Division of Air Quality
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Charleston, WV 25304
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Harold D. Ward, Cabinet Secretary
dep.wv.gov

Final Determination

Application No.:	R13-3728
Facility ID No.	039-00760
Name of Applicant:	Clean-Seas West Virginia, Inc.
Name of Facility:	Belle Facility
Location of Facility:	near Belle, Kanawha County
NAICS Code:	325199 - "All Other Basic Organic Chemical Manufacturing"
SIC Code:	2860 - "Industrial Organic Chemicals"
Application Type:	Construction
Submittal Date:	August 20, 2025
Application Complete Date:	March 2, 2026
DAQ Public Notice Date:	June 26, 2026
Newspaper:	*The Charleston Gazette-Mail*
Public Meeting Date:	July 14, 2026 (In-person)
Engineer:	Edward Andrews, P.E.
UTMs:	Easting: 455.5 km Northing: 4,229.0 km Zone: 17
Latitude/Longitude:	38.2081876°N/-81.5081475°W

BACKGROUND INFORMATION

On June 26, 2026, the Division of Air Quality (DAQ) initiated the public participation process by issuing a notice of a formal comment period and an in-person public meeting concerning Permit Application R13-3728. This application, originally submitted on August 20, 2025, proposes the construction of a plastic pyrolysis chemical manufacturing facility at 2700 East Dupont Ave., Suite 3B, in Belle, Kanawha County. Concurrent with this announcement, the DAQ made the Draft Permit and Engineering Evaluation available for public examination, supplementing the permit application, which remained accessible throughout the duration of the comment period.

In accordance with 45 CSR 13, the DAQ published a Class I legal advertisement in *The Charleston Gazette-Mail* on Friday, June 26, 2026. This publication commenced a 30-day statutory comment window, set to expire at 5:00 P.M. on Monday, July 27, 2026. Notice of the

proceedings was also prominently featured on the Agency's website to ensure broad public awareness.

The DAQ hosted an in-person public meeting on Tuesday, July 14, 2026, at 6:00 P.M. within the Belle Town Hall Gym. The session was designed to provide technical information regarding the proposed facility, facilitate a question-and-answer period with DAQ engineering staff, and record oral testimony for the administrative record. The proceedings included a formal presentation by the Agency followed by the acceptance of oral comments from the public.

ApplicationEnhancer

Instructions for accessing Application Enhancer can be found at:

https://dep.wv.gov/daq/permitting/Pages/NSR-Permit-Applications.aspx

SUMMARY OF COMMENTS RECEIVED

Between the initial filing and the termination of the public comment window on July 27, 2026, the DAQ received a substantial volume of feedback regarding the proposed facility. Formal submissions included legal briefs from Fair Shake Environmental Legal Services and Earthjustice, a technical engineering evaluation by Dr. William Auberle, P.E., and correspondence from the Charleston City Council and Kanawha County Commission. Additionally, the administrative record includes numerous individual letters, form emails from the EveryAction and Earthworks networks, oral testimony from the July 14, 2026 public meeting, and written question cards collected during that session.

Non-technical comments primarily expressed opposition rooted in local quality-of-life concerns, land-use preferences, proximity to schools and businesses, fire risks, and regional health indicators. Technical and legal objections focused on the facility's source classification, with some arguing for regulation as a major Title V source due to potential hydrogen chloride emissions. Other technical concerns involved the applicability of Clean Air Act Section 129 and 40 CFR Part 60 Subpart EEEE, the legitimacy of non-waste fuel under 40 CFR Part 241, the destruction efficiency of the Enclosed Combustion Device (ECD - 3C), dioxin/furan monitoring, and benzene waste standards.

The "Response to Public Comments" document has been structured to address several dynamic response categories:

1. **General Statutory & Jurisdictional Framework:** This section defines the technical scope of W. Va. Code § 22-5 and clarifies that matters of local land-use, zoning, and setbacks are under the jurisdiction of the County Commission pursuant to W. Va. Code § 8A-7-1.

