TEST PROTOCOL

Sims Group USA Corporation
Redwood City, CA

SIMS METAL MANAGEMENT

Shredder Emissions Testing Protocol

Prepared By:

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Project 180501.0015

Trinity Consultants

Environmental solutions delivered uncommonly well

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INTRODUCTION

Trinity Consultants (Trinity), on behalf of Sims Group USA Corporation (Sims), has prepared this emissions testing protocol (Test Protocol) in accordance with the United States Environmental Protection Agency (USEPA) Request for Information Under §114(a) of the Clean Air Act (CAA), 42 U.S.C. §7414(a), dated October 28, 2019, in the Matter of: Sims Group USA dba Sims Metal Management (the RFI), regarding the metal shredder operating at the Sims facility located at 699 Seaport Boulevard, Redwood City, CA 94063 (the Facility).

In accordance with Exhibit C of the RFI, Sims is required conduct testing on emissions from the hammermill shredder located at the Facility (the Shredder) to determine emission rates for the following constituents in accordance with the EPA Reference Methods specified in the RFI (the Test):

a. Total gaseous organic compounds as volatile organic compounds (VOCs),
b. Volatile organic hazardous air pollutants (HAPs),
c. Particulate matter (PM),
d. Metals, and
e. Hexavalent chromium.

Please note that this Test Protocol excludes testing for hexavalent chromium due to the absence of hexavalent chromium sources in Feedstock Material.

Also in accordance with Exhibit C of the RFI, during the Testing, Sims is to:

a. Monitor and record the Shredder operating parameters, including metal feed rate, water flow rates, Shredder amperage, and the amounts of end-of-life autos (ELV) and other end-of-life material (Light Iron) shredded per Test run (collectively, "Feedstock Material");
b. Operate the Shredder under representative conditions and at greater than 90% of maximum production capacity, with an ELV to Light Iron ratio of 1:1 (50% ELVs and 50% Light Iron);
c. Operate the Shredder and the emissions capture and collection system in a way that no visible emissions from the Shredder system are allowed to be emitted to the atmosphere, without first passing through the measurement equipment and the downstream exhaust stack; and
d. Conduct the Testing under this Test Protocol once approved in advance by USEPA.

Please note that this Test Protocol assumes that the ELV to Light Iron ratio used in the test will be 35:65, to more accurately reflect representative conditions at this Shredder, as documented in prior submissions to EPA. Based on a maximum production capacity of 200 net tons per hour, Sims proposes to conduct this Test with the operation of the Shredder at between 180 and 200 net tons per hour of Feedstock Material, at a 35:65 ratio of ELVs and Light Iron. Throughout this Test Protocol unless specifically stated otherwise, the term "ton" means "net ton," equal to 2,000 lbs.

Finally, in accordance with Exhibit C of the RFI, this Test Protocol describes the methods and procedures and equipment specifications that will be used during testing, including all relevant operating parameters, as follows:
a. The air system flow rate (in scfm),
b. The procedures that will be used to minimize unmeasured emissions, and
c. Those measures Sims will use to verify that emissions are not escaping the capture system.

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The individuals leading the Sims team implementing the Test Protocol are:

Description	Address	Contact
Facility Lead	Sims Metal Management 699 Seaport Blvd Redwood City, CA 94063	Jeff Shell Project/Electrical Engineering Manager (916)-769-2289 [HYPERLINK "mailto:jeff.shell@simsmm.com"]
Project Lead	Trinity Consultants, Inc. 1901 Harrison Street Suite 1590 Oakland, CA 94612	Divya Agarwal, PE, CM Principal Consultant (510) 285-6351 [HYPERLINK "mailto:dagarwal@trinityconsultants.com"]
Project Support	Trinity Consultants, Inc. 1S660 Midwest Road Oakbrook Terrace, IL 60181	Richard Trzupek Principal Consultant (630) 495-1470 [HYPERLINK "mailto:rtrzupek@trinityconsultants.com"]

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1. IDENTIFICATION AND DESCRIPTION OF THE SOURCE TO BE TESTED

1.1. TYPE OF INDUSTRIAL PROCESS

At the Redwood City Facility Sims receives, handles, stockpiles and/or otherwise stores, processes, and recycles ferrous and non-ferrous recyclable metallic materials and produces and ships the specification-grade recyclable metals resulting from such processing and recycling. At the Shredder, Feedstock Material is mechanically processed (shredded) through a large hammermill, with the processed material discharged from the hammermill mechanically separated in order to produce specification-grade ferrous metal and other recyclable metals.

The industrial process subject to this Test Protocol is the shredding of Feedstock Material in the Shredder (the Shredding Process). During normal operations, a range of Feedstock Material is shredded in ratios needed to produce specification-grade metal products. Sims, along with the technical recommendation of its consultant, Trinity, has identified the under mill oscillator (UMO) as the emissions point for the hammermill (the Emissions Point).

1.2. TYPE OF RAW MATERIAL USED IN THE PROCESS

The raw material used in the Shredding Process consists of the above-described Feedstock Material, after implementation of the Sims Inbound Material Acceptance Policy with respect to inspection of such material (Inbound Material SOP).

1.3. DESCRIPTION OF CYCLICAL OR BATCH OPERATIONS

No cyclical or batch operations are associated with this process.

1.4. SITE SPECIFIC OPERATING PARAMETERS

During the Emissions Testing, Sims will operate the Shredder under representative conditions and will monitor and record the operating parameters of the Shredder, including water flow rates, blower motor amperage, Shredder amperage, and estimated tonnage of ELVs and Light Iron shredded per run, along with other pertinent parameters.

Sims will weigh Feedstock Material prior to each Shredding Process test run to determine the throughput of the UMO in tons during the particular test run, and will record such weights and other pertinent information.

Under normal operating conditions the Shredder, or its individual parts, may be subject to intermittent failure, mechanical breakdown or damage. Such failures, breakdowns or damage are unpredictable, outside of the control of Sims and can at times require procurement of replacement parts which would result in extended periods of time during which operation is not possible. Any such failures, breakdowns or damage and the attendant downtime or deferral in emissions testing would constitute a force majeure condition. A force majeure condition includes any equipment failure that requires the procurement of replacement parts and results in extended periods of time during which operation is not possible, so long as the equipment failure was not caused by poor maintenance or careless operation. If any force majeure condition occurs during the Test, Sims will either extend or cancel the affected test run, depending on duration of the downtime and circumstances, and the Testing will resume once the condition is corrected.

