services, LLC
Uncorrected CEMS Monitoring Results
Instrumental Reference Methods - 3A, 6C, 7E and 10

Facility/Site: NEFCO / SWA Biosolids **Date:** 06/26/13
Location: West Palm Beach, FL **Start Time:** 9:00
Run No.: U1-M5-Pre5 **Stop Time:** 10:03

Date/time	O_2 ($\%_{vd}$)	CO_2 ($\%_{vd}$)			
6/26/2013 9:00:00 AM	9.02	7.27			
6/26/2013 9:01:00 AM	9.05	7.29			
6/26/2013 9:02:00 AM	9.03	7.32			
6/26/2013 9:03:00 AM	8.98	7.29			
6/26/2013 9:04:00 AM	9.17	7.36			
6/26/2013 9:05:00 AM	9.00	7.31			
6/26/2013 9:06:00 AM	9.10	7.29			
6/26/2013 9:07:00 AM	9.04	7.29			
6/26/2013 9:08:00 AM	9.00	7.33			
6/26/2013 9:09:00 AM	8.89	7.39			
6/26/2013 9:10:00 AM	9.06	7.40			
6/26/2013 9:11:00 AM	8.69	7.49			
6/26/2013 9:12:00 AM	8.68	7.56			
6/26/2013 9:13:00 AM	8.66	7.52			
6/26/2013 9:14:00 AM	8.60	7.53			
6/26/2013 9:15:00 AM	8.74	7.52			
6/26/2013 9:16:00 AM	8.73	7.46			
6/26/2013 9:17:00 AM	8.58	7.48			
6/26/2013 9:18:00 AM	8.68	7.49			
6/26/2013 9:19:00 AM	8.63	7.50			
6/26/2013 9:20:00 AM	8.47	7.49			
6/26/2013 9:21:00 AM	8.69	7.49			
6/26/2013 9:22:00 AM	8.71	7.46			
6/26/2013 9:23:00 AM	8.69	7.48			
6/26/2013 9:24:00 AM	8.62	7.59			
6/26/2013 9:25:00 AM	8.56	7.58			
6/26/2013 9:26:00 AM	8.42	7.64			
6/26/2013 9:27:00 AM	8.46	7.60			
6/26/2013 9:28:00 AM	8.55	7.57			
6/26/2013 9:29:00 AM	8.56	7.52			
6/26/2013 9:30:00 AM	8.58	7.58			
6/26/2013 9:31:00 AM			Port Change		
6/26/2013 9:32:00 AM					
6/26/2013 9:33:00 AM					
6/26/2013 9:34:00 AM	8.42	7.66			
6/26/2013 9:35:00 AM	8.39	7.62			
6/26/2013 9:36:00 AM	8.65	7.64			
6/26/2013 9:37:00 AM	8.70	7.58			
6/26/2013 9:38:00 AM	8.44	7.65			
6/26/2013 9:39:00 AM	8.34	7.69			
6/26/2013 9:40:00 AM	8.40	7.70			
6/26/2013 9:41:00 AM	8.41	7.68			
6/26/2013 9:42:00 AM	8.41	7.65			
6/26/2013 9:43:00 AM	8.53	7.59			
6/26/2013 9:44:00 AM	8.47	7.62			
6/26/2013 9:45:00 AM	8.47	7.60			
6/26/2013 9:46:00 AM	8.44	7.62			
6/26/2013 9:47:00 AM	8.48	7.66			
6/26/2013 9:48:00 AM	8.48	7.66			
6/26/2013 9:49:00 AM	8.44	7.64			
6/26/2013 9:50:00 AM	8.37	7.66			
6/26/2013 9:51:00 AM	8.50	7.59			
6/26/2013 9:52:00 AM	8.46	7.56			
6/26/2013 9:53:00 AM	8.57	7.52			
6/26/2013 9:54:00 AM	8.54	7.61			
6/26/2013 9:55:00 AM	8.52	7.60			
6/26/2013 9:56:00 AM	8.50	7.57			
6/26/2013 9:57:00 AM	8.63	7.56			
6/26/2013 9:58:00 AM	8.59	7.54			
6/26/2013 9:59:00 AM	8.69	7.50			
6/26/2013 10:00:00 AM	8.67	7.48			
6/26/2013 10:01:00 AM	8.88	7.52			
6/26/2013 10:02:00 AM	8.66	7.56			
Run Averages:	**8.64**	**7.53**			

South Florida Environmental Services, LLC
Uncorrected CEMS Monitoring Results
Instrumental Reference Methods - 3A, 6C, 7E and 10

Facility/Site: NEFCO / SWA Biosolids **Date:** 06/26/13
Location: West Palm Beach, FL **Start Time:** 10:20
Run No.: U1-M5-Pre6 **Stop Time:** 11:27

Date/time	O_2 (%$_{vd}$)	CO_2 (%$_{vd}$)			
6/26/2013 10:20:00 AM	8.65	7.54			
6/26/2013 10:21:00 AM	8.43	7.52			
6/26/2013 10:22:00 AM	8.62	7.57			
6/26/2013 10:23:00 AM	8.47	7.57			
6/26/2013 10:24:00 AM	8.83	7.56			
6/26/2013 10:25:00 AM	8.45	7.57			
6/26/2013 10:26:00 AM	8.61	7.59			
6/26/2013 10:27:00 AM	8.61	7.58			
6/26/2013 10:28:00 AM	8.79	7.57			
6/26/2013 10:29:00 AM	8.64	7.58			
6/26/2013 10:30:00 AM	8.57	7.55			
6/26/2013 10:31:00 AM	8.40	7.61			
6/26/2013 10:32:00 AM	8.53	7.52			
6/26/2013 10:33:00 AM	8.44	7.56			
6/26/2013 10:34:00 AM	8.66	7.56			
6/26/2013 10:35:00 AM	8.51	7.57			
6/26/2013 10:36:00 AM	8.48	7.59			
6/26/2013 10:37:00 AM	8.55	7.59			
6/26/2013 10:38:00 AM	8.68	7.58			
6/26/2013 10:39:00 AM	8.64	7.55			
6/26/2013 10:40:00 AM	8.47	7.57			
6/26/2013 10:41:00 AM	8.47	7.60			
6/26/2013 10:42:00 AM	8.54	7.56			
6/26/2013 10:43:00 AM	8.55	7.56			
6/26/2013 10:44:00 AM	8.54	7.59			
6/26/2013 10:45:00 AM	8.50	7.57			
6/26/2013 10:46:00 AM	8.32	7.60			
6/26/2013 10:47:00 AM	8.55	7.59			
6/26/2013 10:48:00 AM	8.38	7.59			
6/26/2013 10:49:00 AM	8.53	7.61			
6/26/2013 10:50:00 AM			Port Change		
6/26/2013 10:51:00 AM					
6/26/2013 10:52:00 AM					
6/26/2013 10:53:00 AM					
6/26/2013 10:54:00 AM					
6/26/2013 10:55:00 AM					
6/26/2013 10:56:00 AM					
6/26/2013 10:57:00 AM	8.59	7.42			
6/26/2013 10:58:00 AM	8.71	7.52			
6/26/2013 10:59:00 AM	8.63	7.51			
6/26/2013 11:00:00 AM	8.60	7.52			
6/26/2013 11:01:00 AM	8.47	7.52			
6/26/2013 11:02:00 AM	8.62	7.49			
6/26/2013 11:03:00 AM	8.53	7.51			
6/26/2013 11:04:00 AM	8.63	7.53			
6/26/2013 11:05:00 AM	8.81	7.47			
6/26/2013 11:06:00 AM	8.63	7.51			
6/26/2013 11:07:00 AM	8.62	7.52			
6/26/2013 11:08:00 AM	8.63	7.49			
6/26/2013 11:09:00 AM	8.61	7.54			
6/26/2013 11:10:00 AM	8.56	7.51			
6/26/2013 11:11:00 AM	8.66	7.51			
6/26/2013 11:12:00 AM	8.56	7.50			
6/26/2013 11:13:00 AM	8.59	7.48			
6/26/2013 11:14:00 AM	8.68	7.51			
6/26/2013 11:15:00 AM	8.65	7.48			
6/26/2013 11:16:00 AM	8.69	7.49			
6/26/2013 11:17:00 AM	8.79	7.42			
6/26/2013 11:18:00 AM	8.74	7.52			
6/26/2013 11:19:00 AM	8.61	7.45			
6/26/2013 11:20:00 AM	8.48	7.54			
6/26/2013 11:21:00 AM	8.69	7.46			
6/26/2013 11:22:00 AM	8.68	7.50			
6/26/2013 11:23:00 AM	8.64	7.50			
6/26/2013 11:24:00 AM	8.69	7.49			
6/26/2013 11:25:00 AM	8.64	7.45			
6/26/2013 11:26:00 AM	8.67	7.54			
Averages:	**8.59**	**7.53**			

South Florida Environmental Services, LLC
Uncorrected CEMS Monitoring Results
Instrumental Reference Methods - 3A, 6C, 7E and 10

Facility/Site: NEFCO / SWA Biosolids
Location: West Palm Beach, FL
Run No.: U1-M5-Pre7
Date: 06/26/13
Start Time: 11:48
Stop Time: 12:52

Date/time	O_2 ($\%_{vd}$)	CO_2 ($\%_{vd}$)			
6/26/2013 11:48:00 AM	8.58	7.54			
6/26/2013 11:49:00 AM	8.40	7.58			
6/26/2013 11:50:00 AM	8.56	7.49			
6/26/2013 11:51:00 AM	8.64	7.52			
6/26/2013 11:52:00 AM	8.53	7.50			
6/26/2013 11:53:00 AM	8.55	7.48			
6/26/2013 11:54:00 AM	8.55	7.47			
6/26/2013 11:55:00 AM	8.57	7.51			
6/26/2013 11:56:00 AM	8.50	7.53			
6/26/2013 11:57:00 AM	8.80	7.49			
6/26/2013 11:58:00 AM	8.65	7.45			
6/26/2013 11:59:00 AM	8.52	7.47			
6/26/2013 12:00:00 PM	8.50	7.40			
6/26/2013 12:01:00 PM	8.47	7.45			
6/26/2013 12:02:00 PM	8.67	7.47			
6/26/2013 12:03:00 PM	8.57	7.54			
6/26/2013 12:04:00 PM	8.64	7.50			
6/26/2013 12:05:00 PM	8.71	7.44			
6/26/2013 12:06:00 PM	8.63	7.42			
6/26/2013 12:07:00 PM	8.64	7.44			
6/26/2013 12:08:00 PM	8.75	7.43			
6/26/2013 12:09:00 PM	8.74	7.40			
6/26/2013 12:10:00 PM	8.79	7.40			
6/26/2013 12:11:00 PM	8.86	7.44			
6/26/2013 12:12:00 PM	8.87	7.36			
6/26/2013 12:13:00 PM	8.97	7.31			
6/26/2013 12:14:00 PM	8.94	7.27			
6/26/2013 12:15:00 PM	8.90	7.24			
6/26/2013 12:16:00 PM	8.92	7.28			
6/26/2013 12:17:00 PM	8.90	7.27			
6/26/2013 12:18:00 PM					
6/26/2013 12:19:00 PM			Port Change		
6/26/2013 12:20:00 PM					
6/26/2013 12:21:00 PM					
6/26/2013 12:22:00 PM	9.24	7.26			
6/26/2013 12:23:00 PM	8.77	7.22			
6/26/2013 12:24:00 PM	8.93	7.24			
6/26/2013 12:25:00 PM	9.08	7.25			
6/26/2013 12:26:00 PM	8.92	7.27			
6/26/2013 12:27:00 PM	8.94	7.27			
6/26/2013 12:28:00 PM	8.90	7.25			
6/26/2013 12:29:00 PM	9.00	7.25			
6/26/2013 12:30:00 PM	8.89	7.28			
6/26/2013 12:31:00 PM	9.22	7.24			
6/26/2013 12:32:00 PM	8.94	7.26			
6/26/2013 12:33:00 PM	8.96	7.27			
6/26/2013 12:34:00 PM	8.82	7.31			
6/26/2013 12:35:00 PM	8.75	7.40			
6/26/2013 12:36:00 PM	8.59	7.43			
6/26/2013 12:37:00 PM	8.54	7.47			
6/26/2013 12:38:00 PM	8.71	7.47			
6/26/2013 12:39:00 PM	8.91	7.31			
6/26/2013 12:40:00 PM	9.04	7.27			
6/26/2013 12:41:00 PM	8.71	7.42			
6/26/2013 12:42:00 PM	9.14	7.09			
6/26/2013 12:43:00 PM	8.70	7.44			
6/26/2013 12:44:00 PM	8.43	7.54			
6/26/2013 12:45:00 PM	8.39	7.59			
6/26/2013 12:46:00 PM	8.34	7.61			
6/26/2013 12:47:00 PM	8.44	7.54			
6/26/2013 12:48:00 PM	8.52	7.50			
6/26/2013 12:49:00 PM	8.18	7.58			
6/26/2013 12:50:00 PM	8.45	7.58			
6/26/2013 12:51:00 PM	8.57	7.50			
Run Averages:	**8.72**	**7.40**			

TRAVERSE DATA SHEET

PLANT NEFCO / SWA Biosolids

RUN # U1- M5-Pre5

LOCATION West Palm Beach, FL / Unit #1

DATE 6/26/13

Filter No.

Filter Tare Wt.

Trap No. N/A

IMP-1 (INT) 100
IMP-2 (INT) 100
IMP-3 (INT) 0
IMP-4 (INT) 811.5
IMP-5 (INT) —
IMP-6 (INT) —
IMP-7 (INT) —

IMP-1 (FIN) 331
IMP-2 (FIN) 112
IMP-3 (FIN) 4
IMP-4 (FIN) 816.0
IMP-5 (FIN) —
IMP-6 (FIN) —
IMP-7 (FIN) —

Pstack -0.42

Baro. Pres 30.0

TEST LENGTH 60

FINAL METER 710.099

INTIAL METER 659.777

BEGIN TIME 900

END TIME 1003

TRAVERSE POINT	DELTA P	DELTA H	DRY GAS METER IN	DRY GAS METER OUT	STACK TEMP (F)	METER READING	FILTER BOX	PROBE TEMP	DRY FILTER	IMP TEMP	VAC
A1	.18	1.80	94	94	245	—	253	246	N/A	62	2
2	.23	2.30	94	94	272	663.5	248	244		64	3
3	.23	2.30	94	94	279	668.1	248	240		62	3
4	.25	2.50	93	93	294	672.2	248	245		62	3
5	.22	2.20	94	94	279	676.7	245	249		62	3
6	.18	1.80	94	94	271	680.8	251	243		62	3
B1	.20	2.00	93	93	262	684.6	251	249		64	3
2	.22	2.20	93	93	284	688.5	250	244		60	3
3	.22	2.20	92	92	271	692.9	248	245		60	3
4	.24	2.40	92	92	273	697.0	249	245		61	4
5	.23	2.30	92	92	280	701.5	250	244		61	4
6	.22	2.20	92	92	267	705.9	248	246		62	4

Relationship	10.0
Box #	5
Y	.9728
Delta H	2.04
Box Op.	AC
Probe Op.	FM

Pre Leak Check	0.002	@	12	"Hg
Post Leak Check	0.002	@	10	"Hg
Pre Pitot Check	0.0	@	73	"H2O
Post Pitot Check	0.0	@	73	"H2O
Noz. ID No.		Probe No.	P-5-1	
Noz. Diam.	.351			

Notes:
Port Change - 930-937

TRAVERSE DATA SHEET

PLANT	NEFCo / SWA Biosolids	**RUN #**	U1-M5-Pre 6
LOCATION	West Palm Beach, FL / Unit #1	**DATE**	6/26/13

Filter No.		**Filter Tare Wt.**		**Trap No.**	

IMP-1 (INT)	100
IMP-2 (INT)	100
IMP-3 (INT)	0
IMP-4 (INT)	805.0
IMP-5 (INT)	—
IMP-6 (INT)	—
IMP-7 (INT)	—
IMP-1 (FIN)	300
IMP-2 (FIN)	112
IMP-3 (FIN)	4
IMP-4 (FIN)	811.0
IMP-5 (FIN)	—
IMP-6 (FIN)	—
IMP-7 (FIN)	—
Pstack	-.42
Baro. Pres.	30.0
TEST LENGTH	60
FINAL METER	759.140
INTIAL METER	710.371
BEGIN TIME	1020
END TIME	1127

TRAVERSE POINT	DELTA P	DELTA H	DRY GAS METER IN	DRY GAS METER OUT	STACK TEMP (F)	METER READING	FILTER BOX	PROBE TEMP	DRY FILTER	IMP TEMP	VAC
A1	.22	2.20	92	92	279	–	244	240	N/A	62	1
2	.22	2.20	91	91	272	714.7	248	246		56	1
* 3	.21	2.02	92	92	283	719.2	249	244		57	1
4	.22	2.11	92	92	268	723.6	249	244		58	1
5	.21	2.02	92	92	266	727.0	249	244		58	1
6	.18	1.73	92	92	273	731.4	254	244		58	1
B1	.22	2.11	93	93	270	734.7	249	242		64	2
2	.22	2.11	93	93	271	738.9	248	245		58	2
3	.23	2.21	94	94	277	742.8	250	245		58	2
4	.22	2.11	94	94	270	747.1	248	246		60	2
5	.21	2.02	94	94	271	751.0	247	243		61	2
6	.20	1.92	94	94	269	755.4	249	243		62	2

Relationship	10.0
Box #	5
Y	.9724
Delta H	2.04
Box Op.	AS
Probe Op.	FM

Pre Leak Check	0.004	**@**	12	**"Hg**
Post Leak Check	0.002	**@**	8	**"Hg**
Pre Pitot Check	0.0	**@**	73	**"H2O**
Post Pitot Check	0.0	**@**	73	**"H2O**
Noz. ID No.		**Probe No.**	P-5-1	
Noz. Diam.	.351			

Notes:

Port Change 1150-1157

@10:00 change K-Factor to 9.6

TRAVERSE DATA SHEET

PLANT: NEFCO / SWA Biosolids
RUN #: U1 - M5 - Pre 7
LOCATION: West Palm Beach, FL / Unit 1
DATE: 6/26/13
Filter No.:
Filter Tare Wt.:
Trap No.:

IMP-1 (INT): 100
IMP-2 (INT): 100
IMP-3 (INT): 0
IMP-4 (INT): 816
IMP-5 (INT): -
IMP-6 (INT): -
IMP-7 (INT): -

IMP-1 (FIN): 324
IMP-2 (FIN): 114
IMP-3 (FIN): 2
IMP-4 (FIN): 824
IMP-5 (FIN): -
IMP-6 (FIN): -
IMP-7 (FIN): -

Pstack: -.40
Baro. Pres.: 30.0
TEST LENGTH: 60
FINAL METER: 810.801
INTIAL METER: 759.393
BEGIN TIME: 1148
END TIME: 1252

TRAVERSE POINT	DELTA P	DELTA H	DRY GAS METER IN	DRY GAS METER OUT	STACK TEMP (F)	METER READING	FILTER BOX	PROBE TEMP	DRY FILTER	IMP. TEMP	VAC.
A1	.20	1.92	93	93	262	-	245	256	N/A	64	2
2	.18	1.73	93	93	269	763.4	245	248	|	60	2
3	.22	2.11	94	94	270	766.0	250	245	|	61	2
4	.24	2.30	93	93	268	771.0	250	250	|	62	~~2~~3
5	.24	2.30	94	94	281	776.1	249	245	|	62	4
6	.25	2.40	94	94	279	779.6	251	242	|	63	4
B1	.27	2.59	94	94	280	784.0	250	242	|	63	5
2	.27	2.59	94	94	271	788.6	249	247	|	63	5
3	.26	2.50	94	94	272	793.2	249	247	|	63	5
4	.26	2.50	94	94	272	797.9	249	246	|	63	5
5	.24	2.30	94	94	266	802.4	250	249	|	64	5
6	.22	2.11	94	94	270	806.6	250	251	|	64	5

Relationship	9.6	Pre Leak Check	0.003	@	10	"Hg
Box #	5	Post Leak Check	0.004	@	10	"Hg
Y	.9728	Pre Pitot Check	0.0	@	73	"H2O
Delta H	2.04	Post Pitot Check	0.0	@	73	"H2O
Box Op.	AS	Noz. ID No.		Probe No.	1-5-1	
Probe Op.	FM	Noz. Diam.	.351			

Notes:
Port change 1213-1222

Client/Site: NEFCO / SWA Biosolids

Source: RTO # 1 & #2 Stacks

RM Response Time: Upscale (seconds): 20

Operator: Andrew Seache

Date: 6/26/13

Downscale (seconds): 20

Note: System Response Time is the longer of the upscale and downscale response times. Performed during initial zero and bias checks:

Analyzer Calibration Error (ACE) – Reference Method

Pollutant/Diluent	Low		Mid		High/Full Scale (CS)	
	Cylinder Value (C_v)	Analyzer Response (C_{DIR})	Cylinder Value (C_v)	Analyzer Response (C_{DIR})	Cylinder Value (C_v)	Analyzer Response (C_{DIR})
Oxygen	0.00	0.09	10.49	10.55	20.42	20.43
Carbon Dioxide	0.00	0.14	9.45	9.44	18.69	18.68

Range selected for analyzer operation:

O_2 (%)	CO_2 (%)	CO (ppm)	NO_x (ppm)	SO_2 (ppm)
25	20	—	—	—

Protocol Gases Used During Program:

Cylinder No.	Diluent/Pollutant Concentrations(s)	Expiration Date
CC421863	20.42 O_2 / 18.69 CO_2	11/2/20
CC421656	10.49 O_2 / 9.45 CO_2	11/2/20

Analyzer Calibration Error (ACE) Acceptance Criteria: ≤ ± 2%

Where: ACE = $[(C_{Dir} - C_v)/CS] * 100\%$

Client/Site: SNEFCC / SWA Biosolids

Source: RTO # 1 Stack

Operator: A. Seahe

Date: 6/26/13

Run Number: U1 - MS - Pre 5

Start Time: 900

End Time: 1003

System Bias (SB)/Drift (D) Assessments – Reference Method

Pollutant/Diluent	Start Zero		Start Span (C_{MA})		Final Zero		Final Span (C_{MA})	
	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)
Oxygen	0.00	0.16	10.49	10.52	0.00	0.09	10.49	10.55
Carbon Dioxide	0.00	0.12	9.45	9.45	0.00	0.10	9.45	9.41

O_2 (%)	CO_2 (%)	CO (ppm)	NO_x (ppm)	SO_2 (ppm)
25	20	—	—	—

Sampling System Bias (SB) Criteria: ≤± 5% of span for zero and upscale gas, where:

Where: $SB = [(C_s - C_{Dir})/CS] * 100\%$

Zero and Calibration Drift (D) Criteria: ≤± 3% of span, where

$D = |SB_{final} - SB_i|$

Client/Site: NEFCO /SWA Biosolids

Source: RTO # 1 Stack

Operator: A. Seehe

Date: 6/26/13

Run Number: U1- MS - Pre 6

Start Time: 1020

End Time: 1127

System Bias (SB)/Drift (D) Assessments – Reference Method

Pollutant/Diluent	Start Zero		Start Span (C_{MA})		Final Zero		Final Span (C_{MA})	
	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)
Oxygen	0.00	0.09	10.49	10.55	0.00	0.10	10.49	10.56
Carbon Dioxide	0.00	0.10	9.45	9.41	0.00	0.12	9.45	9.41

O_2 (%)	CO_2 (%)	CO (ppm)	NO_x (ppm)	SO_2 (ppm)
25	20	–	–	–

Sampling System Bias (SB) Criteria: ≤± 5% of span for zero and upscale gas, where:

Where: $SB = [(C_s - C_{Dir})/CS] * 100\%$

Zero and Calibration Drift (D) Criteria: ≤± 3% of span, where

$D = |SB_{final} - SB_i|$

Client/Site: NEFCo / SWA Bio

Source: Unit #1 Stack

Operator: A. Seshe

Date: 6/26/13

Run Number: U1- M5 - Pre 7

Start Time: 1148

End Time: 1252

System Bias (SB)/Drift (D) Assessments – Reference Method

Pollutant/Diluent	Start Zero		Start Span (C_{MA})		Final Zero		Final Span (C_{MA})	
	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)
Oxygen	0.00	0.10	10.49	10.56	0.00	0.10	10.49	10.57
Carbon Dioxide	0.00	0.12	9.45	9.41	0.00	0.10	9.45	9.39

O_2 (%)	CO_2 (%)	CO (ppm)	NO_x (ppm)	SO_2 (ppm)
25	20	—	—	—

Sampling System Bias (SB) Criteria: ≤± 5% of span for zero and upscale gas, where:

Where: $SB = [(C_s - C_{Dir})/CS] * 100\%$

Zero and Calibration Drift (D) Criteria: ≤± 3% of span, where

$D = |SB_{final} - SB_i|$

A4

RTO / Dryer No. 2 Pre-Compliance Emissions Data (6/26/13)

PARTICULATE EMISSION CALCULATION SHEET

PLANT:	**NEFCO / SWA Biosolids**	RUN # :	**U2-M5-Pre5**
LOCATION:	**West Palm Beach, FL**	DATE:	**26-Jun-13**

			BLANKS	
	FILTER	**BEAKER**	**FILTER**	**BEAKER**
NUMBER :	1437	7D	1445	B5-48
FINAL :	0.4511	67.2800	0.4408	67.0280
TARE :	0.4503	67.2788	0.4408	67.0279
NET :	0.0008	0.0012	0.0000	0.0001

VOLUME BLANK RINSE 130

VOLUME OF RINSE 110

Mn - Ar = Mn

Mn = 2.000

Ar = 0.085

Mn = 2.000 not blank corr

O2 = 7.23

CO2 = 8.16

Vs = 28.25 ft/sec

As = 7.07 ft2

Vm std = 45.61 DSCF

Qs =	3600(1-Bwo)(Vs)(As)(17.64)(Ps/Ts)	=	455382	DSCFH
	3600 (Vs) (As)	=	718857	ACFH
	ACFH / 60	=	11981	ACFM
Cs =	(2.205 E-6) (Mn) / (Vm Std)	=	9.66811E-08	LB/SCF
Cs' =	0.0154 (Mn) /(VmStd)	=	0.0007	GRAINS/SCF
Cs' =	Mn / VmStd	=	1.55	mg/dscm
Cs' @ 7% O2 =	Mn / VmStd x 20.9-7/20.9-O2%	=	1.57	mg/dscm @7% O2
PMR =	Qs x Cs	=	0.044	LB/HR

PARTICULATE EMISSION CALCULATION SHEET

PLANT	**NEFCO / SWA Biosolids**	RUN # :	**U2-M5-Pre6**
LOCATION	**West Palm Beach, FL**	DATE :	**26-Jun-13**

			BLANKS	
	FILTER	BEAKER	FILTER	BEAKER
NUMBER :	1438	405	1445	B5-48
FINAL :	0.4528	67.5405	0.4408	67.0280
TARE :	0.4513	67.5395	0.4408	67.0279
NET :	0.0015	0.0010	0.0000	0.0001
		VOLUME BLANK RINSE		130
		VOLUME OF RINSE		115

Mn - Ar = Mn

			O2 =	7.65	
			CO2 =	7.93	
Mn =	2.500		Vs =	27.58	ft/sec
Ar =	0.088		As =	7.07	ft2
			Vm std=	43.75	DSCF
Mn =	2.500	not blank corr			

Qs	= 3600(1-Bwo)(Vs)(As)(17.64)(Ps/Ts)	=	438695	DSCFH
	3600 (Vs) (As)	=	701783.4741	ACFH
	ACFH / 60	=	11696	ACFM
Cs	= (2.205 E-6) (Mn) / (Vm Std)	=	1.26013E-07	LB/SCF
Cs'	= 0.0154 (Mn) /(VmSTD)	=	0.0009	GRAINS/SCF
Cs'	= Mn / VmStd	=	2.02	mg/dscm
Cs' @ 7% O2	= Mn / VmStd x 20.9-7/20.9-O2%	=	2.12	mg/dscm @7% O2
PMR	= Qs x Cs	=	0.055	LB/HR

PARTICULATE EMISSION CALCULATION SHEET

PLANT	**NEFCO / SWA Biosolids**	RUN # :	**U2-M5-Pre7**
LOCATION	**West Palm Beach, FL**	DATE :	**26-Jun-13**

			BLANKS	
	FILTER	**BEAKER**	**FILTER**	**BEAKER**
NUMBER :	1439	G12	1445	B5-48
FINAL :	0.4446	65.8297	0.4408	67.0280
TARE :	0.4436	65.8286	0.4408	67.0279
NET :	0.0010	0.0011	0.0000	0.0001

VOLUME BLANK RINSE 130

VOLUME OF RINSE 125

Mn - Ar = Mn

Mn = 2.100

Ar = 0.096

Mn = 2.100 not blank corr

O2 = 7.53

CO2 = 8.04

Vs = 27.59 ft/sec

AS = 7.07 ft2

Vm std= 44.60 DSCF

Qs	= 3600(1-Bwo)(Vs)(As)(17.64)(Ps/Ts)	=	440579	DSCFH
	3600 (Vs) (As)	=	702020.7184	ACFH
	ACFH / 60	=	11700	ACFM
Cs	= (2.205 E-6) (Mn) / (Vm Std)	=	1.03827E-07	LB/SCF
Cs'	= 0.0154 (Mn) /(VmSTD)	=	0.0007	GRAINS/SCF
Cs'	= Mn / VmStd	=	1.66	mg/dscm
Cs' @ 7% O2	= Mn / VmStd x 20.9-7/20.9-O2%	=	1.73	mg/dscm @7% O2
PMR	= Qs x Cs	=	0.046	LB/HR

INPUT DATA SHEET

PLANT:	NEFCO / SWA Biosolids	RUN # :	U2-M5-Pre5
LOCATION:	West Palm Beach, FL	DATE :	26-Jun-13

As (SQFT) :	7.069
Dn (INCHES)	0.351
PITOT COEFFICIENT:	0.84
IMP-1 (INT) :	100
IMP-2 (INT) :	100
IMP-3 (INT) :	0
IMP-4 (INT) :	811.0
IMP-1 (FIN) :	300
IMP-2 (FIN) :	114
IMP-3 (FIN) :	2
IMP-4 (FIN) :	816.0
% CO2 (OUT):	8.16
% O2 (OUT) :	7.23
% CO (OUT) :	0
Pbar	30.0
Pstack	-0.35
NUMBER OF POINTS	12
TEST LENGTH	60
FINAL METER	859.902
INTIAL METER	811.121
BEGIN TIME	13:32
END TIME	14:34

TRAVERSE POINT	VELOCITY HEAD	SQUARE ROOT	DELTA H	DRY GAS METER IN	DRY GAS METER OUT	STACK TEMP (F)
A1	0.17	0.41	1.87	91	91	205
2	0.17	0.41	1.87	92	92	220
3	0.18	0.42	1.98	93	93	222
4	0.19	0.44	2.09	94	94	213
5	0.19	0.44	2.09	93	93	218
6	0.20	0.45	2.20	93	93	217
B1	0.19	0.44	2.09	94	94	212
2	0.21	0.46	2.31	94	94	220
3	0.20	0.45	2.20	94	94	230
4	0.20	0.45	2.20	94	94	229
5	0.18	0.42	1.98	94	94	226
6	0.17	0.41	1.87	94	94	224
AVERAGE:	**0.19**	**0.43**	**2.06**	**93.3**	**93.3**	**219.7**

INPUT DATA SHEET

PLANT :	NEFCO / SWA Biosolids	RUN # :	U2-M5-Pre6
LOCATION :	West Palm Beach, FL	DATE :	26-Jun-13

As (SQFT) :	7.069
Dn (INCHES)	0.351
PITOT COEFFICIENT:	0.84
IMP-1 (INT) :	100
IMP-2 (INT) :	100
IMP-3 (INT) :	0
IMP-4 (INT) :	816.0
IMP-1 (FIN) :	280
IMP-2 (FIN) :	115
IMP-3 (FIN) :	5
IMP-4 (FIN) :	824.5
% CO2 (OUT):	7.93
% O2 (OUT) :	7.65
% CO (OUT) :	0
Pbar	30.0
Pstack	-0.36
NUMBER OF POINTS	12
TEST LENGTH	60
FINAL METER	906.953
INTIAL METER	860.425
BEGIN TIME	15:15
END TIME	16:17

TRAVERSE POINT	VELOCITY HEAD	SQUARE ROOT	DELTA H	DRY GAS METER IN	DRY GAS METER OUT	STACK TEMP (F)
A1	0.17	0.41	1.70	90	90	221
2	0.18	0.42	1.80	90	90	227
3	0.17	0.41	1.63	90	90	222
4	0.19	0.44	1.82	90	90	221
5	0.18	0.42	1.73	90	90	231
6	0.17	0.41	1.63	89	89	222
B1	0.17	0.41	1.63	90	90	225
2	0.19	0.44	1.82	90	90	254
3	0.18	0.42	1.73	90	90	248
4	0.18	0.42	1.73	90	90	251
5	0.18	0.42	1.73	90	90	224
6	0.15	0.39	1.44	89	89	224
AVERAGE:	**0.18**	**0.42**	**1.70**	**89.8**	**89.8**	**230.8**

INPUT DATA SHEET

PLANT :	NEFCO / SWA Biosolids	RUN # :	U2-M5-Pre7
LOCATION :	West Palm Beach, FL	DATE :	26-Jun-13

As (SQFT) :	7.069
Dn (INCHES)	0.351
PITOT COEFFICIENT:	0.84
IMP-1 (INT) :	100
IMP-2 (INT) :	100
IMP-3 (INT) :	0
IMP-4 (INT) :	811.0
IMP-1 (FIN) :	286
IMP-2 (FIN) :	112
IMP-3 (FIN) :	4
IMP-4 (FIN) :	818.0
% CO2 (OUT):	8.04
% O2 (OUT) :	7.53
% CO (OUT) :	0
Pbar	30.0
Pstack	-0.35
NUMBER OF POINTS	12
TEST LENGTH	60
FINAL METER	954.530
INTIAL METER	907.281
BEGIN TIME	16:34
END TIME	17:37

TRAVERSE POINT	VELOCITY HEAD	SQUARE ROOT	DELTA H	DRY GAS METER IN	OUT	STACK TEMP (F)
A1	0.14	0.37	1.54	89	89	227
2	0.16	0.40	1.76	88	88	221
3	0.17	0.41	1.87	88	88	229
4	0.17	0.41	1.87	88	88	231
5	0.18	0.42	1.98	88	88	229
6	0.16	0.40	1.76	89	89	228
B1	0.18	0.42	1.98	88	88	226
2	0.19	0.44	2.09	88	88	230
3	0.20	0.45	2.20	88	88	236
4	0.20	0.45	2.20	88	88	238
5	0.20	0.45	2.20	87	87	236
6	0.17	0.41	1.87	87	87	232
AVERAGE:	0.18	0.42	1.94	88.0	88.0	230.3

ISOKINETIC CALCULATION SHEET

PLANT : **NEFCO / SWA Biosolids** RUN # : **U2-M5-Pre5**
LOCATION : **West Palm Beach, FL** DATE : **26-Jun-13**

Ts (°F) =	219.7	% CO2 =	8.16	Vm (CF) =	48.781
Ts (°R) =	679.7	% O2 =	7.23	DELTA H (ABS) =	30.15
Tm (°F) =	93.3	% CO =	0	Ps (ABS) =	29.97
Tm (°R) =	553.3	% N2 =	84.61	SQRT DELTA P =	0.4328
Vl (TOT) =	221.0	Cp =	0.84	Y =	0.9728
Vl (adj) =	NA	TIME =	60	An =	0.000672

Vm std =	$\frac{17.64\ (Vm)(Y)(\text{DELTA H ABS})}{(Tm)}$	=	45.614 DSCF
Vw std =	.04707 (Vl TOT)	=	10.402 CF
Bwo =	Vw std / (Vw std) + (Vm std)	=	0.186
Bwo =	by steam tables	=	NA
1 - Bwo =	1 - Bwo	=	0.814
Md (DRY)=	0.44 (% CO2) + 0.32 (% O2) + 0.28 (% CO) + 0.28 (% N2)	=	29.594 LB/LB MOLE
Ms (WET)=	MD (1-Bwo) + 18 (Bwo)	=	27.441 LB/LB MOLE
G =	SQRT (Ts/Ps/Ms)	=	0.909
Vs =	85.49 (Cp) (G) (SQRT DELTA P)	=	28.249 FPS
Qs =	3600 (1-Bwo)(Vs)(As)(17.64)(Ps/Ts)	=	455382 DSCFH
% ISO =	$\frac{100\ (Ts)\ (Vm\ std)\ (Pstd)}{60\ (Tstd)\ (\ Vs\ )\ (Time)\ (\ An)\ (Ps)\ (1\text{-}Bwo)}$	=	105.3

ISOKINETIC CALCULATION SHEET

PLANT : **NEFCO / SWA Biosolids** RUN # : **U2-M5-Pre6**
LOCATION : **West Palm Beach, FL** (example) **26-Jun-13**

Ts (°F) =	230.8	% CO2 =	7.93	Vm (CF) =	46.528
Ts (°R) =	690.8	% O2 =	7.65	DELTA H (ABS) =	30.12
Tm (°F) =	89.8	% CO =	0	Ps (ABS) =	29.97
Tm (°R) =	549.8	% N2 =	84.42	SQRT DELTA P =	0.4191
Vl (TOT) =	208.5	Cp =	0.84	Y =	0.9728
Vl (adj) =	NA	TIME =	60	An =	0.000672

$$\text{Vm std} = \frac{17.64\ (\text{Vm})(\text{Y})(\text{DELTA H ABS})}{(\text{Tm})} = 43.745\ \text{DSCF}$$

Vw std = .04707 (Vl TOT) = 9.814 CF

Bwo = Vw std / (Vw std) + (Vm std) = 0.183

Bwo = by steam tables = NA

1 - Bwo = 1 - Bwo = 0.817

Ms (WET)= 0.44 (% CO2) + 0.32 (% O2) + 0.28 (% CO) + 0.28 (% N2) = 29.574 LB/LB MOLE

Ms (WET)= MD (1-Bwo) + 18 (Bwo) = 27.454 LB/LB MOLE

G = SQRT (Ts/Ps/Ms) = 0.916

Vs = 85.49 (Cp) (G) (SQRT DELTA P) = 27.578 FPS

Qs = 3600 (1-Bwo)(Vs)(As)(17.64)(Ps/Ts) = 438695 DSCFH

$$\text{\% ISO} = \frac{100\ (\text{Ts})\ (\text{Vm std})\ (\text{Pstd})}{60\ (\text{Tstd})\ (\text{ Vs })\ (\text{Time})\ (\text{ An})\ (\text{Ps})\ (\text{1-Bwo})} = 104.9$$

ISOKINETIC CALCULATION SHEET

PLANT : **NEFCO / SWA Biosolids** RUN # : **U2-M5-Pre7**
LOCATION : **West Palm Beach, FL** DATE : **26-Jun-13**

Ts (°F) =	230.3	% CO2 =	8.04	Vm (CF) =	47.249
Ts (°R) =	690.3	% O2 =	7.53	DELTA H (ABS) =	30.14
Tm (°F) =	88.0	% CO =	0	Ps (ABS) =	29.97
Tm (°R) =	548.0	% N2 =	84.44	SQRT DELTA P =	0.4198
VI (TOT) =	209.0	Cp =	0.84	Y =	0.9728
VI (adj) =	NA	TIME =	60	An =	0.000672

Vm std = $\frac{17.64\ (Vm)(Y)(DELTA\ H\ ABS)}{(Tm)}$ = 44.598 DSCF

Vw std = .04707 (VI TOT) = 9.838 CF

Bwo = Vw std / (Vw std) + (Vm std) = 0.181

Bwo = by steam tables = NA

1 - Bwo = 1 - Bwo = 0.819

Ms (WET)= 0.44 (% CO2) +
0.32 (% O2) +
0.28 (% CO) + = 29.587 LB/LB MOLE
0.28 (% N2)

Ms (WET)= MD (1-Bwo) + 18 (Bwo) = 27.493 LB/LB MOLE

G = SQRT (Ts/Ps/Ms) = 0.915

Vs = 85.49 (Cp) (G) (SQRT DELTA P) = 27.588 FPS

Qs = 3600 (1-Bwo)(Vs)(As)(17.64)(Ps/Ts) = 440579 DSCFH

% ISO = $\frac{100\ (Ts)\ (Vm\ std)\ (Pstd)}{60\ (Tstd)\ (\ Vs\ )\ (Time)\ (\ An)\ (Ps)\ (1-Bwo)}$ = 106.4

Analyzer Calibrations

PLANT :	NEFCO / SWA Biosolids	DATE :	26-Jun-13
LOCATION :	West Palm Beach, FL		

Diluent/Pollutant	O_2	CO_2			
Units	%	%			
Monitor Range Selected	25	20			
Monitor Range (Effective, per Method)	20.42	18.69			
--- Low Level Analyzer Calibration Error ---					
Cylinder Value ($C_{v,Low}$)	0.00	0.00			
Analyzer Response ($C_{Dir,Low}$)	0.09	0.14			
Analyzer Calibration Error ($ACE_{,Low)}$)	0.44	0.75			
Calibration Status (Pass/Fail)	Pass	Pass			
--- Mid Level Analyzer Calibration Error ---					
Cylinder Value ($C_{v,Mid}$)	10.49	9.45			
Analyzer Response ($C_{Dir,Mid}$)	10.55	9.44			
Analyzer Calibration Error ($ACE_{,Mid}$)	0.29	-0.05			
Calibration Status (Pass/Fail)	Pass	Pass			
--- High Level Analyzer Calibration Error ---					
Cylinder Value ($C_{v,High}$)	20.42	18.69			
Analzyer Response ($C_{Dir,High}$)	20.43	18.68			
Analyzer Calibration Error ($ACE_{,High}$)	0.05	-0.05			
Calibration Status (Pass/Fail)	Pass	Pass			
--- Cylinder Gas Selected for Bias Checks ---					
Use Mid (M) or High (H) Span	M	M			
ZERO	0.09	0.14			
SPAN	10.55	9.44			
--- Mid Level Gas Range Assessment ---					
Cylinder Value (Mid)	10.49	9.45			
Cylinder Value (High/Span)	20.42	18.69			
Percentage of Span (%)	51.4	50.6			
Assessment Status (Pass/Fail)	Pass	Pass			

CEMS Calibrations and Calculations Sheet

PLANT : NEFCO / SWA Biosolids
LOCATION : West Palm Beach, FL
RUN # : U2-M5-Pre5
DATE : 26-Jun-13

	GAS
START TIME :	13:32
END TIME :	14:34

Diluent/Pollutant:	O_2 (%)	CO_2 (%)
Instrument Span =	20.42	18.69
Analyzer Zero Response =	0.09	0.14
Analyzer Span Response =	10.55	9.44
Initial Sytem Zero Response =	0.10	0.10
Final System Zero Response =	0.09	0.11
Average Zero Response (C_o) =	0.10	0.11
Initial Sytem Span Response =	10.57	9.39
Final System Span Response =	10.60	9.35
Average Span Response (C_m) =	10.59	9.37
Calibration gas values (C_{ma}) =	10.49	9.45
System Bias and Drift Calculations		
Initial Zero Bias (SB_i) =	0.05	0.21
Final Zero Bias (SB_{final}) =	0.00	0.16
Zero Drift (D) =	0.05	0.05
Initial Span Bias (SB_i) =	0.10	0.27
Final Span Bias (SB_{final}) =	0.24	0.48
Span Drift (D) =	0.15	0.21
Uncorrected Ave. ($\overline{C_{Avg}}$) =	7.33	8.10
Corrected Ave.=C_{gas} = ($\overline{C_{Avg}}$-C_o)(C_{ma}/(C_m-C_o)) =	7.23	8.16

PLANT DATA

CEMS Calibrations and Calculations Sheet

PLANT : NEFCO / SWA Biosolids
LOCATION : West Palm Beach, FL
RUN # : U2-M5-Pre6
DATE : 26-Jun-13

	GAS
START TIME :	15:15
END TIME :	16:17

Diluent/Pollutant:	O_2 (%)	CO_2 (%)
Operating Range =	20.42	18.69
Analyzer Zero Response =	0.09	0.14
Analyzer Span Response =	10.55	9.44
Sytem Zero Response (Initial) =	0.09	0.11
System Zero Response (Final) =	0.15	0.10
Average Zero Response (C_o) =	0.12	0.11
Sytem Span Response (Initial) =	10.60	9.35
System Span Response (Final) =	10.59	9.35
Average Span Response (C_m) =	10.60	9.35
Calibration gas values (C_{ma}) =	10.49	9.45
System Bias and Drift Calculations:		
Initial Zero Bias (SB_i) =	0.00	0.16
Final Zero Bias (SB_{final}) =	0.29	0.21
Zero Drift (D) =	0.29	0.05
Initial Span Bias (SB_i) =	0.24	0.48
Final Span Bias (SB_{final}) =	0.20	0.48
Span Drift (D) =	0.05	0.00
Uncorrected Ave. ($\overline{C_{Avg}}$) =	7.76	7.86
Corrected Ave.=C_{gas} = $(\overline{C_{Avg}}-C_o)(C_{ma}/(C_m-C_o))$ =	7.65	7.93

PLANT DATA

CEMS Calibrations and Calculations Sheet

PLANT : NEFCO / SWA Biosolids
LOCATION : West Palm Beach, FL
RUN # : U2-M5-Pre7
DATE : 26-Jun-13

	GAS
START TIME :	16:34
END TIME :	17:37

Diluent/Pollutant:	O_2 (%)	CO_2 (%)
Operating Range =	20.42	18.69
Analyzer Zero Response =	0.09	0.14
Analyzer Span Response =	10.55	9.44
Sytem Zero Response (Initial) =	0.15	0.10
System Zero Response (Final) =	0.12	0.06
Average Zero Response (C_o) =	0.14	0.08
Sytem Span Response (Initial) =	10.59	9.35
System Span Response (Final) =	10.55	9.42
Average Span Response (C_m) =	10.57	9.39
Calibration gas values (C_{ma}) =	10.49	9.45
System Bias and Drift Calculations:		
Initial Zero Bias (SB_i) =	0.29	0.21
Final Zero Bias (SB_{final}) =	0.15	0.43
Zero Drift (D) =	0.15	0.21
Initial Span Bias (SB_i) =	0.20	0.48
Final Span Bias (SB_{final}) =	0.00	0.11
Span Drift (D) =	0.20	0.37
Uncorrected Ave. ($\overline{C_{Avg}}$) =	7.62	8.00
Corrected Ave.=C_{gas} = ($\overline{C_{Avg}}$-C_o)(C_{ma}/(C_m-C_o)) =	7.53	8.04

PLANT DATA

South Florida Environmental Services, LLC
Uncorrected CEMS Monitoring Results
Instrumental Reference Methods - 3A, 6C, 7E and 10

Facility/Site: NEFCO / SWA Biosolids **Date:** 06/26/13
Location: West Palm Beach, FL **Start Time:** 13:32
Run No.: U2-M5-Pre5 **Stop Time:** 14:34

Date/time	O_2 ($\%_{vd}$)	CO_2 ($\%_{vd}$)			
6/26/2013 1:32:00 PM	7.48	8.03			
6/26/2013 1:33:00 PM	7.44	8.00			
6/26/2013 1:34:00 PM	7.52	8.00			
6/26/2013 1:35:00 PM	7.55	8.02			
6/26/2013 1:36:00 PM	7.46	8.03			
6/26/2013 1:37:00 PM	7.33	8.10			
6/26/2013 1:38:00 PM	7.32	8.12			
6/26/2013 1:39:00 PM	7.26	8.09			
6/26/2013 1:40:00 PM	7.47	8.02			
6/26/2013 1:41:00 PM	7.52	8.00			
6/26/2013 1:42:00 PM	7.49	7.96			
6/26/2013 1:43:00 PM	7.54	7.99			
6/26/2013 1:44:00 PM	7.60	7.99			
6/26/2013 1:45:00 PM	7.28	8.09			
6/26/2013 1:46:00 PM	7.30	8.15			
6/26/2013 1:47:00 PM	7.33	8.14			
6/26/2013 1:48:00 PM	7.34	8.12			
6/26/2013 1:49:00 PM	7.37	8.06			
6/26/2013 1:50:00 PM	7.39	8.05			
6/26/2013 1:51:00 PM	7.30	8.06			
6/26/2013 1:52:00 PM	7.36	8.09			
6/26/2013 1:53:00 PM	7.28	8.11			
6/26/2013 1:54:00 PM	7.43	8.16			
6/26/2013 1:55:00 PM	7.22	8.17			
6/26/2013 1:56:00 PM	7.27	8.17			
6/26/2013 1:57:00 PM	7.46	8.12			
6/26/2013 1:58:00 PM	7.29	8.07			
6/26/2013 1:59:00 PM	7.38	8.09			
6/26/2013 2:00:00 PM	7.38	8.08			
6/26/2013 2:01:00 PM	7.29	8.13			
6/26/2013 2:02:00 PM			Port Change		
6/26/2013 2:03:00 PM					
6/26/2013 2:04:00 PM					
6/26/2013 2:05:00 PM	7.26	8.15			
6/26/2013 2:06:00 PM	7.33	8.12			
6/26/2013 2:07:00 PM	7.54	8.13			
6/26/2013 2:08:00 PM	7.37	8.07			
6/26/2013 2:09:00 PM	7.29	8.07			
6/26/2013 2:10:00 PM	7.36	8.10			
6/26/2013 2:11:00 PM	7.31	8.17			
6/26/2013 2:12:00 PM	7.19	8.21			
6/26/2013 2:13:00 PM	7.02	8.23			
6/26/2013 2:14:00 PM	6.96	8.21			
6/26/2013 2:15:00 PM	7.19	8.16			
6/26/2013 2:16:00 PM	7.21	8.11			
6/26/2013 2:17:00 PM	7.30	8.08			
6/26/2013 2:18:00 PM	7.29	8.10			
6/26/2013 2:19:00 PM	7.20	8.14			
6/26/2013 2:20:00 PM	7.26	8.13			
6/26/2013 2:21:00 PM	7.22	8.15			
6/26/2013 2:22:00 PM	7.17	8.17			
6/26/2013 2:23:00 PM	7.20	8.13			
6/26/2013 2:24:00 PM	7.36	8.11			
6/26/2013 2:25:00 PM	7.39	8.12			
6/26/2013 2:26:00 PM	7.21	8.12			
6/26/2013 2:27:00 PM	7.13	8.13			
6/26/2013 2:28:00 PM	7.17	8.17			
6/26/2013 2:29:00 PM	7.15	8.11			
6/26/2013 2:30:00 PM	7.43	8.11			
6/26/2013 2:31:00 PM	7.34	8.05			
6/26/2013 2:32:00 PM	7.33	8.09			
6/26/2013 2:33:00 PM	7.37	8.09			
Run Averages:	**7.33**	**8.10**			

South Florida Environmental Services, LLC
Uncorrected CEMS Monitoring Results
Instrumental Reference Methods - 3A, 6C, 7E and 10

Facility/Site: NEFCO / SWA Biosolids
Location: West Palm Beach, FL
Run No.: U2-M5-Pre6

Date: 06/26/13
Start Time: 15:15
Stop Time: 16:17

Date/time	O_2 ($\%_{vd}$)	CO_2 ($\%_{vd}$)			
6/26/2013 3:15:00 PM	7.39	8.01			
6/26/2013 3:16:00 PM	7.51	8.01			
6/26/2013 3:17:00 PM	7.39	7.99			
6/26/2013 3:18:00 PM	7.46	7.98			
6/26/2013 3:19:00 PM	7.39	8.01			
6/26/2013 3:20:00 PM	7.48	7.99			
6/26/2013 3:21:00 PM	7.39	8.00			
6/26/2013 3:22:00 PM	7.47	7.93			
6/26/2013 3:23:00 PM	7.48	7.85			
6/26/2013 3:24:00 PM	7.80	7.79			
6/26/2013 3:25:00 PM	7.78	7.87			
6/26/2013 3:26:00 PM	7.78	7.85			
6/26/2013 3:27:00 PM	7.70	7.89			
6/26/2013 3:28:00 PM	7.74	7.89			
6/26/2013 3:29:00 PM	7.69	7.88			
6/26/2013 3:30:00 PM	7.74	7.87			
6/26/2013 3:31:00 PM	7.73	7.89			
6/26/2013 3:32:00 PM	7.51	7.92			
6/26/2013 3:33:00 PM	7.57	7.91			
6/26/2013 3:34:00 PM	7.61	7.95			
6/26/2013 3:35:00 PM	7.64	7.91			
6/26/2013 3:36:00 PM	7.69	7.94			
6/26/2013 3:37:00 PM	7.59	7.91			
6/26/2013 3:38:00 PM	7.63	7.94			
6/26/2013 3:39:00 PM	7.62	7.92			
6/26/2013 3:40:00 PM	7.53	7.95			
6/26/2013 3:41:00 PM	7.56	7.96			
6/26/2013 3:42:00 PM	7.66	7.96			
6/26/2013 3:43:00 PM	7.62	7.95			
6/26/2013 3:44:00 PM	7.55	7.93			
6/26/2013 3:45:00 PM			Port		
6/26/2013 3:46:00 PM			Change		
6/26/2013 3:47:00 PM	9.67	7.10			
6/26/2013 3:48:00 PM	7.78	7.84			
6/26/2013 3:49:00 PM	8.02	7.81			
6/26/2013 3:50:00 PM	8.09	7.81			
6/26/2013 3:51:00 PM	7.85	7.80			
6/26/2013 3:52:00 PM	7.85	7.84			
6/26/2013 3:53:00 PM	7.88	7.80			
6/26/2013 3:54:00 PM	7.91	7.85			
6/26/2013 3:55:00 PM	7.92	7.82			
6/26/2013 3:56:00 PM	7.85	7.80			
6/26/2013 3:57:00 PM	7.75	7.83			
6/26/2013 3:58:00 PM	7.92	7.83			
6/26/2013 3:59:00 PM	7.84	7.80			
6/26/2013 4:00:00 PM	7.80	7.81			
6/26/2013 4:01:00 PM	7.91	7.82			
6/26/2013 4:02:00 PM	7.87	7.84			
6/26/2013 4:03:00 PM	7.87	7.82			
6/26/2013 4:04:00 PM	7.79	7.82			
6/26/2013 4:05:00 PM	7.82	7.84			
6/26/2013 4:06:00 PM	7.84	7.84			
6/26/2013 4:07:00 PM	7.84	7.84			
6/26/2013 4:08:00 PM	7.72	7.84			
6/26/2013 4:09:00 PM	7.67	7.80			
6/26/2013 4:10:00 PM	7.90	7.83			
6/26/2013 4:11:00 PM	7.98	7.80			
6/26/2013 4:12:00 PM	7.94	7.79			
6/26/2013 4:13:00 PM	7.84	7.78			
6/26/2013 4:14:00 PM	7.96	7.79			
6/26/2013 4:15:00 PM	7.85	7.80			
6/26/2013 4:16:00 PM	7.90	7.83			
Averages:	**7.76**	**7.86**			

South Florida Environmental Services, LLC
Uncorrected CEMS Monitoring Results
Instrumental Reference Methods - 3A, 6C, 7E and 10

Facility/Site: NEFCO / SWA Biosolids
Date: 06/26/13
Location: West Palm Beach, FL
Start Time: 16:34
Run No.: U2-M5-Pre7
Stop Time: 17:37

Date/time	O_2 (%$_{vd}$)	CO_2 (%$_{vd}$)			
6/26/2013 4:34:00 PM	7.80	7.82			
6/26/2013 4:35:00 PM	8.04	7.86			
6/26/2013 4:36:00 PM	7.72	7.86			
6/26/2013 4:37:00 PM	7.83	7.88			
6/26/2013 4:38:00 PM	7.81	7.86			
6/26/2013 4:39:00 PM	7.89	7.83			
6/26/2013 4:40:00 PM	7.86	7.82			
6/26/2013 4:41:00 PM	7.88	7.83			
6/26/2013 4:42:00 PM	7.87	7.84			
6/26/2013 4:43:00 PM	7.88	7.87			
6/26/2013 4:44:00 PM	7.94	7.86			
6/26/2013 4:45:00 PM	7.78	7.89			
6/26/2013 4:46:00 PM	8.11	7.87			
6/26/2013 4:47:00 PM	7.86	7.86			
6/26/2013 4:48:00 PM	7.77	7.82			
6/26/2013 4:49:00 PM	7.94	7.85			
6/26/2013 4:50:00 PM	7.97	7.81			
6/26/2013 4:51:00 PM	7.97	7.85			
6/26/2013 4:52:00 PM	7.76	7.90			
6/26/2013 4:53:00 PM	7.60	7.97			
6/26/2013 4:54:00 PM	7.55	8.01			
6/26/2013 4:55:00 PM	7.59	8.00			
6/26/2013 4:56:00 PM	7.57	8.02			
6/26/2013 4:57:00 PM	7.71	7.97			
6/26/2013 4:58:00 PM	7.70	7.95			
6/26/2013 4:59:00 PM	7.84	7.97			
6/26/2013 5:00:00 PM	7.62	7.99			
6/26/2013 5:01:00 PM	7.61	8.01			
6/26/2013 5:02:00 PM	7.56	8.05			
6/26/2013 5:03:00 PM	7.58	8.04			
6/26/2013 5:04:00 PM	7.53	8.02			
6/26/2013 5:05:00 PM					
6/26/2013 5:06:00 PM			Port		
6/26/2013 5:07:00 PM			Change		
6/26/2013 5:08:00 PM					
6/26/2013 5:09:00 PM	7.77	7.98			
6/26/2013 5:10:00 PM	7.56	8.03			
6/26/2013 5:11:00 PM	7.47	8.12			
6/26/2013 5:12:00 PM	7.43	8.14			
6/26/2013 5:13:00 PM	7.51	8.12			
6/26/2013 5:14:00 PM	7.37	8.12			
6/26/2013 5:15:00 PM	7.41	8.08			
6/26/2013 5:16:00 PM	7.47	8.06			
6/26/2013 5:17:00 PM	7.54	8.03			
6/26/2013 5:18:00 PM	7.38	8.08			
6/26/2013 5:19:00 PM	7.40	8.11			
6/26/2013 5:20:00 PM	7.40	8.13			
6/26/2013 5:21:00 PM	7.39	8.15			
6/26/2013 5:22:00 PM	7.24	8.11			
6/26/2013 5:23:00 PM	7.36	8.13			
6/26/2013 5:24:00 PM	7.30	8.13			
6/26/2013 5:25:00 PM	7.51	8.09			
6/26/2013 5:26:00 PM	7.62	8.10			
6/26/2013 5:27:00 PM	7.48	8.09			
6/26/2013 5:28:00 PM	7.16	8.17			
6/26/2013 5:29:00 PM	7.20	8.14			
6/26/2013 5:30:00 PM	7.40	8.15			
6/26/2013 5:31:00 PM	7.24	8.21			
6/26/2013 5:32:00 PM	7.40	8.13			
6/26/2013 5:33:00 PM	7.42	8.10			
6/26/2013 5:34:00 PM	7.42	8.14			
6/26/2013 5:35:00 PM	7.27	8.09			
6/26/2013 5:36:00 PM	7.40	8.12			
6/26/2013 12:51:00 PM	8.57	7.50			
Run Averages:	**7.62**	**8.00**			

TRAVERSE DATA SHEET

PLANT	NEFCO / SWA Biosolids	RUN #	U2 - MS - Pre 5
LOCATION	West Palm Beach, FL / Unit 2	DATE	6/24/13
Filter No.		Filter Tare Wt.	
Trap No.			