2. **Technical Permitting & Legal Determinations:** The DAQ confirmed the facility's status as a minor source under 45 CSR 13 and 45 CSR 30 (controlled PTE: 2.18 tpy NO_x, 2.20 tpy CO, 0.89 tpy SO_2, 1.23 tpy $PM_{10}/PM_{2.5}$, 5.44 tpy VOCs, 0.84 tpy Total HAPs, and 0.69 tpy HCl). Under 42 U.S.C. § 7429(g)(1) & (g)(6), feedstock and process-derived syngas satisfy non-waste criteria, qualifying Pyrolysis Trains 1S and 2S as chemical manufacturing units exempt from CAA Section 129. Furthermore, Subpart AAAA is inapplicable as train capacities are below the 35 tpd threshold, and TRE Unit 8S meets the Laboratory Analysis Exemption under 40 CFR § 60.2887(j).

   Concerns about the destruction efficiency of the ECD and about other compounds not specifically identified in the review. The permit establishes a minimum operating temperature for the ECD at 1,800°F. U.S. EPA air pollution control guidance specifies that operating temperatures between 1,400°F and 1,600°F with a 0.5- to 1.0-second residence time are sufficient to achieve 98% to 99% DRE for non-halogenated organic compounds. Enforcing a continuous minimum temperature of 1,800°F provides a substantial thermal safety margin above standard federal design criteria, ensuring DREs of 99% to 99.9% are reliably maintained during routine process operations and venting.

   Benzene (C_6H_6) contains a delocalized aromatic ring that makes its chemical bonds thermally stable, with an autoignition temperature between 928°F and 1,040°F. Benzene is widely recognized by the EPA as a conservative, "worst-case" surrogate for non-halogenated organic HAPs. Maintaining the combustion chamber at 1,800°F supplies more than enough thermal energy to break these resilient aromatic ring structures.

   Open-chain dienes and aldehydes—such as 1,3-butadiene (C_4H_6) and acetaldehyde (C_2H_4O)—contain reactive double and carbonyl bonds with significantly lower autoignition temperatures (approximately 788°F for 1,3-butadiene). Because 1,800°F easily exceeds the thermal energy required to destroy stable aromatic ring structures like benzene, more reactive compounds such as 1,3-butadiene and acetaldehyde undergo complete oxidative cleavage with equal or greater destruction efficiency.

3. **Air Toxics, Emissions Controls, & Material Handling:** This category evaluates the monitoring framework for HAPs, including stack testing for dioxins/furans, mandatory PTE recalculations, and 1,800°F combustion standards for the ECD (3C). It also addresses feedstock storage limits, baghouse controls on Carbon Silo 10S, leak-free pneumatics, submerged tank loading, the 90% control LDAR program under 45 CSR 21, and the 1.0 Mg/yr benzene limit under 40 CFR Part 61 Subpart FF.

4. **School Proximity, Community Health, & Environmental Justice:** The DAQ evaluated health protections under the National Ambient Air Quality Standards (NAAQS), including considerations for valley temperature inversions and dispersion modeling screening thresholds.

5. **Special & Non-Air Quality Inquiries:** This section addresses regional monitoring, out-of-state feedstock, emergency response jurisdictions (OSHA PSM / EPA RMP), and rules regarding uninstalled equipment storage under 45 CSR § 13-2.26.

After a comprehensive review of all technical data, testimony, and legal briefs, the DAQ found no evidence that the permitting process or Draft Permit were inconsistent with W. Va. Code § 22-5-1 *et seq.* or 45 CSR 13. Nevertheless, substantive revisions were incorporated into the Final Permit to address technical concerns and enhance practical enforceability.

The U.S. EPA Region III was notified of this application; however, the DAQ received no correspondence from the EPA regarding this minor source permit.

Substantive Additions and Revisions to Permit R13-3728

As a result of technical inquiries, written briefs, and oral comments received during the public review process, several substantive revisions and additions were incorporated into Final Permit R13-3728. The final permit changes are summarized below:

Condition 4.1.2

Draft

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.

- This inspection plan shall be developed, submitted, and implemented prior to the initial startup of pyrolysis reactors 1S and 2S.

Final

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.

Remarks: An additional requirement was incorporated for the applicant to submit, implement, and conduct annual reviews of a written Feedstock Inspection Plan 15 days before the facility's receipt of any feedstock.

This measure ensures compliance with feedstock purity standards before reactor charging occurs.

Condition 4.1.7

Draft:

The permittee shall operate and maintain all pneumatic conveying systems in a manner that is free of leaks to limit the release of fugitive PM emissions.

Final:

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.

Remark: A new requirement specifies that all pneumatic conveying lines associated with carbon storage (10S/10E) must operate completely free of leaks.