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1.5. RATED CAPACITY OF THE PROCESS

During Emissions Testing Sims will operate its Shredder at up to 200 tons of Feedstock Material per hour (the Rated Throughput Capacity), but no less than 180 tons per hour. While the RFI specifies that approximately 50 percent of the Feedstock Material should be ELVs, by weight, Sims proposes that the percent ELVs in the Feedstock Material be reduced to 35%, by weight, consistent with historical, representative operating conditions at the Facility.

1.6. EMISSIONS COLLECTION APPARATUS

In order to facilitate emissions testing, Sims is proposing to install a Temporary Enclosure (TE) around the Emissions Point, subject to approval of USEPA. The TE system will consist of the following components:

- The TE, which will be constructed of heavy rubber sheeting surrounding the UMO and beginning stages of the off-feed conveyor, joined together with sheet metal where the sides of the rubber sheets meet. The top of the TE will be constructed of sheet metal.
    - This design allows for temporary containment of emissions in the safest possible manner, as the rubber sheeting is better able to absorb energy releases or high-velocity projectiles than a rigid structure, in the event that they may be generated during the Shredding Process.
    - The approximate dimensions of the TE are as follows: width of 108"; depth of 146"; height of 120".
    - Although safety considerations prevent the TE from meeting all of the design criteria for a Temporary Total Enclosure (TTE) set forth in USEPA Method 204, subject to approval of the USEPA, the structure is expected to allow for efficient collection of emissions from the UMO.
    - To enhance the containment achieved by the rubber sheeting, the design contemplates the use of a centrifugal blower, providing an average face velocity well in excess of 200 feet per minute (fpm), to simulate a negative pressure environment inside the TE.
- The pickup point where the TE meets the ductwork over the UMO will have a face dimension of approximately 2.5'X6' set into the roof of the TE; the roof of the TE will be constructed of sheet metal.
- Exhaust ductwork at the Shredder currently runs from the UMO to a cyclone and scrubber which are located to the southwest of the shredder. In accordance with this Testing Protocol, additional ductwork will be added as follows: scrubber discharge will be ducted to the south to the sampling location approximately one hundred and sixty (160') feet away from the TE, with a total duct length of two hundred twenty three (223') feet.
    - The ductwork will be fifty (50) inches in diameter and is anticipated to be constructed of sheet metal. See Section 6 and 7.1 for conceptual layout of the ductwork.
    - The Sampling Location along the ductwork pathway will be protected from potential Shredder Process projectiles by a temporary shelter installed for that purpose.

- In addition to the existing 250 HP fan, in accordance with this Testing Protocol, an additional 125 HP booster fan will be obtained and utilized to ensure sufficient air flow from the scrubber discharge duct to the sampling location.

- The Sampling point at the Sampling Location will conform to USEPA Method 1 requirements (Sampling Point), as follows:

    - Two (2), nominal four (4) inch-diameter NPT sampling ports will be cut in the ductwork, offset ninety (90) degrees from each other on the same plane.

    - During sampling, the area around sample probes in the ports will be sealed as completely as practicable using duct tape and/or other suitable materials.

Regarding the booster fan, a centrifugal blower powered by a 125 HP electric motor will be used to draw emissions, along with the existing 250 HP fan, from the Emissions Point, through the TE and ductwork, to the Sampling Point. The blower will have a variable frequency drive (VFD) that will allow the operator to adjust the emissions flow rate if necessary.

The existing and booster fan blowers will be operated at a rate of 45,000 standard cubic feet per minute (scfm).[1] Based on the aggregate area of the measured gaps between the rubber sheeting segments, a 45,000 scfm blower is expected to provide an average face velocity well in excess of 200 fpm through those gaps. The fans, however, will have the capacity to be operated at up to 50,000 sfcm. The emissions testing contractor (ETC) will monitor blower motor amperage and static pressure at the blower inlet. As long as these two variables are within an acceptable range, then air flow rate may be assumed to be nominally constant and a consistent negative pressure environment maintained. The static pressure within a section of ductwork near the TE will also be monitored in order to confirm this assumption. The presence of any visible emissions will be noted during the test period at the Shredder infeed.

Sims will execute purchase orders required to implement this Test Protocol promptly following USEPA's approval.

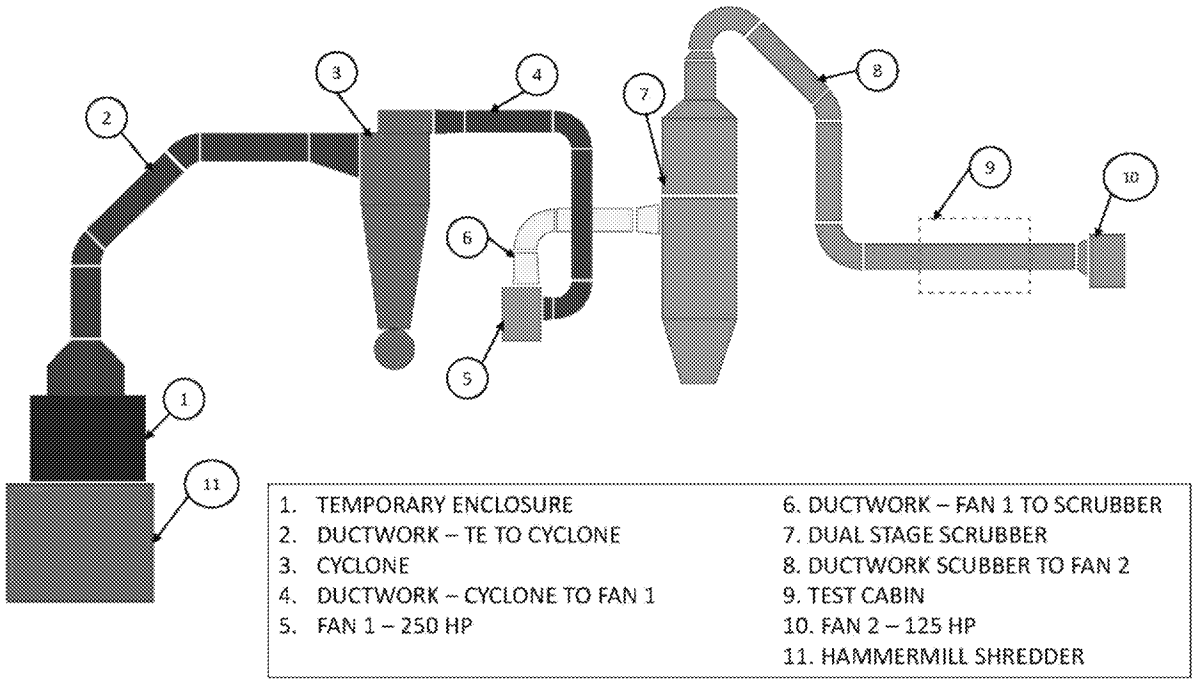
A schematic of the emission collection apparatus is show in Section 7.

