1.0 INTRODUCTION

1.1 SUMMARY OF TEST PROGRAM

Tetra Tech, Inc. contracted Montrose Air Quality Services (Montrose) to conduct compliance stack emission testing for The City of Warren Waste Water Treatment Plant (WWTP) Sewage Sludge Incinerator (EUINCINERATOR). Testing was conducted to demonstrate compliance with Michigan Department of Environment, Great Lakes, and Energy (EGLE) Permit Number MI-ROP-B1792-2016, and 40 CFR 60 Subpart MMM. The testing was performed on June 16-17, 2020.

The specific objectives were to:

- Verify the concentrations (corrected to 7% oxygen (O_2)) of filterable particulate matter (PM), sulfur dioxide (SO_2), nitrogen oxides (NO_x), carbon monoxide (CO), polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans (PCDD/PCDF), hydrogen chloride (HCl), cadmium (Cd), lead (Pb), and mercury (Hg) at the EUINCINERATOR Scrubber Exhaust Stack
- Verify the emissions of filterable PM (lb/1000lb of 50% excess air (EA))
- Verify the percent total time of fugitive emissions at the Ash Loading Station associated with EUINCINERATOR
- Conduct the test program with a focus on safety

Montrose performed the tests to measure the emission parameters listed in Tables 1-1 and 1-2.

TABLE 1-1
SUMMARY OF TEST PROGRAM

Test Date(s)	Unit ID/ Source Name	Activity/ Parameters	Test Methods	No. of Runs	Duration (Minutes)
6/16/2020	EUINCINERATOR	Velocity/Volumetric Flow Rate	EPA 1 & 2	3	84
6/16/2020	EUINCINERATOR	O_2, CO_2	EPA 3A	3	84
6/16/2020	EUINCINERATOR	Moisture	EPA 4	3	84
6/16/2020	EUINCINERATOR	FPM, HCl	EPA 5 & 26A	3	84
6/16/2020	EUINCINERATOR	SO_2	EPA 6C	3	84
6/16/2020	EUINCINERATOR	NOx	EPA 7E	3	84
6/16/2020	EUINCINERATOR	CO	EPA 10	3	84
6/16/2020	Ash Handling System	Fugitive Emissions	EPA 22	3	60

6/17/2020	EUINCINERATOR	Velocity/Volumetric Flow Rate	EPA 1 & 2	3	120
6/17/2020	EUINCINERATOR	O_2, CO_2	EPA 3A	3	120
6/17/2020	EUINCINERATOR	Moisture	EPA 4	3	120
6/17/2020	EUINCINERATOR	PCDD/PCDF	EPA 23	3	120
6/17/2020	EUINCINERATOR	Velocity/Volumetric Flow Rate	EPA 1 & 2	3	120
6/17/2020	EUINCINERATOR	O_2, CO_2	EPA 3A	3	120
6/17/2020	EUINCINERATOR	Moisture	EPA 4	3	120
6/17/2020	EUINCINERATOR	Multi-Metals	EPA 29	3	120

To simplify this report, a list of Units and Abbreviations is included in Appendix D.1. Throughout this report, chemical nomenclature, acronyms, and reporting units are not defined. Please refer to the list for specific details.

This report presents the test results and supporting data, descriptions of the testing procedures, descriptions of the facility and sampling locations, and a summary of the quality assurance procedures used by Montrose. The average emission test results are summarized and compared to their respective permit limits in Tables 1-2 and 1-3. Detailed results for individual test runs can be found in Section 4.0. All supporting data can be found in the appendices.

The testing was conducted by the Montrose personnel listed in Table 1-4. The tests were conducted according to the test plan (protocol) dated April 6, 2020 that was submitted to EGLE.

TABLE 1-2
SUMMARY OF AVERAGE COMPLIANCE RESULTS - EUINCINERATOR
JUNE 16, 2020

Parameter/Units	Average Results	Emission Limits	% of Limit
Filterable Particulate Matter (FPM)			
mg/dscm	4.97	-	-
mg/dscm @ 7% O_2	6.15	80.0	7.7
lb/1000lb @ 50% Excess Air	0.0048	0.2	2.4
Hydrogen Chloride (HCl)			
ppmvd	0.45	-	-
ppmvd @ 7% O_2	0.56	1.2	46.7
Fugitive Emissions			
%	0.0	5.0	0.0
Sulfur Dioxide (SO_2)			
ppmvd*	<1.79	-	-
ppmvd @ 7% O_2*	<2.22	26	8.5
Nitrogen Oxides (NO_x as NO_2)			
ppmvd	149	-	-
ppmvd @ 7% O_2	185	220	83.9
Carbon Monoxide (CO)			
ppmvd	1,891	-	-
ppmvd @ 7% O_2	2,340	3,800	61.6

* The "<" symbol indicates that compound was below the Minimum Detection Limit (MDL) of the analytical method. See Section 4.2 for details.