Remarks: This ensures strict adherence to the standards outlined in 45 CSR § 7-5.1. The storage bin must be maintained free of leaks as well.

Condition 4.2.3.

Draft

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). 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.

Final:

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.

Remark: Added the sentence that the inspection shall include the carbon storage bin and associated pneumatic conveying system.

Condition 4.4.4.b

Draft

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)]

- 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)]

- If the amount of benzene waste equals or exceeds 1.0 Mg/yr (1.1 tons/yr), 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)]

- 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.

Final

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.

Added a mandatory 10-day written notification and compliance plan submittals are required if any TAB determination reaches or exceeds this threshold.

This maintains area source status and provides an immediate agency alert under Benzene NESHAP Subpart FF (40 CFR § 61.342).

Condition 4.5.1.

Draft

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 the initial startup of pyrolysis reactor trains 1S or 2S. Such submittal shall be made in accordance with Condition 3.5.3. of this permit.

Final

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.

The grammatical phrasing was corrected to require that the inspection plan be submitted no later than 15 days before any plastic feedstock is received on-site.

The revision corrects a typographical error found in the draft.

Condition 5.1.1.a.8

Added the Rule 7 Mineral Acids Citation to the end of the condition: **[45CSR§7-4.2. and Table 45-7B]**

Condition 5.2.1.e.4

Draft:

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 header/pressurized storage tanks) at all times when the pyrolysis trains 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.

Final:

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.

Remarks: Added "(1S or 2S)" to the second paragraph.

Condition 5.2.2

Draft:

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.

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:

Final:

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:

Remarks: Added "by any one of these combustion devices 1S, 2S. 3S. and 7S." to ensure that the location of the instrument(s) is upstream of all combustion devices and the measured data would be representative of the gas being combusted by the devices.

Condition 5.2.8.b.8

Added:

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.

Remarks: Added semi-annual liquid-phase organic HAP speciation testing (EPA Method 8260) for Pyrolysis Oil. It also requires 10-day written notification if any Table 1 HAP reaches or exceeds 0.1% wt (1,000 ppmw) to the final permit.

This verifies that Pyrolysis Oil remains exempt from CMAS NESHAP Subpart VVVVVV (40 CFR § 63.11494).

Condition 5.3.1.a.

Draft:

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), with the exception of Dioxins and Furans (Method 23), which are only required during the initial compliance demonstration unless otherwise requested in writing by the Director.**

Final:

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.**

Remarks: The permit will require subsequent testing for dioxins and furans.

Conditions 5.3.4. & 5.3.4.c.

Draft:

Performance-Triggered Subsequent Compliance Testing (Process Heaters 1S and 2S) In lieu of a fixed periodic stack testing schedule, the permittee shall utilize the routine portable analyzer monitoring required by Condition 5.2.4 as an ongoing performance indicator.

c. **Resetting the Baseline:** Following the successful completion of a triggered compliance demonstration (where U.S. EPA Reference Methods prove the unit is operating within its permitted limits), the portable analyzer monitoring schedule shall continue, and a new subsequent stack test will only be required if the portable analyzer readings again exceed the values in Table 5.3.4.a.

Final:

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.

Remarks: Removed the “in lieu of periodic testing” provision in the condition and set the reset or retest trigger to six months.

Condition 5.3.7.

Draft:

Process-Derived Syngas (PDS) Metal HAP Analysis To demonstrate ongoing compliance with the facility-wide Hazardous Air Pollutant (HAP) limits and to verify the efficacy of the plastic feedstock sorting process, the permittee shall conduct periodic laboratory analysis of the Process-Derived Syngas (PDS) for metal HAPs.

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 (at least once every six calendar months).

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 detection limit, 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.

b. Target Analytes and Methodology:

1. The analysis shall quantify the concentration of, at a minimum, the following metal HAPs: Antimony, Arsenic, Beryllium, Cadmium, Chromium, Lead, Manganese, Mercury, and Nickel.

2. The permittee shall utilize an approved U.S. EPA or ASTM methodology for sampling and analyzing trace metals in a fuel gas stream (e.g., ICP-MS or ICP-AES).

3. 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.

c. Compliance Demonstration (Mass Balance): 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.

