West Virginia Department of Environmental Protection
Harold D. Ward
Cabinet Secretary

Construction Permit

R13-3728

This permit is issued in accordance with the West Virginia Air Pollution Control Act (West Virginia Code §§22-5-1 et seq.) and 45 C.S.R. 13 – Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits, Permission to Commence Construction, and Procedures for Evaluation. The permittee identified at the above-referenced facility is authorized to construct the stationary sources of air pollutants identified herein in accordance with all terms and conditions of this permit.

Issued to:

Clean-Seas West Virginia, Inc.
Belle Facility
039-00760

Laura M. Crowder

Laura M. Crowder
Director, Division of Air Quality

Laura M. Crowder

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DN: CN = Laura M. Crowder email = Laura.M.Crowder@wv.gov C = US O = WV DEP OU = DAQ
Date: 2026.08.12 17:50:53 -04'00'

Issued: August 12, 2026

Facility Location:	2700 E Dupont Ave Ste 3B. Belle, Kanawha County, West Virginia 25015
Mailing Address:	Same as above
Facility Description:	Plastic Pyrolysis
NAICS Codes:	325199 - All Other Basic Organic Chemical Manufacturing
SIC Code:	2860- "Industrial Organic Chemicals"
UTM Coordinates:	455,512.60 m Easting • 4,229,035.46 m Northing • Zone 17
Latitude/Longitude:	38.2081876ºN/-81.5081475ºW
Permit Type:	Construction
Description of Change:	This action is for the construction and operation of a chemical manufacturing process (pyrolysis units) that will convert non-hazardous plastic feedstock into pyrolysis oil for the petrochemical industry and synthetic gas to be consumed by combustion units at the facility for process heat. The facility will also include other process heaters, volatile organic storage vessels (tanks), and one emergency engine.

Any person whose interest may be affected, including, but not necessarily limited to, the applicant and any person who participated in the public comment process, by a permit issued, modified, or denied by the Secretary may appeal such action of the Secretary to the Air Quality Board pursuant to article one [§§22B-1-1 et seq.], Chapter 22B of the Code of West Virginia. West Virginia Code §§22-5-14.

As a result of the granting of this permit, the source is a nonmajor source subject to 45CSR30. The permittee shall apply for a Title V (45CSR30) permit in accordance with the requirements of 45CSR30 unless granted a deferral or exemption by the Director from such filing deadline pursuant to a request from the permittee.

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1.0. Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device
Pyrolysis Reactor Units					
1S	N/A	Pyrolysis Reactor Train #1	2026	25 TPD	N/A
	1E	ARTI - 3.5 MMBtu/hr Process Heater w/ EFGR		3.5 MMBtu/hr	None
2S	N/A	Pyrolysis Reactor Train #2	2026	25 TPD	N/A
	2E	ARTI - 3.5 MMBtu/hr Process Heater w/ EFGR		3.5 MMBtu/hr	None
3S	3E	Enclosed Combustion Device (ECD) ARTI	2026	10 MMBtu/hr	N/A
4S	3E	Tank Battery 8 Vessels	2026	21,000 gal per vessel	3C
5S	5E	Emergency Generator Make: Generac Model:SG150 EPA Engine Family No SGNXB08.92O3.	2026	228 Bhp	N/A
6S	6E	Truck Loading	2026	100 gpm	
7S	7E	Heater - Glycol heat transfer fluid Mfg. Heatex Model HCI-3010-25G	2026	4 MMBtu/hr	N/A
8S	8E	Training, Research, Evaluation (TRE) Pyrolysis Reactor with ARTI 0.2 MMBtu/hr Heater	2026	1 TPD	9C
	8E	ARTI 0.2 MMBtu/hr Heater	2026	0.2 MMBtu/hr	None
9S	9E	TRE Flare Refer as Control Device 9C Elevated Flare with a 6 inch flare tip	2026	0.1 MMBtu/hr	N/A
10S	10E	Carbon Material Storage Bin 1 4,300 cubic feet of storage	2026	30 tons	DC1

EFGR - External Flue Gas Recirculation

2.0. General Conditions

2.1. Definitions

2.1.1. All references to the "West Virginia Air Pollution Control Act" or the "Air Pollution Control Act" mean those provisions contained in W.Va. Code §§ 22-5-1 to 22-5-18.

2.1.2. The "Clean Air Act" means those provisions contained in 42 U.S.C. §§ 7401 to 7671q, and regulations promulgated thereunder.

2.1.3. "Secretary" means the Secretary of the Department of Environmental Protection or such other person to whom the Secretary has delegated authority or duties pursuant to W.Va. Code §§ 22-1-6 or 22-1-8 (45 CSR §30-2.12.). The Director of the Division of Air Quality is the Secretary's designated representative for the purposes of this permit.

2.2. Acronyms

CAAA	Clean Air Act Amendments		**NO_X**	Nitrogen Oxides
CBI	Confidential Business Information		**NSPS**	New Source Performance Standards
CEM	Continuous Emission Monitor		**PM**	Particulate Matter
CES	Certified Emission Statement		**$PM_{2.5}$**	Particulate Matter less than 2.5 µm in diameter
C.F.R. *or* CFR	Code of Federal Regulations		**PM_{10}**	Particulate Matter less than 10µm in diameter
CO	Carbon Monoxide		**Ppb**	Pounds per Batch
C.S.R. *or* CSR	Codes of State Rules		**Pph**	Pounds per Hour
DAQ	Division of Air Quality		**Ppm**	Parts per Million
DEP	Department of Environmental Protection		**Ppm_V or ppmw**	Parts per Million by Volume
dscm	Dry Standard Cubic Meter		**PSD**	Prevention of Significant Deterioration
FOIA	Freedom of Information Act		**Psi**	Pounds per Square Inch
HAP	Hazardous Air Pollutant		**SIC**	Standard Industrial Classification
HON	Hazardous Organic NESHAP		**SIP**	State Implementation Plan
HP	Horsepower		**SO_2**	Sulfur Dioxide
lbs/hr	Pounds per Hour		**TAP**	Toxic Air Pollutant
LDAR	Leak Detection and Repair		**TPY**	Tons per Year
M	Thousand		**TRS**	Total Reduced Sulfur
MACT	Maximum Achievable Control Technology		**TSP**	Total Suspended Particulate
MDHI	Maximum Design Heat Input		**USEPA**	United States Environmental Protection Agency
MM	Million		**UTM**	Universal Transverse Mercator
MMBtu/hr *or* mmbtu/hr	Million British Thermal Units per Hour		**VEE**	Visual Emissions Evaluation
MMCF/hr *or* mmcf/hr	Million Cubic Feet per Hour		**VOC**	Volatile Organic Compounds
NA	Not Applicable		**VOL**	Volatile Organic Liquids
NAAQS	National Ambient Air Quality Standards			
NESHAPS	National Emissions Standards for Hazardous Air Pollutants			

2.3. Authority

This permit is issued in accordance with West Virginia Air Pollution Control Act W.Va. Code §§ 22-5-1. et seq. and the following Legislative Rules promulgated thereunder:

2.3.1. 45CSR13 – *Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits and Procedures for Evaluation*.

2.4. Term and Renewal

2.4.1. This Permit shall remain valid, continuous and in effect unless it is revised, suspended, revoked, or otherwise changed under an applicable provision of 45CSR13 or any other applicable legislative rule.

2.5. Duty to Comply

2.5.1. The permitted facility shall be constructed and operated in accordance with the plans and specifications filed in Permit Application R13-3728, and any modifications, administrative updates, or amendments thereto. The Secretary may suspend or revoke a permit if the plans and specifications upon which the approval was based are not adhered to.
[45CSR§§13-5.10 and 10.3.]

2.5.2. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the West Virginia Code and the Clean Air Act and is grounds for enforcement action by the Secretary or USEPA.

2.5.3. Violations of any of the conditions contained in this permit, or incorporated herein by reference, may subject the permittee to civil and/or criminal penalties for each violation and further action or remedies as provided by West Virginia Code 22-5-6 and 22-5-7.

2.5.4. Approval of this permit does not relieve the permittee herein of the responsibility to apply for and obtain all other permits, licenses, and/or approvals from other agencies, i.e., local, state, and federal, which may have jurisdiction over the construction and/or operation of the source(s) and/or facility herein permitted.

2.6. Duty to Provide Information

The permittee shall furnish to the Secretary within a reasonable time any information the Secretary may request in writing to determine whether cause exists for administratively updating, modifying, revoking, or terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the Secretary copies of records to be kept by the permittee. For information claimed to be confidential, the permittee shall furnish such records to the Secretary along with a claim of confidentiality in accordance with 45CSR31. If confidential information is to be sent to USEPA, the permittee shall directly provide such information to USEPA along with a claim of confidentiality in accordance with 40 C.F.R. Part 2.

2.7. Duty to Supplement and Correct Information

Upon becoming aware of a failure to submit any relevant facts or a submittal of incorrect information in any permit application, the permittee shall promptly submit to the Secretary such supplemental facts or corrected information.

2.8. Administrative Update

The permittee may request an administrative update to this permit as defined in and according to the procedures specified in 45CSR13.
[45CSR§13-4.]

2.9. Permit Modification

The permittee may request a minor modification to this permit as defined in and according to the procedures specified in 45CSR13.
[45CSR§13-5.4.]

2.10 Major Permit Modification

The permittee may request a major modification as defined in and according to the procedures specified in 45CSR14 or 45CSR19, as appropriate.
[45CSR§13-5.1]

2.11. Inspection and Entry

The permittee shall allow any authorized representative of the Secretary, upon the presentation of credentials and other documents as may be required by law, to perform the following:

a. At all reasonable times (including all times in which the facility is in operation) enter upon the permittee's premises where a source is located or emissions related activity is conducted, or where records must be kept under the conditions of this permit.

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit.

c. Inspect at reasonable times (including all times in which the facility is in operation) any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit; and

d. Sample or monitor at reasonable times substances or parameters to determine compliance with the permit or applicable requirements or ascertain the amounts and types of air pollutants discharged.

[WV Code §22-5-4(a)(9)]

2.12. Reserved

2.13. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a permittee in an enforcement action that it should have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. However, nothing in this paragraph shall be construed as precluding consideration of a need to halt or

reduce activity as a mitigating factor in determining penalties for noncompliance if the health, safety, or environmental impacts of halting or reducing operations would be more serious than the impacts of continued operations.

2.14. Suspension of Activities

In the event the permittee should deem it necessary to suspend, for a period in excess of sixty (60) consecutive calendar days, the operations authorized by this permit, the permittee shall notify the Secretary, in writing, within two (2) calendar weeks of the passing of the sixtieth (60) day of the suspension period.

2.15. Property Rights

This permit does not convey any property rights of any sort or any exclusive privilege.

2.16. Severability

The provisions of this permit are severable and should any provision(s) be declared by a court of competent jurisdiction to be invalid or unenforceable, all other provisions shall remain in full force and effect.

2.17. Transferability

This permit is transferable in accordance with the requirements outlined in Section 10.1 of 45CSR13. **[45CSR§13-10.1.]**

2.18. Notification Requirements

The permittee shall notify the Secretary, in writing, no later than thirty (30) calendar days after the actual startup of the operations authorized under this permit.

2.19. Credible Evidence

Nothing in this permit shall alter or affect the ability of any person to establish compliance with, or a violation of, any applicable requirement through the use of credible evidence to the extent authorized by law. Nothing in this permit shall be construed to waive any defense otherwise available to the permittee including, but not limited to, any challenge to the credible evidence rule in the context of any future proceeding.

3.0. Facility-Wide Requirements

3.1. Limitations and Standards

3.1.1. **Open burning.** The open burning of refuse by any person, firm, corporation, association, or public agency is prohibited except as noted in 45CSR§6-3.1.
[45CSR§6-3.1.]

3.1.2. **Open burning exemptions.** The exemptions listed in 45CSR§6-3.1 are subject to the following stipulation: Upon notification by the Secretary, no person shall cause, suffer, allow, or permit any form of open burning during existing or predicted periods of atmospheric stagnation. Notification shall be made by such means as the Secretary may deem necessary and feasible.
[45CSR§6-3.2.]

3.1.3. **Asbestos.** The permittee is responsible for thoroughly inspecting the facility, or part of the facility, prior to commencement of demolition or renovation for the presence of asbestos and complying with 40 C.F.R. § 61.145, 40 C.F.R. § 61.148, and 40 C.F.R. § 61.150. The permittee, owner, or operator must notify the Secretary at least ten (10) working days prior to the commencement of any asbestos removal on the forms prescribed by the Secretary if the permittee is subject to the notification requirements of 40 C.F.R. § 61.145(b)(3)(i). The USEPA, the Division of Waste Management, and the Bureau for Public Health - Environmental Health require a copy of this notice to be sent to them.
[40 CFR §61.145(b) and 45CSR§34]

3.1.4. **Odor.** No person shall cause, suffer, allow, or permit the discharge of air pollutants which cause or contribute to an objectionable odor at any location occupied by the public.
[45CSR§4-3.1] ***[State Enforceable Only]***

3.1.5. **Permanent shutdown.** A source which has not operated at least 500 hours in one 12-month period within the previous five (5) year time period may be considered permanently shutdown, unless such source can provide to the Secretary, with reasonable specificity, information to the contrary. All permits may be modified or revoked and/or reapplication or application for new permits may be required for any source determined to be permanently shutdown.
[45CSR§13-10.5.]

3.1.6. **Standby plan for reducing emissions.** When requested by the Secretary, the permittee shall prepare standby plans for reducing the emissions of air pollutants in accordance with the objectives set forth in Tables I, II, and III of 45CSR11.
[45CSR§11-5.2.]

3.2. Monitoring Requirements

[Reserved]

3.3. Testing Requirements

3.3.1. **Stack testing.** As per provisions set forth in this permit or as otherwise required by the Secretary, in accordance with the West Virginia Code, underlying regulations, permits and orders, the permittee shall conduct test(s) to determine compliance with the emission limitations set forth in this permit and/or established or set forth in underlying documents. The Secretary, or his duly authorized representative, may at his option witness or conduct such test(s). Should the Secretary exercise his option to conduct such test(s), the operator shall provide all necessary sampling

connections and sampling ports to be located in such manner as the Secretary may require, power for test equipment and the required safety equipment, such as scaffolding, railings and ladders, to comply with generally accepted good safety practices. Such tests shall be conducted in accordance with the methods and procedures set forth in this permit or as otherwise approved or specified by the Secretary in accordance with the following:

a. The Secretary may on a source-specific basis approve or specify additional testing or alternative testing to the test methods specified in the permit for demonstrating compliance with 40 C.F.R. Parts 60, 61, and 63 in accordance with the Secretary's delegated authority and any established equivalency determination methods which are applicable. If a testing method is specified or approved which effectively replaces a test method specified in the permit, the permit may be revised in accordance with 45CSR§13-4. or 45CSR§13-5.4 as applicable.

b. The Secretary may on a source-specific basis approve or specify additional testing or alternative testing to the test methods specified in the permit for demonstrating compliance with applicable requirements which do not involve federal delegation. In specifying or approving such alternative testing to the test methods, the Secretary, to the extent possible, shall utilize the same equivalency criteria as would be used in approving such changes under Section 3.3.1.a. of this permit. If a testing method is specified or approved which effectively replaces a test method specified in the permit, the permit may be revised in accordance with 45CSR§13-4. or 45CSR§13-5.4 as applicable.

c. All periodic tests to determine mass emission limits from or air pollutant concentrations in discharge stacks and such other tests as specified in this permit shall be conducted in accordance with an approved test protocol. Unless previously approved, such protocols shall be submitted to the Secretary in writing at least thirty (30) days prior to any testing and shall contain the information set forth by the Secretary. In addition, the permittee shall notify the Secretary at least fifteen (15) days prior to any testing so the Secretary may have the opportunity to observe such tests. This notification shall include the actual date and time during which the test will be conducted and, if appropriate, verification that the tests will fully conform to a referenced protocol previously approved by the Secretary.

d. The permittee shall submit a report of the results of the stack test within sixty (60) days of completion of the test. The test report shall provide the information necessary to document the objectives of the test and to determine whether proper procedures were used to accomplish these objectives. The report shall include the following: the certification described in paragraph 3.5.1.; a statement of compliance status, also signed by a responsible official; and a summary of conditions which form the basis for the compliance status evaluation. The summary of conditions shall include the following:

1. The permit or rule evaluated, with the citation number and language.
2. The result of the test for each permit or rule condition; and,
3. A statement of compliance or noncompliance with each permit or rule condition.