TABLE 1-3
SUMMARY OF AVERAGE COMPLIANCE RESULTS -
EUINCINERATOR
JUNE 17, 2020

Parameter/Units	Average Results	Emission Limits	% of Limit
Cadmium (Cd)			
mg/dscm*	<0.0030	-	-
mg/dscm @ 7% O_2*	<0.0040	0.095	4.2
Lead (Pb)			
mg/dscm	0.020	-	-
mg/dscm @ 7% O_2	0.027	0.3	9.0
Mercury (Hg)			
mg/dscm	0.035	-	-
mg/dscm @ 7% O_2	0.045	0.28	16.1
Total Toxic Equivalents as 2,3,7,8-tetrachlorodibenzo-p-dioxin, 2005 WHO Factors			
ng/dscm	0.020	-	-
ng/dscm @ 7% O_2	0.026	0.32	8.1

* The "<" symbol indicates that compound was below the Minimum Detection Limit (MDL) of the analytical method. See Section 4.2 for details.

1.2 KEY PERSONNEL

A list of project participants is included below:

Facility Information

Source Location:	City of Warren WWTP	
Project Contact:	Todd Schaedig	Ted Bishop
Role:	Facility Engineer	Sr. Project Manager
Company:	City of Warren WWTP	Tetra Tech, Inc
Telephone:	586-264-2530 ext 8203	248-991-9702
Email:	tschaedig@cityofwarren.org	Ted.bishop@tetratech.com

Agency Information

Regulatory Agency:	EGLE
Agency Contact:	Karen Kajiya-Mills
Telephone:	517-256-0880
Email:	kajiya-millsk@michigan.gov

Testing Company Information

Testing Firm:	Montrose Air Quality Services, LLC	
Contact:	Matthew Young	Mason Sakshaug
Title:	District Manager	Client Project Manager
Telephone:	248-548-8070	248-548-8070
Email:	myoung@montrose-env.com	msakshaug@montrose-env.com

In-House Laboratory Information

Laboratory:	Montrose Detroit
City, State:	Royal Oak, MI
Method:	5

Laboratory Information

Laboratory:	Enthalpy Analytical, LLC
City, State:	Durham, NC
Method:	23, 26A, 29

Test personnel and observers are summarized in Table 1-4.

TABLE 1-4
TEST PERSONNEL AND OBSERVERS

Name	Affiliation	Role/Responsibility
Matthew Young	Montrose	District Manager, QI
Mason Sakshaug	Montrose	Field Project Manager, QI
David Trahan	Montrose	Field Technician
Ben Durham	Montrose	Field Technician
Ted Bishop	Tetra Tech, Inc.	Observer/Client Liaison/Test Coordinator
Todd Schaedig	City of Warren WWTP	Observer/Plant Engineer/Test Coordinator

2.0 PLANT AND SAMPLING LOCATION DESCRIPTIONS

2.1 PROCESS DESCRIPTION, OPERATION, AND CONTROL EQUIPMENT

The City of Warren owns and operates a multiple hearth sewage sludge incinerator located at the City Waste Water Treatment Plant in Warren, Michigan. The incinerator combusts natural gas and sewage sludge, a product of secondary and tertiary waste water treatment processes, also known as biosolids. The incinerator exhaust gases pass through a wet scrubber prior to discharge to atmosphere. The incinerator vents into a VenturiPak™ scrubber system which consists of a quench vessel, a multistage VenturiPak scrubber vessel and a pump skid with associated field instrumentation. The exhaust gases exit the multiple hearth incinerator breech and flow directly into the quencher/scrubber system. The quench vessel cools the exhaust gases and commences the scrubbing process before the gases enter the scrubber vessel. The main components of the VenturiPak scrubber vessel are the impingement tray stage, venturi stage, separator stage, and high efficiency mesh pad mist eliminator stage. The impingement tray stage conditions the gases by lowering the temperature to moisture saturation and condensing volatile compounds. The venturi stage utilizes finely atomized water droplets combined with differential velocity to scrub gas entrained aerosols and fine particulate that penetrate the preceding stages. The separator impingement tray and mesh pad mist eliminator remove any remaining dirty water droplets from the gas stream. The capacity of the VenturiPak Is custom designed to accommodate the incinerator with an inlet flow rate of 59,725 ACFM @ -10" water column (WC) and inlet temperature of 1200°F. The efficiency of the VenturiPak varies depending on the pollutant but generally will remove 99+ %. The system is guaranteed to meet the regulatory limits, which are defined in Tables 1-2 and 1-3.

During testing the emission unit EUINCINERATOR was in operation.

2.2 FLUE GAS SAMPLING LOCATIONS

Information regarding the sampling locations is presented in Table 2-1.

TABLE 2-1
SAMPLING LOCATIONS

Sampling Location	Stack Inside Diameter (in.)	Distance from Nearest Disturbance: Downstream EPA "B" (in./dia.)	Distance from Nearest Disturbance: Upstream EPA "A" (in./dia.)	Number of Traverse Points
EUINCINERATOR Scrubber Exhaust Stack	47.5	144.0 / 3.0	360.0 / 7.6	Isokinetic: 24 (12/port) Gaseous: 12 (6/port)

Sample locations were verified in the field to conform to EPA Method 1. Acceptable cyclonic flow conditions were confirmed prior to testing using EPA Method 1, Section 11.4. See Appendix A.1 for more information.

2.3 OPERATING CONDITIONS AND PROCESS DATA

The EUINCINERATOR was tested while operating at or near normal operating capacity.