1. The calculation shall assume 100% of the metals present in the PDS are emitted to the atmosphere upon combustion.

2. These calculated metal HAP emissions shall be added to the organic HAP emissions to demonstrate continuous compliance with the total HAP emission limits established in Condition 5.1.1.b.6.iv.

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 maintain records of all syngas sampling protocols, certified laboratory analytical reports, and the resulting mass balance emission calculations in accordance with Condition 3.4.1.

Final:

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.

Remarks: The condition was revised to clearly define semi-annual laboratory mass-balance testing of PDS for trace metal HAPs for specific compounds of Sb, As, Be, Cd, Cr, Pb, Mn, Hg, and Ni. The actual specific pollutant name (HAP) was included instead of the element symbol. The revisions addressed how to handle measurements below the method detection limit.

This demonstrates ongoing compliance with the facility-wide metal HAP limits.

Condition 5.3.8. (Added)

Final:

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.

Remarks: Initial and semi-annual raw PDS organic HAP speciation testing (EPA Method 18 / TO-15) was added upstream of combustion, with a 10-day notification requirement for Table 1 HAPs exceeding 0.1% wt.

This ensures that continuous process vents remain exempt from CMAS NESHAP Subpart VVVVVV.

Condition 5.4.4.

Remarks: This number was inadvertently skipped over in the draft version. The numbering correction revised the preceding conditions in Section 5.4. by one.

Condition 5.4.6. (Draft) - Condition 5.4.5.d. (Final)

Final (added):

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.

Remarks: A dedicated Subpart VVVVVV (CMAS) Applicability Evaluation was added to the 180-day Non-Waste Fuel Legitimacy Report.

This mathematically confirms that no process vent or liquid stream meets the 0.1% wt threshold for Table 1 to Subpart VVVVVV of Part 63—Hazardous Air Pollutants Used To Determine Applicability of Chemical Manufacturing Operations.

Condition 5.5.3.

Draft:

For any instance where the results of the total sulfur monitoring of the PDS as required in Condition 5.2.2. yields a concentration of or greater than the limit in Condition 5.1.1.b.6.ii., the permittee shall notify the Director within 10 days of receiving the results of the sampling analysis. Such notification shall include the laboratory results/report, chain of custody of the sample, location that the sample was taken from, and date/time the sample was taken. This notification shall be submitted in accordance with Condition 3.5.1. and records of the notification maintained in accordance with Condition 3.4.1.

Final:

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.

Remarks: Written notification requirements were expanded to include PDS Total Chlorine/HCl exceedances (greater than or equal to 156 ppmdv) alongside Total Sulfur exceedances.

This provides the agency with real-time alerts regarding syngas acid gas exceedances.

Condition 5.5.5.

Draft:

Dioxin and Furan Test Results and Applicability Determination Within sixty (60) days of completing the initial U.S. EPA Method 23 stack test, the permittee shall submit a report to the Director evaluating the Dioxin and Furan (D/F) test results. The permittee shall utilize the specific D/F emission rates measured during the test to recalculate the facility's total maximum Potential to Emit (PTE) for Hazardous Air Pollutants (HAPs). If the calculated PTE demonstrates that the facility exceeds the Major Source thresholds for HAPs, or if the Director determines the emission profile indicates the combustion of solid waste subject to OSWI guidelines, the permittee shall submit a Title V application or a permit modification application to implement necessary control technologies within the timeframes established by state and federal rule.

Final:

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.

Remarks: The scope of the 60-day HAP PTE recalculation report was expanded to include all measured stack and PDS HAPs for a Major Source Title V applicability evaluation.

This guarantees an applicability review based on comprehensive actual stack and syngas data.

FINAL DETERMINATION

Upon comprehensive evaluation of the administrative record—inclusive of all formal testimony, legal arguments, and technical documentation submitted during the public review phase—the DAQ has concluded that the proposed Belle Facility, as detailed in Application R13-3728 and governed by the provisions of Permit R13-3728, satisfies the statutory requirements of W. Va. Code § 22-5-1 *et seq.* and the applicable legislative rules and federal standards.

Accordingly, the agency's preliminary determination is affirmed, and it is the recommendation of the undersigned that Construction Permit R13-3728 be granted to Clean-Seas West Virginia, Inc.

Edward S. Andrews

Digitally signed by: Edward S. Andrews
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Date: 2026.08.12 11:30:39 -04'00'

Edward Andrews, P.E.
Engineer
Date: August 12, 2026