IMP 1 (INT): 100
IMP 2 (INT): 100
IMP 3 (INT): 0
IMP 4 (INT): 811.0
IMP 5 (INT): —
IMP 6 (INT): —
IMP 7 (INT): —

IMP 1 (FIN): 300
IMP 2 (FIN): 114
IMP 3 (FIN): 2
IMP 4 (FIN): 8160
IMP 5 (FIN): —
IMP 6 (FIN): —
IMP 7 (FIN): —

Pstack: -.35
Baro. Pres.: 30.0
TEST LENGTH: 60
FINAL METER: 859.902
INTIAL METER: 811.121
BEGIN TIME: 1332
END TIME: 1434

TRAVERSE POINT	DELTA P	DELTA H	DRY GAS METER IN	DRY GAS METER OUT	STACK TEMP (F)	METER READING	FILTER BOX	PROBE TEMP	DRY FILTER	IMP TEMP	VAC
A 1	0.17	1.87	91	91	205	—	247	234	N14	62	1
2	.17	1.87	92	92	220	815.1	250	241		63	1
3	.18	1.98	93	93	222	819.0	249	246		63	1
4	.19	2.09	94	94	213	822.7	247	247		62	2
5	.19	2.09	93	93	218	827.0	242	241		62	2
6	.20	2.20	93	93	217	831.1	249	245		63	2
B 1	.19	2.09	94	94	212	835.3	249	247		65	2
2	.21	2.31	94	94	220	839.3	251	247		63	2
3	.20	2.20	94	94	230	844.1	248	242		63	2
4	.20	2.20	94	94	229	847.9	250	245		63	2
5	.18	1.98	94	94	226	852.0	250	242		64	2
6	.17	1.87	94	94	224	856.2	246	236		65	2

Relationship	11.0	Pre Leak Check	0.005	@	10	"Hg
Box #	5	Post Leak Check	0.004	@	10	"Hg
Y	.9928	Pre Pitot Check	0.0	@	>3	"H2O
Delta H	2.04	Post Pitot Check	0.0	@	73	"H2O
Box Op.	AS	Noz. ID No.		Probe No.		P-5-1
Probe Op.	Fm	Noz. Diam	.351			

Notes:
Port Change 1402-1404

TRAVERSE DATA SHEET

PLANT: NEFCO / SWA Biosolids
RUN #: U2 - M5 - Pre 6
LOCATION: West Palm Beach, FL / Unit 2
DATE: 6/26/13
Filter No.:
Filter Tare Wt.:
Trap No.:

IMP 1 (INT): 100
IMP 2 (INT): 100
IMP 3 (INT): 0
IMP 4 (INT): 816.0
IMP 5 (INT): —
IMP 6 (INT): —
IMP 7 (INT): —

IMP 1 (FIN): 280
IMP 2 (FIN): 115
IMP 3 (FIN): 5
IMP 4 (FIN): 824.5
IMP 5 (FIN): —
IMP 6 (FIN): —
IMP 7 (FIN): —

Pstack: -.36
Baro. Pres.: 30.0
TEST LENGTH: 60
FINAL METER: 906.933
INTIAL METER: 860.425
BEGIN TIME: 1515
END TIME: 1617

TRAVERSE POINT	DELTA P	DELTA H	DRY GAS METER IN	DRY GAS METER OUT	STACK TEMP (F)	METER READING	FILTER BOX	PROBE TEMP	DRY FILTER	IMP TEMP	VAC
A1	.17	1.87	90	90	221	—	250	244	N/A	65	1
2	.18	1.98	90	90	227	864.8	251	245		66	1
3	.17	1.87	90	90	222	868.4	249	246		63	1
4	.19	2.09	90	90	221	872.6	248	243		62	1
5	.18	1.98	90	90	231	875.9	249	243		60	1
6	.17	1.87	89	89	222	879.8	249	248		60	1
B1	.17	1.87	90	90	225	883.5	248	248		61	1
2	.19	2.09	90	90	254	887.4	251	249		57	1
3	.18	1.98	90	90	248	891.6	247	237		57	1
4	.18	1.98	90	90	251	895.6	246	239		55	1
5	.18	1.98	90	90	224	900.1	248	237		58	1
6	.15	1.65	89	89	224	903.4	249	250		59	1

Relationship	11.0	Pre Leak Check	0.002	@	10	"Hg
Box #	5	Post Leak Check	0.002	@	8	"Hg
Y	.9728	Pre Pitot Check	0.0	@	>3	"H2O
Delta H	2.04	Post Pitot Check	0.0	@	73	"H2O
Box Op.	AS	Noz. ID No.		Probe No.	P-5-1	
Probe Op.	FM	Noz. Diam.	0.351			

Notes: Port Change 1545 - 1547

TRAVERSE DATA SHEET

PLANT	NEFCO / SWA Biosolids	**RUN #**	U2 - M5 - Pre 7
LOCATION	WPB, FL / Unit 2	**DATE**	6/26/13

Filter No.:
Filter Tare Wt:
Trap No:

IMP 1 (INT) 100
IMP 2 (INT) 100
IMP 3 (INT) 0
IMP 4 (INT) 811.0
IMP 5 (INT) —
IMP 6 (INT) —
IMP 7 (INT) —

IMP 1 (FIN) 286
IMP 2 (FIN) 112
IMP 3 (FIN) 9
IMP 4 (FIN) 818.0
IMP 5 (FIN) —
IMP 6 (FIN) —
IMP 7 (FIN) —

Pstack -.135
Baro Pres 30.0
TEST LENGTH 60
FINAL METER 954.530
INITIAL METER 907.281
BEGIN TIME 1634
END TIME 1729

TRAVERSE POINT	DELTA P	DELTA H	DRY GAS METER IN	DRY GAS METER OUT	STACK TEMP (t)	METER READING	FILTER BOX	PROBE TEMP	DRY FILTER	IMP TEMP	VAC
A1	.14	1.54	89	89	227	—	248	231	N/A	58	1
2	.16	1.76	88	88	221	911.4	247	236		57	1
3	.17	1.87	88	88	229	914.8	248	243		57	1
4	.17	1.87	88	88	231	918.4	249	246		57	1
5	.18	~~2.00~~ 1.98	88	88	229	924.8	249	244		58	1
6	.16	1.76	89	89	228	927.1	250	247		59	1
B1	.18	1.98	88	88	226	930.0	248	245		63	1
2	.19	2.09	88	88	230	934.4	249	245		60	1
3	.20	2.20	88	88	236	937.6	250	244		58	1
4	.20	2.20	88	88	238	942.1	250	247		58	1
5	.20	2.20	87	87	236	946.5	249	249		59	1
6	.17	1.87	87	87	232	950.6	248	246		59	1

Relationship	11.0	**Pre Leak Check**	0.002	**@**	12	**"Hg**
Box #	5	**Post Leak Check**	0.012	**@**	10	**"Hg**
Y	.9928	**Pre Pitot Check**	0.0	**@**	73	**"H2O**
Delta H	2.04	**Post Pitot Check**	0.0	**@**	73	**"H2O**
Box Op.	AS	**Noz. ID No.**		**Probe No.**	P-51	
Probe Op.	FM	**Noz. Diam.**	.351			

Notes:
Port Change 1704-~~1706~~ 1707

Client/Site: NEFCO / SWA Biosolids

Source: RTO # 1 & #2 Stacks

RM Response Time: Upscale (seconds): 20

Operator: Andrew Searle

Date: 6/26/13

Downscale (seconds): 20

Note: System Response Time is the longer of the upscale and downscale response times. Performed during initial zero and bias checks:

Analyzer Calibration Error (ACE) – Reference Method

Pollutant/Diluent	Low		Mid		High/Full Scale (CS)	
	Cylinder Value (C_v)	Analyzer Response (C_{DIR})	Cylinder Value (C_v)	Analyzer Response (C_{DIR})	Cylinder Value (C_v)	Analyzer Response (C_{DIR})
Oxygen	0.00	0.09	10.49	10.55	20.42	20.43
Carbon Dioxide	0.00	0.14	9.45	9.44	18.69	18.68

Range selected for analyzer operation:

O_2 (%)	CO_2 (%)	CO (ppm)	NO_x (ppm)	SO_2 (ppm)
25	20	—	—	—

Protocol Gases Used During Program:

Cylinder No.	Diluent/Pollutant Concentrations(s)	Expiration Date
CC421863	20.42 O_2 / 18.69 CO_2	11/2/20
CC421656	10.49 O_2 / 9.45 CO_2	11/2/20

Analyzer Calibration Error (ACE) Acceptance Criteria: ≤ ± 2%

Where: ACE = $[(C_{Dir} - C_v)/CS] * 100\%$

Client/Site: NEFCO / SWA Biosolids

Source: Unit #2 Stack

Run Number: U2 - M5 - Pre 5

Start Time: 1332

End Time: 1434

Operator: A. Seaba

Date: 6/26/13

System Bias (SB)/Drift (D) Assessments – Reference Method

Pollutant/Diluent	Start Zero		Start Span (C_{MA})		Final Zero		Final Span (C_{MA})	
	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)
Oxygen	0.00	0.10	10.49	10.57	0.00	0.09	10.49	10.60
Carbon Dioxide	0.00	0.10	9.45	9.39	0.00	.11	9.45	9.35

O_2 (%)	CO_2 (%)	CO (ppm)	NO_x (ppm)	SO_2 (ppm)
25	20	–	–	–

Sampling System Bias (SB) Criteria: ≤± 5% of span for zero and upscale gas, where:

Where: $SB = [(C_s - C_{Dir})/CS] * 100\%$

Zero and Calibration Drift (D) Criteria: ≤± 3% of span, where

$D = |SB_{final} - SB_i|$

Client/Site: WEFCO /SWA Biosolids
Source: RTO #2 stack
Operator: A. Seale
Date: 6/26/13

Run Number: U2-MS-Pre6
Start Time: 1515
End Time: 1617

System Bias (SB)/Drift (D) Assessments – Reference Method

Pollutant/Diluent	Start Zero		Start Span (C_{MA})		Final Zero		Final Span (C_{MA})	
	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)
Oxygen	0.00	0.09	10.49	10.60	0.00	0.15	10.49	10.59
Carbon Dioxide	0.00	0.11	9.45	9.35	0.00	0.10	9.45	9.35

O_2 (%)	CO_2 (%)	CO (ppm)	NO_x (ppm)	SO_2 (ppm)
25	20	—	—	—

Sampling System Bias (SB) Criteria: ≤± 5% of span for zero and upscale gas, where:

Where: $SB = [(C_s - C_{Dir})/CS] * 100\%$

Zero and Calibration Drift (D) Criteria: ≤± 3% of span, where

$D = |SB_{final} - SB_i|$

Client/Site: NEFCO / SWA Biosolids
Source: RTO #2 Stack

Operator: A. Seaha
Date: 6/26/13

Run Number: U2 - M5 - Pre 7
Start Time: 1634
End Time: 1737

System Bias (SB)/Drift (D) Assessments – Reference Method

Pollutant/Diluent	Start Zero		Start Span (C_{MA})		Final Zero		Final Span (C_{MA})	
	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)
Oxygen	0.00	0.15	10.49	10.59	0.00	0.12	10.49	10.55
Carbon Dioxide	0.00	0.10	9.45	9.35	0.00	0.06	9.45	9.42

O_2 (%)	CO_2 (%)	CO (ppm)	NO_x (ppm)	SO_2 (ppm)
25	20	—	—	—

Sampling System Bias (SB) Criteria: ≤± 5% of span for zero and upscale gas, where:

Where: $SB = [(C_s - C_{Dir})/CS] * 100\%$

Zero and Calibration Drift (D) Criteria: ≤± 3% of span, where

$D = |SB_{final} - SB_i|$

A5
Particle Size Distribution Data

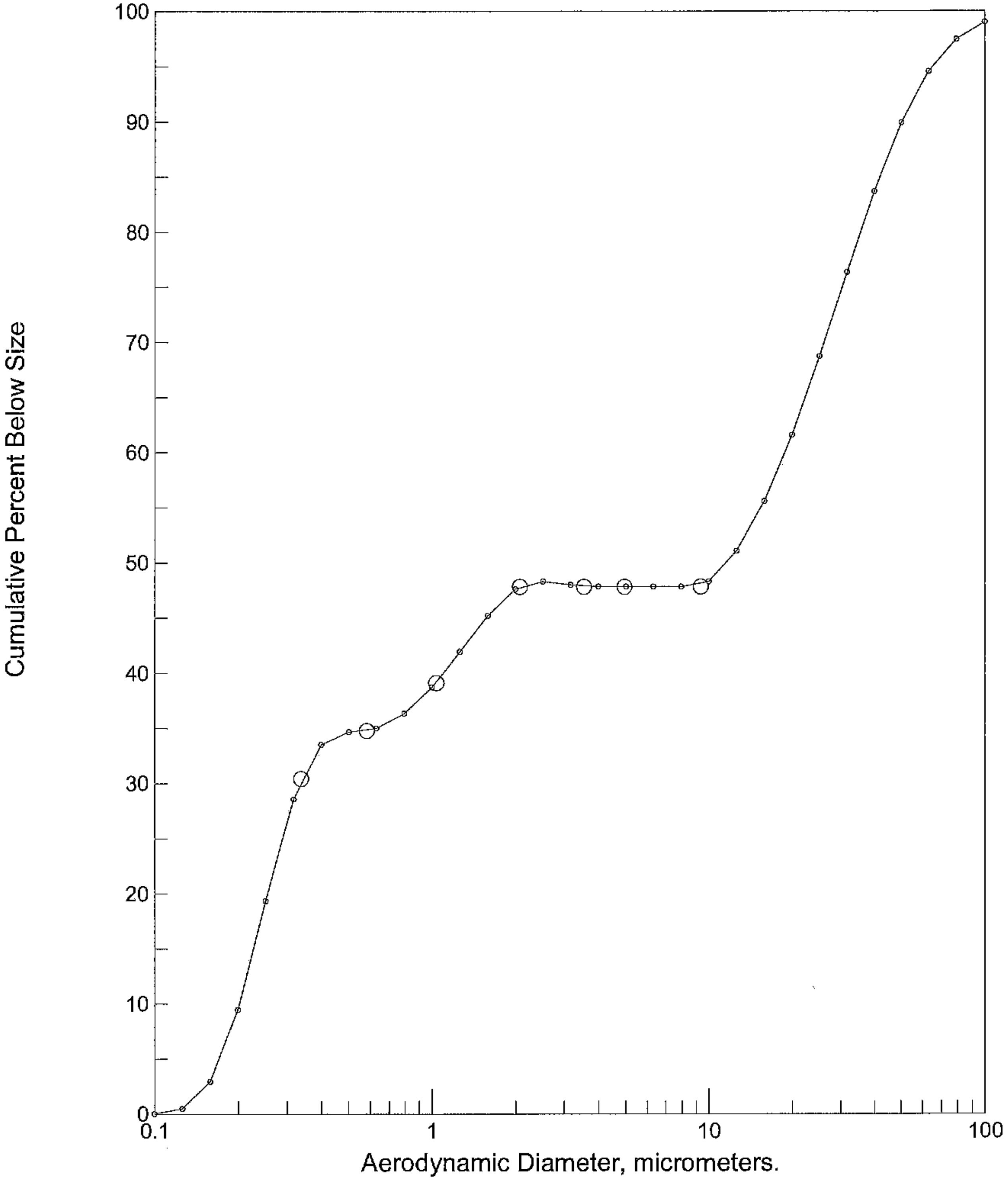
```
WinCIDRS: Results for Sample NEFCO Unit 1 Pre01.DI
Diameter Basis: Aerodynamic

Stage  C.Corr   D50   Cum.%  Re.No. V*D50 Skip
  1    1.02   9.368  47.83  1619.8  30.07
  2    1.02  11.614  47.83    47.5   8.48  X
  3    1.03   7.615  47.83    62.2   9.51  X
  4    1.04   4.952  47.83    82.2  10.80
  5    1.06   3.531  47.83   102.7  12.02
  6    1.11   2.071  47.83   146.2  14.29
  7    1.22   1.034  39.13   227.2  17.24
  8    1.39   0.582  34.78   306.8  17.73
  9    1.71   0.337  30.43   519.2  17.49

Total Concentration = 2.58E+00 mg/dscm

Results of Spline Fit:

  Dia.    Cum.%   Cum.Conc.  dM/dLogD  dN/dLogD
   um             mg/dncm    mg/dncm   No./dncm
  0.10     0.04   1.03E-03   3.04E-02  5.80E+10
  0.13     0.50   1.29E-02   2.75E-01  2.63E+11
  0.16     2.95   7.60E-02   1.10E+00  5.26E+11
  0.20     9.47   2.44E-01   2.24E+00  5.38E+11
  0.25    19.35   4.98E-01   2.66E+00  3.21E+11
  0.32    28.58   7.36E-01   1.92E+00  1.16E+11
  0.40    33.52   8.64E-01   6.73E-01  2.04E+10
  0.50    34.68   8.94E-01   5.78E-02  8.77E+08
  0.63    35.00   9.02E-01   2.00E-01  1.52E+09
  0.79    36.34   9.36E-01   4.85E-01  1.85E+09
  1.00    38.72   9.98E-01   7.36E-01  1.41E+09
  1.26    41.92   1.08E+00   8.77E-01  8.40E+08
  1.58    45.21   1.16E+00   7.73E-01  3.71E+08
  2.00    47.60   1.23E+00   4.13E-01  9.94E+07
  2.51    48.31   1.24E+00   5.84E-05  7.04E+03
  3.16    47.99   1.24E+00   5.84E-05  3.53E+03
  3.98    47.83   1.23E+00   1.69E-02  5.11E+05
  5.01    47.83   1.23E+00   8.62E-05  1.31E+03
  6.31    47.83   1.23E+00   8.62E-05  6.55E+02
  7.94    47.83   1.23E+00   7.24E-02  2.76E+05
 10.00    48.29   1.24E+00   4.86E-01  9.28E+05
 12.59    51.08   1.32E+00   9.44E-01  9.04E+05
 15.85    55.58   1.43E+00   1.37E+00  6.55E+05
 19.95    61.59   1.59E+00   1.71E+00  4.12E+05
 25.12    68.72   1.77E+00   1.93E+00  2.33E+05
 31.62    76.35   1.97E+00   1.96E+00  1.19E+05
 39.81    83.69   2.16E+00   1.78E+00  5.39E+04
 50.12    89.94   2.32E+00   1.41E+00  2.15E+04
 63.10    94.56   2.44E+00   9.65E-01  7.34E+03
 79.43    97.48   2.51E+00   5.55E-01  2.11E+03
100.00    99.02   2.55E+00   2.62E-01  5.01E+02
```

MMD = 11.52

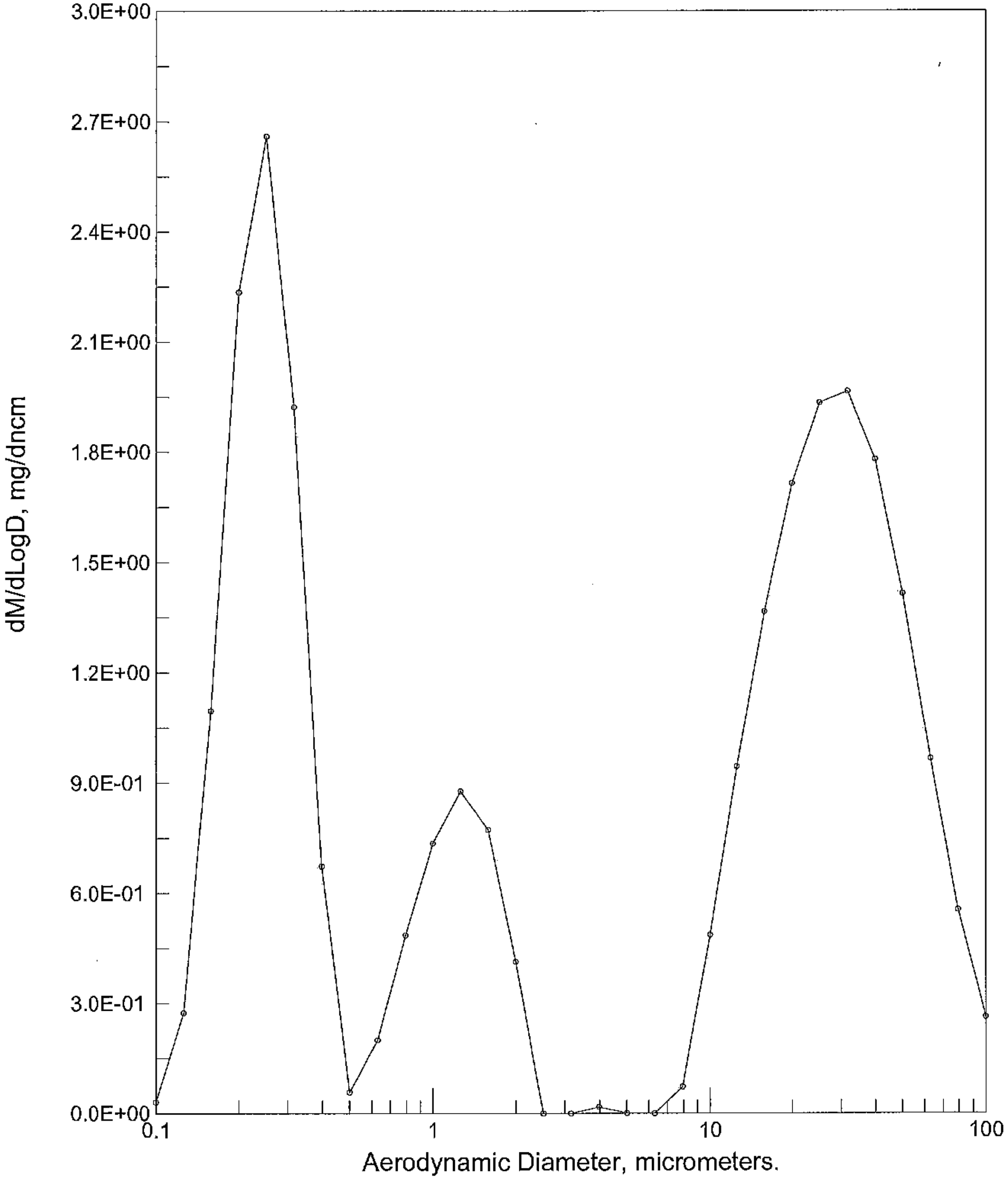
WinCIDRS: INERTIAL PARTICLE SIZING ANALYSIS PROGRAM, VERSION 8.4.20

```
Test Desig.: NEFCO Unit 1 Pre   Run Number: 01  Test Type: Outlet
Test Date: 6/25/13     Test Location: Unit 1 Stack
Time of Test: 13:17 to 14:23
Run Remarks: Used Filter Set PS3

Sizing Device: ANDWRAPC.IMP
RAPC  p0-s1 1-s2 2-s3 3-s4 4-s5 5-s6 6-s7 7-s8

Substrate Type: Fibrous

Basis of Diameters for Results: Aerodynamic (Particle density = 1)

Gas Composition - Bulk Gas Percentages on DRY BASIS
O2 = 8.2             CO2 = 7.8     N2 =  84
CO =  0              H2O = 15.5

Sampling Details:

Gas Meter Start: 493.151  GAS METER END: 527.044  NET VOLUME =  33.893
Meter Correction Factor = .9728
Orifice DH (in. wg) = 1       DH@ = 2.04
Meter Temperature (deg. F) = 93.2
Stack Temperature (deg. F) = 269.8
Impactor Temperature (deg. F) = 269.8
Barometric Pressure (in. Hg) = 29.9
Stack Pressure Differential to Ambient (in. wg) = -.42
Impactor Pressure Drop (in. Hg) = 0.85
Sample Duration (min.) = 60
Sample Flow Rate (acfm) =  .8614
Pitot DP (in. wg) = .2124                      PITOT CONSTANT = .84
Gas Velocity (fps) =  31.02
Nozzle Diameter (in.) = .312
Percent Isokinetic = 87.2
Volume Condensed H2O (cc) =  123

Stage Weights (mg):

Stage      Initial   Final   Gross   Blank    Net
RAPC        70798.30 70799.50    1.20    0.00    1.20
S1         156.10  156.10   0.00    0.00    0.00
S2         139.60  139.60   0.00    0.00    0.00
S3         155.50  155.50   0.00    0.00    0.00
S4         139.10  139.10   0.00    0.00    0.00
S5         155.70  155.70   0.00    0.00    0.00
S6         139.60  139.80   0.20    0.00    0.20
S7         156.30  156.40   0.10    0.00    0.10
S8         139.00  139.10   0.10    0.00    0.10
```

Blank Stage	0.00	0.00	0.00	0.00	0.00
Filter	208.60	209.30	0.70	0.00	0.70
Blank Filter	0.00	0.00	0.00	0.00	0.00



Cumulative Percent by Mass versus Particle Diameter.
Results for run NEFCO Unit 1 Pre01.DIS



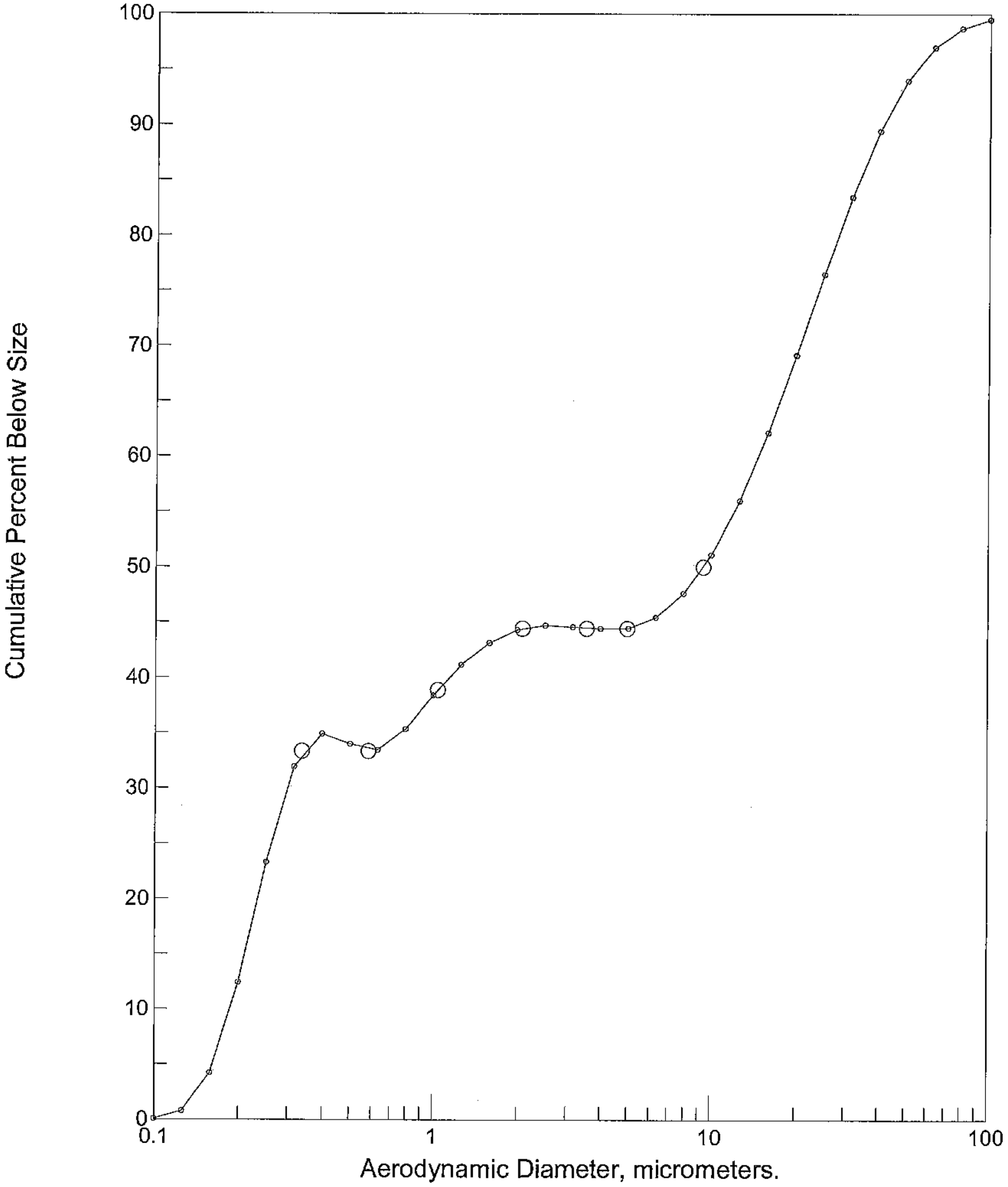
Particle Size Distribution on Differential Mass Basis.
Results for run NEFCO Unit 1 Pre01.DIS

```
WinCIDRS: Results for Sample NEFCO Unit 1 Pre04.DI
 Diameter Basis: Aerodynamic


 Stage  C.Corr   D50    Cum.%  Re.No. V*D50 Skip
   1    1.02   9.380  50.00 1597.3  30.27
   2    1.02  11.668  50.00   46.9   8.56  X
   3    1.03   7.649  50.00   61.3   9.61  X
   4    1.05   4.973  44.44   81.1  10.91
   5    1.06   3.546  44.44  101.2  12.14
   6    1.11   2.080  44.44  144.2  14.44
   7    1.22   1.039  38.89  224.0  17.41
   8    1.40   0.584  33.33  302.5  17.88
   9    1.72   0.337  33.33  512.0  17.57

Total Concentration = 2.03E+00 mg/dscm

Results of Spline Fit:

    Dia.    Cum.%    Cum.Conc. dM/dLogD  dN/dLogD
     um            mg/dncm   mg/dncm   No./dncm
    0.10    0.07    1.33E-03  3.89E-02  7.43E+10
    0.13    0.78    1.59E-02  3.27E-01  3.13E+11
    0.16    4.24    8.61E-02  1.16E+00  5.59E+11
    0.20   12.43    2.52E-01  2.08E+00  5.01E+11
    0.25   23.31    4.73E-01  2.14E+00  2.58E+11
    0.32   31.93    6.48E-01  1.23E+00  7.41E+10
    0.40   34.90    7.08E-01  6.85E-02  2.07E+09
    0.50   33.99    6.89E-01  5.84E-05  8.86E+05
    0.63   33.45    6.78E-01  1.60E-01  1.21E+09
    0.79   35.34    7.17E-01  5.55E-01  2.11E+09
    1.00   38.40    7.79E-01  6.33E-01  1.21E+09
    1.26   41.17    8.35E-01  4.84E-01  4.63E+08
    1.58   43.16    8.75E-01  3.21E-01  1.54E+08
    2.00   44.33    8.99E-01  1.55E-01  3.72E+07
    2.51   44.71    9.07E-01  1.29E-02  1.56E+06
    3.16   44.59    9.04E-01  4.49E-05  2.71E+03
    3.98   44.46    9.02E-01  4.65E-05  1.41E+03
    5.01   44.47    9.02E-01  1.02E-01  1.55E+06
    6.31   45.48    9.22E-01  3.13E-01  2.38E+06
    7.94   47.63    9.66E-01  5.65E-01  2.15E+06
   10.00   51.12    1.04E+00  8.54E-01  1.63E+06
   12.59   56.02    1.14E+00  1.13E+00  1.08E+06
   15.85   62.15    1.26E+00  1.35E+00  6.47E+05
   19.95   69.16    1.40E+00  1.48E+00  3.55E+05
   25.12   76.50    1.55E+00  1.48E+00  1.78E+05
   31.62   83.48    1.69E+00  1.34E+00  8.06E+04
   39.81   89.47    1.81E+00  1.08E+00  3.26E+04
   50.12   94.01    1.91E+00  7.62E-01  1.16E+04
   63.10   97.02    1.97E+00  4.65E-01  3.54E+03
   79.43   98.72    2.00E+00  2.41E-01  9.17E+02
  100.00   99.54    2.02E+00  1.04E-01  1.98E+02
```

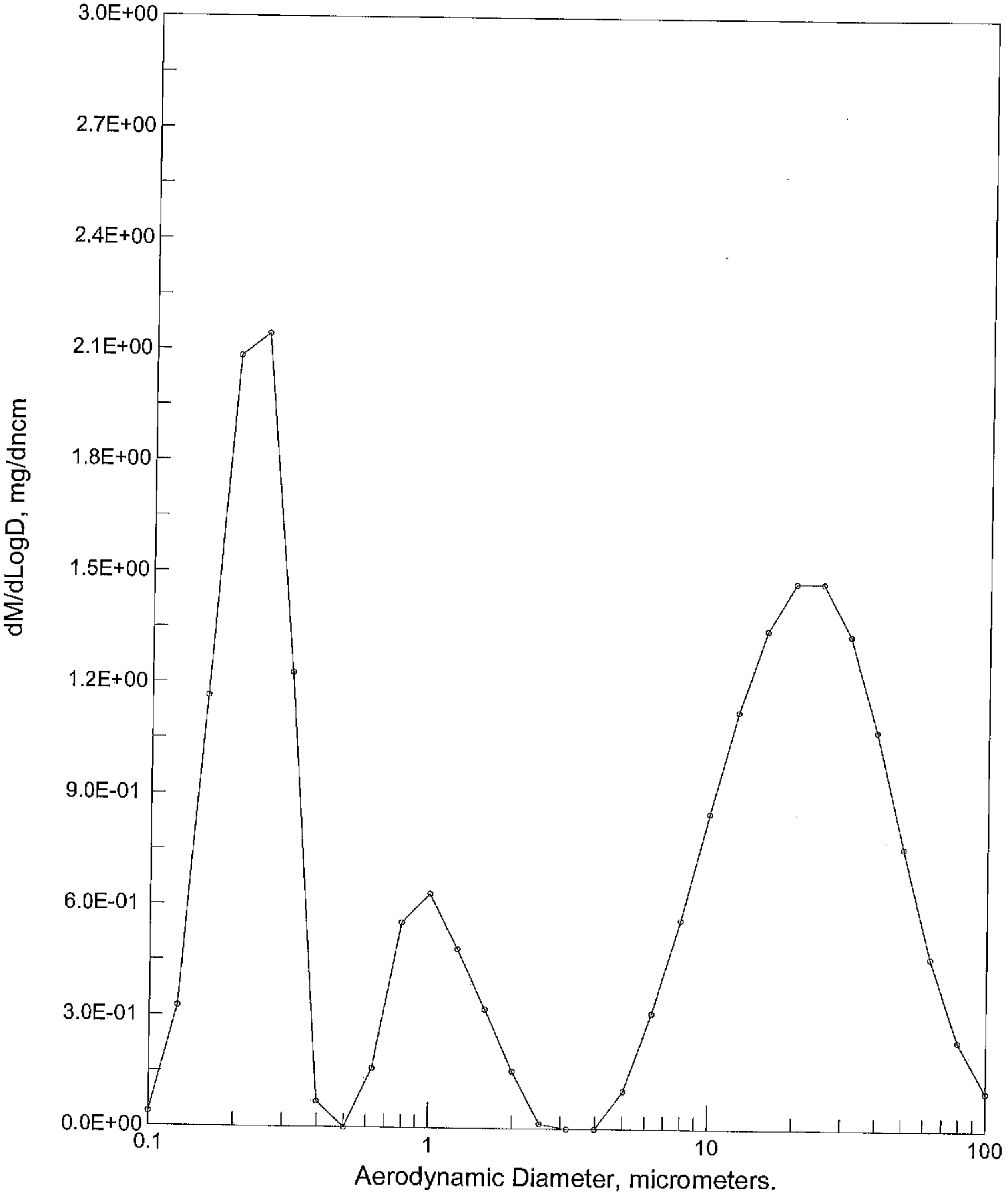
MMD = 9.29

```
WinCIDRS: INERTIAL PARTICLE SIZING ANALYSIS PROGRAM, VERSION 8.4.20

Test Desig.: NEFCO Unit 1 Pre   Run Number: 04  Test Type: Outlet
Test Date: 6/25/13     Test Location: Unit 1 Stack
Time of Test: 17:55 to 19:00
Run Remarks: Used Filter Set PS4

Sizing Device: ANDWRAPC.IMP
RAPC  p0-s1 1-s2 2-s3 3-s4 4-s5 5-s6 6-s7 7-s8

Substrate Type: Fibrous

Basis of Diameters for Results: Aerodynamic (Particle density = 1)

Gas Composition - Bulk Gas Percentages on DRY BASIS
O2 = 8.4           CO2 = 7.7    N2 =  83.9
CO =  0            H2O = 15.6

Sampling Details:

Gas Meter Start: 626.169  GAS METER END: 659.434  NET VOLUME =  33.265
Meter Correction Factor = .9728
Orifice DH (in. wg) = 1       DH@ = 2.04
Meter Temperature (deg. F) = 86.2
Stack Temperature (deg. F) = 277.6
Impactor Temperature (deg. F) = 277.6
Barometric Pressure (in. Hg) = 29.9
Stack Pressure Differential to Ambient (in. wg) = -.4
Impactor Pressure Drop (in. Hg) = 0.85
Sample Duration (min.) = 60
Sample Flow Rate (acfm) =  .8662
Pitot DP (in. wg) = .2764                     PITOT CONSTANT = .84
Gas Velocity (fps) =  35.58
Nozzle Diameter (in.) = .312
Percent Isokinetic = 76.4
Volume Condensed H2O (cc) =  123

Stage Weights (mg):

Stage      Initial  Final   Gross   Blank    Net
RAPC        67516.90 67517.50   0.60    0.00    0.60
S1         156.30   156.60   0.30    0.00    0.30
S2         142.00   142.00   0.00    0.00    0.00
S3         157.10   157.20   0.10    0.00    0.10
S4         139.60   139.60   0.00    0.00    0.00
S5         155.40   155.40   0.00    0.00    0.00
S6         140.60   140.70   0.10    0.00    0.10
S7         155.60   155.70   0.10    0.00    0.10
S8         139.70   139.70   0.00    0.00    0.00
```

Blank Stage	0.00	0.00	0.00	0.00	0.00
Filter	208.70	209.30	0.60	0.00	0.60
Blank Filter	0.00	0.00	0.00	0.00	0.00



Cumulative Percent by Mass versus Particle Diameter.
Results for run NEFCO Unit 1 Pre04.DIS



Particle Size Distribution on Differential Mass Basis.
Results for run NEFCO Unit 1 Pre04.DIS

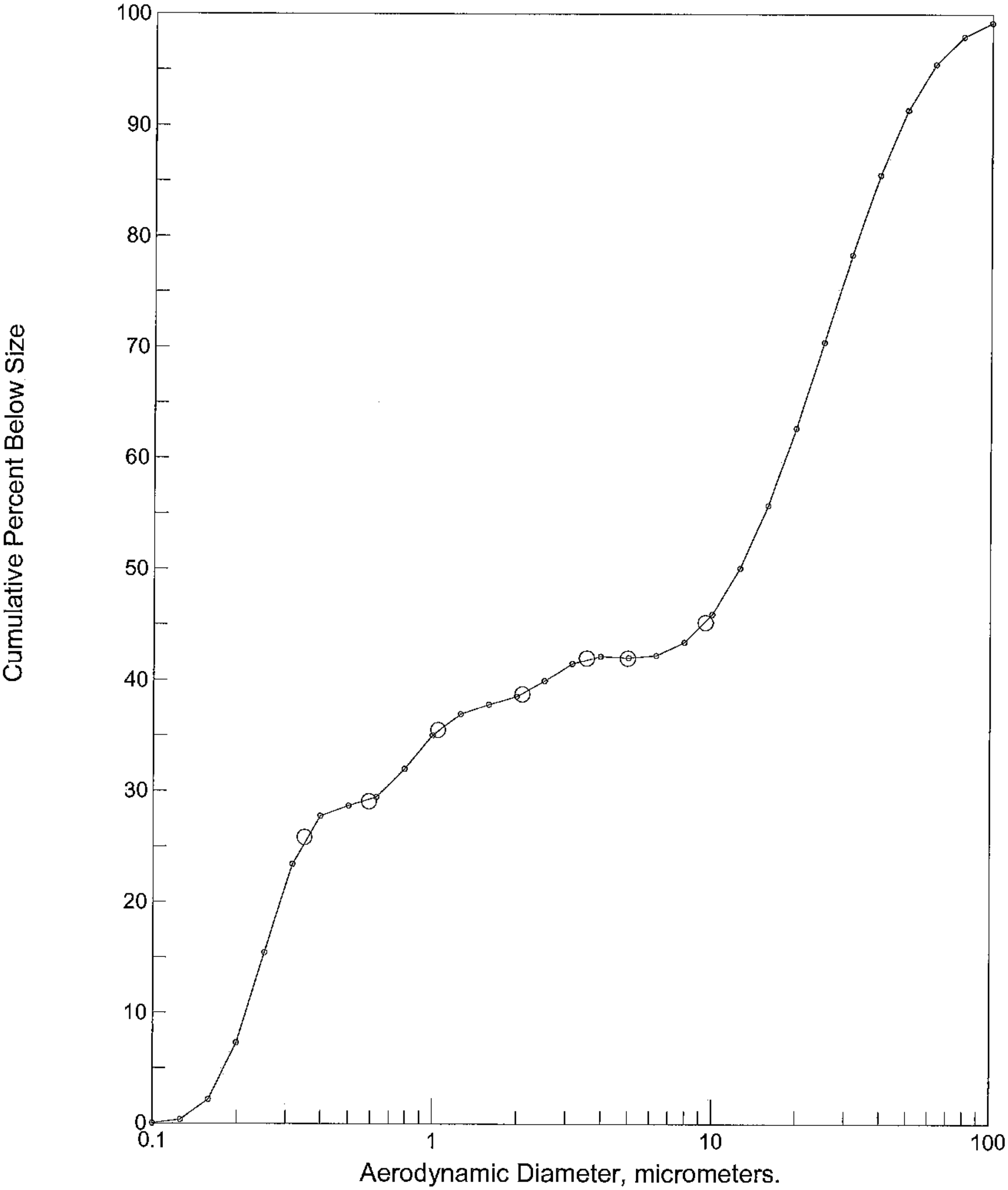
```
WinCIDRS: Results for Sample NEFCO Unit 2 Pre03.DI
 Diameter Basis: Aerodynamic


 Stage  C.Corr   D50   Cum.%  Re.No. V*D50 Skip
   1    1.02   9.469  45.21  1655.7  28.80
   2    1.02  11.679  45.21    48.6   8.08  X
   3    1.03   7.662  45.21    63.5   9.07  X
   4    1.04   4.985  41.98    84.0  10.31
   5    1.06   3.557  41.98   104.9  11.48
   6    1.10   2.089  38.75   149.4  13.67
   7    1.20   1.047  35.52   232.1  16.55
   8    1.36   0.593  29.06   313.4  17.14
   9    1.64   0.349  25.83   530.4  17.16

Total Concentration = 3.52E+00 mg/dscm

Results of Spline Fit:

   Dia.    Cum.%   Cum.Conc. dM/dLogD  dN/dLogD
   um              mg/dncm   mg/dncm   No./dncm
   0.10    0.03   1.01E-03  2.96E-02  5.66E+10
   0.13    0.36   1.27E-02  2.73E-01  2.61E+11
   0.16    2.19   7.70E-02  1.14E+00  5.46E+11
   0.20    7.30   2.57E-01  2.45E+00  5.88E+11
   0.25   15.44   5.43E-01  3.07E+00  3.70E+11
   0.32   23.42   8.24E-01  2.32E+00  1.40E+11
   0.40   27.76   9.76E-01  7.59E-01  2.30E+10
   0.50   28.68   1.01E+00  9.33E-02  1.42E+09
   0.63   29.46   1.04E+00  6.15E-01  4.68E+09
   0.79   32.01   1.13E+00  1.08E+00  4.12E+09
   1.00   35.04   1.23E+00  9.39E-01  1.79E+09
   1.26   36.94   1.30E+00  4.35E-01  4.17E+08
   1.58   37.81   1.33E+00  2.27E-01  1.09E+08
   2.00   38.55   1.36E+00  3.51E-01  8.43E+07
   2.51   39.95   1.40E+00  5.83E-01  7.02E+07
   3.16   41.50   1.46E+00  4.42E-01  2.67E+07
   3.98   42.14   1.48E+00  1.26E-02  3.81E+05
   5.01   42.02   1.48E+00  4.04E-01  6.13E+06
   6.31   42.24   1.49E+00  2.30E-01  1.75E+06
   7.94   43.43   1.53E+00  6.31E-01  2.40E+06
  10.00   45.96   1.62E+00  1.17E+00  2.24E+06
  12.59   50.10   1.76E+00  1.73E+00  1.66E+06
  15.85   55.76   1.96E+00  2.24E+00  1.07E+06
  19.95   62.71   2.20E+00  2.62E+00  6.30E+05
  25.12   70.46   2.48E+00  2.80E+00  3.37E+05
  31.62   78.35   2.75E+00  2.70E+00  1.63E+05
  39.81   85.56   3.01E+00  2.33E+00  7.05E+04
  50.12   91.40   3.21E+00  1.76E+00  2.67E+04
  63.10   95.52   3.36E+00  1.14E+00  8.69E+03
  79.43   98.00   3.45E+00  6.26E-01  2.38E+03
 100.00   99.25   3.49E+00  2.83E-01  5.41E+02
```

MMD = 12.59

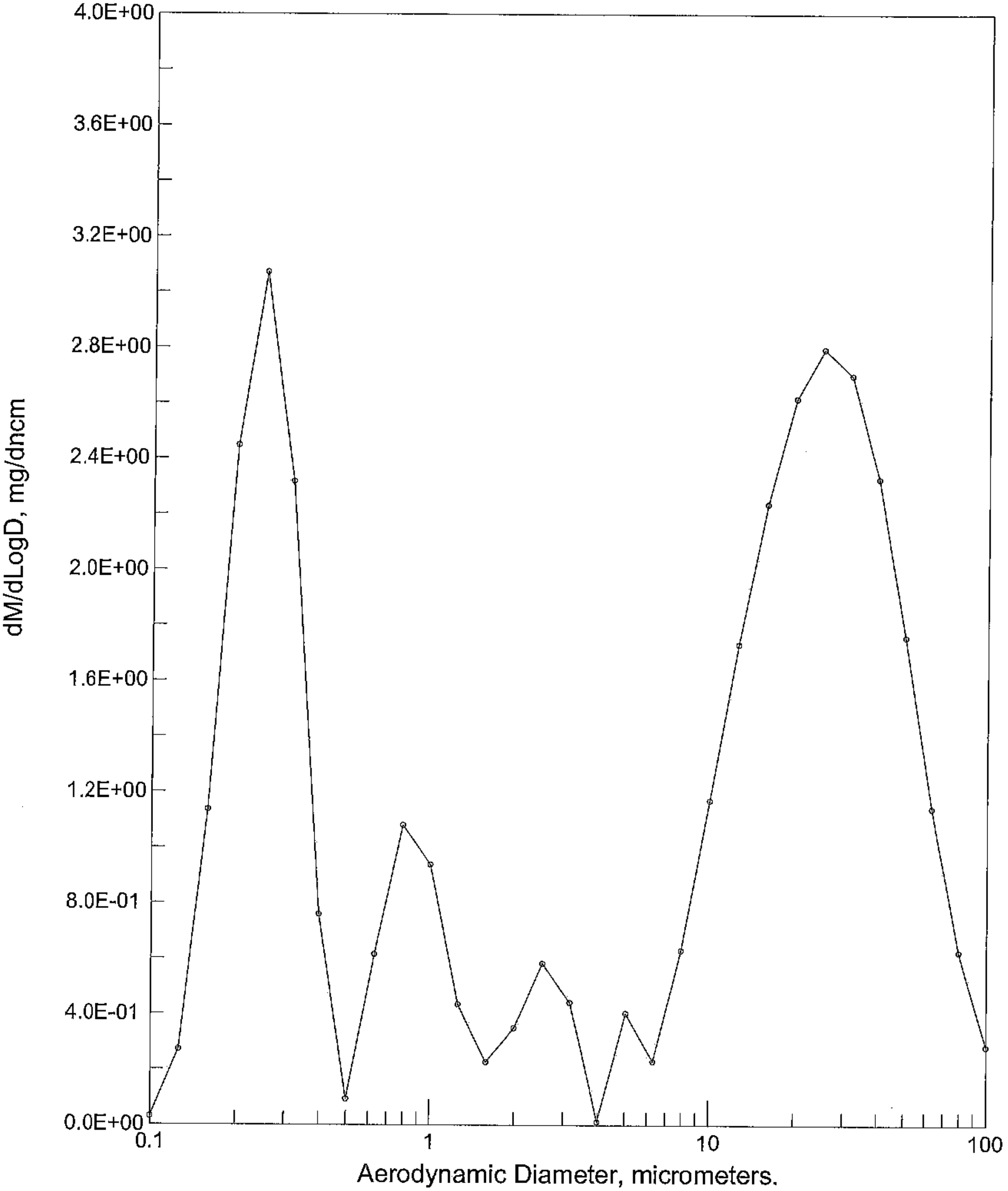
WinCIDRS: INERTIAL PARTICLE SIZING ANALYSIS PROGRAM, VERSION 8.4.20

```
Test Desig.: NEFCO Unit 2 Pre   Run Number: 03  Test Type: Outlet
Test Date: 6/25/13     Test Location: Unit 2 Stack
Time of Test: 09:15 to 10:22
Run Remarks: Used Filter Set PS1

Sizing Device: ANDWRAPC.IMP
RAPC  p0-s1 1-s2 2-s3 3-s4 4-s5 5-s6 6-s7 7-s8

Substrate Type: Fibrous

Basis of Diameters for Results: Aerodynamic (Particle density = 1)

Gas Composition - Bulk Gas Percentages on DRY BASIS
O2 =  8.4           CO2 =  7.8    N2 =  83.8
CO =  0             H2O = 15.7

Sampling Details:

Gas Meter Start: 424.838  GAS METER END: 458.203  NET VOLUME =  33.365
Meter Correction Factor = .9728
Orifice DH (in. wg) = 1       DH@ = 2.04
Meter Temperature (deg. F) = 92
Stack Temperature (deg. F) = 239.6
Impactor Temperature (deg. F) = 240
Barometric Pressure (in. Hg) = 29.9
Stack Pressure Differential to Ambient (in. wg) = -.42
Impactor Pressure Drop (in. Hg) = 0.8
Sample Duration (min.) = 60
Sample Flow Rate (acfm) =  .8164
Pitot DP (in. wg) = .1688                         PITOT CONSTANT = .84
Gas Velocity (fps) =  27.08
Nozzle Diameter (in.) = .312
Percent Isokinetic = 94.6
Volume Condensed H2O (cc) =  123

Stage Weights (mg):

Stage       Initial   Final   Gross    Blank     Net
RAPC         69963.20 69964.80    1.60    0.00    1.60
S1          154.20   154.30    0.10     0.00     0.10
S2          140.00   140.00    0.00     0.00     0.00
S3          155.20   155.30    0.10     0.00     0.10
S4          139.00   139.00    0.00     0.00     0.00
S5          156.40   156.50    0.10     0.00     0.10
S6          139.00   139.10    0.10     0.00     0.10
S7          155.50   155.70    0.20     0.00     0.20
S8          139.30   139.40    0.10     0.00     0.10
```

Blank Stage	0.00	0.00	0.00	0.00	0.00
Filter	207.90	208.70	0.80	0.00	0.80
Blank Filter	0.00	0.00	0.00	0.00	0.00



Cumulative Percent by Mass versus Particle Diameter.
Results for run NEFCO Unit 2 Pre03.DIS



Particle Size Distribution on Differential Mass Basis.
Results for run NEFCO Unit 2 Pre03.DIS