Plant personnel were responsible for establishing the test conditions and collecting all applicable unit-operating data. The process data that was provided is presented in Appendix B. Data collected includes the following parameters:

- Sludge feed rate, wet ton/hour
- Hearth temperatures, °F
- Scrubber flow rate, gallon/min
- Scrubber differential pressure, inches WC (water column)
- Scrubber water, pH
- Grab Samples of sludge feed for solid/moisture, %
- Center shaft gearbox, RPMs

3.0 SAMPLING AND ANALYTICAL PROCEDURES

3.1 TEST METHODS

The test methods for this test program were presented previously in Table 1-1. Additional information regarding specific applications or modifications to standard procedures is presented below.

3.1.1 EPA Method 1, Sample and Velocity Traverses for Stationary Sources

EPA Method 1 is used to assure that representative measurements of volumetric flow rate are obtained by dividing the cross-section of the stack or duct into equal areas, and then locating a traverse point within each of the equal areas. Acceptable sample locations must be located at least two stack or duct equivalent diameters downstream from a flow disturbance and one-half equivalent diameter upstream from a flow disturbance.

The sample port and traverse point locations are detailed in Appendix A.

3.1.2 EPA Method 2, Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube)

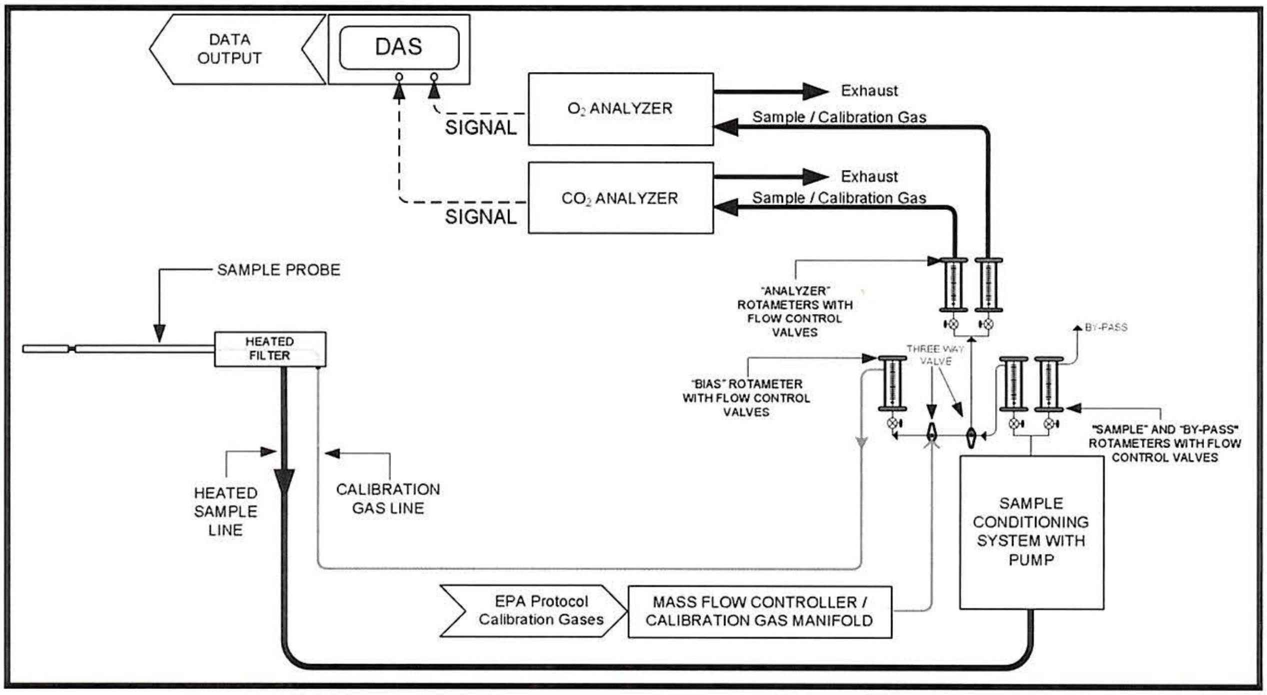
EPA Method 2 is used to measure the gas velocity using an S-type pitot tube connected to a pressure measurement device, and to measure the gas temperature using a calibrated thermocouple connected to a thermocouple indicator. Typically, Type S (Stausscheibe) pitot tubes conforming to the geometric specifications in the test method are used, along with an inclined manometer. The measurements are made at traverse points specified by EPA Method 1.

3.1.3 EPA Method 3A, Determination of Oxygen and Carbon Dioxide Concentrations in Emissions from Stationary Sources (Instrumental Analyzer Procedure)

EPA Method 3A is an instrumental test method used to measure the concentration of O_2 and CO_2 in stack gas. The effluent gas is continuously or intermittently sampled and conveyed to analyzers that measure the concentration of O_2 and CO_2. The performance requirements of the method must be met to validate data.

The typical sampling system is detailed in Figure 3-1 and 3-3.

FIGURE 3-1
EPA METHODS 3A (O_2/CO_2) SAMPLING TRAIN



3.1.4 EPA Method 4, Determination of Moisture Content in Stack Gas

EPA Method 4 is a manual, non-isokinetic method used to measure the moisture content of gas streams. Gas is sampled at a constant sampling rate through a probe and impinger train. Moisture is removed using a series of pre-weighed impingers containing methodology-specific liquids and silica gel immersed in an ice water bath. The impingers are weighed after each run to determine the percent moisture.

The typical sampling system is detailed in Figures 3-2, 3-4, and 3-5.

