

CRODA

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JUN 16 2023

Croda Inc.
315 Cherry Lane
New Castle DE 19720 USA
Tel +1 (302) 429-5200
Fax +1 (302) 429-5304
Division of Air Quality

June 16, 2023

Mr. Eric Rowland
State of Delaware - DNREC
Division of Air Quality
715 Grantham Lane
New Castle, DE 19720

APC-2023/0098-Construction

Re: Croda Inc.
Flare Permit Application Submission and Request for Public Hearing

Dear Mr. Rowland:

Enclosed, please find the completed air permit application for the installation of a pollution control device at Croda's Atlas Point facility – ECO Plant, located at 315 Cherry Lane in New Castle. Croda proposes to install a steam-assisted flare for the purpose of destroying volatile organic compounds (VOCs) from malfunctions to reduce air emissions at the ECO Plant. This pollution control device would reduce VOC emissions by approximately 98%.

As part of Croda's proactive community engagement outreach, we have already discussed our proposal to install a flare device with our Community Advisory Council (CAC). Croda is also in the process of drafting a question-and-answer document about the proposed installation and use of the flare and how the new equipment would improve safety and environmental impacts. Once this question-and-answer document is complete, we will send to you accordingly.

Moreover, Croda believes a public hearing on this application would benefit the facility's neighbors and those in the greater New Castle area, and therefore ask that DNREC schedule a public hearing as expeditiously as possible. While we recognize that a hearing for this permit is not required, we welcome the opportunity to engage with the community so they may learn more about this application.

Two checks in the amount of \$325.00 and \$215.00 are included as required for the advertisement and permit fees.

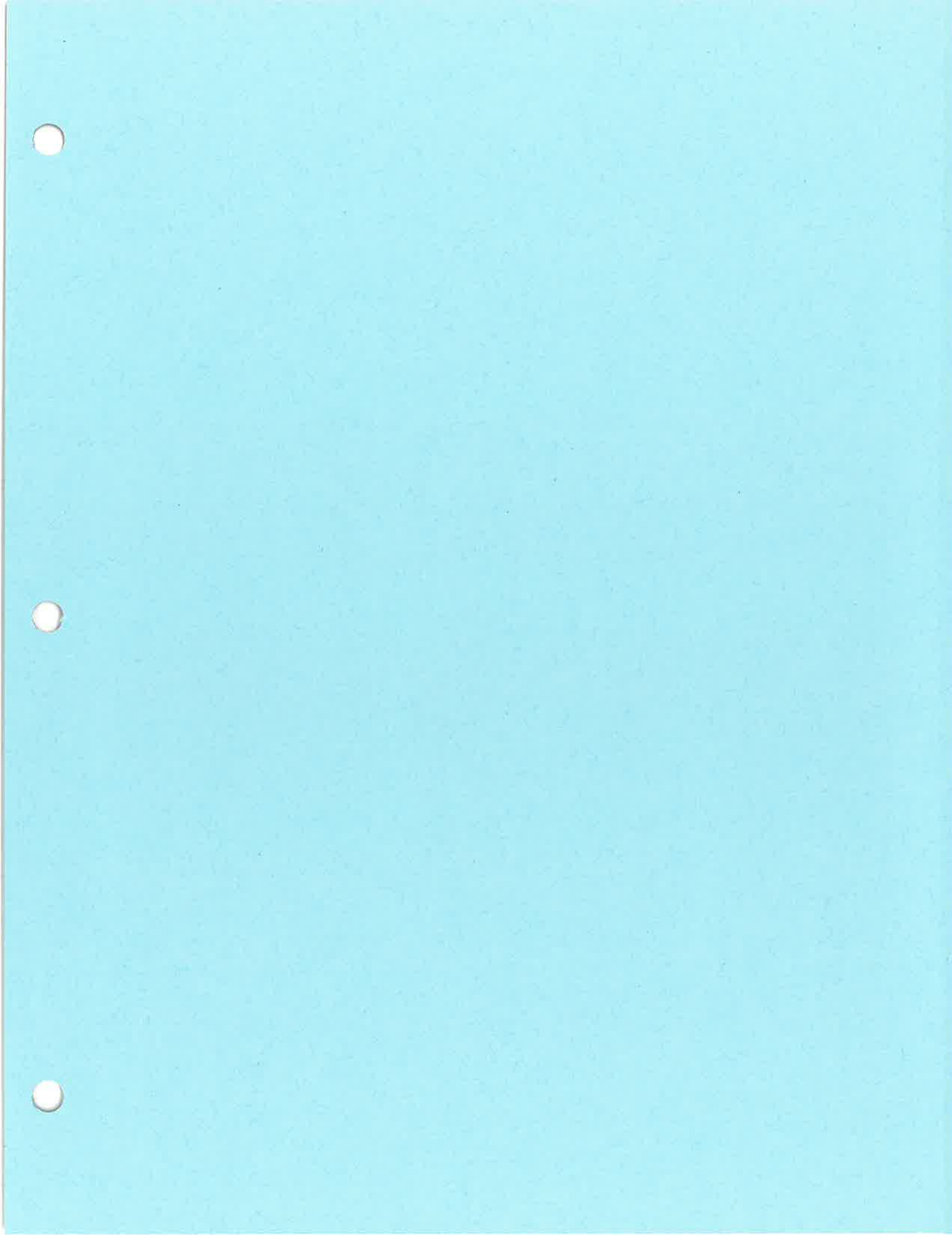
Croda remains committed to minimizing emissions to the greatest extent feasible, and we look forward to working with DNREC toward that shared objective. Should DNREC-DAQ need additional information, please contact me at John.Somers@Croda.com or at (302) 439-5429.

Sincerely,



John Somers
SHE Manager

Enclosure
JS/bl





**DNREC – Division of Air Quality
Application to Construct, Operate, or Modify
Stationary Sources**

Form AQM-1
Page 1 of 4

Administrative Information

One original and one copy of All Application Forms Should Be Mailed To:
Division of Air Quality
100 West Water Street, Suite 6A
Dover, DE 19904

All Checks Should Be Made Payable To:
State of Delaware

| <u>Company and Site Information</u> | |
|--|---|
| 1. | Company Name: Croda Inc |
| 2. | Company Mailing Address: 315 Cherry Lane City: New Castle State: DE Zip Code: 19720 |
| 3. | Site Name: Atlas Point |
| 4. | Site Mailing Address: NA <i>(if different from above)</i> City: State: Zip Code: |
| 5. | Physical Location of Site: NA <i>(if different from above)</i> City: State: Zip Code: |
| 6. | Site Billing Address: NA <i>(if different from above)</i> City: State: Zip Code: |
| 7. | Air Quality Management Facility ID Number: 1000300058 |
| 8. | Site NAICS Code: 325199 <i>(list all that apply)</i> |
| 9. | Site SIC Code: 2869 <i>(list all that apply)</i> |
| 10. | Site Location Coordinates: Latitude: 286939 ° 41' 36" Longitude: -75 ° 32' 35" |
| 11. | Is the Facility New or Existing? <input type="checkbox"/> NEW <input checked="" type="checkbox"/> EXISTING |
| <i>If the Facility is an Existing Facility, Complete the Rest of Question 11. If Not, Proceed to Question 12.</i> | |
| 11.1. | Does the Facility Have Active Air Permits? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| 12. | Is this Application For New Equipment or a Modification to Existing Equipment? <input checked="" type="checkbox"/> New Equipment <input type="checkbox"/> Modification of Existing Equipment <input type="checkbox"/> Other (Specify): |
| <i>If the application is for the modification of existing equipment, complete the rest of Question 12. If not, proceed to Question 13.</i> | |



DNREC – Division of Air Quality
Application to Construct, Operate, or Modify
Stationary Sources

Form AQM-1
Page 2 of 4

| <u>Company and Site Information</u> | |
|---|---|
| 12.1. Does the Equipment Have an Active Air Permit? | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |
| <i>If the equipment has an active air permit, complete the rest of Question 12. If not, proceed to Question 13.</i> | |
| 12.2. Permit Number of Existing Equipment: | |
| 13. Status of Equipment Being Applied For: | <input checked="" type="checkbox"/> Natural Minor Source <input type="checkbox"/> Synthetic Minor Source <input type="checkbox"/> Major Source <input type="checkbox"/> Federally Enforceable Restrictions |
| 14. Facility Status: | <input type="checkbox"/> Natural Minor Facility <input type="checkbox"/> Synthetic Minor Facility <input checked="" type="checkbox"/> Major Facility |
| <i>If the facility is a Major Source, complete the rest of Question 14. If not, proceed to Question 15.</i> | |
| 14.1. Responsible Official Name: | Josh Dube |
| 14.2. Responsible Official Title: | Site Director |

| <u>Contact Information</u> | |
|---|-----------------------------------|
| 15. Name of Owner or Facility Manager: | Croda Inc |
| 16. Title of Owner or Facility Manager: | Site Director |
| 17. Permit Contact Name: | John Somers |
| 18. Permit Contact Title: | SHE Manager |
| 19. Permit Contact Telephone Number: | (302) 429-5429 |
| 20. Permit Contact Fax Number: | NA |
| 21. Permit Contact E-Mail Address: | John.Somers@croda.com |
| 22. Billing Contact Name: | Mike Lisowski |
| 23. Billing Contact Title: | Site Accountant |
| 24. Billing Contact Telephone Number: | (302) 429-5218 |
| 25. Billing Contact Fax Number: | NA |
| 26. Billing Contact E-Mail Address: | Michael.Lisowski@croda.com |

| <u>Proposed Construction and Operating Schedule</u> | |
|---|---|
| 27. When Will the Proposed Construction/Installation/Modification Occur: | 09/01/2023 |
| 28. Proposed Operating Schedule: | 24 hours/day 7 days/week 52 weeks/year |
| 28.1. Is There Any Additional Information Regarding the Operating Schedule? | <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| <i>If YES, complete the rest of Question 28. If NO, proceed to Question 29.</i> | |



**DNREC – Division of Air Quality
Application to Construct, Operate, or Modify
Stationary Sources**

| |
|--|
| <u>Proposed Construction and Operating Schedule</u> |
| 28.2. Describe the Additional Information: The proposed flare has a pilot that would run at all times. During malfunction events where process gas is directed to the flare, supplemental natural gas would be supplied as necessary. |

| |
|--|
| <u>Coastal Zone Information</u> |
| 29. Is the Facility Located in the Coastal Zone? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| <i>If the facility is located in the Coastal Zone complete the rest of Question 29. If not, proceed to Question 30.</i> |
| 29.1. Is a Coastal Zone Permit Required for Construction or Operation of the Source Being Applied for? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |
| Attach a copy of the Coastal Zone Determination if it has not been previously submitted |
| <i>If a Coastal Zone Permit is required complete the rest of Question 29. If not, proceed to Question 30.</i> |
| 29.2. Has a Coastal Zone Permit Been Issued? <input type="checkbox"/> YES <input type="checkbox"/> NO |
| Attach a copy of the Coastal Zone Permit if it has not been previously submitted |

| |
|---|
| <u>Local Zoning Information</u> |
| 30. Parcel Zoning: Heavy industry |
| Attach Proof of Local Zoning if it has not been previously submitted |

| |
|---|
| <u>Application Information</u> |
| 31. Is the Appropriate Application Fee Attached? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| 32. Is the Advertising Fee Attached? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| <i>For help determining your application and advertising fees see:</i> http://www.dnrec.state.de.us/DNREC2000/Library/Fees/DE%20Permit%20Fees.htm |
| Attach the appropriate fees. Note that your Application will not be considered complete if the appropriate fees are not included. |
| 33. Is a Cover Letter Describing the Process Attached? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| Attach a brief cover letter describing your Application. |
| <i>If the Facility is a New Facility complete Question 34. If not, proceed to Question 35.</i> |
| 34. Is a Copy of the Applicant Background Information Questionnaire on Record at the Department? <input type="checkbox"/> YES <input type="checkbox"/> NO |
| <i>If NO, complete the rest of Question 34. If YES, process to Question 35.</i> |
| 34.1 Is a Copy of the Applicant Background Information Questionnaire Attached? <input type="checkbox"/> YES <input type="checkbox"/> NO |
| <i>For a copy of the Applicant Background Information Questionnaire see</i> http://www.dnrec.delaware.gov/services/Documents/Chapter79Form.pdf |
| Attach a copy of the Applicant Background Information Questionnaire if applicable. |
| 35. Check Which Application Forms are Attached: |