[WV Code § 22-5-4(a)(14-15) and 45CSR13]

3.4. Recordkeeping Requirements

3.4.1. **Retention of records.** The permittee shall maintain records of all information (including monitoring data, support information, reports, and notifications) required by this permit recorded in a form suitable and readily available for expeditious inspection and review. Support information includes all calibration and maintenance records and all original strip-chart recordings

for continuous monitoring instrumentation. The files shall be maintained for at least five (5) years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. At a minimum, the most recent two (2) years of data shall be maintained on site. The remaining three (3) years of data may be maintained off site, but must remain accessible within a reasonable time. Where appropriate, the permittee may maintain records electronically (on a computer, on computer floppy disks, CDs, DVDs, or magnetic tape disks), on microfilm, or on microfiche.

3.4.2. **Odors.** For the purposes of 45CSR4, the permittee shall maintain a record of all odor complaints received, any investigation performed in response to such a complaint, and any responsive action(s) taken.
[45CSR§4. *State Enforceable Only.*]

3.5. Reporting Requirements

3.5.1. **Responsible official.** Any application form, report, or compliance certification required by this permit to be submitted to the DAQ and/or USEPA shall contain a certification by the responsible official that states that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

3.5.2. **Confidential information.** A permittee may request confidential treatment for the submission of reporting required by this permit pursuant to the limitations and procedures of W.Va. Code § 22-5-10 and 45CSR31.

3.5.3. **Correspondence.** All notices, requests, demands, submissions and other communications required or permitted to be made to the Secretary of DEP and/or USEPA shall be made in writing and shall be deemed to have been duly given when delivered by hand, or mailed first class or by private carrier with postage prepaid to the address(es), or submitted in electronic format by email as set forth below or to such other person or address as the Secretary of the Department of Environmental Protection may designate:

DAQ: Director WVDEP Division of Air Quality 601 57th Street Charleston, WV 25304-2345 **DAQ Compliance and Enforcement[1]:** DEPAirQualityReports@wv.gov	**US EPA:** Section Chief U.S. Environmental Protection Agency, Region III Enforcement and Compliance Assurance Division Air Section (3ED21) Four Penn Center 1600 John F. Kennedy Boulevard Philadelphia, PA 19103-2852

[1]For all self-monitoring reports (MACT, GACT, NSPS, etc.), stack tests and protocols, Notice of Compliance Status Reports, Initial Notifications, etc.

3.5.4. The permittee shall submit reports of all required monitoring on or before September 15 for the reporting period January 1 to June 30 and March 15 for the reporting period July 1 to December 31. All instances of deviation from permit requirements must be clearly identified in such reports; and

3.5.5. The permittee shall submit to the Director on or before March 15, a certification of compliance with all requirements of this permit for the previous calendar year ending on December 31. If, during the previous annual period, the permittee had been out of compliance with any part of this permit, it shall be noted along with the following information: 1) the source/equipment/process

that was non-compliant and the specific requirement of this permit that was not met, 2) the date the permittee discovered that the source/ equipment/process was out of compliance, 3) the date the Director was notified, 4) the corrective measures to get the source/equipment/process back into compliance, and 5) the date the source began to operate in compliance. The submission of any non-compliance report shall give no enforcement action immunity to episodes of non-compliance contained therein.

3.5.6. **Operating Fee**

3.5.6.1. In accordance with 45CSR30 – Operating Permit Program, the permittee shall pay fees on an annual basis in accordance with 45CSR§30-8. A receipt for the appropriate fee shall be maintained on the premises for which the receipt has been issued and shall be made immediately available for inspection by the Secretary or his/her duly authorized representative.

3.5.6.2. In accordance with 45CSR30 – Operating Permit Program, enclosed with this permit is a Certified Emissions Statement (CES) Invoice, from the date of initial startup through the following June 30. Said invoice and the appropriate fee shall be submitted to this office no later than 30 days prior to the date of initial startup. For any startup date other than July 1, the permittee shall pay a fee or prorated fee in accordance with Section 4.5 of 45CSR22. A copy of this schedule may be found attached to the Certified Emissions Statement (CES) Invoice.

3.5.7. **Emission inventory.** At such time(s) as the Secretary may designate, the permittee herein shall prepare and submit an emission inventory for the previous year, addressing the emissions from the facility and/or process(es) authorized herein, in accordance with the emission inventory submittal requirements of the Division of Air Quality. After the initial submittal, the Secretary may, based upon the type and quantity of the pollutants emitted, establish a frequency other than on an annual basis.

4.0. Source-Specific Requirements for Incoming Plastic Feedstock

4.1. Limitations and Standards

4.1.1. **Acceptable Feedstock Specifications:** The permittee shall exclusively accept and process plastic feedstock that has been pre-processed off-site prior to receipt. All received plastic feedstock must meet the following stringent requirements:

- **Composition:** The feedstock shall consist of no less than 85% by weight of either polyethylene (PE), polypropylene (PP), or a combination thereof per shipment received.
- **Purity:** The feedstock shall be sorted to remove foreign matter.
- **Sizing:** The feedstock shall be sized appropriately for processing within the pyrolysis reactor.
- **Moisture:** The feedstock must be washed and free of free-flowing liquids.
- **Regulatory Status:** The feedstock shall not exhibit the characteristics of a hazardous waste, nor be a listed hazardous waste, as defined in 40 CFR § 261.3.
- **Packaging:** Shipments shall arrive at the facility in sealed containers. The feedstock shall not be received in bales or other forms that severely limit or prevent visual inspection.
- **Documentation:** A Certificate of Analysis (COA) shall accompany each shipment upon arrival. Any shipment lacking a valid COA shall be immediately rejected.
- **Traceability:** Each shipment shall be uniquely identifiable, documenting the date received, the date inspected by the permittee, and the specific facility of origin.

4.1.2. **Feedstock Inspection Plan:** The permittee shall develop and implement a written inspection procedure to ensure that each received shipment of plastic feedstock strictly meets the requirements of Condition 4.1.1.

a. The permittee shall develop, submit for review, and implement the feedstock inspection plan 15 days prior to the facility receiving any feedstock. Any feedstock received at the facility prior to permit issuance shall be separated at the facility and not processed until the material can undergo inspection in accordance with the plan that was submitted to the Director.

b. The permittee shall review and update this inspection plan at least once annually, or whenever more than 5% by weight of the pyrolysis oil produced in a calendar quarter cannot be shipped or sold as a viable product due to contamination.

4.1.3. **Acceptable Feedstock Storage:** The permittee shall store the acceptable plastic feedstock in sealed containers or inside a fully enclosed structure in accordance with the following requirements:

- No containers or storage structures shall exhibit any visible emissions. **[45CSR§7-3.7]**
- The storage method shall prevent ambient moisture and precipitation from being absorbed into the plastic feedstock.
- The storage method shall minimize the decomposition of the feedstock from ultraviolet (UV) radiation.

- The permittee shall not store more than 4,500 tons of acceptable plastic feedstock at the facility at any given time.

- No individual batch of plastic feedstock shall be stored on-site for more than twelve (12) consecutive months.

4.1.4. **Unacceptable Feedstock Management:** The permittee shall establish a dedicated, segregated area for storing rejected or unacceptable feedstock. Plastic feedstock that has been inspected and determined to be unacceptable shall be removed from the facility within five (5) days of such determination.

4.1.5. **Fugitive Dust Control:** The permittee shall maintain all paved and unpaved roadways at the facility in a manner that minimizes fugitive particulate matter (PM). Specifically, the permittee shall apply control measures to all active unpaved roadways to prevent fugitive PM from being discharged beyond the facility's boundary lines. Such control measures may include the application of water, chemical dust suppressants, or other measures that effectively reduce the silt loading of the roadway. Records of these control applications shall be maintained in accordance with Condition 3.4.1.
[45CSR§7-5.2]

4.1.6. **Carbon Material Storage Bin**
No visible emissions shall be exhibited at any time from each storage bin or Emission Points 10E.
[45CSR§7-3.7.]

4.1.7. **Pneumatic Conveying System:** The permittee shall operate and maintain all pneumatic conveying systems associated with the carbon storage bin in a manner that is free of leaks to limit the release of fugitive PM emissions.
[45CSR§7-5.1]

4.1.8. **Benzene Waste Operations NESHAP:** The permittee shall manage facility operations to ensure the total annual benzene quantity in the waste generated by the facility remains less than 1.0 Megagram per year (Mg/yr) (1.1 tons/yr).
[40 CFR § 61.342(d)]

4.1.9. **Operation and Maintenance of Air Pollution Control Equipment.** The permittee shall, to the extent practicable, install, maintain, and operate all air pollution control equipment listed in Section 1.0 and associated monitoring equipment in a manner consistent with safety and good air pollution control practices for minimizing emissions, or comply with any more stringent limits set forth in this permit or as set forth by any State rule, Federal regulation, or alternative control plan approved by the Secretary.
[45CSR§13-5.10.]

4.2. Monitoring Requirements

4.2.1. **Visible Emissions Monitoring (Carbon Material Storage Bins 10S)** To demonstrate ongoing compliance with the visible emissions (opacity) limit of Condition 4.1.6., the permittee shall conduct periodic tiered visible emissions monitoring of the exhaust stack of the dust collector for the storage bin (Emission Points 10E).

a. Tier 1 U.S. EPA Method 22 Observation:

1. The permittee shall conduct a visible emissions observation using U.S. EPA Method 22 (40 CFR Part 60, Appendix A) at least once per calendar half-year (semi-annually).

2. The Method 22 observation shall be conducted for a continuous duration of no less than **2 minutes** while carbon material is being fed into the storage bin.

3. If no visible emissions are observed, then no further action is required for that monitoring period.

b. Tier 2 and Corrective Action: If any visible emissions are observed during the Tier 1 screening, the permittee shall immediately log a deviation and take one of the following actions:

1. **Immediate Maintenance:** The permittee may immediately cease feeding carbon material into the bin, perform corrective maintenance of either the bin or dust collector (e.g., inspect the bags or cartridges), and restart the unit. Within 24 hours of restarting the unit, the permittee shall conduct a new Tier 1 screening while feeding carbon material to the bin. If the unit passes the new screening, no further action is required.

2. If maintenance is not performed, or if the unit fails a subsequent Tier 1 screening, the permittee shall conduct a formal U.S. EPA Method 9 observation (40 CFR Part 60, Appendix A) within **seventy-two (72) hours** of the failed second Method 22 screening. The permittee shall report the deviation to the Director in accordance with Condition 3.5.3. with an initial plan to restore compliance with the visible emission standard and follow-up report within 10 days after restoring compliance.

c. Recordkeeping Requirements: The permittee shall maintain records of all visible emissions monitoring in accordance with Condition 3.4.1. Records shall include:

1. The date, time, and duration of all Method 22 observations.

2. The amount of carbon material fed into the storage bin during the observation period.

3. The name and affiliation of the observer, and (if applicable) a copy of their current Method 9 certification.

4. The results of the observations, including the total time of visible emissions during Method 22 checks.

5. Details of any corrective maintenance performed on the bin and/or control device as a result of a failed Tier 1 screening.

4.2.2. **Periodic Hazardous Waste Determination:** The permittee shall conduct a hazardous waste determination in accordance with 40 CFR § 262.11 on the secondary material streams leaving the pyrolysis process (e.g., syngas, pyrolysis oil, char) at least once every twelve (12) months.

- If a determination yields that any stream currently being routed to an on-site combustion unit is a hazardous waste, the permittee shall immediately cease routing that material to the combustion unit.

- The permittee shall notify the Director within ten (10) days of this determination in accordance with Condition 3.5.3.

- The hazardous stream shall not be combusted on-site until a compliance plan that legally addresses the combustion of hazardous secondary material (e.g., RCRA/OSWI applicability) has been submitted to and approved by the Director.

- Records of each determination shall be maintained in accordance with Condition 3.4.1.

4.2.3. The permittee shall conduct an inspection of the entire facility for sources of fugitive PM emissions (e.g. haul roads, parking areas, storage areas, etc.) at least once per calendar half-year (semi-annually). This inspection shall include the carbon storage bin and associated pneumatic conveying system. Any indications of fugitive PM emissions or equipment/control measure defect shall be recorded and the permittee shall implement a corrective action plan within 10 days of identifying the indication or defect. Records of the inspection results to include the date and time and inspector, and summary of corrective action taken with the date that the corrective action was fully implemented shall be maintained in accordance with Condition 3.4.1.

4.3. Testing Requirements

[Reserved]

4.4. Recordkeeping Requirements

4.4.1. **Record of Monitoring.** The permittee shall keep records of monitoring information that include the following:

a. The date, place as defined in this permit, and time of sampling or measurements.

b. The date(s) analyses were performed.

c. The company or entity that performed the analyses.

d. The analytical techniques or methods used.

e. The results of the analyses; and

f. The operating conditions existing at the time of sampling or measurement.

4.4.2. **Record of Maintenance of Air Pollution Control Equipment.** For all pollution control equipment listed in Section 1.0, the permittee shall maintain accurate records of all required pollution control equipment inspection and/or preventative maintenance procedures.

4.4.3. **Record of Malfunctions of Air Pollution Control Equipment.** For all air pollution control equipment listed in Section 1.0., the permittee shall maintain records of the occurrence and duration of any malfunction or operational shutdown of the air pollution control equipment during which excess emissions occur. For each such case, the following information shall be recorded:

a. The equipment involved.

b. Steps taken to minimize emissions during the event.

c. The duration of the event.

d. The estimated increase in emissions during the event.

For each such case associated with an equipment malfunction, the additional information shall also be recorded:

e. The cause of the malfunction.

f. Steps taken to correct the malfunction.

g. Any changes or modifications to equipment or procedures that would help prevent future recurrences of the malfunction.

4.4.4. **Benzene Waste Determinations & Exceedance Notification:** The permittee shall determine the total annual benzene quantity from facility waste and the total annual benzene quantity in the facility wastewater stream in accordance with the procedures and U.S. EPA-approved testing methodologies outlined in 40 CFR § 61.355(a) and (c).
[40 CFR §§ 61.342(a), (d) and § 61.355(a)]

a. If the total annual benzene quantity from facility waste is less than 1.0 Mg/yr (1.1 tons/yr), the permittee shall repeat the determination whenever there is a change in the process generating the waste that could cause the quantity to increase to 1.0 Mg/yr or more.
[40 CFR § 61.355(a)(5)(ii)]

b. If any benzene waste determination or process change yields a Total Annual Benzene (TAB) quantity equal to or greater than 1.0 Mg/yr (1.1 tons/yr), the permittee shall notify the Director in writing within ten (10) calendar days of such determination in accordance with Condition 3.5.3. Within sixty (60) days of the determination, the permittee shall submit a compliance plan demonstrating full compliance with the applicable waste management and control standards of 40 CFR Part 61 Subpart FF.

c. The permittee shall repeat the determination at least once per year, and whenever there is a process change that could cause the quantity to increase to 10.0 Mg/yr (11 tons/yr) or more.
[40 CFR § 61.355(a)(4)(ii)]

d. The permittee shall comply with all applicable recordkeeping requirements of 40 CFR § 61.356 and such records shall be maintained in accordance with Condition 3.4.1.

4.4.5. The permittee shall maintain a continuous, rolling inventory log of all plastic feedstock to demonstrate compliance with the storage and residence time limitations of Conditions 4.1.3 and 4.1.4. This log shall be maintained in accordance with Condition 3.4.1. and shall, at a minimum, record the following for each discrete batch or shipment:

Receipt & Inspection: The date of arrival, specific shipment identifier (e.g., bill of lading number), total mass received (in tons), and the determination of whether the batch is "acceptable" or "unacceptable."

Acceptable Feedstock: The date(s) the acceptable batch is processed into the pyrolysis trains (to verify compliance with the 12-month residence limit).

Inventory Balance: A continuous calculated balance of the total acceptable feedstock currently stored on-site (in tons) to verify it remains below the 4,500-ton limit.