The blower will have a slightly larger design capacity to allow for approximately a 10% increase in airflow, should that be necessary during the test.

2. AIR POLLUTION CONTROL DEVICE DESCRIPTION

A two-stage scrubber is used to control PM emissions from the hammermill. The scrubber consists of a quench section to cool the collected gases and a packed tower section to further remove PM that passes through the quench section.

Schematic Ducting and Control Devices



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3. EMISSIONS CONSTITUENTS TO BE SAMPLED

Sampling will be conducted for the following constituents:

- Total VOCs, as Total Hydrocarbons (THC)
- Selected, speciated VOCs (VOC HAPS)
- Particulate matter (PM)
- Metals

As previously noted, Sims proposes to omit Hexavalent Chromium from the Testing Protocol due to the lack of Hexavalent Chromium sources in the Feedstock Material.

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DISCUSSION OF TEST METHODS

4.1.1. Average Gas Molecular Weight, Moisture and Flow Rate

The ETC will adhere to EPA Methods 1, 2, 3 and 4 of 40 CFR 60, Appendix A, to measure the average emissions composition and volumetric flow rate during the Test. These methods will determine the following characteristics of the emissions stream: velocity, moisture content, flow rate, and the concentrations of O_2 and CO_2.

4.1.2. Particulate, Selected Metals

Sims proposes use of EPA Method 5, "Determination of Particulate Emissions from Stationary Sources," to measure filterable particulate matter (FPM) [See Appendix A of 40 CFR 60].

Method 5 defines filterable particulate matter as any material that is collected before or on the surface of a glass fiber or quartz fiber filter.

Sims proposes use of EPA Method 29, "Determination of Metals Emissions from Stationary Sources," for determining PM and metals emissions from the Sampling Location. This method involves isokinetic sampling of the emissions and subsequent collection of PM onto a quartz fiber filter and absorption of gaseous metals into an acidic hydrogen peroxide solution. A minimum of 60 dry standard cubic feet of sample gas will be collected over each test run. Metals analysis will include total chromium. Chromium entering the facility is in the form of elemental chromium (Chrome Zero) as found in chrome plated parts and varying grades of steel. Sims does not process ionic chrome species such as chromic acid or chromate salts. As a consequence, Sims proposes to omit Hexavalent Chromium from the Test.

The samples recovered from the probe and quartz filter will be analyzed gravimetrically for PM using EPA Method 5 procedures. The PM samples will reconstituted with nitric acid, and the reconstituted samples and the absorbing solution will be digested and analyzed for metals. Typically, inductively coupled plasma-mass spectroscopy (ICP-MS) can be used to analyze the samples for each of the target metals except mercury (Hg), which is analyzed using cold vapor atomic absorption spectroscopy (CVAAS).

4.1.3. Total Hydrocarbons, Volatile Organic Compounds and Methane/Ethane Emissions

Monitoring of THC emissions at the test locations will be performed using EPA Method 25A. In addition to the pollutant monitoring, O_2 and CO_2 concentrations will also be monitored using EPA Method 3A.

A gas sample will be continuously extracted from the source and delivered to a series of gas analyzers, which measure the pollutant or diluent concentrations in the gas. The analyzers will be calibrated on-site using certified mixtures of calibration gases.

The system utilizes a heated stainless steel probe for gas withdrawal. The probe tip is equipped with a sintered stainless steel filter for particulate removal. The end of the probe is connected to a heated Teflon sample line that delivers the sample gases from the Sampling Location to the continuous emissions monitoring (CEM) system. The heated sample line is designed to maintain the gas temperature above 250°F, in order to prevent condensation of Sampling Location gas moisture within the line.

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A slip stream from the THC analyzer will be directed into a Tedlar bag. The Tedlar bag will be analyzed per EPA Method 18 procedures for methane and ethane content.

Table 1 below lists the analyzers to be used to perform gaseous emissions monitoring.

Table [SEQ Table * ARABIC]:
Gas Analyzers (or equivalent)

Gas	Reference Method	Analyzer Manufacturer	Principle of Operation
O_2	EPA 3A	Servomex 1420C or equivalent	Paramagnetic or Zirconium Oxide
CO_2	EPA 3A	Servomex 1415C or equivalent	Infrared
THC	EPA 25A	TECO 51i or equivalent	Flame Ionization Detection (FID)

4.1.4. Selected, Speciated VOCs (VOC HAPS)

Selected, speciated VOCs will be collected following EPA Method 18. During each test run, gas samples will be collected at a nominal rate of 0.5 liters per minute (LPM). Each sample will be passed through an ice cooled midget impinger charged with distilled/deionized water followed by a two-stage activated carbon collection tube. Each sample with be analyzed by Gas Chromatography/Mass Spectroscopy (GC/MS) following SW-846 Method 8260, including Tentatively Identified Compounds (TICs). For reporting purposes, any compound found to be below the detection limit of the method will be treated mathematically as zero.

5. SAMPLING AND ANALYTICAL PROCEDURES

In accordance with the RFI, the ETC will implement the following USEPA test methods with respect to the sampling and analysis procedures set out in this Test Protocol, whereby Sims shall determine:

- the total gaseous organic compound emission rate as VOCs using EPA Reference Methods 1-4 and Method 25A;
- Methane and ethane concentrations using Method 18, which will be subtracted from the total hydrocarbon concentration measured following Method 25A to determine VOM concentrations;
- Particulate Matter emission rate using EPA Reference Methods 1-4 and Method 5; and
- Metals emission rates using EPA Reference Methods 1-4 and Method 29.
- Sample Locations using Method 1 Sample Traverse Determination, 40 CFR Part 60, Appendix A, whereby the characteristics of the Sampling Locations are summarized below.