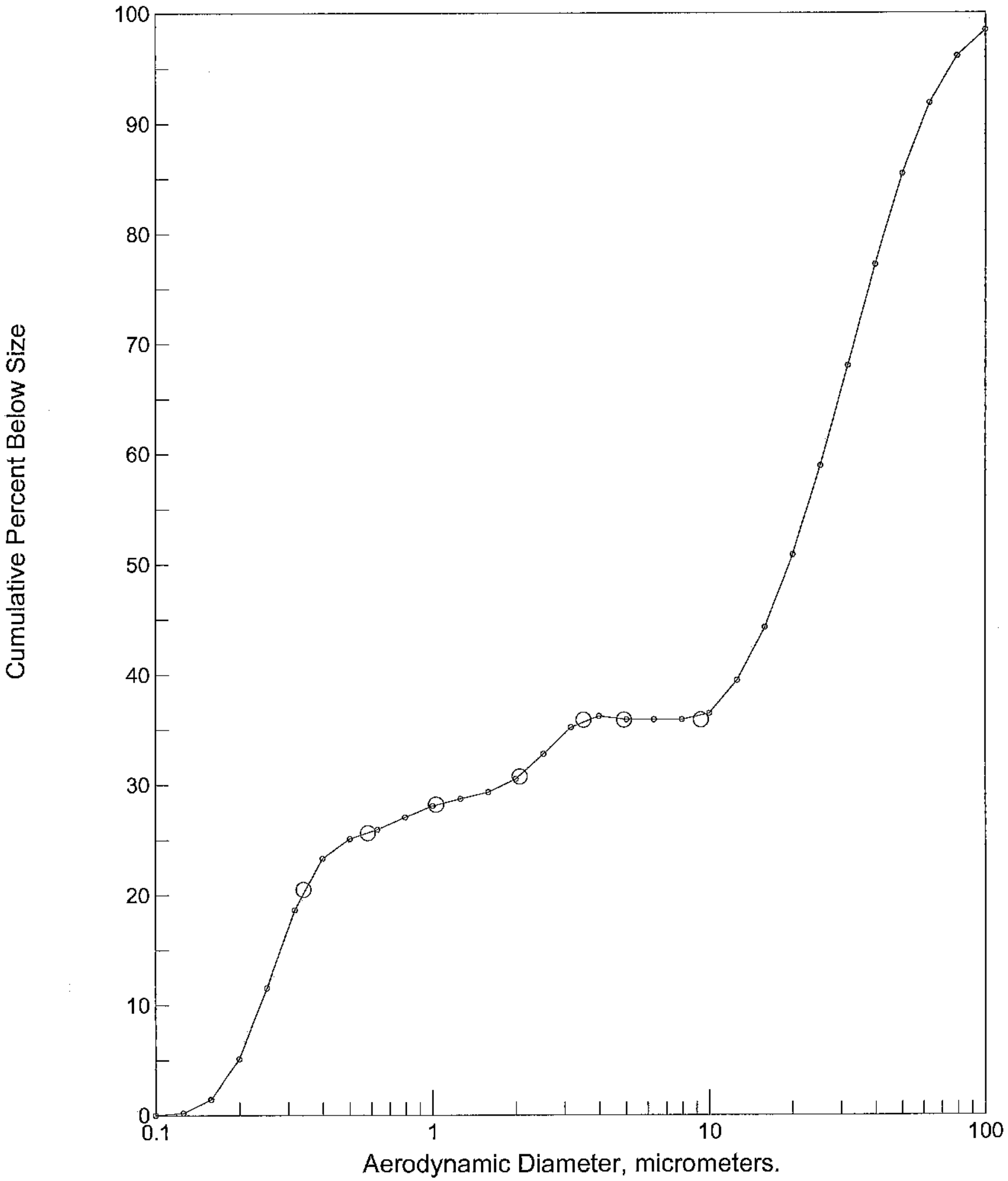
```
WinCIDRS: Results for Sample NEFCO Unit 2 Pre04.DI
 Diameter Basis: Aerodynamic


 Stage   C.Corr    D50    Cum.%   Re.No. V*D50 Skip
   1    1.02    9.333   35.90  1652.4  29.06
   2    1.02   11.517   35.90    48.5   8.16  X
   3    1.03    7.555   35.90    63.4   9.15  X
   4    1.04    4.914   35.90    83.8  10.40
   5    1.06    3.505   35.90   104.7  11.57
   6    1.10    2.057   30.77   149.1  13.78
   7    1.21    1.029   28.20   231.7  16.65
   8    1.37    0.582   25.64   313.0  17.19
   9    1.67    0.340   20.51   529.6  17.13

Total Concentration = 4.59E+00 mg/dscm

Results of Spline Fit:

  Dia.     Cum.%    Cum.Conc.  dM/dLogD  dN/dLogD
   um               mg/dncm    mg/dncm   No./dncm
  0.10     0.02    7.96E-04  2.34E-02  4.46E+10
  0.13     0.22    1.03E-02  2.24E-01  2.15E+11
  0.16     1.43    6.56E-02  1.01E+00  4.85E+11
  0.20     5.10    2.34E-01  2.40E+00  5.77E+11
  0.25    11.58    5.31E-01  3.36E+00  4.04E+11
  0.32    18.66    8.56E-01  2.89E+00  1.74E+11
  0.40    23.32    1.07E+00  1.38E+00  4.16E+10
  0.50    25.13    1.15E+00  4.41E-01  6.69E+09
  0.63    25.97    1.19E+00  4.49E-01  3.42E+09
  0.79    27.07    1.24E+00  5.27E-01  2.01E+09
  1.00    28.12    1.29E+00  3.94E-01  7.53E+08
  1.26    28.75    1.32E+00  2.34E-01  2.24E+08
  1.58    29.34    1.35E+00  3.60E-01  1.73E+08
  2.00    30.54    1.40E+00  7.93E-01  1.91E+08
  2.51    32.81    1.51E+00  1.19E+00  1.43E+08
  3.16    35.21    1.62E+00  8.93E-01  5.39E+07
  3.98    36.24    1.66E+00  5.39E-02  1.63E+06
  5.01    35.91    1.65E+00  1.03E-04  1.56E+03
  6.31    35.91    1.65E+00  1.03E-04  7.83E+02
  7.94    35.91    1.65E+00  2.23E-01  8.50E+05
 10.00    36.46    1.67E+00  9.60E-01  1.83E+06
 12.59    39.45    1.81E+00  1.79E+00  1.71E+06
 15.85    44.26    2.03E+00  2.62E+00  1.26E+06
 19.95    50.83    2.33E+00  3.39E+00  8.16E+05
 25.12    58.93    2.70E+00  4.00E+00  4.82E+05
 31.62    68.01    3.12E+00  4.27E+00  2.58E+05
 39.81    77.19    3.54E+00  4.08E+00  1.23E+05
 50.12    85.44    3.92E+00  3.42E+00  5.18E+04
 63.10    91.86    4.21E+00  2.45E+00  1.86E+04
 79.43    96.11    4.41E+00  1.47E+00  5.62E+03
100.00    98.45    4.52E+00  7.24E-01  1.38E+03
```

```
MMD = 19.38
```

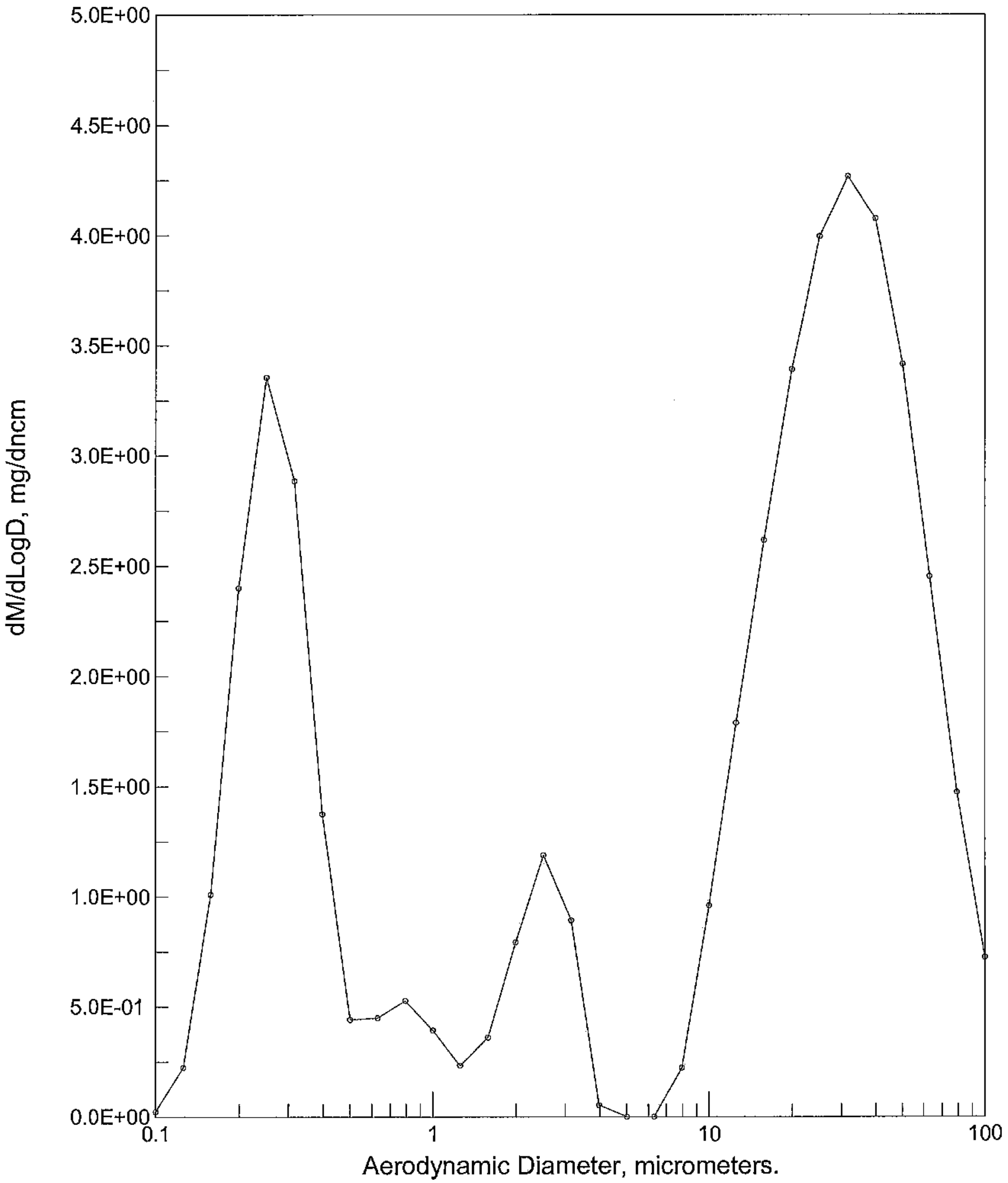
WinCIDRS: INERTIAL PARTICLE SIZING ANALYSIS PROGRAM, VERSION 8.4.20

```
Test Desig.: NEFCO Unit 2 Pre   Run Number: 04  Test Type: Outlet
Test Date: 6/25/13    Test Location: Unit 2 Stack
Time of Test: 10:55 to 12:04
Run Remarks: Used Filter Set PS2

Sizing Device: ANDWRAPC.IMP
RAPC  p0-s1 1-s2 2-s3 3-s4 4-s5 5-s6 6-s7 7-s8

Substrate Type: Fibrous

Basis of Diameters for Results: Aerodynamic (Particle density = 1)

Gas Composition - Bulk Gas Percentages on DRY BASIS
O2 = 10.0          CO2 = 6.8     N2 =  83.2
CO =  0            H2O = 19.7

Sampling Details:

Gas Meter Start: 460.501  GAS METER END: 492.724  NET VOLUME =  32.223
Meter Correction Factor = .9728
Orifice DH (in. wg) = 1        DH@ = 2.04
Meter Temperature (deg. F) = 92.4
Stack Temperature (deg. F) = 247.2
Impactor Temperature (deg. F) = 247.2
Barometric Pressure (in. Hg) = 29.9
Stack Pressure Differential to Ambient (in. wg) = -.41
Impactor Pressure Drop (in. Hg) = 0.81
Sample Duration (min.) = 60
Sample Flow Rate (acfm) =  .8357
Pitot DP (in. wg) = .2016                      PITOT CONSTANT = .84
Gas Velocity (fps) =  30.05
Nozzle Diameter (in.) = .312
Percent Isokinetic = 87.3
Volume Condensed H2O (cc) =  156

Stage Weights (mg):

Stage       Initial   Final   Gross   Blank    Net
RAPC        67197.00 67199.50    2.50    0.00    2.50
S1         158.20  158.20   0.00    0.00    0.00
S2         139.90  139.90   0.00    0.00    0.00
S3         155.50  155.50   0.00    0.00    0.00
S4         140.50  140.50   0.00    0.00    0.00
S5         157.10  157.30   0.20    0.00    0.20
S6         140.40  140.50   0.10    0.00    0.10
S7         157.80  157.90   0.10    0.00    0.10
S8         141.00  141.20   0.20    0.00    0.20
```

Blank Stage	0.00	0.00	0.00	0.00	0.00
Filter	208.00	208.80	0.80	0.00	0.80
Blank Filter	0.00	0.00	0.00	0.00	0.00



Cumulative Percent by Mass versus Particle Diameter.
Results for run NEFCO Unit 2 Pre04.DIS



Particle Size Distribution on Differential Mass Basis.
Results for run NEFCO Unit 2 Pre04.DIS

Appendix B

Reference Method Emissions Data – Compliance Particulate Matter Emissions Data

1 - RTO / Dryer No. 1 Compliance Emissions Data
2 - RTO / Dryer No. 2 Compliance Emissions Data
3 - Visible Emissions Readings / Data

B1

RTO / Dryer No. 1 Compliance Emissions Data

PARTICULATE EMISSION CALCULATION SHEET

PLANT: **NEFCO / SWA Biosolids** RUN # : **U1-M5-R1**
LOCATION: **RTO #1 Stack** DATE: **27-Jun-13**

			BLANKS	
	FILTER	**BEAKER**	**FILTER**	**ACETONE**
NUMBER :	1449	05-7-34	1445	B5-48
FINAL :	0.4615	69.6092	0.4408	67.0280
TARE :	0.4593	69.6076	0.4408	67.0279
NET :	0.0022	0.0016	0.0000	0.0001
		VOLUME BLANK RINSE		130
		VOLUME OF RINSE		100

Mn - Ar = Mn			O2	=	8.72
			CO2	=	7.23
Mn	=	3.800	Vs	=	30.91 ft/sec
Ar	=	0.077	As	=	7.07 ft2
			Vm std	=	46.92 DSCF
Mn	=	3.800 not blank corr			

Qs	=	3600(1-Bwo)(Vs)(As)(17.64)(Ps/Ts)	=	478505	DSCFH
		3600 (Vs) (As)	=	786523	ACFH
		ACFH / 60	=	13109	ACFM
Cs	=	(2.205 E-6) (Mn) / (Vm Std)	=	1.78598E-07	LB/SCF
Cs'	=	0.0154 (Mn) /(VmStd)	=	0.0012	GRAINS/SCF
Cs'	=	Mn / VmStd	=	2.86	mg/dscm
Cs' @ 7% O2	=	Mn / VmStd x 20.9-7/20.9-O2%	=	3.26	mg/dscm @7% O2
PMR	=	Qs x Cs	=	0.085	LB/HR

PARTICULATE EMISSION CALCULATION SHEET

PLANT	**NEFCO / SWA Biosolids**	RUN # :	**U1-M5-R2**
LOCATION	**RTO #1 Stack**	DATE :	**27-Jun-13**

			BLANKS	
	FILTER	**BEAKER**	**FILTER**	**ACETONE**
NUMBER :	1470	BK-49	1445	B5-48
FINAL :	0.4621	70.0995	0.4408	67.0280
TARE :	0.4590	70.0989	0.4408	67.0279
NET :	0.0031	0.0006	0.0000	0.0001
		VOLUME BLANK RINSE		130
		VOLUME OF RINSE		110

Mn - Ar = Mn			O2	=	8.35
			CO2	=	7.40
Mn	=	3.700	Vs	=	31.15 ft/sec
Ar	=	0.085	As	=	7.07 ft2
			Vm std=		47.29 DSCF
Mn	=	3.700 not blank corr			

Qs	=	3600(1-Bwo)(Vs)(As)(17.64)(Ps/Ts)	=	478448	DSCFH
		3600 (Vs) (As)	=	792555.1889	ACFH
		ACFH / 60	=	13209	ACFM
Cs	=	(2.205 E-6) (Mn) / (Vm Std)	=	1.72517E-07	LB/SCF
Cs'	=	0.0154 (Mn) /(VmSTD)	=	0.0012	GRAINS/SCF
Cs'	=	Mn / VmStd	=	2.76	mg/dscm
Cs' @ 7% O2	=	Mn / VmStd x 20.9-7/20.9-O2%	=	3.06	mg/dscm @7% O2
PMR	=	Qs x Cs	=	0.083	LB/HR

PARTICULATE EMISSION CALCULATION SHEET

PLANT **NEFCO / SWA Biosolids** RUN # : **U1-M5-R3**
LOCATION **RTO #1 Stack** DATE : **27-Jun-13**

			BLANKS	
	FILTER	**BEAKER**	**FILTER**	**ACETONE**
NUMBER :	1471	SGC-01	1445	B5-48
FINAL :	0.4588	67.4031	0.4408	67.0280
TARE :	0.4576	67.4024	0.4408	67.0279
NET :	0.0012	0.0007	0.0000	0.0001
		VOLUME BLANK RINSE		130
		VOLUME OF RINSE		100

Mn - Ar = Mn
Mn = 1.900
Ar = 0.077
Mn = 1.900 not blank corr

O2 = 8.46
CO2 = 7.29
Vs = 31.91 ft/sec
AS = 7.07 ft2
Vm std= 48.00 DSCF

Qs = 3600(1-Bwo)(Vs)(As)(17.64)(Ps/Ts) = 489738 DSCFH
3600 (Vs) (As) = 812134.6485 ACFH
ACFH / 60 = 13536 ACFM

Cs = (2.205 E-6) (Mn) / (Vm Std) = 8.72892E-08 LB/SCF

Cs' = 0.0154 (Mn) /(VmSTD) = 0.0006 GRAINS/SCF

Cs' = Mn / VmStd = 1.40 mg/dscm

Cs' @ 7% O2 = Mn / VmStd x 20.9-7/20.9-O2% = 1.56 mg/dscm @7% O2
PMR = Qs x Cs = 0.043 LB/HR

INPUT DATA SHEET

PLANT:	NEFCO / SWA Biosolids	RUN # :	U1-M5-R1
LOCATION:	RTO #1 Stack	DATE :	27-Jun-13

As (SQFT) :	7.069
Dn (INCHES)	0.351
PITOT COEFFICIENT:	0.84
IMP-1 (INT) :	100
IMP-2 (INT) :	100
IMP-3 (INT) :	0
IMP-4 (INT) :	818.0
IMP-1 (FIN) :	304
IMP-2 (FIN) :	112
IMP-3 (FIN) :	6
IMP-4 (FIN) :	823.0
% CO2 (OUT):	7.23
% O2 (OUT) :	8.72
% CO (OUT) :	0
Pbar	30.0
Pstack	-0.38
NUMBER OF POINTS	12
TEST LENGTH	60
FINAL METER	139.892
INTIAL METER	90.251
BEGIN TIME	13:40
END TIME	14:44

TRAVERSE POINT	VELOCITY HEAD	SQUARE ROOT	DELTA H	DRY GAS METER IN	DRY GAS METER OUT	STACK TEMP (F)
A1	0.20	0.45	2.00	85	85	241
2	0.21	0.46	2.10	85	85	245
3	0.21	0.46	2.10	86	86	247
4	0.22	0.47	2.20	86	86	248
5	0.23	0.48	2.30	87	87	251
6	0.23	0.48	2.30	87	87	250
B1	0.18	0.42	1.80	88	88	242
2	0.20	0.45	2.00	88	88	247
3	0.21	0.46	2.10	89	89	248
4	0.23	0.48	2.30	90	90	249
5	0.23	0.48	2.30	90	90	253
6	0.23	0.48	2.30	90	90	253
AVERAGE:	**0.22**	**0.46**	**2.15**	**87.6**	**87.6**	**247.8**

INPUT DATA SHEET

PLANT : NEFCO / SWA Biosolids **RUN # :** U1-M5-R2
LOCATION : RTO #1 Stack **DATE :** 27-Jun-13

As (SQFT) :	7.069
Dn (INCHES)	0.351
PITOT COEFFICIENT:	0.84
IMP-1 (INT) :	100
IMP-2 (INT) :	100
IMP-3 (INT) :	0
IMP-4 (INT) :	824.0
IMP-1 (FIN) :	306
IMP-2 (FIN) :	112
IMP-3 (FIN) :	4
IMP-4 (FIN) :	829.0
% CO2 (OUT):	7.40
% O2 (OUT) :	8.35
% CO (OUT) :	0
Pbar	30.0
Pstack	-0.37
NUMBER OF POINTS	12
TEST LENGTH	60
FINAL METER	190.330
INTIAL METER	140.111
BEGIN TIME	15:00
END TIME	16:03

TRAVERSE POINT	VELOCITY HEAD	SQUARE ROOT	DELTA H	DRY GAS METER IN	DRY GAS METER OUT	STACK TEMP (F)
A1	0.18	0.42	1.80	89	89	239
2	0.18	0.42	1.80	89	89	237
3	0.22	0.47	2.20	88	88	246
4	0.23	0.48	2.30	89	89	264
5	0.24	0.49	2.40	89	89	251
6	0.21	0.46	2.10	90	90	252
B1	0.20	0.45	2.00	90	90	255
2	0.23	0.48	2.30	90	90	257
3	0.23	0.48	2.30	90	90	260
4	0.22	0.47	2.20	90	90	259
5	0.22	0.47	2.20	90	90	269
6	0.24	0.49	2.40	91	91	264
AVERAGE:	**0.22**	**0.46**	**2.17**	**89.6**	**89.6**	**254.4**

INPUT DATA SHEET

PLANT : NEFCO / SWA Biosolids RUN # : U1-M5-R3
LOCATION : RTO #1 Stack DATE : 27-Jun-13

As (SQFT) :	7.069
Dn (INCHES)	0.351
PITOT COEFFICIENT:	0.84
IMP-1 (INT) :	100
IMP-2 (INT) :	100
IMP-3 (INT) :	0
IMP-4 (INT) :	821.0
IMP-1 (FIN) :	300
IMP-2 (FIN) :	115
IMP-3 (FIN) :	2
IMP-4 (FIN) :	826.0
% CO2 (OUT):	7.29
% O2 (OUT) :	8.46
% CO (OUT) :	0
Pbar	30.0
Pstack	-0.38
NUMBER OF POINTS	12
TEST LENGTH	60
FINAL METER	241.623
INTIAL METER	190.698
BEGIN TIME	16:20
END TIME	17:23

TRAVERSE POINT	VELOCITY HEAD	SQUARE ROOT	DELTA H	DRY GAS METER IN	DRY GAS METER OUT	STACK TEMP (F)
A1	0.21	0.46	2.10	90	90	253
2	0.22	0.47	2.20	89	89	261
3	0.24	0.49	2.40	89	89	270
4	0.25	0.50	2.50	90	90	259
5	0.23	0.48	2.30	90	90	261
6	0.21	0.46	2.10	89	89	251
B1	0.23	0.48	2.30	89	89	252
2	0.23	0.48	2.30	89	89	261
3	0.22	0.47	2.20	89	89	257
4	0.23	0.48	2.30	89	89	272
5	0.23	0.48	2.30	89	89	263
6	0.21	0.46	2.10	89	89	260
AVERAGE:	**0.23**	**0.48**	**2.26**	**89.3**	**89.3**	**260.0**

ISOKINETIC CALCULATION SHEET

PLANT : **NEFCO / SWA Biosolids** RUN # : **U1-M5-R1**
LOCATION : **RTO #1 Stack** DATE : **27-Jun-13**

Ts (°F) =	247.8	% CO2 =	7.23	Vm (CF) =	49.641
Ts (°R) =	707.8	% O2 =	8.72	DELTA H (ABS) =	30.16
Tm (°F) =	87.6	% CO =	0	Ps (ABS) =	29.97
Tm (°R) =	547.6	% N2 =	84.05	SQRT DELTA P =	0.4634
Vl (TOT) =	227.0	Cp =	0.84	Y =	0.9728
Vl (adj) =	NA	TIME =	60	An =	0.000672

Vm std = $\frac{17.64\ (Vm)(Y)(DELTA\ H\ ABS)}{(Tm)}$ = 46.915 DSCF

Vw std = .04707 (Vl TOT) = 10.685 CF

Bwo = Vw std / (Vw std) + (Vm std) = 0.186

Bwo = by steam tables = NA

1 - Bwo = 1 - Bwo = 0.814

Md (DRY)= 0.44 (% CO2) +
0.32 (% O2) +
0.28 (% CO) + = 29.506 LB/LB MOLE
0.28 (% N2)

Ms (WET)= MD (1-Bwo) + 18 (Bwo) = 27.372 LB/LB MOLE

G = SQRT (Ts/Ps/Ms) = 0.929

Vs = 85.49 (Cp) (G) (SQRT DELTA P) = 30.908 FPS

Qs = 3600 (1-Bwo)(Vs)(As)(17.64)(Ps/Ts) = 478505 DSCFH

% ISO = $\frac{100\ (Ts)\ (Vm\ std)\ (Pstd)}{60\ (Tstd)\ (\ Vs\ )\ (Time)\ (\ An)\ (Ps)\ (1\text{-}Bwo)}$ = 103.1

ISOKINETIC CALCULATION SHEET

PLANT : **NEFCO / SWA Biosolids** RUN # : **U1-M5-R2**
LOCATION : **RTO #1 Stack** (example) **27-Jun-13**

Ts (°F) =	254.4	% CO2 =	7.40	Vm (CF) =	50.219
Ts (°R) =	714.4	% O2 =	8.35	DELTA H (ABS) =	30.16
Tm (°F) =	89.6	% CO =	0	Ps (ABS) =	29.97
Tm (°R) =	549.6	% N2 =	84.25	SQRT DELTA P =	0.4650
Vl (TOT) =	227.0	Cp =	0.84	Y =	0.9728
Vl (adj) =	NA	TIME =	60	An =	0.000672

Vm std = $\frac{17.64\ (Vm)(Y)(DELTA\ H\ ABS)}{(Tm)}$ = 47.291 DSCF

Vw std = .04707 (Vl TOT) = 10.685 CF

Bwo = Vw std / (Vw std) + (Vm std) = 0.184

Bwo = by steam tables = NA

1 - Bwo = 1 - Bwo = 0.816

Ms (WET)= 0.44 (% CO2) +
0.32 (% O2) +
0.28 (% CO) +
0.28 (% N2) = 29.518 LB/LB MOLE

Ms (WET)= MD (1-Bwo) + 18 (Bwo) = 27.395 LB/LB MOLE

G = SQRT (Ts/Ps/Ms) = 0.933

Vs = 85.49 (Cp) (G) (SQRT DELTA P) = 31.145 FPS

Qs = 3600 (1-Bwo)(Vs)(As)(17.64)(Ps/Ts) = 478448 DSCFH

% ISO = $\frac{100\ (Ts)\ (Vm\ std)\ (Pstd)}{60\ (Tstd)\ (\ Vs\ )\ (Time)\ (\ An)\ (Ps)\ (1\text{-}Bwo)}$ = 103.9

ISOKINETIC CALCULATION SHEET

PLANT : **NEFCO / SWA Biosolids** RUN # : **U1-M5-R3**
LOCATION : **RTO #1 Stack** DATE : **27-Jun-13**

Ts (°F) =	260.0	% CO2 =	7.29	Vm (CF) =	50.925
Ts (°R) =	720.0	% O2 =	8.46	DELTA H (ABS) =	30.17
Tm (°F) =	89.3	% CO =	0	Ps (ABS) =	29.97
Tm (°R) =	549.3	% N2 =	84.25	SQRT DELTA P =	0.4751
Vl (TOT) =	222.0	Cp =	0.84	Y =	0.9728
Vl (adj) =	NA	TIME =	60	An =	0.000672

Vm std = $\frac{\text{17.64 (Vm)(Y)(DELTA H ABS)}}{\text{(Tm)}}$ = 47.996 DSCF

Vw std = .04707 (Vl TOT) = 10.450 CF

Bwo = Vw std / (Vw std) + (Vm std) = 0.179

Bwo = by steam tables = NA

1 - Bwo = 1 - Bwo = 0.821

Ms (WET)= 0.44 (% CO2) +
0.32 (% O2) +
0.28 (% CO) + = 29.505 LB/LB MOLE
0.28 (% N2)

Ms (WET)= MD (1-Bwo) + 18 (Bwo) = 27.448 LB/LB MOLE

G = SQRT (Ts/Ps/Ms) = 0.936

Vs = 85.49 (Cp) (G) (SQRT DELTA P) = 31.915 FPS

Qs = 3600 (1-Bwo)(Vs)(As)(17.64)(Ps/Ts) = 489738 DSCFH

% ISO = $\frac{\text{100 (Ts) (Vm std) (Pstd)}}{\text{60 (Tstd) (Vs) (Time) (An) (Ps) (1-Bwo)}}$ = 103.1

Analyzer Calibrations

PLANT :	NEFCO / SWA Biosolids	DATE :	27-Jun-13
LOCATION :	RTO #1 Stack		

Diluent/Pollutant	O_2	CO_2			
Units	%	%			
Monitor Range Selected	25	20			
Monitor Range (Effective, per Method)	20.42	18.69			
--- Low Level Analyzer Calibration Error ---					
Cylinder Value ($C_{v,Low}$)	0.00	0.00			
Analyzer Response ($C_{Dir,Low}$)	0.11	0.24			
Analyzer Calibration Error ($ACE_{,Low)}$)	0.54	1.28			
Calibration Status (Pass/Fail)	Pass	Pass			
--- Mid Level Analyzer Calibration Error ---					
Cylinder Value ($C_{v,Mid}$)	10.49	9.45			
Analyzer Response ($C_{Dir,Mid}$)	10.47	9.40			
Analyzer Calibration Error ($ACE_{,Mid}$)	-0.10	-0.27			
Calibration Status (Pass/Fail)	Pass	Pass			
--- High Level Analyzer Calibration Error ---					
Cylinder Value ($C_{v,High}$)	20.42	18.69			
Analzyer Response ($C_{Dir,High}$)	20.46	18.62			
Analyzer Calibration Error ($ACE_{,High}$)	0.20	-0.37			
Calibration Status (Pass/Fail)	Pass	Pass			
--- Cylinder Gas Selected for Bias Checks ---					
Use Mid (M) or High (H) Span	M	M			
ZERO	0.11	0.24			
SPAN	10.47	9.4			
--- Mid Level Gas Range Assessment ---					
Cylinder Value (Mid)	10.49	9.45			
Cylinder Value (High/Span)	20.42	18.69			
Percentage of Span (%)	51.4	50.6			
Assessment Status (Pass/Fail)	Pass	Pass			

CEMS Calibrations and Calculations Sheet

PLANT : NEFCO / SWA Biosolids
LOCATION : RTO #1 Stack
RUN # : U1-M5-R1
DATE : 27-Jun-13

	GAS
START TIME :	13:40
END TIME :	14:44

Diluent/Pollutant:	O_2 (%)	CO_2 (%)
Instrument Span =	20.42	18.69
Analyzer Zero Response =	0.11	0.24
Analyzer Span Response =	10.47	9.40
Initial Sytem Zero Response =	0.05	-0.05
Final System Zero Response =	0.21	-0.04
Average Zero Response (C_o) =	0.13	-0.05
Initial Sytem Span Response =	10.71	9.30
Final System Span Response =	10.71	9.23
Average Span Response (C_m) =	10.71	9.27
Calibration gas values (C_{ma}) =	10.49	9.45
System Bias and Drift Calculations		
Initial Zero Bias (SB_i) =	0.29	1.55
Final Zero Bias (SB_{final}) =	0.49	1.50
Zero Drift (D) =	0.78	0.05
Initial Span Bias (SB_i) =	1.18	0.54
Final Span Bias (SB_{final}) =	1.18	0.91
Span Drift (D) =	0.00	0.37
Uncorrected Ave. ($\overline{C}_{Avg}$) =	8.92	7.08
Corrected Ave.=C_{gas} = $(\overline{C}_{Avg}-C_o)(C_{ma}/(C_m-C_o))$ =	8.72	7.23

PLANT DATA

CEMS Calibrations and Calculations Sheet

PLANT : NEFCO / SWA Biosolids
LOCATION : RTO #1 Stack
RUN # : U1-M5-R2
DATE : 27-Jun-13

	GAS
START TIME :	15:00
END TIME :	16:03

Diluent/Pollutant:	O_2 (%)	CO_2 (%)
Operating Range =	20.42	18.69
Analyzer Zero Response =	0.11	0.24
Analyzer Span Response =	10.47	9.40
Sytem Zero Response (Initial) =	0.21	-0.04
System Zero Response (Final) =	0.19	-0.05
Average Zero Response (C_o) =	0.20	-0.05
Sytem Span Response (Initial) =	10.71	9.23
System Span Response (Final) =	10.69	9.22
Average Span Response (C_m) =	10.70	9.23
Calibration gas values (C_{ma}) =	10.49	9.45
System Bias and Drift Calculations:		
Initial Zero Bias (SB_i) =	0.49	1.50
Final Zero Bias (SB_{final}) =	0.39	1.55
Zero Drift (D) =	0.10	0.05
Initial Span Bias (SB_i) =	1.18	0.91
Final Span Bias (SB_{final}) =	1.08	0.96
Span Drift (D) =	0.10	0.05
Uncorrected Ave. ($\overline{C_{Avg}}$) =	8.56	7.21
Corrected Ave.=C_{gas} = $(\overline{C_{Avg}}-C_o)(C_{ma}/(C_m-C_o))$ =	8.35	7.40

PLANT DATA

CEMS Calibrations and Calculations Sheet

PLANT : NEFCO / SWA Biosolids
LOCATION : RTO #1 Stack
RUN # : U1-M5-R3
DATE : 27-Jun-13

	GAS
START TIME :	16:20
END TIME :	17:23

Diluent/Pollutant:	O_2 (%)	CO_2 (%)
Operating Range =	20.42	18.69
Analyzer Zero Response =	0.11	0.24
Analyzer Span Response =	10.47	9.40
Sytem Zero Response (Initial) =	0.19	-0.05
System Zero Response (Final) =	0.17	-0.09
Average Zero Response (C_o) =	0.18	-0.07
Sytem Span Response (Initial) =	10.69	9.22
System Span Response (Final) =	10.70	9.25
Average Span Response (C_m) =	10.70	9.24
Calibration gas values (C_{ma}) =	10.49	9.45
System Bias and Drift Calculations:		
Initial Zero Bias (SB_i) =	0.39	1.55
Final Zero Bias (SB_{final}) =	0.29	1.77
Zero Drift (D) =	0.10	0.21
Initial Span Bias (SB_i) =	1.08	0.96
Final Span Bias (SB_{final}) =	1.13	0.80
Span Drift (D) =	0.05	0.16
Uncorrected Ave. ($C_{\overline{Avg}}$) =	8.66	7.11
Corrected Ave.=C_{gas} = $(C_{\overline{Avg}}-C_o)(C_{ma}/(C_m-C_o))$ =	8.46	7.29

PLANT DATA

South Florida Environmental Services, LLC
Uncorrected CEMS Monitoring Results
Instrumental Reference Methods - 3A, 6C, 7E and 10

Facility/Site: NEFCO / SWA Biosolids **Date:** 06/27/13
Location: RTO #1 Stack **Start Time:** 13:40
Run No.: U1-M5-R1 **Stop Time:** 14:44

Date/time	O_2 ($\%_{vd}$)	CO_2 ($\%_{vd}$)			
6/27/2013 1:40:00 PM	7.40	7.93			
6/27/2013 1:41:00 PM	7.28	7.95			
6/27/2013 1:42:00 PM	12.13	4.64			
6/27/2013 1:43:00 PM	11.66	5.78			
6/27/2013 1:44:00 PM	8.80	7.20			
6/27/2013 1:45:00 PM	8.73	7.24			
6/27/2013 1:46:00 PM	8.81	7.20			
6/27/2013 1:47:00 PM	8.69	7.22			
6/27/2013 1:48:00 PM	8.79	7.22			
6/27/2013 1:49:00 PM	8.77	7.25			
6/27/2013 1:50:00 PM	8.77	7.23			
6/27/2013 1:51:00 PM	8.76	7.23			
6/27/2013 1:52:00 PM	8.73	7.26			
6/27/2013 1:53:00 PM	8.66	7.25			
6/27/2013 1:54:00 PM	8.65	7.25			
6/27/2013 1:55:00 PM	8.58	7.24			
6/27/2013 1:56:00 PM	8.76	7.25			
6/27/2013 1:57:00 PM	8.78	7.19			
6/27/2013 1:58:00 PM	8.76	7.22			
6/27/2013 1:59:00 PM	8.92	7.20			
6/27/2013 2:00:00 PM	8.79	7.16			
6/27/2013 2:01:00 PM	8.81	7.17			
6/27/2013 2:02:00 PM	8.87	7.19			
6/27/2013 2:03:00 PM	9.03	7.15			
6/27/2013 2:04:00 PM	8.81	7.16			
6/27/2013 2:05:00 PM	8.90	7.13			
6/27/2013 2:06:00 PM	8.86	7.17			
6/27/2013 2:07:00 PM	8.82	7.14			
6/27/2013 2:08:00 PM	8.87	7.13			
6/27/2013 2:09:00 PM	8.77	7.12			
6/27/2013 2:10:00 PM					
6/27/2013 2:11:00 PM			Port		
6/27/2013 2:12:00 PM			Change		
6/27/2013 2:13:00 PM					
6/27/2013 2:14:00 PM					
6/27/2013 2:15:00 PM	8.93	7.07			
6/27/2013 2:16:00 PM	8.95	7.10			
6/27/2013 2:17:00 PM	8.87	7.03			
6/27/2013 2:18:00 PM	8.99	7.08			
6/27/2013 2:19:00 PM	8.93	7.05			
6/27/2013 2:20:00 PM	8.97	7.12			
6/27/2013 2:21:00 PM	8.75	7.05			
6/27/2013 2:22:00 PM	8.93	7.03			
6/27/2013 2:23:00 PM	8.96	7.02			
6/27/2013 2:24:00 PM	8.90	7.07			
6/27/2013 2:25:00 PM	8.96	7.04			
6/27/2013 2:26:00 PM	9.03	7.08			
6/27/2013 2:27:00 PM	8.99	7.04			
6/27/2013 2:28:00 PM	8.98	7.05			
6/27/2013 2:29:00 PM	9.10	7.02			
6/27/2013 2:30:00 PM	9.00	7.06			
6/27/2013 2:31:00 PM	8.88	7.00			
6/27/2013 2:32:00 PM	8.89	6.98			
6/27/2013 2:33:00 PM	9.09	7.03			
6/27/2013 2:34:00 PM	9.06	7.04			
6/27/2013 2:35:00 PM	8.95	7.05			
6/27/2013 2:36:00 PM	8.90	7.07			
6/27/2013 2:37:00 PM	8.88	7.01			
6/27/2013 2:38:00 PM	8.99	7.03			
6/27/2013 2:39:00 PM	9.10	7.04			
6/27/2013 2:40:00 PM	8.88	7.00			
6/27/2013 2:41:00 PM	8.81	7.01			
6/27/2013 2:42:00 PM	8.89	7.07			
6/27/2013 2:43:00 PM	8.88	7.14			
Run Averages:	**8.92**	**7.08**			

South Florida Environmental Services, LLC
Uncorrected CEMS Monitoring Results
Instrumental Reference Methods - 3A, 6C, 7E and 10

Facility/Site: NEFCO / SWA Biosolids **Date:** 06/27/13
Location: RTO #1 Stack **Start Time:** 15:00
Run No.: U1-M5-R2 **Stop Time:** 16:03

Date/time	O_2 ($\%_{vd}$)	CO_2 ($\%_{vd}$)			
6/27/2013 3:00:00 PM	8.65	7.22			
6/27/2013 3:01:00 PM	8.54	7.24			
6/27/2013 3:02:00 PM	8.51	7.22			
6/27/2013 3:03:00 PM	8.48	7.25			
6/27/2013 3:04:00 PM	8.61	7.26			
6/27/2013 3:05:00 PM	8.63	7.21			
6/27/2013 3:06:00 PM	8.55	7.22			
6/27/2013 3:07:00 PM	8.79	7.28			
6/27/2013 3:08:00 PM	8.47	7.21			
6/27/2013 3:09:00 PM	8.38	7.22			
6/27/2013 3:10:00 PM	8.47	7.26			
6/27/2013 3:11:00 PM	8.57	7.26			
6/27/2013 3:12:00 PM	8.51	7.24			
6/27/2013 3:13:00 PM	8.49	7.22			
6/27/2013 3:14:00 PM	8.58	7.24			
6/27/2013 3:15:00 PM	8.65	7.29			
6/27/2013 3:16:00 PM	8.27	7.28			
6/27/2013 3:17:00 PM	8.52	7.26			
6/27/2013 3:18:00 PM	8.49	7.23			
6/27/2013 3:19:00 PM	8.50	7.22			
6/27/2013 3:20:00 PM	8.53	7.22			
6/27/2013 3:21:00 PM	8.60	7.20			
6/27/2013 3:22:00 PM	8.63	7.16			
6/27/2013 3:23:00 PM	8.67	7.18			
6/27/2013 3:24:00 PM	8.56	7.27			
6/27/2013 3:25:00 PM	8.50	7.21			
6/27/2013 3:26:00 PM	8.46	7.29			
6/27/2013 3:27:00 PM	8.49	7.29			
6/27/2013 3:28:00 PM	8.43	7.28			
6/27/2013 3:29:00 PM	8.45	7.25			
6/27/2013 3:30:00 PM			Port Change		
6/27/2013 3:31:00 PM					
6/27/2013 3:32:00 PM					
6/27/2013 3:33:00 PM	8.50	7.23			
6/27/2013 3:34:00 PM	8.50	7.19			
6/27/2013 3:35:00 PM	8.67	7.16			
6/27/2013 3:36:00 PM	8.64	7.23			
6/27/2013 3:37:00 PM	8.78	7.15			
6/27/2013 3:38:00 PM	8.76	7.16			
6/27/2013 3:39:00 PM	8.56	7.12			
6/27/2013 3:40:00 PM	8.67	7.16			
6/27/2013 3:41:00 PM	8.64	7.17			
6/27/2013 3:42:00 PM	8.62	7.17			
6/27/2013 3:43:00 PM	8.63	7.15			
6/27/2013 3:44:00 PM	8.60	7.19			
6/27/2013 3:45:00 PM	8.60	7.16			
6/27/2013 3:46:00 PM	8.56	7.21			
6/27/2013 3:47:00 PM	8.54	7.17			
6/27/2013 3:48:00 PM	8.65	7.15			
6/27/2013 3:49:00 PM	8.67	7.11			
6/27/2013 3:50:00 PM	8.52	7.25			
6/27/2013 3:51:00 PM	8.66	7.21			
6/27/2013 3:52:00 PM	8.40	7.21			
6/27/2013 3:53:00 PM	8.51	7.20			
6/27/2013 3:54:00 PM	8.41	7.25			
6/27/2013 3:55:00 PM	8.58	7.21			
6/27/2013 3:56:00 PM	8.59	7.19			
6/27/2013 3:57:00 PM	8.53	7.22			
6/27/2013 3:58:00 PM	8.46	7.26			
6/27/2013 3:59:00 PM	8.62	7.25			
6/27/2013 4:00:00 PM	8.61	7.24			
6/27/2013 4:01:00 PM	8.70	7.19			
6/27/2013 4:02:00 PM	8.54	7.15			
Averages:	**8.56**	**7.21**			

South Florida Environmental Services, LLC
Uncorrected CEMS Monitoring Results
Instrumental Reference Methods - 3A, 6C, 7E and 10

Facility/Site: NEFCO / SWA Biosolids **Date:** 06/27/13
Location: RTO #1 Stack **Start Time:** 16:20
Run No.: U1-M5-R3 **Stop Time:** 17:23

Date/time	O_2 ($\%_{vd}$)	CO_2 ($\%_{vd}$)			
6/27/2013 4:20:00 PM	8.39	7.21			
6/27/2013 4:21:00 PM	8.48	7.20			
6/27/2013 4:22:00 PM	8.57	7.18			
6/27/2013 4:23:00 PM	8.51	7.19			
6/27/2013 4:24:00 PM	8.77	7.18			
6/27/2013 4:25:00 PM	8.68	7.22			
6/27/2013 4:26:00 PM	8.60	7.22			
6/27/2013 4:27:00 PM	8.47	7.19			
6/27/2013 4:28:00 PM	8.60	7.12			
6/27/2013 4:29:00 PM	8.64	7.08			
6/27/2013 4:30:00 PM	8.50	7.10			
6/27/2013 4:31:00 PM	8.72	7.11			
6/27/2013 4:32:00 PM	8.64	7.13			
6/27/2013 4:33:00 PM	8.69	7.14			
6/27/2013 4:34:00 PM	8.47	7.15			
6/27/2013 4:35:00 PM	8.58	7.14			
6/27/2013 4:36:00 PM	8.65	7.15			
6/27/2013 4:37:00 PM	8.64	7.12			
6/27/2013 4:38:00 PM	8.61	7.13			
6/27/2013 4:39:00 PM	8.63	7.14			
6/27/2013 4:40:00 PM	8.60	7.12			
6/27/2013 4:41:00 PM	8.60	7.13			
6/27/2013 4:42:00 PM	8.73	7.07			
6/27/2013 4:43:00 PM	8.67	7.13			
6/27/2013 4:44:00 PM	8.58	7.16			
6/27/2013 4:45:00 PM	8.49	7.19			
6/27/2013 4:46:00 PM	8.44	7.23			
6/27/2013 4:47:00 PM	8.58	7.18			
6/27/2013 4:48:00 PM	8.44	7.18			
6/27/2013 4:49:00 PM	8.43	7.19			
6/27/2013 4:50:00 PM					
6/27/2013 4:51:00 PM			Port		
6/27/2013 4:52:00 PM			Change		
6/27/2013 4:53:00 PM	8.77	7.04			
6/27/2013 4:54:00 PM	8.71	7.07			
6/27/2013 4:55:00 PM	9.03	7.02			
6/27/2013 4:56:00 PM	8.78	7.08			
6/27/2013 4:57:00 PM	8.83	7.03			
6/27/2013 4:58:00 PM	8.70	7.07			
6/27/2013 4:59:00 PM	8.79	7.03			
6/27/2013 5:00:00 PM	8.75	7.03			
6/27/2013 5:01:00 PM	8.83	7.02			
6/27/2013 5:02:00 PM	8.57	7.07			
6/27/2013 5:03:00 PM	8.86	7.04			
6/27/2013 5:04:00 PM	8.75	7.05			
6/27/2013 5:05:00 PM	8.61	7.03			
6/27/2013 5:06:00 PM	8.71	7.09			
6/27/2013 5:07:00 PM	8.68	7.01			
6/27/2013 5:08:00 PM	8.51	7.06			
6/27/2013 5:09:00 PM	8.72	7.07			
6/27/2013 5:10:00 PM	8.89	7.07			
6/27/2013 5:11:00 PM	8.70	7.02			
6/27/2013 5:12:00 PM	8.74	7.08			
6/27/2013 5:13:00 PM	8.78	7.12			
6/27/2013 5:14:00 PM	8.86	7.12			
6/27/2013 5:15:00 PM	8.70	7.07			
6/27/2013 5:16:00 PM	8.78	7.09			
6/27/2013 5:17:00 PM	8.75	7.06			
6/27/2013 5:18:00 PM	8.71	7.08			
6/27/2013 5:19:00 PM	8.67	7.09			
8/27/2013 5:20:00 PM	8.67	7.08			
6/27/2013 5:21:00 PM	8.73	7.05			
6/27/2013 5:22:00 PM	8.71	7.05			
Run Averages:	**8.66**	**7.11**			

TRAVERSE DATA SHEET

PLANT:	NEFCO / SWA/Biosolids	RUN # :	U1-MS-R1
LOCATION:	WPB, FL / Unit # 1	DATE :	6/27/13

Filter No.		Filter Tare Wt.		Trap No.	

IMP-1 (INT) :	100
IMP-2 (INT) :	100
IMP-3 (INT) :	0
IMP-4 (INT) :	818
IMP-5 (INT) :	–
IMP-6 (INT) :	–
IMP-7 (INT) :	–
IMP-1 (FIN) :	304
IMP-2 (FIN) :	112
IMP-3 (FIN) :	6
IMP-4 (FIN) :	823
IMP-5 (FIN) :	–
IMP-6 (FIN) :	–
IMP-7 (FIN) :	–
Pstack	-.38
Baro. Pres.	30.0
TEST LENGTH	60
FINAL METER	139.892
INTIAL METER	90.251
BEGIN TIME	1340
END TIME	1444

TRAVERSE POINT	DELTA P	DELTA H	DRY GAS METER IN	DRY GAS METER OUT	STACK TEMP (F)	METER READING	FILTER BOX	PROBE TEMP	DRY FILTER	IMP TEMP	VAC
A1	.20	2.00	85	85	241	–	249	247	N/A	63	1
2	.21	2.10	85	85	245	94.1	250	251		56	1
3	.21	2.10	86	86	247	98.4	249	243		56	1
4	.22	2.20	86	86	248	102.6	248	250		56	2
5	.23	2.30	87	87	251	106.9	248	249		56	2
6	.23	2.30	87	87	250	110.7	249	250		56	2
B1	.18	1.80	88	88	242	115.0	250	250		62	2
2	.20	2.00	88	88	247	119.1	250	252		57	2
3	.21	2.10	89	89	248	122.9	249	249		58	2
4	.23	2.30	90	90	249	126.9	248	247		57	2
5	.23	2.30	90	90	253	131.2	248	248		57	2
6	.23	2.30	90	90	253	135.4	248	248		57	2

Relationship	10.0
Box #	5
Y	.9728
Delta H	2.04
Box Op.	AS
Probe Op.	FM

Pre Leak Check	0.002	@	12	"Hg
Post Leak Check	0.002	@	8	"Hg
Pre-Pitot Check	0.0	@	73	"H2O
Post-Pitot Check	0.0	@	73	"H2O
Noz. ID No.		Probe No.	P-5-1	
Noz. Diam.	.351			

Notes:

TRAVERSE DATA SHEET

PLANT: NEFCO / SWA Biosolids

RUN # : U1-M5-R2

LOCATION: WPB, FL / Unit #1

DATE : AS ~~U1-M5-R2~~ 6/27/13

Filter No.

Filter Tare Wt.

Trap No.