DNREC – Division of Air Quality
Application to Construct, Operate, or Modify
Stationary Sources

Form AQM-1
 Page 4 of 4

| Application Information | | | | | | |
|---|----------------------------------|-----------------------------------|---|----------------------------------|---|--------------------------------|
| <input checked="" type="checkbox"/> AQM-1 | <input type="checkbox"/> AQM-3.4 | <input type="checkbox"/> AQM-3.9 | <input type="checkbox"/> AQM-3.14 | <input type="checkbox"/> AQM-4.4 | <input type="checkbox"/> AQM-4.9 | <input type="checkbox"/> AQM-6 |
| <input checked="" type="checkbox"/> AQM-2 | <input type="checkbox"/> AQM-3.5 | <input type="checkbox"/> AQM-3.10 | <input type="checkbox"/> AQM-3.15 | <input type="checkbox"/> AQM-4.5 | <input type="checkbox"/> AQM-4.10 | |
| <input type="checkbox"/> AQM-3.1 | <input type="checkbox"/> AQM-3.6 | <input type="checkbox"/> AQM-3.11 | <input type="checkbox"/> AQM-4.1 | <input type="checkbox"/> AQM-4.6 | <input type="checkbox"/> AQM-4.11 | |
| <input type="checkbox"/> AQM-3.2 | <input type="checkbox"/> AQM-3.7 | <input type="checkbox"/> AQM-3.12 | <input type="checkbox"/> AQM-4.2 | <input type="checkbox"/> AQM-4.7 | <input type="checkbox"/> AQM-4.12 | |
| <input type="checkbox"/> AQM-3.3 | <input type="checkbox"/> AQM-3.8 | <input type="checkbox"/> AQM-3.13 | <input checked="" type="checkbox"/> AQM-4.3 | <input type="checkbox"/> AQM-4.8 | <input checked="" type="checkbox"/> AQM-5 | |

36. Check Which Documents are Attached:

| | |
|---|---|
| <input checked="" type="checkbox"/> Coastal Zone Determination | <input type="checkbox"/> Claim of Confidentiality |
| <input type="checkbox"/> Coastal Zone Permit | <input checked="" type="checkbox"/> Manufacturer Specification(s) |
| <input type="checkbox"/> Proof of Local Zoning | <input type="checkbox"/> Material Safety Data Sheets (MSDSs) |
| <input checked="" type="checkbox"/> Application Fee | <input checked="" type="checkbox"/> Supporting Calculations |
| <input checked="" type="checkbox"/> Advertising Fee | <input checked="" type="checkbox"/> Descriptive Cover Letter |
| <input type="checkbox"/> Applicant Background Information Questionnaire | <input checked="" type="checkbox"/> Other (Specify): NCC Special Use Determination |

| Confidentiality Information | |
|---|---|
| 37. Do You Consider Any of the Information Submitted With this Application Confidential? | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |
| For help on how to submit a confidentiality claim see http://regulations.delaware.gov/register/december2011/final/15%20DE%20Reg%20864%2012-01-11.htm | |
| If a Claim of Confidentiality is made it MUST meet the requirements of Section 6 of DNREC's Freedom of Information ("FOIA") Regulation at the time the Application is submitted. | |

| Signature Block | |
|---|------------------------------|
| <p>I, the undersigned, hereby certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all of its attachments as to the truth, accuracy, and completeness of this information. I certify based on information and belief formed after reasonable inquiry, the statements and information in this document are true, accurate, and complete. By signing this form, I certify that I have not changed, altered, or deleted any portions of this application. I acknowledge that I cannot commence construction, alteration, modification or initiate operation until I receive written approval (i.e. permit, registration, or exemption letter) from the Department. I acknowledge that I may be required to perform testing of the equipment to receive construction or operation approval, and that if I do not receive approval to construct or operate that I may appeal the decision.</p> | |
| Josh Dube Owner or Operator | June 16, 2023 Date |
| Signature of Owner or Operator | |

One Original and One Copy of All Application Forms Should Be Mailed To:
 Division of Air Quality
 100 W. Water Street, Suite 6A
 Dover, Delaware 19904

All Checks Should Be Made Payable To:
 State of Delaware



STATE OF DELAWARE

DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

DIVISION OF CLIMATE, COASTAL AND ENERGY

STATE STREET COMMONS

100 W. WATER STREET, SUITE 7B

DOVER, DELAWARE 19904

COASTAL
PROGRAMS

PHONE
(302) 739-9283

October 20, 2022

Allison Bard
Croda Inc.
315 Cherry Lane
New Castle, DE 19720

RE: Croda Proposed Steam-Assisted Flare – Use Not Regulated Review

Dear Ms. Bard,

The Coastal Zone Act (CZA) Program of the Delaware Department of Natural Resources and Environmental Control (DNREC) has completed its review of the above referenced project, dated and received by this office on October 13, 2022, on behalf of Croda Inc. (Croda). Croda proposes to install a steam-assisted flare for the purpose of destroying volatile organic compounds (VOCs) by thermal oxidation within the existing facility footprint at 315 Cherry Lane, New Castle, DE 19720. This pollution control equipment would reduce VOC emissions by approximately 98%. According to the *Regulations Governing Delaware's Coastal Zone* (7 DE Admin. Code 101):

5.0 Uses Not Regulated

5.1 The construction and/or operation of the following types of facilities and activities shall be deemed not to constitute initiation, expansion or extension of heavy industry or manufacturing uses under these regulations:

5.1.16 Installation and modification of pollution control and safety equipment for nonforming uses within their designated footprint providing such installation and modification does not result in any negative environmental impact over and above impacts associated with the present use.

Based on the information provided, the proposed activity at the above-described location would not expand or extend Croda's current industrial or manufacturing activities and would be solely for the purpose of pollution control. Therefore, this activity will not require any further involvement with and/or permits from the CZA Program. Please be advised that this pertains only to 7 DE Admin. Code 101 and does not extend to permitting requirements of other sections within DNREC. Please contact me or Erin Wilson of my staff at the Delaware Coastal Programs office at 302-739-9283 if you have any questions or require additional information.

Sincerely,

Jennifer L. Holmes
Regulatory Programs Manager

**EEF-QS-20
STEAM ASSISTED FLARE TIP**

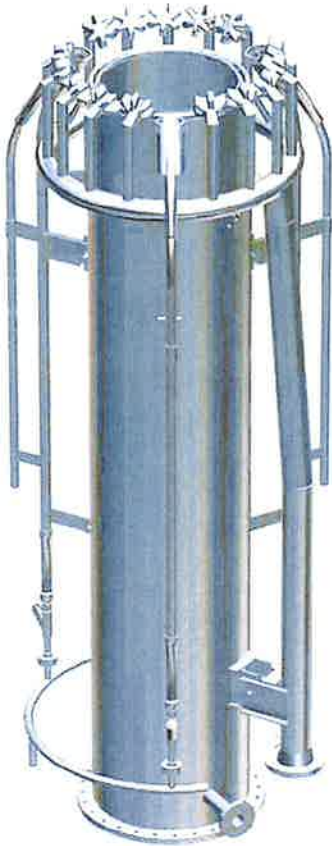
| MANUFACTURING SPECIFICATIONS | |
|-------------------------------------|---|
| WELDING | PER AWS |
| PAINT SPECIFICATION | CARBON STEEL: SSPC-SP6 SURFACE PREPARATION 2 COATS HIGH TEMP. ALUMINUM. 1-2 MILS THICK |
| | STAINLESS STEEL: NO COATINGS REQUIRED |

| NOZZLE INFORMATION | | | |
|---------------------------|------|-----|---------------------|
| DESCRIPTION | SIZE | NO. | TYPE |
| WASTE GAS INLET | 20" | 1 | ANSI 150# RF FLANGE |
| UPPER STEAM INLET | 3" | 1 | ANSI 150# RF FLANGE |
| PILOT GAS INLET | 1" | 3 | PLAIN END |

| CONSTRUCTION MATERIAL | |
|------------------------------|----------------------|
| SECTION | MATERIAL |
| LOWER RISER | 310 S.S. |
| UPPER RISER | 310 S.S. |
| FLAME RET. RING | 310 S.S. |
| INLET FLANGE | LTCS |
| UPPER STEAM INLET | A516-70 C.S. |
| STEAM MANIFOLD | 321 / 304 / 309 S.S. |

| DESIGN INFORMATION | |
|---------------------------|----------|
| OVERALL LENGTH | 10'-1" |
| WEIGHT | 1750 lbs |
| NO. OF PILOTS | 3 |

| UTILITY CONSUMPTION | |
|--|--------------------------|
| UPPER STEAM RATE⁽¹⁾ | 10,000 lbs/hr. |
| PURGE RATE⁽²⁾ | 1,140 lbs/hr. EO Rate |
| PURGE RATE | 24 lb / hr Nitrogen Rate |
| Minimum Steam Rate | 500 lb/hr |
| ⁽¹⁾ 100 PSIG SATURATED STEAM AT INLET CONNECTION | |
| ⁽²⁾ ANY GAS THAT DOES NOT REACH DEW POINT, SELF-IGNITE, OR CONTAIN OXYGEN | |



**EEF-SKEC-3
STEAM ASSISTED
FLARE TIP**

MANUFACTURING SPECIFICATIONS

| | |
|----------------------------|---------------------------------------|
| WELDING | PER AWS |
| RADIOGRAPHY | Per Client Spec |
| PAINT SPECIFICATION | CARBON STEEL: Per Client Spec |
| | STAINLESS STEEL: NO COATINGS REQUIRED |

NOZZLE INFORMATION

| DESCRIPTION | SIZE | NO. | TYPE |
|--------------------------|------|-----|--------------|
| WASTE GAS INLET | 3" | 1 | ANSI 150# RF |
| STEAM INLET | 1" | 1 | ANSI 150# RF |
| PILOT GAS MANIFOLD INLET | 1" | 1 | PLAIN END |

MATERIALS OF CONSTRUCTION

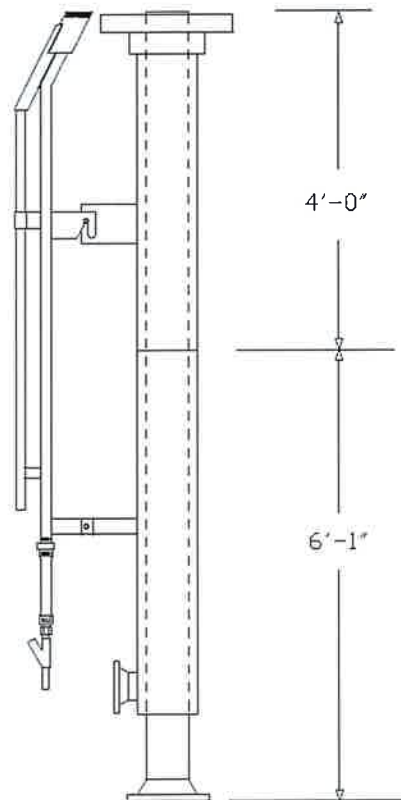
| SECTION | MATERIAL |
|-----------------|----------|
| LOWER RISER | 310 SS |
| UPPER RISER | 310 SS |
| FLAME RET. RING | 310 SS |
| INLET FLANGE | LTCS. |