Sample Point Selection

Test Location	Duct Diameter	Upstream Distance	Downstream Distance	Test Parameter	Number of Sampling Points
UMO TE Exhaust Duct	50 inches	> 100 inches	> 25 inches	Flow Rate	TBD: XX
UMO TE Exhaust Duct	50 inches	> 100 inches	> 25 inches	O_2/CO_2	TBD: 3 (stratification check) or 1
UMO TE Exhaust Duct	50 inches	> 100 inches	>25 inches	VOC	TBD: 3 (if stratified) or 1
UMO TE Exhaust Duct	50 inches	> 100 inches	>25 inches	Speciated VOC	TBD: 3 (if stratified) or 1
UMO TE Exhaust Duct	50 inches	> 100 inches	>25 inches	PM	12 - 24
UMO TE Exhaust Duct	50 inches	> 100 inches	>25 inches	Metals	12 - 24

- Method 2: One (1) velocity traverse will be conducted during each Test Run, concurrent with operation of the Method 5/29 sampling train.
- Method 3A: Carbon dioxide (CO_2) and oxygen (O_2) will be monitored continuously during each Test Run using instruments in conformance with USEPA Method 3A.

- Method 4: Moisture content of the emissions gas stream will be determined by measurement of condensate collected in the back half of the Method 5/29 sampling train at the conclusion of each Test Run.
- Method 5: Particulate matter concentration of the emission gas stream will be determined following USEPA Method 5. Three (3) sampling Test Runs of at least 60 minutes per run will be conducted.
- Method 18: Integrated samples will be collected during each Test Run and retained for off-site Gas Chromatograph/Flame Ionization Detector (GC/FID) analysis for methane or ethane, or alternatively such samples will be analyzed by means of a Flame Ionization Analyzer (FIA) that has the ability to determine methane and ethane concentrations on a semi-continuous basis. Additional Method 18 samples will be collected to determine selected, speciated VOC emission rates.
- Method 25A: The three (3) one-hour Test Runs will be conducted using an FIA that meets the specifications of the Method. Full four point calibrations (zero, high span [0-4000ppmv], mid span [0-1000 ppmv], low span [0-100 ppmv]) will be conducted prior to and at the conclusion of the test period. Two (2) point bias checks (zero and mid span) will be conducted between Test Runs 1 and 2 and Test Runs 2 and 3.
- Method 29: Metal concentrations of the emission gas stream will be determined following USEPA Method 29. Three (3) test runs of at least 90 minutes per run will be conducted.

Monitoring Equipment, QA/QC Procedures, Field Method Approaches and Laboratory Method Approaches

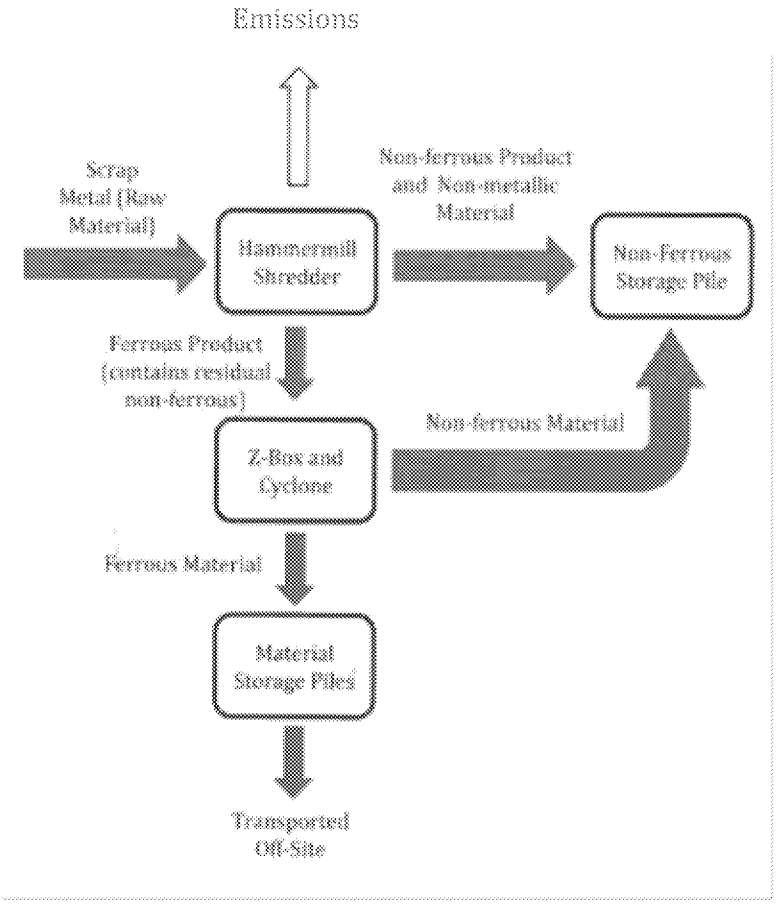
Sims will select the ETC during the USEPA Test Protocol review process. Quality Control documentation from the ETC, as well as field data sheets to be used, will be provided as addenda to this protocol.

Sims will require the ETC to:

- use monitoring equipment and field method approaches that are consistent with the requirements of the applicable sampling and analytical methods;