IMP-1 (INT) :	100
IMP-2 (INT) :	100
IMP-3 (INT) :	0
IMP-4 (INT) :	824.0
IMP-5 (INT) :	—
IMP-6 (INT) :	—
IMP-7 (INT) :	—
IMP-1 (FIN) :	306
IMP-2 (FIN) :	112
IMP-3 (FIN) :	4
IMP-4 (FIN) :	829.0
IMP-5 (FIN) :	—
IMP-6 (FIN) :	—
IMP-7 (FIN) :	~
Pstack	-.37
Baro. Pres.	30.0
TEST LENGTH	60
FINAL METER	190.330
INTIAL METER	140.111
BEGIN TIME	1500
END TIME	1603

TRAVERSE POINT	DELTA P	DELTA H	DRY GAS METER IN	DRY GAS METER OUT	STACK TEMP (F)	METER READING	FILTER BOX	PROBE TEMP	DRY FILTER	IMP TEMP	VAC
A 1	.18	1.80	89	89	239	–	232	230	N/A	65	2
2	.18	1.80	89	89	237	144.3	247	238		62	2
3	.22	2.20	88	88	246	147.7	251	247		62	3
4	.23	2.30	89	89	264	152.0	249	238		58	3
5	.24	2.40	89	89	251	156.3	248	243		57	4
6	.21	2.10	90	90	252	160.8	248	248		56	4
B 1	.20	2.00	90	90	255	1650	247	250		56	4
2	.23	2.30	90	90	257	169.1	249	250		55	4
3	.23	2.30	90	90	260	173.9	248	247		54	4
4	.22	2.20	90	90	259	177.9	247	248		55	4
5	.22	2.20	90	90	269	181.2	248	248		56	4
6	.24	2.40	91	91	264	185.9	249	247		57	4

Relationship	10.0
Box #	5
Y	.9728
Delta H	2.04
Box Op.	AS
Probe Op.	FM

Pre Leak Check	0.004	@	12	"Hg
Post Leak Check	0.004	@	10	"Hg
Pre-Pitot Check	0.0	@	>3	"H2O
Post-Pitot Check	0.0	@	>3	"H2O
Noz. ID No.		**Probe No.**		P-5-1
Noz. Diam.	0.357			

Notes:

Port Change 1530 - 1533

TRAVERSE DATA SHEET

PLANT:	NEFCO / SWA Biosolids	RUN # :	U1 - M5 - R3
LOCATION:	WPB, FL / Unit #1	DATE :	6/27/03
Filter No.		Filter Tare Wt.	
Trap No.	N/A		

IMP-1 (INT) : 100
IMP-2 (INT) : 100
IMP-3 (INT) : 0
IMP-4 (INT) : 821
IMP-5 (INT) : —
IMP-6 (INT) : —
IMP-7 (INT) : —

IMP-1 (FIN) : 300
IMP-2 (FIN) : 115
IMP-3 (FIN) : 2
IMP-4 (FIN) : 826
IMP-5 (FIN) : —
IMP-6 (FIN) : —
IMP-7 (FIN) : —

Pstack -.38

Baro. Pres. 30.0

TEST LENGTH 60

FINAL METER 241.623

INTIAL METER 190.690

BEGIN TIME 1620

END TIME AS 1723

TRAVERSE POINT	DELTA P	DELTA H	DRY GAS METER IN	DRY GAS METER OUT	STACK TEMP (F)	METER READING	FILTER BOX	PROBE TEMP	DRY FILTER	IMP TEMP	VAC
A1	.21	2.10	90	90	253	—	249	239	N/A	64	2
2	.22	2.20	89	89	261	194.7	249	247		60	2
3	.24	2.40	89	89	270	199.0	249	249		59	2
4	0.25	2.50	90	90	259	203.	247	247		59	2
5	0.23	2.30	90	90	261	207.8	248	248		59	2
6	0.21	2.10	89	89	251	212.1	248	248		58	2
B1	.23	2.30	89	89	252	216.2	249	253		59	2
2	.23	2.30	89	89	261	220.1	248	248		55	3
3	.22	2.20	89	89	257	224.6	248	249		55	3
4	.23	2.30	89	89	272	228.9	248	250		55	3
5	.23	2.30	89	89	263	233.1	248	245		576	3
6	.21	2.10	89	89	260	237.5	248	254		57	3

Relationship	10.0
Box #	5
Y	.9728
Delta H	2.04
Box Op.	AS
Probe Op.	JJ

Pre Leak Check	0.000	@	12	"Hg
Post Leak Check	0.000	@	11	"Hg
Pre-Pitot Check	0.0	@	73	"H2O
Post-Pitot Check	0.0	@	73	"H2O
Noz. ID No.		Probe No.		P-5-1
Noz. Diam.	.351			

Notes:

Post Change 1650-1653

Client/Site: NEFCO / SWA Biosolids

Source: RTO #1 & #2

RM Response Time: Upscale (seconds): 20

Operator: Andrew Seaka

Date: 6/27/13

Downscale (seconds): 20

Note: System Response Time is the longer of the upscale and downscale response times. Performed during initial zero and bias checks:

Analyzer Calibration Error (ACE) – Reference Method

Pollutant/Diluent	Low		Mid		High/Full Scale (CS)	
	Cylinder Value (C_v)	Analyzer Response (C_{DIR})	Cylinder Value (C_v)	Analyzer Response (C_{DIR})	Cylinder Value (C_v)	Analyzer Response (C_{DIR})
Oxygen	0.00	0.11	10.49	10.47	20.42	20.46
Carbon Dioxide	0.00	0.24	9.45	9.40	18.69	18.62

Range selected for analyzer operation:

O_2 (%)	CO_2 (%)	CO (ppm)	NO_x (ppm)	SO_2 (ppm)
25	20	—	—	—

Protocol Gases Used During Program:

Cylinder No.	Diluent/Pollutant Concentrations(s)	Expiration Date
CC421863	20.42 O_2 / 18.69 CO_2	11/2/20
CC421656	10.49 O_2 / 9.45 CO_2	11/2/20

Analyzer Calibration Error (ACE) Acceptance Criteria: ≤ ± 2%

Where: ACE = $[(C_{Dir} - C_v)/CS] * 100\%$

Client/Site: NEFCO / SWA Biosolids

Source: RTO #1 Stack

Operator: A. Seahe

Date: 6/27/13

Run Number: U1-M5-R1

Start Time: 1340

End Time: 1444

System Bias (SB)/Drift (D) Assessments – Reference Method

Pollutant/Diluent	Start Zero		Start Span (C_{MA})		Final Zero		Final Span (C_{MA})	
	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)
Oxygen	0.00	0.05	10.49	10.71	0.00	0.21	10.49	10.71
Carbon Dioxide	0.00	-0.05	9.45	9.30	0.00	-0.04	9.45	9.23

O_2 (%)	CO_2 (%)	CO (ppm)	NO_x (ppm)	SO_2 (ppm)
25	20	—	—	—

Sampling System Bias (SB) Criteria: ≤± 5% of span for zero and upscale gas, where:

Where: $SB = [(C_s - C_{Dir})/CS] * 100\%$

Zero and Calibration Drift (D) Criteria: ≤± 3% of span, where

$D = |SB_{final} - SB_i|$

Client/Site: NEFCO / SWA Biosolids

Source: AS WPB Unit #1 Stack

Operator: A. Seale

Date: 6/27/13

Run Number: U1-M5-R2

Start Time: 1500

End Time: 1603

System Bias (SB)/Drift (D) Assessments – Reference Method

Pollutant/Diluent	Start Zero		Start Span (C_{MA})		Final Zero		Final Span (C_{MA})	
	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)
Oxygen	0.00	0.21	10.49	10.71	0.00	0.19	10.49	10.69
Carbon Dioxide	0.00	-0.04	9.45	9.23	0.00	-0.05	9.45	9.22

O_2 (%)	CO_2 (%)	CO (ppm)	NO_x (ppm)	SO_2 (ppm)
25	20	—	—	—

Sampling System Bias (SB) Criteria: ≤± 5% of span for zero and upscale gas, where:

Where: $SB = [(C_s - C_{Dir})/CS] * 100\%$

Zero and Calibration Drift (D) Criteria: ≤± 3% of span, where

$D = |SB_{final} - SB_i|$

Client/Site: NEFCO / SWA Biosolids

Source: RTO #1 Stack

Operator: A. Seale

Date: 6/27/13

Run Number: U1-M5-R3

Start Time: 1620

End Time: 1723

System Bias (SB)/Drift (D) Assessments – Reference Method

Pollutant/Diluent	Start Zero		Start Span (C_{MA})		Final Zero		Final Span (C_{MA})	
	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)
Oxygen	0.00	0.19	10.49	10.69	0.00	0.17	10.49	10.70
Carbon Dioxide	0.00	-0.05	9.45	9.22	0.00	-0.09	9.45	9.25

O_2 (%)	CO_2 (%)	CO (ppm)	NO_x (ppm)	SO_2 (ppm)
25	20	—	—	—

Sampling System Bias (SB) Criteria: ≤± 5% of span for zero and upscale gas, where:

Where: $SB = [(C_s - C_{Dir})/CS] * 100\%$

Zero and Calibration Drift (D) Criteria: ≤± 3% of span, where

$D = |SB_{final} - SB_i|$

B2

RTO / Dryer No. 2 Compliance Emissions Data

PARTICULATE EMISSION CALCULATION SHEET

PLANT: **NEFCO / SWA Biosolids** RUN # : **U2-M5-R1**
LOCATION: **West Palm Beach, FL** DATE: **27-Jun-13**

			BLANKS	
	FILTER	**BEAKER**	**FILTER**	**ACETONE**
NUMBER :	1446	11130	1445	B5-48
FINAL :	0.4460	87.3345	0.4408	67.0280
TARE :	0.4439	87.3342	0.4408	67.0279
NET :	0.0021	0.0003	0.0000	0.0001
		VOLUME BLANK RINSE		130
		VOLUME OF RINSE		120

Mn - Ar = Mn

Mn = 2.400
Ar = 0.092

Mn = 2.400 not blank corr

O2 = 7.55
CO2 = 7.86
Vs = 26.57 ft/sec
As = 7.07 ft2
Vm std = 41.90 DSCF

Qs = 3600(1-Bwo)(Vs)(As)(17.64)(Ps/Ts) = 430938 DSCFH
3600 (Vs) (As) = 676204 ACFH
ACFH / 60 = 11270 ACFM

Cs = (2.205 E-6) (Mn) / (Vm Std) = 1.26286E-07 LB/SCF

Cs' = 0.0154 (Mn) /(VmStd) = 0.0009 GRAINS/SCF

Cs' = Mn / VmStd = 2.02 mg/dscm

Cs' @ 7% O2 = Mn / VmStd x 20.9-7/20.9-O2% = 2.11 mg/dscm @7% O2

PMR = Qs x Cs = 0.054 LB/HR

PARTICULATE EMISSION CALCULATION SHEET

PLANT	**NEFCO / SWA Biosolids**	RUN # :	**U2-M5-R2**
LOCATION	**West Palm Beach, FL**	DATE :	**27-Jun-13**

			BLANKS	
	FILTER	**BEAKER**	**FILTER**	**ACETONE**
NUMBER :	1447	B5-7-32	1445	B5-48
FINAL :	0.4304	69.4633	0.4408	67.0280
TARE :	0.4292	69.4627	0.4408	67.0279
NET :	0.0012	0.0006	0.0000	0.0001
		VOLUME BLANK RINSE		130
		VOLUME OF RINSE		120

Mn - Ar = Mn			O2 =	7.45	
			CO2 =	7.90	
Mn	=	1.800	Vs =	27.17	ft/sec
Ar	=	0.092	As =	7.07	ft2
			Vm std=	42.48	DSCF
Mn	=	1.800 not blank corr			

Qs	=	3600(1-Bwo)(Vs)(As)(17.64)(Ps/Ts)	=	429360	DSCFH
		3600 (Vs) (As)	=	691332.6396	ACFH
		ACFH / 60	=	11522	ACFM
Cs	=	(2.205 E-6) (Mn) / (Vm Std)	=	9.34292E-08	LB/SCF
Cs'	=	0.0154 (Mn) /(VmSTD)	=	0.0007	GRAINS/SCF
Cs'	=	Mn / VmStd	=	1.50	mg/dscm
Cs' @ 7% O2	=	Mn / VmStd x 20.9-7/20.9-O2%	=	1.55	mg/dscm @7% O2
PMR	=	Qs x Cs	=	0.040	LB/HR

PARTICULATE EMISSION CALCULATION SHEET

PLANT	**NEFCO / SWA Biosolids**	RUN # :	**U2-M5-R3**
LOCATION	**West Palm Beach, FL**	DATE :	**27-Jun-13**

			BLANKS	
	FILTER	**BEAKER**	**FILTER**	**ACETONE**
NUMBER :	1448	PB6	1445	B5-48
FINAL :	0.4475	69.4160	0.4408	67.0280
TARE :	0.4442	69.4147	0.4408	67.0279
NET :	0.0033	0.0013	0.0000	0.0001

VOLUME BLANK RINSE 130

VOLUME OF RINSE 110

Mn - Ar = Mn

Mn = 4.600

Ar = 0.085

Mn = 4.600 not blank corr

O2 = 7.02

CO2 = 8.16

Vs = 27.40 ft/sec

AS = 7.07 ft2

Vm std= 41.89 DSCF

Qs = 3600(1-Bwo)(Vs)(As)(17.64)(Ps/Ts) = 423532 DSCFH

3600 (Vs) (As) = 697179.0116 ACFH

ACFH / 60 = 11620 ACFM

Cs = (2.205 E-6) (Mn) / (Vm Std) = 2.4215E-07 LB/SCF

Cs' = 0.0154 (Mn) /(VmSTD) = 0.0017 GRAINS/SCF

Cs' = Mn / VmStd = 3.88 mg/dscm

Cs' @ 7% O2 = Mn / VmStd x 20.9-7/20.9-O2% = 3.88 mg/dscm @7% O2

PMR = Qs x Cs = 0.103 LB/HR

INPUT DATA SHEET

PLANT:	NEFCO / SWA Biosolids	**RUN # :**	U2-M5-R1
LOCATION:	West Palm Beach, FL	**DATE :**	27-Jun-13

As (SQFT) :	7.069
Dn (INCHES)	0.351
PITOT COEFFICIENT:	0.84
IMP-1 (INT) :	100
IMP-2 (INT) :	100
IMP-3 (INT) :	0
IMP-4 (INT) :	811.0
IMP-1 (FIN) :	246
IMP-2 (FIN) :	107
IMP-3 (FIN) :	4
IMP-4 (FIN) :	818.0
% CO2 (OUT):	7.86
% O2 (OUT) :	7.55
% CO (OUT) :	0
Pbar	30.0
Pstack	-0.32
NUMBER OF POINTS	12
TEST LENGTH	60
FINAL METER	999.786
INTIAL METER	955.383
BEGIN TIME	8:12
END TIME	9:15

TRAVERSE POINT	VELOCITY HEAD	SQUARE ROOT	DELTA H	DRY GAS METER IN	DRY GAS METER OUT	STACK TEMP (F)
A1	0.12	0.35	1.28	84	84	230
2	0.14	0.37	1.50	84	84	233
3	0.14	0.37	1.50	85	85	242
4	0.16	0.40	1.71	86	86	243
5	0.18	0.42	1.93	88	88	242
6	0.18	0.42	1.93	88	88	244
B1	0.16	0.40	1.71	88	88	231
2	0.16	0.40	1.71	89	89	238
3	0.18	0.42	1.93	90	90	244
4	0.20	0.45	2.14	90	90	247
5	0.17	0.41	1.82	91	91	248
6	0.17	0.41	1.82	91	91	246
AVERAGE:	**0.16**	**0.40**	**1.75**	**87.8**	**87.8**	**240.7**

INPUT DATA SHEET

PLANT : NEFCO / SWA Biosolids
LOCATION : West Palm Beach, FL
RUN # : U2-M5-R2
DATE : 27-Jun-13

As (SQFT) :	7.069
Dn (INCHES)	0.351
PITOT COEFFICIENT:	0.84
IMP-1 (INT) :	100
IMP-2 (INT) :	100
IMP-3 (INT) :	0
IMP-4 (INT) :	818.0
IMP-1 (FIN) :	277
IMP-2 (FIN) :	110
IMP-3 (FIN) :	1
IMP-4 (FIN) :	821.5
% CO2 (OUT):	7.90
% O2 (OUT) :	7.45
% CO (OUT) :	0
Pbar	30.0
Pstack	-0.35
NUMBER OF POINTS	12
TEST LENGTH	60
FINAL METER	45.313
INTIAL METER	0.168
BEGIN TIME	9:33
END TIME	11:08

TRAVERSE POINT	VELOCITY HEAD	SQUARE ROOT	DELTA H	DRY GAS METER IN	DRY GAS METER OUT	STACK TEMP (F)
A1	0.16	0.40	1.71	90	90	241
2	0.17	0.41	1.82	91	91	248
3	0.17	0.41	1.82	91	91	249
4	0.17	0.41	1.82	92	92	242
5	0.18	0.42	1.93	92	92	247
6	0.17	0.41	1.82	93	93	246
B1	0.15	0.39	1.61	88	88	237
2	0.16	0.40	1.71	88	88	239
3	0.16	0.40	1.71	88	88	236
4	0.18	0.42	1.93	87	87	237
5	0.18	0.42	1.93	87	87	245
6	0.17	0.41	1.82	87	87	241
AVERAGE:	**0.17**	**0.41**	**1.80**	**89.5**	**89.5**	**242.3**

INPUT DATA SHEET

PLANT : NEFCO / SWA Biosolids RUN # : U2-M5-R3
LOCATION : West Palm Beach, FL DATE : 27-Jun-13

As (SQFT) :	7.069
Dn (INCHES)	0.351
PITOT COEFFICIENT:	0.84
IMP-1 (INT) :	100
IMP-2 (INT) :	100
IMP-3 (INT) :	0
IMP-4 (INT) :	818.0
IMP-1 (FIN) :	302
IMP-2 (FIN) :	101
IMP-3 (FIN) :	3
IMP-4 (FIN) :	824.0
% CO2 (OUT):	8.16
% O2 (OUT) :	7.02
% CO (OUT) :	0
Pbar	30.0
Pstack	-0.35
NUMBER OF POINTS	12
TEST LENGTH	60
FINAL METER	89.911
INTIAL METER	45.568
BEGIN TIME	11:28
END TIME	12:33

TRAVERSE POINT	VELOCITY HEAD	SQUARE ROOT	DELTA H	DRY GAS METER IN	DRY GAS METER OUT	STACK TEMP (F)
A1	0.15	0.39	1.61	87	87	246
2	0.17	0.41	1.82	87	87	240
3	0.18	0.42	1.93	87	87	248
4	0.18	0.42	1.93	87	87	242
5	0.18	0.42	1.93	88	88	244
6	0.17	0.41	1.82	88	88	245
B1	0.15	0.39	1.61	87	87	241
2	0.16	0.40	1.71	88	88	236
3	0.18	0.42	1.93	88	88	241
4	0.18	0.42	1.93	88	88	242
5	0.18	0.42	1.93	87	87	243
6	0.16	0.40	1.71	87	87	247
AVERAGE:	**0.17**	**0.41**	**1.82**	**87.4**	**87.4**	**242.9**

ISOKINETIC CALCULATION SHEET

PLANT : **NEFCO / SWA Biosolids** RUN # : **U2-M5-R1**
LOCATION : **West Palm Beach, FL** DATE : **27-Jun-13**

Ts (°F) =	240.7	% CO2 =	7.86	Vm (CF) =	44.403
Ts (°R) =	700.7	% O2 =	7.55	DELTA H (ABS) =	30.13
Tm (°F) =	87.8	% CO =	0	Ps (ABS) =	29.98
Tm (°R) =	547.8	% N2 =	84.58	SQRT DELTA P =	0.4033
Vl (TOT) =	164.0	Cp =	0.84	Y =	0.9728
Vl (adj) =	NA	TIME =	60	An =	0.000672

Vm std = $\frac{17.64\ (Vm)(Y)(DELTA\ H\ ABS)}{(Tm)}$ = 41.905 DSCF

Vw std = .04707 (Vl TOT) = 7.719 CF

Bwo = Vw std / (Vw std) + (Vm std) = 0.156

Bwo = by steam tables = NA

1 - Bwo = 1 - Bwo = 0.844

Md (DRY)= 0.44 (% CO2) +
0.32 (% O2) +
0.28 (% CO) + = 29.560 LB/LB MOLE
0.28 (% N2)

Ms (WET)= MD (1-Bwo) + 18 (Bwo) = 27.762 LB/LB MOLE

G = SQRT (Ts/Ps/Ms) = 0.918

Vs = 85.49 (Cp) (G) (SQRT DELTA P) = 26.573 FPS

Qs = 3600 (1-Bwo)(Vs)(As)(17.64)(Ps/Ts) = 430938 DSCFH

% ISO = $\frac{100\ (Ts)\ (Vm\ std)\ (Pstd)}{60\ (Tstd)\ (\ Vs\ )\ (Time)\ (\ An)\ (Ps)\ (1\text{-}Bwo)}$ = 102.3

ISOKINETIC CALCULATION SHEET

PLANT : **NEFCO / SWA Biosolids** RUN # : **U2-M5-R2**
LOCATION : **West Palm Beach, FL** (example) **27-Jun-13**

Ts (°F) =	242.3	% CO2 =	7.90	Vm (CF) =	45.145
Ts (°R) =	702.3	% O2 =	7.45	DELTA H (ABS) =	30.13
Tm (°F) =	89.5	% CO =	0	Ps (ABS) =	29.97
Tm (°R) =	549.5	% N2 =	84.65	SQRT DELTA P =	0.4101
Vl (TOT) =	191.5	Cp =	0.84	Y =	0.9728
Vl (adj) =	NA	TIME =	60	An =	0.000672

Vm std = $\frac{17.64\ (Vm)(Y)(DELTA\ H\ ABS)}{(Tm)}$ = 42.481 DSCF

Vw std = .04707 (Vl TOT) = 9.014 CF

Bwo = Vw std / (Vw std) + (Vm std) = 0.175

Bwo = by steam tables = NA

1 - Bwo = 1 - Bwo = 0.825

Ms (WET)= 0.44 (% CO2) +
0.32 (% O2) +
0.28 (% CO) + = 29.562 LB/LB MOLE
0.28 (% N2)

Ms (WET)= MD (1-Bwo) + 18 (Bwo) = 27.538 LB/LB MOLE

G = SQRT (Ts/Ps/Ms) = 0.922

Vs = 85.49 (Cp) (G) (SQRT DELTA P) = 27.168 FPS

Qs = 3600 (1-Bwo)(Vs)(As)(17.64)(Ps/Ts) = 429360 DSCFH

% ISO = $\frac{100\ (Ts)\ (Vm\ std)\ (Pstd)}{60\ (Tstd)\ (\ Vs\ )\ (Time)\ (\ An)\ (Ps)\ (1\text{-}Bwo)}$ = 104.0

ISOKINETIC CALCULATION SHEET

PLANT : **NEFCO / SWA Biosolids** RUN # : **U2-M5-R3**
LOCATION : **West Palm Beach, FL** DATE : **27-Jun-13**

Ts (°F) =	242.9	% CO2 =	8.16	Vm (CF) =	44.343
Ts (°R) =	702.9	% O2 =	7.02	DELTA H (ABS) =	30.13
Tm (°F) =	87.4	% CO =	0	Ps (ABS) =	29.97
Tm (°R) =	547.4	% N2 =	84.83	SQRT DELTA P =	0.4121
VI (TOT) =	212.0	Cp =	0.84	Y =	0.9728
VI (adj) =	NA	TIME =	60	An =	0.000672

Vm std = $\frac{17.64\ (Vm)(Y)(\text{DELTA H ABS})}{(Tm)}$ = 41.887 DSCF

Vw std = .04707 (VI TOT) = 9.979 CF

Bwo = Vw std / (Vw std) + (Vm std) = 0.192

Bwo = by steam tables = NA

1 - Bwo = 1 - Bwo = 0.808

Ms (WET)= 0.44 (% CO2) + 0.32 (% O2) + 0.28 (% CO) + 0.28 (% N2) = 29.586 LB/LB MOLE

Ms (WET)= MD (1-Bwo) + 18 (Bwo) = 27.357 LB/LB MOLE

G = SQRT (Ts/Ps/Ms) = 0.926

Vs = 85.49 (Cp) (G) (SQRT DELTA P) = 27.397 FPS

Qs = 3600 (1-Bwo)(Vs)(As)(17.64)(Ps/Ts) = 423532 DSCFH

% ISO = $\frac{100\ (Ts)\ (Vm\ std)\ (Pstd)}{60\ (Tstd)\ (\ Vs\ )\ (Time)\ (\ An)\ (Ps)\ (1-Bwo)}$ = 104.0

Analyzer Calibrations

PLANT :	NEFCO / SWA Biosolids	DATE :	27-Jun-13
LOCATION :	West Palm Beach, FL		

Diluent/Pollutant	O_2	CO_2			
Units	%	%			
Monitor Range Selected	25	20			
Monitor Range (Effective, per Method)	20.42	18.69			
--- Low Level Analyzer Calibration Error ---					
Cylinder Value ($C_{v,Low}$)	0.00	0.00			
Analyzer Response ($C_{Dir,Low}$)	0.11	0.24			
Analyzer Calibration Error (ACE$_{,Low)}$)	0.54	1.28			
Calibration Status (Pass/Fail)	Pass	Pass			
--- Mid Level Analyzer Calibration Error ---					
Cylinder Value ($C_{v,Mid}$)	10.49	9.45			
Analyzer Response ($C_{Dir,Mid}$)	10.47	9.40			
Analyzer Calibration Error (ACE$_{,Mid}$)	-0.10	-0.27			
Calibration Status (Pass/Fail)	Pass	Pass			
--- High Level Analyzer Calibration Error ---					
Cylinder Value ($C_{v,High}$)	20.42	18.69			
Analzyer Response ($C_{Dir,High}$)	20.46	18.62			
Analyzer Calibration Error (ACE$_{,High}$)	0.20	-0.37			
Calibration Status (Pass/Fail)	Pass	Pass			
--- Cylinder Gas Selected for Bias Checks ---					
Use Mid (M) or High (H) Span	M	M			
ZERO	0.11	0.24			
SPAN	10.47	9.4			
--- Mid Level Gas Range Assessment ---					
Cylinder Value (Mid)	10.49	9.45			
Cylinder Value (High/Span)	20.42	18.69			
Percentage of Span (%)	51.4	50.6			
Assessment Status (Pass/Fail)	Pass	Pass			

CEMS Calibrations and Calculations Sheet

PLANT : NEFCO / SWA Biosolids
LOCATION : West Palm Beach, FL
RUN # : U2-M5-R1
DATE : 27-Jun-13

	GAS
START TIME :	8:12
END TIME :	9:15

Diluent/Pollutant:	O_2 (%)	CO_2 (%)
Instrument Span =	20.42	18.69
Analyzer Zero Response =	0.11	0.24
Analyzer Span Response =	10.47	9.40
Initial Sytem Zero Response =	0.15	0.22
Final System Zero Response =	0.05	0.01
Average Zero Response (C_o) =	0.10	0.12
Initial Sytem Span Response =	10.69	9.46
Final System Span Response =	10.44	9.31
Average Span Response (C_m) =	10.57	9.39
Calibration gas values (C_{ma}) =	10.49	9.45
System Bias and Drift Calculations		
Initial Zero Bias (SB_i) =	0.20	0.11
Final Zero Bias (SB_{final}) =	0.29	1.23
Zero Drift (D) =	0.49	1.12
Initial Span Bias (SB_i) =	1.08	0.32
Final Span Bias (SB_{final}) =	0.15	0.48
Span Drift (D) =	1.22	0.80
Uncorrected Ave. ($\overline{C_{Avg}}$) =	7.63	7.83
Corrected Ave.=C_{gas} = $(\overline{C_{Avg}}-C_o)(C_{ma}/(C_m-C_o))$ =	7.55	7.86

PLANT DATA

CEMS Calibrations and Calculations Sheet

PLANT : NEFCO / SWA Biosolids
LOCATION : West Palm Beach, FL
RUN # : U2-M5-R2
DATE : 27-Jun-13

	GAS
START TIME :	9:33
END TIME :	11:08

Diluent/Pollutant:	O_2 (%)	CO_2 (%)
Operating Range =	20.42	18.69
Analyzer Zero Response =	0.11	0.24
Analyzer Span Response =	10.47	9.40
Sytem Zero Response (Initial) =	0.05	0.01
System Zero Response (Final) =	0.09	-0.09
Average Zero Response (C_o) =	0.07	-0.04
Sytem Span Response (Initial) =	10.44	9.31
System Span Response (Final) =	10.67	9.35
Average Span Response (C_m) =	10.56	9.33
Calibration gas values (C_{ma}) =	10.49	9.45
<u>System Bias and Drift Calculations:</u>		
Initial Zero Bias (SB_i) =	0.29	1.23
Final Zero Bias (SB_{final}) =	0.10	1.77
Zero Drift (D) =	0.20	0.54
Initial Span Bias (SB_i) =	0.15	0.48
Final Span Bias (SB_{final}) =	0.98	0.27
Span Drift (D) =	1.13	0.21
Uncorrected Ave. ($\overline{C_{Avg}}$) =	7.52	7.79
Corrected Ave.=C_{gas} = $(\overline{C_{Avg}}-C_o)(C_{ma}/(C_m-C_o))$ =	7.45	7.90

PLANT DATA

CEMS Calibrations and Calculations Sheet

PLANT : NEFCO / SWA Biosolids
LOCATION : West Palm Beach, FL
RUN # : U2-M5-R3
DATE : 27-Jun-13

	GAS
START TIME :	12:57
END TIME :	13:59

Diluent/Pollutant:	O_2 (%)	CO_2 (%)
Operating Range =	20.42	18.69
Analyzer Zero Response =	0.11	0.24
Analyzer Span Response =	10.47	9.40
Sytem Zero Response (Initial) =	0.09	-0.09
System Zero Response (Final) =	0.05	-0.05
Average Zero Response (C_o) =	0.07	-0.07
Sytem Span Response (Initial) =	10.67	9.35
System Span Response (Final) =	10.71	9.30
Average Span Response (C_m) =	10.69	9.33
Calibration gas values (C_{ma}) =	10.49	9.45
System Bias and Drift Calculations:		
Initial Zero Bias (SB_i) =	0.10	1.77
Final Zero Bias (SB_{final}) =	0.29	1.55
Zero Drift (D) =	0.20	0.21
Initial Span Bias (SB_i) =	0.98	0.27
Final Span Bias (SB_{final}) =	1.18	0.54
Span Drift (D) =	0.20	0.27
Uncorrected Ave. ($\overline{C_{Avg}}$) =	7.17	8.04
Corrected Ave.=C_{gas} = ($\overline{C_{Avg}}$-C_o)(C_{ma}/(C_m-C_o)) =	7.02	8.16

PLANT DATA

South Florida Environmental Services, LLC
Uncorrected CEMS Monitoring Results
Instrumental Reference Methods - 3A, 6C, 7E and 10

Facility/Site: NEFCO / SWA Biosolids **Date:** 06/27/13
Location: West Palm Beach, FL **Start Time:** 8:12
Run No.: U2-M5-R1 **Stop Time:** 9:16

Date/time	O_2 (%$_{vd}$)	CO_2 (%$_{vd}$)			
6/27/2013 8:12:00 AM	7.85	7.70			
6/27/2013 8:13:00 AM	7.60	7.74			
6/27/2013 8:14:00 AM	7.97	7.74			
6/27/2013 8:15:00 AM	7.82	7.76			
6/27/2013 8:16:00 AM	7.89	7.72			
6/27/2013 8:17:00 AM	7.84	7.70			
6/27/2013 8:18:00 AM	7.91	7.71			
6/27/2013 8:19:00 AM	7.67	7.70			
6/27/2013 8:20:00 AM	7.85	7.70			
6/27/2013 8:21:00 AM	7.68	7.72			
6/27/2013 8:22:00 AM	7.82	7.75			
6/27/2013 8:23:00 AM	7.85	7.78			
6/27/2013 8:24:00 AM	7.79	7.79			
6/27/2013 8:25:00 AM	7.91	7.78			
6/27/2013 8:26:00 AM	7.59	7.84			
6/27/2013 8:27:00 AM	7.57	7.89			
6/27/2013 8:28:00 AM	7.57	7.85			
6/27/2013 8:29:00 AM	7.61	7.85			
6/27/2013 8:30:00 AM	7.62	7.84			
6/27/2013 8:31:00 AM	7.61	7.86			
6/27/2013 8:32:00 AM	7.61	7.86			
6/27/2013 8:33:00 AM	7.63	7.87			
6/27/2013 8:34:00 AM	7.43	7.95			
6/27/2013 8:35:00 AM	7.34	7.97			
6/27/2013 8:36:00 AM	7.47	7.91			
6/27/2013 8:37:00 AM	7.48	7.89			
6/27/2013 8:38:00 AM	7.56	7.86			
6/27/2013 8:39:00 AM	7.50	7.90			
6/27/2013 8:40:00 AM	7.63	7.91			
6/27/2013 8:41:00 AM	7.70	7.95			
6/27/2013 8:42:00 AM			Port Change		
6/27/2013 8:43:00 AM					
6/27/2013 8:44:00 AM					
6/27/2013 8:45:00 AM	7.83	7.87			
6/27/2013 8:46:00 AM	7.72	7.82			
6/27/2013 8:47:00 AM	7.55	7.83			
6/27/2013 8:48:00 AM	7.64	7.84			
6/27/2013 8:49:00 AM	7.59	7.85			
6/27/2013 8:50:00 AM	7.52	7.86			
6/27/2013 8:51:00 AM	7.41	7.86			
6/27/2013 8:52:00 AM	7.71	7.88			
6/27/2013 8:53:00 AM	7.75	7.85			
6/27/2013 8:54:00 AM	7.58	7.83			
6/27/2013 8:55:00 AM	7.61	7.81			
6/27/2013 8:56:00 AM	7.61	7.81			
6/27/2013 8:57:00 AM	7.65	7.82			
6/27/2013 8:58:00 AM	7.66	7.82			
6/27/2013 8:59:00 AM	7.53	7.84			
6/27/2013 9:00:00 AM	7.48	7.91			
6/27/2013 9:01:00 AM	7.43	7.88			
6/27/2013 9:02:00 AM	7.64	7.84			
6/27/2013 9:03:00 AM	7.63	7.82			
6/27/2013 9:04:00 AM	7.52	7.80			
6/27/2013 9:05:00 AM	7.60	7.81			
6/27/2013 9:06:00 AM	7.78	7.78			
6/27/2013 9:07:00 AM	7.64	7.81			
6/27/2013 9:08:00 AM	7.51	7.86			
6/27/2013 9:09:00 AM	7.49	7.88			
6/27/2013 9:10:00 AM	7.40	7.90			
6/27/2013 9:11:00 AM	7.45	7.90			
6/27/2013 9:12:00 AM	7.52	7.86			
6/27/2013 9:13:00 AM	7.58	7.81			
6/27/2013 9:14:00 AM	7.62	7.79			
Run Averages:	**7.63**	**7.83**			

South Florida Environmental Services, LLC
Uncorrected CEMS Monitoring Results
Instrumental Reference Methods - 3A, 6C, 7E and 10

Facility/Site: NEFCO / SWA Biosolids **Date:** 06/27/13
Location: West Palm Beach, FL **Start Time:** 9:33
Run No.: U2-M5-R2 **Stop Time:** 11:08

Date/time	O_2 (%vd)	CO_2 (%vd)			
6/27/2013 9:33:00 AM	7.30	7.89			
6/27/2013 9:34:00 AM	7.29	7.89			
6/27/2013 9:35:00 AM	7.32	7.90			
6/27/2013 9:36:00 AM	7.32	7.90			
6/27/2013 9:37:00 AM	7.35	7.92			
6/27/2013 9:38:00 AM	7.42	7.91			
6/27/2013 9:39:00 AM	7.36	7.88			
6/27/2013 9:40:00 AM	7.38	7.89			
6/27/2013 9:41:00 AM	7.29	7.88			
6/27/2013 9:42:00 AM	7.46	7.83			
6/27/2013 9:43:00 AM	7.44	7.85			
6/27/2013 9:44:00 AM	7.64	7.79			
6/27/2013 9:45:00 AM	7.51	7.76			
6/27/2013 9:46:00 AM	7.65	7.78			
6/27/2013 9:47:00 AM	7.63	7.79			
6/27/2013 9:48:00 AM	7.58	7.83			
6/27/2013 9:49:00 AM	7.62	7.81			
6/27/2013 9:50:00 AM	7.54	7.82			
6/27/2013 9:51:00 AM	7.52	7.81			
6/27/2013 9:52:00 AM	7.60	7.75			
6/27/2013 9:53:00 AM	7.80	7.81			
6/27/2013 9:54:00 AM	7.64	7.83			
6/27/2013 9:55:00 AM	7.50	7.84			
6/27/2013 9:56:00 AM	7.44	7.82			
6/27/2013 9:57:00 AM	7.41	7.88			
6/27/2013 9:58:00 AM	7.48	7.84			
6/27/2013 9:59:00 AM	7.45	7.82			
6/27/2013 10:00:00 AM	7.51	7.78			
6/27/2013 10:01:00 AM	7.40	7.80			
6/27/2013 10:02:00 AM	7.49	7.77			
			Port Change		
6/27/2013 10:38:00 AM	6.94	8.12			
6/27/2013 10:39:00 AM	7.45	7.72			
6/27/2013 10:40:00 AM	7.57	7.76			
6/27/2013 10:41:00 AM	7.50	7.74			
6/27/2013 10:42:00 AM	7.57	7.73			
6/27/2013 10:43:00 AM	7.55	7.75			
6/27/2013 10:44:00 AM	7.63	7.72			
6/27/2013 10:45:00 AM	7.86	7.69			
6/27/2013 10:46:00 AM	7.64	7.71			
6/27/2013 10:47:00 AM	7.60	7.75			
6/27/2013 10:48:00 AM	7.50	7.74			
6/27/2013 10:49:00 AM	7.70	7.72			
6/27/2013 10:50:00 AM	7.53	7.76			
6/27/2013 10:51:00 AM	7.43	7.75			
6/27/2013 10:52:00 AM	7.44	7.75			
6/27/2013 10:53:00 AM	7.53	7.75			
6/27/2013 10:54:00 AM	7.56	7.74			
6/27/2013 10:55:00 AM	7.55	7.76			
6/27/2013 10:56:00 AM	7.62	7.75			
6/27/2013 10:57:00 AM	7.62	7.74			
6/27/2013 10:58:00 AM	7.61	7.74			
6/27/2013 10:59:00 AM	7.57	7.78			
6/27/2013 11:00:00 AM	7.39	7.78			
6/27/2013 11:01:00 AM	7.56	7.76			
6/27/2013 11:02:00 AM	7.56	7.73			
6/27/2013 11:03:00 AM	7.63	7.71			
6/27/2013 11:04:00 AM	7.65	7.71			
6/27/2013 11:05:00 AM	7.65	7.76			
6/27/2013 11:06:00 AM	7.63	7.72			
6/27/2013 11:07:00 AM	7.58	7.76			
Averages:	7.52	7.79			

South Florida Environmental Services, LLC
Uncorrected CEMS Monitoring Results
Instrumental Reference Methods - 3A, 6C, 7E and 10

Facility/Site: NEFCO / SWA Biosolids **Date:** 06/27/13
Location: West Palm Beach, FL **Start Time:** 12:57
Run No.: U2-M5-R3 **Stop Time:** 13:59

Date/time	O_2 (%$_{vd}$)	CO_2 (%$_{vd}$)			
6/27/2013 11:28:00 AM	7.49	7.90			
6/27/2013 11:29:00 AM	7.40	7.95			
6/27/2013 11:30:00 AM	7.32	7.92			
6/27/2013 11:31:00 AM	7.40	7.92			
6/27/2013 11:32:00 AM	7.39	7.93			
6/27/2013 11:33:00 AM	7.25	7.93			
6/27/2013 11:34:00 AM	7.30	7.93			
6/27/2013 11:35:00 AM	7.33	7.91			
6/27/2013 11:36:00 AM	7.37	7.88			
6/27/2013 11:37:00 AM	7.45	7.91			
6/27/2013 11:38:00 AM	7.45	7.93			
6/27/2013 11:39:00 AM	7.36	7.89			
6/27/2013 11:40:00 AM	7.49	7.90			
6/27/2013 11:41:00 AM	7.45	7.90			
6/27/2013 11:42:00 AM	7.34	7.96			
6/27/2013 11:43:00 AM	7.25	8.05			
6/27/2013 11:44:00 AM	7.16	8.05			
6/27/2013 11:45:00 AM	7.11	8.01			
6/27/2013 11:46:00 AM	7.18	8.04			
6/27/2013 11:47:00 AM	7.17	8.04			
6/27/2013 11:48:00 AM	7.26	8.02			
6/27/2013 11:49:00 AM	7.16	8.03			
6/27/2013 11:50:00 AM	7.07	8.09			
6/27/2013 11:51:00 AM	7.12	8.08			
6/27/2013 11:52:00 AM	7.08	8.08			
6/27/2013 11:53:00 AM	7.02	8.09			
6/27/2013 11:54:00 AM	7.08	8.13			
6/27/2013 11:55:00 AM	6.99	8.09			
6/27/2013 11:56:00 AM	7.30	8.12			
6/27/2013 11:57:00 AM	7.08	8.08			
6/27/2013 11:58:00 AM					
6/27/2013 11:59:00 AM			Port Change		
6/27/2013 12:00:00 PM					
6/27/2013 12:01:00 PM					
6/27/2013 12:02:00 PM	6.94	8.07			
6/27/2013 12:03:00 PM	7.03	8.05			
6/27/2013 12:04:00 PM	7.00	8.05			
6/27/2013 12:05:00 PM	7.15	8.05			
6/27/2013 12:06:00 PM	7.12	8.06			
6/27/2013 12:07:00 PM	7.14	8.07			
6/27/2013 12:08:00 PM	6.98	8.07			
6/27/2013 12:09:00 PM	7.12	8.06			
6/27/2013 12:10:00 PM	7.03	8.07			
6/27/2013 12:11:00 PM	7.26	8.05			
6/27/2013 12:12:00 PM	7.12	8.07			
6/27/2013 12:13:00 PM	7.16	8.08			
6/27/2013 12:14:00 PM	7.02	8.08			
6/27/2013 12:15:00 PM	7.08	8.09			
6/27/2013 12:16:00 PM	7.24	8.11			
6/27/2013 12:17:00 PM	7.14	8.14			
6/27/2013 12:18:00 PM	6.96	8.14			
6/27/2013 12:19:00 PM	6.93	8.15			
6/27/2013 12:20:00 PM	6.90	8.13			
6/27/2013 12:21:00 PM	7.02	8.14			
6/27/2013 12:22:00 PM	6.96	8.12			
6/27/2013 12:23:00 PM	6.96	8.17			
6/27/2013 12:24:00 PM	6.95	8.16			
6/27/2013 12:25:00 PM	7.10	8.07			
6/27/2013 12:26:00 PM	7.22	8.07			
6/27/2013 12:27:00 PM	7.34	8.08			
6/27/2013 12:28:00 PM	7.22	8.03			
6/27/2013 12:29:00 PM	7.23	8.03			
6/27/2013 12:30:00 PM	7.14	8.04			
6/27/2013 12:31:00 PM	7.16	8.04			
6/27/2013 12:32:00 PM	7.23	8.00			
Run Averages:	**7.17**	**8.04**			

TRAVERSE DATA SHEET

PLANT:	NEFCO / SWA Biosolids	**RUN # :**	U2 - M5 - R1
LOCATION:	WPB, FL / Unit #2	**DATE :**	6/27/13
Filter No.		**Filter Tare Wt.**	
Trap No.			

IMP-1 (INT) :	100
IMP-2 (INT) :	100
IMP-3 (INT) :	0
IMP-4 (INT) :	811.0
IMP-5 (INT) :	–
IMP-6 (INT) :	–
IMP-7 (INT) :	–
IMP-1 (FIN) :	246
IMP-2 (FIN) :	107
IMP-3 (FIN) :	4
IMP-4 (FIN) :	818.0
IMP-5 (FIN) :	–
IMP-6 (FIN) :	–
IMP-7 (FIN) :	–
Pstack	-.32
Baro. Pres.	30.0
TEST LENGTH	60
FINAL METER	999.786
INTIAL METER	955.383
BEGIN TIME	812
END TIME	915

TRAVERSE POINT	DELTA P	DELTA H	DRY GAS METER IN	DRY GAS METER OUT	STACK TEMP (F)	METER READING	FILTER BOX	PROBE TEMP	DRY FILTER	IMP TEMP	VAC
A1	.72	1.28	84	84	230	–	248	247	N/A	62	1
2	.14	1.50	84	84	233	958.6	248	249		56	1
3	.14	1.50	85	85	242	962.0	247	249		57	1
4	.16	1.71	86	86	243	965.4	249	248		57	1
5	.18	1.93	88	88	242	969.0	248	247		57	1
6	.18	1.93	88	88	244	973.0	248	249		57	1
B1	.16	1.71	88	88	231	976.8	248	248		57	1
2	.16	1.71	89	89	238	980.1	249	248		57	1
3	.18	1.93	90	90	244	984.2	246	245		58	1
4	.20	2.14	90	90	247	987.9	247	246		58	2
5	.17	1.82	91	91	248	992.2	248	242		58	2
6	.17	1.82	91	91	246	996.0	248	247		59	2

Relationship	10.7
Box #	5
Y	.9728
Delta H	2.04
Box Op.	AS
Probe Op.	FM

Pre Leak Check	0.002	@	12	"Hg
Post Leak Check	0.002	@	7	"Hg
Pre-Pitot Check	0.0	@	73	"H2O
Post-Pitot Check	0.0	@	73	"H2O
Noz. ID No.		Probe No.		P-5-1
Noz. Diam.	0.351			

Notes:
Port Change 842- 845

TRAVERSE DATA SHEET

PLANT: NEFCO /SWA Biosolids
RUN # : U2-MS-R2
LOCATION: WPB, FL / Unit #2
DATE : 6/27/13

Filter No.
Filter Tare Wt.
Trap No.

IMP-1 (INT) : 100
IMP-2 (INT) : 100
IMP-3 (INT) : 0
IMP-4 (INT) : 818.0
IMP-5 (INT) : -
IMP-6 (INT) : -
IMP-7 (INT) : -

IMP-1 (FIN) : 277
IMP-2 (FIN) : 110
IMP-3 (FIN) : 1
IMP-4 (FIN) : 821.5
IMP-5 (FIN) : -
IMP-6 (FIN) : -
IMP-7 (FIN) : -

Pstack -.35

Baro. Pres. 30.0

TEST LENGTH 60

FINAL METER 45.313

INTIAL METER 4000.168

BEGIN TIME 933

END TIME 1108

TRAVERSE POINT	DELTA P	DELTA H	DRY GAS METER IN	DRY GAS METER OUT	STACK TEMP (F)	METER READING	FILTER BOX	PROBE TEMP	DRY FILTER	IMP TEMP	VAC
A1	.16	1.71	90	90	241	-	248	246	N/A	65	1
2	.17	1.82	91	91	248	3.9	249	248		60	1
3	.17	1.82	91	91	249	7.7	247	246		58	1
4	.17	1.82	92	92	242	11.5	248	249		55	1
5	.18	1.93	92	92	247	15.3	247	249		55	1
6	.17	1.82	93	93	246	19.0	248	249		55	1
B1	.15	1.61	88	88	237	22.9	249	250		57	1
2	.16	1.71	88	88	239	26.7	248	249		50	1
3	.16	1.71	88	88	236	30.2	248	248		51	1
4	.18	1.93	87	87	237	34.0	249	248		51	1
5	.18	1.93	87	87	245	37.6	248	248		52	1
6	.17	1.82	87	87	241	41.5	249	249		52	1

Relationship	10.7
Box #	5
Y	.9728
Delta H	2.04
Box Op.	AS
Probe Op.	FM

Pre Leak Check	0.004	@	12	"Hg
Post Leak Check	0.002	@	6	"Hg
Pre-Pitot Check	0.0	@	73	"H2O
Post-Pitot Check	0.0	@	73	"H2O
Noz. ID No.		Probe No.	P5-1	
Noz. Diam.	.351			

Notes:
Port Change 1003 - 1038

Pause test @ port change due to weather (lightning)

TRAVERSE DATA SHEET

PLANT:	NEFCO / SWA Biosolids	RUN # :	U2 - MS - R3
LOCATION:	WPB, FL / Unit #2	DATE :	6/27/13

Filter No.		Filter Tare Wt.		Trap No.	

IMP-1 (INT) :	100
IMP-2 (INT) :	100
IMP-3 (INT) :	0
IMP-4 (INT) :	818.0
IMP-5 (INT) :	–
IMP-6 (INT) :	–
IMP-7 (INT) :	–
IMP-1 (FIN) :	302
IMP-2 (FIN) :	161
IMP-3 (FIN) :	3
IMP-4 (FIN) :	8240
IMP-5 (FIN) :	–
IMP-6 (FIN) :	–
IMP-7 (FIN) :	–
Pstack	-.35
Baro. Pres.	30.0
TEST LENGTH	60
FINAL METER	89.911
INTIAL METER	45.568
BEGIN TIME	1128
END TIME	1233

TRAVERSE POINT	DELTA P	DELTA H	DRY GAS METER IN	DRY GAS METER OUT	STACK TEMP (F)	METER READING	FILTER BOX	PROBE TEMP	DRY FILTER	IMP TEMP	VAC
A1	0.15	1.61	87	87	246	–	248	247	n/a	59	1
2	0.17	1.82	87	87	240	49.2	247	248		56	1
3	0.18	1.93	87	87	248	52.7	247	248		55	1
4	0.18	1.93	87	87	242	56.4	247	248		54	1
5	0.18	1.93	88	88	244	60.0	245	247		55	1
6	0.17	1.82	88	88	245	63.9	248	249		55	1
B1	.15	1.61	87	87	241	67.3	249	251		55	1
2	.16	1.71	88	88	236	70.6	249	249		54	1
3	.18	1.93	88	88	241	74.3	250	249		54	1
4	.18	1.93	88	88	242	78.2	248	248		54	2
5	.18	1.93	87	87	243	82.2	248	248		55	2
6	.16	1.71	87	87	247	86.1	249	248		55	2

Relationship	10.7
Box #	5
Y	.9720
Delta H	2.04
Box Op.	AS
Probe Op.	FM

Pre Leak Check	0.002	@	10	"Hg
Post Leak Check	0.002	@	8	"Hg
Pre-Pitot Check	0.0	@	>3	"H2O
Post-Pitot Check	0.0	@	>3	"H2O
Noz. ID No.		Probe No.	P-5-1	
Noz. Diam.	0.351			

Notes:

Pause at 1150; Restart @ 1203 - Port Change

Client/Site: NEFCO / SWA Biosolids

Source: RTO #1 & #2

RM Response Time: Upscale (seconds): 20

Operator: Andrew Seaka

Date: 6/27/13

Downscale (seconds): 20

Note: System Response Time is the longer of the upscale and downscale response times. Performed during initial zero and bias checks:

Analyzer Calibration Error (ACE) – Reference Method

Pollutant/Diluent	Low		Mid		High/Full Scale (CS)	
	Cylinder Value (C_v)	Analyzer Response (C_{DIR})	Cylinder Value (C_v)	Analyzer Response (C_{DIR})	Cylinder Value (C_v)	Analyzer Response (C_{DIR})
Oxygen	0.00	0.11	10.49	10.47	20.42	20.46
Carbon Dioxide	0.00	0.24	9.45	9.40	18.69	18.62

Range selected for analyzer operation:

O_2 (%)	CO_2 (%)	CO (ppm)	NO_x (ppm)	SO_2 (ppm)
25	20	—	—	—

Protocol Gases Used During Program:

Cylinder No.	Diluent/Pollutant Concentrations(s)	Expiration Date
CC421863	20.42 O_2 / 18.69 CO_2	11/2/20
CC421456	10.49 O_2 / 9.45 CO_2	11/2/20

Analyzer Calibration Error (ACE) Acceptance Criteria: ≤ ± 2%

Where: $ACE = [(C_{Dir} - C_v)/CS] * 100\%$

Client/Site: NEFCO / SWA Biosolids
Source: RTO #2 Stack

Operator: A. Seahn
Date: 6/27/13

Run Number: U2- MS- R1
Start Time: 812
End Time: 915

System Bias (SB)/Drift (D) Assessments – Reference Method

Pollutant/Diluent	Start Zero		Start Span (C_{MA})		Final Zero		Final Span (C_{MA})	
	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)
Oxygen	0.00	0.15	10.49	10.69	0.00	0.05	10.49	10.44
Carbon Dioxide	0.00	0.22	9.45	9.46	0.00	0.01	9.45	9.31

O_2 (%)	CO_2 (%)	CO (ppm)	NO_x (ppm)	SO_2 (ppm)
25	20	—	—	—

Sampling System Bias (SB) Criteria: ≤± 5% of span for zero and upscale gas, where:

Where: $SB = [(C_s - C_{Dir})/CS] * 100\%$

Zero and Calibration Drift (D) Criteria: ≤± 3% of span, where

$D = |SB_{final} - SB_i|$

Client/Site: NEFCO / SWA Biosolids

Source: RTO #2 Stack

Operator: A. Seaha

Date: 6/27/13

Run Number: U2-MS-R2

Start Time: 933

End Time: 1108 *

Pause test @ port change due to weather

System Bias (SB)/Drift (D) Assessments – Reference Method

Pollutant/Diluent	Start Zero		Start Span (C_{MA})		Final Zero		Final Span (C_{MA})	
	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)
Oxygen	0.00	0.05	10.49	10.44	0.00	0.09	10.49	10.67
Carbon Dioxide	0.00	0.01	9.45	9.31	0.00	-0.09	9.45	9.35

O_2 (%)	CO_2 (%)	CO (ppm)	NO_x (ppm)	SO_2 (ppm)
25	20	—	—	—

Sampling System Bias (SB) Criteria: ≤± 5% of span for zero and upscale gas, where:

Where: $SB = [(C_s - C_{Dir})/CS] * 100\%$

Zero and Calibration Drift (D) Criteria: ≤± 3% of span, where

$D = |SB_{final} - SB_i|$

Client/Site: NEFCO / SWA Biosolids

Source: RTO #2 Stack

Operator: A. Seaka

Date: 6/27/13

Run Number: U2 - M5 - R3

Start Time: 1128

End Time: 1233

System Bias (SB)/Drift (D) Assessments – Reference Method

Pollutant/Diluent	Start Zero		Start Span (C_{MA})		Final Zero		Final Span (C_{MA})	
	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)	Cylinder Value (C_V)	Analyzer Response (C_S)
Oxygen	0.00	0.09	10.49	10.67	0.00	0.05	10.49	10.71
Carbon Dioxide	0.00	-0.09	9.45	9.35	0.00	-0.05	9.45	9.30

O_2 (%)	CO_2 (%)	CO (ppm)	NO_x (ppm)	SO_2 (ppm)
25	20	—	—	—

Sampling System Bias (SB) Criteria: ≤± 5% of span for zero and upscale gas, where:

Where: $SB = [(C_s - C_{Dir})/CS] * 100\%$

Zero and Calibration Drift (D) Criteria: ≤± 3% of span, where

$D = |SB_{final} - SB_i|$

B3
Visible Emissioins Readings / Data

EPA METHOD 9 (40 CFR 60 - Appendix A)
VISIBLE EMISSION OBSERVATION FORM

COMPANY NAME NCFCO

LOCATION

LOCATION 6600 45th St

CITY WPB | STATE Fl | ZIP 33412

PROCESS EQUIPMENT Peletizing | OPERATING MODE Normal

CONTROL EQUIPMENT Scrubber | OPERATING MODE Normal

DESCRIBE EMISSION POINT Top of NE stack #2 (ASD) ~~EU 14~~ EU14

HEIGHT OF EMISSION POINT 50'

HEIGHT OF EMISSION POINT RELATIVE TO OBSERVER START 50' END ✓

DISTANCE TO EMISSION POINT START 753' END ✓

DIRECTION TO EMISSION PT. (DEGREES (0-360)) START 296° END ✓

VERTICAL ANGLE TO OBSERVATION POINT START 9° END ✓

DIRECTION TO OBSERVATION POINT (DEGREES (0-360)) START 296° END ✓

DISTANCE & DIRECTION TO OBSERVATION POINT FROM EMISSION POINT START 1' @ 296 END ✓

DESCRIBE EMISSIONS START None END ✓

EMISSION COLOR START N/A END ✓

WATER DROPLET PLUME ATTACHED ☐ DETACHED ☐ NONE ☒

DESCRIBE PLUME BACKGROUND START Sky END ✓

BACKGROUND COLOR START blue END ✓

SKY CONDITIONS START Scattered END ✓

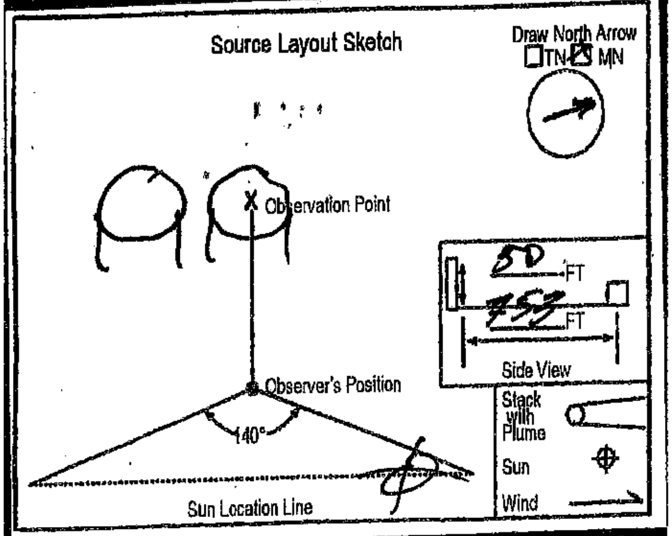
WIND SPEED START 0-5 mph END ✓

WIND DIRECTION START NW END ✓

AMBIENT TEMP START 80° END ✓

WET BULB TEMP

RH percent 79



ADDITIONAL INFORMATION

OBSERVATION DATE 6/27/13 | START TIME 8:12 | END TIME 9:12

SEC / MIN	0	15	30	45	SEC / MIN	0	15	30	45
1	0	0	0	0	1	0	0	0	0
2	0	0	0	0	2	0	0	0	0
3	0	0	0	0	3	0	0	0	0
4	0	0	0	0	4	0	0	0	0
5	0	0	0	0	5	0	0	0	0
6	0	0	0	0	6	0	0	0	0
7	0	0	0	0	7	0	0	0	0
8	0	0	0	0	8	0	0	0	0
9	0	0	0	0	9	0	0	0	0
10	0	0	0	0	10	0	0	0	0
11	0	0	0	0	11	0	0	0	0
12	0	0	0	0	12	0	0	0	0
13	0	0	0	0	13	0	0	0	0
14	0	0	0	0	14	0	0	0	0
15	0	0	0	0	15	0	0	0	0
16	0	0	0	0	16	0	0	0	0
17	0	0	0	0	17	0	0	0	0
18	0	0	0	0	18	0	0	0	0
19	0	0	0	0	19	0	0	0	0
20	0	0	0	0	20	0	0	0	0
21	0	0	0	0	21	0	0	0	0
22	0	0	0	0	22	0	0	0	0
23	0	0	0	0	23	0	0	0	0
24	0	0	0	0	24	0	0	0	0
25	0	0	0	0	25	0	0	0	0
26	0	0	0	0	26	0	0	0	0
27	0	0	0	0	27	0	0	0	0
28	0	0	0	0	28	0	0	0	0
29	0	0	0	0	29	0	0	0	0
30	0	0	0	0	30	0	0	0	0

OBSERVER'S NAME (PRINT) John Fallah

OBSERVER'S SIGNATURE | DATE 6/27/13

ORGANIZATION SFES

CERTIFIED BY ETA | DATE 1/8/13

EPA METHOD 9 (40 CFR 60 - Appendix A)
VISIBLE EMISSION OBSERVATION FORM

COMPANY NAME NEFCO

LOCATION

LOCATION 6600 45th st

CITY WPB STATE Fl ZIP 33412

PROCESS EQUIPMENT Pelletizing OPERATING MODE Normal

CONTROL EQUIPMENT ~~Scrubber~~ (F) RTO OPERATING MODE Normal

DESCRIBE EMISSION POINT ~~Exit of~~ West Stack #2
(AS) ~~EU01~~ EU11

HEIGHT OF EMISSION POINT 138'

HEIGHT OF EMISSION POINT RELATIVE TO OBSERVER START 138' END ✓

DISTANCE TO EMISSION POINT START 755' END ✓

DIRECTION TO EMISSION PT. (DEGREES 0-360)) START 290° END ✓

VERTICAL ANGLE TO OBSERVATION POINT START 10° END ✓

DIRECTION TO OBSERVATION POINT (DEGREES (0-360)) START 290° END ✓

DISTANCE & DIRECTION TO OBSERVATION POINT FROM EMISSION POINT START 1' @ 290° END ✓

DESCRIBE EMISSIONS START None END ✓

EMISSION COLOR START N/A END ✓

WATER DROPLET PLUME ATTACHED ☐ DETACHED ☐ NONE ☒

DESCRIBE PLUME BACKGROUND START SKY END ✓

BACKGROUND COLOR START blue END ✓

SKY CONDITIONS START scattered END ✓

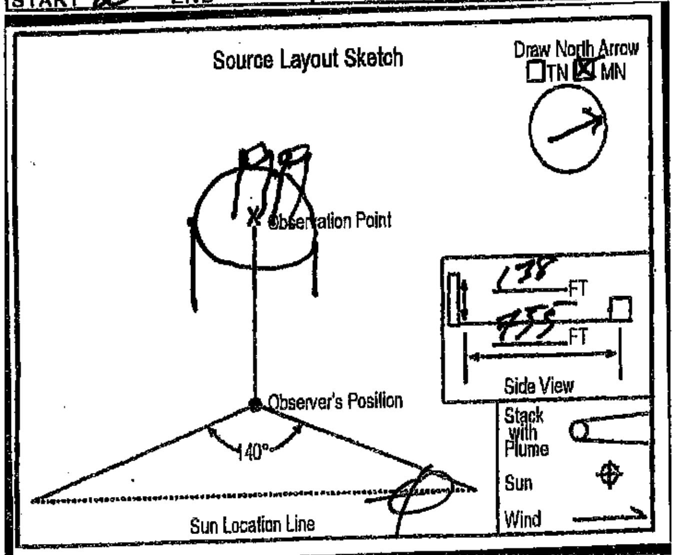
WIND SPEED START 0-5 mph END ✓

WIND DIRECTION START NW END ✓

AMBIENT TEMP START 80° END ✓

WET BULB TEMP

RH percent 79



ADDITIONAL INFORMATION

OBSERVATION DATE 6/27/13 START TIME 8:12 END TIME 9:12

SEC / MIN	0	15	30	45	SEC / MIN	0	15	30	45
1	0	0	0	0	1	0	0	0	0
2	0	0	0	0	2	0	0	0	0
3	0	0	0	0	3	0	0	0	0
4	0	0	0	0	4	0	0	0	0
5	0	0	0	0	5	0	0	0	0
6	0	0	0	0	6	0	0	0	0
7	0	0	0	0	7	0	0	0	0
8	0	0	0	0	8	0	0	0	0
9	0	0	0	0	9	0	0	0	0
10	0	0	0	0	10	0	0	0	0
11	0	0	0	0	11	0	0	0	0
12	0	0	0	0	12	0	0	0	0
13	0	0	0	0	13	0	0	0	0
14	0	0	0	0	14	0	0	0	0
15	0	0	0	0	15	0	0	0	0
16	0	0	0	0	16	0	0	0	0
17	0	0	0	0	17	0	0	0	0
18	0	0	0	0	18	0	0	0	0
19	0	0	0	0	19	0	0	0	0
20	0	0	0	0	20	0	0	0	0
21	0	0	0	0	21	0	0	0	0
22	0	0	0	0	22	0	0	0	
23	0	0	0	0	23	0	0	0	0
24	0	0	0	0	24	0	0	0	0
25	0	0	0	0	25	0	0	0	0
26	0	0	0	0	26	0	0	0	0
27	0	0	0	0	27	0	0	0	0
28	0	0	0	0	28	0	0	0	0
29	0	0	0	0	29	0	0	0	0
30	0	0	0	0	30	0	0	0	0