DESIGN INFORMATION

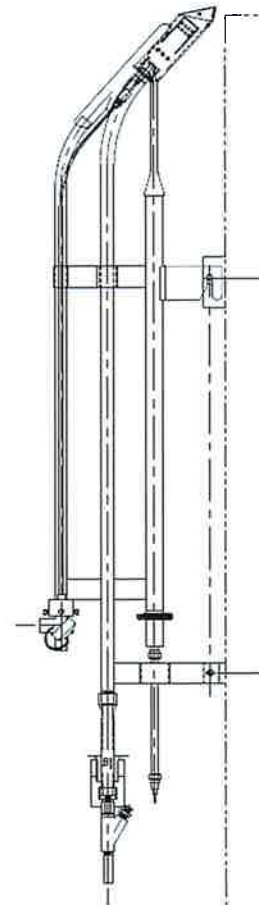
| | |
|-----------------------|---------|
| OVERALL LENGTH | 10'-3" |
| WEIGHT | 200 LBS |
| NO. OF PILOTS | 2 |

UTILITY CONSUMPTION

| | |
|---|----------|
| PURGE RATE* | 330 SCFH |
| * ANY GAS THAT DOES NOT GO TO DEW POINT OR CONTAIN OXYGEN | |



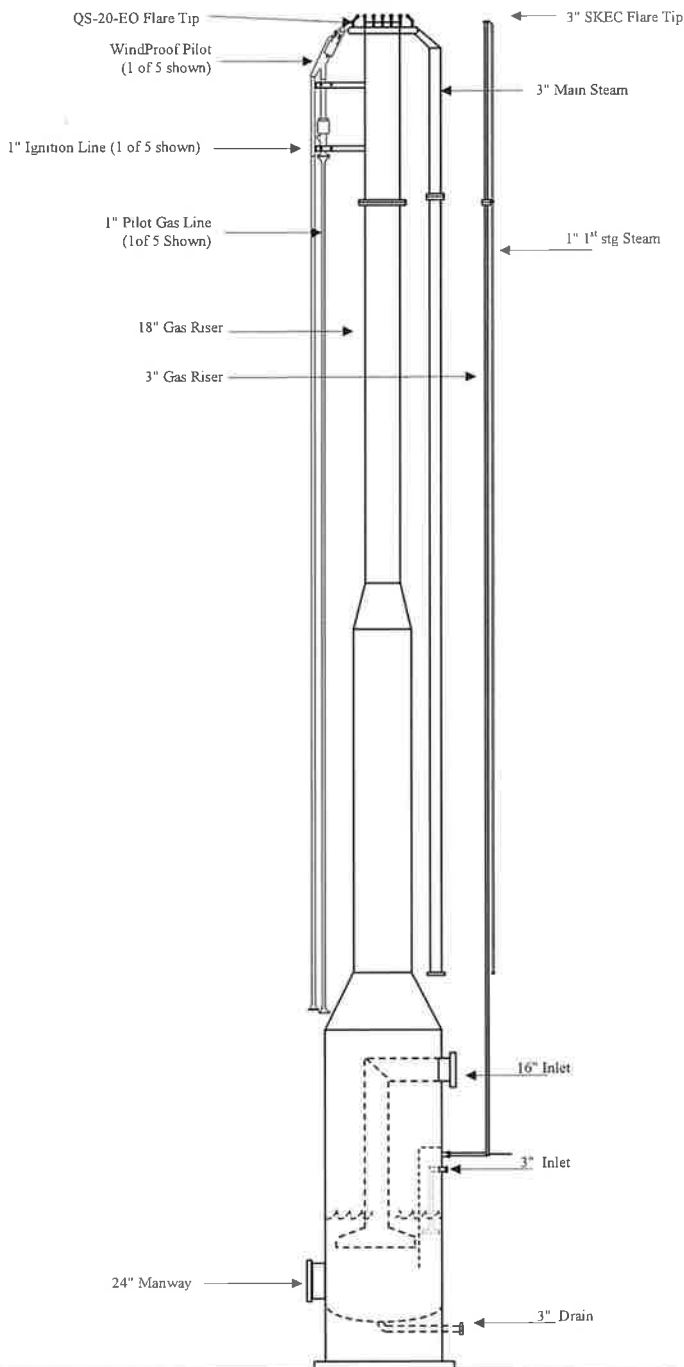
| JOHN ZINK WINDPROOF INSTAFIRE PILOT | | | |
|--|---------------------------------|---|-----------|
| MANUFACTURING SPECIFICATIONS | | | |
| WELDING | WPS AND PQR PER ASME SECTION IX | | |
| PAINT SPECIFICATION | CARBON STEEL: | SSPC-SP6 SURFACE PREPARATION 2 COATS HIGH TEMP. ALUMINUM, 1-2 MILS THICK | |
| | STAINLESS STEEL: | NO COATINGS REQUIRED | |
| NOZZLE INFORMATION | | | |
| DESCRIPTION | SIZE | QUANTITY | TYPE |
| PILOT GAS INLET | 3/4" | 1 | MNPT |
| FLAME IONIZATION (INSTAFIRE) | 1/2" | 1 | NPT |
| FFG IGNITION LINE | 1" | 1 | PLAIN END |
| THERMOCOUPLE CONNECTION | 3/4" | - | MNPT |
| MATERIALS OF CONSTRUCTION | | | |
| PILOT TIP ASSEMBLY | CK20 | | |
| FFG IGNITION LINE | 310 SS | | |
| FUEL LINE | 310 SS | | |
| UPPER BRACKET | 310 SS | | |
| LOWER BRACKET | 310 SS | | |
| MIXER | CK20 | | |
| STRAINER | 310 SS | | |
| DESIGN INFORMATION | | | |
| HEAT RELEASE | 50,000 BTU/HR | | |
| OVERALL LENGTH | 8'-7" | | |
| WEIGHT | 75 LB | | |
| ORIFICE SIZE | #54 MTD NAT GAS | | |
| IGNITION ROD | KANTHAL/CERAMIC | | |
| THERMOCOUPLE TYPE | K | | |
| NUMBER OF THERMOCOUPLES | 2 | | |
| STRAINER MESH | 60/100 | | |
| UTILITY CONSUMPTION PER PILOT | | | |
| NAT. GAS DESIGN FLOW | 50 SCFH | | |
| NATURAL GAS PRESSURE RANGE | 7 TO 20 PSIG (10 PSIG STANDARD) | | |
| PERFORMANCE | | | |
| WIND RESISTANCE | 160 MPH | | |
| RAIN RESISTANCE | 30+'' PER HOUR | | |



Croda Atlas Plant, Ethylene Oxide Flare

New Castle, Delaware

Elevated Self-Supported Stack



Stack Design Specifications

| | |
|-----------------------------|---|
| Design Temp: | -20 F to +650 F |
| Design Code: | Per Client Specifications: 9-4D, 9-5D & 9-8D |
| Overall Height: | 65 ft |
| Support Structure Type: | Self-Supported |
| Max. Wind Speed (for 7-16): | 122 MPH |
| Importance Factor: | 1.25 |
| Seismic (For ASCE 7-16): | SDS 0.187g, SD1 0.074g |
| Seismic Design Category: | B |
| Deflection Criteria: | API 537 |
| External Nozzle Loads: | API 537 |
| Corrosion Allowance: | 0.125" |

Material Specifications

| | |
|------------------------|--|
| Utility Piping: | (5) Pilot Gas Carbon Steel |
| | (5) Ignition line 304 SS |
| | (1) 1" First Stage Steam Carbon Steel, |
| | (1) 3" Main Steam Carbon Steel |
| TC & Ignition Conduit: | (1) Galvanized Carbon Steel |
| Stack Riser: | A-516-70 Carbon Steel |

Ladders & Platforms

| | |
|--------------------------|--|
| Design Type: | Per client specifications |
| Material: | A36 |
| Rest Platform(s): | Two (2) |
| Maintenance Platform(s): | One (1) 140 at Liquid Seal, One (1) 360 at Flare Tip |

Carbon Steel Surface Preparation Specifications*

Per client spec system 10

***Galvanized carbon steel, stainless steel & aluminum surfaces shall be natural finish**

Inspection & Testing Specifications

| | |
|----------------|--------------|
| Code: | Per AWS D1.1 |
| Pressure Test: | Liquid Seal |

Liquid Seal Data Sheet

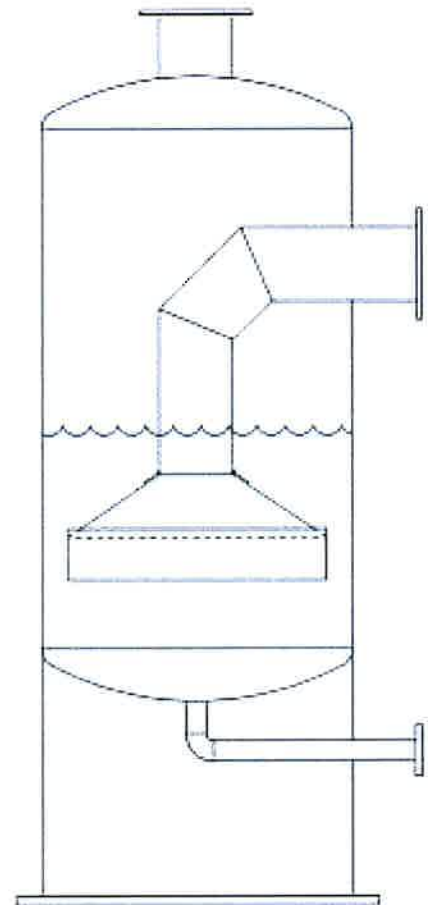
| | | | |
|-----------|-------------------|-----------|---------------|
| Customer: | Croda | Date: | 02.16.2022 |
| End User: | Croda Atlas Point | Quote #: | 263523-A |
| Location: | New Castle, DE | Engineer: | Andrew Parker |

| Vessel Information | |
|----------------------------|-----------------|
| Diameter OD: | 6 Ft 6 Inch |
| Length (T-T): | 9 Ft 11 Inch |
| Position: | Vertical |
| Support Height (Skirt): | 11 Ft 9 Inch |
| Top Head Type: | Transition Cone |
| Bottom Head Type: | F&D |
| Weight (Empty): | ≈12,800 lbs |
| Design Seal Depth Stage 1: | 4 in |
| Design Seal Depth Stage 2: | 21 in |
| Design Pressure: | 50 PSI |
| Corrosion Allowance: | 0.125" |
| Design Temp: | -20 F to 650 F |

| | |
|-----------------|----------|
| Design: | ASME |
| Code Stamp: | Yes |
| Hydrotest: | Yes |
| Radiograph: | Per ASME |
| Weld Procedure: | ASME |

| | |
|---------------|---------------------------|
| Surface Prep: | SP-10 |
| Paint: | Per client spec system 10 |
| L&Ps: | Per client specification |

| Nozzles: | Size: | Qty: | Material: | Type: |
|---------------------|-------|------|-----------|-----------|
| Inlet | 16" | 1 | A-516-70 | 150# RFWN |
| Stg 1 Inlet | 3" | 1 | SA-106 | 300# RFWN |
| Outlet | 30" | 1 | A-516-70 | Welded |
| Stg 1 Outlet | 3" | 1 | SA-106 | 300# RFWN |
| Drain | 3" | 2 | SA-106 | 150# RFWN |
| Manway | 24" | 1 | A-516-70 | 150# RFWN |
| Skirt Access | 16" | 2 | SA-106 | |
| Liquid Seal Fill | 2" | 2 | SA-106 | 150# RFWN |
| Level Control | 2" | 4 | SA-106 | 150# RFWN |
| Nitrogen Post Purge | 2" | 1 | SA-106 | 150# RFWN |
| Natural Gas Purge | 2" | 1 | SA-106 | 150# RFWN |
| Overflow Skimmer | 3" | 2 | SA-106 | 150# RFWN |



| |
|---|
| Comments: |
| JZ design includes clips for insulation on main drum with insulation and heat tracing for freeze protection to be provided by other |
| |
| |

Steam Design

| QS-20 | | |
|-------|-----------------|--|
| 1. | Design Capacity | 90000 LB/HR of 100 PSIG steam at 338°F |
| 2. | Cooling Rate | Approximately 500 LB/HR of steam required continuously for cooling and protection. |

| SKEC-3 | | |
|--------|-----------------|---|
| 3. | Design Capacity | 80 LB/HR of 100 PSIG steam at 338°F |
| 4. | Cooling Rate | Approximately 35 LB/HR of steam required continuously for cooling and protection. |

Notes:

1. The above capacities are based on indicated pressures and temperatures at the tip inlet flanges.
2. John Zink recommends that each steam supply be separately controlled with independent valves and independent control signals.