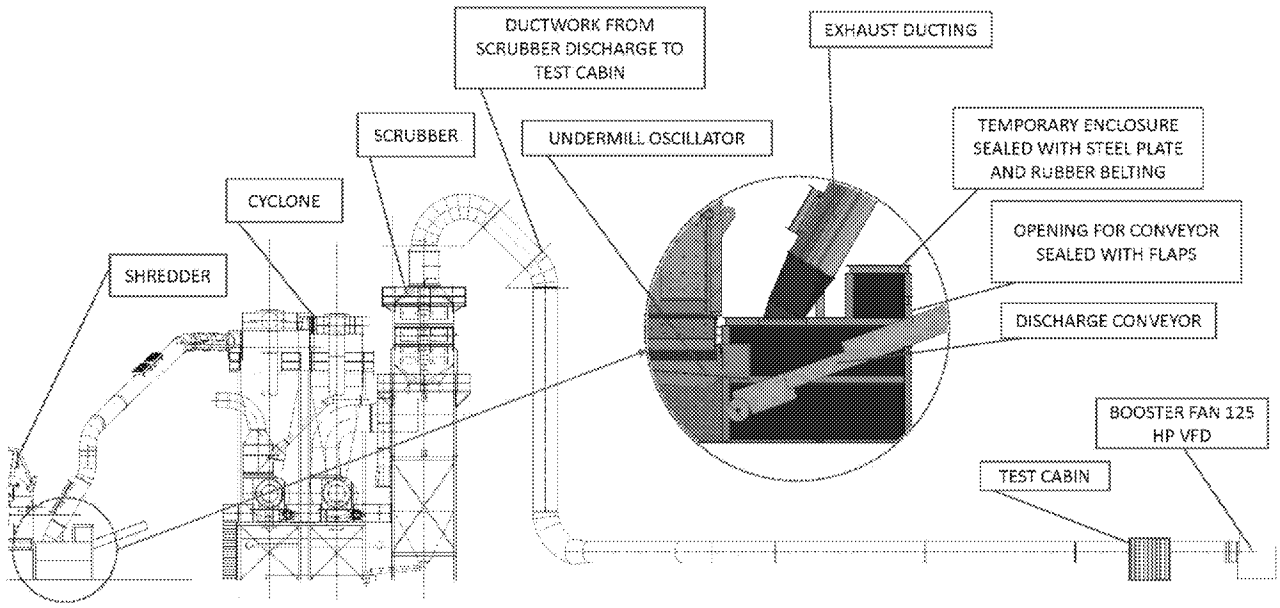
- follow those applicable quality assurance and quality control (QA/QC) procedures:
  - for sampling, recovery and laboratory analysis procedures provided;
  - in accordance with USEPA's Quality Assurance Handbook for Air Pollution Measurement Systems, Volume III, Stationary Source Specific Methods at 40 CFR Part 60 and at 40 CFR Part 61 (1988 and 1994 eds.)

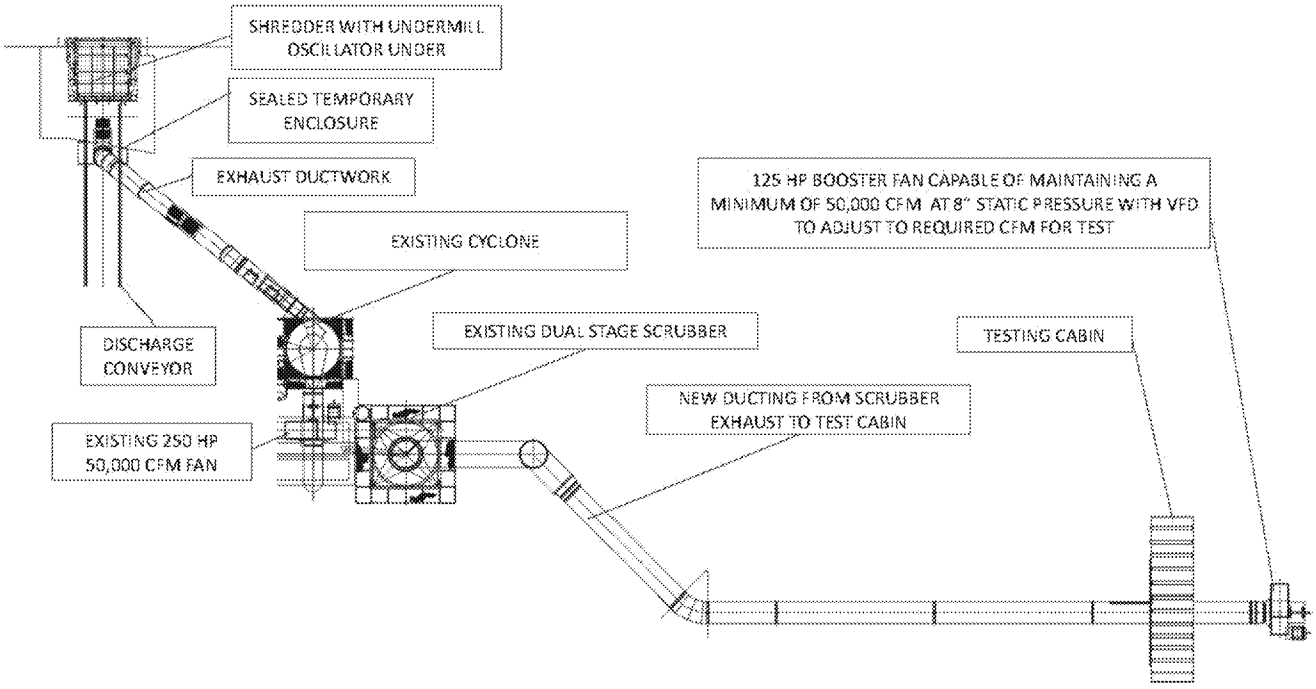
6. PROCESS SKETCH



7. METHOD 1 SKETCHES

7.1. ELEVATION AND PLAN VIEWS





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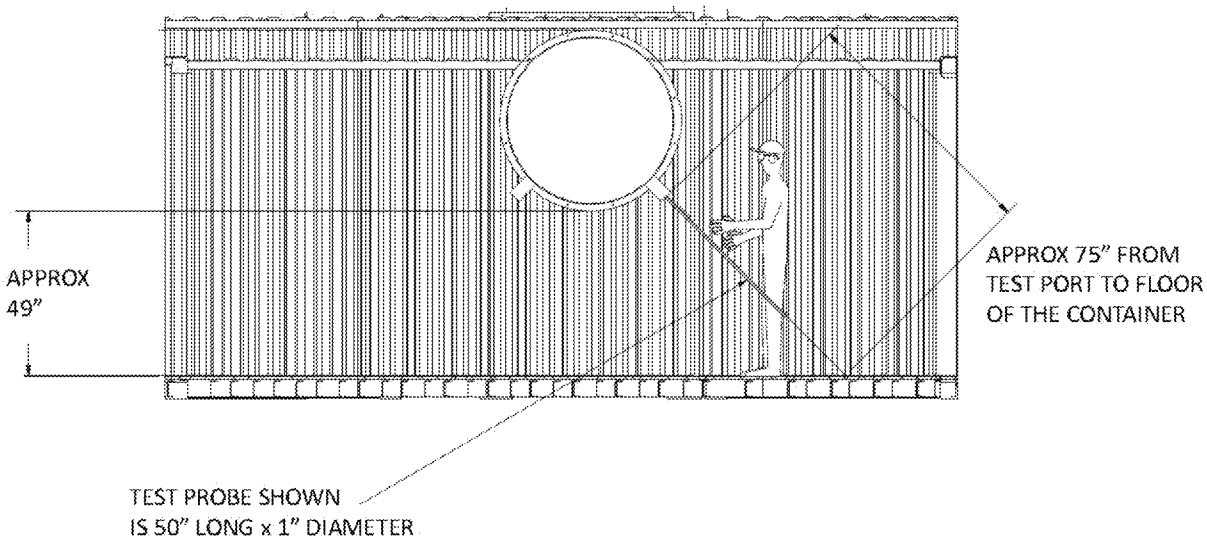