OBSERVER'S NAME (PRINT) John Fallah

OBSERVER'S SIGNATURE

DATE 6/27/13

ORGANIZATION SFES

CERTIFIED BY ETA DATE 1/8/13

EPA METHOD 9 (40 CFR 60 - Appendix A)
VISIBLE EMISSION OBSERVATION FORM

COMPANY NAME NEFCO

LOCATION

LOCATION 6600 45th st

CITY WPB　STATE Fl　ZIP 33412

PROCESS EQUIPMENT Peletizing　OPERATING MODE Normal

CONTROL EQUIPMENT Scrubber　OPERATING MODE Normal

DESCRIBE EMISSION POINT Top of SW Stack #1 (AS) ~~[illegible]~~ EV12

HEIGHT OF EMISSION POINT 50'

HEIGHT OF EMISSION POINT RELATIVE TO OBSERVER START 50' END ✓

DISTANCE TO EMISSION POINT START 492' END ✓

DIRECTION TO EMISSION PT. (DEGREES (0-360)) START 116° END ✓

VERTICAL ANGLE TO OBSERVATION POINT START 10° END ✓

DIRECTION TO OBSERVATION POINT (DEGREES (0-360)) START 116° END ✓

DISTANCE & DIRECTION TO OBSERVATION POINT FROM EMISSION POINT START 1' @ 116° END ✓

DESCRIBE EMISSIONS START None END ✓

EMISSION COLOR START N/A END ✓

WATER DROPLET PLUME ATTACHED ☐ DETACHED ☐ NONE ☒

DESCRIBE PLUME BACKGROUND START Sky END ✓

BACKGROUND COLOR START gray END ✓

SKY CONDITIONS START scattered END ✓

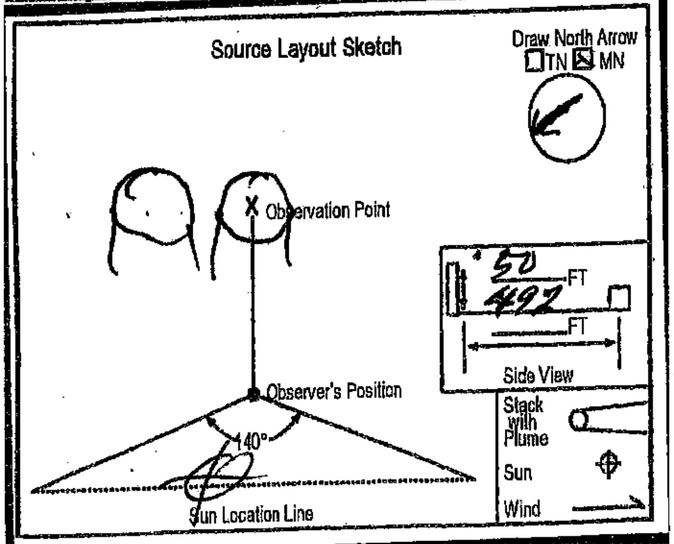
WIND SPEED START 0-5 mph END

WIND DIRECTION START NE END ✓

AMBIENT TEMP ° START 80 END ✓

WET BULB TEMP

RH percent 67%



Draw North Arrow ☐ TN ☒ MN

ADDITIONAL INFORMATION

OBSERVATION DATE 6/27/13　START TIME 1:55　END TIME 2:55

MIN \ SEC	0	15	30	45	MIN \ SEC	0	15	30	45
1	0	0	0	0	1	0	0	0	0
2	0	0	0	0	2	0	0	0	0
3	0	0	0	0	3	0	0	0	0
4	0	0	0	0	4	0	0	0	0
5	0	0	0	0	5	0	0	0	0
6	0	0	0	0	6	0	0	0	0
7	0	0	0	0	7	0	0	0	0
8	0	0	0	0	8	0	0	0	0
9	0	0	0	0	9	0	0	0	0
10	0	0	0	0	10	0	0	0	0
11	0	0	0	0	11	0	0	0	0
12	0	0	0	0	12	0	0	0	0
13	0	0	0	0	13	0	0	0	0
14	0	0	0	0	14	0	0	0	0
15	0	0	0	0	15	0	0	0	0
16	0	0	0	0	16	0	0	0	0
17	0	0	0	0	17	0	0	0	0
18	0	0	0	0	18	0	0	0	0
19	0	0	0	0	19	0	0	0	0
20	0	0	0	0	20	0	0	0	0
21	0	0	0	0	21	0	0	0	0
22	0	0	0	0	22	0	0	0	0
23	0	0	0	0	23	0	0	0	0
24	0	0	0	0	24	0	0	0	0
25	0	0	0	0	25	0	0	0	0
26	0	0	0	0	26	0	0	0	0
27	0	0	0	0	27	0	0	0	0
28	0	0	0	0	28	0	0	0	0
29	0	0	0	0	29	0	0	0	0
30	0	0	0	0	30	0	0	0	0

OBSERVER'S NAME (PRINT) John Fallah

OBSERVER'S SIGNATURE J Fallah　DATE 6/27/13

ORGANIZATION SFES

CERTIFIED BY ETA　DATE 1/8/13

EPA METHOD 9 (40 CFR 60 - Appendix A)
VISIBLE EMISSION OBSERVATION FORM

COMPANY NAME NEFCO

LOCATION

LOCATION 6600 45th st

CITY WPB | STATE Fl | ZIP 33412

PROCESS EQUIPMENT Pelelizing | OPERATING MODE Normal

CONTROL EQUIPMENT Scrubber Ⓑ RTO | OPERATING MODE Normal

DESCRIBE EMISSION POINT Exit of East stack #1 Ⓐ ~~BEU0102~~ EU10

HEIGHT OF EMISSION POINT 138'

HEIGHT OF EMISSION POINT RELATIVE TO OBSERVER START 138' END ✓

DISTANCE TO EMISSION POINT START 447' END ✓

DIRECTION TO EMISSION PT. (DEGREES (0-360)) START 136° END ✓

VERTICAL ANGLE TO OBSERVATION POINT START 13° END ✓

DIRECTION TO OBSERVATION POINT (DEGREES (0-360)) START 136° END ✓

DISTANCE & DIRECTION TO OBSERVATION POINT FROM EMISSION POINT START 1' @ 136° END ✓

DESCRIBE EMISSIONS START None END ✓

EMISSION COLOR START N/A END ✓

WATER DROPLET PLUME ATTACHED ☐ DETACHED ☐ NONE ☒

DESCRIBE PLUME BACKGROUND START sky END ✓

BACKGROUND COLOR START gray END ✓

SKY CONDITIONS START scattered END ✓

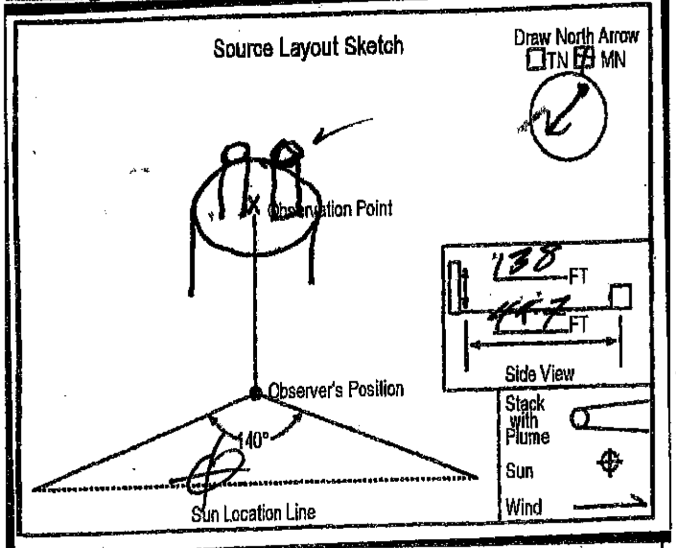
WIND SPEED START 0-5 mph END ✓

WIND DIRECTION START NE END ✓

AMBIENT TEMP START 80° END ✓

WET BULB TEMP

RH percent 67



ADDITIONAL INFORMATION

OBSERVATION DATE 6/27/13 | START TIME 1:55 | END TIME 2:55

SEC / MIN	0	15	30	45	SEC / MIN	0	15	30	45
1	0	0	0	0	1	0	0	0	0
2	0	0	0	0	2	0	0	0	0
3	0	0	0	0	3	0	0	0	0
4	0	0	0	0	4	0	0	0	0
5	0	0	0	0	5	0	0	0	0
6	0	0	0	0	6	0	0	0	0
7	0	0	0	0	7	0	0	0	0
8	0	0	0	0	8	0	0	0	0
9	0	0	0	0	9	0	0	0	0
10	0	0	0	0	10	0	0	0	0
11	0	0	0	0	11	0	0	0	0
12	0	0	0	0	12	0	0	0	0
13	0	0	0	0	13	0	0	0	0
14	0	0	0	0	14	0	0	0	0
15	0	0	0	0	15	0	0	0	0
16	0	0	0	0	16	0	0	0	0
17	0	0	0	0	17	0	0	0	0
18	0	0	0	0	18	0	0	0	0
19	0	0	0	0	19	0	0	0	0
20	0	0	0	0	20	0	0	0	0
21	0	0	0	0	21	0	0	0	0
22	0	0	0	0	22	0	0	0	0
23	0	0	0	0	23	0	0	0	0
24	0	0	0	0	24	0	0	0	0
25	0	0	0	0	25	0	0	0	0
26	0	0	0	0	26	0	0	0	0
27	0	0	0	0	27	0	0	0	0
28	0	0	0	0	28	0	0	0	0
29	0	0	0	0	29	0	0	0	0
30	0	0	0	0	30	0	0	0	0

OBSERVER'S NAME (PRINT) John Fallah

OBSERVER'S SIGNATURE J Fallah | DATE 6/27/13

ORGANIZATION SFES

CERTIFIED BY ETA | DATE 1/8/13

Appendix C

Particulate Matter Laboratory Data

Eastmount Environmental Services, LLC

Job Name: NEFCO / SUA Biosolids
Project #: 13-527

Location: West Palm Beach, FL
Source: Units 1 + 2

Weighing's

	Date	Time
1	6/28/13	1700
2	6/30/13	1820
3		

Beakers

Sample Date	Run ID #	Beaker #	Volume (mL)	Tare Weight	Wt #1	Wt #2	Wt #3	Wt #4	Final Weight	Total mg
6/27/13	U1-MS-R1	05-7-34	100	69.6076	69.6097	69.6092			69.6092	
	-R2	BK-49	110	70.0989	70.0992	70.0995			70.0995	
	-R3	SGC-01	100	67.4024	67.4030	67.4031			67.4031	
	U2-MS-R1	11130	120	87.3342	87.3341	87.3345			87.3345	
	-R2	B5-7-32	120	69.4627	69.4633	69.4632			69.4633	
	-R3	PB6	110	69.4147	69.4155	69.4160			69.4160	
	MS-Blank-A	B5-48	130	67.0279	67.0280	67.0280			67.0280	

Temperature	°F
Humidity	%
Zero Weight	0.0000 g
Upscale Weight	50.0002 g

Weighted By: Francis Mork

Signature:

Eastmount Environmental Services, LLC

Job Name: NEFCO / Swift Biosolids
Project #: 13-527

Location: West Palm Beach, FL
Source: RTO's 1 + 2

Weighing's

	Date	Time
1	6/30/13	1830
2	7/1/13	1030
3		

Filters

Sample Date	Run ID #	Filter #	Tare Weight	Wt. #1	Wt. #2	Wt. #3	Wt. #4	Final Weight	Total mg
6/27/13	U1-M5-R1	1449	0.4593	0.4610	0.4615			0.4615	
	-R2	1470	0.4590	0.4617	0.4621			0.4621	
	-R3	1471	0.4576	0.4588	0.4586			0.4588	
	U2-M5-R1	1446	0.4439	0.4460	0.4457			0.4460	
	-R2	1447	0.4292	0.4304	0.4303			0.4304	
	-R3	1448	0.4442	0.4472	0.4475			0.4475	
	M5-Blank-B	1445	0.4408	0.4408	0.4407			0.4408	

Temperature °F
Humidity %
Zero Weight 0.0000 g
Upscale Weight 0.99967 g

Weighted By: Francis Morlu

Signature:

Eastmount Environmental Services, LLC

Job Name: NEFCO /SWA
Project #: 13-527

Location: ~~Unit~~ #2 WPB, FL
Source: Unit #2

Weighing's

	Date	Time
1	6/25/13	2010
2	6/24/13	0530
3		

Filters

Sample Date	Run ID #	Filter #	Tare Weight	Wt #1	Wt #2	Wt #3	Wt #4	Final Weight	Total mg
6/24/13	U2-MS-Pre 1	1425	0.4391	0.4399	0.4399			0.4399	
	-Pre 2	1426	0.4473	0.4496	0.4495			0.4496	

72	70			Temperature	°F
42	40			Humidity	%
0.0000	0.0000			Zero Weight	0.0000 g
0.9996	0.9997			Upscale Weight	0.99967 g

Weighted By: Andrew Seaha

Signature:

Eastmount Environmental Services, LLC

Job Name: NEFCO / Swt
Project #: 13-527

Location: WPB, FL
Source: Unit #1

Weighing's

	Date	Time
1	6/26/13	1750
2	6/27/13	0500
3		

Filters

Sample Date	Run ID #	Filter #	Tare Weight	Wt. #1	Wt. #2	Wt. #3	Wt. #4	Final Weight	Total mg
6/25/13	U1 ~~U2~~-m5-Pre2	1427	0.4451	0.4468	0.4468			0.4465	
	-Pre3	1428	0.4380	0.4398	0.4397			0.4398	
				70	69			Temperature	°F
				38	37			Humidity	%
				0.0000	0.0000			Zero Weight	0.0000 g
				0.9997	0.9997			Upscale Weight	0.99967 g

Weighted By: Andrew Serke

Signature:

Eastmount Environmental Services, LLC

Job Name: NEFCo / SwA

Project #: 13-527

Location: WPB, FL

Source: Unit #2

Weighing's

	Date	Time	
1	6/25/13	2000	U2-Pre 1/2
2	6/26/13	1800	U2-Pre 1/2 + 3/4
3	6/27/13	0600	U2-Pre 3/4

Beakers

Sample Date	Run ID #	Beaker #	Volume (mL)	Tare Weight	Wt. #1	Wt. #2	Wt. #3	Wt. #4	Final Weight	Total mg
6/24/13	U2-MS-Pre 1	03-12	120	70.7993	70.7994	70.7995			70.7995	
	-Pre 2	411	110	67.5169	67.5173	67.5175			67.5175	
6/25/13	U2-MS-Pre 3	7C	55	69.9632	69.9646	69.9648			69.9648	
	-Pre 4	BK5	55	67.1970	67.1994	67.1995			67.1995	

72	70	70		Temperature	°F
42	38	35		Humidity	%
0.0000	0.0000	0.0000		Zero Weight	0.0000 g
0.9996	0.9997	0.9997		Upscale Weight	50.0002 g
50.0002	50.0002	50.0002			

Weighted By: Andrew Seeha

Signature:

Eastmount Environmental Services, LLC

Job Name: NEFCO/SWA
Project #: 13-527

Location: WPB, FL
Source: Unit #1

Weighing's

	Date	Time
1	6/26/13	1800
2	6/27/13	0515
3		

Beakers

Sample Date	Run ID #	Beaker #	Volume (mL)	Tare Weight	Wt #1	Wt #2	Wt #3	Wt #4	Final Weight	Total mg
6/25/13	U1-MS-Pre1	9C	60	69.9054	69.9058	69.9057			69.9058	
	-Pre2	BD3100	110	70.2271	70.2350	70.2351			70.2351	
	-Pre3	417	125	68.7202	68.7231	68.7232			68.7232	
	-Pre4	BK2	55	69.2813	69.2838	69.2835			69.2838	

70	69			Temperature	°F
38	37			Humidity	%
0.0000	0.0000			Zero Weight	0.0000 g
0.9997	0.9997			Upscale Weight	50.0002 g
50.0002	50.0002				

Weighted By: Andrew Seaha

Signature:

Eastmount Environmental Services, LLC

Job Name: NEFCO/SWA Biosolids
Project #: 13-527

Location: West Palm Beach, FL
Source: Units 1 + 2

Weighing's

	Date	Time
1	6/27/13	1900
2	6/28/13	0500
3		

Beakers

Sample Date	Run ID #	Beaker #	Volume (mL)	Tare Weight	Wt #1	Wt #2	Wt #3	Wt #4	Final Weight	Total mg
6/26/13	U1-MS-Pre5	Z1	120	70.6023	70.0041	70.0039			70.0041	
	-Pre6	BS-8	110	69.8969	69.8985	69.8986			69.8986	
	-Pre7	03-14	125	67.4101	67.4110	67.4111			67.4111	
	U2-MS-Pre5	7D	110	67.2788	67.2799	67.2800			67.2800	
	-Pre6	405	115	67.5395	67.5405	62.5405			67.5405	
	AS ~~-Pre7~~	~~03-38~~	~~125~~	~~69.3453~~						
	-Pre7	G12	125	65.8286	65.8296	65.8297			65.8297	

~~76~~	74			Temperature	°F
46	42			Humidity	%
0.0000	0.0000			Zero Weight	0.0000 g
50.0201	50.0001			Upscale Weight	50.0002 g

Weighted By: Andrew Saha

Signature:

Eastmount Environmental Services, LLC

Job Name: NEFCO/SWA Biosolids
Project #: 13-527

Location: West Palm Beach, FL
Source: Units 1 + 2

Weighing's

	Date	Time
1	6/27/13	1900
2	6/28/13	0500
3		

Filters

Sample Date	Run ID #	Filter #	Tare Weight	Wt. #1	Wt. #2	Wt. #3	Wt. #4	Final Weight	Total mg
6/24/13	U1-MS-Pre5	1429	0.4397	0.4423	0.4425			0.4425	
	-Pre6	1435	0.4538	0.4559	0.4558			0.4559	
	-Pre7	1436	0.4574	0.4609	0.4610			0.4610	
	U2-MS-Pre5	1437	0.4503	.4511	0.4511			0.4511	
	-Pre6	1438	0.4513	0.4528	0.4525			0.4528	
	-Pre7	1439	0.4436	0.4446	0.4445			0.4446	

76	74			Temperature	°F
46	42			Humidity	%
0.0000	0.0000			Zero Weight	0.0000 g
50.0001	50.0001			Upscale Weight	0.99967 g

Weighted By: Andrew Seaka

Signature:

PARTICULATE FILTER WEIGHTS USING THE INTERTIAL IMPACTOR

Run			U1-M5/202-Pre1		
Filter Set			PS3		
	Tare (grams)	prelim wt	wt. #1	wt. #2	Final (grams)
S1	0.1561	0.1561	0.1561	0.1561	0.1561
S2	0.1396	0.1396	0.1396	0.1396	0.1396
S3	0.1555	0.1555	0.1555	0.1555	0.1555
S4	0.1391	0.1390	0.1390	0.1390	0.1390
S5	0.1557	0.1557	0.1557	0.1557	0.1557
S6	0.1396	0.1398	0.1398	0.1398	0.1398
S7	0.1563	0.1564	0.1564	0.1564	0.1564
S8	0.1390	0.1392	0.1391	0.1391	0.1391
Filter	0.2086	0.2094	0.2093	0.2093	0.2093
Total	1.3895	1.3907	1.3905	1.3905	1.3905
					0.0010
		6/26/2013	6/26/2013	6/27/2013	
		0515	1915	0530	

PARTICULATE FILTER WEIGHTS USING THE INTERTIAL IMPACTOR

Run			U1-M5/202-Pre4		
Filter Set			PS4		
	Tare (grams)	prelim wt	wt. #1	wt. #2	Final (grams)
S1	0.1563	0.1563	0.1563	0.1563	0.1566
S2	0.1420	0.1420	0.1419	0.1420	0.1420
S3	0.1571	0.1572	0.1572	0.1572	0.1572
S4	0.1396	0.1396	0.1396	0.1396	0.1396
S5	0.1554	0.1554	0.1554	0.1554	0.1554
S6	0.1406	0.1407	0.1407	0.1407	0.1407
S7	0.1556	0.1558	0.1557	0.1557	0.1557
S8	0.1397	0.1396	0.1396	0.1396	0.1396
Filter	0.2087	0.2093	0.2093	0.2093	0.2093
Total	1.3950	1.3959	1.3957	1.3958	1.3961
					0.0011
		6/26/2013 0515	6/26/2013 1915	6/26/2013 1915	

PARTICULATE FILTER WEIGHTS USING THE INTERTIAL IMPACTOR

Run			U2-M5/202-Pre3		
Filter Set			PS1		
	Tare (grams)	prelim wt	wt. #1	wt. #2	Final (grams)
S1	0.1542	0.1543	0.1543	0.1543	0.1543
S2	0.1400	0.1401	0.1400	0.1400	0.1400
S3	0.1552	0.1553	0.1553	0.1553	0.1553
S4	0.1390	0.1390	0.1390	0.1390	0.1390
S5	0.1564	0.1564	0.1565	0.1564	0.1565
S6	0.1390	0.1391	0.1391	0.1391	0.1391
S7	0.1555	0.1557	0.1557	0.1557	0.1557
S8	0.1393	0.1394	0.1394	0.1394	0.1394
Filter	0.2079	0.2087	0.2087	0.2087	0.2087
Total	1.3865	1.3880	1.3880	1.3879	1.3880
					0.0015
		6/26/2013 0515	6/26/2013 1915	6/27/2013 0530	

PARTICULATE FILTER WEIGHTS USING THE INTERTIAL IMPACTOR

Run			U2-M5/202-Pre4		
Filter Set			PS2		
	Tare (grams)	prelim wt	wt. #1	wt. #2	Final (grams)
S1	0.1582	0.1582	0.1582	0.1582	0.1582
S2	0.1399	0.1399	0.1399	0.1399	0.1399
S3	0.1555	0.1556	0.1555	0.1555	0.1555
S4	0.1405	0.1404	0.1404	0.1404	0.1404
S5	0.1571	0.1571	0.1572	0.1573	0.1573
S6	0.1404	0.1405	0.1405	0.1405	0.1405
S7	0.1578	0.1580	0.1579	0.1579	0.1579
S8	0.1410	0.1412	0.1412	0.1412	0.1412
Filter	0.2080	0.2089	0.2088	0.2088	0.2088
Total	1.3984	1.3998	1.3996	1.3997	1.3997
					0.0013
		6/26/2013 0515	6/26/2013 1915	6/27/2013 0530	

Maxxam

Success Through Science®

Your Project #: 13-527
Site Location: NEFCO/SWA
Your C.O.C. #: 0813

Attention: Andrew Seaha
Eastmount Environmental Services
2 New Pasture Road
Unit 5
Newburyport, MA
USA 1950

Report Date: 2013/07/03

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B3A2353
Received: 2013/06/27, 13:00

Sample Matrix: Stack Sampling Train
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Extractable Condensables (M202)	5	2013/06/28	2013/06/28	BRL SOP-00118	EPA 202
Non Extractable Condensibles (M202)	5	2013/06/29	2013/06/29	BRL SOP-00118 / BRL SOP-00109	EPA 202
Weight of Solvent from Impingers	5	N/A	2013/06/28		
Weight of Water from Impingers	5	N/A	2013/06/28		

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

ASebastian

Ancy Sebastian

03 Jul 2013 09:22:34 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Ancy Sebastian, C.Tech., Senior Project Manager, Air Toxics
Email: ASebastian@maxxam.ca
Phone# (905) 817-5831

==

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 1

EPA M202 CONDENSIBLE PM (STACK SAMPLING TRAIN)

Maxxam ID		SB2464	SB2465	SB2466	SB2467	SB2468		
Sampling Date		2013/06/25 00:01	2013/06/25 00:01	2013/06/25 00:01	2013/06/25 00:01	2013/06/25 00:01		
COC Number		0813	0813	0813	0813	0813		
	Units	**M202-FIELD BLANK**	**U1-M202-PRE1**	**U1-M202-PRE4**	**U2-M202-PRE3**	**U2-M202-PRE4**	RDL	QC Batch
Weight	g	130	390	470	340	460	0.1	3262975
Weight of Solvent	g	140	150	180	91	180	0.1	3262974
Inorganic Condensibles	mg	1.8	9.7	18	13	18	0.5	3262989
Organic Condensibles	mg	7.0	14	19	6.0	12	1.0	3262973

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Test Summary

Maxxam ID SB2464
Sample ID M202-FIELD BLANK
Matrix Stack Sampling Train

Collected 2013/06/25
Shipped
Received 2013/06/27

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Extractable Condensables (M202)	BAL	3262973	2013/06/28	2013/06/28	Manoj Gera
Non Extractable Condensibles (M202)	BAL	3262989	2013/06/29	2013/06/29	Frank Mo
Weight of Solvent from Impingers		3262974	N/A	2013/06/28	Frank Mo
Weight of Water from Impingers		3262975	N/A	2013/06/28	Frank Mo

Maxxam ID SB2465
Sample ID U1-M202-PRE1
Matrix Stack Sampling Train

Collected 2013/06/25
Shipped
Received 2013/06/27

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Extractable Condensables (M202)	BAL	3262973	2013/06/28	2013/06/28	Manoj Gera
Non Extractable Condensibles (M202)	BAL	3262989	2013/06/29	2013/06/29	Frank Mo
Weight of Solvent from Impingers		3262974	N/A	2013/06/28	Frank Mo
Weight of Water from Impingers		3262975	N/A	2013/06/28	Frank Mo

Maxxam ID SB2466
Sample ID U1-M202-PRE4
Matrix Stack Sampling Train

Collected 2013/06/25
Shipped
Received 2013/06/27

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Extractable Condensables (M202)	BAL	3262973	2013/06/28	2013/06/28	Manoj Gera
Non Extractable Condensibles (M202)	BAL	3262989	2013/06/29	2013/06/29	Frank Mo
Weight of Solvent from Impingers		3262974	N/A	2013/06/28	Frank Mo
Weight of Water from Impingers		3262975	N/A	2013/06/28	Frank Mo

Maxxam ID SB2467
Sample ID U2-M202-PRE3
Matrix Stack Sampling Train

Collected 2013/06/25
Shipped
Received 2013/06/27

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Extractable Condensables (M202)	BAL	3262973	2013/06/28	2013/06/28	Manoj Gera
Non Extractable Condensibles (M202)	BAL	3262989	2013/06/29	2013/06/29	Frank Mo
Weight of Solvent from Impingers		3262974	N/A	2013/06/28	Frank Mo
Weight of Water from Impingers		3262975	N/A	2013/06/28	Frank Mo

Maxxam ID SB2468
Sample ID U2-M202-PRE4
Matrix Stack Sampling Train

Collected 2013/06/25
Shipped
Received 2013/06/27

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Extractable Condensables (M202)	BAL	3262973	2013/06/28	2013/06/28	Manoj Gera
Non Extractable Condensibles (M202)	BAL	3262989	2013/06/29	2013/06/29	Frank Mo
Weight of Solvent from Impingers		3262974	N/A	2013/06/28	Frank Mo
Weight of Water from Impingers		3262975	N/A	2013/06/28	Frank Mo

GENERAL COMMENTS

FILTERS : Untared filters were received.

Sample SB2464-01: ORGANIC EXTRACTION : Oily material found in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

Sample SB2465-01: ORGANIC EXTRACTION : Oily material found in vial.
INORGANIC EXTRACTION : Brownish residue found in Teflon dish.

Sample SB2466-01: ORGANIC EXTRACTION : Oily material found in vial.
INORGANIC EXTRACTION : Brownish residue found in Teflon dish.

Sample SB2467-01: ORGANIC EXTRACTION : Oily material found in vial.
INORGANIC EXTRACTION : Brownish residue found in Teflon dish.

Sample SB2468-01: ORGANIC EXTRACTION : Oily material found in vial.
INORGANIC EXTRACTION : Brownish residue found in Teflon dish.

Results relate only to the items tested.

Eastmount Environmental Services
Attention: Andrew Seaha
Client Project #: 13-527
P.O. #:
Site Location: NEFCO/SWA

Quality Assurance Report

Maxxam Job Number: GB3A2353

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
3262973 MGE	Spiked Blank	Organic Condensibles	2013/06/28		92	%	70 - 130
	Spiked Blank DUP	Organic Condensibles	2013/06/28		92	%	70 - 130
	RPD	Organic Condensibles	2013/06/28	0.2		%	20
	Method Blank	Organic Condensibles	2013/06/28	<1.0		mg	
3262989 MGE	Method Blank	Inorganic Condensibles	2013/06/29	<0.5		mg	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Validation Signature Page

Maxxam Job #: B3A2353

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Frank Mo, B.Sc., Inorganic Lab. Manager

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Appendix D

Facility Process Datasheets

STACK TEST DRYER TRAIN DATA LOG

DRYER TRAIN: #2
DATE: 6/24/13

DRYER FUEL: Landfill gas [✓ Natural gas]

RTO FUEL: [✓ Landfill gas] ~~Natural gas~~

	TIME	PROCESS DATA:										
venturi: 55gpm/6.6wc		FEED	FEED	SEPARATOR	CONDENSER	CONDENSER	CONDENSER	CONDENSER	VENTURI	VENTURI	RTO	RTO
		Scale 102	Scale 202	Temprature	Temprature	Flow	pH	Pressure	Pressure	Flow	Temprature	Diff.
		Tons	Tons	inlet/outlet*F	*F	gpm	Std Units	inches wc	inches wc	gpm	*F	Press.
RUN #1 START	1720	X	13.0	1032.3/213.5	142°F	1114.7	5.44	8.0	6.5	53.6	1603°F	6.5
1:00	1755	X	13.4	1063/211.5	142.6	1117.8	5.54	8.0	7.1	53.8	1600	6.9
2:00	1823	X	14.0	1064/208.5	143.9	1117.0	5.52	8.0	7.0	54.0	1601	6.8
10gpm/ 60Rn												
RUN #2 START	1854	X	13.3	1066.8/208.5	142.6	1135.0	5.48	8.0	3.3	9.8	1600	7.1
1:00	1927	X	13.5	1062.7/207.5	142.8	1135.5	5.50	8.0	3.3	9.0	1602	7.1
2:00	2002	X	13.2	1065.8/207.5	142.8	1137.0	5.49	7.9	3.4	8.7	1602	7.1
RUN #3 START												
1:00												
2:00												
RUN #4 START												
1:00												
2:00												

NOTES:

STACK TEST DRYER TRAIN DATA LOG

DRYER FUEL: Landfill gas [✓ Natural gas]

DRYER TRAIN: #2

RTO FUEL: [✓ Landfill gas] Natural gas

DATE: 6/25/13

	TIME	PROCESS DATA: venturi 109 gpm / 6" wc											
		FEED Scale 102/202 Tons/hr	FEED Scale 102/202 Totalizer	GAS USAGE TOTALIZER CCF ~~SCF~~	SEPARATOR Temprature inlet/outlet*F	CONDENSER Temprature *F	CONDENSER Flow gpm	CONDENSER pH Std Units	CONDENSER Pressure inches wc	VENTURI Pressure inches wc	VENTURI Flow gpm	RTO Temp. *F	RTO Diff. Press.
RUN #1 START	0915	13.8	82167.61	192425	962.2/200.6	139.9	1126.4	5.42	8.1	6.1	113.5	1580	6.0
Middle	0945	13.2	82174.64	192 440	1009.4/199.6	141.9	1118.8	5.58	8.2	6.8	113.9	1598	6.5
End	1020	14.3	82182.82	192463	1094/199.6	146.9	1120.7	5.53	8.1	8.0	113.9	1596	7.3
			venturi: 0gpm / Open "wc										
RUN #2 START	1055	13.0	82190.31	192485	1092.2/203.6	144.4	1109.5	5.45	8.1	3.0/open	0	1597	8.0
Middle	1130	13.4	82198.58	192508	1088/204.6	145.4	1113.1	5.70	8.1	open	0	1599	7.6
End	1205	13.6	82206.21	192529	1091/203.6	145.4	1111.1	5.48	8.1	open	0	1598	7.5
RUN #3 START													
Middle													
End													
RUN #4 START													
Middle													
End													

NOTES:

STACK TEST DRYER TRAIN DATA LOG

DRYER FUEL: Landfill gas [✓ Natural gas] venturi @ 109gpm / Diff Pressure 6.0"wc

DRYER TRAIN: #1

RTO FUEL: [✓ Landfill gas] Natural gas

DATE: 6/25/13

	TIME	PROCESS DATA:											
		FEED Scale	FEED Scale	GAS USAGE	SEPARATOR	CONDENSER	CONDENSER	CONDENSER	CONDENSER	VENTURI	VENTURI	RTO	RTO
		102/202	102/202	TOTALIZER	Temprature	Temprature	Flow	pH	Pressure	Pressure	Flow	Temp.	Diff.
		Tons/hr	Totalizer	CCF SCF NG	inlet/outlet*F	*F	gpm	Std Units	inches wc	inches wc	gpm	*F	Press.
RUN #1 START	1317	13.4	70807.82	192577	1049/202.4	135.1	1122.7	5.47	9.1	6.4	112.3	1599	11.5
Middle	1353	13.0	70815.92	192598	1079.8/194.4	137.6	1121.0	5.61	9.4	6.7	111.7	1600	11.8
End	1425	13.4	70822.35	192617	1108/196.3	138.4	1124.0	5.58	9.5	7.1	112.0	1599	12.0
			venturi 55 gpm / Diff Pressure 6.0"wc										
RUN #2 START	1450	13.9	70828.35	192633	1140.8/196.5	138.9	1124.6	5.56	9.2	8.2	58.1	1600	13.8
Middle	1530	13.5	70836.98	192658	1149/197.5	137.2	1126.9	5.54	8.9	6.1	58.3	1600	13.6
End	1555	13.7	70838.34	192674	1152.9/207.4	138.2	1125.3	5.71	9.1	5.9	57.7	1601	13.5
		Path 202	Path 202	venturi	10gpm / Diff Pressure = open								
RUN #3 START	1615	13.3	82216.05	192688	1162/210.4	138.2	1131.6	5.63	8.9	3.6 open	10.1	1600	13.4
Middle	1645	13.8	82223.46	192709	1161/203	138.5	1125.4	5.51	9.0	open	9.1	1599	13.3
End	1718	13.7	82230.52	192736	1178/203.1	138.6	1133.0	5.60	9.1	open	10.7	1602	13.9
RUN #4 START	1755	13.3	82239.46	192755	1175/208	138.9	1132.1	5.56	8.8	open	0	1598	13.9
Middle	1828	13.1	82246.26	192776	1202/205.1	138.6	1141.9	5.40	8.5	open	0	1601	14.8
End	1900	13.5	82253.27	192797	1208/217.5	138.7	1137.1	5.46	8.5	open	0	1598	14.4

NOTES:

Start Path#2 End Path#2
82207.68 – 82211.22
change paths on test to Path#2 55gpm / 6"wc middle to end

STACK TEST DRYER TRAIN DATA LOG

DRYER FUEL: Landfill gas [✓ Natural gas]

DRYER TRAIN: #1

RTO FUEL: [✓ Landfill gas] Natural gas

DATE: 6/26/13

	TIME	PROCESS DATA:											
		FEED Scale	FEED Scale	GAS USAGE	SEPARATOR	CONDENSER	CONDENSER	CONDENSER	CONDENSER	VENTURI	VENTURI	RTO	RTO
		102/202	[✓ 102]/202	TOTALIZER	Temprature	Temprature	Flow	pH	Pressure	Pressure	Flow	Temp.	Diff.
		Tons/hr	Totalizer	SCF	inlet/outlet*F	*F	gpm	Std Units	Inches wc	Inches wc	gpm	*F	Press.
RUN #1 START	9:00	13.9	70888.19	192912	1147/212.5	137.9	1130.8	5.43	9.2	open 4.9	10.0	1598	16.9
Middle	0930	13.2	70894.31	192931	1150/217.3	138.3	1136	5.50	9.2	open 4.0	8.9	1599	14.6
End	1005	14.0	70902.24	192955	1176/211.3	134.7	1130	5.44	8.9	open 4.0	11.1	1601	14.3
RUN #2 START	1020	13.8	70905.87	192965	1186/213.4	138.1	1134	5.43	8.9	open 4.1	10.7	1601	14.5
Middle	1050	13.6	70912.69	192985	1196/212	139.1	1126	5.56	9.2	open 4.2	10.8	1601	14.9
End	1047	~~14.0~~ 13.6	70921.65	193011	1199/212	136.3	1127.5	5.46	8.7	open 4.0	10.8	1599	14.5
RUN #3 START	1145	14.2	70927.49	193028	1201/209	137.0	1126.1	5.53	8.9	open 3.9	10.8	1599	14.3
Middle	1227	13.2	70935.60	193067	1211/205.3	140.3	1122.6	5.60	9.2	open 5.1	10.4	1599	16.7
End	1252	13.1	70943.30	193110	1219/215.3	139.1	1125.9	5.49	9.0	open 4.2	10.7	1599	14.9
RUN #4 START													
Middle													
End													

NOTES:

* on 3rd test (start of 3rd) both trains (FU101 & FU201) are on NG - RTO's (1 & 2) are on LFG

STACK TEST DRYER TRAIN DATA LOG

DRYER FUEL: Landfill gas [✓ Natural gas] venturi 10gpm / open

DRYER TRAIN# 2

RTO FUEL: [✓ Landfill gas] Natural gas

DATE: 6/26/13

	TIME	PROCESS DATA:											
		FEED Scale	FEED Scale	GAS USAGE	SEPARATOR	CONDENSER	CONDENSER	CONDENSER	CONDENSER	VENTURI	VENTURI	RTO	RTO
		102/[✓ 202]	102/[✓ 202]	TOTALIZER	Temprature	Temprature	Flow	pH	Pressure	Pressure	Flow	Temp.	Diff.
		Tons/hr	Totalizer	SCF	Inlet/outlet*F	*F	gpm	Std Units	Inches wc	Inches wc	gpm	*F	Press.
RUN #1 START	1332	13.3	8229092	193151	1068.9/200.4	142.7	1121.9	5.39	7.9	open/3.9	10.5	1606	7.6
Middle	1400	13.0	82296.99	193181	1111.6/206.5	145.5	1119.2	5.50	7.9	open/4.1	9.9	1600	7.8
End	1434	13.5	82309.64	193207	1105.6/213.4	145.5	1119.5	5.44	7.8	open/3.8	10.5	1601	7.5
					~~1094.5/214.6~~								
RUN #2 START	1515	13.1	82313.91	193234	1094.5/214.6	143.9	1121.9	5.49	7.8	open/3.5	8.9	1599	7.3
Middle	1545	13.2	82320.94	193252	1050.6/209.6	142.1	1123.0	5.46	7.9	open/3.3	10.0	1601	7.4
End	1617	13.4	82327.67	193272	1061/209	142.6	1121.9	5.53	7.8	open/3.9	9.2	1601	7.4
RUN #3 START	1634	13.1	82331.38	193282	1059.8/207.6	143.5	1122.3	5.48	7.8	open/3.4	11.2	1597	7.4
Middle	1705	13.7	82337.99	193301	1093/207.6	144.3	1120.0	5.50	7.8	open/3.6	10.0	1600	7.9
End	1737	13.9	82345.98	193322	1095/206.7	145.3	1117.4	5.52	7.8	open/3.7	10.2	1598	7.9
RUN #4 START													
Middle													
End													

NOTES:

- 1 set of test we have 2 trains on NG / RTO's on LFG
- 2+3 set of test only FU201 on NG / RTO#2 on LFG

STACK TEST DRYER TRAIN DATA LOG

DRYER FUEL: Landfill gas [✓ Natural gas]

DRYER TRAIN: #2

DATE: 6/27/13

RTO FUEL: [✓ Landfill gas] Natural gas

	TIME	PROCESS DATA: Venturi = 10gpm / open | IT = 1120											
		FEED Scale	FEED Scale	GAS USAGE	SEPARATOR	CONDENSER	CONDENSER	CONDENSER	CONDENSER	VENTURI	VENTURI	RTO	RTO
		102/202	102/202	TOTALIZER	Temprature	Temprature	Flow	pH	Pressure	Pressure	Flow	Temp.	Diff.
		Tons/hr	Totalizer	SCF	Inlet/outlet*F	*F	gpm	Std Units	Inches wc	Inches wc	gpm	*F	Press.
RUN #1 START	812	13.6	71071.19	193794	1059/209	142°	1120.9	5.53	7.8	open/3.1	11.0	1598	6.6
Middle	840	13.3	71077.59	193812	1151/199	146°	1120.8	5.44	7.8	open/3.8	16.7	1595	7.5
End	0930	13.1	71087.40	193840	1134/207	146.5°	1119.5	5.60	8.0	open/3.8	10.4	1601	8.1
RUN #2 START	933	12.9	71089.12	193846	1125/208	146.3	1118.8	5.53	8.0	open/3.9	10.4	1601	7.7
Middle	1007	13.4	71096.98	193868	1097/209.5	145.3	1127.2	5.60	8.0	open/3.3	10.2	1604	7.0
~~middle~~ ~~End~~ Start	1039	13.6	71103.80	193887	1094/208	143.5	1121.8	5.47	8.0	open/3.3	10.3	1598	7.4
End	1108	13.6	71110.29	193906	1093.2/203.5	143.6	1124.3	5.46	7.9	open/3.3	10.1	1602	7.2
RUN #3 START	1127	13.1	71115.03	193918	1108.7/201	143.5	1122.4	5.63	7.9	open/3.4	10.2	1602	7.7
Middle	1205	13.8	71124.00	193961	1193/203.5	147.9	1122.5	5.43	7.9	open/4.1	10.0	1600	8.3
End	1233	14.6	71130.70	193996	1160/208.5	146.8	1122.5	5.41	7.9	open/38	10.3	1599	7.8
RUN #4 START													
Middle													
End													

NOTES:

* Run#2 was paused at middle of test due to weather

* The End set of numbers is actually the start of the 2nd 1/2 hr of the 2nd test run.

STACK TEST DRYER TRAIN DATA LOG

DRYER FUEL: Landfill gas [✓ Natural gas]

DRYER TRAIN: #1

RTO FUEL: [✓ Landfill gas] Natural gas

DATE: 6/27/13

	TIME	PROCESS DATA: IT @ 1120 gpm / Venturi @ 10 gpm / open											
		FEED Scale	FEED Scale	GAS USAGE	SEPARATOR	CONDENSER	CONDENSER	CONDENSER	CONDENSER	VENTURI	VENTURI	RTO	RTO
		102/202	102/202	TOTALIZER	Temprature	Temprature	Flow	pH	Pressure	Pressure	Flow	Temp.	Diff.
	1339	Tons/hr	Totalizer	SCF	Inlet/outlet*F	*F	gpm	Std Units	Inches wc	Inches wc	gpm	*F	Press.
RUN #1 START	~~139~~	13.3	82405.07	194085	1070/206	136.8	1115.9	5.52	9.4	open/13.4	10.5	1596	12.3
Middle	1410	13.3	82411.33	194122	1103/199.4	137.5	1115.8	5.56	9.1	open/13.8	10.0	1598	12.8
End	1444	13.2	82419.73	194166	1140/198.3	139.1	1117.9	5.49	9.2	open/14.1	10.0	1599	14.6
RUN #2 START	1500	13.1	82422.76	194178	1162/199.4	137.3	1116.4	5.54	9.0	open/14.0	9.9	1599	14.0
Middle	1532	13.0	82430.20	194205	1145/201.4	138.1	1131.4	5.50	9.0	open/14.2	11.3	1598	13.9
End	1602	13.3	82437.19	194226	1157/207	138.0	1126.4	5.49	8.9	open/14.2	11.0	1598	13.9
RUN #3 START	1620	13.0	82441.01	194238	1161/207.2	137.9	1139.3	5.46	8.9	open/14.1	10.6	1602	14.8
Middle	1648	13.3	82447.31	194257	1164/210.3	137.7	1135.1	5.47	8.8	open/14.0	9.8	1599	13.8
End	1723	13.1	82454.94	194280	1175/213	139.0	1125.8	5.49	8.8	open/14.0	9.9	1600	13.9
RUN #4 START													
Middle													
End													

NOTES:

Appendix E

Cylinder Gas Certification & Equipment Calibration Sheets

Meter Box Calibration Sheet

Meter Box No.: 5
Dry Gas Meter No. : N/A
Orifice Meter No.: N/A

Calibration Date: 21-Mar-13
Expiration Date: 21-Sep-13
Calibrated By: FK Morlu
Barometric Press: 29.94

Run No.	Wet Meter Vol. (ft^3)	Dry Meter Vol. (ft^3)	Delta H ("H_2O)	Delta H ("Hg)	Abs. Press. ("Hg)	Run Time (min)
1	5	5.078	0.5	0.0368	29.98	13.37
2	5	5.085	1.0	0.0736	30.01	9.37
3	10	10.230	1.5	0.1103	30.05	15.62
4	10	10.203	2.0	0.1471	30.09	13.52
5	10	10.327	3.0	0.2206	30.16	11.03
6	10	10.450	4.0	0.2941	30.23	9.45

Run No.	Wet Meter Temp (°F)	Dry Meter In Temp (°F)	Dry Meter Out Temp (°F)	Dry Meter Avg Temp (°F)	Y	Delta H@
1	76.0	75.0	75.0	75.0	0.9816	2.03
2	76.0	76.0	76.0	76.0	0.9809	1.99
3	76.0	76.8	76.8	76.8	0.9753	2.07
4	76.0	77.0	77.0	77.0	0.9771	2.07
5	76.0	77.5	77.5	77.5	0.9639	2.07
6	76.0	82.0	82.0	82.0	0.9582	2.00

Averages: Y= **0.9728** H@= **2.04**

Max. Deviation Y: 1.50%
Allowed Deviation: 2.00%
Status: **Pass**

Allowed Range Y: .9500 - 1.050
Status: **Pass**

Equations:

$$Y= \frac{(Vw)\ (Pb)\ (Td)}{(Vd)\ (Pb\ Abs)\ (Tw)} \qquad \text{Delta H@}= \frac{0.0317\ (\text{Delta H})}{(Pb)\ (Td)} \left[\frac{(Tw)\ (Time)}{(Vw)}\right]^2$$

Calibration By:
FK Morlu

EASTMOUNT ENVIRONMENTAL SERVICES
Air Quality Specialists

Meter Box 5 Thermocouple Calibration

TC ID: DG-In
Tech.: M. Bruni
Cal Date: 5/11/2013
Exp Date: 5/11/2014
Reference Type: Mercury in Glass
Reference Cert. No.: ASTM-3

Ice Bath (~32°F)

	Ref Temp (T_R)	TC Temp (T_T)	% Error
Run 1	32	33	-0.33%
Run 2	32	33	-0.33%
Run 3	32	33	-0.33%

Pass/Fail PASS

Ambient (~70°F)

	Ref Temp (T_R)	TC Temp (T_T)	% Error
Run 1	68	69	-0.29%
Run 2	68	69	-0.29%
Run 3	68	69	-0.29%

Pass/Fail PASS

Boiling Water (~212°F)

	Ref Temp (T_R)	TC Temp (T_T)	% Error
Run 1	212	212	0.00%
Run 2	212	212	0.00%
Run 3	212	212	0.00%

Pass/Fail PASS

Test Pass/Fail PASS

Calibration tolerance for each run is 1.5%.
% Error = $(((T_R + 273) - (T_T + 273)) / (T_R + 273)) \cdot 100$
Calibration conducted in accordance with EPA Method 2, Section 10.3.

EASTMOUNT ENVIRONMENTAL SERVICES
Air Quality Specialists

Meter Box 5 Thermocouple Calibration

TC ID: DG-Out **Cal Date:** 5/11/2013 **Reference Type:** Mercury in Glass
Tech.: M. Bruni **Exp Date:** 5/11/2014 **Reference Cert. No.:** ASTM-3

Ice Bath (~32°F)

	Ref Temp (T_R)	TC Temp (T_T)	% Error
Run 1	32	32	0.00%
Run 2	32	32	0.00%
Run 3	33	33	0.00%

Pass/Fail PASS

Ambient (~70°F)

	Ref Temp (T_R)	TC Temp (T_T)	% Error
Run 1	68	69	-0.29%
Run 2	68	69	-0.29%
Run 3	68	69	-0.29%

Pass/Fail PASS

Boiling Water (~212°F)

	Ref Temp (T_R)	TC Temp (T_T)	% Error
Run 1	212	214	-0.41%
Run 2	212	212	0.00%
Run 3	212	212	0.00%

Pass/Fail PASS

Test Pass/Fail PASS

Calibration tolerance for each run is 1.5%.

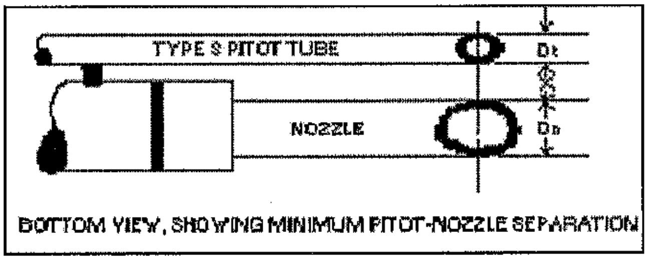
% Error = $(((T_R + 273) - (T_T + 273)) / (T_R + 273)) \bullet 100$

Calibration conducted in accordance with EPA Method 2, Section 10.3.

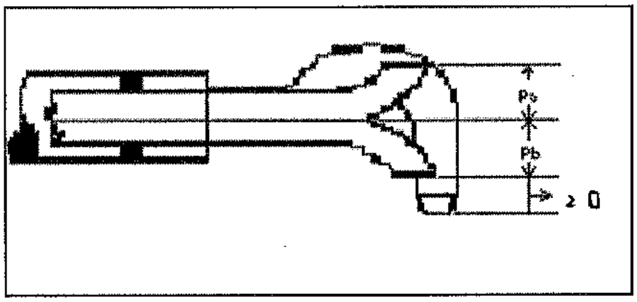
Eastmount Environmental Services
Pitot Calibration Data Input Sheet

Technician: Mike Bruni
Date Calibrated: 11/26/2012

Pitot ID: P-5-1
Probe ID: P-5-1

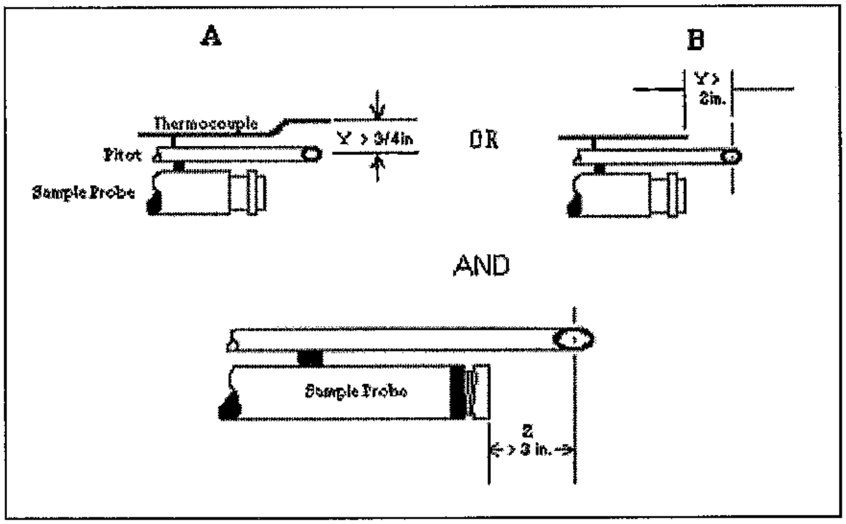


0.375 Dt (between 0.188 and 0.375 in.)
0.750 X (greater than or equal to 3/4 in.)
0.500 Dn (must use 1/2 in. nozzle)



0.450 Pa
0.450 Pb

Pa must = Pb



A
N/A Y (must be > 3/4in.)

or

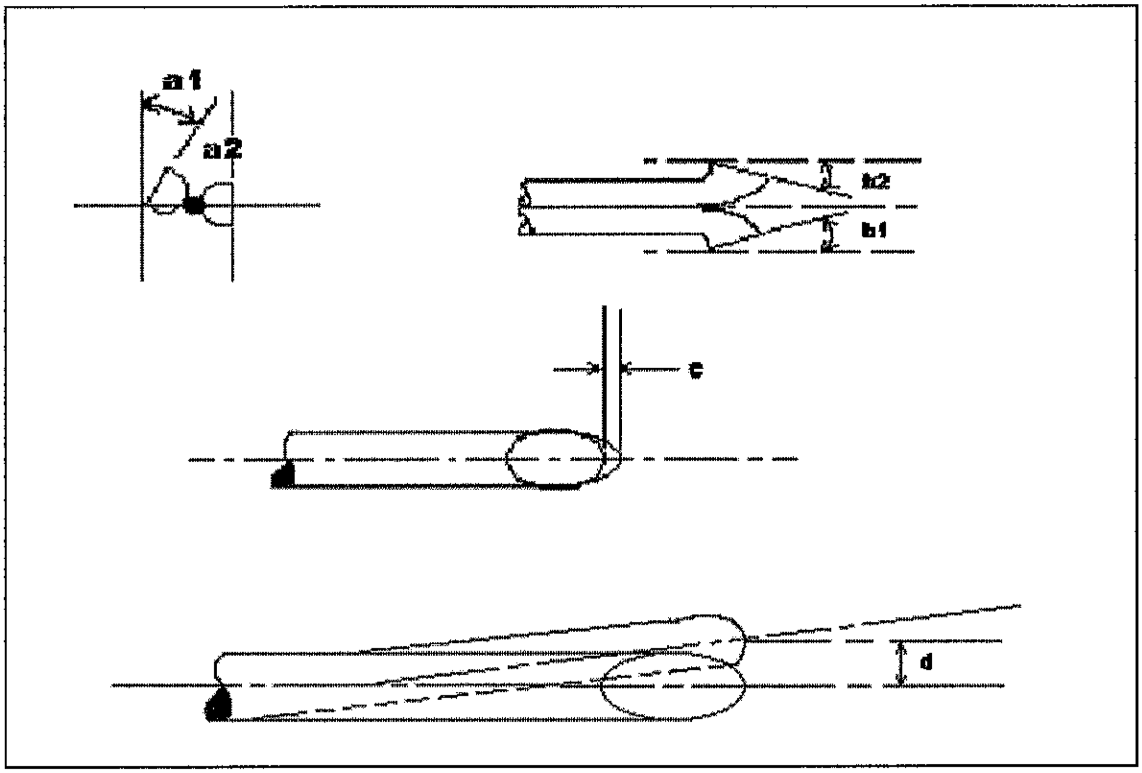
B
2.100 Y (must be > 2in.)

3.750 Z (must be > 3in.)

* All calibrations are in accordance with CFR Pt.60, App.A, Meth.2, sect4.1.2 (Type S Pitot Calibration)

Page: 2 of 2
Pitot ID: P-5-1
Probe ID: P-5-1

Eastmount Environmental Services
Pitot Calibration Data Input Sheet



Degrees

1	a1	a1 and a2 must be < 10 degrees
2	a2	
2	b1	b1 and b2 must be < 5 degrees
2	b2	
3	α	c must be < 0.125 in. (1/8in.) where: c = (Pa+Pb) x sin α
1	Θ	d must be < 0.03125 in (1/32in) where: d = (Pa + Pb) x sin Θ

EASTMOUNT ENVIRONMENTAL SERVICES
Air Quality Specialists

Thermocouple Calibration

TC ID: TC P-5-1
Tech.: M. Bruni
Cal Date: 11/26/2012
Exp Date: 11/26/2013
Reference Type: Mercury in Glass
Reference Cert. No.: ASTM-3

Ice Bath (32°F)

	Ref Temp (T_R)	TC Temp (T_T)	% Error
Run 1	33	32	0.33%
Run 2	33	32	0.33%
Run 3	33	32	0.33%

Pass/Fail PASS

Ambient (~70°F)

	Ref Temp (T_R)	TC Temp (T_T)	% Error
Run 1	65	65	0.00%
Run 2	65	65	0.00%
Run 3	65	65	0.00%

Pass/Fail PASS

Boiling Water (~212°F)

	Ref Temp (T_R)	TC Temp (T_T)	% Error
Run 1	212	213	-0.21%
Run 2	212	213	-0.21%
Run 3	212	213	-0.21%

Pass/Fail PASS

Test Pass/Fail **PASS**

Calibration tolerance for each run is 1.5%.
% Error = $(((T_R + 273) - (T_T + 273)) / (T_R + 273)) \cdot 100$
Calibration conducted in accordance with EPA Method 2, Section 10.3.