Pilot Design

| | | |
|----|------------------------------|---------|
| 1. | Pilot Mixer Orifice Drilling | MTD #54 |
|----|------------------------------|---------|

| Primary Fuel | | |
|--------------|------------------------|--------------------|
| 2. | Molecular Weight | 16.95 |
| 3. | Lower Heating Value | 945 BTU/SCF |
| 4. | Composition | Natural Gas |
| 5. | Flow Rate and Pressure | 50 SCFH at 10 PSIG |

Purge Design

| QS-20 | | |
|-------|------------------------------------|-------------------------|
| 1. | Purge Rate (cont. / EO rate) | 325 / 25,500 SCFH |
| 2. | Molecular Weight (cont. / EO rate) | 28 / 16.95 |
| 3. | Lower Heating Value | 0 BTU/SCF / 945 BTU/SCF |
| 4. | Composition | Nitrogen / Natural Gas |
| 5. | Anti-flashback Plate Depth | 2 feet |

| SKEC-3 | | |
|--------|----------------------------|-------------|
| 1. | Purge Rate | 470 SCFH |
| 2. | Molecular Weight | 16.95 |
| 3. | Lower Heating Value | 945 BTU/SCF |
| 4. | Composition | Natural Gas |
| 5. | Anti-flashback Plate Depth | 2 feet |

There is no industry standard for the purge velocity required to sweep each flare header. A recommended KBR standard, based on previous projects is a value of 0.1 ft/s (0.03) m/s. For extensive flare collection networks this will result in a purge velocity at the flare tip in excess of that required to prevent air ingress by the above criteria.

| | | |
|---------|-------------|--|
| | 0.1 FT/S | From KBR Design Guideline for Flare Systems (p 42) |
| | 360 FT/H | |
| 16" STD | 1.2684 SQFT | From Crane 410 |
| | 457 ACFH | Natural Gas Purge |

V_{act} CONVERTER TO V_{sa}

V_{act} = 457 Gas Flow in actual cubic feet per hour

P_{act} = 15.696 Relief pressure in psia.

T_{act} = 77 Relief temperature in Degrees F

M_{act} = 28.967 Molecular Weight of Gas

P_{std} = 14.696 Standard Pressure in psia.

T_{std} = 60 Standard Temperature in Degrees F

R = 10.731 Gas Constant in ft³-lb_f/in²-lb-mole R

$Moles_{gas}$ = 1.24 lb-moles/hr

W_{act} = 36 Actual pounds per hour

V_{sa} = 473 Equivalent volume of Air in SCFH

250 5 pilots @ 50 SCFH each

723 SCFH total

6330 MCF per year

FLARE EMISSION CALCULATIONS

| Pilot/Purge Emission Factors | | Units | Source |
|------------------------------|-----|----------|-------------------|
| PM | 7.6 | lb/MMSCF | AP-42 Table 1.4-2 |
| SOx | 0.6 | lb/MMSCF | AP-42 Table 1.4-2 |
| NOx | 100 | lb/MMSCF | AP-42 Table 1.4-1 |
| CO | 84 | lb/MMSCF | AP-42 Table 1.4-1 |
| VOC | 5.5 | lb/MMSCF | AP-42 Table 1.4-2 |

| Pilot/Purge Gas Flow Rate | | Units | Source |
|---------------------------|-----|-------|----------------------|
| Pilot | 250 | CFH | Manufacturer |
| Purge | 473 | CFH | Engineering Estimate |
| Total | 723 | CFH | |

| Estimated Pilot/Purge Emissions | | | | |
|---------------------------------|--------|-------|-------|--------|
| PM | 0.0055 | lb/hr | 0.024 | ton/yr |
| SOx | 0.0004 | lb/hr | 0.002 | ton/yr |
| NOx | 0.0723 | lb/hr | 0.317 | ton/yr |
| CO | 0.0607 | lb/hr | 0.266 | ton/yr |
| VOC | 0.0040 | lb/hr | 0.017 | ton/yr |

| Supplemental Gas Emission Factors | | Units | Source |
|-----------------------------------|-----|----------|-------------------|
| PM | 7.6 | lb/MMSCF | AP-42 Table 1.4-2 |
| SOx | 0.6 | lb/MMSCF | AP-42 Table 1.4-2 |
| NOx | 100 | lb/MMSCF | AP-42 Table 1.4-1 |
| CO | 84 | lb/MMSCF | AP-42 Table 1.4-1 |
| VOC | 5.5 | lb/MMSCF | AP-42 Table 1.4-2 |

| Estimated Supplemental Gas Emissions | | | | |
|--------------------------------------|------|-------|--------|---------|
| PM | 0.19 | lb/hr | 0.0849 | ton/yr* |
| SOx | 0.02 | lb/hr | 0.0067 | ton/yr* |
| NOx | 2.55 | lb/hr | 1.1169 | ton/yr* |
| CO | 2.14 | lb/hr | 0.9382 | ton/yr* |
| VOC | 0.14 | lb/hr | 0.0614 | ton/yr* |

**Assume Max Usage = 876 hours/year*

| Supplemental Gas Flow Rate | | Units | Source |
|----------------------------|--------|-------|--------------|
| Flow Rate | 25,500 | CFH | Manufacturer |

| Estimated Process Gas Emissions** | | |
|-----------------------------------|-----|----------|
| VOC (Malfunction Scenarios) | 2.5 | ton/yr** |

****Goal is to minimize to greatest extent possible**

| Estimated Total Emissions | | | | |
|---------------------------|------|-------|-------|--------|
| PM | 0.2 | lb/hr | 0.1 | ton/yr |
| SOx | 0.02 | lb/hr | 0.01 | ton/yr |
| NOx | 2.6 | lb/hr | 1.43 | ton/yr |
| CO | 2.2 | lb/hr | 1.2 | ton/yr |
| Burning Natural Gas | VOC | 0.14 | lb/hr | 0.1 |
| Malfunction Scenarios | VOC | | | 2.5 |



Department of Land Use

Department of Land Use Exploratory Plan Report

Date of Review: May 11, 2022
Engineering Firm: VanDemark & Lynch, Inc.
Application Number: 2022-0264-S
Name of Project: Croda – Eco Flare
Description: Bounded by I-295 to the north, Delaware River to east and the eastern end of Cherry Lane. The purpose of this site plan is to construct safety and environmental improvements to the Eco Plant consisting of a flare and ancillary equipment.
Type of Plan: Site Plan

Project Review Team: Chris Jackson, RA (Planning) – 395-5511 or Christopher.Jackson@NewCastleDE.gov
Kyle Akah (Engineering) – 395-5426 or Kyle.Akah@NewCastleDE.gov
Chris Jackson, RA (Historic) – 395-5511 or Christopher.Jackson@NewCastleDE.gov
Owen Robatino, AICP (Transportation) – 395-5427 or Owen.Robatino@NewCastleDE.gov
Chris Siple (Mapping) – 395-5452 or Christopher.Siple@NewCastleDE.gov
Marco Boyce, RLA (Public Works) – 395-5436 or Marco.Boyce@NewCastleDE.gov
David Thurman (Public Works) – 395-5752 or David.Thurman@NewCastleDE.gov

NCC Board Hearing: None

Status of Review: Address the comment letter concerns and provide a Construction stage submission, to include a point-by-point response letter.

Planning:

1. Heavy Industry uses in the HI (Heavy Industry) District are considered Special Uses (Section 40.03.110). The facility at 315 and 321 Cherry Lane (10-016.00-002), a Heavy Industry use (Section 40.33.270.C), has not received a Special Use Permit from the Board of Adjustment and as such is considered a non-conforming use (Section 40.33.300.N). The UDC does not permit an expansion of a “nonconforming use of a building or structure or lot” (Section 40.08.130.A). The subject application does not appear to be an expansion of the nonconforming use, processing of the application may continue without the Special Use Permit.
2. Show the building and paving setbacks on the plan to demonstrate compliance.
3. The site lies entirely within Delaware’s Coastal Zone. Provide documentation from DNREC verifying that the proposed use will not require a Coastal Zone Status Decision or a Coastal Zone Permit.
4. Regarding General Note #10, the number of required spaces (170) does not match the calculated value (171).
5. There are several active site plan applications proposing development of the subject site (2022-0100, 2022-0101, 2022-0264 & 2022-0298). Address comments received for all applications. Depending on the timing of approval, the site and area information may need to be updated.

Standard Comments:

1. Add the application number to the plan (per Plan Requirement No. 2d from Appendix 1, Chapter 40, of the NCCC).
2. While certification of approval from the State Fire Marshal's Office is not required for Site Plan submissions, the Department recommends discussing the project with the agency as approval will be necessary prior to the issuance of any permits related to the plan.
3. While certification of approval from DelDOT is not required for Site Plan submissions, the Department recommends discussing the project with the agency as approval will be necessary prior to the issuance of any permits related to the plan.
4. Please note, all current County taxes, school taxes and sewer service fees must be paid or not be delinquent at the time of application. Additionally, if payment for the aforementioned taxes becomes delinquent during the review process, no further processing of the application can occur.
5. Please note that Table 40.31.390 of the NCCC outlines the time limits for plan expiration.

Engineering:

The Engineering Section has reviewed the exploratory plan submission. The department finds the plan acceptable in its current form and has no comments at this exploratory stage.