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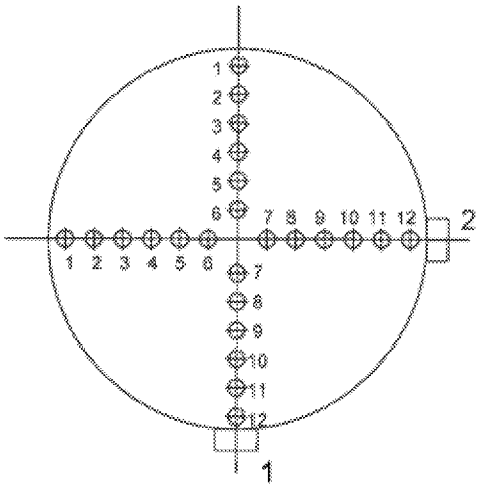
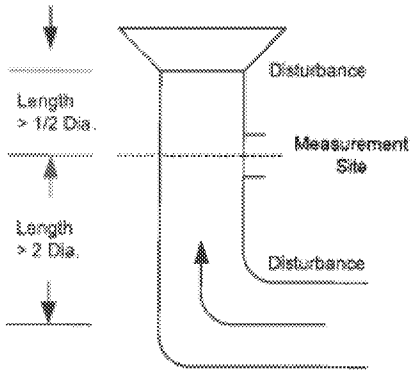
7.2. CROSS SECTIONAL SKETCH

EQUAL AREA TRAVERSE FOR ROUND DUCTS





Job:	Midwest Metals Management Paulina Facility
Date:	TBD
Test Location:	Under Mill Oscillator
Duct Diameter:	50.0 inches
Duct Area:	13.635 square feet
No. Points Across Diameter:	12
No. of Ports:	2

Distance from Inside Wall
To Traverse Point (inches):

1. 1.05
2. 3.35
3. 5.90
4. 8.85
5. 12.50
6. 17.80
7. 32.20
8. 37.50
9. 41.15
10. 44.10
11. 46.65
12. 48.95

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8. ESTIMATED EMISSIONS CONDITIONS AT THE SAMPLING LOCATION

The following are estimated Sampling Location emissions conditions, which may significantly change once the sampling equipment is installed.

- Sampling Location emissions temperature: 50 – 120 F
- Moisture content: 1-8 % by volume
- Sampling Location emissions velocity: 45-55 feet per second (fps)
- Sampling Location emissions velocity pressure: approximately 0.68 inches water column

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9. PROCESS AND CONTROL EQUIPMENT OPERATING DATA

Sims will weigh Feedstock Material for use in each Test Run by use of certified weights from the truck scale where all the Feedstock Material is first received by the Facility (the Scale), and will record such weights and other pertinent information.

Sims will separately weigh the ELV and the other Feedstock Material to meet the agreed-to percent by weight of ELVs, which is proposed at 35%. Sims will record on printed and electronic tickets, the ELV and other Feedstock Material weights generated from the certified Scale.

Sims will operate the Shredder at up to 200 tons but no less than 180 tons of Feedstock Material per hour. At a 35:65 ratio, this requires approximately 70 tons of ELV and 200 tons of all Feedstock Material (for each hour of testing).

The Shredder production report will document the 90 minutes duration of each Test Run.

For each Test Run Sims will place the weighed ELV and the other Feedstock Material in those areas designated for Shredder infeed Feedstock Material stockpiles for the Test Run (Test Stockpiles). For each 90 minute Test Run, Sims will shred all the material in each Test Stockpile designated for the Emissions Test.

10. COPIES OF FIELD DATA SHEETS

Samples of the Field Data Sheets that will generally be used during the test program (which is subject to revision upon selection of the Testing Contractor) are provided below.

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Isokinetic Sampling Cover Sheet

Test Engineer: _____
Test Technician: _____

Plant Information

Run Number: _____ Date: _____ Project Number: _____
Test Location: _____ Client Name: _____ Plant Name: _____
Duct Shape: Circular or Rectangular Length: _____ Width: _____ or Diameter: _____
Flue Area: _____ Upstream Diameters: _____ Downstream Diameters: _____
Port Type: _____ Port Length: _____ Port Diameter: _____
Test Method: _____ Source Condition: _____

Meter and Probe Data

Meter ID: _____ Meter Y Value: _____ ΔH Value: _____
Pitot ID: _____ Pitot Coefficient: _____ Train Type: _____
Nozzle Kit ID: _____ Nozzle Diameter: _____ Filter Number/Weight: _____
Probe Length: _____ Probe Liner: _____ Thimble Number/Weight: _____
Pre-Test Nozzle Leak Check: _____ @ _____ "Hg Post-Test Nozzle Leak Check: _____ @ _____ "Hg
Pre-Test Pitot Leak Check: _____ "H_2O Post-Test Pitot Leak Check: _____ "H_2O

Traverse Data

Ports Sampled: _____ Points/Port: _____ Min/Point: _____
Total Points: _____ Total Test Time: _____ Sample Plane: Horizontal or Vertical