EASTMOUNT ENVIRONMENTAL SERVICES
Air Quality Specialists

NOZZLE CALIBRATION SHEET

Project # : 13-527

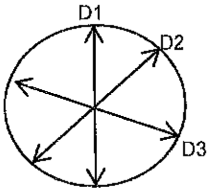
Test Date : 6/27/13

Tech : A. Scala

	Nozzle #	Nozzle #	Nozzle #
Point #			
D1	0.352		
D2	0.352		
D3	0.350		
Average (D_N)	0.351		
	[✓ Metal] Pyrex Quartz	Metal Pyrex Quartz	Metal Pyrex Quartz

---

	Nozzle #	Nozzle #	Nozzle #
Point #			
D1			
D2			
D3			
Average (D_N)			
	Metal Pyrex Quartz	Metal Pyrex Quartz	Metal Pyrex Quartz



$$Dn = \frac{D_1 + D_2 + D_3}{3}$$

The difference between the highest and lowest numbers shall not exceed 0.004 in.

Airgas

Airgas Specialty Gases
630 United Drive
Durham, NC 27713
919-544-3773 Fax: 919-544-3774
www.airgas.com

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E03NI80E15AC003	Reference Number:	122-124343711-1
Cylinder Number:	CC421656	Cylinder Volume:	151 Cu.Ft.
Laboratory:	ASG - Durham - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22012	Valve Outlet:	590
Gas Code:	OC2	Analysis Date:	Nov 02, 2012

Expiration Date: Nov 02, 2020

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
CARBON DIOXIDE	9.500 %	9.453 %	G1	+/- 1% NIST Traceable
OXYGEN	10.50 %	10.49 %	G1	+/- 1% NIST Traceable
NITROGEN	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
090606	090606	CC262103	9.921% CARBON DIOXIDE/NITROGEN	Apr 10, 2013
NTRM	82658	SG9163064BAL	9.507% OXYGEN/NITROGEN	Dec 01, 2015

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Horiba VIA510 CO2 42399380022	Nondispersive Infrared (NDIR)	Oct 19, 2012
Horiba MPA510 O2 41499150042	Paramagnetic	Oct 18, 2012

Triad Data Available Upon Request

Notes:

Approved for Release

Airgas

Airgas Specialty Gases
630 United Drive
Durham, NC 27713
919-544-3773 Fax: 919-544-3774
www.airgas.com

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E03NI61E15ACPK1	Reference Number:	122-124343712-1
Cylinder Number:	CC421863	Cylinder Volume:	158 Cu.Ft.
Laboratory:	ASG - Durham - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22012	Valve Outlet:	590
		Analysis Date:	Nov 02, 2012

Expiration Date: Nov 02, 2020

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
CARBON DIOXIDE	18.50 %	18.69 %	G1	+/- 1% NIST Traceable
OXYGEN	20.50 %	20.42 %	G1	+/- 1% NIST Traceable
NITROGEN	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM	090614	CC273522	22.53% OXYGEN/NITROGEN	Aug 01, 2013
NTRM	120615	CC354889	19.87% CARBON DIOXIDE/NITROGEN	Jan 27, 2018

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Horiba VIA510 CO2 42399380022	Nondispersive Infrared (NDIR)	Oct 19, 2012
Horiba MPA510 O2 41499150042	Paramagnetic	Oct 18, 2012

Triad Data Available Upon Request

Notes:

Approved for Release

VISIBLE EMISSIONS EVALUATOR

John Jallah

This is to certify that the above named observer has met the specifications of Federal Reference Method 9 and is qualified as a visible emissions evaluator. Maximum deviation on white and black smoke did not exceed 7.5% opacity and no single error exceeding 15% opacity was incurred during the certification test conducted by Eastern Technical Associates, Inc. of Raleigh, N.C.

This certificate is valid for six months from date of issue.

409059	**JAL641932**
Certificate Number	Student ID Number
1/9/2013	**West Palm Beach, FL**
Date of Certification	Location
7/11/2013	**WPBF08**
Certification Expiration Date	Last Lecture

Marty Hughes
Director of Training

Appendix F

Facility Permit (Final Permit No. 0990234-022-AV, Tuning Test Request Letter & Tuning Verturi Permission Letter)

Solid Waste Authority of Palm Beach County
North County Regional Resource Recovery Facility
Facility ID No. 0990234
Palm Beach County

Title V Air Operation Permit Renewal

Final Permit No. 0990234-022-AV
(1st of Title V Air Operation Permit No. 0990234-020-AV)

Permitting Authority:
State of Florida
Department of Environmental Protection
Division of Air Resource Management
Office of Permitting and Compliance
2600 Blair Stone Road
Mail Station #5505
Tallahassee, Florida 32399-2400
Telephone: (850) 717-9000
Fax: (850) 717-9097

Compliance Authority:
State of Florida
Department of Environmental Protection
Southeast District Office
400 North Congress Avenue
West Palm Beach, FL 33401
Telephone: (561) 681-6600
Fax: (561) 681-6755

Title V Air Operation Permit Renewal

Final Permit No. 0990234-020-AV

Table of Contents

Section **Page Number**

Florida Department of Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Rick Scott
Governor

Jennifer Carroll
Lt. Governor

Herschel T. Vinyard Jr.
Secretary

PERMITTEE:
Solid Waste Authority of Palm Beach County

Permit No. 0990234-022-AV
North County Regional Resource Recovery Facility
Facility ID No. 0990234
Project: Title V Air Operation Permit Revision

The purpose of this permit is to revise the Title V air operation permit for the above referenced facility to reflect the refurbishment of the two existing municipal solid waste combustors (Units 1 and 2) previously authorized by Permit No. 0990234-015-AC/PSD-FL-108H and to incorporate minor revisions from Permit No. 0990234-021-AC/PSD-FL-108J, issued concurrently with this permit. This existing facility is located in Palm Beach County at 7501 North Jog Road, West Palm Beach; UTM Coordinates: Zone 17, 585.82 km East and 2960.474 km North; Latitude: 26° 45' 53" North and Longitude: 80° 08' 12" West.

This Title V air operation permit is issued under the provisions of Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210 and 62-213. The above named permittee is hereby authorized to operate the facility in accordance with the terms and conditions of this permit.

Effective Date: January 20, 2012
Renewal Application Due Date: February 23, 2016
Expiration Date: October 5, 2016

Executed in Tallahassee, Florida
Electronic Signature

JFK/sa/sms

Subsection A. Facility Description.

This existing facility is a municipal waste combustor plant designed to process 2,000 tons per day (TPD) of municipal solid waste (MSW). The facility burns processed MSW that is called "refuse derived fuel" (RDF). The RDF plant is equipped with three MSW processing lines, any two of which can handle the 2,000 TPD of incoming MSW. The boiler plant includes two Babcock & Wilcox (B&W) boilers (Nos. 1 and 2) with auxiliary burners. Each boiler was designed with a maximum heat input of 427.5 MMBtu/hr and a maximum steam production rating of 324,000 lbs/hour. At a reference heating value of 5,700 Btu/lb, this is equivalent to 900 TPD of RDF per boiler. The gross nominal electric generating capacity of the facility is 62 megawatts (MW).

Two landfills, a Class I Landfill and a Class III Landfill, each with its own gas collection system and flare, are located at the facility. Additional activities at the facility include: a composting facility, material processing systems, a metals recovery system, storage and handling systems for RDF; lime storage and processing facilities; storage and handling systems for ash and ash treatment; and, cooling towers. A biosolids pelletization facility (BPF) is located adjacent to the existing landfill.

The facility is owned by the Solid Waste Authority.

Also included in this permit are miscellaneous unregulated/insignificant emissions units and/or activities.

Subsection B. Summary of Emissions Units.

E.U. ID No.	Brief Description
Regulated Emissions Units	
001	Municipal Solid Waste Boiler No. 1
002	Municipal Solid Waste Boiler No. 2
019	Ash Building and Handling System
	Landfills and Flares
004	Class III Landfill and Flare (1,800 scfm, manufactured by LFG Specialties, model number PCF820I8)
008	Class I Landfill and Flare (3,500 scfm, manufactured by Shaw LFG Specialties, model number CF1238I10)
	Biosolids Pelletization Facility (BPF)
010	BPF Sludge Dryer Train #1
011	BPF Sludge Dryer Train #2
012	BPF Recycle Material Bin and Pellet Storage Silo for Sludge Dryer Train #1
014	BPF Recycle Material Bin and Pellet Storage Silo for Sludge Dryer Train #2
	Engines
016	Emergency Generator - Biosolids Pelletization Facility (BPF) (EPA Tier 3 certified)
017	Woody Waste Facility Diesel Engine (primary engine)
021	Emergency Generator - Operations Building (EPA Tier 3 certified)

E.U. ID No.	Brief Description
035	Emergency Generator - North County Resource Recovery Facility (NCRRF)
036	Fire Water Pump - NCRRF
037	Emergency Generator - NCRRF Scalehouse
038	Emergency Generator - Utilities Facility
039	Emergency Generator - Landfill Scalehouse E1
040	Emergency Generator - Landfill Scalehouse E2
041	Emergency Generator - MIS
042	Emergency Generator - Administration
043	Emergency Generator - Materials Recovery Facility (MRF) (EPA Tier 2 certified)
Unregulated Emissions Units and/or Activities	
005	RDF Storage
006	RDF Processing Lines
007	Oversized Bulk Waste Processing Line
018	Cooling Towers (3) at North County Resource Recovery Facility (RRF) {The cooling towers do no not use chromium-based water treatment chemicals.}
044	Woody Waste Facility Diesel Engine (EPA Tier 1 certified) (backup engine)

Subsection C. Applicable Requirements.

Based on the Title V air operation permit application renewal received on November 17, 2010, this facility is a major source of hazardous air pollutants (HAP). This facility is classified as a Prevention of Significant Deterioration (PSD) major facility. A summary of important applicable requirements is shown in the following table.

Applicable Requirement	E.U. ID No(s).
Rule 62-212.400, F.A.C., Prevention of Significant Deterioration (PSD)	001, 002 & 019 010, 011, 012 & 014
Rule 62-212.400(6), F.A.C., Best Available Control Technology (BACT)	001, 002, 019 010, 011, 012 & 014
40 CFR 60, Subpart A, New Stationary Source Performance Standards (NSPS) General Provisions	001, 002 & 019
40 CFR 60, Subpart Cb, Emissions Guidelines (EG) and Compliance Times for Large Municipal Waste Combustors	001, 002 & 019
Rule 62-296.416, F.A.C., Waste-to-Energy Facilities	001 & 002
Rule 62-210.300, F.A.C., Permits Required	004 & 008
Rule 62-212.400, F.A.C., Prevention of Significant Deterioration (PSD)	004 & 008
40 CFR 60, Subpart A, New Stationary Source Performance Standards (NSPS) General Provisions	004 & 008
40 CFR 60, Subpart WWW, Standards of Performance for Municipal Solid Waste Landfills	004 & 008
40 CFR 61, Subpart M, National Emission Standards for Hazardous Air Pollutants (NESHAP) for Asbestos	004 & 008
40 CFR 63, Subpart A, General Provisions	004 & 008
40 CFR 63, Subpart AAAA, National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills	004 & 008
40 CFR 61, Subpart E, National Emission Standards for Hazardous Air Pollutants for Mercury	010 & 011
40 CFR 64, Compliance Assurance Monitoring (CAM)	010 & 011
40 CFR 63, Subpart A, General Provisions	016, 017, 021 & 035-044
40 CFR 63, Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants (NESHAP) for Stationary Reciprocating Internal Combustion Engines (RICE)	016, 017, 021 & 035-044
40 CFR 60, Subpart A, General Provisions	016, 021, 042 & 043
40 CFR 60, Subpart IIII, NSPS for Compression Ignition Internal Combustion Engines (CI-ICE)	016, 021, 042 & 043

The following conditions apply facility-wide to all emission units and activities:

FW1. Appendices. The permittee shall comply with all documents identified in Section IV., Appendices, listed in the Table of Contents. Each document is an enforceable part of this permit unless otherwise indicated. [Rule 62-213.440, F.A.C.]

Emissions and Controls

FW2. **Not federally enforceable.** Objectionable Odor Prohibited. No person shall cause, suffer, allow or permit the discharge of air pollutants, which cause or contribute to an objectionable odor. An "objectionable odor" means any odor present in the outdoor atmosphere which by itself or in combination with other odors, is or may be harmful or injurious to human health or welfare, which unreasonably interferes with the comfortable use and enjoyment of life or property, or which creates a nuisance. [Rules 62-296.320(2) & 62-210.200 (Definitions), F.A.C.]

FW3. General Volatile Organic Compounds (VOC) Emissions or Organic Solvents (OS) Emissions. The permittee shall allow no person to store, pump, handle, process, load, unload or use in any process or installation, volatile organic compounds or organic solvents without applying known and existing vapor emission control devices or systems deemed necessary and ordered by the Department. [Rule 62-296.320(1), F.A.C.]

{Permitting note: Nothing is deemed necessary and ordered at this time.}

FW4. General Visible Emissions. No person shall cause, let, permit, suffer or allow to be discharged into the atmosphere tbe emissions of air pollutants from any activity equal to or greater than 20% opacity. EPA Method 9 is the method of compliance pursuant to Chapter 62-297, F.A.C. This regulation does not impose a specific testing requirement. [Rule 62-296.320(4)(b), F.A.C.]

FW5. Unconfined Particulate Matter. No person shall cause, let, permit, suffer or allow the emissions of unconfined particulate matter from any activity, including vehicular movement; transportation of materials; construction; alteration; demolition or wrecking; or industrially related activities such as loading, unloading, storing or handling; without taking reasonable precautions to prevent such emissions. Reasonable precautions to prevent emissions of unconfined particulate matter at this facility include:

a. Chemical or water application to unpaved road and unpaved yard and landfill areas;
b. Paving and maintenance of roads, parking areas and yards;
c. Landscaping or planting of vegetation;
d. Confining abrasive blasting where possible and appropriate;
e. Unpaved roads and active unpaved areas are sprayed with a water truck;
f. Landfill areas that are closed are promptly re-vegetated;
g. Ash is quenched with water prior to landfilling; and,
h. Waste transfer trucks are tarped.

[Rule 62-296.320(4)(c), F.A.C. and proposed by applicant in Title V air operation permit renewal application received on November 17, 2010.]

Annual Reports and Fees

See Appendix RR, Facility-wide Reporting Requirements, for additional details.

FW6. Annual Operating Report. The permittee shall submit an annual report that summarizes the actual operating rates and emissions from this facility. Annual operating reports shall be submitted to the Compliance Authority by April 1st of each year. [Rule 62-210.370(3), F.A.C.]

FW7. Annual Emissions Fee Form and Fee. The annual Title V emissions fees are due (postmarked) by March 1st of each year. The completed form and calculated fee shall be submitted to: Major Air Pollution Source Annual Emissions Fee, P.O. Box 3070, Tallahassee, Florida 32315-3070. The forms are available for download by accessing the Title V Annual Emissions Fee On-line Information Center at the following Internet web site: http://www.dep.state.fl.us/air/emission/tvfee.htm. [Rule 62-213.205, F.A.C.]

FW8. Annual Statement of Compliance. The permittee shall submit an annual statement of compliance to the compliance authority at the address shown on the cover of this permit within 60 days after the end of each calendar year during which the Title V air operation permit was effective. [Rules 62-213.440(3)(a)2. & 3. and (b), F.A.C.]

FW9. Prevention of Accidental Releases (Section 112(r) of CAA). If and when the facility becomes subject to 112(r), the permittee shall:

a. Submit its Risk Management Plan (RMP) to the Chemical Emergency Preparedness and Prevention Office (CEPPO) RMP Reporting Center. Any Risk Management Plans, original submittals, revisions or updates to submittals, should be sent to: RMP Reporting Center, Post Office Box 10162, Fairfax, VA 22038, Telephone: 703/227-7650.

b. Submit to the permitting authority Title V certification forms or a compliance schedule in accordance with Rule 62-213.440(2), F.A.C.

[40 CFR 68.]

Subsection A. Emissions Units 001, 002 & 019

The specific conditions in this section apply to the following emissions unit(s):

E.U. ID No.	Brief Description
001	Municipal Solid Waste Boiler No. 1
002	Municipal Solid Waste Boiler No. 2
019	Ash Building and Handling System

Description: Units 1 and 2 are identical Babcock & Wilcox MSWC units that began commercial operation on November 15, 1989. The following descriptions include the changes being made in this permit.

Boiler Type: The boiler use a moving grate to burn the RDF fuel.

Fuel: RDF

Supplementary Fuel: Natural gas is used for startup, shutdown and during combustion of low Btu waste to maintain combustor temperature.

Capacity: The permitted capacity is 324,000 pounds per hour of steam (4-hour block average) based on a unit design capacity of 900 tons per day of RDF.

Generator Nameplate Rating: 62 Megawatts (MW).

Spray Dryer Absorber (SDA): Each unit uses lime injection to control acid gas emissions.

Fabric Filter System: Each unit uses a fabric filter system to control particulate matter (PM) emissions.

Combustion Control System and OFA System: Each unit optimizes furnace conditions with an automated control system and OFA system for proper combustion while minimizing carbon monoxide (CO), nitrogen oxides (NOx) and volatile organic compounds (VOC).

SNCR System: Each unit injects urea with an SNCR system to control NOx emissions.

ACI System: Each unit injects activated carbon to adsorb metal and dioxin/furan emissions, which are then collected by the fabric filter system.

Continuous Monitors: Each unit uses the following equipment to continuously monitor the following pollutants and parameters: continuous emissions monitoring systems (CEMS) for CO, carbon dioxide (CO_2), NOx and sulfur dioxide (SO_2); continuous opacity monitoring system (COMS) for opacity; and continuous monitoring systems (CMS) for the temperature of the flue gas stream at the fabric filter inlet, the steam production rate and urea injection rate.

Stack Parameters: Units 1 and 2 each have a stack that is 250 feet tall with a diameter of 8 feet and are both surrounded by a single stack shell. The volumetric flow rates of each MSWC at permitted capacity are approximately 191,494 actual cubic feet per minute (acfm) and 116,274 dry standard cubic feet per minute (dscfm) @ 7% oxygen (O_2).

Exit Temperature: Approximately 310 °F, as measured downstream of the SDA.

Emissions Unit ID No. 019 is the Ash Building and Handling System. Fly ash from the fabric filter system is wetted to control the dust and minimize fugitive emissions. Bottom ash from the RDF boilers is combined with the fly ash prior to going to the landfill (see Subsection III.B.). Emissions from the building are uncontrolled.

{Permitting notes: These emissions units are regulated under 40 CFR 60, Subpart Cb, Emissions Guidelines (EG) and Compliance Times for Large Municipal Waste Combustors (MWC) adopted and incorporated by reference in Rule 62-204.800(9)(b), F.A.C.; Rule 62-296.416, F.A.C., Waste-to-Energy Facilities; Rule 62-212.400, F.A.C., Prevention of Significant Deterioration (PSD) [PSD-FL-108, as amended]; Rule 62-212.400(6), F.A.C., Best Available Control Technology (BACT); and, Florida Electrical Power Plant Site Certifications [PA84-20].}

Essential Potential to Emit (PTE) Parameters

A.1. Hours of Operation. These emissions units may operate continuously (8,760 hours/year). [Rule 62-210.200 (Definitions - Potential to Emit (PTE)), F.A.C.; and, Permit No. 0990234-015-AC/PSD-FL-108H.]

A.2. Capacity. The following maximum values (capacities) shall not be exceeded:

a. 324,000 lbs/hr individual MWC unit steam production on a 4-hour block arithmetic average.

The MWC units shall not be loaded in excess of their maximum operating capacity, equivalent to 2,000 TPD of mixed MSW. See 40 CFR 60.31b of Appendix 40 CFR 60, Subpart Cb and 40 CFR 60.58b(j) of Appendix 40 CFR 60, Subpart Eb for additional restrictions on capacity. [Rules 62-4.160(2) & 62-210.200 (PTE), F.A.C.; 40 CFR 60.31b & 40 CFR 60.58b(j); and, Permit No. 0990234-015-AC/PSD-FL-108H.]

A.3. Emissions Unit Operating Rate Limitation After Testing. See the related testing provisions in Appendix TR, Facility-wide Testing Requirements. See the "maximum demonstrated municipal waste combustor unit load" provisions of 40 CFR 60.34b(b) and 40 CFR 60.51b for additional restrictions on operating rate. [Rule 62-297.310(2), F.A.C.; and, 40 CFR 60.34b(b) & 40 CFR 60.51b.]

A.4. MWCs - Fuels. The open storage of solid waste outside of a building is prohibited. [PSD-FL-108A, specific condition 10.]

A.5. MWCs - Methods of Operation - Fuels.

a. *Allowable Fuels.*
  (1) The only fuels allowed to be burned in the MWCs are mixed municipal solid waste (MSW) from RDF, with natural gas as an auxiliary fuel. Other fuels or wastes, not specifically listed herein, shall not be burned without written prior approval from the Department. Fuels or wastes specifically authorized herein do not require prior Department approval before combustion.
  (2) The primary fuel for the facility is mixed municipal solid waste (MSW) from RDF, 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 (2010).

b. *Unauthorized Fuels.* 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 in **d.** - **f.**, below. However, the facility
  (1) 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) sewage sludge from sewage treatment plants [1];
    (i) explosives;
    (j) beryllium-containing waste, as defined in 40 CFR 61, Subpart C. *{The U.S. EPA letter dated April 6, 2000 (see attached), on 40 CFR 61, Subpart C further addresses the applicability of this federal regulation with regard to beryllium-containing waste(s).}*
  (2) and shall not knowingly burn:
    (a) untreated biomedical waste from biomedical waste generators regulated pursuant to Chapter 64E-16, F.A.C., and from other similar generators (or sources). See the attached Appendix BW, Biomedical Waste Definitions, for definitions of what constitutes biomedical waste;
    (b) segregated loads of biological waste.

c. *Fuel Handling.* 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 well mixed with MSW. 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 homogeneous composition of waste material, as determined by visual observation.

d. *Other Solid Waste.* 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 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; or
  (6) Rugs, carpets, and floor coverings, but not asbestos-containing materials or polyethylene or polyurethane vinyl floor coverings.

e. *Waste Tires.* 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 <u>segregated loads</u> and burned at the facility shall not exceed 3%, by weight, of the facility's total fuel. Compliance with this limitation shall be determined on a calendar month basis.

f. *Non-MSW Material.* 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 <u>segregated loads</u> and burned at the facility shall not exceed 5%, by weight, of the facility's total fuel. Compliance with this limitation shall be determined on a calendar month basis.
  (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:
    (a) are generated in the manufacture of items in categories **f.(3)** or **f.(4)**, above and are functionally or commercially useless (expired, rejected or spent); or
    (b) 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:
    (a) the routine cleanup of industrial or commercial establishments and machinery; or
    (b) 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 polychlorinated biphenyls (PCB) concentration equal or greater than 50 parts per million (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 written prior approval of the Department.

[Rules 62-4.070(1), (3), 62-213.410 & 62-213.440, F.A.C.; and, [1] PSD-FL-108A, specific condition 11.]

{Permitting note: At RDF plants, the 3% (or 5%) restriction applies to the municipal solid waste received. On-site processing of material at the facility is not included in this restriction. Exceedance of this percentage requires prior department approval.}

A.6. Auxiliary Burners - Methods of Operation - Fuels. Auxiliary burners for each MWC shall be fired only with natural gas. Natural gas may be used as a supplemental fuel during startups, shutdowns, and at other times when necessary and consistent with good combustion practices. [Rules 62-4.160(2), 62-210.200 (PTE), 62-213.410, & 62-213.440, F.A.C.; and, PSD-FL-108A.]

A.7. Auxiliary Gas Burner Operations.

a. During boiler startup, the auxiliary gas burners shall be operating at their maximum capacity prior to the introduction of RDF to the boilers, and shall remain in operation until the lime spray dryer absorbers and particulate matter emissions control device (fabric filter system) are fully operational.

b. During normal, non-emergency boiler shutdown, the auxiliary gas burners shall be operated at their maximum capacity until all RDF has been combusted.

[Rules 62-4.160(2), 62-210.200 (PTE), 62-213.410, & 62-213.440, F.A.C.; 0992034-015-AC/PSD-FL-108H; and, PSD-FL-108A, specific conditions 7. & 8.]

Air Pollution Control Technologies and Measures

A.8. Carbon Usage Rate. The carbon injection rate operating standard and monitoring requirements set forth in 40 CFR 60.58b(m) of 40 CFR 60, Subpart Eb, incorporated by reference in Rule 62-204.800, F.A.C., shall apply. See Appendix 40 CFR 60, Subpart Eb. [Rule 62-296.416(5), F.A.C.]

Emission Limitations and Standards

{Permitting note: Table 1, Summary of Air Pollutant Standards and Terms, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.}

Unless otherwise specified, the averaging times for Specific Conditions **A.9. - A.19.** are based on the specified averaging time of the applicable test method.

{Permitting note: The May 10, 2006 amendments to 40 CFR 60 Subpart Cb changed some of the emission standards and limitations for Unit Nos. 1 & 2. Five (5) air pollutant standards/limitations were lowered under the amendments: PM, cadmium (Cd), Hg, Pb and dioxin/furan (D/F).}

Stack Emissions

A.9. Particulate Matter. The emission limit for particulate matter (PM) contained in the gases discharged to the atmosphere is 25 milligrams (mg) per dry standard cubic meter, corrected to 7 percent oxygen. [Rule 62-204.800(9)(b)3.a., F.A.C.; 40 CFR 60.33b(a)(1)(i); and, PSD-FL-108A, specific condition 3.a.]

A.10. Opacity. As determined by the continuous opacity monitoring system (COMS) or EPA Method 9, the emission limit for opacity exhibited by the gases discharged to the atmosphere is 10 percent (6-minute average). [Rule 62-204.800(9)(b)3.b., F.A.C.; 40 CFR 60.33b(a)(1)(iii); and, PSD-FL-108A, specific condition 3.k. & Permit No. 0990234-015-AC/PSD-FL-108H, specific condition 17.e.]

A.11. Cadmium. The emission limit for cadmium (Cd) contained in the gases discharged to the atmosphere is 35 micrograms (ug) per dry standard cubic meter, corrected to 7 percent oxygen. [Rule 62-204.800(9)(b)3.c., F.A.C. and 40 CFR 60.33b(a)(2)(i).]

A.12. Mercury. The emission limit for mercury (Hg) contained in the gases discharged to the atmosphere is 50 micrograms per dry standard cubic meter or 15 percent of the potential mercury emission concentration (85-percent reduction by weight), corrected to 7 percent oxygen, whichever is less stringent. [Rule 62-204.800(9)(b)3.d., F.A.C.; 40 CFR 60.33b(a)(3); and, PSD-FL-108A, specific condition 3.e.]

A.13. Lead. The emission limit for lead (Pb) contained in the gases discharged to the atmosphere is 400 micrograms per dry standard cubic meter, corrected to 7 percent oxygen. [Rule 62-204.800(9)(b)3.c., F.A.C.; 40 CFR 60.33b(a)(4); and, PSD-FL-108A, specific condition 3.d.]

A.14. Sulfur Dioxide. As determined by the continuous emissions monitoring system (CEMS), the emission limit for sulfur dioxide (SO_2) contained in the gases discharged to the atmosphere is 29 parts per million by volume (ppmv) or 25 percent of the potential sulfur dioxide emission concentration (75-percent reduction by weight or volume), corrected to 7 percent oxygen (dry basis), whichever is less stringent. Compliance with this emission limit is based on a 24-hour daily geometric mean. [Rule 62-204.800(9)(b)3.e., F.A.C.; 40 CFR 60.33b(b)(3)(i); and, PSD-FL-108A, specific condition 3.i. & Permit No. 0990234-015-AC/PSD-FL-108H, specific condition 17.d.]

A.15. Hydrogen Chloride. The emission limit for hydrogen chloride (HCl) contained in the gases discharged to the atmosphere is 25 parts per million by volume or 5 percent of the potential hydrogen chloride emission concentration (95-percent reduction by weight or volume), corrected to 7 percent oxygen (dry basis), whichever is less stringent. [Rule 62-204.800(9)(b)3.f., F.A.C.; 40 CFR 60.33b(b)(3)(ii); and, PSD-FL-108A, specific condition 3.j.]

A.16. Dioxin/Furan. The emission limit for dioxin/furan (D/F) contained in the gases discharged to the atmosphere from designated facilities that do not employ an electrostatic precipitator-based emission control system is 30 nanograms per dry standard cubic meter (total mass), corrected to 7 percent oxygen. [Rule 62-204.800(9)(b)3.g., F.A.C.; 40 CFR 60.33b(c)(1)(iii); and, 0990234-021-AC/PSD-FL-108J]

A.17. Nitrogen Oxides. As determined by the CEMS, the emission limit for nitrogen oxides (NOx) contained in the gases discharged to the atmosphere from a refuse derived fuel type municipal waste combustor technology is 250 parts per million by volume, corrected to 7 percent oxygen, dry basis. Compliance with this emission limit is based on the 24-hour daily arithmetic average of the hourly emission concentrations using continuous emission monitoring system outlet data. Emissions averaging pursuant to 40 CFR 60.33b(d)(1) shall be allowed. 40 CFR 60.33b(d)(2) shall not apply. [Rule 62-204.800(9)(b)3.h., F.A.C.; 40 CFR 60.33b(d); and, PSD-FL-108A, specific condition 3.b. & Permit No. 0990234-015-AC/PSD-FL-108H, specific condition 17.d.]

A.18. Carbon Monoxide. As determined by the CEMS:

a. the emission limit for carbon monoxide (CO) contained in the gases discharged to the atmosphere from a refuse derived fuel stoker type municipal waste combustor technology is 200 parts per million by volume (ppmvd), measured at the combustor outlet in conjunction with a measurement of oxygen concentration, corrected to 7 percent oxygen, dry basis, and calculated on a 24-hour block average. Calculated as an arithmetic average. [Rule 62-204.800(9)(b)3.i., F.A.C.; 40 CFR 60.34b(a); and, Permit No. 0990234-015-AC/PSD-FL-108H, specific condition 17.d.]

b. CO emissions shall not exceed 400 ppmvd, corrected to 7 percent oxygen, dry basis, and calculated on a 4-hour block average. [Permit No. 0990234-015-AC/PSD-FL-108H, specific conditions 3.c. & 17.d.]

A.19. Volatile Organic Compounds. Volatile organic compound (VOC) emissions shall not exceed 1.6×10^{-2} lb/MMBtu. [PSD-FL-108A, specific condition 3.h.]

Fugitive Ash Emissions

A.20. **(This condition only applies to the ash conveying systems of E.U. ID No. 019.)** Fugitive Ash Emissions.

a. No owner or operator of an affected 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 percent of the observation period (i.e., 9 minutes per 3-hour period), as determined by EPA Reference Method 22 observations as specified in 40 CFR 60.58b(k), except as provided in paragraphs b. and c.

b. The emission limit specified in paragraph a. does not cover visible emissions discharged inside buildings or enclosures of ash conveying systems; however, the emission limit specified in paragraph a. does cover visible emissions discharged to the atmosphere from buildings or enclosures of ash conveying systems.

c. The provisions of paragraph a. do not apply during maintenance and repair of ash conveying systems.

[Rule 62-204.800(9)(b)6., F.A.C.; and, 40 CFR 60.36b and 40 CFR 60.55b.]

Excess Emissions

Rule 62-210.700 (Excess Emissions), F.A.C., cannot vary any requirement of an EG, NSPS or NESHAP provision.

A.21. Excess Emissions Allowed - Startup, Shutdown or Malfunction. Excess emissions resulting from startup, shutdown or malfunction shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized but in no case exceed two hours in any 24 hour period unless specifically authorized by the Department for longer duration. The Department authorizes three hours per occurrence in any 24-hour period for these emissions units. A malfunction means any unavoidable failure of air pollution control equipment or process equipment to operate in a normal or usual manner. [Rules 62-210.700(1) & (5), F.A.C. and PSD-FL-108A, specific condition 15.]

A.22. Excess Emissions Prohibited. 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 startup, shutdown or malfunction shall be prohibited. [Rule 62-210.700(4), F.A.C.]

Continuous Monitoring Requirements

{Permitting note: The following continuous monitors are installed on these emissions units: steam flow, urea injection rate, ACI rate, inlet temperature to the fabric filter, opacity, SO_2, NOx, CO and carbon dioxide (CO_2).}

A.23.1. Steam Flow Meter. The owner or operator shall calibrate, maintain, and operate a steam flow meter or a feedwater flow meter; to measure steam (or feedwater) flow in kilograms per hour (or lbs/hour) on a continuous basis; and record the output of the monitor. Steam (or feedwater) flow shall be calculated in 4-hour block arithmetic averages. [Rule 62-213.440, F.A.C.; 40 CFR 60.34b, 40 CFR 60.53b & 40 CFR 60.58b(i)(6); and, PSD-FL-108A.]

A.23.2. Urea Injection Rate: The permittee shall calibrate, operate and maintain a CMS to continuously monitor and record the urea injection rate of each SNCR system. [0990234-015-AC/PSD-FL-108H]

A.23.3. ACI Rate: The permittee shall calibrate, operate and maintain a CMS to continuously monitor and record the ACI injection rate of each ACI system. [0990234-015-AC/PSD-FL-108H]

A.24. Inlet Temperature to Particulate Matter Control Device. The owner or operator shall calibrate, maintain, and operate a device for measuring on a continuous basis the temperature of the flue gas stream at the inlet to each particulate matter control device utilized. Temperature shall be calculated in 4-hour block arithmetic averages. [Rule 62-213.440, F.A.C.; 40 CFR 60.34b, 40 CFR 60.53b & 40 CFR 60.58b(i)(7); and, 0990234-015-AC/PSD-FL-108H]

A.25. Continuous Emissions Monitoring Systems (CEMS) Required. The owner or operator shall calibrate, operate and maintain continuous emissions monitoring systems (CEMS) for monitoring opacity, sulfur dioxide (SO_2), nitrogen oxides (NOx) and carbon monoxide (CO). [Rule 62-213.440, F.A.C.; and, 40 CFR 60.38b; 40 CFR 60.58b(c)(8) (opacity); 40 CFR 60.58b(e)(5) (SO_2); 40 CFR 60.58b(h)(4) (NOx) & 40 CFR 60.58b(i)(3) (CO).]

A.26. Oxygen (O_2) or Carbon Dioxide (CO_2) CEMS. The owner or operator shall calibrate, maintain, and operate a continuous emission monitoring system (CEMS) for measuring the oxygen or carbon dioxide content of the flue gas at each location where carbon monoxide, sulfur dioxide, or nitrogen oxides emissions are monitored and record the output of the system. [Rule 62-213.440, F.A.C. and 40 CFR 60.38b, & 40 CFR 60.58b(b).]

Test Methods and Procedures

{Permitting note: Table 2, Summary of Compliance Requirements, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.}

A.27. Test Methods. Required tests shall be performed in accordance with the following reference methods:

Method(s)	Description of Method(s) and Comment(s)
EPA Methods 1-4	Traverse Points, Velocity and Flow Rate, Gas Analysis, and Moisture Content
EPA Methods 5	Methods for Determining PM Emissions
EPA Methods 6, 6A, 6C or 8	Methods for Determining SO_2 Emissions
EPA Method 7, 7A, 7B, 7C, 7D or 7E	Determination of NOx Emissions
EPA Method 9	Visual Determination of the Opacity of Emissions (VE)
EPA Method 10, 10A or 10B	Determination of CO Emissions
EPA Method 12	Determination of Pb Emissions
EPA Method 19	Determination of “F” factors used in determining heating value of RDF
EPA Method 22	Visual Determination of Fugitive Emissions from Material Sources
EPA Method 23	Measurement of D/F Emissions. Authorized to omit methylene chloride rinse.[1]
EPA Method 25 or 25A	Determination of VOC Emissions
EPA Method 26 or 26A	Determination of HCl Emissions from Stationary Sources. Changes were approved to the EPA Method 26 testing methodology.[2]
EPA Method 29	Determination of Metal (e.g., Cd, Hg and Pb) Emissions from Stationary Sources
EPA Method 101A	Determination of Hg Emissions

The above methods are described in Chapter 62-297, F.A.C. and/or 40 CFR 60, Appendix A, and adopted by reference in Rule 62-204.800, F.A.C. No other methods may be used unless prior written approval is received from the Department. [Chapter 62-297, F.A.C.; Rule 62-204.800(9)(b)7., F.A.C.; PSD-FL-108A; [1] Appendix ATP, U.S. EPA Alternative Test Procedure Approval dated June 3, 2004; and, [2] Permit No. 0990234-019-AC/PSD-FL-108I.]

A.28. Common Testing Requirements. Unless otherwise specified, tests shall be conducted in accordance with the requirements and procedures specified in Appendix TR, Facility-Wide Testing Requirements, of this permit. [Rule 62-297.310, F.A.C.]

A.29. Annual Compliance Test. The owner or operator shall conduct a performance test for PM, opacity, Cd, Hg, Pb and D/F emissions on a calendar year basis (no less than 9 calendar months and no more than 15 calendar months following the previous performance test; and must complete five performance tests in each 5-year calendar period). For each required cadmium, dioxin/furan, lead, mercury, and PM test run, the permittee shall also record and report the actual ACI rate, lime injection rate, and temperature data for the fabric filter system. The owner or operator shall conduct a performance test for HCl emissions on an annual basis. For each required hydrochloric acid test run, the permittee shall also record and report the actual lime injection rate. [Rule 62-297.310(8), F.A.C. [Rules 62-297.310(7) & 62-204.800(9)(b)7., F.A.C. and PSD-FL-108A, specific condition 4. and PSD-FL-108H]

A.30. VOC Emission Testing. Compliance with the VOC limit shall be demonstrated by compliance with both Carbon Monoxide limits in lieu of stack testing, but should the Department feel the VOC limit is not being met, a special compliance test could be required. [0990234-021-AC/PSD-FL-108J]

A.31. Dioxins/Furans. The alternative performance testing schedule for dioxins/furans (D/F) specified in 40 CFR 60.58b(g)(5)(iii) (See Appendix 40 CFR 60, Subpart Eb) shall apply to municipal waste combustor plants that achieve a dioxin/furan emission level less than or equal to **15** nanograms per dry standard cubic meter, corrected to 7 percent oxygen. [Rule 62-204.800(9)(b)7.b, F.A.C.]

A.32. HCl Emission Testing. EPA Method 26 shall be used for the determination of hydrochloric acid concentration or other methods approved by DEP and EPA. The permittee may modify the EPA Method 26 sampling train as follows: full-size (Greenburg-Smith design) impingers may be used in lieu of midget impingers; and, the two sodium hydroxide (NaOH) impingers may be replaced with one empty impinger. [Permit No. 0990234-019-AC/PSD-FL-108I, specific condition 4.i.]

A.33. Mercury Testing Frequency. The Department's Order Granting Variance dated August 25, 1997, is a part of this permit. The variance allows the facility to test mercury emissions annually provided each future annual test demonstrates compliance. The order contains additional terms. If compliance is not demonstrated by each annual test, the Department retains the right to reinstate quarterly testing. The variance does not apply to any other new or existing state or federal rule which may require more frequent mercury testing. [Rule 62-296.416(3)(a)3., F.A.C.; and, Order Granting Variance dated August 25, 1997.]

{Permitting note: 40 CFR 60, Subpart Cb requires annual Hg testing.}

A.34. RDF Analysis. During compliance stack tests, the RDF shall be analyzed by at least two separate labs, approved by the Department, using split samples for the Btu and moisture contents. [PSD-FL-108A, specific condition 12.]

Recordkeeping and Reporting Requirements

A.35. Reporting Schedule. The following reports shall be submitted to the Compliance Authority:

Report	Reporting Deadlines	Related Conditions
Excess Emissions from Malfunctions, if requested by the Compliance Authority	Every 3 months (quarter)	**A.36.**
NSPS Excess Emissions and Monitoring System Performance	Every 6 months (semi-annual), except when more frequent reporting is specifically required	**A.46.**
EG Cb (Eb) Annual Report	Every 6 months (semi-annual)	**A.44 & 45.** Appendix Cb/Appendix Eb - 40 CFR 60.59b(g)
EG Cb (Eb) Semi-Annual Report	Every 6 months (semi-annual)	**A.44 & 45.** Appendix Cb/Appendix Eb - 40 CFR 60.59b(h)

[Rule 62-210.700(6), F.A.C.; 40 CFR 60, Subparts A, Cb & Eb.]

A.36. Excess Emissions from Malfunctions. In the case of excess emissions resulting from malfunctions, each owner or operator shall notify the Compliance Authority in accordance with Rule 62-4.130, F.A.C. A full written report on the malfunctions shall be submitted in a quarterly report, if requested by the Compliance Authority. [Rule 62-210.700(6), F.A.C.]

A.37. Other Reporting Requirements. See Appendix RR, Facility-Wide Reporting Requirements, for additional reporting requirements. [Rule 62-213.440, F.A.C.]

A.38. Records of Non-MSW. The facility owner or 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 (see Specific Conditions **A.5.e.** and **A.5.f.**). The following records shall be prepared and maintained to demonstrate compliance with the segregated non-MSW percentage limitations:

a. *Segregated Loads of non-MSW Materials*. Each segregated load of non-MSW materials, that is subject to the percentage weight limitations (see Specific Conditions **A.5.e.** and **A.5.f.**), which is received for processing shall be documented as to the description and weight of the waste. The weight of all waste materials received for processing shall be measured using the facility truck scale and recorded.

b. *Waste Tires*. 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 days in the current calendar month. At the end of each calendar month, the resultant monthly total weight of tires shall be divided by the total weight of all waste materials received in the same calendar month, 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.

c *Non-MSW Material*. 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 days in the current calendar month. At the end of each calendar month, the resultant monthly total weight of segregated non-MSW materials subject to the 5% restriction shall be divided by the total weight of all waste materials received in the same calendar month, 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.

[Rules 62-4.070(1), (3), 62-213.410 & 62-213.440, F.A.C.]

A.39. Daily Waste Logs Required. The permittee shall maintain a daily log of the municipal solid waste received. Such a log must record, at a minimum, the amount of waste, the time, and the type of waste received. [PSD-FL-108A, specific condition 18. and Rule 62-213.440, F.A.C.]

A.40. Reporting and Recordkeeping. The reporting and recordkeeping requirements applicable to each municipal waste combustor unit subject to Rule 62-204.800(9)(b), F.A.C., shall be the same as set forth in 40 CFR 60.59b, except for the siting requirements under 40 CFR 60.59b(a), (b)(5) and (d)(11). See Appendix 40 CFR 60, Subpart Eb. [Rule 62-204.800(9)(b)7.b, F.A.C.]

Operator Practices, Training and Certification

A.41. Operating Practices. The owner or operator shall comply with the operating practices as set forth in 40 CFR 60.53b(b) and (c). [Rule 62-204.800(9)(b)4., F.A.C.; and, 40 CFR 60.34b & 40 CFR 60.53b.]

A.42. Operator Training and Certification. The owner or operator shall comply with the operator training and certification requirements of 40 CFR 60.54b. Compliance with these requirements shall be conducted according to the schedule specified in 40 CFR 60.39b(c)(4). [Rule 62-204.800(9)(b)5., F.A.C.; and, 40 CFR 60.35b & 40 CFR 60.54b.]

EG 40 CFR 60, Subpart Cb Requirements

A.43. EG Requirements - General Applicability and Definitions. These emissions units shall comply with all applicable requirements of 40 CFR 60, Emission Guidelines and Compliance Times which have been adopted by reference in Rule 62-204.800(9), F.A.C., except that the term "Administrator," when used in any provision of 40 CFR 60 that is delegated to the Department by the U.S. Environmental Protection Agency, shall mean the Secretary or the Secretary's designee. [Rule 62-204.800(9)(a), F.A.C.]

A.44. EG Requirements - Subpart Cb. These emissions units shall comply with all applicable requirements of 40 CFR 60, Subpart Cb, Emissions Guidelines (EG) and Compliance Times for Large Municipal Waste Combustors, which have been adopted and incorporated by reference in Rule 62-204.800(9), F.A.C. These emissions units shall comply with Appendix 40 CFR 60 Subpart Cb included with this permit. [Rule 62-204.800(9)(b), F.A.C.]

NSPS 40 CFR 60, Subpart A & Eb Requirements

{Permitting notes: The EG 40 CFR 60, Subpart Cb, cross references conditions (applicable requirements) that are contained in the NSPS 40 CFR 60, Subparts A and Eb.}

A.45. NSPS Requirements - Subpart Eb. Except as otherwise provided in this permit, these emissions units shall comply with all applicable provisions of 40 CFR 60, Subpart Eb, Large Municipal Waste Combustors, adopted and incorporated by reference in Rule 62-204.800(8)(b), F.A.C.; except that the Secretary is not the Administrator for purposes of the authorities cited at 40 CFR 60.50b(n). These emissions units shall comply with all applicable provisions of Appendix 40 CFR 60 Subpart Eb included with this permit. [Rule 62-204.800(8)(b)7., F.A.C.]

A.46. NSPS Requirements - Subpart A. This emissions unit shall comply with all applicable requirements of 40 CFR 60, Subpart A, General Provisions, including:

40 CFR 60.7, Notification and Recordkeeping
40 CFR 60.8, Performance Tests
40 CFR 60.11, Compliance with Standards and Maintenance Requirements
40 CFR 60.12, Circumvention
40 CFR 60.13, Monitoring Requirements
40 CFR 60.19, General Notification and Reporting Requirements,

which have been adopted by reference in Rule 62-204.800(8)(d), F.A.C.; except that the Secretary is not the Administrator for purposes of 40 CFR 60.4, 40 CFR 60.8(b)(2) and (3), 40 CFR 60.11(e)(7) and (8), 40 CFR 60.13(g), (i) and (j)(2), and 40 CFR 60.16. This emissions unit shall comply with all applicable provisions of Appendix 40 CFR 60 Subpart A included with this permit. [Rule 62-204.800(8)(d), F.A.C.]

Other Requirements

A.47. Acid Rain Part Application. For any unit which is a solid waste incinerator, burning less than 20 percent fossil fuel as described in 40 CFR 72.6(b)(7), adopted and incorporated by reference at Rule 62-204.800, F.A.C., the designated representative of the source containing the unit shall submit a complete Acid Rain Part application governing such unit to the Department before March 1st of the year following the three calendar year period in which the incinerator consumed 20 percent or more fossil fuel on a British thermal unit (BTU) basis. [Rule 62-214.320(1), F.A.C.]

Subsection B. Emissions Units 004 & 008

The specific conditions in this section apply to the following emissions units:

E.U. ID No.	Brief Description
004	Class III Landfill and Flare (1,800 scfm, manufactured by LFG Specialties, model number PCF820I8)
008	Class I Landfill and Flare (3,500 scfm, manufactured by Shaw LFG Specialties, model number CF1238I10)

The facility currently has two contiguous landfills, a Class I landfill and a Class III landfill, each with its own gas collection system and flare.

Both landfills have a design capacity greater than 2.5 million megagrams (Mg) by mass or 2.5 million cubic meters by volume. The design capacity of the Class I landfill is 33,212,516 Mg by mass and the Class III landfill is 5,723,708 Mg by mass. The landfills commenced construction in August 1988. A minor modification was requested and approved in 1994, expanding the landfills and changing the slopes. The Class I landfill started receiving waste in August 1989 and the Class III landfill started receiving waste in April 1990. The yearly waste acceptance at the Class I and Class III landfills in fiscal year (FY) 2004 was 643,501 and 203,470 Mg/yr, respectively. The Class I landfill currently accepts both municipal solid waste and ash from the resource recovery facility. The Class III landfill accepts predominately construction and demolition (C&D) debris. The Class I landfill received asbestos from 1989-1993. In 1993, asbestos disposal was transferred to the Class III landfill, which continues to receive the material.

Non-methane organic compound (NMOC) emissions from each landfill were calculated to be greater than 50 Mg per year, therefore, gas collection and control systems were required. Collection and control of landfill gas emissions began in February 1996 for both landfills.

The facility has two flares with one located at each landfill. The flares are used to control emissions from the landfills. The gas flow rates from the Class I and Class III landfill flares are 1,839.6 million ft^3/year and 946.08 million ft^3/year, respectively. Each flare is rated based on a maximum heat content of 550 Btu/scfm. The Class I landfill flare, a 3,500 scfm flare (Emissions Unit ID No. 008) was manufactured by Shaw LFG Specialties, model number CF1238I10 and began operations on May 15, 2008. The Class III landfill flare, a 1,800 scfm flare (Emissions Unit ID No. 004) was manufactured by LFG Specialties, model number PCF820I8 and began operations in 1999.

The landfills are collocated with a major source of HAP; however, individually they are not major sources of HAP. The landfills do not contain bioreactors.

The Class III landfill is expected to close by 2016 and the Class I landfill between 2023 and 2026.

{Permitting note(s): These emissions units are regulated under Rule 62-210.300, F.A.C., Permits Required; 40 CFR 60, Subpart WWW, Standards of Performance for Municipal Solid Waste Landfills adopted by reference in Rule 62-204.800(8)(b), F.A.C.; 40 CFR 63, Subpart AAAA, National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills adopted by reference in Rule 62-204.800(11)(b)59., F.A.C.; and, 40 CFR 61, Subpart M, National Emission Standards for Hazardous Air Pollutants (NESHAP) for Asbestos adopted by reference in Rule 62-204.800(10)(b), F.A.C. The flares are regulated under the NSPS 40 CFR 60, Subpart A, General Provisions, specifically at 40 CFR 60.18(b), adopted by reference in Rule 62-204.800(8)(d), F.A.C.}

Essential Potential to Emit (PTE) Parameters

B.1. Hours of Operation. These emissions units may operate continuously (8,760 hours/year). [Rule 62-210.200 (Definitions - Potential to Emit (PTE), F.A.C. and Permit No. 0990234-002-AC/PSD-FL-108D.]

B.2. Flares - Landfill Gas Flow Rate. The owner or operator shall not allow more than 3,500 scfm of landfill gas to be directed to the Class I flare and 1,800 scfm of landfill gas to be directed to the Class III flare. [Rule 62-4.070(3), F.A.C., and Permit No. 0990234-002-AC/PSD FL-108D, specific condition 3.]

Landfills - Collection and Control System Design Plan

B.3. Landfills - Collection and Control System Design Plan. As an amendment to the gas collection and control plan, the owner requested and received approval from the Department for alternative provisions to inactivate gas wells. The owner or operator shall inactivate gas wells in accordance with the plan approved by the Department. [Rule 62-204.800(8)(b)75., F.A.C.; 40 CFR 60.752(b)(2)(i) & 40 CFR 60.753(b); Class I and Class III Landfill Gas Well Inactivation Plan received September 19, 2005; and, DEP approval dated December 13, 2005.]

Landfills - Collection System Temperature, Oxygen and Nitrogen Requirements

B.4. Landfills - Collection System Temperature, Oxygen and Nitrogen Requirements. The permittee requested and received approval from the Department to establish a higher landfill gas temperature of 82.2° C for the interior wellhead in the gas collection system. The owner or operator shall operate each interior wellhead in the collection system with a landfill gas temperature less than 82.2° C. [Rule 62-204.800(8)(b)75., F.A.C.; 40 CFR 60.753(c); and, DEP approval dated October 25, 2005.]

Landfills - Surface Methane Requirements

B.5. Landfills - Surface Methane Requirements. The permittee requested and received approval from the USEPA to reduce the frequency of surface monitoring of methane gas emissions. The frequency of surface monitoring of methane gas emissions shall be annual for the Class III Landfill, provided that the methane concentration level remains below 250 parts per million (ppm). If the methane concentration equals or exceeds 250 ppm, then the surface monitoring shall revert back to a quarterly monitoring frequency. If no readings of 250 ppm or greater are detected in three consecutive subsequent quarterly samples, the frequency shall again become annual. Note that although quarterly monitoring shall be required if the methane concentration equals or exceeds 250 ppm, corrective action measures, as required by 40 CFR 60.755(c)(4), shall only be required when the concentration level equals or exceeds 500 ppm or more above background at any location. [Rule 62-204.800(7)(b), F.A.C.; 40 CFR 60.755(c)(1); USEPA approval dated June 7, 2002; and, Permit No. 0990234-005-AC/PSD-FL-108E, specific condition 2.]

Flares - General Control Device Requirements

B.6. Flares - Operation. The flares shall be operated with a flame present at all times, as determined by the methods specified in 40 CFR 60.18(f). [Rule 62-204.800(8)(d), F.A.C.; and, 40 CFR 60.18(c)(2)]

B.7. Flares - Exit Velocity. The flares shall be operated with an exit velocity, in accordance with 40 CFR 60.18(c)(4) and (5), as determined by the methods specified in 40 CFR 60.18(f)(4) and (f)(6). [Rule 62-204.800(8)(d), F.A.C.; and, 40 CFR 60.18(c)(4) & (5)]

B.8. Flares - Actual Exit Velocity. The owner or operator shall annually determine the actual exit velocity of each flare. [Permit No. 0990234-002-AC/PSD FL-108D, specific condition 5.]

B.9. Flares - Operation. Flares used to comply with provisions of 40 CFR 60, Subpart A shall be operated at all times when emissions may be vented to them. [Rule 62-204.800(8)(d), F.A.C.; and, 40 CFR 60.18(e)]

Emission Limitations and Standards

B.10. Flares - Visible Emissions. The flares shall be operated with no visible emissions (VE), except for periods not to exceed a total of 5 minutes during any 2 consecutive hours. [Rule 62-204.800(8)(d), F.A.C.; and, 40 CFR 60.18(c)(1).]

Monitoring Requirements

{Permitting note: TABLE L-1. SUMMARY OF MONITORING REQUIREMENTS FOR MSW LANDFILLS under 40 CFR 60, Subpart WWW and 40 CFR 63, Subpart AAAA, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.}

B.11. Flares - Landfill Gas Flow Rate. Total landfill gas flow to the flares shall be continuously measured and recorded. [Rules 62-4.160(2) & 62-4.070(3), F.A.C.; and, Permit No. 0990234-012-AC, specific condition 2.]

B.12. Flares - Landfill Gas Flow Rate. The actual flow rate shall be determined for each flare on a monthly average basis by dividing the measured flow by the hours that each flare was operated each month. Compliance with this limitation shall be by measuring landfill gas flows to each flare and recording flows with a totalizing meter. Records of the totalizing meter values shall be recorded in an operators log monthly, or whenever the meter is reset for any purpose, whichever is more frequent. The owner or operator shall maintain a strip chart recorder to record the flow rate to each flare as a backup device in the event that the totalizer meter is not functioning; the strip chart recorder shall also be used in conjunction with an operators log to document the hours each month that each flare was operated. [Rule 62-4.070(3), F.A.C., and Permit No. 0990234-002-AC/PSD FL-108D, specific condition 3.]

B.13. Sampling & Analysis of Sulfur Content of Landfill Gas. The sulfur content of each landfill's gas shall be sampled annually, analyzed and the results provided to the compliance authority with a copy to the Bureau of Air Regulation. The sulfur content of each landfill's gas shall be analyzed at the inlet to the flare. Based on the sampling results and Rule 62-297.310(7)(b), F.A.C., the Department may request additional gas sampling and analyses. [Rules 62-4.070(3) and 62-297.310, F.A.C.; Permit No. 0990234-012-AC, specific condition 7.; and, Permit No. 0990234-002-AC/PSD FL-108D, specific condition 5.]

B.14. Startup, Shutdown and Malfunction Plan under NESHAP 40 CFR 63, Subpart AAAA. The owner or operator shall follow the written startup, shutdown and malfunction plan (SSM Plan). A copy of the SSM Plan must be maintained on site. [Rule 62-204.800(11)(d)1., F.A.C. and 40 CFR 63.1960.]