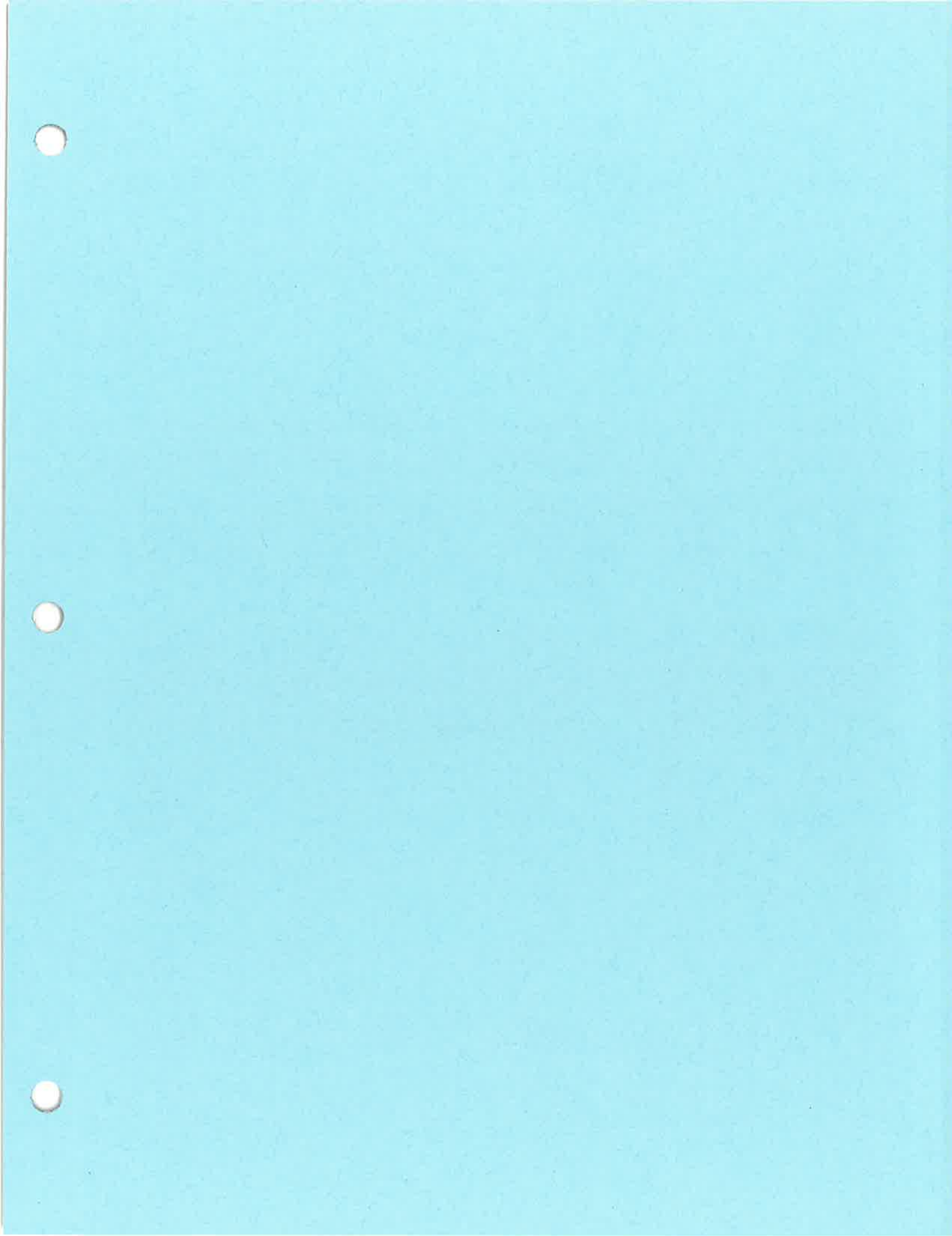
Historic:

The proposed application does not appear to impact any historic or cultural resources meeting the Criteria for Designation pursuant Section 40.15.110 of the New Castle County Code. Historic Review Board review is not required pursuant to Section 40.15.010.B of the New Castle County Code.

Public Works:

1. All on-site sanitary sewer is privately owned and maintained. Advise engineer to consider keeping proposed unit from bearing directly over the private sanitary sewer to prevent any collapse of the pipe and to keep it accessible for maintenance purposes.
2. The site is an existing Industrial Permittee. No additional flow proposed by this application.

cc: Janet Vinc
Croda, Inc.
c/o Chris Barnett



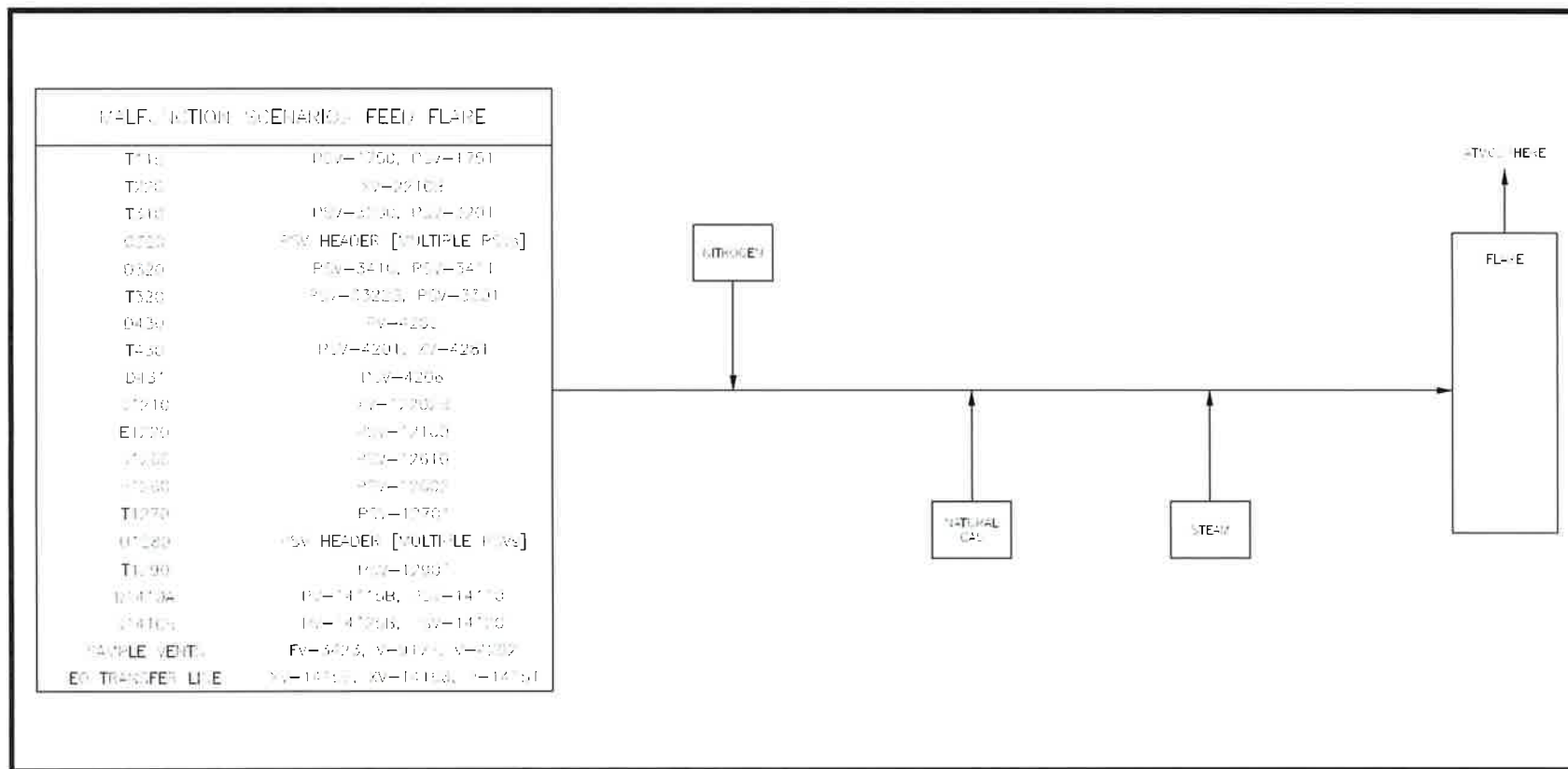


**DNREC – Air Quality Management Section
Application to Construct, Operate, or Modify
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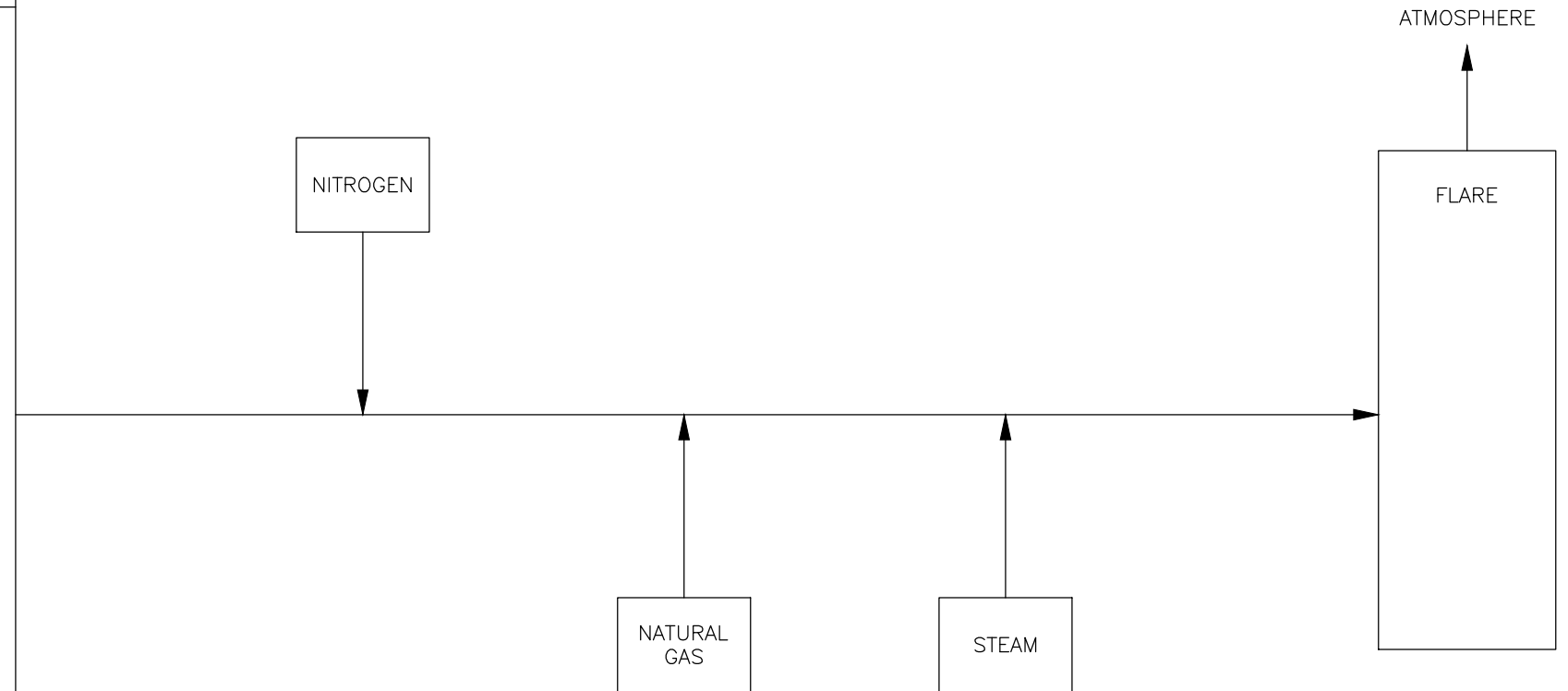
Process Flow Diagram

Sketch the Process Flow Diagram for the equipment or process being applied for. Include each emission unit and control device (even existing emission units that will not be modified by this application). You may identify each emission unit with a simple shape. Label each emission unit and control device with a unique identifier. Show the relationship between each emission unit and/or control device by drawing arrows between them to indicate the flow of air pollutants. List which application forms are included for each emission unit or control device below the shape representing each emission unit or control device. See <http://www.delaware.gov/req2/default.htm> for example Process Flow Diagrams for common processes. If you already have a Process Flow Diagram for the equipment or process being applied for, you may attach it to the application instead of using this form.