Stack Parameters

Barometric Pressure: _____ Static Pressure: _____
CO_2 %: _____/_____/_____/ Avg._____ O_2 %: _____/_____/_____/Avg._____ Determined by: Method 3 or Method 3A
Imp and/or silica balance Model and S/N: _____ Servomex Serial #: _____
Initial Imp. Volume or Weight: _____ Final Imp. Volume or Weight: _____ Imp. Volume or Weight Gain: _____
Initial Silica Weight: _____ Final Silica Weight: _____ Silica Weight Gain: _____

Comments:

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Isokinetic Sampling Field Data Sheet

Project Number: _____ Date: _____ Test Number: _____

Client: _____ Test Location: _____ Operator: _____ Test Tech: _____

Plant: _____ Test Method: _____ Page Number: _____ of _____

Port-Point #.	Time	(ΔP)	Orifice Setting (ΔH)	Meter Volume (V_m) ft³, Actual	Square Root, ΔP	Meter Rate, Cubic Feet/ Min.	Theoretical Meter Volume, (V_m) ft³, per point	Theoretical Meter Volume, (V_m) ft³, total	Stack Temp, °F	Meter Temp Inlet, °F	Meter Temp Outlet, °F	Pump Vacuum, " Hg	Probe Temp. °F	Filter Temp. °F	Impinger Outlet Well Temp. °F

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Method 25A Field Data Sheet

Project: _____ Operator: _____
Client: _____ Source: 1. _____
Location: _____ 2. _____
Date: _____ 3. _____

Parameters	Location 1	Location 2	Location 3
Test 1			
Time			
VOC ppmv as			
Air flow, scfm			
VOC lbs/hr as			
Removal Efficiency, %			
Test 2			
Time			
VOC ppmv as			
Air flow, scfm			
VOC lbs/hr as			
Removal Efficiency, %			
Test 3			
Time			
VOC ppmv as			
Air flow, scfm			
VOC lbs/hr as			
Removal Efficiency, %			

DS-019 Method 25A (Total Organic Compounds) Rev. 1.0 3/2/2015

METHOD 204 ENCLOSURE DATA SHEET

Project: _____
Location: _____
Date: _____

Sketch enclosure, all ducts, NDOs and potential VOC emission points on accompanying page. Label all dimensions.

Enclosure Designation: _____

Control Devices (s): _____

Process(es) Enclosed: _____

NDO to VOC Emission Point

NDO	Dimensions	Area	Equivalent Diameter	VOC Emission Point	Distances		Pass/ Fail?
					Minimum	Actual	

NDOs equivalent diameter $= \left(\frac{4 \times \text{area}}{\pi}\right)^{0.5}$

Minimum Allowed Distance = 4 × Equivalent Diameter (NDO)

NDO to Exhaust (TTE only)

Exhaust Point	Dimensions	Equivalent Diameter	NDO	Dimensions	Equivalent Diameter	Distances		Pass/ Fail?
						Minimum	Actual	

Equivalent diameter $= \left(\frac{4 \times \text{area}}{\pi}\right)^{0.5}$

Minimum Allowed Distance = 4 × Equivalent Diameter (NDO or Exhaust Point)

METHOD 204 ENCLOSURE DATA SHEET (cont.)

Near Ratio [NDO Area/Total Enclosure Area]

NDO	Surface Area (FT^2)	Wall, Ceiling, or Floor Section	Surface Area (FT^2)
TOTAL NDO AREA=		TOTAL ENCLOSURE AREA=	

NEAR ratio:

$$\frac{\text{NDOArea}}{\text{EnclosureArea}} = _____$$

Pass/Fail? _____

Velocity of Air through NDO (Volumetric Flow Method)

Exhausted Air			Make Up Air	
Exhaust Point	SCFM	Controlled ? (Y/N?)	Make up point	SCFM
TOTAL			TOTAL	

total NDO area - _____ ft^2

$$\frac{\text{Exhaust scfm - 1make up scfm}}{\text{NDO area } (ft^2)} = _____ \text{ fpm}$$

fpm should be ≥ 200

pass/fail? _____

Or,
Velocity of Air through NDO (Pressure Differential Method)

Pressure Differential across the enclosure = _____ inches H_20
Pressure difference ≥ 0.007 inches H_2O
pass/fail? _____

METHOD 204 ENCLOSURE DATA SHEET (cont.)

Direction of Air through NDO

Checked by Smoke Tubes

NDO No.	Normally		Direction of Air Flow			NDO Required to be Normally Closed?	Direction of Air Flow (One Hour Verification)						
	Open	Closed	Into Enclosure	Out of Enclosure	Swirled		Initial: Actual Time:	10 min: Actual Time:	20 min: Actual Time:	30 min: Actual Time:	40 min: Actual Time:	50 min: Actual Time:	60 min: Actual Time:

***Check to verify that airflow was checked at top, bottom, middle, and both sides of enclosure.**

Status of doors and windows

Are all access doors and windows whose areas are not included as NDOs closed during normal operation.
☐ Yes ☐ No

Capture of VOC Emissions

Does all exhaust ductwork go to control (for PTE) or to a point where it can be measured (for TTE).
☐ Yes ☐ No

11. NAMES AND TITLES OF TEST PERSONNEL

Upon selection of the ETC, Sims will provide the names of the test personnel.

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12. PROCEDURES TO MAINTAIN SAMPLE INTEGRITY

The procedures to maintain sample integrity at a minimum will include:

- The ETC's Quality Control Procedures
- EPA_WetMethod-00
- CEM-000
- LAB-03
- COC-00

13. CALIBRATION SHEETS

Examples of the types of Calibration Sheets that will be used during the test program are provided below. The ETC will provide its version of these and other calibration sheets after selection. The ETC also will provide the frequency of calibration in accordance with the applicable EPA Methods.

CALIBRATION PROCEDURES

PITOT TUBES

The pitot tubes used during this test program are fabricated according to the specification described and illustrated in the *Code of Federal Regulations*, Title 40, Part 60, Appendix A, Methods 1 through 5 as published in the *Federal Register*, Volume 42, No. 160; hereafter referred to by the appropriate method number. The pitot tubes comply with the alignment specifications in Method 2, Section 4; and the pitot tube assemblies are in compliance with specifications in the same section.

Pitot tube assemblies are calibrated in accordance with Method 2, Section 4, against a standard hemispherical pitot utilizing a wind tunnel meeting the specification in Method 2, Section 4.1.2.