Test Methods and Procedures

B.15. Flares - Test Methods. Required tests shall be performed in accordance with the following reference methods:

Method(s)	Description of Method(s) and Comment(s)
ASTM Method D1072-90, or later method	Sulfur Content Analysis of Landfill Gas
ASTM D1945-03 [1]	Alternative Method of Determining Net Heating Value of Landfill Gas
In-place Calibrated Flow Meter [1]	Determining Flare Gas Exit Velocity
EPA Method 22	Visual Determination of Smoke Emissions from Flares

The above methods are described in Chapter 62-297, F.A.C. and/or 40 CFR 60, Appendix A, and adopted by reference in Rule 62-204.800, F.A.C. No other methods may be used unless prior written approval is received from the Department. [Chapter 62-297, F.A.C. & Rule 62-204.800(9)(b)7., F.A.C.; Permit No. 0990234-002-AC/PSD FL-108D, specific condition 5.; and, [1] USEPA approval dated August 10, 2005.]

B.16. Common Testing Requirements. Unless otherwise specified, tests shall be conducted in accordance with the requirements and procedures specified in Appendix TR, Facility-Wide Testing Requirements, of this permit. [Rule 62-297.310, F.A.C.]

B.17. Annual Compliance Test. During each federal fiscal year (October 1st to September 30th), the flares shall be tested to demonstrate compliance with the emission limitations for VE. [Rule 62-297.310(7), F.A.C.]

B.18. Flares - Determining Net Heating Value of Landfill Gas. The owner or operator requested and received approval from USEPA for an alternative method of determining the net heating value of the gas being combusted in the flares. ASTM D1945-03 shall be used in place of EPA Method 18. A minimum collection of three (3)-thirty (30) minute samples is required. The requirement to test for hydrogen with ASTM D1946 is waived due to the low levels of hydrogen in the landfill gas. [Rule 62-204.800(8)(d), F.A.C.; 40 CFR 60.18(f)(3); and, USEPA approval dated August 10, 2005.]

B.19. Flares - Determining Flare Gas Exit Velocity. The owner or operator requested and received approval from USEPA for an alternative method of determining the flare gas exit velocity. The in-place calibrated flow meter shall be used in place of EPA Methods 2, 2A, 2C, or 2D. [Rule 62-204.800(8)(d), F.A.C.; 40 CFR 60.18(f)(4); and, USEPA approval dated August 10, 2005.]

B.20. Flares - Visible Emission Test Method. EPA Method 22 shall be used to determine the compliance with the visible emission limit for the flares. The observation period is 2 hours and shall be used according to EPA Method 22. [Rule 62-204.800(8)(d), F.A.C.; and, 40 CFR 60.18(f)(1).]

B.21. Flares - Sulfur Content of Landfill Gas. The owner or operator shall annually analyze the sulfur content of the landfill gas directed to each flare using ASTM Method D1072-90, or later method. [Permit No. 0990234-002-AC/PSD FL-108D, specific condition 5.]

Recordkeeping and Reporting Requirements

{Permitting note: TABLE L-2. SUMMARY OF RECORDKEEPING REQUIREMENTS FOR MSW LANDFILLS under 40 CFR 60, Subpart WWW and 40 CFR 63, Subpart AAAA, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.}

{Permitting note: TABLE L-3. SUMMARY OF COMPLIANCE REPORTING REQUIREMENTS FOR MSW LANDFILLS under 40 CFR 60, Subpart WWW and 40 CFR 63, Subpart AAAA, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.}

B.22. Reporting Schedule. The following reports shall be submitted to the Compliance Authority:

Report	Reporting Deadline	Related Condition
Semi-Annual Compliance Reports	Every 6 months, due March 1st and September 1st	**B.24.**

[Rule 62-213.440, F.A.C.]

B.23. Flares - Reporting Requirements. The owner or operator shall annually report the actual exit velocity of each flare and the sulfur content of the landfill gas directed to each flare. The actual exit velocity shall be reported to the Department as an attachment to the facility's annual operating report (AOR). The sulfur content along with SO_2 emissions in tons per year (TPY) for each flare shall also be included with the AOR. [Permit No. 0990234-002-AC/PSD FL-108D, specific condition 5.]

B.24. Landfills - Semi-Annual Compliance Reports under NESHAP 40 CFR 63, Subpart AAAA. The owner or operator shall submit semi-annual compliance reports. The semi-annual compliance reports shall be due March 1st and September 1st. [Rule 62-204.800(11)(d)1., F.A.C.; 40 CFR 63.1980(a); and, Applicant's Request.]

B.25. Other Reporting Requirements. See Appendix RR, Facility-Wide Reporting Requirements, for additional reporting requirements. [Rule 62-213.440, F.A.C.]

NSPS 40 CFR 60, Subpart A & WWW Requirements

B.26. NSPS Requirements - Subpart WWW. Except as otherwise provided in this permit, these emissions units shall comply with all applicable provisions of 40 CFR 60, Subpart WWW, Municipal Solid Waste Landfills, adopted by reference in Rule 62-204.800(8)(b), F.A.C.; except that the Secretary is not the Administrator for purposes of 40 CFR 60.754(a)(5). These emissions units shall comply with all applicable provisions of **Appendix 40 CFR 60 Subpart WWW** included with this permit. [Rule 62-204.800(8)(b)75., F.A.C.]

B.27. NSPS Requirements - Subpart A. These emissions units shall comply with all applicable requirements of 40 CFR 60, Subpart A, General Provisions, including:

40 CFR 60.7, Notification and Recordkeeping

40 CFR 60.8, Performance Tests
40 CFR 60.11, Compliance with Standards and Maintenance Requirements
40 CFR 60.12, Circumvention
40 CFR 60.13, Monitoring Requirements
40 CFR 60.19, General Notification and Reporting Requirements,

which have been adopted by reference in Rule 62-204.800(8)(d), F.A.C.; except that the Secretary is not the Administrator for purposes of 40 CFR 60.4, 40 CFR 60.8(b)(2) and (3), 40 CFR 60.11(e)(7) and (8), 40 CFR 60.13(g), (i) and (j)(2), and 40 CFR 60.16. These emissions units shall comply with all applicable provisions of **Appendix 40 CFR 60 Subpart A** included with this permit. [Rule 62-204.800(8)(d), F.A.C.]

NESHAP 40 CFR 61, Subpart A & M - Asbestos Disposal Site Standards

B.28. NESHAP 40 CFR 61 Requirements - Subpart M [Set A]. The asbestos waste disposal sites shall comply with all applicable requirements of 40 CFR 61, Subpart M, National Emission Standard for Asbestos, which have been adopted by reference in Rule 62-204.800(10)(b), F.A.C.; except that the Secretary is not the Administrator for the purposes of 40 CFR 61.149(c)(2), 40 CFR 61.150(a)(4), 40 CFR 61.151(c), 40 CFR 61.152(b)(3), 40 CFR 61.154(d), and 40 CFR 61.155(a). These emissions units shall comply with all applicable provisions of **Appendix 40 CFR 61, Subpart M "Set A,"** included with this permit. [Rule 62-204.800(10)(b)8., F.A.C.]

B.29. NESHAP 40 CFR 61 Requirements - Subpart A. The asbestos waste disposal sites shall comply with all applicable requirements of 40 CFR 61, Subpart A, General Provisions, which have been adopted by reference in Rule 62-204.800(10)(d), F.A.C.; except for 40 CFR 61.08 and except that the Secretary is not the Administrator for the purposes of 40 CFR 61.04, 40 CFR 61.11, and 40 CFR 61.18. In lieu of the process set forth in 40 CFR 61.08, the Department will follow the permit processing procedures of Rule 62-4.055, F.A.C. The asbestos waste disposal sites shall comply with all applicable provisions of **Appendix 40 CFR 61 Subpart A - General Provisions** included with this permit. [Rule 62-204.800(10)(d), F.A.C.]

NESHAP (MACT) 40 CFR 63, Subpart A & AAAA Requirements

{Permitting note: Most of the requirements of NESHAP 40 CFR 63, Subpart AAAA cross references conditions (applicable requirements) that are contained in NSPS 40 CFR 60, Subpart WWW. However, NESHAP 40 CFR 63, Subpart AAAA does include several additional requirements, most importantly the requirement to develop and implement a written startup, shutdown and malfunction plan (SSM Plan) (see 40 CFR 63.1960 in ***Appendix 40 CFR 63 Subpart AAAA****, and 40 CFR 63.6(e)(3) in* ***Appendix 40 CFR 63 Subpart A****), and the requirement for submittal of a semi-annual compliance report (see 40 CFR 60.757(f) in* ***Appendix 40 CFR 60 Subpart WWW*** *and 40 CFR 63.1980 in* ***Appendix 40 CFR 63 Subpart AAAA****).)}*

B.30. 40 CFR 63 Requirements - Subpart A. These emissions units shall comply with all applicable requirements of 40 CFR 63, Subpart A, General Provisions, which have been adopted by reference in Rule 62-204.800(11)(d)1., F.A.C., except that the Secretary is not the Administrator for purposes of 40 CFR 63.5(e), 40 CFR 63.5(f), 40 CFR 63.6(g), 40 CFR 63.6(h)(9), 40 CFR 63.6(j), 40 CFR 63.13, and 40 CFR 63.14. These emissions units shall comply with **Appendix 40 CFR 63 Subpart A** included with this permit. [Rule 62-204.800(11)(d)1., F.A.C.]

B.31. 40 CFR 63 Requirements - Subpart AAAA. These emissions units shall comply with all applicable requirements of 40 CFR 63, Subpart AAAA, Municipal Solid Waste Landfills, which have been adopted by reference in Rule 62-204.800(11)(b)59., F.A.C., except that the Secretary is not the Administrator for purposes of the authorities cited at 40 CFR 63.1985(c). These emissions units shall comply with **Appendix 40 CFR 63 Subpart AAAA** included with this permit. [Rule 62-204.800(11)(b)59., F.A.C.]

Subsection C. Emissions Units 010, 011, 012 & 014

The specific conditions in this section apply to the following emissions units:

E.U. ID No.	Brief Description
	Biosolids Pelletization Facility (BPF)
010	BPF Sludge Dryer Train #1
011	BPF Sludge Dryer Train #2
012	BPF Recycle Material Bin and Pellet Storage Silo for Sludge Dryer Train #1
014	BPF Recycle Material Bin and Pellet Storage Silo for Sludge Dryer Train #2

The BPF has two 337.5 wet tons per day (wtpd) {67.5 dry tpd} sludge drying trains, Dryer Train #1 and #2, and related appurtenances. The sludge dryer trains were manufactured by Baker Rullman Drum Assembly, Model No. SD-125-42. Each dryer train at the BPF combusts landfill gas generated from the nearby landfill and/or natural gas in a rotary drum dryer to dry sewage sludge and then screens the dried sludge into marketable fertilizer pellets. Each dryer has a rated capacity of 40 MMBtu/hour heat input (natural gas or landfill gas) plus an additional 2 MMBtu/ hour heat input from each regenerative thermal oxidizer (RTO) for a total rated capacity of 84 MMBtu/ hour heat input from the dryers and the RTOs.

Dry low NOx burners and acid addition in the tray/condenser scrubber are used to control NOx emissions from each dryer's exhaust. A tray/condenser scrubber and a venturi scrubber are used to control PM emissions from each dryer's exhaust. The BPF uses a regenerative thermal oxidizer (RTO) on each dryer exhaust to control VOC emissions with an efficiency of 98%. The RTO also minimizes odors. VOCs are also combusted in the dryer burners with an estimated efficiency of 98%. CO emissions are controlled by good combustion in the dryer and in the RTO.

Each dryer RTO train has its own flue within a shared single stack. The stack parameters are: height, 138 feet; diameter, 2.5 feet; exit temperature, 194 degrees F; and, actual stack gas flow rate, 15,000 acfm. The sludge dryer trains began operation on May 22, 2009.

Each biosolids dryer train also has the following: a recycle material bin and pellet storage silo, and a cooling tower. Dusty air from silo filling operations is ducted to each recycle bin baghouse. Material captured by each baghouse is returned back into the process/operation. Each recycle material bin baghouse vents through a building odor scrubber which exhausts through an approximately 0.5 feet diameter outlet at about 50 feet above grade. Emissions from the cooling towers are uncontrolled.

{Permitting note(s): The sludge drying trains are regulated under 40 CFR 61, Subpart E, National Emission Standards for Hazardous Air Pollutants for Mercury, adopted and incorporated by reference in Rule 62-204.800(10)(b)3., F.A.C. and 40 CFR 64, Compliance Assurance Monitoring (CAM). The sludge drying trains are not regulated under 40 CFR 60, Subpart LLLL, Standards of Performance for New Stationary Sources: Sewage Sludge Incineration Units and 40 CFR 60, Subpart MMMM, Emission Guidelines for Existing Sources: Sewage Sludge Incineration Units pursuant to the specific exemptions at 40 CFR 60.4780 and 40 CFR 60.5065. Some of these emissions units are regulated under Rule 62-212.400, F.A.C., Prevention of Significant Deterioration (PSD) [PSD-FL-108F, G & I and, Rule 62-212.400(6), F.A.C., Best Available Control Technology (BACT).}

Essential Potential to Emit (PTE) Parameters

C.1. Hours of Operation. These emissions units may operate continuously (8,760 hours/year). [Rule 62-210.200 (Definitions - Potential to Emit (PTE), F.A.C. and Permit No. 0990234-006-AC/PSD-FL-108F.]

C.2. Permitted Capacity. The maximum process rate for each dryer train is 337.5 wet tons of sludge per day (wtpd, at 20% solids) or 67.5 dry tpd. The maximum process rate for the Biosolids Pelletization Facility (BPF) is 675 wet tons of sludge per day (wtpd, at 20% solids) or 135 dry tpd. The maximum heat input rate for each dryer and RTO are as follows:

E.U. ID No.	Brief Description	Max. Heat Input (Natural or Landfill Gas)
010	BPF Sludge Dryer Train #1	42 MMBtu/hour
011	BPF Sludge Dryer Train #2	42 MMBtu/hour

[Rules 62-4.160(2) & 62-210 (PTE), F.A.C. and Permit Nos. 0990234-006-AC/PSD-FL-108F & 0990234-019-AC/PSD-FL-108I.]

C.3. Methods of Operation - Fuels. The dryers may be fired with natural gas and/or landfill gas. [Rules 62-4.160(2) & 62-210.200 (PTE), F.A.C. and Permit Nos. 0990234-006-AC/PSD-FL-108F & 0990234-019-AC/PSD-FL-108I.]

C.4. Emissions Unit Operating Rate Limitation After Testing. See the related testing provisions in Appendix TR, Facility-wide Testing Requirements. [Rule 62-297.310(2), F.A.C.]

Monitoring of Operations

C.5. Sludge Process Rate. The owner or operator shall monitor and record daily the sludge process rate for each dryer train. [Rule 62-4.070(1) & (3), F.A.C.; and, Permit No. 0990234-006-AC/PSD-FL-108F.]

Operation and Maintenance of Air Pollution Control Technologies

C.6. Operation and Maintenance of Air Pollution Control Technologies. The owner or operator shall operate and maintain the selected air pollution control technologies, e.g., dry low NOx burners, exhaust gas recirculation system, tray scrubber/condenser scrubber, venturi scrubbers and RTOs. [BACT Determination and Permit No. 0990234-006-AC/PSD-FL-108F.]

C.7. Operation and Maintenance of Fabric Filters. The owner or operator shall operate and maintain fabric filters on each material recycle bin exhaust to control PM emissions from the material recycle bin and the pellet storage silo. [BACT Determination and Permit No. 0990234-006-AC/PSD-FL-108F.]

C.8. Operation and Maintenance Manuals. The owner or operator shall follow the manufacturers' Operation and Maintenance Manuals for the selected air pollution control technologies, e.g., dry low NOx burners, exhaust gas recirculation system, tray scrubber/condenser scrubber, venturi scrubber, RTOs and fabric filters. [BACT Determination and Permit No. 0990234-006-AC/PSD-FL-108F.]

Emission Limitations and Standards

{Permitting note: Table 1, Summary of Air Pollutant Standards and Terms, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.}

Unless otherwise specified, the averaging times for Specific Conditions **C.9.** - **C.17.** are based on the specified averaging time of the applicable test method.

C.9. Nitrogen Oxides. NOx emissions from each sludge dryer RTO train shall not exceed 5.60 lbs/hour and 24.55 tons/year. [BACT Determination and Table AP-1 from Permit No. 0990234-006-AC/PSD-FL-108F.]

C.10. Particulate Matter. PM/PM_{10} emissions from each sludge dryer RTO train shall not exceed 2.42 lbs/hour and 10.6 tons/year. [BACT Determination and Table AP-1 from Permit No. 0990234-006-AC/PSD-FL-108F.]

C.11. Visible Emission. VE from each sludge dryer RTO train shall not exceed 5% opacity, except 20% opacity is allowed for up to 3 minutes in 1 hour. [BACT Determination and Table AP-1 from Permit No. 0990234-006-AC/PSD-FL-108F.]

C.12. Particulate Matter. PM/PM_{10} emissions from each recycle material bin and pellet storage silo baghouse shall not exceed 0.010 gr/dscf. [BACT Determination and Table AP-1 from Permit No. 0990234-006-AC/PSD-FL-108F.]

C.13. Visible Emission. VE from each recycle material bin and pellet storage silo baghouse shall not exceed 5% opacity. [BACT Determination and Table AP-1 from Permit No. 0990234-006-AC/PSD-FL-108F.]

C.14. Sulfur Dioxide. SO_2 emissions from each sludge dryer RTO train shall not exceed 4.45 lbs/hour and 19.5 tons/year. [Rules 62-212.400(12) (Source Obligation, escape PSD), 62-4.070(1), & (3), F.A.C., and Table AP-1 from Permit No. 0990234-006-AC/PSD-FL-108F.]

C.15. Carbon Monoxide. CO emissions from each sludge dryer RTO train shall not exceed 3.37 lbs/hour and 14.75 tons/year. [Rules 62-212.400(12) (Source Obligation, escape PSD), 62-4.070(1), & (3), F.A.C., and Table AP-1 from Permit No. 0990234-006-AC/PSD-FL-108F.]

C.16. Volatile Organic Compound. VOC emissions from each sludge dryer RTO train shall not exceed 1 lbs/hour and 4.4 tons/year. [Rules 62-212.400(12) (Source Obligation, escape PSD), 62-4.070(1), & (3), F.A.C., and Table AP-1 from Permit No. 0990234-006-AC/PSD-FL-108F.]

C.17. Mercury. Hg emissions from each sludge dryer RTO train shall not exceed 2.2 E-02 lb/24-hour period. {The Hg emissions standard under the NESHAP is 3.2 kg (7.1 lb)/24-hour period. The applicant proposed a limit which is much lower than the NESHAP standard.} [Rules 62-212.400(12) (Source Obligation, escape PSD), 62-4.070(1), & (3), F.A.C., and Table AP-1 from Permit No. 0990234-006-AC/PSD-FL-108F.]

C.18. Unconfined Particulate Matter Emissions at BPF. Pursuant to Rules 62-296.320(4)(c)1., 3. and 4., F.A.C., reasonable precautions to prevent emissions of unconfined particulate matter at the BPF include the following requirements consistent with current practices by the Solid Waste Authority:

a. Pave all parking lots and permanent drives;
b. Street sweep paved areas on a regular basis; and,
c. Use a water truck to spray water on unpaved roads and active unpaved areas.

[Rule 62-296.320(4)(c)2., F.A.C. and Permit No. 0990234-006-AC/PSD-FL-108F.]

Excess Emissions

Rule 62-210.700 (Excess Emissions), F.A.C., cannot vary any requirement of a NESHAP provision.

C.19. Excess Emissions Allowed. Excess emissions resulting from startup, shutdown or malfunction of any emissions unit shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized but in no case exceed two hours in any 24 hour period unless specifically authorized by the Department for longer duration. [Rule 62-210.700(1), F.A.C.]

C.20. Excess Emissions Prohibited. 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 startup, shutdown, or malfunction shall be prohibited. [Rule 62-210.700(4), F.A.C.]

Monitoring Requirements

C.21. Compliance Assurance Monitoring (CAM) Requirements. Each sludge dryer RTO train is subject to the CAM requirements contained in the attached Appendix CAM. Failure to adhere to the monitoring requirements specified does not necessarily indicate an exceedance of a specific emissions limitation; however, it may constitute good reason to require compliance testing pursuant to Rule 62-297.310(7)(b), F.A.C. [40 CFR 64; and, Rules 62-204.800 & 62-213.440(1)(b)1.a., F.A.C.]

{Permitting note: The excursion level specified in the approved CAM Plan was established based upon the initial PM test data (September 2009) and the manufacturer's recommendations. The excursion level shall be re-evaluated at the time of permit renewal based upon the new most recent test data and the manufacturer's recommendations.}

Test Methods and Procedures

{Permitting note: Table 2, Summary of Compliance Requirements, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.}

C.22. Test Methods. Required tests shall be performed in accordance with the following reference methods:

Method(s)	Description of Method(s) and Comment(s)
EPA Methods 1-4	Traverse Points, Velocity and Flow Rate, Gas Analysis, and Moisture Content
EPA Method 5	Methods for Determining Particulate Matter (PM) Emissions
EPA Method 6C	Method for Determining Sulfur Dioxide (SO_2) Emissions
EPA Method 7 or 7E	Method for Determining Nitrogen Oxides (NOx) Emissions
EPA Method 9	Visual Determination of the Opacity of Emissions (VE)
EPA Method 10	Method for Determining Carbon Monoxide (CO) Emissions
EPA Method 25 or 25A	Methods for Determining Volatile Organic Compound (VOC) Emissions
EPA Method 101A or EPA Method 105	Method for Determining Particulate and Gaseous Mercury (Hg) Emissions from Sewage Sludge Incinerators or Method for Determining Mercury (Hg) in Wastewater Treatment Plant Sewage Sludge The specific testing and sampling conditions as outlined in 40 CFR 61.53 and 61.54 shall be followed as described.

The above methods are described in Chapter 62-297, F.A.C. and/or 40 CFR 60, Appendix A, and adopted by reference in Rule 62-204.800, F.A.C. No other methods may be used unless prior written approval is received from the Department. [Chapter 62-297, F.A.C. and Permit No. 0990234-006-AC/PSD-FL-108F.]

C.23. Annual Compliance Test. Except as specified in Specific Condition **C.26.**, during each federal fiscal year (October 1st to September 30th), Emissions Unit ID Nos. 010 and 011 (Sludge Dryer Train #1 and #2) and 012 & 014 (Recycle Material Bins & Pellet Storage Silos for Sludge Dryer Train #1 and #2) shall be tested to demonstrate compliance with the emission limitations for VE. Compliance with the visible emissions limit for the recycle bin fabric filter exhaust is determined at the building odor control scrubber exhaust. [Rule 62-297.310(7), F.A.C. and Permit No. 0990234-006-AC/PSD-FL-108F.]

C.24. Compliance Test Prior To Renewal. Prior to permit renewal, Emissions Unit ID Nos. 010 and 011 (Sludge Dryer Train #1 and #2) shall be tested to demonstrate compliance with the emission limitations for NOx, PM/PM_{10}, SO_2, and Hg. [Rule 62-297.310(7)(a)3., F.A.C. and Permit No. 0990234-006-AC/PSD-FL-108F.]

C.25. Compliance Testing - CO and VOC Emissions. The testing frequency for CO and VOC emissions was an initial demonstration only; no subsequent testing is required for CO and VOC because the lb/hour emission rates stated in Table AP-1 were achieved in the initial test. In lieu of frequent testing for CO and VOC emissions, the owner or operator shall follow the Operation and Maintenance Manuals for the dry low NOx burners and the RTOs. [Permit No. 0990234-006-AC/PSD-FL-108F and Rule 62-297.310(7)(a)4., F.A.C.]

C.26. Minor PM Source Testing. The recycle material bins and pellet storage silos are minor sources of particulate matter. Because of the expense and complexity of conducting a stack test on minor sources of particulate matter, and because these sources are equipped with baghouses, the Department pursuant to the authority granted under Rule 62-297.620(4), F.A.C., hereby establishes a visible emission limitation not to exceed an opacity of 5% in lieu of a particulate matter stack test. In accordance with Rule 62-297.620(4), minor particulate matter sources equipped with baghouses with visible emissions that are greater than or equal to 5 percent opacity may result in the permittee being required to perform a stack test in accordance with approved methods to verify compliance with the gr/dscf emission limits. The visible emissions test shall be conducted by a certified observer using Method 9 and the procedures in 40 CFR. 60.11 and Rule 62-297.320, F.A.C. [Rule 62-297.620(1)-(4), F.A.C. and Permit No. 0990234-006-AC/PSD-FL-108F.]

C.27. Common Testing Requirements. Unless otherwise specified above, tests shall be conducted in accordance with the requirements and procedures specified in Appendix TR, Facility-Wide Testing Requirements, of this permit. [Rule 62-297.310, F.A.C.]

Recordkeeping and Reporting Requirements

C.28. Reporting Schedule. The following report shall be submitted to the Compliance Authority:

Report	Reporting Deadline	Related Condition
Excess Emissions from Malfunctions, if requested by the Compliance Authority	Every 3 months (quarter)	C.29.

[Rule 62-210.700(6), F.A.C.]

C.29. Excess Emissions from Malfunctions. In the case of excess emissions resulting from malfunctions, each owner or operator shall notify the Compliance Authority in accordance with Rule 62-4.130, F.A.C. A full written report on the malfunctions shall be submitted in a quarterly report, if requested by the Compliance Authority. [Rule 62-210.700(6), F.A.C.]

C.30. Other Reporting Requirements. See Appendix RR, Facility-Wide Reporting Requirements, for additional reporting requirements. [Rule 62-213.440, F.A.C.]

NESHAP 40 CFR 61, Subparts A & E Requirements

C.31. NESHAP 40 CFR 61 Requirements - Subpart A. The dryers shall comply with all applicable requirements of 40 CFR 61, Subpart A, General Provisions, which have been adopted by reference in Rule 62-204.800(10)(d), F.A.C., except for 40 CFR 61.08 and except that the Secretary is not the Administrator for the purposes of 40 CFR 61.04, 40 CFR 61.11, and 40 CFR 61.18. In lieu of the process set forth in 40 CFR 61.08, the Department will follow the permit processing procedures of Rule 62-4.055, F.A.C. The dryers shall comply with all applicable provisions of Appendix 40 CFR 61 Subpart A - General Provisions included with this permit. [Rule 62-204.800(10)(d), F.A.C.]

C.32. NESHAP 40 CFR 61 Requirements - Subpart E. The dryers shall comply with all applicable requirements of 40 CFR 61, Subpart E, National Emission Standards for Hazardous Air Pollutants for Mercury, which have been adopted by reference in Rule 62-204.800(10)(b)3., F.A.C., except that the term "Administrator," when used in any provision of 40 CFR Part 61 that is delegated to the Department by the U.S. Environmental Protection Agency, shall mean the Secretary or the Secretary's designee. The dryers shall comply with all applicable provisions of Appendix 40 CFR 61 Subpart E - NESHAP for Mercury included with this permit. [Rule 62-204.800(10)(a) & (b)3., F.A.C.]

Subsection D. Emissions Units 016, 017, 021, 035 - 044

Engines in this subsection are grouped by similar engine type as regulated by EPA. Each group number is followed by a very brief explanation of the engine type as described in the EPA regulations/tables.

	Group 1: *"Existing" stationary CI RICE less than or equal to 500 HP*	**See Specific Conditions**
E.U. ID No.	**Brief Description**	**D.1. - D.11. & D.71. - D.74.**
035	Emergency Generator - North County Resource Recovery Facility (NCRRF) (SWA of PBC ID# WTE-E2)	
036	Fire Water Pump - NCRRF (SWA of PBC ID# WTE-E1)	
037	Emergency Generator - NCRRF Scalehouse (SWA of PBC ID# WTES-E1)	
039	Emergency Generator - Landfill Scalehouse E1 (SWA of PBC ID# LFSC-E1)	
040	Emergency Generator - Landfill Scalehouse E2 (SWA of PBC ID# LFSC-E2)	
041	Emergency Generator - MIS (SWA of PBC ID# MIS-E1)	
	Group 2: *"Existing" stationary CI RICE greater than 500 HP*	**See Specific Conditions**
E.U. ID No.	**Brief Description**	**D.12. - D.13. & D.71. - D.74.**
038	Emergency Generator - Utilities Facility (SWA of PBC ID# U-E5)	
	Group 3: *"Existing" stationary CI RICE greater than 500 HP , Non-Emergency*	**See Specific Conditions**
E.U. ID No.	**Brief Description**	**D.14. - D.38. & D.71. - D.74.**
017	Woody Waste Facility Diesel Engine (primary engine) (SWA of PBC ID# WW)	
	Group 4: *"New" stationary CI RICE greater than or equal to 175 HP and less than or equal to 500 HP*	**See Specific Conditions**
E.U. ID No.	**Brief Description**	**D.39. - D.54. & D.71. - D.74.**
021	Emergency Generator - Operations Building (EPA Tier 3 certified) (SWA of PBC ID# OPS-E1)	
	Group 5: *"New" stationary CI RICE greater than 500 HP*	**See Specific Conditions**
E.U. ID No.	**Brief Description**	**D.55. - D.70. & D.71. - D.74.**
016	Emergency Generator - Biosolids Pelletization Facility (BPF) (EPA Tier 3 certified)	

	(SWA of PBC ID# BPF-E1)	
042	Emergency Generator - Administration (EPA Tier 1 certified) (SWA of PBC ID# A-E1)	
043	Emergency Generator - Materials Recovery Facility (MRF) (EPA Tier 2 certified) (SWA of PBC ID# MRF-E1)	

This subsection of the permit is comprised of 12 compression ignition (CI) type engines, 11 of which are emergency generators. Air pollutant emissions from these engines are uncontrolled.

{Permitting notes: These emissions units, engines, are regulated under 40 CFR 63, Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants (NESHAP) for Stationary Reciprocating Internal Combustion Engines (RICE) adopted in Rule 62-204.800(11)(b), F.A.C. The permittee identified numerous other non-road engines (portable) located at the facility; these engines are not regulated under 40 CFR 63, Subpart ZZZZ. The "new" engines must meet 40 CFR 60, Subpart IIII, NSPS for Compression Ignition Internal Combustion Engines (CI ICE).}

Each part of this subsection includes unit-specific applicable requirements for each group of engines which were customized from the entire 40 CFR 63, Subpart ZZZZ and/or 40 CFR 60, Subpart IIII.

The specific conditions in this part of the subsection apply to the following group of emissions units:

	Group 1: *"Existing" stationary CI RICE less than or equal to 500 HP*
E.U. ID No.	**Brief Description**
035	Emergency Generator - North County Resource Recovery Facility (NCRRF) (SWA of PBC ID# WTE-E2)
036	Fire Water Pump - NCRRF (SWA of PBC ID# WTE-E1)
037	Emergency Generator - NCRRF Scalehouse (SWA of PBC ID# WTES-E1)
039	Emergency Generator - Landfill Scalehouse E1 (SWA of PBC ID# LFSC-E1)
040	Emergency Generator - Landfill Scalehouse E2 (SWA of PBC ID# LFSC-E2)
041	Emergency Generator - MIS (SWA of PBC ID# MIS-E1)

{Permitting note: This part of the subsection addresses "existing" stationary CI RICE less than or equal to 500 horsepower (HP) that are located at a major source of HAP and that have not been modified or reconstructed after 6/12/2006. Unless the RICE is modified or reconstructed after 7/11/2005, NSPS 40 CFR 60, Subpart IIII, will not apply.}

The following table provides important details for these emissions units:

E.U. ID No.	Engine Brake HP	Date of Construction	Model Year	Primary Fuel	Type of Engine	Displacement liters/cylinder (l/c)	Manufacturer Model # Engine Serial #
035	356	1989	-	Diesel	Emergency	1.73	Caterpillar® 3306 85Z04092
036	273	1994	-	Diesel	Emergency	1.75	Caterpillar® 3306D 6AF15B
037	19	04/01/1997	-	Diesel	Emergency	0.6	Generac® 97A00 N/A
039	19	04/01/1997	-	Diesel	Emergency	0.6	Generac® 97A00 N/A
040	63	05/19/2005	-	Diesel	Emergency	0.6	Generac® 5204150200 5030TF270c
041	47	05/01/1997	-	Diesel	Emergency	0.6	Generac® 97A02 N/A

Compliance Deadline

D.1. Compliance Deadline. The permittee shall comply with the following emissions and operating limitations no later than **May 3, 2013**. [40 CFR 63.6595(a)(1)]

Essential Potential to Emit (PTE) Parameters

D.2. Hours of Operation.

a. *Emergency Situations.* There is no time limit on the use of emergency stationary RICE in emergency situations. [40 CFR 63.6640(f)(1)]

b. *Maintenance and Testing.* Each RICE is authorized to operate for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by federal, state or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 100 hours per year. [40 CFR 63.6640(f)(1)]

c. *Non-emergency Situations.* Each RICE is authorized to operate up to 50 hours per year in non-emergency situations, but those 50 hours are counted towards the 100 hours per year provided for maintenance and testing. [40 CFR 63.6640(f)(1)]

d. *Other Situations.* Each RICE cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity; except that owners and operators may operate the emergency engine for a maximum of 15 hours per year as part of a demand response program if the regional transmission organization or equivalent balancing authority and transmission operator has determined there are emergency conditions that could lead to a potential electrical blackout, such as unusually low frequency, equipment overload, capacity or energy deficiency, or unacceptable voltage level. The engine may not be operated for more than 30 minutes prior to the time when the emergency condition is expected to occur, and the engine operation must be terminated immediately after the facility is notified that the emergency condition is no longer imminent. The 15 hours per year of demand response operation are counted as part of the 50 hours of operation per year provided for non-emergency situations. The supply of emergency power to another entity or entities pursuant to financial arrangement is not limited by this paragraph, as long as the power provided by the financial arrangement is limited to emergency power. [40 CFR 63.6640(f)(1)]

e. *Engine Startup.* During periods of startup the owner or operator must minimize the engine's time spent at idle and minimize the engine's startup time to a period needed for the appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission limitations apply. [40 CFR 63.6625(h)]

Emission Limitations and Operating Requirements

{Permitting note: These "existing" stationary CI engines with ≤ 500 HP do not have specific numerical emission limitations and standards.}

D.3. Work or Management Practice Standards.

a. *Oil.* Change oil and filter every 500 hours of operation or annually, whichever comes first. [40 CFR 63 Table 2c(1)(a)]

b. *Air Cleaner.* Inspect air cleaner every 1,000 hours of operation or annually, whichever comes first. [40 CFR 63 Table 2c(1)(b)]

c. *Hoses and Belts.* Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary. [40 CFR 63 Table 2c(1)(c)]

d. *Operation and Maintenance.* Operate and maintain the stationary RICE according to the manufacturer's emission-related operation and maintenance instructions or develop and follow your own maintenance plan which must provide, to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution, control practice for minimizing emissions. [40 CFR 63.6625(e)]

e. *Oil Analysis.* The owner or operator has the option of using oil analysis to extend the change requirement. The oil analysis must be performed at the same frequency specified for changing the oil. The analysis program must at a minimum analyze the following three parameters: Total Base Number, viscosity, and percent of water content. The condemning limits for these parameters are as follows: Total Base Number is less than 30 percent of the Total Base Number of the oil when new; viscosity of the oil has changed by more than 20 percent from the viscosity of the oil when new; or percent of water content (by volume) is greater than 0.5. If all of these condemning limits are not exceeded, the engine owner or operator is not required to change the oil. If any of the limits are exceeded, the engine owner or operator must change the oil within 2 days of receiving the results of the analysis; if the engine is not in operation when the results of the analysis are received, the engine owner or operator must change the oil within 2 days or before commencing operation, whichever is later. The owner or operator must keep records of the parameters that are analyzed as part of the program, the results of the analysis, and the oil changes for the engine. The analysis program must be part of the maintenance plan for the engine. [40 CFR 63.6625(i)]

Monitoring of Operations

D.4. Hour Meter. The owner or operator must install a non-resettable hour meter if one is not already installed. [40 CFR 63.6625(f)]

Compliance Requirements

D.5. Continuous Compliance. Each unit shall be in compliance with the emission limitations and operating standards in this section at all times. [40 CFR 63.6605(a)]

D.6. Operation and Maintenance of Equipment. At all times the owner or operator must operate and maintain, any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the compliance authority which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source. [40 CFR 63.6605(b)]

Recordkeeping Requirements

D.7. Notification, Performance and Compliance Records.

a. A copy of each notification and report that the owner or operator submitted to comply with this section, including all documentation supporting any Initial Notification or Notification of Compliance Status that the owner or operator submitted.
b. The owner or operator must keep the records required in 40 CFR 63.6625(e) of this section to show continuous compliance with each emission limitation or operating requirement.
c. The owner or operator must keep records of the hours of operation of the engine that is recorded through the non-resettable hour meter. The owner or operator must document how many hours are spent for emergency operation including what classified the operation as emergency and how many hours are spent for non-emergency operation. If the engines are used for demand response operation, the owner or operator must keep records of the notification of the emergency situation, and the time the engine was operated as part of demand response.

[40 CFR 63.6655]

D.8. Malfunction Records.

a. Records of the occurrence and duration of each malfunction of operation (i.e. process equipment) or the air pollution control and monitoring equipment.
b. Records of actions taken during periods of malfunction to minimize emissions in accordance with 40 CFR 63.6605(b) of this section including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment to its normal or usual manner of operation.

[40 CFR 63.6655]

D.9. Maintenance Records.

a. Records of all required maintenance performed on the air pollution control and monitoring equipment.
b. (The owner or operator must keep records of the maintenance conducted on the stationary RICE in order to demonstrate that the stationary RICE and after-treatment control device (if any) are operated and maintained according to its own maintenance plan.

[40 CFR 63.6655]

D.10. Record Retention.

a. The owner or operator must keep records in a suitable and readily available form for expeditious reviews.
b. The owner or operator must keep each record readily accessible in hard copy or electronic form for at least 5 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record.

[40 CFR 63.6660 and 40 CFR 63.10(b)(1)]

Reporting Requirements

D.11. Emergency Situation. If an emergency engine is operating during an emergency and it is not possible to shut down the engine in order to perform the work practice requirements on the schedule required of this section, or if performing the work practice on the required schedule would otherwise pose an unacceptable risk under federal, state, or local law, the work practice can be delayed until the emergency is over or the unacceptable risk under federal, state, or local law has abated. The work practice should be performed as soon as practicable after the emergency has ended or the unacceptable risk under federal, state, or local law has abated. Sources must report any failure to perform the work practice on the schedule required and the federal, state or local law under which the risk was deemed unacceptable. [40 CFR 63.6602 Table 2c, footnote 1]

The specific conditions in this part of the subsection apply to the following group of emissions units:

	Group 2: "Existing" stationary CI RICE greater than 500 HP
E.U. ID No.	**Brief Description**
038	Emergency Generator - Utilities Facility (SWA of PBC ID# U-E5)

{Permitting note: This part of the subsection addresses "existing" stationary CI RICE greater than 500 HP that are located at a major source of HAP and that have not been modified or reconstructed after 12/19/2002. Unless the RICE is modified or reconstructed after 7/11/2005, NSPS 40 CFR 60, Subpart IIII, will not apply. This RICE is not used as a fire pump.}

The following table provides important details for this emissions unit:

E.U. ID No.	Engine Brake HP	Date of Construction	Model Year	Primary Fuel	Type of Engine	Displacement liters/cylinder (l/c)	Manufacturer Model # Engine Serial #
038	3,164	5/7/2002	-	Diesel	Emergency	4.3	Caterpillar® 3516B 1HZ02187

Essential Potential to Emit (PTE) Parameters

D.12. Hours of Operation.

a. *Emergency Situations.* There is no time limit on the use of emergency stationary RICE in emergency situations. [40 CFR 63.6640(f)(2)]

b. *Maintenance and Testing.* Each RICE is authorized to operate for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by the manufacturer, the vendor, or the insurance company associated with the engine. Required testing of such units should be minimized, but there is no time limit for routine testing and maintenance. [40 CFR 63.6640(f)(2)]

c. *Non-emergency situations.* Each RICE is authorized to operate for an additional 50 hours per year in non-emergency situations. The 50 hours per year for non-emergency situations cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity. [40 CFR 63.6640(f)(2)]

d. *Engine Startup.* During periods of startup the owner or operator must minimize the engine's time spent at idle and minimize the engine's startup time to a period needed for the appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission limitations apply. [40 CFR 63.6625(h)]

Emission Limitations and Operating Requirements

{Permitting note: This "existing" stationary CI engine with > 500 HP does not have a specific numerical emission limitations and standards.}

Recordkeeping Requirements

D.13. Record Retention.

a. The owner or operator must keep records in a suitable and readily available form for expeditious reviews.

b. The owner or operator must keep each record readily accessible in hard copy or electronic form for at least 5 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record. [40 CFR 63.6660 and 40 CFR 63.10(b)(1)]

The specific conditions in this part of the subsection apply to the following group of emissions units:

	Group 3: *"Existing" stationary CI RICE greater than 500 HP, Non-Emergency*
E.U. ID No.	**Brief Description**
017	Woody Waste Facility Diesel Engine (primary engine) (SWA of PBC ID# WW)

{Permitting note: This part of the subsection addresses "existing" stationary CI RICE greater than 500 HP that are located at a major source of HAP and that have been constructed or reconstructed before 12/19/2002. This RICE is not used as a fire pump.}

The following table provides important details for this emissions unit:

E.U. ID No.	Engine Brake HP	Date of Construction	Model Year	Primary Fuel	Type of Engine	Displacement liters/cylinder (l/c)	Manufacturer Model # Engine Serial #
017	1,180	12/10/2001	2001	Diesel	Non-Emergency	2.25	Caterpillar® 3412 BDT00610

Essential Potential to Emit (PTE) Parameters

D.14. Compliance Deadline. The permittee shall comply with the following emissions and operating limitations no later than **May 3, 2013**. [40 CFR 63.6595(a)(1)]

D.15. Allowable Fuel. The stationary RICE must use diesel fuel that meets the following requirements for non-road diesel fuel:

a. *Sulfur Content.* The sulfur content shall not exceed 15 ppm (0.0015% by weight) for non-road diesel fuel.

b. *Cetane and Aromatic.* The fuel must have a minimum cetane index of 40 or must have a maximum aromatic content of 35 volume percent.

[40 CFR 63.6604 and 40 CFR 80.510(b)]

Emission Standards and Limitations

D.16. Hours of Operation.

a. *Normal Operation.* The stationary RICE may operate continuously (8,760 hours a year) if needed. [40 CFR 63.6640(f)(1)]
b. *Engine Startup.* During periods of startup the owner or operator must minimize the engine's time spent at idle and minimize the engine's startup time at startup to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission limitations apply. [40 CFR 63.6625(h)]

D.17. CO Emissions. The owner or operator must reduce carbon monoxide (CO) emissions by 70 percent or more; or limit concentration of CO in the stationary RICE exhaust to 23 parts per million by volume, dry (ppmvd) or less at 15 percent O_2. [40 CFR 63.6600(d) Table 2c]

Operating Limitations

D.18. Operating Limitations. The owner or operator must comply with any operating limitations approved by the Administrator. [40 CFR 63.6603; Table 2b]

Compliance Requirements

D.19. Continuous Compliance. Each unit shall be in compliance with the emission limitations and operating standards in this section at all times. [40 CFR 63.6605(a)]

D.20. Operation and Maintenance of Equipment. At all times the owner or operator must operate and maintain, any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the compliance authority which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source. [40 CFR 63.6605(b)]

D.21. Continuous Compliance - Monitoring and Data. If the owner or operator must comply with emission and operating limitations, they must monitor and collect data according to this section.
a. Except for monitor malfunctions, associated repairs, and required quality assurance or control activities (including, as applicable, calibration checks and required zero and span adjustments), they must monitor continuously at all times that the stationary RICE is operating.
b. The owner or operator may not use data recorded during monitoring malfunctions, associated repairs, and required quality assurance or control activities in data averages and calculations used to report emission or operating levels. They must, however, use all the valid data collected during all other periods.
[40 CFR 63.6635(a)]

D.22. Continuous Compliance. The owner or operator must demonstrate continuous compliance by:
a. Conducting performance tests every 8,760 hours or 3 years, whichever comes first, for CO to demonstrate that the required CO percent reduction is achieved or that emissions remain at or below the CO concentration limit; and,
b. Collecting the approved operating parameter (if any) data according to 40 CFR 63.6625(b); and
c. Reducing these data to 4-hour rolling averages; and,
d. Maintaining the 4-hour rolling averages within the operating limitations for the operating parameters established during the performance test.
[40 CFR 63.6640(a) Table 6 10.i.]

Monitoring, Installation, Collection, Operation and Maintenance Requirements

D.23. CEMS. If the owner or operator elects to install a CEMS as specified in Table 5 of 40 CFR 63, Subpart ZZZZ, they must install, operate, and maintain a CEMS to monitor CO and either oxygen or carbon dioxide (CO_2) at both the inlet and the outlet of the control device according to the requirements in 40 CFR 63.6625(a)(1) through (4). [40 CFR 63.6625(a)]

D.24. Continuous Parameter Monitoring System (CPMS). If the owner or operator is required to install a continuous parameter monitoring system (CPMS) as specified in Table 5 of 40 CFR 63, Subpart ZZZZ, they must install, operate, and maintain each CPMS according to the requirements in 40 CFR 63.6625(b)(1) through (8). [40 CFR 63.6625(b)]

D.25. Crankcase Ventilation System. If you own or operate an existing non-emergency, non-black start CI engine greater than or equal to 300 HP that is not equipped with a closed crankcase ventilation system, you must comply with either 40 CFR 63.6625(g)(1) or (g)(2):

a. Install a closed crankcase ventilation system that prevents crankcase emissions from being emitted to the atmosphere. [40 CFR 63.6625(g)(1)]

b. Install an open crankcase filtration emission control system that reduces emissions from the crankcase by filtering the exhaust stream to remove oil mist, particulates, and metals. [40 CFR 63.6625(g)(2)]

Owners and operators must follow the manufacturer's specified maintenance requirements for operating and maintaining the open or closed crankcase ventilation systems and replacing the crankcase filters, or can request the Administrator to approve different maintenance requirements that are as protective as manufacturer requirements. [40 CFR 63.6625(g)]

D.26. Temperature Measurement Device. If the owner or operator has an operating limitation that requires the use of a temperature measurement device, they must meet the requirements in 40 CFR 63.6625(k)(1) through (4). [40 CFR 63.6625(k)]

Testing Requirements

D.27. Initial Compliance Testing. The owner or operator has demonstrated initial compliance when:

a. *CO Emissions.*

(1) The average reduction of emissions of CO determined from the initial performance test achieves the required CO percent reduction; and,

(2) The owner or operator has installed a CPMS to continuously monitor operating parameters approved by the Administrator (if any) according to the requirements in 40 CFR 63.6625(b); and,

(3) The owner or operator has recorded the approved operating parameters (if any) during the initial performance test.

[40 CFR 63.6630 Table 5]

D.28. Testing Frequency. The owner or operator must conduct performance tests every 8,760 hours or 3 years, whichever comes first. [40 CFR 63.6615 Table 3]

D.29. Measurements to Determine O_2 and CO.

a. *Measurements to Determine O_2.* The owner or operator must measure the O_2 at the inlet and outlet of the control device using a portable CO and O_2 analyzer according to the ASTM D6522–00 (2005) (incorporated by reference, see 40 CFR 63.14) requirements. Measurements to determine O_2 must be made at the same time as the measurements for CO concentration. Methods 3A and 10 may also be used as options to ASTM–D6522–00 (2005).

b. *Measurements to Determine CO.* The owner or operator must measure the CO at the inlet and the outlet of the control device using a portable CO and O_2 analyzer according to the ASTM D6522–00 (2005) (incorporated by reference, see 40 CFR 63.14) or Method 10 of 40 CFR appendix A requirements. The CO concentration must be at 15 percent O_2, dry basis. Methods 3A and 10 may also be used as options to ASTM–D6522–00 (2005). Method 320 of 40 CFR part 63, appendix A, or ASTM D6348–03 may also be used.

[40 CFR 63.6620 Table 4]

Recordkeeping Requirements

D.30. Notification, Performance and Compliance Records.

a. The owner or operator must keep a copy of each notification and report that the owner or operator submitted to comply with this section, including all documentation supporting any Initial Notification or Notification of Compliance Status that the owner or operator submitted.

b. The owner or operator must keep the records required in 40 CFR 63.6625(e) of this section to show continuous compliance with each emission limitation or operating requirement.

c. The owner or operator must keep records of the hours of operation of the engine that is recorded through the non-resettable hour meter. The owner or operator must document how many hours are spent for emergency operation including what classified the operation as emergency and how many hours are spent for non-emergency operation. If the engines are used for demand response operation, the owner or operator must keep records of the notification of the emergency situation, and the time the engine was operated as part of demand response.

[40 CFR 63.6655]

D.31. Malfunction Records.

a. The owner or operator must keep records of the occurrence and duration of each malfunction of operation (i.e. process equipment) or the air pollution control and monitoring equipment.

b. The owner or operator must keep records of actions taken during periods of malfunction to minimize emissions in accordance with 40 CFR 63.6605(b) of this section including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment to its normal or usual manner of operation.

[40 CFR 63.6655]

D.32. Maintenance Records.

a. The owner or operator must keep records of all required maintenance performed on the air pollution control and monitoring equipment.

b. The owner or operator must keep records of the maintenance conducted on the stationary RICE in order to demonstrate that the stationary RICE and after-treatment control device (if any) are operated and maintained according to its own maintenance plan.

[40 CFR 63.6655]

D.33. Performance Records. The owner or operator must keep records of performance tests and performance evaluations as required. [40 CFR 63.6655]

D.34. Record Retention.

a. The owner or operator must keep records in a suitable and readily available form for expeditious reviews.

b. The owner or operator must keep each record readily accessible in hard copy or electronic form for at least 5 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record.

[40 CFR 63.6660 and 40 CFR 63.10(b)(1)]

Reporting Requirements

D.35. Notification Requirements. The owner or operator must submit all of the notifications in 40CFR 63.7(b) and (c), 63.8(e), (f)(4) and (f)(6), 63.9(b) through (e), and (g) and (h) that apply to you by the dates specified. [40 CFR 63.6645(a)]

D.36. Notification of Intent to Conduct a Performance Test. If the owner or operator is required to conduct a performance test, they must submit a Notification of Intent to conduct a performance test at least 60 days before the performance test is scheduled to begin as required in 40 CFR 63.7(b)(1). [40 CFR 63.6645(g)]

D.37. Notification of Compliance Status. If the owner or operator is required to conduct a performance test as specified in Tables 4 and 5 of 40 CFR 63, Subpart ZZZZ, they must submit a Notification of Compliance Status according to 40 CFR 63.9(h)(2)(ii).

a. For each compliance demonstration required in Table 5 of 40 CFR 63, Subpart ZZZZ that does not include a performance test, the owner or operator must submit the Notification of Compliance Status before the close of business on the 30th day following the completion of the initial compliance demonstration.

b. For each compliance demonstration required in Table 5 of 40 CFR 63, Subpart ZZZZ that includes a performance test conducted according to the requirements in Table 3 of 40 CFR 63, Subpart ZZZZ, the owner or operator must submit the Notification of Compliance Status, including the performance test results, before the close of business on the 60th day following the completion of the performance test according to 40 CFR 63.10(d)(2).

[40 CFR 63.6645(h)]

D.38. Compliance Report. The owner or operator must submit a Compliance Report. The Report must contain:

a. If there are no deviations from any emission limitations or operating limitations that apply to the owner or operator, a statement that there were no deviations from the emission limitations or operating limitations during the reporting period. If there were no periods during which the CMS, including CEMS and CPMS, was out-of-control, as specified in 40 CFR 63.8(c)(7), a statement that there were not periods during which the CMS was out-of-control during the reporting period; or

b. If the owner or operator had a deviation from any emission limitation or operating limitation during the reporting period, the information in 40 CFR 63.6650(d). If there were periods during which the CMS, including CEMS and CPMS, was out-of-control, as specified in 40 CFR 63.8(c)(7), the information in 40 CFR 63.6650(e); or

c. If the owner or operator had a malfunction during the reporting period, the information in 40 CFR 63.6650(c)(4).

The owner or operator must submit the report semiannually according to the requirements in 40 CFR 63.6650(b).

[40 CFR 63.6650 (except 63.6650(g)) Table 7]

The specific conditions in this part of the subsection apply to the following group of emissions units:

	Group 4: "New" stationary CI RICE greater than or equal to 175 HP and less than or equal to 500 HP
E.U. ID No.	**Brief Description**
021	Emergency Generator - Operations Building (EPA Tier 3 certified) (SWA of PBC ID# OPS-E1)

{Permitting note: This part of the subsection addresses "new" stationary CI RICE greater than or equal to 175 HP and less than or equal to 500 HP, with a displacement less than 10 liters per cylinder, that are located at a major source of HAP and that have been modified, reconstructed or commenced construction on or after 6/12/2006 and have a 2007 or later model year. This RICE is not used as a fire pump.}

The following table provides important details for this emissions unit:

E.U. ID No.	Engine Brake HP	Date of Construction	Model Year	Primary Fuel	Type of Engine	Displacement liters/cylinder (l/c)	Manufacturer Model # Engine Serial #
021	250	2008	-	Diesel	Emergency	1.115	Cummings/Onan® DSGAB -

Applicability

D.39. Applicability. Pursuant to 40 CFR 63.6590(c), these engines must comply with 40 CFR 63, Subpart ZZZZ by meeting the requirements of NSPS 40 CFR 60, Subpart IIII. Pursuant to 40 CFR 63.6590(c), no further requirements apply to the engine under 40 CFR 63, Subpart ZZZZ. [Rules 62-204.800(11) & (8), F.A.C.; and, 40 CFR 63.6590(c)]

Essential Potential to Emit (PTE) Parameters

D.40. Allowable Fuel. The stationary RICE must use diesel fuel that meets the following requirements for non-road diesel fuel:

c. *Sulfur Content.* The sulfur content shall not exceed 15 ppm (0.0015% by weight) for non-road diesel fuel.

d. *Cetane and Aromatic.* The fuel must have a minimum cetane index of 40 or must have a maximum aromatic content of 35 volume percent.

[40 CFR 60.4207(b) and 40 CFR 80.510(b)]

D.41. Hours of Operation.

a. *Emergency Situations.* There is no time limit on the use of emergency stationary RICE in emergency situations. [40 CFR 60.4211(e)]

b. *Maintenance and Testing.* Each RICE is authorized to operate for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by federal, state, or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 100 hours per year. [40 CFR 60.4211(e)]

c. *Other Situations.* Each RICE cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity. [40 CFR 60.4219]

Emission Standards and Limitations

D.42. NMHC + NOx Emissions. Non-methane hydrocarbons and nitrogen oxide emissions shall not exceed 4.0 g/KW-hr {equivalent to: 3.2 lbs/hour (OPS-E1)}. [40 CFR 60.4205(b)]

D.43. CO Emissions. Carbon monoxide emissions shall not exceed 3.5 g/KW-hr {equivalent to: 1.4 lbs/hour (OPS-E1)}. [40 CFR 60.4205(b)]

D.44. PM Emissions. Particulate matter emissions shall not exceed 0.2 g/KW-hr {equivalent to: 4.3 lbs/hour (OPS-E1)}. [40 CFR 60.4205(b)]

D.45. Operation and Maintenance. The owner or operator must operate and maintain the stationary CI internal combustion engine according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer. In addition, owners and operators may only change those settings that are permitted by the manufacturer. The owner or operator must meet the requirements of 40 CFR 89, 94 and/or 1068, as they apply. [40 CFR 60.4211(a)]

Monitoring of Operations

D.46. Hour Meter. The owner or operator must install a non-resettable hour meter if one is not already installed. [40 CFR 60.4209(a)]

Compliance Requirements

D.47. Compliance Requirements. Owner or operator must demonstrate compliance according to one of the methods below:

e. *Certification.* Have purchased an engine certified according to 40 CFR 89 or 94, as applicable, for the same model year and maximum engine power.

f. *Manufacturer Data.* Keep records of engine manufacturer data indicating compliance with the standards.

g. *Vendor Data.* Keep records of control device vendor data indicating compliance with the standards.

h. *Performance Test.* Conduct an initial performance test to demonstrate compliance with the emission standards according to the testing requirements in this section.
i. *Similar Engine Tests.* Keep records of performance test results for each pollutant for a test conducted on a similar engine. The test must have been conducted using the same methods specified in this subpart and these methods must have been followed correctly.