3.1.5 EPA Method 5, Determination of Particulate Matter from Stationary Sources

EPA Method 5 is a manual, isokinetic method used to measure FPM emissions. The samples are analyzed gravimetrically. This method is performed in conjunction with EPA Methods 1 through 4. The stack gas is sampled through a nozzle, probe, filter, and impinger train. FPM results are reported in emission concentration and emission rate units.

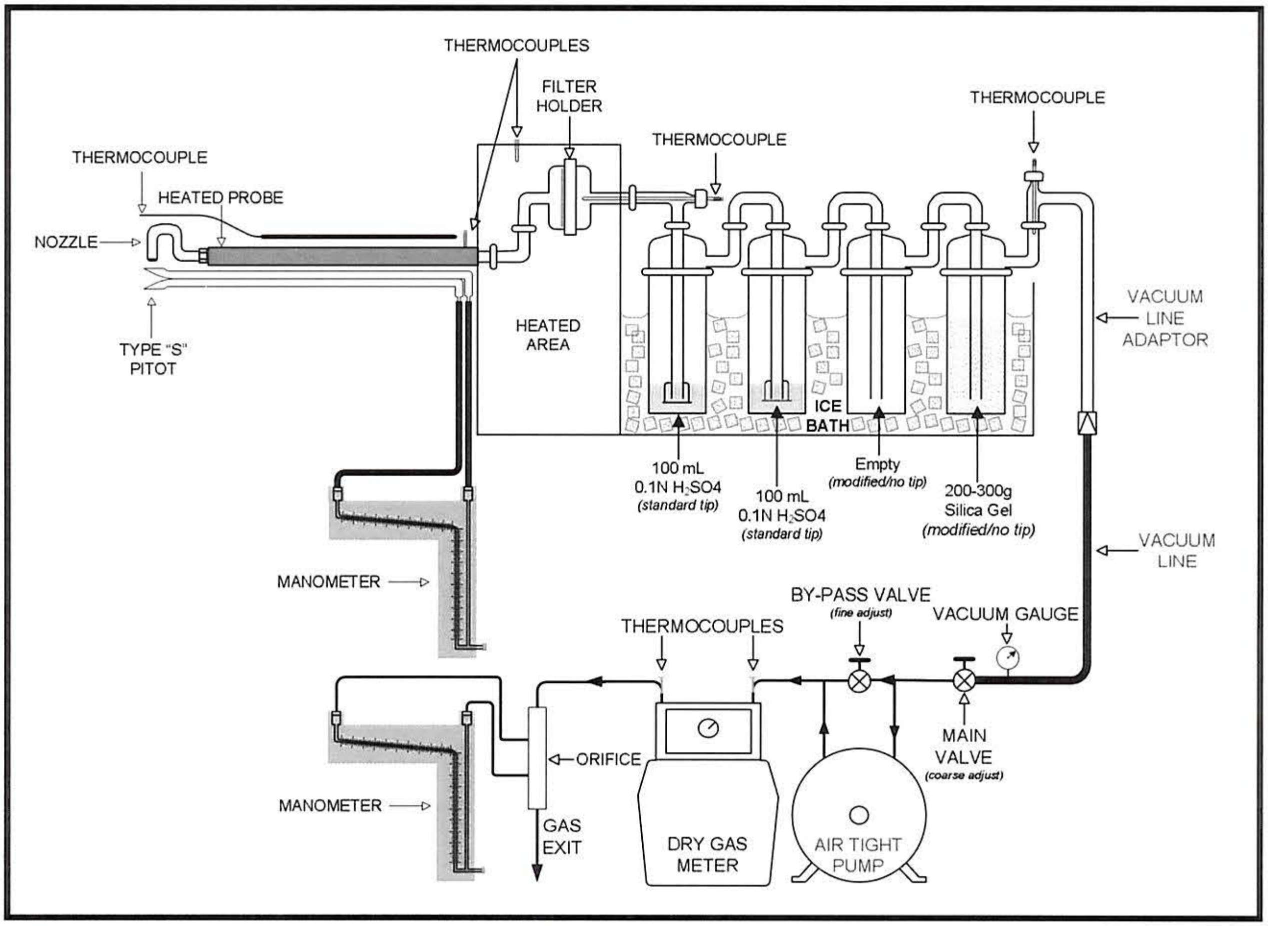
The typical sampling system is detailed in Figure 3-2.

3.1.6 EPA Method 6C, Determination of Sulfur Dioxide Emissions from Stationary Sources (Instrumental Analyzer Procedure)

EPA Method 6C is an instrumental test method used to continuously measure emissions of SO_2. Conditioned gas is sent to an analyzer to measure the concentration of SO_2. The performance requirements of the method must be met to validate the data.

The typical sampling system is detailed in Figure 3-3.

FIGURE 3-2
US EPA METHOD 5/26A (HALIDES) SAMPLING TRAIN



3.1.7 EPA Method 7E, Determination of Nitrogen Oxides Emissions from Stationary Source (Instrumental Analyzer Procedure)

EPA Method 7E is an instrumental test method used to continuously measure emissions of NO_x as NO_2. Conditioned gas is sent to an analyzer to measure the concentration of NO_x. NO and NO_2 can be measured separately or simultaneously together but, for the purposes of this method, NO_x is the sum of NO and NO_2. The performance requirements of the method must be met to validate the data.