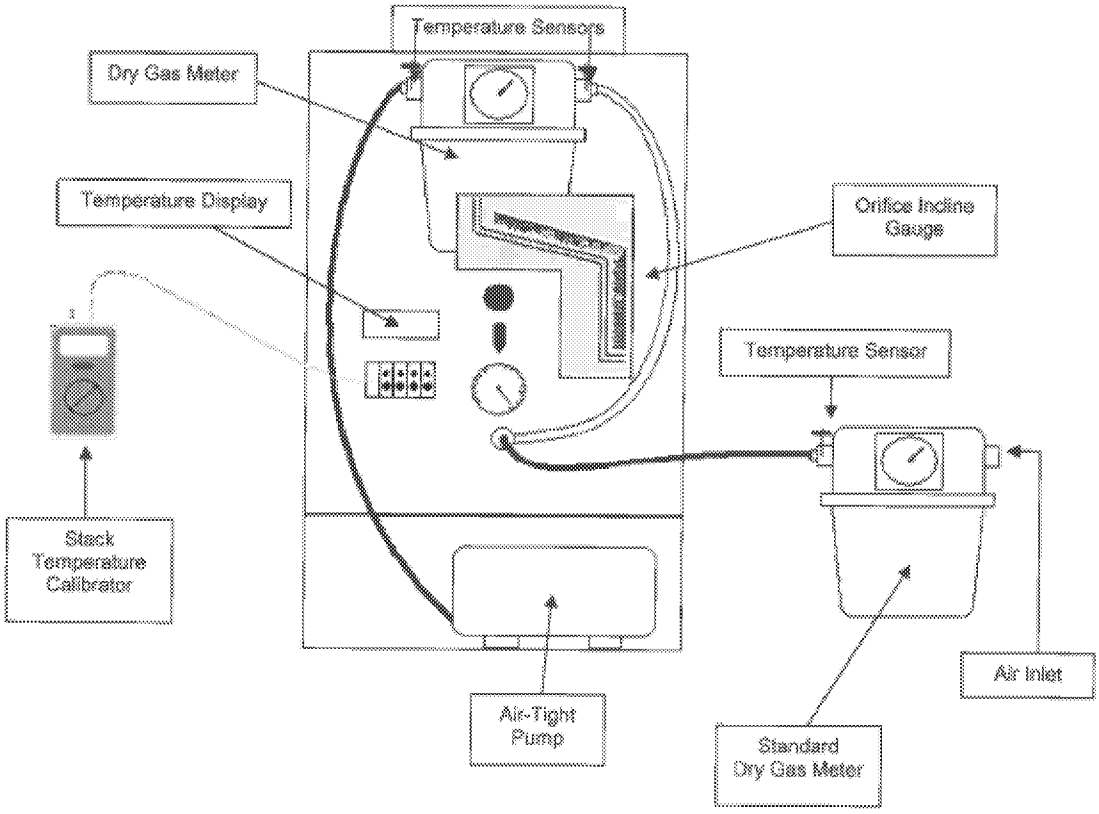
TEMPERATURE SENSING DEVICES

The potentiometer and thermocouples are calibrated against a mercury thermometer in a calibration well. Alternatively, readings are checked utilizing a NBS traceable millivolt source.

DRY GAS METERS

The test meters are calibrated according to Method 5, Section 5.3 and "Procedures for Calibrating and Using Dry Gas Volume Meters as Calibration Standards" by P.R. Westlin and R.T. Shigehara, March 10, 1978.

Dry Gas Meter/Control Module Calibration Diagram



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Method 25A Calibration Summary

Project: _____ Date: _____
Client: _____ Operator: _____
Location: _____ Analyzer ID: _____
Analyzer Range: _____

Cal Run	Cal Level	Test Location	Cylinder ID Serial Number	Cal Gas Type	Cal Time	Expected Cal Value	Actual Response	Difference (% of cal value)	Drift (% of span)	Cylinder Pressure
Pre 1	Zero								N/A	
	Low								N/A	
	Mid								N/A	
	High								N/A	
Post 1/ Pre 2	Zero									
	Low									
	Mid									
	High									
Post 2/ Pre 3	Zero									
	Low									
	Mid									
	High									
Post 3	Zero									
	Low									
	Mid									
	High									
	Zero									
	Low									
	Mid									
	High									
	Zero									
	Low									
	Mid									
	High									

14. EMISSIONS TESTING REPORT

Due to the amount of data that is expected to be generated, the complexity of the issues and the need for additional preparation and review time due to constraints imposed by the COVID-19 pandemic, Sims is requesting a period of 60 days following completing of testing for submission of the Emissions Testing Report:

1. Summary of Results
   a. results of the Emissions Testing;
   b. process and control equipment data recorded during the Emissions Testing;
   c. discussion of any errors that occurred during Emissions Testing; and
   d. discussion of any deviations from the reference test methods or other problems encountered during Emissions Testing.
2. Facility Operations
   a. description of the process and control equipment in operation during the Emissions Testing;
   b. operating parameters of any control equipment in operation during the Emissions Testing;
   c. Facility operating parameters and data, including an explanation of how the operating parameters demonstrate that the Shredder was operating at greater than 180 tons per hour at the time of the Emissions Testing.
   d. data on production rate during Emissions Testing; including:
      i. Weight of ELVs processed through the Shredder;
      ii. Total weight of infeed material into the Shredder;
      iii. Down time of the Shredder during Emissions Testing day(s); and
      iv. Number and description of energy releases, if any.
3. Sampling and Analytical Procedures
   a. sampling port location(s) and dimensions of cross-section;
   b. Sampling Point description, including labeling system;
   c. brief description of sampling procedures, including equipment and diagram;
   d. description of sampling procedures (planned or accidental) that deviated from any standard method;
   e. brief description of analytical procedures, including calibration;
   f. description of analytical procedures (planned or accidental) that deviated from any standard method; and
   g. QA/QC procedures, tests, and results.
4. Appendix
   a. complete results with example calculations;
   b. raw field data;
   c. laboratory report, with signed chain-of-custody forms;
   d. calibration procedures and results;
   e. raw process and equipment data (water flow rates, blower motor amperage, shredder amperage and ELV and other recyclable material processed in the Shredder per Test Run), signed by a Facility representative;
   f. test log(s), if any; and
   g. project participants and titles.

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