STARTUP/SHUTDOWN/MALFUNCTION FEED FLARE

| | |
|------------------|---------------------------------|
| T115 | PSV-1750, PSV-1751 |
| T220 | XV-2210B |
| T310 | PSV-3200, PSV-3201 |
| C320 | PSV HEADER [MULTIPLE PSVs] |
| D320 | PSV-3410, PSV-3411 |
| T320 | PSV-3301, PSV-3302, PSV-3322B |
| D430 | PV-4206 |
| T430 | PSV-4201, PSV-4202, XV-4281 |
| D431 | PSV-4206, PSV-4207 |
| D1210 | XV-12202B |
| E1220 | PSV-12100, PSV-12101 |
| D1260 | PSV-12610, PSV-12611 |
| R1260 | PSV-12602, PSV-12603 |
| T1270 | PSV-12700, PSV-12701 |
| U1280 | PSV HEADER [MULTIPLE PSVs] |
| T1290 | PSV-12901, PSV-12902 |
| D1410A | PSV-14110, PSV-14111, PV-14115B |
| D1410B | PSV-14120, PSV-14121, PV-14125B |
| SAMPLE VENTS | FV-3423, V-9177, V-4292 |
| EO TRANSFER LINE | SV-14156, XV-14166, P-14151 |

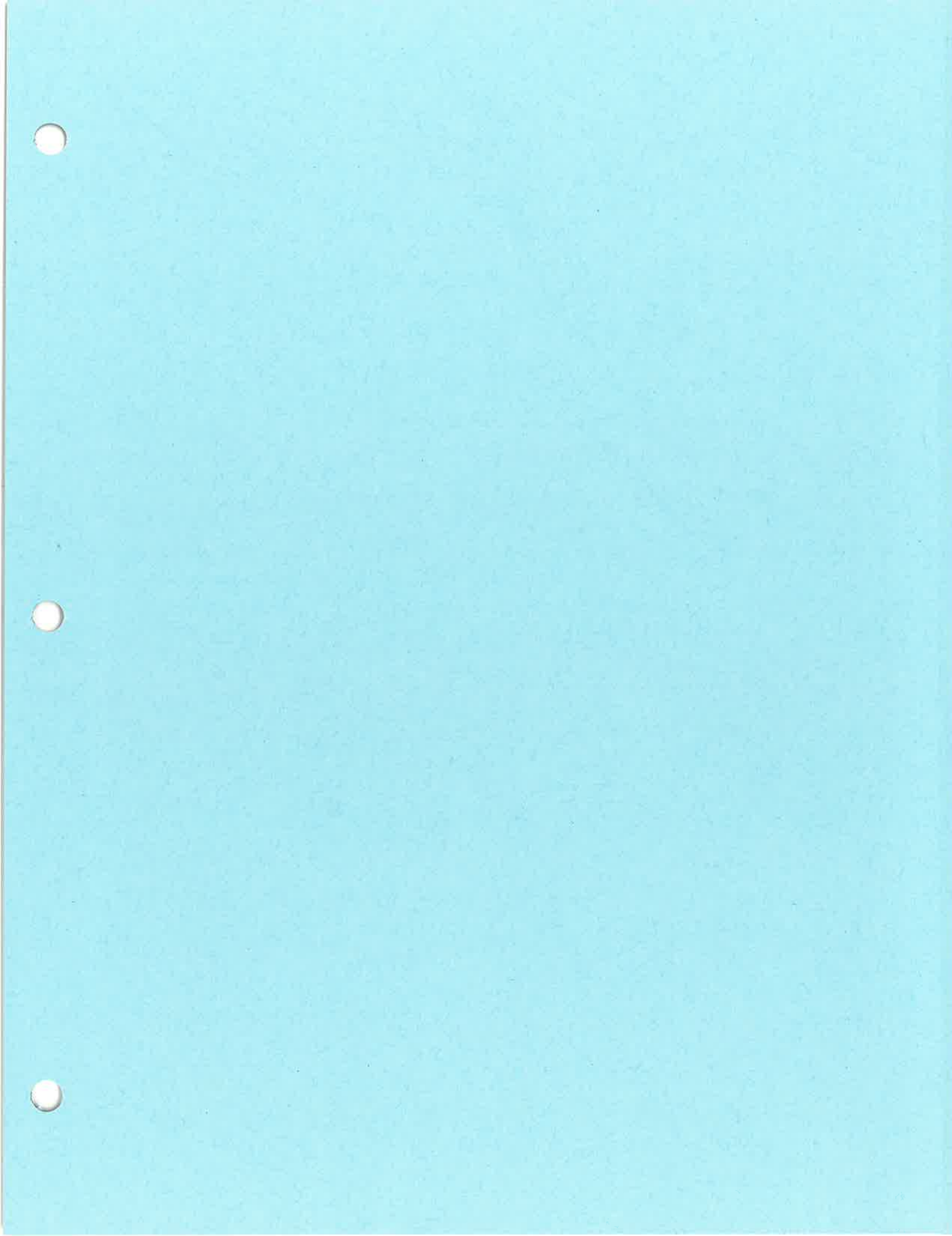


Atlas Point Site

AP-FORMAT-B.dwg

| NO. | DATE | BY | APP. | PROJ. | REVISION | SCALE | NONE |
|-----|----------|-----|------|-----------|-----------------------------------|-------|-----------|
| A | 09/18/20 | SJB | | | INITIAL DESIGN | DATE | 09/23/20 |
| B | 10/19/20 | SJB | | | ISSUED FOR HAZARD STUDY 2 | BY | SJB |
| C | 03/12/21 | SJB | RNJ | KJW | ISSUED FOR CLIENT APPROVAL | SITE | ATLAS PT. |
| D | 04/07/21 | SJB | RNJ | KJW | ISSUED FOR DESIGN | BLDG. | |
| E | 07/08/21 | RND | RNJ | ACI 19549 | ISSUED FOR DESIGN | PROJ. | ACI19549 |
| F | 01/30/23 | SJB | CH | ACI 19549 | ONGOING PROJECT RELATED REVISIONS | APP. | |
| G | 04/15/24 | SJB | CH | ACI 19549 | ONGOING PROJECT RELATED REVISIONS | APP. | |

| | | | | | |
|--|--|-------------------------------|----------------------|-------------------------------------|------------------------------|
| <h1 style="margin: 0;">CRODA</h1> | | | | | |
| | | | ETHYLENE OXIDE PLANT | | |
| | | | EO FLARE | | |
| | | | BLOCK FLOW DIAGRAM | | |
| THIS DESIGN IS THE PROPERTY OF CRODA. THE INFORMATION AND KNOW-HOW HEREIN MAY NOT BE USED, NOR MAY THE DRAWINGS BE REPRODUCED EXCEPT WITH THE WRITTEN PERMISSION OF CRODA. REPRODUCTION IN WHOLE OR IN PART, INCLUDING VENDOR'S SHOP DRAWINGS, SHALL BEAR THIS NOTICE. | | APP. FOR CONST. BY DATE | SIZE B | DRAWING NUMBER 684 54 219 | REV. G 04/15/24 |





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Flare Application

If you are using this form electronically, press F1 at any time for help

| <u>General Information</u> | |
|--|---|
| 1. | Facility Name: Croda Inc |
| 2. | Equipment ID Number: X-1601 (QS-20 for large flare, SKEC-3 for piggy-back flare) |
| 3. | Flare Type: <input checked="" type="checkbox"/> Elevated <input type="checkbox"/> Ground <input type="checkbox"/> Other (Specify): |
| 4. | Flare Design: <input type="checkbox"/> Air-Assisted <input checked="" type="checkbox"/> Steam-Assisted <input type="checkbox"/> Non-Assisted <input type="checkbox"/> Other (Specify): |
| <i>If the Flare is Steam-Assisted, complete the rest of Question 4. If not, proceed to Question 5.</i> | |
| 4.1. | Steam Injection Rate: 10,000 for QS-20, 80 for SKEC-3 pounds/hour |
| 4.2. | Steam Pressure: 100 psi |
| 5. | Manufacturer: John Zink Hamworthy Combustion |
| 6. | Model: QS-20 for large flare, SKEC-3 for piggy-back flare |
| 7. | Serial Number: TBD |
| Attach the Manufacturer's Specification Sheet. | |

| <u>Operating Information</u> | |
|------------------------------|--|
| 8. | Flare Stack Height: 65 feet |
| 9. | Flare Stack Diameter: 2.5' section and 1.67' section feet |
| 10. | Flame Temperature: 1,800 °F |
| 11. | Turn Down Ratio: 3,618:1 |
| 12. | Flare Tip Diameter: 1.67' for QS-20, 0.25' for SKEC-3 feet |
| 13. | Minimum BTU Rating for Flare: 300 BTU/scf |
| 14. | Maximum BTU Rating for Flare: NA BTU/scf |
| 15. | Describe the Operation of the Flare's Ignition System: Direct spark ignition with manual flame front generator backup |
| 16. | Heat Release Rate: Unknown calories/second |



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Contaminant Information

17. Percent of Each Contaminant in the Waste Gas, Heating Value, and Destruction Efficiency

If more than five Contaminants are present, attach additional copies of this page as needed.

| <u>Contaminant</u> | <u>CAS Number</u> | <u>Percent of Waste Gas</u> | <u>Heating Value</u> | <u>Destruction Efficiency</u> |
|--------------------|-------------------|-----------------------------|----------------------|-------------------------------|
| 17.1. VOCs | | % | BTUs | 98 % |
| 17.2. | | % | BTUs | % |
| 17.3. | | % | BTUs | % |
| 17.4. | | % | BTUs | % |
| 17.5. | | % | BTUs | % |

Gas Stream Information

18. Maximum Inlet Volumetric Gas Flow Rate: **12,173 acfm at 173.4 °F**

19. Maximum Outlet Volumetric Gas Flow Rate: **12,687 acfm at 169.2 °F**

20. Heat Content of Waste Gas: **Unknown BTU/scf**

21. Exit Gas Velocity: **162 feet/second**

Auxiliary Fuel Information

22. Describe the Operating Conditions that Necessitate Introducing Auxiliary Fuel to the Flare: **Whenever there is sufficient flow in the flare header to cause a breakthrough of the large flare stack liquid seal, an additional 25,500 SCFH of natural gas is introduced to ensure that the gas velocity at the flare tip is sufficient to prevent ethylene oxide flashback. In the few cases where the Btu content of the gas entering the flare stack is below 300 Btu/scf, additional natural gas would be added to maintain the minimum heat input value.**

23. Auxiliary Fuel Type: Natural Gas Propane
 Diesel Biodiesel
 No. 2 Fuel Oil Refinery Fuel Gas
 No. 4 Fuel Oil Other (Specify):