[40 CFR 60.4211(b)]

Testing Requirements

D.48. Performance Test. Performance test must be conducted according to the in-use testing procedures in 40 CFR 1039, Subpart F. [40 CFR 60.4212]

D.49. Engine Manufacturer's Recommendations and Instructions. If the owner/operator does not install, configure, operate, and maintain the engine according to the manufacturer's recommendations and instructions, any required testing shall be completed in accordance with 40 CFR 60, Subpart IIII. [40 CFR 60.4212.]

D.50. Not to exceed (NTE) Standards. Exhaust emissions from stationary CI ICE that are complying with the emission standards must not exceed the not to exceed (NTE) numerical requirements, rounded to the same number of decimal places as the applicable standard, determined from the following equation: NTE = (1.25) x (Standard). [40 CFR 60.4212]

Recordkeeping Requirements

D.51. Required Records. Owner or operator must keep records of the operation of the engine in emergency and non-emergency service that are recorded through the non-resettable hour meter. The owner or operator must record the time of operation of the engine and the reason the engine was in operation during that time. [40 CFR 60.4214]

D.52. Record Retention.

a. The owner or operator must keep records in a suitable and readily available form for expeditious reviews.
b. The owner or operator must keep each record readily accessible in hard copy or electronic form for at least 5 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record.

[40 CFR 63.6660 and 40 CFR 63.10(b)(1)]

NSPS 40 CFR 60, Subpart A & IIII Requirements

D.53. NSPS Requirements - Subpart A. These emissions units shall comply with all applicable requirements of 40 CFR 60, Subpart A, General Provisions, including:

40 CFR 60.7, Notification and Recordkeeping
40 CFR 60.8, Performance Tests
40 CFR 60.11, Compliance with Standards and Maintenance Requirements
40 CFR 60.12, Circumvention
40 CFR 60.13, Monitoring Requirements
40 CFR 60.19, General Notification and Reporting Requirements,

which have been adopted by reference in Rule 62-204.800(8)(d), F.A.C.; except that the Secretary is not the Administrator for purposes of 40 CFR 60.4, 40 CFR 60.8(b)(2) and (3), 40 CFR 60.11(e)(7) and (8), 40 CFR 60.13(g), (i) and (j)(2), and 40 CFR 60.16. The applicable 40 CFR 60, Subpart A, General Provisions to which these emissions are subject to are found at 40 CFR 63.4218 and are included in **Appendix 40 CFR 60 Subpart A**. [Rule 62-204.800(8)(d), F.A.C.]

D.54. 40 CFR 60 Requirements - Subpart IIII [Generally Applicable Requirements]. These emissions units shall comply with all applicable requirements of 40 CFR 60, Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, which have been adopted by reference in Rule 62-204.800(8), F.A.C. These emissions units shall comply with **Appendix 40 CFR 60 Subpart IIII**

"Generally Applicable Requirements," included with this permit, which includes applicable requirements that apply in general to all engines regulated under 40 CFR 60, Subpart IIII. This appendix also contains useful information like definitions (see 40 CFR 60.4219) that are specific to engines regulated under 40 CFR 60 Subpart IIII. [Rule 62-204.800(8), F.A.C.]

The specific conditions in this part of the subsection apply to the following group of emissions units:

	Group 5: "New" stationary CI RICE greater than 500 HP
E.U. ID No.	**Brief Description**
016	Emergency Generator - Biosolids Pelletization Facility (BPF) (EPA Tier 3 certified) (SWA of PBC ID# BPF-E1)
042	Emergency Generator - Administration (EPA Tier 1 certified) (SWA of PBC ID# A-E1)
043	Emergency Generator - Materials Recovery Facility (MRF) (EPA Tier 2 certified) (SWA of PBC ID# MRF-E1)

{Permitting note: This part of the subsection addresses "new" stationary CI RICE greater than 500 HP, with a displacement less than 10 liters per cylinder, that are located at a major source of HAP and that have been modified, reconstructed or commenced construction on or after 12/19/2002 and have a pre-2007 or 2007 & later model year. These RICE are not used as fire pumps.}

The following table provides important details for these emissions units:

E.U. ID No.	Engine Brake HP	Date of Construction	Model Year	Primary Fuel	Type of Engine	Displacement liters/cylinder (l/c)	Manufacturer	Model #	Engine Serial #
016	550	2009	2007	Diesel	Emergency	2.33	Kohler®	350REOZDD	2180993
042	913	5/2/2006	2001	Diesel	Emergency	2.25	Caterpillar®	3412	BPG00204
043	775	2009	-	Diesel	Emergency	2.48	Cummings/Onan®	DFEG 60 Hz	-

Applicability

D.55. Applicability. Pursuant to 40 CFR 63.6590(c), these engines must comply with 40 CFR 63, Subpart ZZZZ by meeting the requirements of NSPS 40 CFR 60, Subpart IIII. Pursuant to 40 CFR 63.6590(c), no further requirements apply to the engine under 40 CFR 63, Subpart ZZZZ. [Rules 62-204.800(11) & (8), F.A.C.; and, 40 CFR 63.6590(c)]

Essential Potential to Emit (PTE) Parameters

D.56. Allowable Fuel. The stationary RICE must use diesel fuel that meets the following requirements for non-road diesel fuel:

a. *Sulfur Content.* The sulfur content shall not exceed 15 ppm (0.0015% by weight) for non-road diesel fuel.

b. *Cetane and Aromatic.* The fuel must have a minimum cetane index of 40 or must have a maximum aromatic content of 35 volume percent.

[40 CFR 60.4207(b) and 40 CFR 80.510(b)]

D.57. Hours of Operation.

a. *Emergency Situations.* There is no time limit on the use of emergency stationary RICE in emergency situations. [40 CFR 60.4211(e)]

b. *Maintenance and Testing.* Each RICE is authorized to operate for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by federal, state, or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 100 hours per year. [40 CFR 60.4211(e)]

c. *Other Situations.* Each RICE cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity. [40 CFR 60.4219]

Emission Standards and Limitations

D.58. The following emission standards and limitations apply to E.U. ID No. 016, Emergency Generator - Biosolids Pelletization Facility (BPF) (EPA Tier 3 certified):

a. NMHC + NOx Emissions. Non-methane hydrocarbons and nitrogen oxide emissions shall not exceed 4.0 g/KW-hr {equivalent to: 3.62 lbs/hour}. [40 CFR 60.4205(b)]

b. CO Emissions. Carbon monoxide emissions shall not exceed 3.5 g/KW-hr {equivalent to: 3.17 lbs/hour}. [40 CFR 60.4205(b)]

c. PM emissions. Particulate matter emissions shall not exceed 0.2 g/KW-hr{equivalent to: 0.18 lbs/hour}. [40 CFR 60.4205(b)]

D.59. The following emission standards and limitations apply to E.U. ID No. 042, Emergency Generator - Administration (EPA Tier 1 certified):

a. HC Emissions. Hydrocarbon emissions shall not exceed 1.3 g/KW-hr or 1.0 g/HP-hr {equivalent to: 1.9 lbs/hour}. [40 CFR 60.4205(a)]

b. NOx Emissions. Nitrogen oxide emissions shall not exceed 9.2 g/KW-hr or 6.9 g/HP-hr {equivalent to: 13.8 lbs/hour}. [40 CFR 60.4205(a)]

c. CO Emissions. Carbon monoxide emissions shall not exceed 11.4 g/KW-hr or 8.5 g/HP-hr {equivalent to: 17.1 lbs/hour}. [40 CFR 60.4205(a)]

d. PM emissions. Particulate matter emissions shall not exceed 0.54 g/KW-hr or 0.40 g/HP-hr {equivalent to: 0.8 lbs/hour}. [40 CFR 60.4205(a)]

D.60. The following emission standards and limitations apply to E.U. ID No. 043, Emergency Generator - Materials Recovery Facility (MRF) (EPA Tier 2 certified):

a. NMHC + NOx Emissions. Non-methane hydrocarbons and nitrogen oxide emissions shall not exceed 6.4 g/KW-hr {equivalent to: 7.95 lbs/hour}. [40 CFR 60.4205(b)]

b. CO Emissions. Carbon monoxide emissions shall not exceed 3.5 g/KW-hr {equivalent to: 4.35 lbs/hour}. [40 CFR 60.4205(b)]

c. PM emissions. Particulate matter emissions shall not exceed 0.2 g/KW-hr {equivalent to: 0.25 lbs/hour}. [40 CFR 60.4205(b)]

D.61. Operation and Maintenance. The owner or operator must operate and maintain the stationary CI internal combustion engine according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer. In addition, owners and operators may only change those settings that are permitted by the manufacturer. The owner or operator must meet the requirements of 40 CFR 89, 94 and/or 1068, as they apply. [40 CFR 60.4211(a)]

Monitoring of Operations

D.62. Hour Meter. The owner or operator must install a non-resettable hour meter if one is not already installed. [40 CFR 60.4209(a)]

Compliance Requirements

D.63. Compliance Requirements. Owner or operator must demonstrate compliance according to one of the methods below:

a. *Certification.* Have purchased an engine certified according to 40 CFR 89 or 94, as applicable, for the same model year and maximum engine power.
b. *Manufacturer Data.* Keep records of engine manufacturer data indicating compliance with the standards.
c. *Vendor Data.* Keep records of control device vendor data indicating compliance with the standards.
d. *Performance Test.* Conduct an initial performance test to demonstrate compliance with the emission standards according to the testing requirements in this section.
e. *Similar Engine Tests.* Keep records of performance test results for each pollutant for a test conducted on a similar engine. The test must have been conducted using the same methods specified in this subpart and these methods must have been followed correctly.

[40 CFR 60.4211(b)]

Testing Requirements

D.64. Performance Test. Performance test must be conducted according to the in-use testing procedures in 40 CFR 1039, Subpart F. [40 CFR 60.4212]

D.65. Engine Manufacturer's Recommendations and Instructions. If the owner/operator does not install, configure, operate, and maintain the engine according to the manufacturer's recommendations and instructions, any required testing shall be completed in accordance with 40 CFR 60, Subpart IIII. [40 CFR 60.4212.]

D.66. Not to exceed (NTE) Standards. Exhaust emissions from stationary CI ICE that are complying with the emission standards must not exceed the not to exceed (NTE) numerical requirements, rounded to the same number of decimal places as the applicable standard, determined from the following equation: NTE = (1.25) x (Standard). [40 CFR 60.4212]

Recordkeeping Requirements

D.67. Required Records. Owner or operator must keep records of the operation of the engine in emergency and non-emergency service that are recorded through the non-resettable hour meter. The owner or operator must record the time of operation of the engine and the reason the engine was in operation during that time. [40 CFR 60.4214]

D.68. Record Retention.

a. The owner or operator must keep records in a suitable and readily available form for expeditious reviews.
b. The owner or operator must keep each record readily accessible in hard copy or electronic form for at least 5 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record.

[40 CFR 63.6660 and 40 CFR 63.10(b)(1)]

NSPS 40 CFR 60, Subpart A & IIII Requirements

D.69. NSPS Requirements - Subpart A. These emissions units shall comply with all applicable requirements of 40 CFR 60, Subpart A, General Provisions, including:

40 CFR 60.7, Notification and Recordkeeping
40 CFR 60.8, Performance Tests

40 CFR 60.11, Compliance with Standards and Maintenance Requirements
40 CFR 60.12, Circumvention
40 CFR 60.13, Monitoring Requirements
40 CFR 60.19, General Notification and Reporting Requirements,
which have been adopted by reference in Rule 62-204.800(8)(d), F.A.C.; except that the Secretary is not the Administrator for purposes of 40 CFR 60.4, 40 CFR 60.8(b)(2) and (3), 40 CFR 60.11(e)(7) and (8), 40 CFR 60.13(g), (i) and (j)(2), and 40 CFR 60.16. The applicable 40 CFR 60, Subpart A, General Provisions to which these emissions are subject to are found at 40 CFR 63.4218 and are included in **Appendix 40 CFR 60 Subpart A.** [Rule 62-204.800(8)(d), F.A.C.]

D.70. 40 CFR 60 Requirements - Subpart IIII [Generally Applicable Requirements]. These emissions units shall comply with all applicable requirements of 40 CFR 60, Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, which have been adopted by reference in Rule 62-204.800(8), F.A.C. These emissions units shall comply with **Appendix 40 CFR 60 Subpart IIII "Generally Applicable Requirements,"** included with this permit, which includes applicable requirements that apply in general to all engines regulated under 40 CFR 60, Subpart IIII. This appendix also contains useful information like definitions (see 40 CFR 60.4219) that are specific to engines regulated under 40 CFR 60 Subpart IIII. [Rule 62-204.800(8), F.A.C.]

THE FOLLOWING SPECIFIC CONDITIONS APPLY TO ALL GROUPS OF EMISSIONS UNITS.

Operation and Maintenance Requirements

{Permitting note: TABLE E-1. SUMMARY OF MAINTENANCE REQUIREMENTS FOR ENGINES, summarizes maintenance requirements under 40 CFR 63, Subpart ZZZZ for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.}

Test Methods and Procedures

D.71. Common Testing Requirements. Any tests, if required, shall be conducted in accordance with the requirements and procedures specified in Appendix TR, Facility-Wide Testing Requirements, of this permit. [Rule 62-297.310, F.A.C.]

Recordkeeping and Reporting Requirements

D.72. Other Reporting Requirements. See Appendix RR, Facility-Wide Reporting Requirements, for additional reporting requirements. [Rule 62-213.440, F.A.C.]

NESHAP 40 CFR 63, Subpart A & ZZZZ Requirements

D.73. 40 CFR 63 Requirements - Subpart A. These emissions units shall comply with all applicable requirements of 40 CFR 63, Subpart A, General Provisions, which have been adopted by reference in Rule 62-204.800(11)(d)1., F.A.C., except that the Secretary is not the Administrator for purposes of 40 CFR 63.5(e), 40 CFR 63.5(f), 40 CFR 63.6(g), 40 CFR 63.6(h)(9), 40 CFR 63.6(j), 40 CFR 63.13, and 40 CFR 63.14. The applicable 40 CFR 63, Subpart A, General Provisions to which these emissions are subject to are found at 40 CFR 63.6665 and are included in **Appendix 40 CFR 63 Subpart A.** [Rule 62-204.800(11)(d)1., F.A.C.]

D.74. 40 CFR 63 Requirements - Subpart ZZZZ [Generally Applicable Requirements]. These emissions units shall comply with all applicable requirements of 40 CFR 63, Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE), which have been adopted by reference in Rule 62-204.800(11)(b), F.A.C. These emissions units shall comply with **Appendix 40 CFR 63 Subpart ZZZZ "Generally Applicable Requirements,"** included with this permit, which includes applicable requirements that apply in general to all engines regulated under 40 CFR 63 Subpart ZZZZ. This appendix also contains useful information like provisions that are not delegated to state or local agencies (see 40 CFR 63.6670) and contains definitions (see 40 CFR 63.6675) that are specific to engines regulated under 40 CFR 63 Subpart ZZZZ. [Rule 62-204.800(11)(b), F.A.C.]

SECTION IV. APPENDICES.

The Following Appendices are Enforceable Parts of This Permit:

Appendix A, Glossary.
Appendix ATP, U.S. EPA Alternative Test Procedure Approval dated June 3, 2004.
Appendix BW, Biomedical Waste Definitions.
Appendix CAM, Compliance Assurance Monitoring Plan.
Appendix HGV, DEP Order Granting Variance for Mercury Testing dated August 25, 1997.
Appendix I, List of Insignificant Emissions Units and/or Activities.
Appendix RR, Facility-wide Reporting Requirements.
Appendix TR, Facility-wide Testing Requirements.
Appendix TV, Title V General Conditions.
Appendix U, List of Unregulated Emissions Units and/or Activities.

Appendix 40 CFR 60 Subpart A, NSPS General Provisions (version dated 2/5/2010).
Appendix 40 CFR 60 Subpart Cb, Emissions Guidelines (EG) and Compliance Times for Large Municipal Waste Combustors (version dated 03/24/2010).
Appendix 40 CFR 60 Subpart Eb, NSPS for Large Municipal Waste Combustors (version dated 04/21/2008).
Appendix 40 CFR 60 Subpart IIII "Generally Applicable Requirements," Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (version dated 07/11/2006).
Appendix 40 CFR 60 Subpart WWW, NSPS for Municipal Solid Waste Landfills (version dated 08/06/2009).
Appendix 40 CFR 61 Subpart A, NESHAP General Provisions (version dated 05/06/2004).
Appendix 40 CFR 61 Subpart E, NESHAP for Mercury (version dated 03/20/03).
Appendix 40 CFR 61 Subpart M "Set A," NESHAP for Asbestos (version dated 08/19/2004).
Appendix 40 CFR 63 Subpart A, NESHAP General Provisions (version dated 01/29/2008).
Appendix 40 CFR 63 Subpart AAAA, NESHAP for Municipal Solid Waste Landfills (version dated 08/06/2009).
Appendix 40 CFR 63 Subpart ZZZZ "Generally Applicable Requirements," National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (version dated 06/30/2010)

May 2, 2013

Syed Arif
Program Administrator
Florida Department of Environmental Protection
Division of Air Resource Management
Office of Permitting & Compliance
2600 Blair Stone Road, MS #5505
Tallahassee, FL 32399-2400

Subject: Biosolids Pelletization Facility (BPF)
Request for Preliminary Testing Venturi Scrubber – CAM Plan Criteria
Impingement Tray Scrubber and Cyclone Separator Retrofit
Title V Air Operating Permit No. 0990234-022-AV

Dear Mr. Arif:

The Solid Waste Authority of Palm Beach County (Authority) owns a Biosolids Pelletization Facility (BPF) that is collocated with the Authority's North County Resource Recovery Facility in West Palm Beach, Florida. The BPF is operated by the New England Fertilizer Company (NEFCO) under FDEP Title V Air Operating Permit No. 0990234-022-AV.

On December 13, 2012, the Department issued an exemption from obtaining an Air Construction permit for the Impingement Tray Scrubber and Cyclone Separator Retrofit Project at the BPF. As part of the authorization, we are to conduct particulate matter (PM/PM10) and visible emissions (VE) tests on both dryers 180 days after the tray scrubber/cyclonic separator work is complete. According to information submitted from NEFCO's consultant (CH2MHill), the BPF will now rely upon the venturi scrubbers for PM control to meet the PM/PM10 emission limits (BPF had not relied upon venturi scrubbers in the initial Title V permit application). Consequently, the Title V permit will be revised to include the venturi scrubbers in the CAM Plan.

NEFCO is proposing to perform diagnostic testing on the venturi scrubbers prior to the official stack test to determine operating criteria for the CAM Plan (see attachments). The test values range from 109 gpm to 0 gpm (zero flow), along with various pressure drops. The Authority is sending this letter to the Department to ask permission to perform the preliminary PM/PM10 testing at the proposed operating rates (i.e. no flow) for the venturi scrubbers.

7501 North Jog Road, West Palm Beach, Florida 33412 (561) 640-4000 FAX (561) 640-3400

NEFCO anticipates completing the tray scrubber/cyclonic separator work the second week of May and to complete emission testing on or before June 30, 2013. The Authority would greatly appreciate your prompt consideration of this approval to test the venturi scrubbers with no flow and variable rates because NEFCO wishes to proceed with the preliminary testing within the next few weeks. If you have any questions or need additional information, please contact Mary Beth Morrison at mmorrison@swa.org or at (561) 640-4000 ext. 4613.

Sincerely,

FOR

Mark Hammond
Executive Director

Enclosures

cc: Scott Sheplak, FDEP Tallahassee
Joe Lurix, FDEP SE District
Marc Bruner, SWA
Ray Schauer, SWA
Mary Beth Morrison, SWA
Bill Hansen, NEFCO

NEFCO
Recycle, Renew, Restore

April 30, 2013 via email

Mary Beth Morrison
Solid Waste Authority of Palm Beach County
7501 North Jog Road
West Palm Beach, FL 33412

RE: Scrubber tuning

Dear Mary Beth,

As we discussed, NEFCO would like to "tune" the operation of the venturi scrubbers serving the dryer systems at SWA. To reiterate, the dryers are equipped with both tray scrubbers and venturi scrubbers, and the tray scrubbers by themselves are very good PM collection devices. The venturi scrubbers clean the dryer exhaust minimally better than the trays (if at all) and merely contribute to excess operating cost.

In the conservative analysis prepared by NEFCO and sent to FDEP previous to the cyclone and scrubber modifications, the particle size distribution and mass loadings were worst-case. Moreover, the tray scrubbers' PM collection efficiency was based solely on the scrubbing effect of warm circulating water; i.e. no credit was taken due to condensation effects[1]. Under such a conservative analysis, and in the interest of time, NEFCO concluded that the venturi scrubbers should be operated at nominal flow conditions until stack testing could demonstrate adequate PM collection by the tray scrubbers alone.

NEFCO has herein provided stack test data to support operating the venturi scrubbers with reduced or zero water flow. Our Greater Lawrence Sanitary District (GLSD) dryers located in North Andover, MA are equipped with Sly tray scrubber/condensers and Sly venturi scrubbers much like those at SWA. The pressure drop and extrapolated water flows of the GLSD tray scrubbers are very similar to those at SWA subsequent to the most recent modification.

---

[1] Condensation has a beneficial effect on PM collection. For example, see Perry's Chemical Engineers Handbook, Sixth Edition, page 20-92.

In stack compliance testing in June 2003 at our GLSD facility, PM emission rates of 0.219, 0.190, 0.262, 0.293, 0.389, and 0.167 pounds per hour were measured with nominal water flow to the tray scrubber/condensers and with 35 gpm flowing to the venturi scrubbers.

In March 2008, NEFCO asked for and received permission from the Massachusetts DEP to conduct venturi tuning tests at GLSD similar to those proposed at SWA. With water supplied only to the tray scrubbers, PM emissions were 0.06, 0.01, 0.06, 0.05, 0.07, and 0.04 pounds per hour. PM emission rates were very close regardless of whether the venturi scrubbers were supplied with water. For unknown reasons, emissions were actually slightly lower with all scrubbing provided by the tray scrubbers and none by the venturi scrubbers.

A similar scenario was repeated in the initial stack testing in September 2009 when the SWA dryer systems were tested using just 10 gpm in each venturi (a fraction of the nominal water flow of 109 gpm).

The tested PM emission rates were an order of magnitude lower than the FDEP permit values: 0.172, 0.171, 0.144, 0.196, 0.193, and 0.191; compared with a permitted emission rate of 2.42.

Although the incorporation of venturi scrubbers in our dryer systems provides a certain amount of design comfort to regulators, developers and to clients, the venturis actually do little or nothing to further control PM above that provided by the trays scrubbers. Rather, in operation, the venturis simply consume power and create indirect emissions at off-site power plants.

We therefore ask permission to perform tuning stack tests with the tray scrubber/condensers operating at 1000 gpm or more per the CAM plan, at the venturi operating conditions below:

1. Dryer # 1, with venturi scrubber set at 109 gpm and 6" delta p
2. Dryer # 1, with venturi scrubber set at 55 gpm and 6" delta p
3. Dryer # 1, with venturi scrubber set at 10 gpm and maximum throat opening
4. Dryer # 1, with venturi scrubber set at 0 gpm and maximum throat opening
5. Dryer # 2, with venturi scrubber set at 109 gpm and 6" delta p
6. Dryer # 2, with venturi scrubber set at 55 gpm and 6" delta p
7. Dryer # 2, with venturi scrubber set at 10 gpm and maximum throat opening
8. Dryer # 2, with venturi scrubber set at 0 gpm and maximum throat opening

Each test is expected to take two hours. After the tuning tests are completed, the venturi scrubbers will be returned to operation at the current CAM plan conditions.

If the tuning tests indicate that less stringent venturi conditions will provide equivalent emission rates, NEFCO will then instruct the test firm to perform the compliance tests at those conditions. If tested PM emissions during tuning are unexpectedly high, the compliance tests will be performed at the current CAM plan conditions.

The last of the modifications to the air handling systems are scheduled to be complete by May 10. We plan to solicit proposals for stack testing starting tomorrow, with a due date of May 15, and to complete the testing on or before June 30, 2013.

Sincerely,

Michael W. Thayer
Technical Manager

cc Jim Greer, SWA
Brad Vermeulen, SWA
William Hansen, NEFCO
Manuel Irujo, NEFCO
Larry Bishop, NEFCO
Jordan Dimitrov, NEFCO

Enclosures (3)

New England Fertilizer Company
Lawrence, MA

Compliance Test Report for Dryer Units A and B

ENSR Corporation
July 2003
Document Number 10402-001-400

TABLE 2-2 UNIT A PARTICULATE RESULTS

Run No. Date Start Time Stop Time	Units	R1 04-Jun-03 1 1	R2 05-Jun-03 0 1	R3 05-Jun-03 1 1	AVGS
<u>**Sampling Parameters –**</u>					
Barometric Pressure	In. Hg	30.00	29.85	29.85	29.90
Volume Metered	dcf	76.954	79.039	83.337	79.777
Volume of Gas Collected	dscf	75.054	77.020	80.936	77.670
Moisture	% v/v	3.9	3.6	3.6	3.7
O_2 at Stack	% dry	10.92	11.39	11.57	11.29
CO_2 at Stack	% dry	8.04	7.95	7.72	7.90
Avg. Stack Temp.	°F	198	222	231	217
Stack Flowrate	dscfm	3,187	3,265	3,427	3,293
Isokinetics	%	100	100	100	100
<u>**Particulate Emission Results –**</u>					
Front Half Rinse	mg	2.9	3.2	2.3	2.8
Particulate Filter	mg	26.0	26.2	21.0	24.1
Condensible Particulate	mg	10.2	5.6	23.5	13.1
Total Particulate	mg	39.1	34.0	46.8	40.0
PM Loading @ 7% O_2	mg/dscm	25.55	22.71	30.32	26.19
Grain Loading	gr/dscf	0.008	0.007	0.009	0.008
Grain Loading @ 7% O_2	gr/dscf	0.011	0.010	0.013	0.011
Grain Loading @ 12% CO_2	gr/dscf	0.012	0.010	0.014	0.012
Emission Rate	lb/hr	0.219	0.190	0.262	0.224

TABLE 2-3 UNIT B PARTICULATE RESULTS

Run No.		1*	2	3	
Date		03-Jun-03	03-Jun-03	04-Jun-03	
Start Time	Units	0	1	0	
Stop Time		1	1	1	AVGS
Sampling Parameters --					
Barometric Pressure	in. Hg	29.95	29.95	30.00	29.98
Volume Metered	dcf	87.146	88.939	76.588	82.764
Volume of Gas Collected	dscf	81.563	85.113	74.246	79.679
Moisture	% v/v	8.0	8.0	8.0	8.0
O_2 at Stack	% dry	12.27	11.52	11.15	11.34
CO_2 at Stack	% dry	7.95	8.40	7.69	8.05
Avg. Stack Temp.	°F	220	224	240	232
Stack Flowrate	dscfm	3,284	3,545	3,055	3,300
Isokinetics	%	106	102	103	103
Particulate Emission Results --					
Front Half Rinse	mg	1.3	2.1	2.9	2.5
Particulate Filter	mg	26.4	30.3	18.4	24.4
Condensible Particulate	mg	27.5	38.3	9.4	23.9
Total Particulate	mg	55.20	70.70	30.70	60.70
PM Loading	mg/dscm	23.90	29.33	14.60	21.97
Grain Loading	gr/dscf	0.010	0.013	0.006	0.010
Grain Loading @ 7% O_2	gr/dscf	0.017	0.019	0.009	0.014
Grain Loading @ 12% CO_2	gr/dscf	0.016	0.018	0.010	0.014
Emission Rate	lb/hr	0.293	0.389	0.167	0.278

* Run number one failed final leak check due to a broken liner and results presented for Run 1 are for informational purposes only.

Emissions Test Report

Testing of Sludge Dryer Emission Controls at the Greater Lawrence Sanitary District North Andover, Massachusetts

Greater Lawrence Sanitary District
240 Charles St.
North Andover, Massachusetts 01845

TRC Environmental Corporation
Wannalancit Mills
650 Suffolk St
Lowell, Massachusetts 01854

March 2008

Table 2-1
Train A Results

Test Number	1	2	3	3 - Run Average	Permit Limit
Test Date	11/7/2007	11/7/2007	11/7/2007		
Start Time	845	1132	1422		
Stop Time	1053	1345	1627		
Stack Gas Properties					
Oxygen Concentration (% - dry)	11.46	10.65	11.08	11.07	
Carbon Dioxide Concentration (% - dry)	7.76	8.39	8.11	8.09	
Moisture Concentration (%)	8.18	9.28	9.28	8.91	
Gas Flow Rate (scfm - dry)	3,104	3,225	3,441	3,257	
Gas Flow Rate (scfm - wet)	3,380	3,555	3,793	3,576	
NOx Emissions					
Concentration (ppm-dry)	36.01	31.20	30.51	32.57	
Mass Emission Rate (lbs/hour)	0.80	0.72	0.75	0.76	**1.2**
Carbon Monoxide Emissions					
Concentration (ppm-dry)	20.66	21.39	21.80	21.28	
Mass Emission Rate (lbs/hour)	0.280	0.301	0.327	0.303	**0.89**
Sulfur Dioxide Emissions					
Concentration (ppm-dry)	0.00	0.00	0.14	0.05	
Mass Emission Rate (lbs/hour)	0.000	0.000	0.005	0.002	**1.3**
NMOC Emissions					
Concentration (ppm as propane-wet)	0.05	0.00	0.15	0.07	
Concentration (ppm as carbon-dry)	0.163	0.000	0.496	0.220	
Mass Emission Rate (lbs/hour)	0.001	0.000	0.004	0.002	**0.22**
Particulate Emissions					
Filterable Particulate (mg)	9.0	1.7	8.4	6.4	
Gas Sample Volume at Standard Conditions,	60.478	63.247	66.029	63.251	
Grain Loading, gr/dscf	2.29E-03	4.14E-04	1.96E-03	1.55E-03	
Mass Emission Rate (lbs/hour)	0.06	0.01	0.06	0.04	**0.64**
Metals Emissions					
Arsenic (ug)	< 3.75	< 3.75	< 3.75	< 3.75	
Cadium (ug)	5.13	2.43	< 0.12	< 2.56	
Gas Sample Volume at Standard Conditions,	60.478	63.247	66.029	63.251	
As Mass Emission Rate (lbs/hour)	< 2.55E-05	< 2.53E-05	< 2.59E-05	< 2.55E-05	**5.68E-05**
Cd Mass Emission Rate (lbs/hour)	3.48E-05	1.64E-05	< 8.27E-07	< 1.74E-05	**3.59E-04**

Table 2-2
Train B Results

Test Number	1	2	3	3 - Run Average	**Permit Limit**
Test Date	11/6/2007	11/6/2007	11/6/2007		
Start Time	918	1155	1437		
Stop Time	1125	1409	1647		
Stack Gas Properties					
Oxygen Concentration (% - dry)	12.15	12.12	12.00	12.09	
Carbon Dioxide Concentration (% - dry)	7.16	7.24	7.33	7.25	
Moisture Concentration (%)	11.37	9.37	9.51	10.08	
Gas Flow Rate (scfm - dry)	3,471	3,045	3,605	3,374	
Gas Flow Rate (scfm - wet)	3,916	3,359	3,984	3,753	
NOx Emissions					
Concentration (ppm-dry)	36.39	32.52	34.03	34.31	
Mass Emission Rate (lbs/hour)	0.90	0.71	0.88	0.83	1.2
Carbon Monoxide Emissions					
Concentration (ppm-dry)	8.26	7.98	8.22	8.15	
Mass Emission Rate (lbs/hour)	0.125	0.106	0.129	0.120	0.89
Sulfur Dioxide Emissions					
Concentration (ppm-dry)	0.15	0.00	0.10	0.08	
Mass Emission Rate (lbs/hour)	0.005	0.000	0.004	0.003	1.3
NMOC Emissions					
Concentration (ppm as propane-wet)	0.02	0.19	0.53	0.25	
Concentration (ppm as carbon-dry)	0.068	0.629	1.757	0.818	
Mass Emission Rate (lbs/hour)	0.001	0.004	0.014	0.006	0.22
Particulate Emissions					
Filterable Particulate (mg)	8.1	11.3	5.9	8.4	
Gas Sample Volume at Standard Conditions,	73.814	60.725	70.910	68.483	
Grain Loading, gr/dscf	1.69E-03	2.87E-03	1.28E-03	1.95E-03	
Mass Emission Rate (lbs/hour)	0.05	0.07	0.04	0.05	0.64
Metals Emissions					
Arsenic (ug)	4.45	< 3.75	< 3.75	< 3.98	
Cadium (ug)	< 0.12	1.03	< 0.12	< 0.42	
Gas Sample Volume at Standard Conditions,	73.814	60.725	70.910	68.483	
As Mass Emission Rate (lbs/hour)	2.77E-05	< 2.51E-05	< 2.52E-05	< 2.60E-05	**5.68E-05**
Cd Mass Emission Rate (lbs/hour)	< 7.46E-07	6.90E-06	< 8.08E-07	< 2.82E-06	**3.59E-04**

TEST REPORT

COMPLIANCE EMISSIONS TESTING

NEW ENGLAND FERTILIZER COMPANY

OCTOBER 12, 2009

PREPARED FOR:

New England Fertilizer Company
500 Victory Road, 4th Floor
North Quincy, Massachusetts 02171

CONCERNING:

Compliance Emissions Testing
Solid Waste Authority of Palm Beach County
North County Resource Recovery Facility (NCRRF)
Biosolids Pelletization Facility
7501 North Jog Road
West Palm Beach, Florida 33412
(FDEP) Permit No. 0990234-006-AC/PSD-FL-108F

PREPARED BY:

CK Environmental, Inc.
1020 Turnpike Street, Unit 8
Canton, MA 02021
CK Project No.3490

Environmental

Table 3-2
Summary of Performance Testing Emissions
NEFCO - SWA
Train #1 RTO Exhaust
Palm Beach, FLA
9/10/09

Test Run No.		M101A - Run 1	Run 2	Run 3	Average	Facility Permit Limit (lb / hr)
Date		9/10/09	9/10/09	9/10/09		
Time	Start	8:12	11:06	14:45		
	Stop	10:16	13:05	16:50		
Sample Conditions						
Volume	(dscf)^a	95.279	96.317	96.203	96.209	
Volume	(dscm)^b	2.698	2.728	2.724	2.724	
Isokinetics	(%)	91.6	93.9	93.3	93.3	
Sludge Feed Rate	(wet tons/hr)	14.1	14.4	14.5	14.3	
Stack Conditions						
Opacity	(%)	0	0	2	0	5
Flow Rate	(dscfm)^c	11,474	11,314	11,521	11,521	
Temperature	(°F)	278.5	277.6	285.8	283.8	
Moisture	(%)	11.2	11.1	9.6	9.5	
Oxygen	(%)	11.1	10.5	10.6	10.6	
Carbon Dioxide	(%)	3.5	9.0	8.8	8.8	
Oxides of Nitrogen	(PPM)	40.0	50.2	50.1	0.0	
Oxides of Nitrogen	(lb/hr)	3.3	4.1	4.1	3.8	5.6
Carbon Monoxide	(PPM)	14.6	13.8	17.9	15.4	
Carbon Monoxide	(lb/hr)	0.7	0.7	0.9	0.8	3.37
Volatile Organic Compounds	(PPM)	9.9	11.2	11.2	10.8	
Volatile Organic Compounds	(lb/hr)	0.78	0.87	0.88	0.84	1
Sulfur Dioxide	(PPM)	16.29	20.49	9.07	15.3	
Sulfur Dioxide	(lb/hr)	1.86	2.31	1.04	1.7	4.45
Mercury (Hg) Catch	(ug)	0.95	3.18	2.95		
Mercury (Hg) Catch	(mg)	0.00095	0.00318	0.00295	0.0	
Hg Concentration	(mg/dscf)	1.000E-05	3.298E-05	3.064E-05	2.45E-05	
Hg Emission Rate	(lb/hr)	1.5167E-05	4.9320E-05	4.6658E-05	3.70E-05	9.22E-04
Particulate Matter and PM10 Emissions						
Total PM Catch	(mg)	10.8	11.0	9.1	10.3	
Concentration	(mg/dscfm)	0.1134	0.1142	0.0946	0.1	
	(ug/dscfm)	113.351	0.972	0.788	38.4	
	(lb/mmbtu)	0.005	0.005	0.004		
Emission Rate	(lb/hr)	0.172	0.171	0.144	0.162	2.42

a) dry standard cubic feet
b) dry standard cubic meters
c) dry standard cubic feet per minute
d) based on PM emission rate

CK Environmental

Summary of Performance Testing Emissions
NEFCO - SWA
Train #2 RTO Exhaust
Palm Beach, FLA
9/12/09

Test Run No.		MI01A - Run 1	Run 2	Run 3	Average	Facility Permit Limit
Date		9/12/09	9/12/09	9/12/09		
Time	Start	12:32	15:20	19:34		
	Stop	14:36	17:30	21:40		
Sample Conditions						
Volume	(dscf)[a]	112.884	106.331	112.069	112.069	
Volume	(dscm)[b]	3.197	3.011	3.174	3.174	
Isokinetics	(%)	105.1	105.2	105.6	108.6	
Sludge Feed Rate	(wet tons/hr)	14.4	13.8	14.2	14.2	
Stack Conditions						
Opacity	(%)	0	0	0	0	5
Flow Rate	(dscfm)[c]	11,847	11,145	11,521	11,521	
Temperature	(°F)	274.7	258.0	313.4	313.4	
Moisture	(%)	9.9	11.9	11.4	11.4	
Oxygen	(%)	10.2	9.8	10.9	10.9	
Carbon Dioxide	(%)	9.1	9.4	10.3	10.3	
Oxides of Nitrogen	(PPM)	29.8	30.0	27.4	0.0	
Oxides of Nitrogen	(lb/hr)	2.5	2.4	2.3	2.4	5.6
Carbon Monoxide	(PPM)	20.2	20.0	32.0	24.1	
Carbon Monoxide	(lb/hr)	1.0	1.0	1.6	1.2	53.37
Volatile Organic Compounds	(PPM)	12.0	12.1	12.0	12.0	
Volatile Organic Compounds	(lb/hr)	0.97	0.92	0.95	0.95	1
Sulfur Dioxide	(PPM)	24.59	30.00	19.10	24.6	
Sulfur Dioxide	(lb/hr)	2.90	3.33	2.19	2.8	4.45
Mercury (Hg) Catch	(ug)	5.56	6.10	3.50		
Mercury (Hg) Catch	(mg)	0.00556	0.00610	0.00350	0.0	
Hg Concentration	(mg/dscf)	4.922E-05	5.741E-05	3.123E-05	4.60E-05	
Hg Emission Rate	(lb/hr)	7.7061E-05	8.4553E-05	4.7552E-05	6.97E-05	9.22E-04
Particulate Matter and PM10 Emissions						
Total PM Catch	(mg)	14.1	13.9	14.0	14.0	
Concentration	(mg/dscfm)	0.1249	0.1307	0.1249	0.1	
	(ug/dscfm)	1.190	1.247	1.212	1.2	
	(lb/mmbtu)	0.005	0.005	0.005		
Emission Rate	(lb/hr)	0.196	0.193	0.191	0.193	2.42

a) dry standard cubic feet
b) dry standard cubic meters
c) dry standard cubic feet per minute
d) based on PM emission rate

REQUEST FOR PROPOSALS

FOR

STACK TESTING SERVICES

AT THE

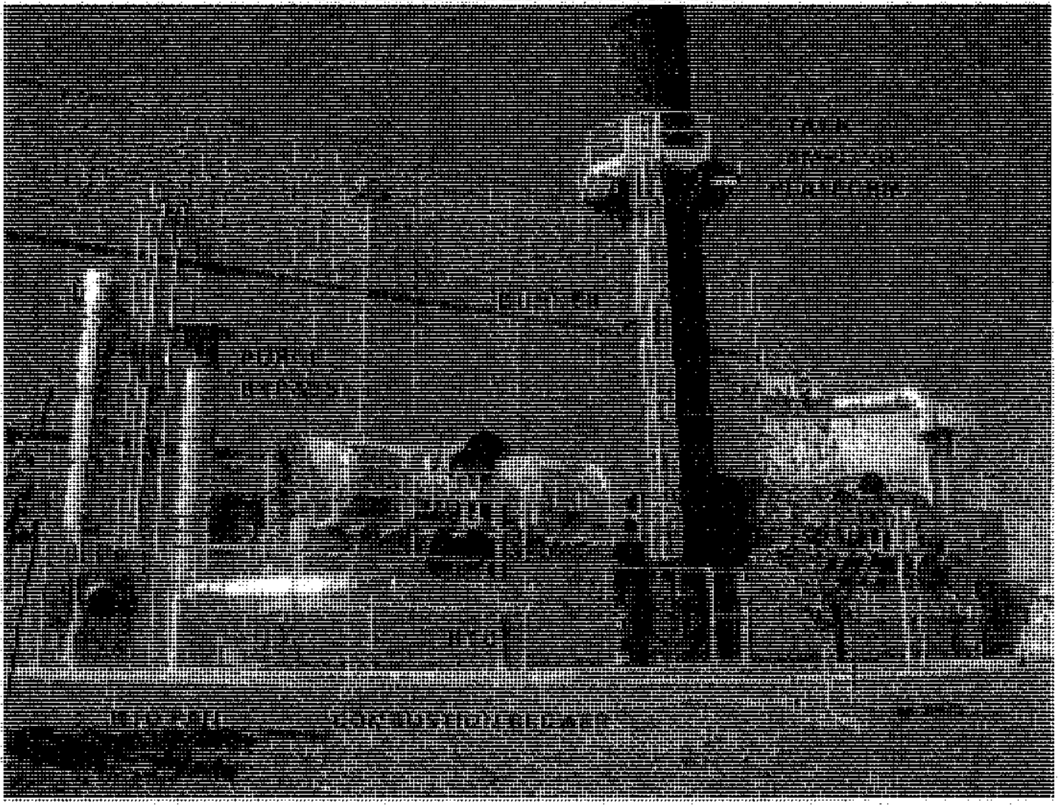
SOLID WASTE AUTHORITY OF PALM BEACH COUNTY

BIOSOLIDS DRYING FACILITY

APRIL 30, 2013

Proposals will be accepted until noon, May 15, 2013. Proposals should be addressed to New England Fertilizer Company, 500 Victory Road, Quincy MA 02171, Attn: Mike Thayer. Proposals may be mailed or emailed in protected format such as Adobe pdf files to sludgy@nefcobiosolids.com

STACK SAMPLING LOCATION



II. Preliminary "tuning":

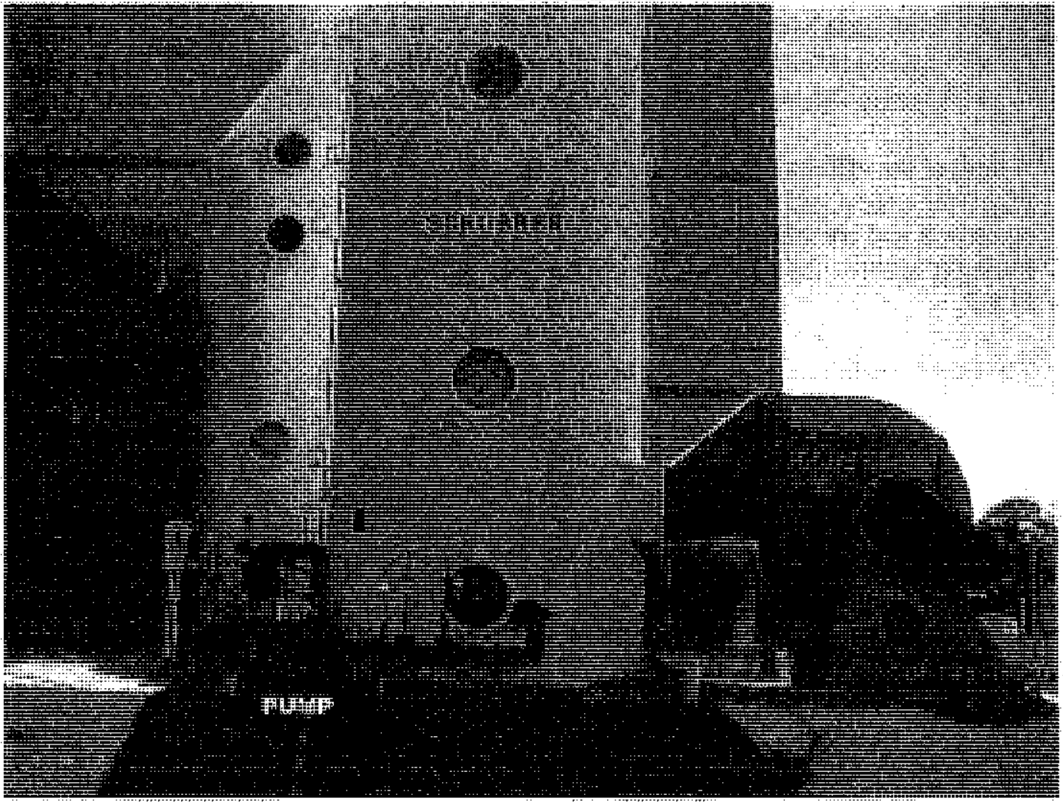
The preliminary test program will consist of eight initial PM tests to make adjustments to determine the best operating conditions for its pollution controls. VE testing of the dryers is not required during tuning. Each dryer system will be tuned and tested separately. All tests shall be conducted at the RTO outlet stack, and with the RTO operating.

The target conditions for all tests:

- Dryer feed rate between 25,000 and 28,000 (wet) pounds per hour
- 15 - 20% solids in feed
- >1000 gpm flow through tray scrubber
- RTO temperature setpoint at 1600°F

The separator outlet ducts have been drilled with ~ ½" diameter holes and tapped to allow insertion of pitot tubes. The ducts are accessible from the roof via a ladder inside the building.

ODOR SCRUBBERS

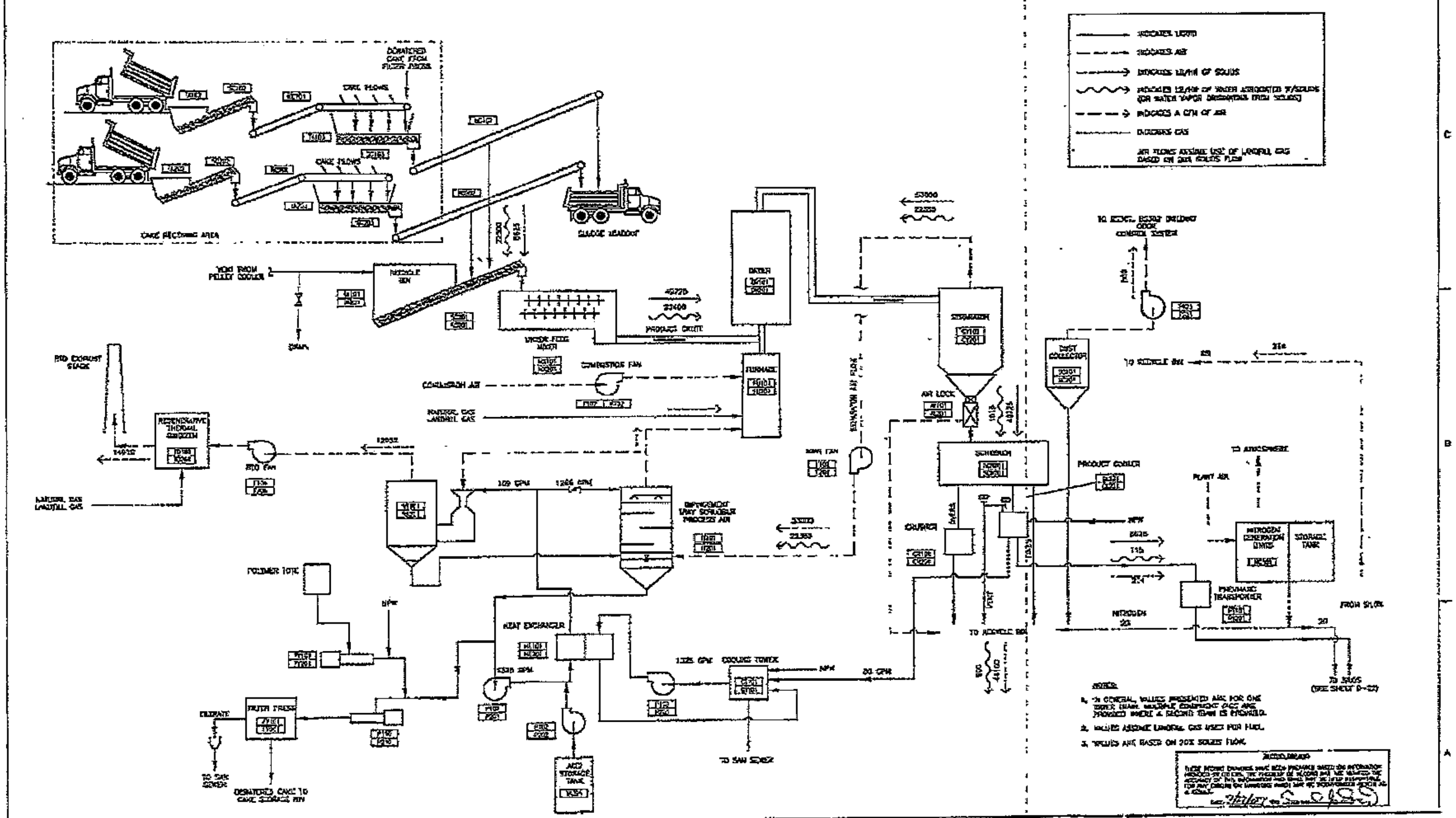


The odor control scrubber stacks are visible from ground level.

The site may be visited by proposers by contacting our on-site construction manager, Armand Asselin by phone 508-868-2128, or email: aasselin@nefcobiosolids.com.

Deliverables for tuning tests:

The PM and flow data collected during the tuning test program shall be summarized and presented in writing to NEFCO within 24 hours of the completion of the eight tests. Once the data has been received and reviewed by NEFCO, venturi scrubber operating adjustments will be made prior to the official testing.



NOTES:

1. IN GENERAL, VALUES PRESENTED ARE FOR ONE TRAIN. MULTIPLE COMPONENT TAGS ARE PROVIDED WHERE A SECOND TRAIN IS PROVIDED.
2. VALUES ASSUME LANDFILL GAS USED FOR FUEL.
3. VALUES ARE BASED ON 20% SOLIDS FLOW.

RECORD DRAWING

[illegible]

0	3/11/03	RECORD DRAWING
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	F. DeLaFOREST	CHK BY
ARCHITECTURAL	R. ANDREW	
STRUCTURAL	J. CRUGER	
CIVIL	R. THAMS	
PROCESS	F. DeLaFOREST	
MECHANICAL	B. SPOTT	
ELECTRICAL	R. LARSON	
	M. HENKEL	
PROJECT NUMBER	000000000024620	

PE NAME: Edward J. DeLaForest
PE # 62359
CA # 4213

HDR

BIOSOLIDS PROCESSING FACILITY

SWA Solid Waste Authority of Palm Beach County

MATERIAL FLOW DIAGRAM
RECORD DRAWING

FILENAME 202-D1.DWG
SCALE NONE

SHEET
D-01

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

BOB MARTINEZ CENTER
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

RICK SCOTT
GOVERNOR

HERSCHEL T. VINYARD JR.
SECRETARY

Sent by Electronic Mail - Received Receipt Requested

Mr. Mark Hammond, Executive Director
North County Regional Resource Recovery Facility
Solid Waste Authority of Palm Beach County
7501 North Jog Road
West Palm Beach, Florida 33412-2414

Re: North County Regional Resource Recovery Facility
Project No. 0990234-027-AC
CAM Testing - Venturi Scrubbers (Project)
Testing Authorization

Dear Mr. Hammond:

This is a response to your letter dated May 2, 2013, regarding the proposed stack testing to establish Compliance Assurance Monitoring (CAM) parameters for the modified tray scrubbers and cyclonic separators at the Biosolids Pelletization Facility (BPF) (project) at the North County Regional Resource Recovery Facility located in Palm Beach County at 7501 North Jog Road in West Palm Beach, Florida.

Determination: The permittee proposed stack testing to establish CAM parameters for the modified tray scrubbers and cyclonic separators at the BPF (project).

Pursuant to Rule 62-4.040(1)(b), Florida Administrative Code (F.A.C.) and for the reasons stated in the Technical Evaluation, the Office of Permitting and Compliance hereby determines that the proposed activity (project) will not emit air pollutants "*... in sufficient quantity, with respect to its character, quality or content, and the circumstances surrounding its location, use and operation, as to contribute significantly to the pollution problems within the State, so that the regulation thereof is not reasonably justified.*"

Section 403.061(18), Florida Statutes, authorizes the Department to encourage studies, investigations and research relating to pollution and its causes, effects, prevention, abatement and control. Stack testing was requested by the applicant to study scrubber performances.

Therefore, the permittee is authorized to conduct the proposed activity. The applicant shall submit the tuning stack tests and compliance stack tests along with the scrubbers' operating parameters during all of the testing to the Department. In the test results, the applicant shall indicate whether or not the venturi scrubbers are needed in fact to achieve the particulate matter (PM) emission limit. This testing authorization expires on **June 30, 2013**.

This determination may be revoked if the proposed activity is substantially modified or the basis for the authorization is determined to be materially incorrect. A copy of this letter shall be maintained at the site of the proposed activity. This decision is made pursuant to Chapter 403, Florida Statutes.

Permitting Authority: Applications for air construction permits are subject to review in accordance with the provisions of Chapter 403, Florida Statutes (F.S.) and Chapters 62-4, 62-210 and 62-212, F.A.C. The Permitting Authority responsible for making a determination for this project is the Office of Permitting and Compliance in the Department of Environmental Protection's Division of Air Resource Management. The Permitting Authority's physical and mailing address is: 2600 Blair Stone Road, MS #5505, Tallahassee, Florida 32399-2400. The Permitting Authority's telephone number is 850/717-9000.

Petitions: A person whose substantial interests are affected by the proposed 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 with (received by) the agency clerk in the Office of General Counsel of the Department of Environmental Protection, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. Petitions must be filed within 21 days of receipt of this exemption from air permitting requirements. A petitioner shall 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 (in a proceeding initiated by another party) will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205, F.A.C.

A petition that disputes the material facts on which the Permitting Authority's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner; the name, address and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of when and how each petitioner received notice of the agency action or proposed decision; (d) A statement of all disputed issues of material fact. If there are none, the petition must so state; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action including an explanation of how the alleged facts relate to the specific rules or statutes; and, (g) A statement of the relief sought by the petitioner, stating precisely the action the petitioner wishes the agency to take with respect to the agency's proposed action. A petition that does not dispute the material facts upon which the Permitting Authority's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301, F.A.C.

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

Mediation: Mediation is not available in this proceeding.

Effective Date: This decision is final and effective on the date filed with the clerk of the Permitting Authority unless a petition is filed in accordance with the above paragraphs or unless a request for extension of time in which to file a petition is filed within the time specified for filing a petition pursuant to Rule 62-110.106, F.A.C., and the petition conforms to the content requirements of Rules 28-106.201 and 28-106.301, F.A.C. Upon timely filing of a petition of a request for extension of time, this action will not be effective until further order of the Permitting Authority.

Judicial Review: Any party to this decision (order) has the right to seek judicial review of it under Section 120.68, F.S., by filing a notice of appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the clerk of the Department of Environmental Protection in the Office of General Counsel, Mail Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000, 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 must be filed within 30 days after this order is filed with the clerk of the Department.

Executed in Tallahassee, Florida

for Jeffery F. Koerner, Program Administrator
Office of Permitting and Compliance
Division of Air Resource Management

JFK/sa/sms

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this **Testing Authorization** and the **Technical Evaluation** were sent by electronic mail, or a link to these documents made available electronically on a publicly accessible server, with received receipt requested before the close of business on the date indicated below to the persons listed below.

Mr. Mark Hammond, SWA: mhammond@swa.org
Ms. Mary Beth Morrison, SWA: mmorrison@swa.org
Mr. Lee Hoefert, P.E., DEP SED: lee.hoefert@dep.state.fl.us
Mr. James Stormer, PBCHD: james_stormer@doh.state.fl.us
Ms. Cindy Mulkey, DEP Siting: cindy.mulkey@dep.state.fl.us
Ms. Heather Ceron, U.S. EPA Region 4: ceron.heather@epa.gov
Ms. Katy R. Forney, U.S. EPA Region 4: forney.kathleen@epa.gov
Ms. Barbara Friday, DEP OPC: barbara.friday@dep.state.fl.us
Ms. Lynn Scearce, DEP OPC: lynn.scearce@dep.state.fl.us

Clerk Stamp

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