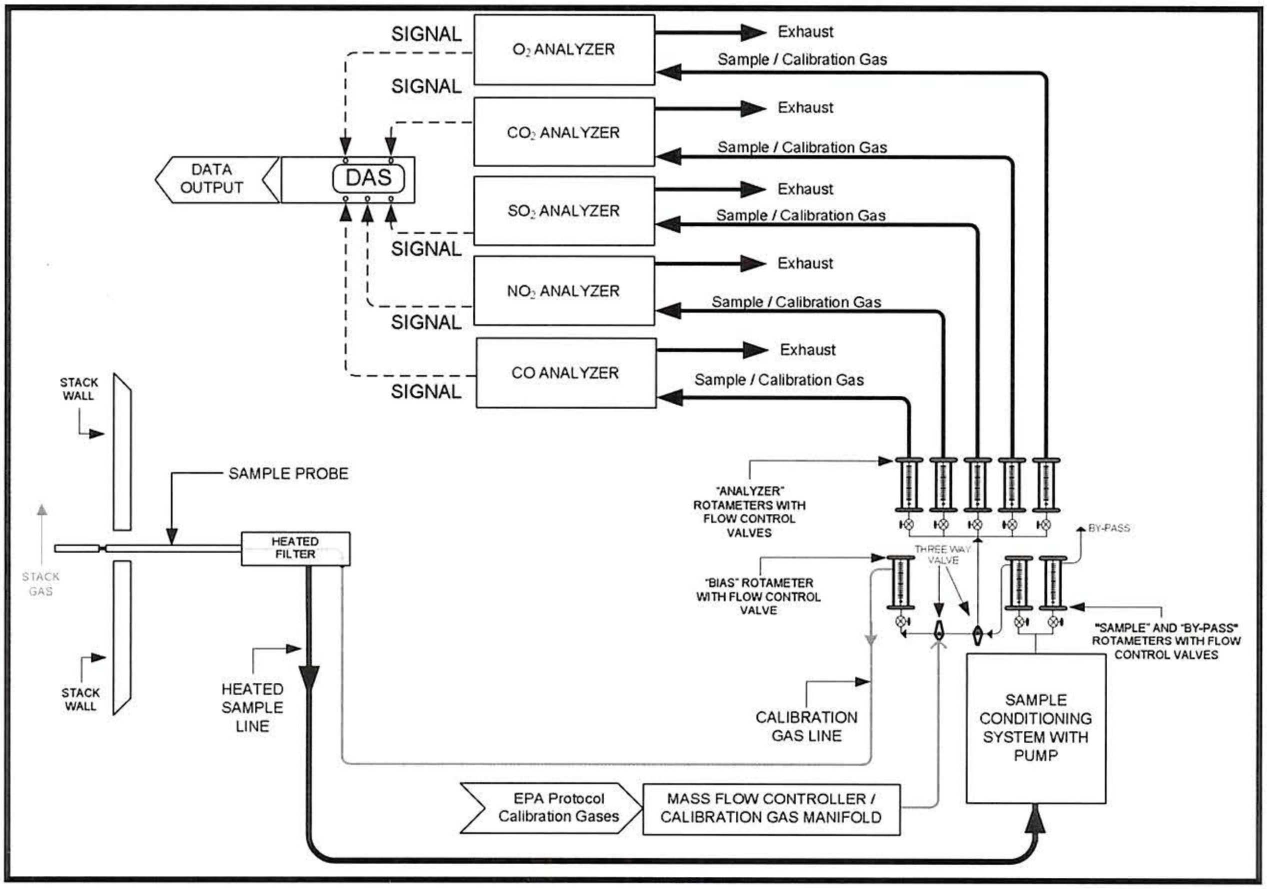
The typical sampling system is detailed in Figure 3-3.

3.1.8 EPA Method 10, Determination of Carbon Monoxide Emissions from Stationary Sources (Instrumental Analyzer Procedure)

EPA Method 10 is an instrumental test method used to continuously measure emissions of CO. Conditioned gas is sent to an analyzer to measure the concentration of CO. The performance requirements of the method must be met to validate the data.

The typical sampling system is detailed in Figure 3-3.

FIGURE 3-3
EPA METHODS 3A (O_2/CO_2), 6C, 7E, 10 SAMPLING TRAIN



3.1.9 EPA Method 22, Visual Determination of Fugitive Emissions from Material Sources and Smoke Emissions from Flares

EPA Method 22 is used to determine the frequency of fugitive emissions from stationary sources. Fugitive emissions produced during ash loading operations are visually determined by an observe without the aid of instruments. This method determines the amount of time that visible emissions occur during the observation period (i.e., the accumulated emission time). The observer stands at a distance sufficient to provide a clear view of the potential emission point(s), such that sunlight is not shining directly into their eyes. The observation point is observed continuously. Two stopwatches are used, one to keep track of the entire observation period, and another that is started and stopped whenever fugitive emissions are observed.

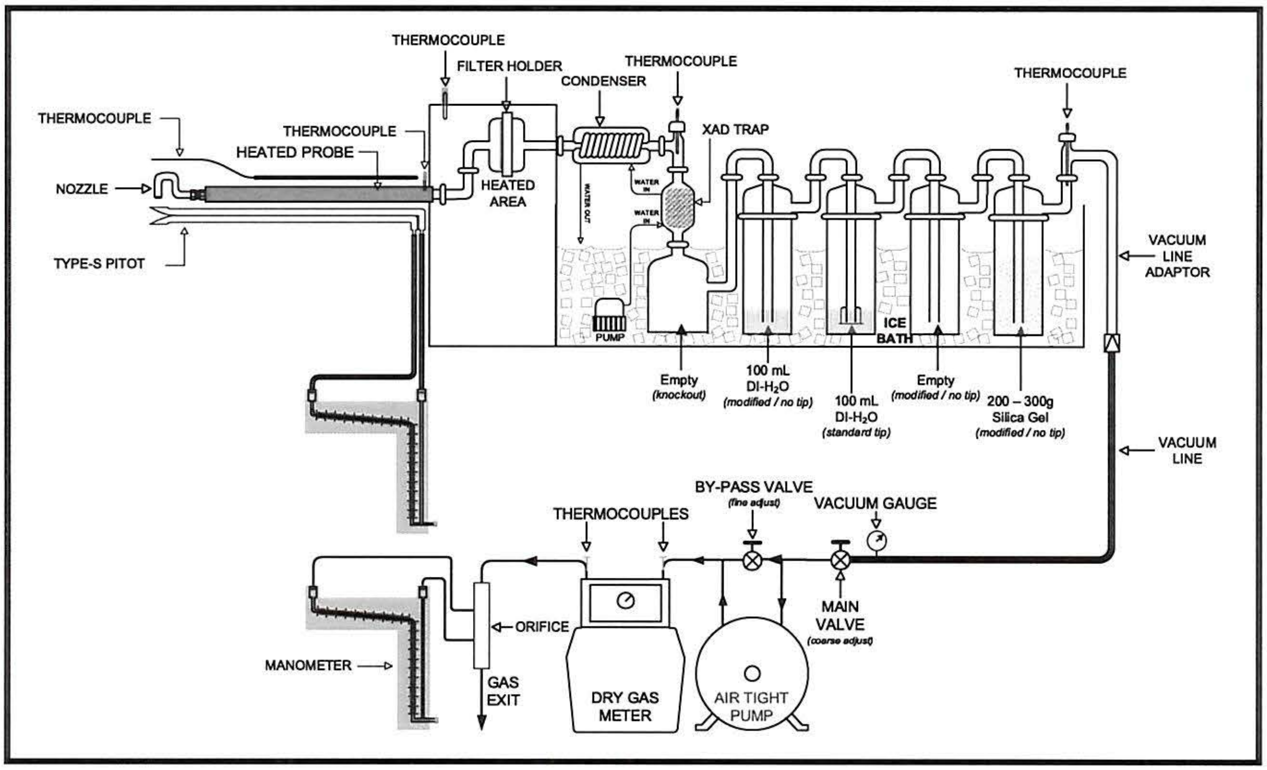
This method does not require that the opacity of emissions be determined. Since this procedure requires only the determination of whether visible emissions occur and does not require the determination of opacity levels, observer certification according to the procedures of Method 9 is not required. However, it is necessary that the observer is knowledgeable with respect to the general procedures for determining the presence of visible emissions. At a minimum, the observer must be trained and knowledgeable regarding the effects of background contrast, ambient lighting, observer position relative to lighting, wind, and the presence of uncombined water (condensing water vapor) on the visibility of emissions. This training is to be obtained from written materials found in References 1 and 2 or from the lecture portion of the Method 9 certification course.

3.1.10 EPA Method 23, Determination of Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans from Stationary Sources

EPA Method 23 is a manual, isokinetic method to measure polychlorinated dibenzo-p-dioxins (PCDD) and polychlorinated dibenzofurans (PCDF) emissions using high resolution gas chromatography with high resolution mass spectroscopy (HRGC/HRMS). The stack gas is sampled through a nozzle, probe, filter, sorbent trap module encased in a water-cooled condenser, and impinger train. Dioxin/furan emissions are reported in emission concentration and emission rate units.

The typical sampling system is detailed in Figure 3-4.

FIGURE 3-4
EPA METHOD 23 SAMPLING TRAIN



3.1.11 EPA Method 26A, Determination of Hydrogen Halide and Halogen Emissions from Stationary Sources Isokinetic Method

EPA Method 26A is a manual, isokinetic method used to measure hydrogen chloride emissions from stationary sources. Gaseous and particulate pollutants are withdrawn isokinetically from the source and collected in an optional cyclone, on a filter, and in absorbing solutions. The cyclone collects any liquid droplets and is not necessary if the source emissions do not contain them; however, it is preferable to include the cyclone in the sampling train to protect the filter from any liquid present. Acidic and alkaline absorbing solutions collect the gaseous hydrogen halides and halogens, respectively.

Following sampling of emissions containing liquid droplets, any halides/halogens dissolved in the liquid in the cyclone and on the filter are vaporized to gas and collected in the impingers by pulling conditioned ambient air through the sampling train. The hydrogen halides are solubilized in the acidic solution and form chloride (Cl^-), bromide (Br^-), and fluoride (F^-) ions. The halogens have a very low solubility in the acidic solution and pass through to the alkaline solution where they are hydrolyzed to form a proton (H^+), the halide ion, and the hypohalous acid (HClO or HBrO). Sodium thiosulfate is added to the alkaline solution to assure reaction with the hypohalous acid to form a second halide ion such that two halide ions are formed for each molecule of halogen gas. The halide ions in the separate solutions are measured by ion chromatography (IC). NOTE: During this test only HCl was measured.

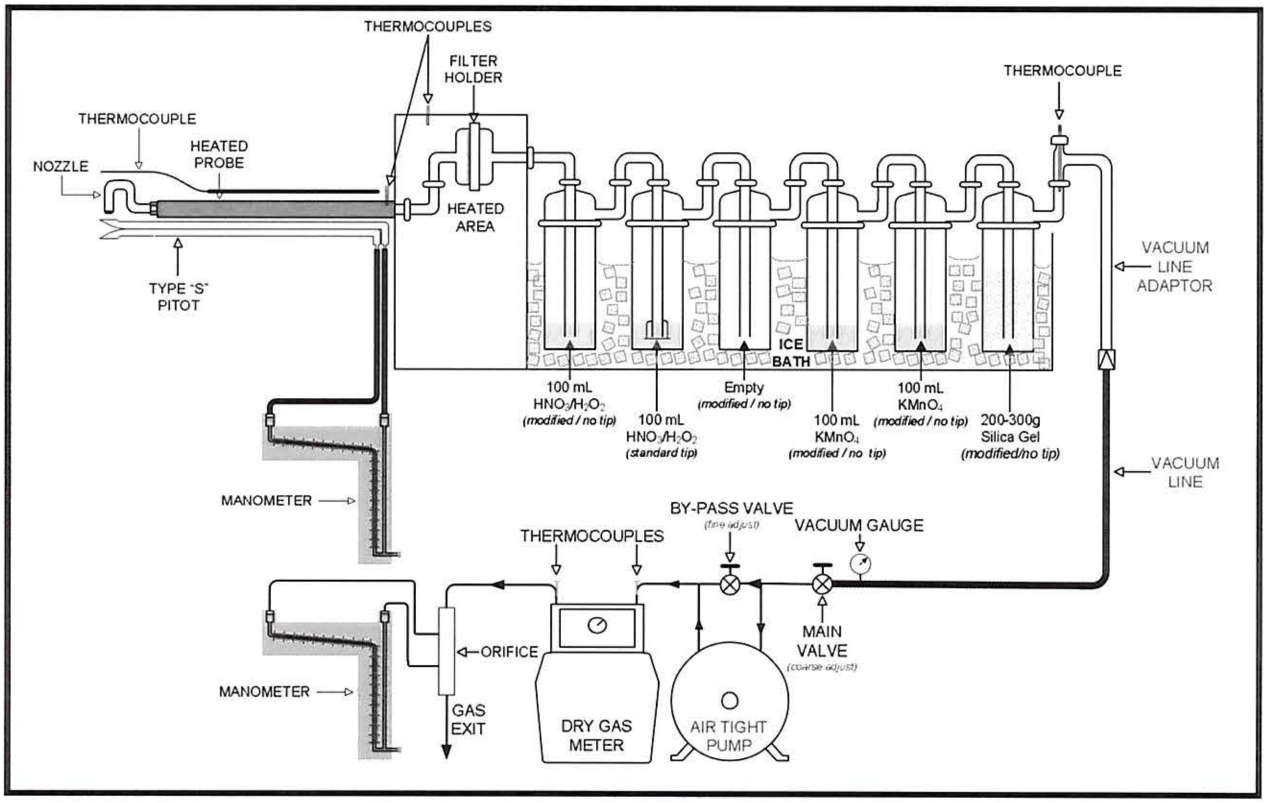
The typical sampling system is detailed in Figure 3-2.

3.1.12 EPA Method 29, Determination of Metals Emissions from Stationary Sources

EPA Method 29 is a manual, isokinetic test method to measure a variety of metals using inductively coupled argon plasma emission spectroscopy (ICAP) and cold vapor atomic absorption (CVAA) spectroscopy. This method is performed in conjunction with EPA Methods 1-4. A stack sample is withdrawn isokinetically from the source, filterable emissions are collected in the probe and on a heated filter, and condensable emissions are collected in an aqueous acidic solution of hydrogen peroxide (analyzed for all target analytes) and an optional aqueous acidic solution of potassium permanganate (required only when Hg is a target analyte). The recovered samples are digested, and appropriate fractions are analyzed for the target analytes which may include Hg by CVAAS and for Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Ni, P, Se, Ag, Tl, and Zn by ICAP or atomic absorption spectroscopy (AAS). Graphite furnace atomic absorption spectroscopy (GFAAS) is used for analysis of Sb, As, Cd, Co, Pb, Se, and Tl if these elements require greater analytical sensitivity than can be obtained using ICAP. AAS may be used for analysis of all target analytes if the resulting in-stack method detection limits meet the goal of the testing program. Similarly, inductively coupled plasma-mass spectroscopy (ICP-MS) may be used for analysis of Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Ni, Ag, Tl and Zn. The results from analysis of individual fractions of the sample train are summed to obtain the total concentration of each metal per sample train.

The typical sampling system is detailed in Figure 3-5.

FIGURE 3-5
US EPA METHOD 29 (Hg) SAMPLING TRAIN



3.2 PROCESS TEST METHODS

Process samples (sludge) were taken during each test run by City of Warren WWTP personnel. The sludge samples were subsequently analyzed to determine percent solids contained in the sewage sludge being fed to the incinerator during testing.

4.0 TEST DISCUSSION AND RESULTS

4.1 FIELD TEST DEVIATIONS AND EXCEPTIONS

No field deviations or exceptions from the test plan or test methods occurred during this test program.

4.2 PRESENTATION OF RESULTS

The average results are compared to the permit limits in Tables 1-2 and 1-3. The results of individual compliance test runs performed are presented in Tables 4-1 through 4-5. Emissions are reported in units consistent with those in the applicable regulations or requirements. Additional information is included in the appendices as presented in the Table of Contents.

Concentration values in Table 4-3 and 4-5 denoted with a "<" had concentrations measured to be below the minimum detection limit (MDL) of the applicable analytical method.

Since more than 10% of the individual differential pressure (dP) readings recorded at the EUINCINERATOR Scrubber Exhaust Stack during each run were below 0.05 in-H2O, a more sensitive dP gauge was utilized at this location as per EPA Method 2, Section 6.2. The more sensitive dP gauge had divisions of 0.005 in-H2O in the inclined scale.

**TABLE 4-1
FUGITIVE EMISSIONS RESULTS -
EUINCINERATOR ASH HANDLING SYSTEM**

Run Number	1	2	3	Average
Date	6/16/2020	6/16/2020	6/16/2020	--
Time	9:03-10:21	11:03-12:13	13:08-14:19	--
Emission Frequency %	0	0	0	0

**TABLE 4-2
FPM AND HCl EMISSIONS RESULTS -
EUINCINERATOR**

Run Number	1	2	3	Average
Date	6/16/2020	6/16/2020	6/16/2020	--
Time	9:03-10:32	11:03-12:32	13:08-14:36	--
Process Data*				
Sludge feed rate, wet ton/hr	5.5	5.5	5.4	-
Flue Gas Parameters				
O_2, % volume dry	9.67	9.73	9.60	9.66
CO_2, % volume dry	8.38	8.31	8.26	8.32
flue gas temperature, °F	85.7	87.3	89.1	87.3
moisture content, % volume	3.18	3.21	2.97	3.12
volumetric flow rate, dscfm	7,502	7,164	7,401	7,356
Filterable Particulate Matter (FPM)				
mg/dscm	6.58	4.26	4.08	4.97
mg/dscm @ 7% O_2	8.15	5.30	5.01	6.15
lb/1000lb @ 50%EA	0.0063	0.0041	0.0039	0.0048
Hydrogen Chloride (HCl)				
ppmvd	0.472	0.724	0.408	0.452
ppmvd @ 7% O_2	0.584	0.594	0.501	0.560

* Process data was provided by City of Warren WWTP personnel.

TABLE 4-3
SO_2, NO_X, AND CO EMISSIONS RESULTS - EUINCINERATOR

Run Number	1	2	3	Average
Date	6/16/2020	6/16/2020	6/16/2020	--
Time	9:03-10:32	11:03-12:32	13:08-14:36	--
Process Data*				
Sludge feed rate, wet ton/hr	5.5	5.5	5.4	-
Flue Gas Parameters				
O_2, % volume dry	9.67	9.73	9.60	9.66
CO_2, % volume dry	8.38	8.31	8.26	8.32
flue gas temperature, °F	85.7	87.3	89.1	87.3
moisture content, % volume	3.18	3.21	2.97	3.12
volumetric flow rate, dscfm	7,502	7,164	7,401	7,356
Sulfur Dioxide (SO_2) †				
ppmvd	<1.79	<1.79	<1.79	<1.79
ppmvd @ 7% O_2	<2.22	<2.23	<2.20	<2.22
Nitrogen Oxides (NO_x as NO_2)				
ppmvd	154.0	146.6	147.2	149.2
ppmvd @ 7% O_2	190.6	182.4	181.0	184.6
Carbon Monoxide (CO)				
ppmvd	1,921	1,847	1,906	1,891
ppmvd @ 7% O_2	2,378	2,298	2,343	2,340

* Process data was provided by City of Warren WWTP personnel.
† The "<" symbol indicates a concentration below the MDL of the analytical method. See Section 4.2 for details.

MONTROSE AIR QUALITY SERVICES

TABLE 4-4
PCDD/PCDF EMISSIONS RESULTS -
EUINCINERATOR

Run Number	1	2	3	Average
Date	6/17/2020	6/17/2020	6/17/2020	--
Time	8:45-10:52	11:37-13:43	14:10-16:16	--
Process Data*				
Sludge feed rate, wet ton/hr	5.5	5.4	5.5	-
Flue Gas Parameters				
O_2, % volume dry	9.79	10.81	9.70	10.10
CO_2, % volume dry	7.89	7.51	8.27	7.89
flue gas temperature, °F	89.4	91.7	93.6	91.6
moisture content, % volume	3.12	3.65	3.70	3.49
volumetric flow rate, dscfm	7,581	8,759	7,112	7,818
Total Toxic Equivalents as 2,3,7,8-tetrachlorodibenzo-p-dioxin, 2005 WHO Factors				
ng/dscm	0.022	0.023	0.015	0.020
ng/dscm @ 7% O_2	0.027	0.031	0.019	0.026

* Process data was provided by City of Warren WWTP personnel.