Unacceptable Feedstock: The exact date the unacceptable feedstock was physically shipped off-site to verify compliance with the 5-day removal limit.

4.5. Reporting Requirements

4.5.1. **Feedstock Inspection Plan Submittal.** The permittee shall submit the written inspection procedure required by Condition 4.1.2 to the Director no later than fifteen (15) days before receiving any plastic feedstock on-site. Such submittal shall be made in accordance with Condition 3.5.3. of this permit.

4.5.2. **Inspection Plan Revisions.** The permittee shall furnish any subsequent amendments or updates to the feedstock inspection plan to the Director at least fifteen (15) days prior to the implementation of such changes.

4.5.3. **Initial Benzene Report.** Within ninety (90) days of the actual startup of the facility, the permittee shall submit a report to the Director and the USEPA summarizing the regulatory status of each benzene-containing waste stream subject to 40 CFR § 61.342. This report shall be submitted in accordance with Condition 3.5.3. and shall include the following information:
[40 CFR § 61.357(a)]

a. The total annual benzene quantity generated from all facility waste.

b. A summary table identifying each waste stream and a determination of whether benzene emissions from that stream will be controlled.

c. For each waste stream not subject to benzene emission controls, the summary shall further include:

i. The water content of the stream (noting if greater than 10 percent);

ii. Classification of the stream (e.g., process wastewater, tank drawdown, or leachate);

iii. The annual waste quantity;

iv. The range of measured benzene concentrations;

v. The annual average flow-weighted benzene concentration; and

vi. The total annual benzene quantity for that specific stream.

d. The report shall reflect the waste stream characteristics based on the facility's current physical and operational configuration. Documentation is only required for streams contacting benzene-containing materials and does not require descriptions of future control installations.

4.5.4. **Annual Benzene Report.** The permittee shall submit annual reports documenting the total annual benzene quantity from the facility pursuant to the requirements of 40 CFR § 61.357(b) or (c). Reporting shall be conducted on a calendar year basis (January 1 to December 31) and shall be submitted or postmarked within sixty (60) days of the end of the reporting period. Records of these reports shall be maintained in accordance with Condition 3.4.1.

5.0. Source-Specific Requirements for Pyrolysis Reactors Trains 1S and 2S

5.1. Limitations and Standards

5.1.1. **Pyrolysis Reactor Trains (1S and 2S) and Process Heaters**
The following requirements apply to each pyrolysis reactor train (1S and 2S) and associated equipment, which includes the condenser and synthetic gas cleaning equipment:

a. Emission Limits: Emissions from each process heater of the respective pyrolysis reactor train shall not exceed the following limits:

1. **Nitrogen Oxides (NOx):** 0.13 lb/hr (3-hour average) OR a concentration of 30 ppmvd corrected to 3% oxygen.

2. **Carbon Monoxide (CO):** 0.13 lb/hr (3-hour average) OR a concentration of 50 ppmvd corrected to 3% oxygen.

3. **Particulate Matter (PM_{10} / $PM_{2.5}$):** 0.02 lb/hr (6-hour average).

4. **Total Particulate Matter (PM):** 0.02 lb/hr (3-hour average). **[45CSR§7-4.1.]**

5. **Sulfur Dioxide (SO_2):** 0.06 lb/hr (3-hour average) when firing synthetic gas, or a concentration of 10 ppmvd corrected to 3% oxygen. **[45CSR§10-5.1.]**

6. **Volatile Organic Compounds (VOC):**

   i. 0.02 lb/hr (3-hour average) when firing natural gas or propane; OR

   ii. 0.03 pounds per hour and a concentration of 7.3 ppmvd corrected to 3% oxygen when firing Process-Derived Syngas (PDS).

7. **Total Hazardous Air Pollutants (HAP):** 0.06 lb/hr (3-hour average).

8. **Hydrogen Chloride (HCl):** 0.05 pounds per hour or 15 ppmvd corrected to 3% oxygen (3-hour average). **[45CSR§7-4.2. and Table 45-7B]**

9. **Visible Emissions (Opacity):** Visible emissions from emission points 1E and 2E shall not equal or exceed 20% opacity on a six (6) minute average basis. **[45CSR§7-4.1.]**

b. Operational Limitations:

1. **Equipment Operation:** The permittee shall not operate either pyrolysis train unless the primary synthetic gas condensers and cleaning equipment are operational.

2. **Feedstock Limit:** The permittee shall not charge more than 2,083 pounds per hour of plastic feedstock into each operating pyrolysis train on a daily average basis.

3. **Oxygen Limit:** Each pyrolysis unit shall be operated in an oxygen-free/oxygen-limited atmosphere which shall not contain an oxygen concentration greater than 20,000 ppm (2.0% by volume) at any time when the unit is in operation, startup, or shutdown mode.

4. **Heat Input Limit:** The maximum heat energy inputted into each process heater shall not exceed 3.5 MMBtu per hour on a daily average basis.

5. **Closed Vent System:** All pressure relief devices for each pyrolysis train shall be hard-piped through a closed vent system to the enclosed combustion device (3C).

6. **Process-Derived Syngas (PDS):**

i. The PDS shall have a daily average heating value of no less than 997 Btu per standard cubic foot on a gross basis

ii. The PDS shall not have a total sulfur content of greater than 6.13 grains of sulfur per 100 scf (104 ppmdv)

iii. The PDS shall not have a maximum total chlorine or HCl of greater than 156 ppmdv.

iv. The PDS shall not have a metal HAP, which shall include Antimony, Arsenic, Beryllium, Cadmium, Chromium, Lead, Manganese, Mercury, and Nickel, content greater than 0.00389 grains per 100 scf.

c. Fuel and Startup/Shutdown Requirements:

1. Each process heater for each train shall be fired only with pipeline natural gas or propane during startup and shutdown events. During normal operations, the heaters shall be fired with natural gas, propane, or Process-Derived Syngas (PDS) that meets the definition of a non-waste fuel in accordance with 40 CFR Part 241.

2. A startup event shall end 15 minutes after the firebox temperature of the process heater is equal to or above 1,800°F, or the minimum operating temperature established through performance testing as required in Condition 5.3.1.

3. A shutdown event begins when the firebox temperature drops below 1,800°F or the minimum operating temperature established through performance testing.

4. The permittee shall develop and implement written startup operating procedures. These procedures must identify the parameters that must be satisfied before plastic feedstock is introduced, and how the ECD (3C) will be operated to limit the duration of startup and minimize raw syngas venting. The permittee shall review these procedures at least once every two years.

d. Non-Waste Determination (40 CFR Part 241): Prior to the initial startup of the pyrolysis trains, the permittee shall prepare a non-waste/waste self-determination or submit a petition to the EPA Administrator for all streams exiting the pyrolysis train (e.g., syngas, pyrolysis oil) that are routed to a combustion device as fuel. A record of this determination shall be maintained on-site for the life of the pyrolysis trains. If utilizing a site-specific "self-determination" under 40 CFR 241.3(b), the documentation must clearly show how the processed secondary material meets each of the legitimacy criteria under 40 CFR 241.3(d)(1).

5.1.2. **Enclosed Combustion Device (ECD - 3C / 3S)**
The Enclosed Combustion Device (ECD), identified as emission unit 3S and control device 3C, shall be operated and maintained in accordance with the following requirements:

a. Emission Limits: Emissions from the ECD exhaust stack shall not exceed the following limits:

1. **Nitrogen Oxides (NO_x):** 0.97 lb/hr (3-hour average) OR a concentration of 80 ppmvd corrected to 3% oxygen.

2. **Carbon Monoxide (CO):** 0.37 lb/hr (3-hour average) OR a concentration of 80 ppmvd corrected to 3% oxygen.

3. **Sulfur Dioxide (SO_2):** 0.17 lb/hr (3-hour average) OR a concentration of 10 ppmvd corrected to 3% oxygen. **[45CSR§10-5.1.]**

4. **PM_{10} /$PM_{2.5}$ emissions:** 0.05 lb/hr (6-hour average).

5. **Particulate Matter (PM):** 0.05 lb/hr (3-hour average). **[45CSR§6-4.1.]**

6. **Volatile Organic Compounds (VOC):** 0.09 lb/hr (3-hour average) OR a concentration of 7.5 ppmvd corrected to 3% oxygen.

7. **Total Hazardous Air Pollutants (HAP):** 0.02 lb/hr (3-hour average), of which Metal HAPs shall not exceed 5.45E-5 lb/hr (3-hour average).

8. **Hydrogen Chloride (HCl):** 0.001 pounds per hour or 15 ppmvd corrected to 7% oxygen (3-hour average).

9. **Visible Emissions (Opacity):** Visible emissions from emission point 3E shall not equal or exceed 20% opacity on a six (6) minute average basis. **[45CSR§6-4.3.]**

b. Operational and Performance Standards:

1. **Destruction Efficiency:** The permittee shall install, operate, and maintain the ECD to achieve a minimum destruction efficiency of 99% for VOCs, or an outlet VOC concentration no greater than 7.5 ppmvd at 3% O_2 (expressed as propane).

2. **Heat Input and Fuel:** The maximum amount of heat energy inputted into the ECD shall not exceed 10.0 MMBtu per hour from all combined sources (effluent and supplemental fuel). The permittee shall utilize only pipeline natural gas or propane as the supplemental fuel source.

3. **Preheating:** The permittee shall preheat the ECD combustion chamber to a minimum of 850°F prior to venting effluent to the device during a pyrolysis train startup or planned shutdown event.

4. **Operating Temperature:** During the oxidation of any effluent process gas in the ECD, the unit shall be operated with a minimum combustion chamber temperature of 1,800°F on a 3-hour block average (or the average over the duration of the venting event if the event is less than 3 hours).

5. **Operating Hour Limitation:** The permittee shall not route effluent process gas from the pyrolysis reactor trains (1S and 2S) to the Enclosed Combustion Device (3C) during startup and shutdown events for more than 312 hours per rolling 12-month period. *(Note: This limitation does not apply to the continuous, low-volume routing of displaced vapors and non-condensable gases from the Pyrolysis Oil Storage Vessels).*

5.1.3. T**raining, Research, and Evaluation (TRE) Unit and TRE Flare Requirements** The Training, Research, and Evaluation (TRE) Unit (Emission IDs: 8S/9S) and associated TRE Flare (Control Device 9C) shall be installed, operated, and maintained in accordance with the following requirements:

a. **Purpose and Applicability:** The permittee shall operate the TRE Unit exclusively for the purpose of chemical or physical analysis and research. By maintaining this operational

purpose, the unit is exempt from the requirements of the Other Solid Waste Incineration (OSWI) rules pursuant to 40 CFR § 60.2887(j).

b. **TRE Operational and Feedstock Limits:**

1. **Feedstock Limit:** The permittee shall not charge more than **83.3 pounds per hour** of plastic feedstock into the TRE pyrolysis reactor. Compliance with this limit shall be determined as an operating-day average, calculated by dividing the total mass of feedstock charged into the reactor by the total hours the unit operated that day (excluding documented periods of startup and shutdown).

2. **Oxygen-Deficient Atmosphere:** The TRE pyrolysis unit shall be operated in an oxygen-free or oxygen-limited atmosphere. The oxygen concentration within the reactor shall not exceed 20,000 ppm (2.0% by volume) at any time when the unit is in operation, startup, or shutdown mode.

3. **Closed Vent System:** All pressure relief devices (PRDs) for the TRE pyrolysis train shall be hard-piped through a closed vent system directly to the TRE Flare (9C).

4. **Process Heater:** The process heater (8S) shall only be fired with natural gas or propane. The use of Process-Derived Syngas (PDS) in the process heater for 8S is prohibited.

c. **Process Heater (8S/9S) Emission Limits:** Emissions from the TRE process heater exhaust shall not exceed the following limits:

1. **Nitrogen Oxides (NO_x):** 0.007 lb/hr (3-hour average) OR 30 ppmvd corrected to 3% oxygen.

2. **Carbon Monoxide (CO):** 0.007 lb/hr (3-hour average) OR 50 ppmvd corrected to 3% oxygen.

3. **Particulate Matter (PM_{10} / $PM_{2.5}$):** 0.001 lb/hr (6-hour average).

4. **Total Particulate Matter (PM):** 0.001 lb/hr (3-hour average).

5. **Volatile Organic Compounds (VOC):** 0.001 lb/hr (3-hour average).

6. **Total Hazardous Air Pollutants (HAP):** 3.71E-4 lb/hr (3-hour average).

d. **TRE Flare (9C) Operational Standards:** The permittee shall install, operate, and maintain the TRE Flare (9C) to achieve a minimum VOC destruction efficiency of 98%, while complying with the following operational requirements:

1. **Pilot Light:** The permittee shall maintain the flare in an operational status with the pilot light lit at all times when the TRE pyrolysis train is operating, including startup and shutdown operations. The pilot shall be fueled exclusively with pipeline natural gas or propane, with a maximum heat input no greater than 0.1 MMBtu/hr.

2. **Visible Emissions:** The flare shall be designed for and operated with no visible emissions, except for periods not to exceed a total of 5 minutes during any 2 consecutive hours, as determined by the methods specified in Condition 5.2.6 and 40 CFR § 60.18(b) and (c)(1).

3. **Heating Value:** The net heating value of the effluent routed to the flare shall not be less than 11.2 MJ/scm (300 Btu/scf).

4. **Exit Velocity:** The actual exit velocity of the effluent from the flare tip shall not exceed 10 m/s (33 ft/s).

5. **Process-Derived Syngas (PDS)**: The PDS generated from the TRE unit shall not exceed that following:

   i. The hourly average volume shall not exceed 533 scfh based on a 3-hour average.

   ii. Total sulfur content of no greater than 6.13 grains of sulfur per 100 scf (104 ppmdv).

   iii. Total Chlorine or HCl content of no greater than 156 ppmdv.

e. **TRE Flare (9C) Emission Limits:** Emissions from the TRE Flare shall not exceed the following mass emission limits. *(Note: Compliance with these limits is demonstrated by restricting the maximum effluent flow rate to the flare to 533 scfh and adhering to the parameters in Section d of this condition).*

1. **Nitrogen Oxides (NOx):** 0.04 lb/hr (3-hour average).

2. **Carbon Monoxide (CO):** 0.03 lb/hr (3-hour average).

3. **Particulate Matter (PM_{10} / $PM_{2.5}$):** 0.002 lb/hr (6-hour average).

4. **Sulfur Dioxide (SO_2):** 0.008 lb/hr (3-hour average).
[45CSR§10-5.1]

5. **Volatile Organic Compounds (VOC):** 0.004 lb/hr (3-hour average).

6. **Total Hazardous Air Pollutants (HAP):** 9.22E-3 lb/hr (3-hour average).

7. **Hydrogen Chloride (HCl):** 0.008 lb/hr (3-hour average).

5.1.4. **Glycol Heater (7S):** The following requirements apply to the glycol recirculation heater (7S):

a. Emission Limits: Emissions from the glycol recirculation heater exhaust stack (Emission Point 7E) shall not exceed the following limits:

1. Nitrogen Oxides (NO_x): 0.15 lb/hr (3-hour average) OR a concentration of 30 ppmvd corrected to 3% oxygen.

2. Carbon Monoxide (CO): 0.15 lb/hr (3-hour average) OR a concentration of 50 ppmvd corrected to 3% oxygen.

3. Particulate Matter (PM_{10} / $PM_{2.5}$): 0.02 lb/hr (6-hour average).

4. Total Particulate Matter (PM): 0.02 lb/hr (3-hour average). [45CSR§2-4.1.]

5. Sulfur Dioxide (SO_2): 0.07 lb/hr (3-hour average) when firing synthetic gas, OR a concentration of 10 ppmvd corrected to 3% oxygen. [45CSR§10-5.1.]

6. Volatile Organic Compounds (VOC):

   i. 0.02 lb/hr (3-hour average) when firing natural gas or propane; OR

ii. 0.04 pounds per hour and a concentration of 7.3 ppmvd corrected to 3% oxygen when firing Process-Derived Syngas (PDS).