24. Heat Content of Auxiliary Fuel: **1,020,000,000 BTU/MMCF**

25. % Sulfur of Auxiliary Fuel: **0 %**

26. Maximum Hourly Fuel Usage: **0.026223 MMCF**

27. Maximum Yearly Fuel Usage: **230 MMCF**

Pilot Flame Monitoring Information

28. Is the Presence of the Pilot Flame Monitored? YES NO



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| <u>Pilot Flame Monitoring Information</u> | |
|---|---|
| <i>If Yes, complete the rest of Question 28. If NO, proceed to Question 29.</i> | |
| 28.1. Monitor Type: | <input checked="" type="checkbox"/> Thermocouple <input checked="" type="checkbox"/> Other (Specify): And InstaFire ionization detector |
| 28.2. Does the Flare Shut Off if the Pilot Flame is Not Detected? | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |

| <u>Monitoring and Alarm Information</u> | | | | |
|---|-------------------------------|------------------------|--|--|
| 29. Are There Any Alarms You Would Like the Department to Consider When Drafting the Permit? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | | | | |
| <i>If YES, complete the rest of Question 29. If NO, proceed to Question 30.</i> | | | | |
| 29.1. Describe the System Alarm(s): | | | | |
| If there are more than five alarms, attach additional copies of this page as needed. | | | | |
| | Operating Parameter Monitored | Describe Alarm Trigger | Monitoring Device or Alarm Type | Does the Alarm Initiate an Automated Response? |
| 29.1.1. | Flare 1 pilot #1 temperature | Low temperature | <input checked="" type="checkbox"/> Visual <input type="checkbox"/> Auditory <input checked="" type="checkbox"/> Automatic (Remote Monitoring) <input type="checkbox"/> Other | <input type="checkbox"/> NO <input checked="" type="checkbox"/> YES Describe: Automatic re-ignition of pilot |
| 29.1.2. | Flare 1 pilot #2 temperature | Low temperature | <input checked="" type="checkbox"/> Visual <input type="checkbox"/> Auditory <input checked="" type="checkbox"/> Automatic (Remote Monitoring) <input type="checkbox"/> Other | <input type="checkbox"/> NO <input checked="" type="checkbox"/> YES Describe: Automatic re-ignition of pilot |
| 29.1.3. | Flare 2 pilot #1 temperature | Low temperature | <input checked="" type="checkbox"/> Visual <input type="checkbox"/> Auditory <input checked="" type="checkbox"/> Automatic (Remote Monitoring) <input type="checkbox"/> Other | <input type="checkbox"/> NO <input checked="" type="checkbox"/> YES Describe: Automatic re-ignition of pilot |
| 29.1.4. | Flare 2 pilot #2 temperature | Low temperature | <input checked="" type="checkbox"/> Visual <input type="checkbox"/> Auditory <input checked="" type="checkbox"/> Automatic (Remote Monitoring) <input type="checkbox"/> Other | <input type="checkbox"/> NO <input checked="" type="checkbox"/> YES Describe: Automatic re-ignition of pilot |
| 29.1.5. | Flare 2 pilot #3 temperature | Low temperature | <input checked="" type="checkbox"/> Visual <input type="checkbox"/> Auditory <input checked="" type="checkbox"/> Automatic (Remote Monitoring) <input type="checkbox"/> Other | <input type="checkbox"/> NO <input checked="" type="checkbox"/> YES Describe: Automatic re-ignition of pilot |



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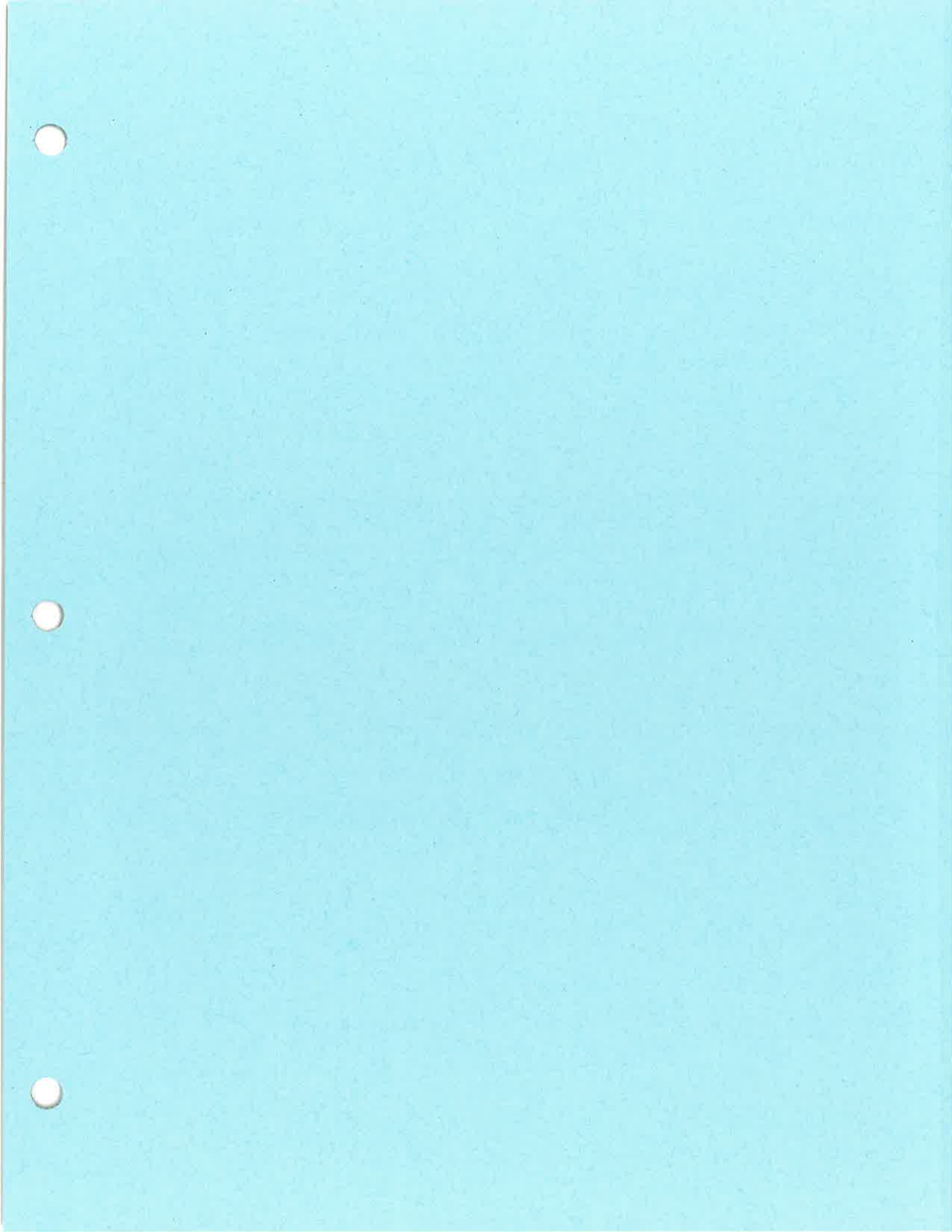
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Additional Information

30. Is There Any Additional Information Pertinent to this Application? YES NO

If YES, complete the rest of Question 30.

30.1. Describe:





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Emissions Information Application

If you are using this form electronically, press F1 at any time for help

| <u>Process Information</u> | |
|-----------------------------------|---|
| 1. | Number of Individual Pieces of Process Equipment in Process: 1 |
| 2. | Number of Individual Control Devices in Process: 0 |

| <u>Emissions Information for First Emission Point/Stack</u> | | | | | | |
|--|---|---|--|--|---------------------------------------|---|
| 3. Emission Point Name: Flare | | | | | | |
| 4. Equipment ID Number for all Process Equipment and Control Devices Venting Through Emission Point/Stack: Flare | | | | | | |
| 5. Pollutant Emissions | | | | | | |
| If more than 15 pollutants are emitted at this Emission Point/Stack, attach additional copies of this page as needed. | | | | | | |
| | <u>Pollutant Name</u> <small>(Specify VOCs and HAPs Individually in 5.10 through 5.18)</small> | <u>CAS Number</u> <small>(Not required for 5.1 through 5.10)</small> | <u>Maximum Uncontrolled Emission Rate at Design Capacity</u> | <u>Maximum Controlled Emission Rate at Design Capacity</u> | <u>Annual Potential to Emit (PTE)</u> | <u>Requested Permitted Annual Emissions</u> |
| 5.1. | Particulate Matter (PM) | | 0.2 lbs/hour | 0.2 lbs/hour | 0.1 tons/year | 0.1 tons/year |
| 5.2. | PM ₁₀ | | lbs/hour | lbs/hour | tons/year | tons/year |
| 5.3. | PM _{2.5} | | lbs/hour | lbs/hour | tons/year | tons/year |
| 5.4. | Sulfur Oxides (SO _x) | | 0.02 lbs/hour | 0.02 lbs/hour | 0.01 tons/year | 0.01 tons/year |
| 5.5. | Nitrogen Oxides (NO _x) | | 2.6 lbs/hour | 2.6 lbs/hour | 1.4 tons/year | 1.4 tons/year |
| 5.6. | Carbon Monoxide (CO) | | 2.2 lbs/hour | 2.2 lbs/hour | 1.2 tons/year | 1.2 tons/year |
| 5.7. | Total Volatile Organic Compounds (VOCs) | | 0.14 lbs/hour | 0.14 lbs/hour | 0.1 tons/year | 0.1 tons/year |
| 5.8. | Total Hazardous Air Pollutants (HAPs) | | lbs/hour | lbs/hour | tons/year | tons/year |



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| Emissions Information for First Emission Point/Stack | | | | | | |
|--|------------------------------------|--|----------|----------|---------------|---------------|
| 5.9. | CO ₂ | | lbs/hour | lbs/hour | tons/year | tons/year |
| 5.10. | CO _{2e} | | lbs/hour | lbs/hour | tons/year | tons/year |
| 5.11. | VOC (Malfunction Scenarios) | | lbs/hour | lbs/hour | 2.5 tons/year | 2.5 tons/year |
| 5.12. | | | lbs/hour | lbs/hour | tons/year | tons/year |
| 5.13. | | | lbs/hour | lbs/hour | tons/year | tons/year |
| 5.14. | | | lbs/hour | lbs/hour | tons/year | tons/year |
| 5.15. | | | lbs/hour | lbs/hour | tons/year | tons/year |
| 6. Provide Any Additional Information Necessary to Understanding the Emission Rates Provided Above: These emissions are for burning natural gas via the pilot, supplemental natural gas, and an engineering estimate for malfunction scenarios. | | | | | | |
| Attach the Basis of Determination or Calculations for each Emission Rate provided above. | | | | | | |

| Emissions Information for Second Emission Point/Stack | | | | | | |
|---|--|--|--|--|---------------------------------------|---|
| 7. Emission Point Name: | | | | | | |
| 8. Equipment ID Number for all Process Equipment and Control Devices Venting Through Emission Point/Stack: | | | | | | |
| 9. Pollutant Emissions | | | | | | |
| If more than 15 pollutants are emitted at this Emission Point/Stack, attach additional copies of this page as needed. | | | | | | |
| | <u>Pollutant Name</u> (Specify VOCs and HAPs Individually in 9.10 through 9.18) | <u>CAS Number</u> (Not required for 9.1 through 9.10) | <u>Maximum Uncontrolled Emission Rate at Design Capacity</u> | <u>Maximum Controlled Emission Rate at Design Capacity</u> | <u>Annual Potential to Emit (PTE)</u> | <u>Requested Permitted Annual Emissions</u> |
| 9.1. | Particulate Matter (PM) | | lbs/hour | lbs/hour | tons/year | tons/year |
| 9.2. | PM ₁₀ | | lbs/hour | lbs/hour | tons/year | tons/year |
| 9.3. | PM _{2.5} | | lbs/hour | lbs/hour | tons/year | tons/year |