7. Total Hazardous Air Pollutants (HAP): 0.07 lb/hr (3-hour average).

8. Hydrogen Chloride (HCl): 0.06 pounds per hour or 15 ppmvd corrected to 7% oxygen (3-hour average).

9. Visible Emissions (Opacity): Visible emissions from emission point 7E shall not exceed 10% opacity on a six (6) minute average basis. **[45CSR§2-3.1.]**

b. **Operational Limitations:**

1. Heat Input Limit: The maximum heat energy inputted into the heater shall not exceed 4.0 MMBtu per hour on a daily average basis.

c. **Fuel and Startup/Shutdown Requirements:**

1. The heater shall be fired only with pipeline quality natural gas or propane during startup and shutdown events. During normal operations, the heater shall be fired with natural gas, propane, or Process-Derived Syngas (PDS) that meets the definition of a non-waste fuel in accordance with 40 CFR Part 241.

5.1.5. The annual combined emissions from the emission units 1S, 2S, 3S, 7S, 8S, and 9S shall not exceed the following limits on a 12-month rolling basis.

a. NO_x emission rate shall not exceed 2.15 tons per year.

b. CO emissions rate shall not exceed 2.01 tons per year.

c. SO_2 emission rate shall not exceed 0.88 tons per year.

d. VOC emission rate shall not exceed 0.46 tons per year.

e. PM_{10} emission rate shall not exceed 0.20 tons per year.

f. $PM_{2.5}$ emission rate shall not exceed 0.20 tons per year.

g. Total HAP emission rate shall not exceed 0.83 tons per year.

h. HCl emission rate shall not exceed 0.72 tons per year.

These emission limits do not include fugitive emissions sources (equipment leaks or cleaning of equipment) or the emissions released from tanker truck loading operations.

5.1.6. **Prohibition on Uncontrolled Venting** Except as otherwise explicitly authorized by this permit, the intentional, routine release of un-combusted Process-Derived Syngas (PDS) directly to the atmosphere is prohibited. To comply with this prohibition, the permittee shall ensure the following:

a. **Routing:** All PDS generated by the pyrolysis units shall be continuously routed through a closed vent system to the process heaters (for energy recovery) or to the designated control devices (flare/enclosed combustor) for destruction.

b. **Fugitive Emissions:** Incidental releases of PDS from piping components (valves, flanges, pumps) shall not be considered a violation of this condition provided the permittee is actively complying with the facility's Leak Detection and Repair (LDAR) program requirements.

c. **Emergencies and Maintenance:** Releases resulting from malfunctions, or releases required for safe equipment depressurization during maintenance events, shall be minimized to the maximum extent practicable and reported in accordance with the malfunction and deviation reporting requirements of Condition 3.5.3.

5.1.7. **Operation and Maintenance of Air Pollution Control Equipment.** The permittee shall, to the extent practicable, install, maintain, and operate all pollution control equipment listed in Section 1.0 and associated monitoring equipment in a manner consistent with safety and good air pollution control practices for minimizing emissions, or comply with any more stringent limits set forth in this permit or as set forth by any State rule, Federal regulation, or alternative control plan approved by the Secretary.
[45CSR§13-5.10.]

5.2. Monitoring Requirements

5.2.1. **Process and Control Device Parametric Monitoring and Calibration** To demonstrate continuous compliance with the operational and emission limitations of this permit, the permittee shall install, calibrate, operate, and maintain Continuous Parameter Monitoring Systems (CPMS) or continuous recording devices to monitor the following parameters. Unless otherwise specified, all "continuous" monitoring shall measure the parameter at least once every 15 minutes to calculate valid hourly averages.

a. **Pyrolysis Units (1S, 2S, and 8S-TRE):**

1. **Feed Rate:** The mass of plastic feedstock charged into each unit (in lb/hr) for each operating hour.

2. **Reactor Temperature:** The operating temperature within each pyrolysis reactor on a continuous basis.

3. **Reactor Pressure:** The operating pressure within each pyrolysis train on a continuous basis.

4. **Oxygen Content:** The oxygen concentration within each pyrolysis reactor (in ppmv) on a continuous basis.

5. **Operating Status:** A record of the hours each pyrolysis train is in operation, including startup and shutdown periods.

6. **Syngas Production:** The volume of non-condensable Process-Derived Syngas (PDS) produced by each unit (in scfh) on an hourly basis.

7. **Condenser Outlet:** The temperature of the syngas immediately exiting the condenser on a continuous basis.

b. **Process Heaters (for 1S, 2S, and 8S-TRE):**

1. **Combustion Temperature:** The firebox (combustion chamber) temperature of the respective process heaters for trains 1S and 2S on a continuous basis. *(Note: This specific temperature monitoring requirement does not apply to the 8S/9S TRE process heater).*

2. **Fuel Consumption:** The volume and specific type of fuel (natural gas, propane, or PDS) fired by each process heater (1S, 2S, 9S) for each hour of operation.

c. **Enclosed Combustion Device (Control Device 3C):**

1. **Combustion Temperature:** The firebox temperature on a continuous basis.

2. **Header Pressure:** The line pressure of the effluent header routed to the ECD on a continuous basis.

3. **Venting Events:** The date, time, and duration of any venting events to the ECD, including the operational reason for routing effluent to the device (e.g., startup, shutdown, malfunction, or routine pressure relief).

d. **TRE Flare (Control Device 9C):**

1. **Pilot Flame:** The continuous presence of a pilot flame using a thermocouple, ultraviolet beam sensor, or infrared sensor.

2. **Effluent Flow:** The total volumetric flow rate and the peak volumetric flow rate of effluent routed to the flare during each discrete venting event.

3. **Venting Events:** The date, time, and duration of any venting events to the flare, including the operational reason for routing effluent to the device.

e. **Instrument Calibration and Maintenance:** To ensure the accuracy and reliability of the data collected by the CPMS and other measurement devices required by this condition, the permittee shall comply with the following calibration and maintenance requirements:

1. The permittee shall install, operate, and maintain each pressure sensor, thermocouple, flow meter, and other applicable measurement device in accordance with the manufacturer's written specifications.

2. The permittee shall either calibrate or verify the calibration of each measurement device prior to initial startup, and subsequently at least once every twelve (12) months, or at the minimum frequency specified by the instrument manufacturer, whichever is more stringent.

3. All calibration and verification activities shall be conducted utilizing the instrument manufacturer's written procedures and, where applicable, utilizing certified reference standards traceable to the National Institute of Standards and Technology (NIST).

4. **Diverter Valve Position Status:** The permittee shall install, calibrate, operate, and maintain a continuous valve position monitoring system (such as an electronic limit switch, proximity sensor, or digital position transmitter linked to the facility's Supervisory Control and Data Acquisition system (SCADA)) on the main PDS routing diverter valve assembly.

* The system shall continuously monitor and record the physical position of the valve (e.g., routed to the ECD vs. routed to the fuel gas header/pressurized storage tanks) at all times when any one of the pyrolysis trains (1S or 2S) are in operation, startup, or shutdown modes.

* The position logs shall be automatically time-stamped and electronically correlated directly with the venting event logs required by Condition 5.2.1.c.3.

5. Any measurement device that cannot be calibrated or verified to meet the manufacturer's required accuracy threshold shall be immediately repaired or replaced.

f. **Recordkeeping Requirements:** The permittee shall maintain the following records in accordance with Condition 3.4.1. and make them available to the Director or the his/her duly authorized representative upon request:

1. All continuous, hourly average, and discrete event data collected pursuant to subsections (a) through (d) of this condition.

2. A current copy of the manufacturer's written operating, maintenance, and calibration/verification procedures for each applicable monitoring device.

3. A chronological log of all routine and non-routine calibration and verification activities, which shall at a minimum include:

- The date and time of the calibration or verification event.
- The specific identification number and location of the instrument.
- The results of the verification, including the "as-found" and "as-left" readings.
- The name and affiliation of the technician or third-party vendor performing the procedure.
- A description of any maintenance, corrective actions, adjustments, or replacements made to bring the instrument back into proper calibration.

5.2.2. **Continuous Process Gas Monitoring System (CPGMS) Requirements**

To demonstrate continuous compliance with the syngas heating value requirements, the H_2S limits of 45CSR10, and the HAP area source limitations, the permittee shall install, calibrate, certify, maintain, and operate a Continuous Process Gas Monitoring System (CPGMS) on the Process-Derived Syngas (PDS) line from pyrolysis trains 1S and 2S, prior to combustion by any one of these combustion devices 1S, 2S, 3S, and 7S.

The CPGMS shall continuously monitor the syngas composition (including CO, CO_2, CH_4, and H_2), Hydrogen Sulfide (H_2S), and Hydrogen Chloride (HCl). The CPGMS shall meet the following requirements:

a. **Analyzer Specifications & Performance Standards:**

1. **Heating Value / Composition:** The system shall utilize a multi-component online analyzer (e.g., NDIR for CO, CO_2, and CH_4; thermal conductivity detector (TCD) for H_2, or a Process Gas Chromatograph).

2. **Hydrogen Sulfide (H_2S) & Hydrogen Chloride (HCl):** The system shall utilize analyzer technologies capable of accurately quantifying H_2S and HCl in a syngas matrix (e.g., Tunable Diode Laser Absorption Spectroscopy (TDLAS), Fourier Transform Infrared (FTIR), or Gas Chromatography).

3. **Measurement Accuracy:** The analyzers shall have a minimum accuracy of $\pm$2.0% of full scale for each monitored component.

4. **Sampling Frequency:** The system shall measure the concentration of all required parameters and automatically calculate the Gross Calorific Value (GCV) of the syngas at least once every fifteen (15) minutes. GCV calculations shall utilize the calculation methodologies described in ASTM D3588 (latest edition) or an equivalent Director-approved method.

5. **Data Validation:** A valid hour of data must consist of at least four (4) equally spaced data points.

b. **Quality Assurance / Quality Control (QA/QC):**

1. **Daily Calibration:** The permittee shall perform a daily zero and span calibration check on all analyzers using manufacturer-recommended, NIST-traceable calibration gases.

2. **Relative Accuracy Test Audit (RATA):** Within 180 days of initial startup, and annually thereafter, the permittee shall conduct a RATA by comparing the CPGMS output to established reference methods.

- Composition/GCV shall be compared to ASTM D1945 (via Gas Chromatography) or equivalent.

- H_2S shall be compared to EPA Method 11, Method 15, or equivalent.

- HCl shall be compared to EPA Method 26/26A, Method 320, or equivalent.

3. **Tolerance:** The CPGMS results must stay within 10% of the reference method results, or within a Director-approved absolute concentration difference for low-concentration streams, to be considered valid.

c. **CPGMS Monitoring Plan:**

Within sixty (60) days prior to the initial startup of the pyrolysis units, the permittee shall submit a CPGMS Monitoring Plan to the Director for approval. This plan must detail the specific analyzer models, ranges, calibration procedures, and crucially, the design of the heated **Sample Conditioning System** utilized to prevent the condensation of tars, moisture, and heavy hydrocarbons from fouling the analyzers.

d. **Recordkeeping and Backup Monitoring:**

1. The permittee shall maintain continuous electronic records (timestamps and measured values) of all 15-minute averages, calculated 1-hour block averages, daily calibration results, and any periods of monitor downtime or out-of-control periods.

2. In the event of CPGMS downtime exceeding twenty-four (24) consecutive hours, the permittee shall implement a Director-approved backup sampling method (e.g., daily colorimetric detector tubes (Dräger tubes) or daily grab samples analyzed by an off-site laboratory) until the CPGMS is restored to normal operation.

3. All records shall be maintained in accordance with Condition 3.4.1.

5.2.3. To demonstrate compliance with the Non-Hazardous Secondary Material (NHSM) legitimacy criteria (40 CFR § 241.3) and state emissions standards, the permittee shall sample and analyze the

Process-Derived Syngas (PDS) generated by the TRE pyrolysis unit (ID: 8S) for every day of operation.

a. **Sampling Frequency and Timing:** A daily analysis profile shall be established by collecting a minimum of three (3) representative gas samples per operating day. The samples shall be drawn from a sampling port located strictly downstream of the pyrolysis reactor and downstream of any gas conditioning/scrubbing equipment, if applicable, prior to combustion. The sampling times shall be distributed as follows:

1. **Startup:** One (1) sample collected within the first 60 minutes after the syngas is initially routed to the process heater or vapor combustion device.

2. **Peak / Steady-State:** One (1) sample collected during the second hour of operation, or during the period of peak syngas production for that operating day.

3. **Shutdown / Turn-down:** One (1) sample collected within the 60 minutes prior to cessation of the pyrolysis heating cycle, or during the lowest syngas production rate of that operating day.

b. **Required Analytes and Analytical Methods:** The permittee shall analyze each collected sample to determine the High Heating Value (HHV/Gross Calorific Value), Total Sulfur content, and Total Chlorine (or Hydrogen Chloride) content. The analysis shall be conducted using the following approved methods, or an alternative method approved in writing by the Director:

1. **High Heating Value (HHV):** Determined via compositional analysis using **ASTM D1945** (Standard Test Method for Analysis of Natural Gas by Gas Chromatography), with the heating value calculated in accordance with **ASTM D3588** (Standard Practice for Calculating Heat Value, Compressibility Factor, and Relative Density of Gaseous Fuels).

2. **Total Sulfur:** Determined using **ASTM D5504** (Standard Test Method for Determination of Sulfur Compounds in Natural Gas and Gaseous Fuels by Gas Chromatography) or **ASTM D6667** (Ultraviolet Fluorescence).

3. **Total Chlorine / Hydrogen Chloride (HCl):** Determined using a modified **EPA Method 26** (Determination of Hydrogen Chloride Emissions) utilizing midget impingers and Ion Chromatography (IC), or via continuous online gas monitoring / calibrated colorimetric gas detection tubes (e.g., ASTM D4490) validated against laboratory standards.

c. **Recordkeeping:** The permittee shall maintain records of the date and time of each sample collected, the operational phase (startup, peak, shutdown), the analytical method utilized, and the final results. These records shall be maintained in accordance with Condition 3.4.1.

5.2.4. **Process Heater Periodic Monitoring (NO_x, CO, and O_2)** The permittee shall conduct periodic monitoring of the process heaters for the pyrolysis trains (IDs: 1S, 2S, and 8S) and the glycol recirculation heater (ID: 7S) to measure the Nitrogen Oxides (NOx), Carbon Monoxide (CO), and Oxygen (O_2) concentrations in the exhaust using a portable electro-chemical gas analyzer.

a. **Monitoring Frequency:**

1. Monitoring for the primary commercial pyrolysis trains (1S and 2S) shall be conducted in accordance with the schedule in Table 5.2.4.a.:

Table 5.2.4.a. : Monitoring Frequency for Units 1S and 2S

Operating Period	Monitoring Frequency
First 6 Months After Initial Startup	Weekly
Months 7 through 12 After Initial Startup	Biweekly
12+ Months After Initial Startup	Monthly

2. **Intermittent Operation Exemption (Unit 8S):** Because the TRE Unit (8S) is operated intermittently and fired exclusively on pipeline natural gas or propane, monitoring for Unit 8S shall be conducted **once per calendar quarter** during which the unit operates. If Unit 8S does not operate during a given calendar quarter, no monitoring is required for that period.

3. **Glycol Recirculation Heater (7S):** Monitoring for the Glycol Recirculation Heater (7S) shall be conducted at least once per calendar half-year (semi-annually).

4. **Non-Operation for 1S/2S:** If a continuous unit (1S or 2S) is out of service for an entire scheduled monitoring period (e.g., an entire week during the first 6 months), the monitoring requirement is suspended for that period.

b. **Monitoring Methodology:**

Such monitoring shall be conducted in accordance with the following requirements:

1. **Duration:** Conduct three (3) consecutive monitoring runs of at least 20 minutes duration per run.

2. **Operational State:** Monitoring shall be taken with the heater operating at a representative load on a fuel that is representative of normal operations for the respective heater.

3. **Analyzer Standards:** Determine NO_x, CO, and O_2 concentrations using an electro-chemical cell portable gas analyzer maintained and operated in accordance with the manufacturer's specifications and a recognized industry standard (e.g., **EPA Conditional Test Method CTM-030, CTM-034, or ASTM D6522**), including required pre- and post-test calibration and zero-span checks.

4. **Data Reduction:** The measured NO_x and CO concentrations shall be corrected to three percent (3%) oxygen (dry basis) and averaged across the three runs.

c. **Corrective Action:** If the measured average of NO_x or CO concentrations exceeds the permitted emission limits stated in Condition 5.1.1.a.1. & 2. for 1S and 2S, Condition 5.1.3.c.1. & 2. for 8S, or Condition 5.1.4.a.1. & 2. for 7S, the permittee shall make the necessary adjustments to restore acceptable performance levels. The permittee shall repeat the monitoring test **within 72 hours of the measured exceedance, or prior to the next startup if the unit is shut down for repairs**. Any adjustments made to the process heater or other corrective actions shall be recorded.

d. **Step-Down Provision (For Units 1S and 2S):** If the measured, corrected concentrations of NO_x and CO are less than 75 percent of the permitted limits for three (3) consecutive monthly monitoring periods, the permittee may defer the monitoring frequency to quarterly. If a subsequent quarterly monitored concentration exceeds 75 percent of the permitted limit, the permittee must immediately resume the monthly monitoring schedule until the criteria are again satisfied.

e. **Recordkeeping:** Records of such monitoring shall be maintained in accordance with Condition 3.4.1. and include the following:

1. The date, start time, and end time of each run.

2. The measured and corrected NOx concentration (in ppmvd) for each run.

3. The measured and corrected CO concentration (in ppmvd) for each run.

4. The measured O2 concentration (in percent) for each run.

5. The calculated average corrected NOx and CO concentrations for the test.

6. The make, model, and serial number of the portable analyzer used, and documentation of calibration checks.

7. The name of the operator or technician who conducted the test.

8. Details of any corrective actions or tuning performed on the heaters.

5.2.5. **Visible Emission Checks for Enclosed Combustor (3C)**

To determine compliance with the opacity limits of Condition 5.1.2.a.9., the permittee shall conduct visible emission checks and/or opacity monitoring and recordkeeping for the Enclosed Combustion Device (Control Device 3C) in accordance with the following requirements:

a. **Observer Training:**
The visible emission check shall determine the presence or absence 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 may be obtained from written materials found in References 1 and 2 from 40 CFR Part 60, Appendix A, Method 22, or from the lecture portion of the 40 CFR Part 60, Appendix A, Method 9 certification course.

b. **Monitoring Frequency (Operational Qualifier):**
Because Control Device 3C is utilized primarily during startup, shutdown, or malfunction events, the permittee shall verify compliance by conducting visual observations using U.S. EPA Method 22 once per calendar month during periods in which the unit receives effluent process gas. If Control Device 3C is not operated at any point during a given calendar month, no visible emission observation is required. The permittee shall note the non-operation in the facility records.

c. **Observation Methodology and Escalation:**
Observation Methodology and Escalation: During an operational venting event, the observer shall conduct a one-minute Method 22 observation. If no visible emissions are observed, compliance is verified. Should the permittee observe visible emissions from emission point 3E during the initial one-minute observation, the permittee shall continue the observation for an additional five (5) minutes. If the cumulative time that visible emissions are observed exceeds 55 seconds during the five-minute period, the permittee shall initiate corrective action(s).

d. **Corrective Action and Method 9 Requirement:**
If the 55-second threshold is exceeded, the permittee shall conduct corrective action(s) to bring Control Device 3C back into proper operating conditions (no visible emissions) within 48 hours of the initial observation, or prior to the next operational event of the unit, whichever is later. * Following corrective action, the permittee shall re-verify compliance with a new Method 22 observation during the next period of operation.

Alternatively, the permittee may elect to conduct a U.S. EPA Method 9 observation (conducted by a certified Method 9 reader) to mathematically demonstrate compliance with the numeric opacity standard of Condition 5.1.2.a.9. within 10 operating days of the initial observation.

e. **Recordkeeping:**
Records of all Method 22 observations, periods of non-operation, any Method 9 tests conducted, and detailed descriptions of any corrective actions taken shall be maintained in accordance with Condition 3.4.1.
[45 CSR §6-7.1.]

5.2.6. **Flare Visible Emissions Monitoring (40 CFR § 60.18)** To verify compliance with the visible emission requirements of Condition 5.1.3.d. and 40 CFR § 60.18(c)(1), the permittee shall conduct visible emission checks and recordkeeping for the flare in accordance with the following requirements:

a. **Monitoring Frequency (Annual Startup Event):** The permittee shall conduct visual observations using U.S. EPA Method 22 for one (1) minute during a startup operation of the TRE pyrolysis train (Unit 8S) at least **once per rolling 12-month period**.

- If the pyrolysis train has not undergone a shutdown and startup cycle within 12 months of the previous observation, the monitoring requirement is suspended until the next startup event. In such cases, the permittee shall conduct the required observation during the next actual startup of the pyrolysis train.

b. **Tiered Observation Protocol:**

1. **Initial Screen:** The observer shall conduct an initial one-minute Method 22 observation. If no visible emissions are observed, compliance is verified for the period.

2. **Extended Observation:** Should the permittee observe any visible emissions from the flare during the initial one-minute observation, the permittee shall immediately continue

the Method 22 observation for an additional fourteen (14) minutes (for a total observation period of 15 minutes).

c. **Corrective Action:** If the cumulative time that visible emissions are observed exceeds **sixty (60) seconds** during the 15-minute extended observation period, the permittee shall initiate corrective action(s) to bring the flare back into proper operating condition (i.e., operating with no visible emissions as required by 40 CFR § 60.18).

- Corrective actions shall be completed **within 48 hours of the initial observation, or prior to the next startup event, whichever is later.** * Following the corrective action, the permittee shall re-verify compliance by conducting a new 15-minute Method 22 observation during the next period of operation.

d. **Recordkeeping:** Records of all Method 22 observations (including the date, time, and duration of emissions), periods of extended non-operation, and detailed descriptions of any corrective actions taken shall be maintained in accordance with Condition 3.4.1.

5.2.7. **Visible Emissions Monitoring (Glycol Recirculation Heater 7S)** To demonstrate ongoing compliance with the visible emissions (opacity) limit of Condition 5.1.4.a.9., the permittee shall conduct periodic tiered visible emissions monitoring of the glycol recirculation heater exhaust stack (Emission Point 7E).

a. **Tier 1 Screening (U.S. EPA Method 22):**

4. The permittee shall conduct a visible emissions observation using U.S. EPA Method 22 (40 CFR Part 60, Appendix A) at least once per calendar half-year (semi-annually).

5. The Method 22 observation shall be conducted for a continuous duration of exactly **six (6) minutes** while the heater is operating and **firing Process-Derived Syngas (PDS)**. *(Note: If PDS is not utilized in the heater during an entire calendar half-year, the observation may be conducted while firing natural gas or propane to satisfy the semi-annual requirement, provided that a subsequent observation is conducted within thirty (30) days of the next introduction of PDS to the heater).*

6. If no visible emissions are observed, or if visible emissions are observed for **less than thirty (30) seconds** during the 6-minute observation period, the unit is deemed to be in compliance and no further action is required for that monitoring period.

b. Tier 2 Quantification (U.S. EPA Method 9) and Corrective Action: If visible emissions are observed for thirty (30) seconds or more during the Tier 1 screening, the permittee shall immediately log a deviation and take one of the following actions:

3. **Immediate Maintenance:** The permittee may immediately shut down the heater, perform corrective maintenance (e.g., burner tuning or cleaning), and restart the unit. Within 24 hours of restarting the unit, the permittee shall conduct a new Tier 1 screening while firing PDS. If the unit passes the new screening, no Method 9 observation is required.

4. **Method 9 Observation:** If maintenance is not performed, or if the unit fails a subsequent Tier 1 screening, the permittee shall conduct a formal U.S. EPA Method 9 observation (40 CFR Part 60, Appendix A) within **seventy-two (72) hours** of the failed Method 22 screening. The Method 9 observation must be conducted by a certified visible emissions evaluator while the heater is firing PDS to definitively determine compliance with the 10% opacity standard.

c. Recordkeeping Requirements: The permittee shall maintain records of all visible emissions monitoring in accordance with Condition 3.4.1. Records shall include:

6. The date, time, and duration of all Method 22 and Method 9 observations.

7. The specific type of fuel being fired during the observation (e.g., 100% PDS, or a blend of PDS and natural gas).

8. The name and affiliation of the observer, and (if applicable) a copy of their current Method 9 certification.

9. The results of the observations, including the total time of visible emissions during Method 22 checks, and the calculated 6-minute averages for any Method 9 checks.

10. Details of any corrective maintenance performed on the heater as a result of a failed Tier 1 screening.

5.2.8. **Pyrolysis Oil Product Analysis and Marketability Demonstration** To demonstrate that the facility operates as a manufacturing process producing a valuable commercial commodity—and thereby satisfies the legitimacy criteria for Non-Hazardous Secondary Materials under 40 CFR § 241.3(d)(1)(i)—the permittee shall conduct periodic sampling, analysis, and recordkeeping of the manufactured pyrolysis oil.

a. Sampling and Analysis Schedule: The permittee shall collect representative samples of the manufactured pyrolysis oil from the final product storage tanks in accordance with the following schedule:

1. **Initial Analysis:** An initial sample shall be collected and analyzed within thirty (30) days after the facility achieves steady-state operation, but in no event later than the date of the initial performance testing required by Condition 5.3.1.

2. **Periodic Analysis:** Following the initial analysis, sampling and analysis shall be conducted **once per calendar quarter** thereafter.

b. Required Analytical Parameters: To demonstrate the oil meets standard commercial specifications for petrochemical off-takers and to verify storage tank compliance parameters, the permittee shall analyze the oil samples for the following parameters using the specified methodologies (or an approved equivalent):

1. **Gross Calorific Value / High Heating Value (HHV):** Determined using ASTM D240 or ASTM D4809.

2. **Total Chlorine / Halogens:** Determined using ASTM D4929, ASTM D5808, or an equivalent method to ensure the oil is not heavily contaminated with PVC residuals.

3. **Total Sulfur:** Determined using ASTM D4294 or ASTM D5453.

4. **Specific Gravity / API Gravity:** Determined using ASTM D1298 or ASTM D4052.

5. **Water Content:** Determined using ASTM D95 or ASTM D4928.

6. **Flash Point:** Determined using ASTM D93.

7. **Vapor Pressure:** Determined using **ASTM D6377 (VPCRx Expansion Method)**. The analysis shall be conducted at the maximum anticipated operating temperature of the oil storage tanks to establish the True Vapor Pressure (TVP) of the liquid and verify ongoing compliance with applicable Volatile Organic Liquid (VOL) storage regulations.

8. **CMAS Table 1 Organic HAP Speciation & Triggered Action:** The permittee shall conduct semi-annual liquid-phase organic HAP speciation testing on representative samples of manufactured pyrolysis oil collected from Storage Vessels 4S utilizing U.S. EPA Method 8260 (or an equivalent Director-approved method). The analysis shall specifically quantify individual concentrations of Table 1 Organic Hazardous Air Pollutants listed in 40 CFR Part 63 Subpart VVVVVV (including, but not limited to, acetaldehyde, 1,3-butadiene, chloroform, ethylene dichloride, and vinyl chloride). The permittee shall convert analytical results into a weight percentage (wt%) to verify that no individual Table 1 Organic HAP is present at a concentration equal to or greater than 0.1% by weight (1,000 ppmw). If any liquid-phase speciation analysis yields an individual Table 1 Organic HAP concentration equal to or greater than 0.1% by weight (1,000 ppmw), the permittee shall notify the Director in writing within ten (10) calendar days of receiving the analytical results pursuant to Condition 3.5.3. Within sixty (60) days of the determination, the permittee shall submit a formal compliance plan or permit modification application demonstrating full compliance with applicable storage tank and management standards under 40 CFR Part 63 Subpart VVVVVV.

c. Proof of Marketability: In addition to the chemical analysis, the permittee must demonstrate that the pyrolysis oil is continuously managed as a valuable commercial product and not speculatively accumulated or discarded. The permittee shall maintain records of commercial off-take agreements, bills of lading, transfer logs, or sales receipts that explicitly demonstrate the pyrolysis oil is being transferred or sold to a commercial off-taker, refinery, or secondary market for value.

d. Recordkeeping: The permittee shall maintain records of all laboratory analytical results, chain-of-custody forms, date of sampling, and the commercial transfer records required in paragraph (c) of this condition. These records shall be maintained in accordance with Condition 3.4.1.

5.2.9. **Hazardous Waste Prohibition and Residual Determinations (40 CFR § 262.11)** To ensure the facility does not receive, process, or combust hazardous waste, and to satisfy the requirements of 40 CFR Part 262, the permittee shall comply with the following requirements:

a. Feedstock and Combustion Prohibition: The permittee is strictly prohibited from receiving or processing any material that meets the definition of a RCRA hazardous waste. Furthermore, the permittee is strictly prohibited from routing any stream or material determined to be a hazardous waste to any process heater, enclosed combustor, or flare at the facility.

b. Process Residual Waste Determinations: For all process residuals generated by the facility that are intended for discard and disposal as solid waste (including, but not limited to, solid pyrolysis char, filter cake, and scrubber blowdown/wastewater), the permittee shall conduct a formal hazardous waste determination in accordance with 40 CFR § 262.11.

1. **Frequency:** This determination shall be conducted initially within thirty (30) days of steady-state operation, and at least **once per rolling 12-month period** thereafter.

2. **Triggered Determinations:** An additional determination shall be conducted anytime there is a significant change in the Prepared Polymer Feedstock (PPF) profile or the pyrolysis operating conditions that could reasonably be expected to alter the chemical characteristics of the waste streams.

3. **Methodology:** The determination shall be made using accurate generator knowledge supported by laboratory testing (e.g., Toxicity Characteristic Leaching Procedure - TCLP for heavy metals and organics, flash point for ignitability, and pH for corrosivity).

c. Reporting of Hazardous Classifications: Should a 40 CFR 262.11 determination yield that any residual stream generated by the facility exhibits a hazardous characteristic or meets a hazardous waste listing, the permittee shall:

1. Immediately manage the material in accordance with applicable RCRA large or small quantity generator regulations.
2. Notify the Director in writing within ten (10) days of the determination, in accordance with Condition 3.5.3. of this permit.

d. Recordkeeping: Records of each 40 CFR 262.11 hazardous waste determination, including supporting laboratory analytical data, chain-of-custody records, and waste profile sheets, shall be maintained in accordance with Condition 3.4.1.

5.3. Testing Requirements

5.3.1. **Process Heaters (1S and 2S) Comprehensive Performance Testing and Parameter Establishment** To demonstrate compliance with the applicable emission limits set forth in Condition 5.1.1. — **specifically for VOC, NOx, CO, PM/PM_{10}/$PM_{2.5}$, HCl, and Dioxins/Furans**—and to establish the minimum continuous operating combustion chamber temperature required by Condition 5.1.1.c., the permittee shall conduct comprehensive performance testing on the exhaust stacks of the process heaters for pyrolysis trains 1S and 2S. The testing shall be conducted in accordance with the general testing requirements of Condition 3.3.1. and the following specific conditions:

a. Testing Schedule: The permittee shall conduct the initial performance test **for all pollutants specified in subsection (c)** within sixty (60) days after achieving the maximum production rate at which the pyrolysis units will be operated, but no later than one hundred eighty (180) days after initial startup of the process heaters.

Subsequent compliance demonstrations shall be conducted at least once every sixty-one (61) months from the date of the previous successful compliance demonstration. **These subsequent recurring tests shall include all pollutants listed in subsection (c) of this condition.**

b. Operational Load and Fuel Requirements during Testing:

1. **Operating Rate:** Testing shall be conducted while the respective pyrolysis process is operating at a rate of not less than ninety percent (90%) of the permitted maximum daily charge rate. If the facility cannot achieve 90% capacity during the test, the maximum permitted capacity shall be re-established as 110% of the actual tested rate until a new test is conducted at a higher load.

2. **Fuel Firing:** Because the process heaters are capable of firing multiple fuels, the performance test **must be conducted while the process heaters are firing 100% Process-Derived Syngas (PDS)**, or the maximum ratio of PDS to natural gas/propane that is physically capable of being fired under normal operations.

c. Test Methods and VOC Calculation: The demonstration shall be conducted in accordance with Condition 3.3.1. using the following methodologies:

1. **Total Hydrocarbons (THC):** U.S. EPA Method 25A shall be used to measure THC.

2. **Methane and Ethane Subtraction:** U.S. EPA Method 18 or U.S. EPA Method 320 (FTIR) shall be used to determine the specific emission rates of methane and ethane.

3. **VOC Determination:** To determine the final VOC emission rate, the measured methane and ethane rates shall be subtracted from the THC rate measured by Method 25A. The

permittee shall ensure all measurements are converted to a consistent basis (e.g., as propane or as carbon) prior to subtraction. Alternative test methods may only be used if approved in writing by the Director.

4. **Nitrogen Oxides (NOx):** U.S. EPA Method 7E shall be used to determine NOx emissions. *(Note: This data shall also serve to certify the baseline accuracy of the portable electro-chemical analyzer required in Condition 5.2.4.).*

5. **Carbon Monoxide (CO):** U.S. EPA Method 10 shall be used to determine CO emissions.

6. **Particulate Matter (PM/PM10/PM2.5):** U.S. EPA Method 5 shall be used to determine filterable particulate matter, and U.S. EPA Method 202 shall be used to determine condensable particulate matter. The results of Method 5 and Method 202 shall be summed to demonstrate compliance with total PM10/PM2.5 limits.

7. **Hydrogen Chloride (HCl):** U.S. EPA Method 26 or 26A shall be used to determine HCl emissions to verify the efficacy of upstream feedstock sorting and/or syngas acid gas scrubbing.

8. **Dioxins and Furans (PCDD/PCDF):** U.S. EPA Method 23 shall be used to determine polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans.

d. Establishment of Minimum Operating Temperature: During the performance test, the permittee shall continuously monitor and record the combustion chamber temperature of the process heater at least once every 15 minutes.

- The minimum operating combustion chamber temperature for each process heater shall be established as the **arithmetic average of the temperature values recorded during the three (3) required test runs** in which VOC compliance is successfully demonstrated.
- Once established, the permittee must maintain the 3-hour rolling average combustion chamber temperature at or above this established minimum limit during all subsequent operations when firing PDS.

e. Recordkeeping: Detailed records of the performance test, including the determined minimum temperature, the production rate during testing, the fuel ratios fired, and the continuous temperature data logged during the test, shall be maintained in accordance with Condition 3.4.1.

5.3.2. **Enclosed Combustor (3C) Method 9 Opacity Compliance Testing** To demonstrate initial and ongoing compliance with the visible emission standard of 45CSR§6-3.4, the permittee shall conduct formal opacity testing on the exhaust stack of the enclosed combustion device (Control Device 3C, associated with Unit 3S) in accordance with the following requirements:

a. Testing Frequency: The permittee shall conduct an initial U.S. EPA Method 9 observation within sixty (60) days after achieving steady-state operation, but no later than one hundred eighty (180) days after initial startup of the facility. Following the initial demonstration, subsequent Method 9 testing shall be conducted at least once every sixty-one (61) months, or at such other times as formally requested by the Director.

b. Operational State (Startup Operations): Because enclosed combustion devices are most susceptible to incomplete combustion during thermal ramp-up, the Method 9 observation **must be conducted during a planned startup operation** of the unit. The visual observation shall commence concurrently with the ignition of the combustor and the initial routing of process gas or auxiliary fuel to the device.

c. Observation Methodology and Duration: The compliance demonstration shall be conducted utilizing U.S. EPA Method 9 (40 CFR Part 60, Appendix A).

1. **Certified Observer:** All observations must be conducted by a technician who holds a current, valid EPA Method 9 certification.

2. **Test Duration:** The Method 9 observation shall span a minimum of sixty (60) continuous minutes (consisting of 240 consecutive 15-second readings).

3. **Shortened Event Exemption:** If the entire startup sequence and transition to steady-state (no visible emissions) is completed in less than 60 minutes, the observation may be terminated at the conclusion of the startup event, provided the total observation period is adequately documented.

d. Compliance Determination: Compliance with the 45CSR§6-3.1. standard shall be determined by evaluating the highest six-minute average opacity recorded during the startup event. Opacity shall not exceed twenty percent (20%), except for emissions which are less than forty percent (40%) opacity for a period or periods aggregating no more than eight (8) minutes in any sixty (60) minute period.

e. Recordkeeping and Reporting: The permittee shall maintain records of the compliance demonstration, including the date, start and end times of the observation, the operational status of the unit, the name and certification credentials of the Method 9 observer, and the original field data sheets. Records shall be maintained in accordance with Condition 3.4.1. and test results shall be submitted to the Director in accordance with Condition 3.5.3.

5.3.3. **TRE Flare (9C) Initial Visible Emissions Compliance Demonstration** To demonstrate initial compliance with the visible emissions standard of 40 CFR § 60.18(c)(1) and Condition 5.1.3., the permittee shall conduct an initial visible emissions performance test on the TRE Flare (Control Device 9C).

a. Testing Schedule: The permittee shall conduct the initial performance test within sixty (60) days after achieving the maximum production rate at which the TRE unit will be operated, but no later than one hundred eighty (180) days after initial startup of the flare.

b. Observation Methodology and Duration: The compliance demonstration shall be conducted utilizing U.S. EPA Method 22 (40 CFR Part 60, Appendix A).

1. In accordance with 40 CFR § 60.18(f)(1), the observation period for the initial performance test shall be **two (2) continuous hours**.

2. The test shall be conducted while the TRE unit is operating and routing a representative flow of Process-Derived Syngas (PDS) to the flare.

c. Compliance Determination: The flare shall be considered in compliance if the observation confirms there are no visible emissions, except for periods not to exceed a total of five (5) minutes during the entire two-hour observation period.

d. Recordkeeping and Reporting: The permittee shall record the total time of any visible emissions observed during the test. The original Method 22 field data sheets and the final test results shall be submitted to the Director in accordance with the general testing reporting requirements of Condition 3.3.1. and maintained in accordance with Condition 3.4.1.

5.3.4. **Supplemental Stack Testing Triggered by Portable Monitoring:** Apart from the sixty-one (61) month schedule mandated by Condition 5.3.1.a., the permittee shall utilize the periodic portable analyzer data collected pursuant to Condition 5.2.4. as a performance metric. These monitoring results shall serve to trigger a supplemental compliance demonstration utilizing U.S. EPA reference methodologies for Nitrogen Oxides (NO_x) and Carbon Monoxide (CO).

a. Triggering Event:

If the results of any routine portable analyzer monitoring check conducted pursuant to Condition 5.2.4 equal or exceed the triggering concentrations established in Table 5.3.4.a, the permittee shall conduct a subsequent compliance demonstration for CO and NO_x utilizing U.S. EPA Reference Methods in accordance with Condition 5.3.1.

Table 5.3.4.a. Triggering Concentrations for Subsequent Testing

Pollutant	Triggering Concentration	Averaging Period / Basis
Nitrogen Oxides (NOx)	**24 ppmvd** (corrected to 3% O_2)	Average of three (3) consecutive portable analyzer test runs
Carbon Monoxide (CO)	**40 ppmvd** (corrected to 3% O_2)	Average of three (3) consecutive portable analyzer test runs

b. Notification and Testing Timeline: Upon any measurement surpassing a threshold established in Table 5.3.4.a, the permittee shall provide written notification to the Director within **seven (7) calendar days** of the occurrence. A formal stack test utilizing reference methodologies shall be executed within **sixty (60) days** of the initial portable analyzer reading. Should the portable monitoring results indicate a level that exceeds the hourly mass emission limits of Condition 5.1.1, the permittee shall immediately execute corrective maintenance and burner tuning in accordance with the protocols of Condition 5.2.4.c.

c. Resumption of Routine Monitoring: Upon the successful verification of compliance via U.S. EPA Reference Methods, the permittee shall resume the periodic portable analyzer monitoring schedule established in Condition 5.2.4. A subsequent triggered performance test pursuant to this condition shall only be required if a future portable analyzer reading surpasses the thresholds specified in Table 5.3.4.a. following six months after a satisfactory compliance demonstration.

5.3.5. **Syngas Monitoring Method Validation** To validate the accuracy of the daily colorimetric stain tube monitoring program established in Condition 5.2.2., the permittee shall conduct an initial comprehensive laboratory analysis of the Process-Derived Syngas (PDS).

a. Testing Timeline: The validation testing shall be conducted within sixty (60) days of achieving steady-state operation, but no later than one hundred eighty (180) days after initial startup.

b. Required Analytical Methods: The permittee shall collect representative samples of the PDS and send them to a certified laboratory to determine the exact concentrations of sulfur and chlorine. The analysis shall utilize the following gold-standard methodologies (or an approved equivalent):

1. **Sulfur Species:** Gas Chromatography (e.g., ASTM D5504 or equivalent).

2. **Chlorine / Hydrogen Chloride (HCl):** Ion Chromatography (IC) or a modified U.S. EPA Method 26 utilizing midget impingers.

c. Correlation Demonstration: During the exact time period that the laboratory gas samples are being drawn, the permittee shall simultaneously conduct on-site sampling using the specific brand and model of colorimetric stain tubes intended for daily compliance monitoring.

1. The permittee shall compare the on-site stain tube readings against the final certified laboratory results to determine any cross-sensitivity or bias in the stain tubes caused by the specific PDS matrix.

2. If the stain tube readings deviate by more than ±10% from the laboratory results, the permittee must either establish a mathematical correction factor to be applied to all future daily readings, or select an alternative brand/type of stain tube and repeat the validation process.

d. Recordkeeping: A validation report, including the laboratory analytical results, the simultaneous stain tube field logs, and any calculated correction factors, shall be maintained on-site for the life of the facility and submitted to the Director or the Director's duly authorized representative upon request.

5.3.6. **Operating Conditions and Data Collection During Performance Testing** To ensure that compliance demonstrations are conducted under representative worst-case operating conditions, and to establish accurate continuous compliance baselines, the permittee shall comply with the following data collection requirements during all performance tests:

a. Concurrent Monitoring: The permittee shall monitor and record all applicable process and control device operating parameters—specifically including those required by Condition 5.2.1. —concurrently with the exact time period of each individual compliance test run.

b. Required Process Data: At a minimum, the data recorded and correlated to each test run shall include:

1. The exact production or throughput rate (e.g., pounds of plastic feedstock charged per hour, or volume of syngas generated).

2. The operational state and critical parameters of the specific emission unit and its associated control devices (e.g., combustion chamber temperatures, system pressures, and gas flow rates).

3. Any other parameters required to establish continuous operating limits pursuant to the specific requirements of this permit.

c. Data Reduction and Reporting: The permittee shall calculate the arithmetic average of the recorded parameters for the exact duration of each individual test run. Both the raw, continuously logged data and the calculated run-averages shall be explicitly documented and included as a dedicated appendix in the final performance test report submitted to the Director.

5.3.7. **Process-Derived Syngas (PDS) Metal HAP Analysis:** To verify continuous compliance with facility-wide HAP emission standards and to validate the efficiency of the plastic feedstock sorting protocols, the permittee shall perform periodic laboratory sampling and analytical testing of the Process-Derived Syngas (PDS) to quantify metal HAP concentrations.

a. Sampling Frequency:

1. **Initial and Semi-Annual:** The permittee shall collect and analyze a representative sample of the PDS within one hundred eighty (180) days of initial startup. Thereafter, sampling shall be conducted on a semi-annual basis, once during each semi-annual period (January 1 – June 30 and July 1 – December 31), with successive tests spaced at least four (4) calendar months apart.

2. **Reduction to Annual (Skip Period):** If the results of four (4) consecutive semi-annual analyses demonstrate that the total concentration of metal HAPs in the syngas is below the laboratory Method Detection Limit (MDL), or at levels that equate to less than 10% of the permitted hourly HAP emission limits when combusted, the permittee may submit a written request to the Director to reduce the testing frequency to annually. If an annual test exceeds these thresholds, the frequency shall immediately revert to semi-annual.

b. Target Analytes and Methodology:

1. The analysis shall quantify the concentration of, at a minimum, the following metal HAPs:

   i. Antimony Compounds (measured as total elemental antimony [Sb])

   ii. Arsenic Compounds (inorganic including arsine, measured as total elemental arsenic [As])

   iii. Beryllium Compounds (measured as total elemental beryllium [Be])

   iv. Cadmium-containing species (analyzed as the total elemental cadmium [Cd])

   v. Chromium Compounds (measured as total elemental chromium [Cr])

   vi. Lead Compounds (measured as total elemental lead [Pb])

   vii. Manganese Compounds (measured as total elemental manganese [Mn])

   viii. Mercury Compounds (measured as total elemental mercury [Hg])

   ix. Nickel Compounds (measured as total elemental nickel [Ni])

2. **Sampling and Analytical Procedures:** The permittee shall employ a recognized U.S. EPA or ASTM testing protocol for the collection and quantification of trace metal HAPs in the fuel gas header. Analytical determinations shall be conducted by a certified laboratory utilizing Inductively Coupled Plasma Mass Spectrometry (ICP-MS) or Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES) pursuant to **U.S. EPA Method 6020B, Method 200.8**, or an alternative procedure approved in writing by the Director.

3. **Protocol:** Within sixty (60) days prior to the initial sampling event, the permittee shall submit a gas sampling and analytical protocol to the Director for written approval. **The permittee shall not commence the sampling program until the Director has issued formal written approval of the submitted protocol.**

c. Compliance Demonstration (Mass Balance):

1. The permittee shall utilize the laboratory concentration results to calculate the maximum potential metal HAP emission rates (in lb/hr and tons/yr) from all combustion devices firing the PDS.

2. **Non-Detect Protocol:** In establishing the mass balance for these emission calculations, any constituent reported by the certified laboratory as being below the Method Detection Limit (MDL) shall be accounted for utilizing **the full MDL**.

3. **Assumption:** The emission calculation shall conservatively assume that 100% of the metals present in the PDS are emitted to the atmosphere upon combustion.

4. **Emission Aggregation:** The permittee shall sum these determined metal HAP emission rates with the facility's organic HAP emissions to verify ongoing compliance with the aggregate facility-wide HAP emission limitations specified in Condition 5.1.5.

d. **Corrective Action:** If the mass balance calculation in Section (c) indicates an exceedance of any permitted metal content limitation in the PDS, it shall constitute a permit deviation. The permittee shall immediately report the deviation in accordance with Condition 3.5.3. and investigate the feedstock sorting process to identify and eliminate the source of the metal contamination.

e. **Recordkeeping:** The permittee shall retain documentation of all syngas sampling procedures, final analytical reports from certified laboratories, Certificates of Analysis (CoA), and all associated mass balance emission determinations. Such records shall be maintained in accordance with Condition 3.4.1. of this permit.

5.3.8. **Process-Derived Syngas (PDS) Organic HAP Speciation Testing:** To demonstrate continuous exemption from the Chemical Manufacturing Area Sources NESHAP (40 CFR Part 63 Subpart VVVVVV) pursuant to 40 CFR § 63.11494(a)(2), the permittee shall conduct periodic gas-phase speciation testing for organic Hazardous Air Pollutants in the raw Process-Derived Syngas (PDS) generated by Pyrolysis Trains 1S and 2S.

a. Sampling Frequency: An initial sampling event shall be conducted within one hundred eighty (180) days of initial facility startup concurrently with the initial stack testing required by Condition 5.3.1. Thereafter, sampling and analysis shall be conducted on a semi-annual basis (at least once every six calendar months).

b. Sampling Location & Analytes: Representative gas samples shall be drawn from a sampling port located on the main PDS header strictly upstream of Process Heaters 1E, 2E, and 7E, and prior to combustion. The analysis shall quantify individual concentrations of all organic HAPs listed in Table 1 to 40 CFR Part 63 Subpart VVVVVV, explicitly including acetaldehyde, 1,3-butadiene, vinyl chloride, ethylene dichloride, and chloroform.

c. Test Methods: Gas sampling and laboratory analysis shall be conducted utilizing U.S. EPA Method 18 or U.S. EPA Method TO-15.

d. Weight-Fraction Compliance Demonstration: The permittee shall utilize the measured gas-phase volume concentrations (ppmv) and the concurrent molecular weight profile of the PDS matrix determined under Condition 5.2.2 to calculate the mass fraction (wt%) of each individual HAP identified in *Table 1 to Subpart VVVVVV of Part 63—Hazardous Air Pollutants Used To Determine Applicability of Chemical Manufacturing Operations* in the gas stream.

e. Triggered CMAS Action: If the weight-fraction calculation demonstrates that any individual Table 1 Organic HAP in the PDS stream equals or exceeds 0.1% by weight (1,000 ppmw), the permittee shall notify the Director in writing within ten (10) calendar days pursuant to Condition 3.5.3. Within sixty (60) days of the determination, the permittee shall submit a formal compliance plan or permit modification application demonstrating full compliance

with applicable process vent control and management standards under 40 CFR Part 63 Subpart VVVVVV.

5.4. Recordkeeping Requirements

5.4.1. **Record of Monitoring.** The permittee shall keep records of monitoring information that include the following:

a. The date, place as defined in this permit, and time of sampling or measurements.

b. The date(s) analyses were performed.

c. The company or entity that performed the analyses.

d. The analytical techniques or methods used.

e. The results of the analyses; and

f. The operating conditions existing at the time of sampling or measurement.

5.4.2. **Record of Maintenance of Air Pollution Control Equipment.** For all pollution control equipment listed in Section 1.0, the permittee shall maintain accurate records of all required pollution control equipment inspection and/or preventative maintenance procedures.

5.4.3. **Record of Malfunctions of Air Pollution Control Equipment.** For all air pollution control equipment listed in Section 1.0, the permittee shall maintain records of the occurrence and duration of any malfunction or operational shutdown of the air pollution control equipment during which excess emissions occur. For each such case, the following information shall be recorded:

a. The equipment involved.

b. Steps taken to minimize emissions during the event.

c. The duration of the event.

d. The estimated increase in emissions during the event.

For each such case associated with an equipment malfunction, the additional information shall also be recorded:

e. The cause of the malfunction.

f. Steps taken to correct the malfunction.

g. Any changes or modifications to equipment or procedures that would help prevent future recurrences of the malfunction.

5.4.4. No later than 15th day after the end of each month, the permittee shall determine the total emissions from emission points 1E, 2E, 3E, 7E, 8E, and 9E that were emitted during the previous month and the 12-month rolling total to demonstrate compliance with the annual emission limits in Condition 5.1.5. The permittee shall utilize the most current operation and emission data available

in determining actual emissions. Such records shall be maintained in accordance with Condition 3.4.1. of this permit.

5.4.5. **Non-Waste Fuel Legitimacy Demonstration (Syngas and Pyrolysis Oil)** To maintain the classification of the Process-Derived Syngas (PDS) and the Pyrolysis Oil as non-waste fuels, and to maintain the applicable exemptions from the Other Solid Waste Incineration (OSWI) standards pursuant to 40 CFR Part 241, the permittee shall demonstrate that both output streams meet the Non-Hazardous Secondary Materials (NHSM) legitimacy criteria.

a. **Initial Demonstration:** Within one hundred eighty (180) days of initial startup, the permittee shall prepare a formal legitimacy demonstration report. The report shall utilize the results of the initial syngas analyses (Condition 5.2.2), the initial Dioxin/Furan stack test (Condition 5.3.1), and the initial pyrolysis oil product testing (Condition 5.2.8) to mathematically and chemically document that the contaminant levels in both the PDS and the Pyrolysis Oil are comparable to or lower than those found in traditional analogous fuels. .

b. **Recordkeeping:** This legitimacy demonstration shall be documented in a written report, submitted to the Director, and maintained on-site for the life of the facility.

c. **Ongoing Applicability:** So long as the permittee complies with the continuous feedstock limitations and the periodic syngas and pyrolysis oil monitoring requirements of this permit, the PDS and Pyrolysis Oil shall retain their non-waste fuel classifications. No further formal determinations under 40 CFR § 241.3(d) are required unless the permittee significantly alters the accepted feedstock profile.

d. The 180-day Legitimacy Demonstration Report shall include a dedicated Subpart VVVVVV (CMAS) Applicability Evaluation. The evaluation shall summarize all analytical data generated pursuant to Conditions 5.2.8.b.8, 5.3.7, and 5.3.8, providing mathematical documentation confirming that no individual Table 1 Organic HAP or Table 1 Metal HAP equals or exceeds 0.1% by weight (1,000 ppmw) in any process vent, syngas header, or liquid byproduct stream. Records of this evaluation shall be maintained on-site for the life of the facility in accordance with Condition 3.4.1.

5.4.6. **Enclosed Combustion Device (3C) Operating Hour Records:** To demonstrate compliance with the 312-hour operational limitation established in Condition 5.1.2.b.5., the permittee shall maintain monthly records of the total hours the Enclosed Combustion Device (3C) received effluent process gas from the pyrolysis reactor trains (1S and 2S) during startup and shutdown events. At the end of each calendar month, the permittee shall calculate and record the 12-month rolling total of these operating hours. These records shall be derived from the venting event logs required by Condition 5.2.1.c.3. and shall be maintained in accordance with Condition 3.4.1. of this permit.

5.5. Reporting Requirements

5.5.1. Any deviations(s) of the allowable visible emission requirement for any emission source discovered during observations using 40 CFR Part 60, Appendix A, Method 9 must be reported in writing to the Director of the Division of Air Quality as soon as practicable, but within ten (10) calendar days, of the occurrence and shall include, at a minimum, the following information: the results of the visible determination of opacity of emissions, the cause or suspected cause of the violation(s), and any corrective measures taken or planned. Such notification shall be submitted in accordance with Section 3.5. of this permit. A record of such report shall be maintained in accordance with Condition 3.4.1.

5.5.2. Any deviation(s) from the (Control Device 3C) design and operation criteria in Condition 5.1.2. shall be reported in writing to the Director as soon as practicable, but in any case, within ten (10) calendar days of discovery of such deviation. Such notification shall be submitted in accordance with Section 3.5. of this permit. A record of such report shall be maintained in accordance with Condition 3.4.1.

5.5.3. For any instance where the results of the PDS monitoring as required in Condition 5.2.2. yields a Total Sulfur concentration equal to or greater than the limit in Condition 5.1.1.b.6.ii, OR a Total Chlorine/HCl concentration equal to or greater than the 156 ppmdv limit in Condition 5.1.1.b.6.iii, the permittee shall notify the Director in writing within ten (10) calendar days of receiving the sampling or analyzer results. Such notification shall include the certified laboratory results/report or CPGMS log, chain of custody, exact sampling location, date and time of occurrence, and an initial corrective action plan. This notification shall be submitted in accordance with Condition 3.5.1 and records shall be maintained in accordance with Condition 3.4.1.

5.5.4. After initial startup, the permittee shall submit monthly reports to the Director by the 15th of the following month. These reports shall contain the following for each reporting period:

a. Total and daily average of feedstock processed.

b. Hours of operation of each pyrolysis train.

c. Date and times of all shut down and startup events.

d. Any exceedances of any of the permit conditions in Sections 4. or 5. of this permit.

e. Monthly and 12-month rolling combined total emissions of all criteria pollutants and HAPs from Emission Points **1E, 2E, 3E, 7E, 8E, and 9E**.

f. Explanation and/or actions taken of the exceedances.

Such submittals shall be in accordance with Condition 3.5.3. and maintained in accordance with Condition 3.4.1 of this permit.

5.5.5. **Comprehensive HAP Test Results & Major Source Applicability Determination:** Within sixty (60) days of completing the initial performance testing required by Conditions 5.3.1, 5.3.7, and 5.3.8, the permittee shall submit a comprehensive HAP Potential to Emit (PTE) Evaluation Report to the Director. The permittee shall utilize actual measured stack emission rates (including Dioxins/Furans via Method 23, HCl via Method 26/26A, and organic VOC HAPs via Method 18/TO-15) and raw syngas metal concentrations (Condition 5.3.7) to formally recalculate the facility's total maximum single HAP and aggregate HAP Potential to Emit (PTE) in tons per year. If the recalculated PTE demonstrates that facility-wide emissions equal or exceed Major Source thresholds (10 TPY for any single HAP or 25 TPY for total HAPs), or if the Director determines the emission profile indicates the combustion of solid waste subject to OSWI guidelines, the permittee shall immediately submit a Title V permit application (45CSR30) or a major permit modification application to implement required Maximum Achievable Control Technology (MACT) or OSWI performance standards within the timeframes established by state and federal rule.

6.0. Specific Requirements for Storage Vessels (4S), Truck Loading Rack (6S), Equipment Leaks and Closed Vent System.

6.1. Limitations and Standards

6.1.1. **Pyrolysis Oil Storage Vessels Operating Requirements:** To minimize Volatile Organic Compound (VOC) emissions and ensure compliance with the applicable provisions of 40 CFR Part 60 Subpart Kc, the following requirements apply to each pyrolysis oil storage vessel at the facility:

a. Vapor Pressure Limitations: The permittee shall not store any Volatile Organic Liquid (VOL) in the storage vessels that exhibits a True Vapor Pressure (TVP) equal to or greater than 1.5 psia at 100°F. Compliance with this limitation shall be verified through the periodic pyrolysis oil product analysis required by Condition 5.2.8.

b. Temperature Limitation: The bulk liquid temperature of the VOL stored in these vessels shall be maintained at or below 100°F on a daily average basis.

c. Nitrogen Blanketing and Closed-Vent System: Each pyrolysis oil storage vessel shall be designed and operated as a fixed-roof tank equipped with a continuous nitrogen blanketing system.

1. **Closed-Vent System:** The tank vapor headspace, including all normal working and breathing vents, shall be hard-piped and classified as a closed-vent system.

2. **Routing to Control:** All displaced vapors and non-condensable gases from the storage vessels (excluding emergency pressure relief events) shall be continuously routed through the closed-vent system to Control Device 3C (Enclosed Combustion Device - ECD).

3. **LDAR Applicability:** The closed-vent system piping shall be maintained and monitored for leaks in accordance with the Leak Detection and Repair (LDAR) requirements of Condition 6.1.3.

6.1.2. **Truck Loading Rack (6E) Operating and Emission Requirements** To minimize Volatile Organic Compound (VOC) emissions during product transfer operations, the permittee shall operate the pyrolysis oil truck loading rack (Emission Point 6E) in accordance with the following requirements:

a. Emission Limits: VOC emissions resulting from the loading of pyrolysis oil into tanker trucks shall not exceed 0.015 pounds per loading event and 0.40 tons per rolling 12-month period.

b. Operational and Throughput Limits: To mathematically demonstrate compliance with the emission limits in subparagraph a of this condition, the permittee shall adhere to the following physical and operational limitations:

1. **Maximum Loading Rate:** The transfer rate of pyrolysis oil into any single tanker truck shall not exceed 100 gallons per minute.

2. **Maximum Annual Throughput:** The total volume of pyrolysis oil loaded through the rack shall not exceed 3.96 million gallons per rolling 12-month period.

3. **Submerged Filling Requirement:** All tanker trucks shall be loaded using the submerged fill method. The submerged fill pipe shall be installed and maintained such that the point

of discharge is no more than six (6) inches from the bottom of the cargo tank. Bottom loading of tanker trucks is considered an acceptable submerged fill operation.

c. Compliance Demonstration: Compliance with the VOC emission limits shall be demonstrated by calculating the emissions using the total gallons loaded and the standard emission factor equation for Transportation and Marketing of Petroleum Liquids found in **U.S. EPA AP-42, Chapter 5.2 (Equation 1)**. The calculations shall utilize the True Vapor Pressure (TVP) of the oil established in Condition 5.2.8.

d. Recordkeeping: The permittee shall maintain the following records on-site for a minimum of five (5) years in accordance with Condition 3.4.1.:

1. The total gallons of pyrolysis oil loaded each calendar month.
2. The 12-month rolling total of gallons loaded.
3. The calculated monthly and 12-month rolling total VOC emissions.
4. Records verifying that the loading rack drop-tubes or bottom-loading arms are configured in accordance with Condition 6.1.2.b.3. to meet the submerged fill definition.

6.1.3. **Equipment Leak Standards and Monitoring (LDAR)**

To minimize fugitive emissions of Volatile Organic Compounds (VOC) and satisfy the fugitive emission exemption of Condition 5.1.6.b., all equipment in VOC service at the facility shall be maintained in such a manner that the equipment is free from leaks at all times. The permittee shall implement a Leak Detection and Repair (LDAR) program in accordance with the following requirements:

a. Applicability and Definitions:

1. **VOC Service:** All equipment in contact with synthetic gas, pyrolysis oil, diesel, or any other liquid/gas stream that contains at least 10 percent by weight VOCs is considered in VOC service. Furthermore, all piping and equipment comprising a closed vent system shall be considered in VOC service.
2. **Leak Definition:** An equipment leak is defined as any one of the following conditions:

i. **Valves and Connectors (Gas/Vapor and Light Liquid Service):** An instrument reading of 500 ppmv or greater is measured using U.S. EPA Method 21.

ii. **Pumps (Light Liquid Service):** An instrument reading of 2,000 ppmv or greater is measured using U.S. EPA Method 21.

iii. **Pressure Relief Devices (PRDs):** An instrument reading of 500 ppmv or greater is measured using U.S. EPA Method 21.

iv. **Compressors:** An instrument reading of 500 ppmv or greater is measured using U.S. EPA Method 21.

v. There are indications of liquid dripping from any equipment.

vi. Any leak from any equipment that is detected on the basis of sight, sound, or smell.

vii. Any visible emission from the equipment observed utilizing an Optical Gas Imaging (OGI) camera (e.g., FLIR) operated by either the permittee or the Director's authorized representative.

b. Monitoring Frequency: The permittee shall conduct an equipment inspection program using the U.S. EPA Method 21 as specified in section 46 of 45CSR21 or alternative method approved by the Secretary according to the following schedule:

1. **Quarterly Monitoring:** The permittee shall conduct quarterly monitoring of each compressor, pump in light liquid service, valve in light liquid service, valve in gas/vapor service, and pressure relief valve (PRV) in gas/vapor service.

2. **Weekly Visual Inspections:** The permittee shall conduct a weekly visual inspection of each pump in light liquid service.

3. **Post-Release Monitoring:** The permittee shall monitor each pressure relief valve after each overpressure relief to ensure that the valve has properly reseated and is not leaking.

c. Leak Tagging and Repair Schedule:

1. **Tagging:** When a leak is detected, the permittee shall affix a weatherproof, readily visible tag in a bright color such as red or yellow, bearing the equipment identification number and the date on which the leak was detected. This tag shall remain in place until the leaking equipment is repaired.

2. **First Attempt:** The permittee shall make a first attempt at repair for any leak not later than 5 calendar days after the leak is detected.

3. **Final Repair:** The permittee shall repair any leak as soon as practicable, but not later than 15 calendar days after it is detected except as provided in the Delay of Repair provisions in paragraph (d) below.

d. Delay of Repair:

Delay of repair of equipment for which a leak has been detected will be allowed only under the following conditions:

1. **Process Shutdown Required:** The repair is technically infeasible without a process unit shutdown. Repair of such equipment shall occur before the end of the first process unit shutdown after detection of the leak.

2. **Isolated Equipment:** Delay of repair of equipment will also be allowed for equipment that is isolated from the process and that does not remain in VOC service after detection of the leak.

3. **Valve Assembly Depletion:** Delay of repair beyond a process unit shutdown will be allowed for a valve, if valve assembly replacement is necessary during the process unit shutdown, and if valve assembly supplies have been depleted, where valve assembly supplies had been sufficiently stocked before the supplies were depleted. Delay of repair beyond the first process unit shutdown will not be allowed unless the next process unit shutdown occurs sooner than 6 months after the first process unit shutdown.

e. Alternative Standards for Difficult/Unsafe Valves:

1. **Unsafe-to-Monitor:** Any valve is exempt from the quarterly monitoring requirements as an unsafe-to-monitor valve if the permittee demonstrates that the valve is unsafe to monitor because monitoring personnel would be exposed to an immediate danger as a consequence of complying with the monitoring requirement , and the permittee adheres to a written plan that requires monitoring of the valve as frequently as practicable during safe-to-monitor times.

2. **Difficult-to-Monitor:** Any valve is exempt from the quarterly monitoring requirements as a difficult-to-monitor valve if the permittee demonstrates that the valve cannot be monitored without elevating the monitoring personnel more than 2 meters (6.6 feet) above a support surface , and the permittee follows a written plan that requires monitoring of the valve at least once per calendar year.

f. Alternative Standards for Valves: Skip Period Leak Detection In lieu of the standard quarterly monitoring, the permittee may elect to comply with the following alternative skip period leak detection schedule for valves in gas/vapor and light liquid service:

1. **Semi-Annual Skip:** If the percent of valves leaking is equal or less than 2.0 for two consecutive quarters, the permittee may skip alternate quarterly leak detection periods (i.e., monitor semi-annually) for the valves in gas/vapor and light liquid service.

2. **Annual Skip:** If the percent of valves leaking is equal to or less than 2.0 for five consecutive quarters, the permittee may skip three of the quarterly leak detection periods per year (i.e., monitor annually) for the valves in gas/vapor and light liquid service, provided that each valve shall be monitored once each year.

3. **Reversion to Quarterly:** If at any time the percent of valves leaking is greater than 2.0, the permittee shall resume compliance with the standard quarterly monitoring requirements, but may again elect to comply with the alternative skip period once the consecutive quarter criteria are met again.

4. **Percent Leaking Calculation:** The percent of valves leaking shall be determined by dividing the sum of valves found leaking during current monitoring and previously leaking valves for which repair has been delayed by the total number of valves subject to the requirements of this section.

5. **Recordkeeping:** The permittee shall keep a record of the percent of valves found leaking during each leak detection period.

g. Alternative Work Practice for OGI (Optical Gas Imaging): In lieu of conducting the quarterly U.S. EPA Method 21 monitoring required by Condition 6.1.3.b.1, the permittee may elect to implement the Alternative Work Practice (AWP) to detect leaks using an Optical Gas Imaging (OGI) camera. If the permittee elects to use this alternative, they shall comply with the following:

1. The OGI camera shall be operated in accordance with the requirements, specifications, and daily instrument checks outlined in 40 CFR §§ 60.18(g), (h), and (i).

2. Any equipment found to have visible emissions utilizing the OGI camera shall be defined as leaking equipment and shall be tagged and repaired in accordance with the schedules in Condition 6.1.3.c. and 6.1.3.d.

3. The permittee must maintain records of the OGI video logs, date/time of surveys, and operator training certifications on-site.

4. If the permittee utilizes the AWP for quarterly monitoring, they must still conduct an annual leak detection survey utilizing U.S. EPA Method 21 on all applicable equipment.

6.2. Monitoring Requirements

6.2.1. **Pyrolysis Oil Storage Vessel Monitoring** To demonstrate ongoing compliance with the storage vessel operating requirements of Condition 6.1.1., the permittee shall conduct the following monitoring for each pyrolysis oil storage vessel:

a. Temperature Monitoring: The permittee shall install, calibrate, operate, and maintain a Continuous Parameter Monitoring System (CPMS) equipped with a thermocouple (or equivalent temperature sensing device) to continuously measure and record the bulk liquid temperature of the Volatile Organic Liquid (VOL) stored in each vessel.

b. Temperature Data Reduction: The daily average temperature shall be calculated as the arithmetic average of all valid hourly temperature readings recorded during each operating day.

c. Nitrogen Blanketing System Monitoring: To verify that the nitrogen blanketing system is operating properly and maintaining a vapor-tight, oxygen-free headspace, the permittee shall continuously monitor the system pressure.

1. **Instrument:** The permittee shall install, operate, and maintain a pressure transmitter or gauge on the storage vessel headspace or on the final nitrogen supply header directly feeding the storage vessel.

2. **Operational Standard:** The monitoring device shall verify that a positive pressure is continuously maintained within the vessel headspace or supply line (above atmospheric pressure) at all times when VOL is stored in the vessel, except during approved maintenance events.

3. **Data Recording:** The permittee shall record the pressure reading at least once per operating day to document that the nitrogen blanket is active and properly pressurized.

d. Closed-Vent System Inspections: The closed-vent system piping routing the tank vapors to Control Device 3C (ECD) shall be visually inspected for defects (e.g., cracks, holes, or missing caps) at least once per calendar month, and shall be monitored for leaks in accordance with the facility Leak Detection and Repair (LDAR) schedule established in Condition 6.1.3.

6.2.2. S**ubmerged Fill Verification and Inspection** To demonstrate ongoing compliance with the submerged fill requirement of Condition 6.1.2.b.3., the permittee shall conduct the following verifications and inspections:

a. Bottom Loading Design Verification (If Applicable): If the loading rack is designed and operated exclusively as a bottom-loading facility, the physical connection inherently satisfies the submerged fill requirement. The permittee shall maintain on-site engineering drawings or vendor specifications demonstrating that the loading rack (Emission Point 6E) is designed solely for bottom loading.

b. Top Loading Drop-Tube Inspections (If Applicable): If the loading rack utilizes top-loading arms, the permittee shall conduct an annual visual inspection of each loading arm drop-tube.

1. The inspection shall verify that the drop-tube is structurally intact, has not been shortened, altered, or broken, and physically extends to within six (6) inches of the bottom of the standard cargo tanks loaded at the facility.

2. If a drop-tube is found to be damaged or out of compliance, it shall be immediately tagged out of service and repaired or replaced prior to resuming loading operations from that arm.

c. Recordkeeping: The permittee shall maintain records of the annual drop-tube inspections (including the date of inspection, the name of the inspector, and any maintenance or repairs performed) or the bottom-loading design certifications. These records shall be maintained in accordance with Condition 3.4.1.

6.3. Recordkeeping Requirements

6.3.1. The permittee shall maintain records in accordance with Condition 3.4.1. of the following for each permitted storage tanks covered by Condition 6.1.1:

a. The dimensions of each storage vessel and an analysis showing the capacity of each storage vessel. **[40 CFR § 60.115c(b)]**

b. The amount of pyrolysis oil stored in the each vessel each month.

c. The maximum vapor pressure of the pyrolysis oil stored in the vessel, determined using one of the following methods:

i. ASTM D6377-20 (using a vapor-to-liquid ratio of 4:1); or **[40CFR§60.113c(d)(1)(ii)]**

ii. ASTM D6378-22 (using a vapor-to-liquid ratio of 4:1). **[40CFR§60.113c(d)(1)(iii)]**

d. All instances where the pressure of the nitrogen blanket drops below the required positive operating pressure standard.

e. All instances where the bulk liquid temperature rises above the operating parameter limit set forth in Condition 6.1.1.b.

7.0. Specific Requirements for Emergency Generator (5S)

7.1. Limitations and Standards

7.1.1. The following conditions and requirements are specific to the internal combustion engine used for Emergency Generator #1 (ID 5S):

a. **Emission Limits:** Emissions from the engine shall not exceed the following:

i. NO_x: 2.0 grams of NOx per horsepower-hour (g/hp-hr) or 160 ppmvd at 15% O2.
[40 CFR §60.4233(e), Table 1 to Subpart JJJJ of Part 60—NO_X, CO, and VOC Emission Standards for Stationary Non-Emergency SI Engines ≥100 HP (Except Gasoline and Rich Burn LPG), Stationary SI Landfill/Digester Gas Engines, and Stationary Emergency Engines >25 HP]

ii. **CO:** 4.0 grams of CO per horsepower-hour (g/hp-hr) or 540 ppmvd at 15% O2.
[40CFR§60.4233(e) Table 1 to Subpart JJJJ of Part 60—NO_X, CO, and VOC Emission Standards for Stationary Non-Emergency SI Engines ≥100 HP (Except Gasoline and Rich Burn LPG), Stationary SI Landfill/Digester Gas Engines, and Stationary Emergency Engines >25 HP]

iii. **VOC:** 1.0 grams of VOCs per horsepower-hour (g/hp-hr) or 86 ppmvd at 15% O2. Formaldehyde emissions shall not be included as part of this standard.
[40CFR§60.4233(e) Table 1 to Subpart JJJJ of Part 60—NO_X, CO, and VOC Emission Standards for Stationary Non-Emergency SI Engines ≥100 HP (Except Gasoline and Rich Burn LPG), Stationary SI Landfill/Digester Gas Engines, and Stationary Emergency Engines >25 HP]

b. **Certification Requirement:** The permittee shall satisfy compliance with the emission standards in item (a) of this condition by purchasing an engine certified to comply with the emergency engine emission standards of 40 CFR Part 60 Subpart JJJJ applicable to the same model year and maximum engine power. The model year of the engine shall be 2025 or later. The engine must be installed and configured according to the manufacturer's emission-related specifications.
[40CFR§§60.4243(a) and (a)(1)].

c. **Mass Emission Limits:** Hourly emissions from the engine shall not exceed the following rates on a 3-hour average basis:

Table 7.1.1.c. Mass Emissions Limits for 5S

Pollutant	Hourly Rate (lb/hr)
Oxides of Nitrogen (NO_x)	0.50
Carbon Monoxide (CO)	0.37
Volatile Organic Compounds (VOCs)	0.11

d. **Power Output:** This engine shall not have a nameplate power rating greater than 228 brake horsepower (bhp).

e. **Fuel Specifications:** The engine shall be fueled exclusively with pipeline-quality natural gas that meets the definition in 40 CFR § 60.4248, containing a sulfur loading of no greater than 10 ppmv of total sulfur or 0.44 grains of total sulfur per 100 scf.

f. Operating Hour Limitations: There is no time limit on the use of this engine in true emergency situations. The engine may be operated 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. Maintenance checks and readiness testing are limited to a maximum of **100 hours per calendar year**. The engine may be operated for up to 50 hours per calendar year in non-emergency situations; however, these 50 hours are counted as part of the 100 hours of operation allowed for maintenance and testing. **[40 CFR § 60.4243(d)]**

g. Hour Meter: The engine shall be equipped prior to initial startup, and maintained for the life of the engine, with a non-resettable hour meter. Should the hour meter need to be repaired or replaced, the permittee shall notify the Director in accordance with Condition 3.5.3. within 15 calendar days of the repair/replacement. Such notice shall include the actual reading prior to the repair/replacement, the scope of work performed, the individual supervising the repair, and the date/time the work was completed.

h. Operation and Maintenance: The permittee shall keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine and associated control device (if equipped) in a manner consistent with good air pollution control practice for minimizing emissions.
[40 CFR § 60.4243(a)(1)]

7.2. Monitoring Requirements

7.2.1. The permittee shall measure and record the duration of the each type of operating event for the emergency generator engine (**ID 5S**) on a monthly basis through the use of the non-resettable hour meter:

1. Hours that the unit operated for emergencies, including the specific reason for each emergency.

2. Hours that the unit operated for maintenance checks and/or readiness testing.

3. Hours that the unit operated for non-emergency operations other than maintenance or readiness checks.

These records shall be maintained in accordance with Condition 3.4.1. of this permit.

7.3. Recordkeeping Requirements

7.3.1. Record of Monitoring. The permittee shall keep records of monitoring information that include the following:

a. The date, place as defined in this permit, and time of sampling or measurements.

b. The date(s) analyses were performed.

c. The company or entity that performed the analyses.

d. The analytical techniques or methods used.

e. The results of the analyses; and

f. The operating conditions, as specified in Condition 7.2.1. existing as specified at the time of sampling or measurement.

7.3.2. Record of Maintenance of Air Pollution Control Equipment. For all pollution control equipment listed in Section 1.0, the permittee shall maintain accurate records of all required pollution control equipment inspection and/or preventative maintenance procedures.

7.3.3. Record of Malfunctions of Air Pollution Control Equipment. For all air pollution control equipment listed in Section 1.0, the permittee shall maintain records of the occurrence and duration of any malfunction or operational shutdown of the air pollution control equipment during which excess emissions occur. For each such case, the following information shall be recorded:

a. The equipment involved.

b. Steps taken to minimize emissions during the event.

c. The duration of the event.

d. The estimated increase in emissions during the event.

For each such case associated with an equipment malfunction, the additional information shall also be recorded:

e. The cause of the malfunction.

f. Steps taken to correct the malfunction.

g. Any changes or modifications to equipment or procedures that would help prevent future recurrences of the malfunction.

7.3.4. **Engine Maintenance Records:** The permittee shall keep a maintenance plan and records of all maintenance performed on the emergency generator engine (ID 5S) to demonstrate compliance with the manufacturer's emission-related specifications.
[40 CFR § 60.4243(a)(1)]

7.3.5. **Fuel Sulfur Content Records:** To demonstrate continuous compliance with the natural gas sulfur content limitations specified in Condition 7.1.1.e. without the need for physical on-site fuel sampling, the permittee shall maintain valid documentation verifying the fuel provided to the emergency engine (5S) meets the definition of pipeline-quality natural gas.

a. Acceptable Documentation: The permittee shall maintain one of the following forms of documentation from the natural gas supplier:

1. A current, valid purchase contract, tariff sheet, or transportation contract from the local natural gas utility company that explicitly specifies the maximum total sulfur content of the fuel is equal to or less than 10 ppmv or 0.44 grains per 100 scf.
2. Representative fuel gas analysis data (e.g., a semi-annual or annual gas chromatograph report) provided directly by the local natural gas distributor demonstrating the sulfur content remains below the permitted threshold.

b. Record Retention: Records of the active tariff sheets, vendor contracts, or vendor-supplied lab analyses shall be updated as necessary and maintained on-site for a minimum of five (5) years in accordance with Condition 3.4.1.

c. Exceedance Reporting: If the utility provider notifies the permittee, or if a vendor-supplied gas analysis indicates, that the sulfur content of the delivered natural gas has exceeded the limit established in Condition 7.1.1.e., the permittee shall report the event as a permit deviation in accordance with Condition 3.5.3.

8.0. Specific Requirements for Cleaning or Other Maintenance Activities.

8.1. Specific Limitations

8.1.1. The following limitations apply to any equipment cleaning or maintenance activities at the permitted facility.

a. VOC emission from the cleaning process equipment or process piping shall not exceed 319 pounds per calendar year.

1. The permittee shall only clean the process equipment for a maximum of 104 hours per year on a 12-month rolling basis.

b. All solvents or cleaning agents used at the facility must be free of organic and HAPs.

c. Air drying of spent containers that contained VOL is prohibited.

d. Lids for containers used to store VOL must be closed at all times except when dispensing the organic solvent.

8.2. Recordkeeping Requirements

8.2.1. The permittee shall maintain monthly records of the number of hours that the process equipment is cleaned at the facility for each calendar month and determine the total mass rate of VOC emitted due to the cleaning of process equipment for the month with an annual total VOC emitted due to the cleaning of the process equipment at the facility. Such records shall be maintained in accordance with Condition 3.4.1.

8.2.2. The permittee shall maintain records of each solvent and cleaning agent used at the facility and sufficient information of each organic solvent to indicate compliance with the requirement in Condition 8.1.1.b. Such records shall be maintained in accordance with Condition 3.4.1.

APPENDIX A Visible Emissions Observation (example form)

Date of Observation: _____

Data Entered by: _____

Reviewed by: _____

Date Reviewed: _____

Describe the General Weather Conditions:

Emission Point ID	Emission Point Description	Time of Observation	Visible Emissions? Yes/No	Consecutive Months of Visual Emissions	Comments

CERTIFICATION OF DATA ACCURACY

I, the undersigned, hereby certify that, based on information and belief formed after reasonable inquiry, all information contained in the attached _____, representing the period beginning _____ and ending _____, and any supporting documents appended hereto, is true, accurate, and complete.

Signature[1] _____ _____
(Please use blue ink) Responsible Official or Authorized Representative Date

Name & Title _____ _____
(Please print or type) Name Title

Telephone No. _____ Fax No. _____

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[1] This form shall be signed by a "Responsible Official." "Responsible Official" means one of the following:

a. For a corporation: The president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit and either:

(i) the facilities employ more than 250 persons or have a gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), or

(ii) the delegation of authority to such representative is approved in advance by the Director.

b. For a partnership or sole proprietorship: a general partner or the proprietor, respectively.

c. For a municipality, State, Federal, or other public entity: either a principal executive officer or ranking elected official. For the purposes of this part, a principal executive officer of a federal agency includes the chief executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., a Regional Administrator of U.S. EPA); or

d. The designated representative delegated with such authority and approved in advance by the Director.