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| Emissions Information for Second Emission Point/Stack | | | | | | |
|--|---|--|----------|----------|-----------|-----------|
| 9.4. | Sulfur Oxides (SO _x) | | lbs/hour | lbs/hour | tons/year | tons/year |
| 9.5. | Nitrogen Oxides (NO _x) | | lbs/hour | lbs/hour | tons/year | tons/year |
| 9.6. | Carbon Monoxide (CO) | | lbs/hour | lbs/hour | tons/year | tons/year |
| 9.7. | Total Volatile Organic Compounds (VOCs) | | lbs/hour | lbs/hour | tons/year | tons/year |
| 9.8. | Total Hazardous Air Pollutants (HAPs) | | lbs/hour | lbs/hour | tons/year | tons/year |
| 9.9. | CO ₂ | | lbs/hour | lbs/hour | tons/year | tons/year |
| 9.10. | CO _{2e} | | lbs/hour | lbs/hour | tons/year | tons/year |
| 9.11. | | | lbs/hour | lbs/hour | tons/year | tons/year |
| 9.12. | | | lbs/hour | lbs/hour | tons/year | tons/year |
| 9.13. | | | lbs/hour | lbs/hour | tons/year | tons/year |
| 9.14. | | | lbs/hour | lbs/hour | tons/year | tons/year |
| 9.15. | | | lbs/hour | lbs/hour | tons/year | tons/year |
| 10. Provide Any Additional Information Necessary to Understanding the Emission Rates Provided Above: | | | | | | |
| Attach the Basis of Determination or Calculations for each Emission Rate provided above. | | | | | | |

| Emissions Information for Third Emission Point/Stack | |
|---|---|
| 11. | Emission Point Name: |
| 12. | Equipment ID Number for all Process Equipment and Control Devices Venting Through Emission Point/Stack: |
| 13. | Pollutant Emissions |
| If more than 15 pollutants are emitted at this Emission Point/Stack, attach additional copies of this page as needed. | |



DNREC – Division of Air Quality
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| Emissions Information for Third Emission Point/Stack | | | | | |
|--|--|--|--|---------------------------------------|---|
| <u>Pollutant Name</u> (Specify VOCs and HAPs Individually in 13.10 through 13.18) | <u>CAS Number</u> (Not required for 13.1 through 13.10) | <u>Maximum Uncontrolled Emission Rate at Design Capacity</u> | <u>Maximum Controlled Emission Rate at Design Capacity</u> | <u>Annual Potential to Emit (PTE)</u> | <u>Requested Permitted Annual Emissions</u> |
| 13.1. Particulate Matter (PM) | | lbs/hour | lbs/hour | tons/year | tons/year |
| 13.2. PM ₁₀ | | lbs/hour | lbs/hour | tons/year | tons/year |
| 13.3. PM _{2.5} | | lbs/hour | lbs/hour | tons/year | tons/year |
| 13.4. Sulfur Oxides (SO _x) | | lbs/hour | lbs/hour | tons/year | tons/year |
| 13.5. Nitrogen Oxides (NO _x) | | lbs/hour | lbs/hour | tons/year | tons/year |
| 13.6. Carbon Monoxide (CO) | | lbs/hour | lbs/hour | tons/year | tons/year |
| 13.7. Total Volatile Organic Compounds (VOCs) | | lbs/hour | lbs/hour | tons/year | tons/year |
| 13.8. Total Hazardous Air Pollutants (HAPs) | | lbs/hour | lbs/hour | tons/year | tons/year |
| 13.9. CO ₂ | | lbs/hour | lbs/hour | tons/year | tons/year |
| 13.10. CO _{2e} | | lbs/hour | lbs/hour | tons/year | tons/year |
| 13.11. | | lbs/hour | lbs/hour | tons/year | tons/year |
| 13.12. | | lbs/hour | lbs/hour | tons/year | tons/year |
| 13.13. | | lbs/hour | lbs/hour | tons/year | tons/year |
| 13.14. | | lbs/hour | lbs/hour | tons/year | tons/year |
| 13.15. | | lbs/hour | lbs/hour | tons/year | tons/year |
| 14. Provide Any Additional Information Necessary to Understanding the Emission Rates Provided Above: | | | | | |
| Attach the Basis of Determination or Calculations for each Emission Rate provided above. | | | | | |



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| Emissions Information for Fourth Emission Point/Stack | | | | | | |
|--|--|--|--|--|---------------------------------------|---|
| 15. Emission Point Name: | | | | | | |
| 16. Equipment ID Number for all Process Equipment and Control Devices Venting Through Emission Point/Stack: | | | | | | |
| 17. Pollutant Emissions | | | | | | |
| If more than 15 pollutants are emitted at this Emission Point/Stack, attach additional copies of this page as needed. | | | | | | |
| | <u>Pollutant Name</u> (Specify VOCs and HAPs Individually in 17.10 through 17.18) | <u>CAS Number</u> (Not required for 17.1 through 17.10) | <u>Maximum Uncontrolled Emission Rate at Design Capacity</u> | <u>Maximum Controlled Emission Rate at Design Capacity</u> | <u>Annual Potential to Emit (PTE)</u> | <u>Requested Permitted Annual Emissions</u> |
| 17.1. | Particulate Matter (PM) | | lbs/hour | lbs/hour | tons/year | tons/year |
| 17.2. | PM ₁₀ | | lbs/hour | lbs/hour | tons/year | tons/year |
| 17.3. | PM _{2.5} | | lbs/hour | lbs/hour | tons/year | tons/year |
| 17.4. | Sulfur Oxides (SO _x) | | lbs/hour | lbs/hour | tons/year | tons/year |
| 17.5. | Nitrogen Oxides (NO _x) | | lbs/hour | lbs/hour | tons/year | tons/year |
| 17.6. | Carbon Monoxide (CO) | | lbs/hour | lbs/hour | tons/year | tons/year |
| 17.7. | Volatile Organic Compounds (VOCs) | | lbs/hour | lbs/hour | tons/year | tons/year |
| 17.8. | Total Hazardous Air Pollutants (HAPs) | | lbs/hour | lbs/hour | tons/year | tons/year |
| 17.9. | CO ₂ | | lbs/hour | lbs/hour | tons/year | tons/year |
| 17.10. | CO _{2e} | | lbs/hour | lbs/hour | tons/year | tons/year |
| 17.11. | | | lbs/hour | lbs/hour | tons/year | tons/year |
| 17.12. | | | lbs/hour | lbs/hour | tons/year | tons/year |
| 17.13. | | | lbs/hour | lbs/hour | tons/year | tons/year |
| 17.14. | | | lbs/hour | lbs/hour | tons/year | tons/year |
| 17.15. | | | lbs/hour | lbs/hour | tons/year | tons/year |



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| Emissions Information for Fourth Emission Point/Stack |
|--|
| 18. Provide Any Additional Information Necessary to Understanding the Emission Rates Provided Above: |
| Attach the Basis of Determination or Calculations for each Emission Rate provided above. |
| If there are more than four Emission Points/Stacks, attach additional copies of this form as needed. |

| Overall Process Emissions | | | | | | |
|--|--|--|--|--|---------------------------------------|---|
| 19. Pollutant Emissions | | | | | | |
| If more than 15 pollutants are emitted from this Process, attach additional copies of this page as needed. | | | | | | |
| | <u>Pollutant Name</u> (Specify VOCs and HAPs Individually in 19.10 through 19.18) | <u>CAS Number</u> (Not required for 19.1 through 19.10) | <u>Maximum Uncontrolled Emission Rate at Design Capacity</u> | <u>Maximum Controlled Emission Rate at Design Capacity</u> | <u>Annual Potential to Emit (PTE)</u> | <u>Requested Permitted Annual Emissions</u> |
| 19.1. | Particulate Matter (PM) | | 0.2 lbs/hour | 0.2 lbs/hour | 0.1 tons/year | 0.1 tons/year |
| 19.2. | PM ₁₀ | | lbs/hour | lbs/hour | tons/year | tons/year |
| 19.3. | PM _{2.5} | | lbs/hour | lbs/hour | tons/year | tons/year |
| 19.4. | Sulfur Oxides (SO _x) | | 0.02 lbs/hour | 0.02 lbs/hour | 0.01 tons/year | 0.01 tons/year |
| 19.5. | Nitrogen Oxides (NO _x) | | 2.6 lbs/hour | 2.6 lbs/hour | 1.4 tons/year | 1.4 tons/year |
| 19.6. | Carbon Monoxide (CO) | | 2.2 lbs/hour | 2.2 lbs/hour | 1.2 tons/year | 1.2 tons/year |
| 19.7. | Total Volatile Organic Compounds (VOCs) | | 0.14 lbs/hour | 0.14 lbs/hour | 0.1 tons/year | 0.1 tons/year |
| 19.8. | Total Hazardous Air Pollutants (HAPs) | | lbs/hour | lbs/hour | tons/year | tons/year |
| 19.9. | CO ₂ | | lbs/hour | lbs/hour | tons/year | tons/year |
| 19.10. | CO _{2e} | | lbs/hour | lbs/hour | tons/year | tons/year |
| 19.12. | VOC (Malfunction Scenarios) | | lbs/hour | lbs/hour | 2.5 tons/year | 2.5 tons/year |



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| Overall Process Emissions | | | | | |
|--|--|-----------------|-----------------|-----------|-----------|
| 19.13. | | lbs/hour | lbs/hour | tons/year | tons/year |
| 19.14. | | lbs/hour | lbs/hour | tons/year | tons/year |
| 19.15. | | lbs/hour | lbs/hour | tons/year | tons/year |
| 20. Provide Any Additional Information Necessary to Understanding the Emission Rates Provided Above: | | | | | |
| | | | | | |
| Attach the Basis of Determination or Calculations for each Emission Rate provided above. | | | | | |

| Minor New Source Review Information | |
|--|---|
| 21. Does the Process Have the Potential to Emit More Than Five Tons Per Year of Any Pollutant? | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |
| 22. Is the Source New or Existing? <small>See Question 11 of AQM-1</small> | <input checked="" type="checkbox"/> NEW <input type="checkbox"/> EXISTING |
| If the Process has the Potential to Emit more than five tons per year of any pollutant, and is a New Source, a Control Technology Analysis pursuant to Regulation No. 1125 Section 4 must be conducted and attached to this application. | |

| Major New Source Review Information | |
|---|--|
| 23. Does the Process Have the Potential to Emit More Than the Significance Level for Any Pollutant? <i>(Check All That Apply)</i> | |
| <input type="checkbox"/> Greater Than 25 Tons Per Year of Particulate Matter (PM) | |
| <input type="checkbox"/> Greater Than 15 Tons Per Year of PM ₁₀ | |
| <input type="checkbox"/> Greater Than 10 Tons Per Year of PM _{2.5} | |
| <input type="checkbox"/> Greater Than 40 Tons Per Year of Sulfur Dioxide(SO ₂) | |
| <input type="checkbox"/> Greater Than 25 Tons Per Year of Nitrogen Oxides (NO _x) in New Castle and Kent County | |
| <input type="checkbox"/> Greater Than 100 Tons Per Year of Nitrogen Oxides (NO _x) in Sussex County | |
| <input type="checkbox"/> Greater Than 100 Tons Per Year of Carbon Monoxide (CO) | |
| <input type="checkbox"/> Greater Than 25 Tons Per Year of Total Volatile Organic Compounds (VOCs) in New Castle and Kent County | |
| <input type="checkbox"/> Greater Than 50 Tons Per Year of Total Volatile Organic Compounds (VOCs) in Sussex County | |
| <input type="checkbox"/> Greater Than 75,000 Tons Per Year of Equivalent Carbon Dioxide (CO _{2e}) | |



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If the Process has the Potential to Emit greater than any of the amounts listed above 7 DE Admin. Code 1125 Sections 2 and/or 3 apply. Contact the Department at (302) 323-4542 or (302) 739-9402 for additional information

Additional Information

24. Is There Any Additional Information Pertinent to this Application? YES NO

If YES, complete the rest of Question 24.

24.1. Describe: