FACT SHEET FOR: OP26M1-027 **DATE: DRAFT**

DWEE ID: 58049
121646

Name of Source: Chief Ethanol Fuels, Inc.
CC Hastings Capture Company, LLC

Source Classification: Class I at time of issuance
Area Source of Hazardous Air Pollutants (HAPs)

Regulatory changes may supersede information in this document. If the source should add or change equipment or change processes such that a NESHAP or NSPS subpart becomes an applicable requirement, it is the source's obligation to comply with that subpart and applicable requirements whether or not they are identified in the associated permitting action or Title 129. Also note that the NESHAP and NSPS subparts are subject to change. Detailed information related to NESHAP and NSPS subparts can be found on the DWEE Air Toxics Notebook and DWEE NSPS Notebook located on the DWEE website (https://dwee.nebraska.gov/). The DWEE website can also be used to find other permit related and facility specific information that is not identified in this fact sheet.

The source is subject to and will comply with all applicable requirements found in Title 40 Protection of Environment, Code of Federal Regulations that apply to the source including those found at 40 CFR Part 52, Subpart CC or 40 CFR Part 70, Appendix A (federally enforceable requirements); the State Implementation Plan (SIP) approved Title 129 as amended September 28, 2022 cited in this permit and denoted by an asterisk (*) are federally enforceable; and the Environmental Protection Act, Neb. Rev. Stat. §§ 81-1501 to 81-1532, and Nebraska Administrative Code Title 129 as amended June 28, 2026. When Title 129 as amended June 28, 2026, cited in this permit becomes SIP approved and federally enforceable it will supersede Title 129 as amended September 28, 2022.

DESCRIPTION OF THE SOURCE OR ACTIVITY:

This operating permit OP26M1-027 approves the operation of an ethanol manufacturing plant producing approximately 80 million gallons of denatured ethanol annually and a co-located carbon dioxide (CO_2) capture facility.

PERMIT REVISION:

On June 9, 2026, Chief Ethanol Fuels, LLC (Chief) [FID 58049] submitted an operating permit modification application, OP26M1-027, to incorporate the applicable requirements of Construction Permit CP24-010, issued May 7, 2025, and Construction Permit CP25-014, issued January 26, 2026. Construction Permits CP24-010 and CP25-014 authorized the removal of three (3) existing fermentation scrubbers; installation of a new fermentation scrubber; removal of two (2) existing fermenters; installation of a new fermenter; and construction of a new carbon capture facility that is located adjacent to the existing Chief facility operated as CC Hastings Capture Company, LLC. Chief and CC Hastings Capture Company are considered a single source for the purposes of accounting for emission contributions under the NSR program. The facilities are also considered single sources when accounting for emission contributions to determine area or major source classification for HAPs.

TYPE AND QUANTITY OF AIR CONTAMINANT EMISSIONS ANTICIPATED:

The change in emissions for this project is shown in the potential to emit (PTE) table below {pollutants in the facility not listed below did not have any change in PTE}:

Regulated Pollutant	Potential Emissions[1] (tons/year)	Potential Emissions after Revision (tons/year)	Change in Potential Emissions[2] (tons/year)
Particulate Matter (PM)	149.52	149.52	0.00
Particulate Matter less than or equal to 10 microns (PM_{10})	64.04	64.04	0.00
Particulate Matter less than or equal to 2.5 microns ($PM_{2.5}$)	28.37	28.37	0.00
Sulfur Dioxide (SO_2)	1.13	1.13	0.00
Oxides of Nitrogen (NO_x)	137.13	137.13	0.00
Carbon Monoxide (CO)	104.86	104.86	0.00
Volatile Organic Compounds (VOCs)	104.50	106.73	2.23
Greenhouse Gases (GHGs)	451,841	451,841	0.00
Carbon Dioxide Equivalents (CO_2e)	452,053	452,053	0.00
Hazardous Air Pollutants (HAPs)	21.70	19.25	-2.55

[1] The potential emissions are from the fact sheet associated with Operating Permit OP25R1-004.
[2] The change in potential emissions calculations were provided in the Air Quality Permit Revision Request Form received on June 9, 2026 and addendum calculations received on September 9, 2026, and are in the DWEE's file for this source.

APPLICABLE REQUIREMENTS AND VARIANCES OR ALTERNATIVES TO REQUIRED STANDARDS:

Title 129, Chapter 9, Section 005*; Title 129, Chapter 9, Section 005 – Significant Permit Revisions

The source requested a significant operating permit revision to its existing operating permit as per Title 129, Chapter 9, Section 005*[1]; Title 129, Chapter 9, Section 005[1]

> Title 129, Chapter 9, Section 005*; Title 129, Chapter 9, Section 005 A "significant permit revision" is any revision or change to a permit that cannot be accomplished as an administrative permit amendment or as a minor permit revision. Any relaxation in existing monitoring, reporting, or recordkeeping shall be considered significant.
>
> Title 129, Chapter 9, Section 005.01*; Title 129, Chapter 9, Section 005.01 A source may request a significant permit revision by submitting the application forms and information in accordance with Chapter 6, Section 002*; Chapter 6, Section 002 for operating permit revisions or Chapter 3, Section 001.05*; Chapter 3, Section 001.05, for construction permit revisions.
>
> Title 129, Chapter 9, 005.03*; Title 129, Chapter 9, 005.03 For operating permits only, the permit shield described in Chapter 6, Section 003.12*; Chapter 6, Section 003.12, shall apply to a significant permit revision only after the Director approves the permit revision, provided that the permit contains a permit shield.

[1] Section 005.02*; Section 005.02 is not included because it contains instructions for the DWEE.

Chief Ethanol Fuels, LLC / CC Hastings Capture Company, LLC complied with all the above applicable requirements when submitting their application for the significant operating permit revision.

SUPPLEMENTAL INFORMATION:

Subpart A – General Provisions:

This subpart applies to sources that are subject to another NSPS subpart. Because Chief Ethanol Fuels, Inc. (Chief) is subject to NSPS Subparts Db, Kb, VV, IIII, and JJJJ, Chief is subject to this subpart.

Subpart Db – Standards of Performance for Industrial – Commercial – Institutional Steam Generating Units:

This subpart applies to steam generating units with a design rate greater than 100 MMBtu/hr, installed after June 19, 1984. The 249 MMBtu/hr natural gas boiler (EP-16) and the 152.5 MMBtu/hr natural gas boiler (EP-39) are subject to this NSPS because the heat input capacity of each boiler is greater than 100 MMBtu/hr, and they were installed in 1993 and 2022.

Subpart Kb – Standards of Performance for Volatile Organic Liquid Storage Vessels:

This subpart applies to storage vessels with a capacity greater than or equal to 75 cubic meters (m3), 19,800 gallons, that is used to store volatile organic liquids for which construction, reconstruction, or modification is commenced after July 23, 1984 and on or prior to October 4, 2023. Tanks that are used within a process (including a solvent or raw material recovery process) to collect material discharged from a feedstock storage vessel or equipment within the process before the material is transferred to other equipment within the process, to a product or by-product storage vessel, or to a vessel used to store recovered solvent or raw material (i.e. process vessels) are exempt from this subpart. Therefore, the tank that is used to store Denatured Ethanol (T-26101) is explicitly subject to this subpart. Tanks T-6103, T-6101, and T-6102 were installed prior to July 23, 1984 and therefore, the subpart does not apply. The Gas Storage Tank (EP-37) is not subject to NSPS Subpart Kb, since it is below the applicable capacity. Tanks that contain anhydrous ethanol (T-1501A, T-1501B, T-11501C) which will be further processed are not considered storage tanks and therefore are not subject to this regulation and were constructed prior to implementation of the state BACT program and thus do not contain these requirements. Tank T-26101 are subject to NSPS Subpart Kb.

Subpart VV – Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for which Construction, Reconstruction, or Modification Commenced After January 5, 1981, and on or Before November 7, 2006:

This subpart applies to the VOC equipment leaks associated with this plant (a Synthetic Organic Chemical Manufacturing Industry). This subpart is associated with subpart NNN & RRR, but NNN & RRR are based on how the chemical is produced (biomass versus synthetic), while VV is based on the chemicals produced. Since new organic chemicals are synthesized (process doesn't matter), then all of the associated equipment leaks are subject to this subpart.

Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines:

This subpart applies to owners and operators of new stationary CI ICE manufactured on or after April 1, 2006, or stationary CI ICE which are fire pump engines manufactured on or after July 1, 2006. Chief operates a 175 hp diesel fire pump engine installed in 2011. Since the fire pump was manufactured after 2006, then it is subject to this subpart.

Subpart JJJJ – Standards of Performance for Stationary Spark Ignition Internal Combustion Engines:

This subpart applies to owners and operators of new stationary SI ICE manufactured on or after July 1, 2008 for non-emergency generators greater than 19 kW (25 hp), or on or after January 2009 for emergency generators greater than 19 kW. Chief operates the 78 kW emergency generator as an emergency unit, and is therefore subject to this subpart.

The following NSPS appear to apply but do not:

Subpart Ka – Standards of Performance for Storage Vessels for Petroleum Liquids for which Construction, Reconstruction, or Modification Commenced After May 18, 1978, and Prior to July 23, 1984:

This subpart applies to storage vessels with a capacity greater than 151,416 liters, 40,000 gallons, that are used to store petroleum liquids for which construction is commenced after May 18, 1978, and prior to July 23, 1984. The Denaturant Storage Tank (T-6103) capacity is less than 40,000 gallons so the subpart does not apply. The other tanks are not subject to NSPS Subpart Ka since they do not contain petroleum liquids or were constructed after 1984.

Subpart Kc – Standards of Performance for Volatile Organic Liquid Storage Vessels for Which Construction, Reconstruction, or Modification Commenced After October 4, 2023

This subpart applies to storage vessels with a capacity greater than or equal to 20,000 gallons that are used to store volatile organic liquids which construction, reconstruction or modification commenced after October 4, 2023. All of the volatile organic liquid storage vessels were constructed prior to October 2023, and have not been modified or reconstructed. Therefore, the tanks at this facility are not subject to NSPS Subpart Kc.

Subpart DD – Standards for Grain Elevators

This subpart applies to any grain terminal elevator (permanent storage capacity of 2.5 million US bushels) or any grain storage elevator (permanent storage capacity of 1 million US bushels). Ethanol (fuel grade) plants are in the grain terminal elevator. The grain storage capacity at this facility is currently at 585,540 bu. Therefore, the grain elevator is not subject to this subpart.

Subpart VVa – Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for Which Construction, Reconstruction, or Modification Commenced after November 7, 2006:

This subpart applies to the VOC equipment leaks associated at a Synthetic Organic Chemical Manufacturing facility that was constructed, reconstructed, or modified after November 7, 2006. This subpart includes all the requirements of 40 CFR Part 60, Subpart VV, as amended, along with new provisions. Differences between Subparts VVa and VV include, but are not limited to, lower leak definitions for pumps and valves, requiring monitoring of connectors, and additional recordkeeping requirements and quality assurance measures.

Subpart VVb—Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for which Construction, Reconstruction, or Modification Commenced After April 25, 2023:

This subpart applies to the VOC equipment leaks associated with a Synthetic Organic Chemical Manufacturing facility that was constructed, reconstructed, or modified after April 25, 2023. Subpart VVb is currently not applicable to this facility. Modifications to EP-24 as part of the projects included in this significant permit revision application do not constitute reconstruction as defined in 40 CFR 60.15(b) and §60.488b. Changes do not constitute a modification under 40 CFR 60.14.

Subpart NNN – Standards of Performance for Volatile Organic Compound (VOC) Emissions from Synthetic Organic Chemicals Manufacturing Industry (SOCMI) Distillation Operations:

This subpart does not apply to the distillation operation, per EPA's January 24, 2000, letter from Richard Tripp, EPA Region VII to Randy Griffin, Nebraska Air Quality Compliance Supervisor, concerning applicability of 40 CFR 60 to biomass ethanol production. The letter stated that Subpart NNN does not apply to ethanol derived from biomass such as corn. Subpart NNN applies to synthetic (chemical reaction of petroleum refining products) processes to produce organic chemicals (including ethanol).

Subpart RRR – Standards of Performance for Volatile Organic Compound (VOC) Emissions from Synthetic Organic Chemicals Manufacturing Industry (SOCMI) Reactor Processes:

This subpart does not apply to the fermentation tanks, per EPA's January 24, 2000, letter, from Richard Tripp, EPA Region VII to Randy Griffin, Nebraska Air Quality Compliance Supervisor, concerning applicability of 40 CFR 60 to biomass ethanol production. The letter stated that Subpart RRR does not apply to ethanol derived from biomass such as corn. Subpart RRR applies to synthetic (chemical reaction of petroleum refining products) processes to produce organic chemicals (including ethanol).

Title 129; Chapter 13, Sections 002 and 003*; Title 129, Chapter 13; Sections 002 and 003 - National Emission Standards for Hazardous Air Pollutants (NESHAP)

Subpart A – General Provisions:

This subpart applies to sources that are subject to another NESHAP subpart.

Subpart ZZZZ – Stationary Reciprocating Internal Combustion Engines:

This subpart applies to owners and operators of existing or new stationary RICE at major or area sources of HAP emissions. The emergency fire water pump and the emergency generator are subject to this subpart because they are new stationary RICE. Chief will demonstrate compliance with this NESHAP subpart by complying with NSPS Subparts IIII and JJJJ {40 CFR 63.6590(c)}.

Subpart CCCCCC – Gasoline Dispensing Facility:

This subpart applies to each gasoline dispensing facility located at an area (non-major) source of HAPs. A gasoline dispensing facility means a facility (tank) which dispenses gasoline into a fuel tank used for an engine (i.e. motor vehicles, generators, lawn equipment). This subpart applies to the 300 gallon gas storage tank (EP-38) because Chief is an area source of HAPs and is a gasoline dispensing facility. Tank T-6103 (natural gasoline) is not subject to Subpart CCCCCC, because it is not a gasoline dispensing facility.

The following NESHAPs appear to apply but do not:

Subparts F/G – Organic HAPs from the Synthetic Organic Chemical Manufacturing Industry:

This subpart applies to manufacturing facilities which produce a hazardous air pollutant as the primary chemical {§63.100(b)(1)}, or use as reactant or manufacture as a product or co-product one or more of the organic hazardous air pollutants specified{§63.100(b)(2)}, and located at a plant site that is a major source. This plant produces ethanol, which contains acetaldehyde and methanol, as well as the HAPs in the denaturant. This facility is not subject to this subpart because the primary product is ethanol (which is not on the HAP list in this subpart) and the facility is limited to less than 10 tons/year of individual HAP and less than 25 tons/year of combined HAPs.

Subpart G – Organic HAPs from the Synthetic Organic Chemical Manufacturing Industry for Process Vents, Storage Vessels, Transfer Operations, and Wastewater:

This subpart applies to the same manufacturing facilities as Subpart F, but only for all of the process vents, storage vessels, transfer racks and recycled process water streams. Since this plant is exempt from Subpart F, it is also exempt from Subpart G.

Subpart H –Organic HAPs from the Synthetic Organic Chemical Manufacturing Industry for Equipment Leaks:

This subpart applies to the same manufacturing facilities as Subpart F, but only for the following equipment: pumps, compressors, agitators, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, surge control vessels, bottoms receivers, instrumentation systems, and control devices or closed vent systems that are intended in operate in organic hazardous air pollutant service 300 hours or more during the calendar year. Since this plant is exempt from Subpart F, it is also exempt from Subpart H.

Subpart Q – Industrial Process Cooling Towers:

This subpart applies to industrial process cooling towers that are operated with chromium-based water treatment chemicals and are located at major facilities for HAPs. This facility is not subject to this subpart because the facility is limited below the major source thresholds. Also, no chromium-based water treatment chemicals were reported to be used for the cooling towers.

Subpart EEEE – Organic Liquids Distribution (non-gasoline):

This subpart applies to major HAP facilities, which have organic liquids distribution. The organic liquids distribution operation must have 7.29 million gallons per year or more either into or out of the operation to be subject to this subpart. Organic liquids are all crude oils other than black oil, and those liquids or liquid mixtures, except gasoline, that contain a total of 5 percent by weight or more of the organic HAP listed in the subpart (including acetaldehyde, methanol, benzene, carbon disulfide, cumene, ethyl benzene, hexane, toluene, xylenes). Fuels used on-site (such as fuels used for fleet refueling) are exempt from this subpart. This facility is not subject to this subpart because the facility is limited to below the major source thresholds. If the facility-wide HAP emissions exceed the major source threshold, then an analysis will need to be conducted on the organic liquid distribution operations to determine if this subpart is applicable.

Subpart FFFF – Miscellaneous Organic Chemical Manufacturing:

This subpart applies to major HAP facilities, which own or operate miscellaneous organic chemical manufacturing process units (MCPU). An MCPU includes equipment necessary to operate a miscellaneous organic chemical manufacturing process, as defined in §63.2550 (process includes reaction, recovery, separation, purification, or other activity, operation, manufacture, or treatment which are used to produce a product of isolated intermediate), that produce an organic chemical(s) in the specified SIC (includes SIC 2869), and it processes, uses, or produces HAP. This facility is not subject to this subpart because the facility is limited below the major source thresholds. If the facility-wide HAP emissions exceed the major source threshold, then the miscellaneous organic chemical manufacturing units and operations would be subject to this NESHAP.

Subpart DDDDD – Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters

This subpart applies to industrial, commercial, and institutional boilers or process heaters located at a major source of HAP. Chief is not subject to this subpart since the source is an area source of HAPs.

Subpart JJJJJJ – Industrial, Commercial, and Institutional Boilers at Area Sources

This subpart applies to industrial, commercial, and institutional boilers located at area sources of HAPs. The natural gas boilers (EP-16 and EP-39) are exempt from this subpart since they are gas-fired boilers (40 CFR 63.11195(e)).

Subpart VVVVVV- Chemical Manufacturing Area Sources:

This subpart applies to area sources which own or operate chemical manufacturing process units (CMPU). The CMPU must use as feedstocks, generate as byproducts, or produce as products any of the following HAP: 1,3-butadiene, 1,3-dichloropropene, acetaldehyde, chloroform, ethylene dichloride, hexachlorobenzene, methylene chloride, quinoline, arsenic compounds, cadmium compounds, chromium compounds, lead compounds, manganese compounds or nickel compounds. Additionally, the HAP must be present in feedstocks or must be generated or produced in the CMPU at concentrations greater than 0.1 % for carcinogens and 1.0% for non-carcinogens as defined by the Occupational Safety and Health Administration (OSHA) (percentages are determined on a mass basis). A CMPU includes all process vessels, equipment, and activities necessary to operate a chemical manufacturing that produces a material or a family of materials described by North American Industry Classification System code 325. Ethanol plants have a NAICS coded of 325193. Acetaldehyde is produced along with ethanol in the CMPU. The concentration of acetaldehyde in the CMPU is less than 0.1% and it is not a feedstock or product, therefore this source is not subject to this subpart per §63.11494(a)(2).

Title 129, Chapter 13, Section 004*; Title 129; Chapter 13; Section 004 – Hazardous Air Pollutants (MACT and T-BACT)

The fermentation, distillation, and dryers are required to have scrubbers to control Acetaldehyde to demonstrate compliance with T-BACT. Acetaldehyde is limited (2.15 lb/hr combined = 9.42 tpy) for the scrubbers to limit emissions below the MACT threshold (10 tpy).

Title 129; Chapter 15*; Title 129; Chapter 15 - Compliance

Process Weight Rate

Title 129; Chapter 15; Section 001.01* and Title 129; Chapter 15; Section 001.01 limit PM (filterable) emissions to the amounts shown in Table 15-1 during any one hour. These process weight rate limits; which are based on throughput of the emission units; vary as throughputs change. Since the potential to emit for each emission point is less than the process weight rate limitations; these PM limitations were not included in Condition III of this permit.

Particulate Emissions from Combustion Sources

All of the PM emission points subject to Chapter 15, Section 001.02 *; Chapter 15, Section 001.02 limitations are in compliance with those limitations; as the potential to emit for each emission point is less than the limitations. Therefore; these PM limitations were not included in Condition III of this permit.

Opacity Limitations from Emission Units (Section 001.04)

Specific Condition I.(J) specifies that no person shall cause or allow emissions; from any source; which has an opacity equal to or greater than twenty percent (20%). Opacity must be determined using an EPA-approved method or recorded by a continuous opacity monitoring system which has been operated and maintained pursuant to 40 CFR Part 60 Appendix B except as provided for in Chapter 15, Sections 001.05* and 001.05E*; Chapter 15, Sections 001.05 and 001.05E (Title 129; Chapter 15; Section 001.04*; Title 129, Chapter 15, Section 001.04).

Proposed changes to the specific permit requirements of Operating Permit OP25R1-004 issued August 29, 2025, made in Significant Operating Permit Revision #OP26M1-027 received on June 9, 2026 are in bold print and <u>underlined,</u> deletions are in ~~strikethrough~~ and the descriptions of changes to permit conditions are in *italics*.

<u>SPECIFIC PERMIT CONDITIONS DISCUSSION:</u>

Conditions I and II.

Conditions I and II were reissued in their entirety at the request of the source to reflect the fact that Title 129 was amended on June 28, 2026. A permit shield to VVb was also added to Condition II.(M) at the request of the source.

Title 129 – Air Quality Regulations was amended on June 28, 2026. Operating permit OP25R1-004 issued August 29, 2025 was written under Title 129 – Air Quality Regulations as amended September 28, 2022. The State Implementation Plan (SIP) approved Title 129 as amended September 28, 2022 cited in this permit and denoted by an asterisk (*).

III. REVISED SPECIFIC PERMIT CONDITIONS:

(B) Specific Conditions for Fermentation and Distillation Operations

(1) <u>Permitted Emission Points</u>:

(a) The following table identifies emission points, emission units, permitted capacities, permitted fuel types, required control equipment the source must operate, and applicable standards at the source at the time of permit issuance, in accordance with operating permit ~~application~~ OP25R1-004, **<u>issued September 2, 2025,</u>** ~~received January 28, 2025, Construction Permit CP20-012, issued August 18, 2020, and Construction Permit CP24-042, issued October 17, 2024,~~ **<u>Construction Permit CP24-010, issued May 7, 2025, Construction Permit CP25-014, issued January 26, 2026, and Significant Operating Permit Revision Application OP26M1-027, received June 9, 2026,</u>** including any supporting information received prior to issuance of this permit:

Control Equipment ID# and Description	Emission Unit Description	Applicable NSPS Requirements	Applicable NESHAP Requirements
Emission Point ID#: ~~EP-8-1, EP-8-2 and EP-8-3~~ <u>EP-8-4</u>			
~~C-1401: Fermentation Scrubber #1; installed in 1984 (EP-8-1);~~	~~EU-8.1: Fermentation Tank #1A, 77,251 gallons maximum capacity; installed in 1984~~	None	None
	~~EU-8.2: Fermentation Tank #1B, 77,251 gallons maximum capacity; installed in 1984~~		

~~C-21402: Fermentation Scrubber #2; installed in 1998 (EP-8-2); and~~ ~~C-31402: Fermentation Scrubber #3; installed in 2008 (EP-8-3)~~ **C-1404A: Fermentation Scrubber #4; installed in 2025 (EP-8-4)**	EU-8.3: Fermentation Tank #2A, 78,762 gallons maximum capacity; installed in 1984		
	EU-8.4: Fermentation Tank #2B, 78,762 gallons maximum capacity; installed in 1984		
	EU-8.5: Fermentation Tank #3A, 159,679 gallons maximum capacity; installed in 1984		
	EU-8.6: Fermentation Tank #3B, 159,679 gallons maximum capacity; installed in 1984		
	EU-8.7: Fermentation Tank #4A, 159,679 gallons maximum capacity; installed in 1984		
	EU-8.8: Fermentation Tank #4B, 159,679 gallons maximum capacity; installed in 1984		
	EU-8.9: Fermentation Tank #5A, 272,000 gallons maximum capacity; installed in 1992		
	EU-8.10: Fermentation Tank #5B, 272,000 gallons maximum capacity; installed in 1992		
	EU-8.11: Fermentation Tank #5C, 925,000 gallons maximum capacity; installed in 2006		
	EU-8.12: Fermentation Tank #6, 705,000 gallons maximum capacity; installed in 1998		
	EU-8.13: Beer Well Tank #7, 705,000 gallons maximum capacity; installed in 1998		
	EU-8.14: Fermentation Tank #5D, 925,000 gallons maximum capacity; installed in 2025		
Emission Point ID#: EP-CC-03			
N/A	**EU-CC-03: TEG Reboiler Still Vent; installed in 2025**	**None**	**None**
Emission Point ID#: EP-CC-FUG			
N/A	**EU-CC-01: CO_2 Compressor Rodpacking; installed in 2025**	**None**	**None**
	EU-CC-02: CO_2 Blowdown Vapors; installed in 2025		
	EU-CC-04: Equipment Leaks; installed in 2025		

Emission Point ID#: EP-9			
S-1501: Unit 1 Distillation Scrubber; installed in 1998 (1984 original)	EU-9.1: Unit 1 Beer Column; installed in 1984	None	None
	EU-9.2: Unit 1 Rectifying Column; installed in 1984		
	EU-9.3: Unit 1 Mole Sieve; installed in 1998		
Emission Point ID#: EP-10			
C-11533: Unit 2 Distillation Scrubber; installed in 1993	EU-10.1: Unit 2 Beer Column; installed in 1993	None	None
	EU-10.2: Unit 2 Rectifying Column; installed in 1993		
	EU-10.3: Unit 2 Stripper Column; installed in 1997		
	EU-10.4: Unit 2 Mole Sieve; installed in 1993		
	EU-10.5: Unit 3 Alcohol Column; installed in 2008		
	EU-10.6: Unit 3 Mole Sieve; installed in 2008		

(2) Emission Limitations and Testing Requirements:

(a) Pollutant emission rates from each emission point identified in the table below shall not exceed the permitted limits. Performance testing, if required, shall be conducted in accordance with Standard Condition I.(M).

Pollutant	Permitted Limit	Averaging Period	Basis for Permit Limit	Performance Testing Required
Emission Point ID#: ~~EP-8-1, EP-8-2, EP-8-3~~, EP-8-4, EP-9, EP-10, EP-CC-03, EP-CC-FUG				
VOC	8.30 lb/hr[1] (combined limit with EP-13	Three 1-hour test runs or test method average	**Construction Permit CP25-014, Condition III.(B)(2)(a), issued January 26, 2026;** **Construction Permit CP24-010, Condition III.(C)(2)(a); issued May 7, 2025** ~~Construction Permit CP20-012, Condition XIII.(F), issued August 18, 2020; Title 129, Chapter 4~~	Yes[2]
Acetaldehyde	2.15 lb/hr (combined limit with EP-13)	Three 1-hour test runs or test method average	**Construction Permit CP25-014, Condition III.(B)(2)(a), issued January 26, 2026;** **Construction Permit CP24-010, Condition III.(C)(2)(a); issued May 7, 2025**~~Construction Permit CP20-012, Condition XIII.(A), issued August 18, 2020~~	Yes[2]

[1] Expressed as mass of VOC.

[2] See Condition III.(B)(2)(b) for specific testing requirements.

(b) In order to demonstrate compliance with Condition III.(B)(**2**~~3~~)(a) ~~and to verify the assumptions used in the permit application~~, the source shall conduct performance tests for Acetaldehyde and VOC on emission points **EP-8-4,** ~~EP-8-1, EP-8-2, EP-8-3,~~ EP-9, and EP-10. The frequency of the testing shall be as follows: [**Title 129, Chapter 15, Section 005.01*; Title 129, Chapter 6, Section 003.03*;** Title 129, Chapter 15, Section 005.01; **Title 129,** Chapter 6, Section 003.03]:

(i) The first performance test shall be conducted during the third calendar quarter (July through September) in the calendar year of 2027.

(ii) The subsequent performance tests shall be conducted every two years

thereafter.

(iii) Performance testing shall be conducted during the third calendar quarter (July through September) each year testing is required.

(iv) Performance testing for Acetaldehyde and VOC required by this condition on the Fermentation Scrubbers (**EP-8-4** ~~EP-8-1, EP-8-2, and EP-8-3~~) and, Distillation Scrubbers (EP-9 and EP-10) shall be conducted concurrently (during the same testing period) with Acetaldehyde and VOC testing required by Condition III.(E)(2)(b) on the DDGS Dryer Scrubber (EP-13).

(v) Only one valid performance test may be conducted at each operating range when conducting performance tests on the Scrubber Control Systems (**EP-8-4**~~EP-8-1, EP-8-2, EP-8-3~~, EP-9, EP-10, and EP-13).

1. Subsequent performance tests may be conducted if the facility chooses to change any one or all operational parameters (chemical addition rate, type of chemical used, chemical concentration, and liquid flow rate) in order to demonstrate compliance with permitted limits.

(vi) Performance test port(s) for the exhaust from C-1404A shall be located prior to the connection to the carbon capture facility.

1. The test port(s) shall be representative of the entire flow of the gas from C-1404A.

(3) Operational and Monitoring Requirements:

~~(a) VOC and HAP emissions from the fermentation and distillation process (EU-8.1 through EU-8.13, EU-9.1 through EU-9.3, and EU-10.1 through EU-10.6) shall be controlled by a wet scrubber with chemical addition [C-1401, C-21402, C-31402, S-1501, and C-11533] (EP-8-1, EP-8-2, EP-8-3, EP-9, and EP-10) [Construction Permit CP20-012, Condition XIII.(F), issued August 18, 2020; Title 129, Chapter 4, Section 001; Chapter 6, Section 003.03].~~

~~(i) Chemical addition may not be required if the source demonstrates through performance testing in accordance with Condition I.(M) that chemical addition is not necessary to comply with the applicable VOC and HAP limitations.~~

(a) Operation and maintenance of fermentation scrubber C-1404A shall be in accordance with the following requirements [Construction Permit CP25-014, Condition III.(B)(3)(a), issued January 26, 2026; Title 129, Chapter 6, 003.03*: Title 129, Chapter 6, 003.03]:

(i) C-1404A, shall be operated and control emissions at all times when any of the associated emission units are in operation [Construction Permit CP25-014, Condition III.(B)(3)(a)(i), issued January 26, 2026].

1. The vapor stream from emission units EU-8.3, EU-8.4, EU-8.5, EU-8.6, EU-8.7, EU-8.8, EU-8.9, EU-8.10, EU-8.11, EU-8.12, EU-8.13, and EU-8.14 shall be controlled by C-1404A, regardless of whether the vapor stream is released to ambient air or routed elsewhere].

(ii) C-1404A shall be equipped with devices that continuously monitor and record the following operating parameters [Construction Permit CP25-014, Condition III.(B)(3)(b)(ii), issued January 26, 2026; Title 129, Chapter 6, 003.03*; Title 129, Chapter 6, 003.03]:

1. **Scrubbing liquid flow rate shall be monitored and recorded continuously;**
2. **Recirculation liquid flow rate shall be monitored and recorded continuously;**
3. **Chemical addition flow rate shall be monitored and recorded continuously, if utilized;**
4. **Scrubber pressure differential shall be monitored and recorded continuously;**
5. **Scrubbing liquid temperature shall be monitored and recorded continuously; and**
6. **Recirculation liquid inlet temperature shall be monitored and recorded continuously.**

(iii) When chemical addition is utilized, the total monthly amount of chemical, in gallons, added to C-1404A shall be monitored and recorded [Construction Permit CP25-014, Condition III.(B)(3)(a)(iii), issued January 26, 2026].

(iv) Upon request by DWEE personnel, chemical drawdown checks shall be performed to verify that the flow meter is working correctly [Construction Permit CP25-014, Condition III.(B)(3)(a)(iv), issued January 26, 2026].

(v) The following operating parameters of C-1404A shall be maintained as described below [Construction Permit CP25-014, Condition III.(B)(3)(v), issued January 26, 2026]:

1. **The scrubbing liquid temperature shall be maintained at or below the tested level(s) recorded during the most recent valid performance test under normal operating conditions.**

(vi) Observations at least once each day during daylight hours of scrubber operation shall be conducted to determine whether there are leaks, noise, or other indications that corrective action is necessary. If corrective action is necessary, it shall occur immediately [Construction Permit CP25-014, Condition III.(B)(3)(a)(vi), issued January 26, 2026].

(vii) Flow meters for recording scrubbing liquid, recirculation liquid, and chemical addition flow rates shall be maintained and calibrated according to manufacturer's instructions [Construction Permit CP25-014, Condition III.(B)(3)(a)(vii), issued January 26, 2026].

(viii) Flow meters for recording scrubbing liquid and chemical addition flow rates (if chemical addition is utilized) shall be maintained and calibrated according to manufacturer's instructions [Title 129, Chapter 6, Section 003.03*; Title 129, Chapter 6, Section 003.03].

(b) The source shall operate Fermentation Scrubbers C-1401A (EP 8-4) in accordance with the Fermentation Scrubber #4 Compliance Assurance Monitoring (CAM) Plan, submitted by the source on June 9, 2026. The CAM requirements include, but are not limited to, the following (See Attachment C) [40 CFR 64.6(c); Title 129, Chapter 6, Section 010*; Title 129, Chapter 6, Section 009]:

(i) CAM requirements for scrubber feed water flow rate:

1. **An exceedance is defined as a daily average scrubber feed water flow rate of less than the average gallon-per-minute (gpm) flow rate established during the most recent valid performance test.**

   A. **An exceedance triggers a response per 40 CFR 64.7(d) and reporting and recordkeeping per 40 CFR 64.9.**

2. **The scrubber feed water flow rate shall be measured continuously using a flow meter located in the scrubber feed water line.**

3. **The scrubber inlet flow meters shall each be calibrated at least annually.**

   A. **The acceptance criterion for scrubber inlet flow meter accuracy shall be no more than ± 5 percent of measured value.**

(ii) CAM requirements for re-circulation water flow rate:

1. **An exceedance is defined as a daily average scrubber re-circulation water flow rate of less than the average gallon-per-minute (gpm) flow rate established during the most recent valid performance test.**

   A. **An exceedance triggers a response per 40 CFR 64.7(d) and reporting and recordkeeping per 40 CFR 64.9.**

2. **The scrubber re-circulation water flow rate shall be measured continuously using a flow meter located in the scrubber re-circulation water line.**

3. **The scrubber re-circulation water flow meter shall each be calibrated at least annually.**

   A. **The acceptance criterion for scrubber re-circulation flow meter accuracy shall be no more than ± 5 percent of measured value.**

(iii) CAM requirements for scrubber feed water temperature:

1. **An exceedance is defined as a daily average scrubber feed water temperature of greater than the average temperature established during the most recent valid performance test.**

   A. **An exceedance triggers a response per 40 CFR 64.7(d) and reporting and recordkeeping per 40 CFR 64.9.**

2. **The scrubber feed water temperature shall be measured continuously using a thermocouple located in the scrubber feed water line.**

3. **The temperature thermocouple shall be calibrated at least annually.**

   A. **The acceptance criterion for thermocouple accuracy shall be no more than ± 5 percent of measured value.**

(iv) CAM requirements for scrubber recirculation water temperature:

1. **An exceedance is defined as a daily average scrubber recirculation water temperature of greater than the average temperature established during the most recent valid performance test.**

   A. **An exceedance triggers a response per 40 CFR 64.7(d) and reporting and recordkeeping per 40 CFR 64.9.**

2. The scrubber recirculation water temperature shall be measured continuously using a thermocouple located in the scrubber feed water line.

3. The temperature thermocouple shall be calibrated at least annually.

A. The acceptance criterion for thermocouple accuracy shall be no more than ± 5 percent of measured value.

(~~i~~v) The source shall comply with the obligations to conduct monitoring and fulfill other obligations as specified in 40 CFR 64.7 and 64.9.

~~(b) Operation and maintenance of the fermentation and distillation scrubbers (C-1401, C-21402, C-31402, S-1501, and C-11533) shall be in accordance with the following requirements [Construction Permit CP24-042, Condition XIII.(F), issued October 17, 2024; Title 129, Chapter 4, Section 001; Chapter 6, Section 003.03]:~~

~~(i) The scrubber shall be operated and be controlling emissions at all times when the associated emission units are in operation [Construction Permit CP24-042, Condition XIII.(F)(1), issued October 17, 2024; Title 129, Chapter 6, Section 003.03].~~

~~1. The vapor stream from the fermentation shall be controlled by scrubbers regardless of whether fermentation scrubber exhaust is vented to the atmosphere or routed elsewhere. [Construction Permit CP24-042, Condition XIII.(F)(1)(a), issued October 17, 2024]~~

~~(ii) The scrubber shall be properly designed, installed, operated and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection and maintenance of the scrubber shall be kept on site and readily available to NDWEE representatives [CP24-042, Condition XIII.(F)(2), issued October 17, 2024; Title 129, Chapter 6, Section 003.03].~~

~~(iii) The scrubber shall be equipped with devices capable of monitoring the following operating parameters in the manner described below [Construction Permit CP24-042, Condition XIII.(F)(4), issued October 17, 2024; Title 129, Chapter 6, Section 003.03].~~

~~1. Scrubbing liquid flow rate shall be monitored and recorded continuously;~~

~~2. Recirculation liquid flow rate shall be monitored and recorded continuously for Scrubber C-31402;~~

~~3. Chemical addition flow rate shall be monitored and recorded continuously if chemical addition is utilized;~~

~~4. Continuous pressure readings from each of the pressure devices installed on fermentation tanks #5A, #5B, #5C and the pressure device installed in the common fermentation header piping leading to Scrubber C-21402.~~

~~5. Scrubber inlet pressure shall be monitored and recorded continuously on the distillation scrubbers (S-1501 and C-11533).~~

~~6. Scrubber water temperature shall be monitored and recorded continuously for the fermentation scrubbers (C-1401, C-21402, and C-31402); and~~

~~7. Scrubber water temperature shall be monitored continuously and recorded once per day for the distillation scrubbers (S-1501 and C-11533).~~

8. Recirculation water inlet temperature shall be monitored and recorded continuously for fermentation scrubber C-31402;

(iv) If chemical addition is utilized the total monthly amount of chemical, in gallons, added to the scrubber shall be monitored and recorded by the source [Title 129, Chapter 6, Section 003.03].

(v) If chemical addition is utilized, chemical draw-down checks shall be performed upon request by NDWEE personnel to verify that the flow meter is working correctly [Title 129, Chapter 6, Section 003.03].

(vi) The scrubber operating parameters shall be maintained at the levels recorded during the most recent valid performance test conducted at the facility [Title 129, Chapter 6, Section 003.03].

1. The fermentation scrubbing (C-1401, C-21402, and C-31402) liquid temperatures and recirculation liquid temperatures for C-31402, "shall be maintained at the levels recorded during the most recent valid performance test" shall mean at or below the tested level(s) under normal operating conditions.

2. The distillation scrubber (S-1501 and C-11533) liquid shall be composed of only well water to ensure consistent liquid temperature. In the event the source uses an alternate scrubber liquid or scrubber liquid recirculation; compliance testing may be required to determine an appropriate scrubber liquid temperature and/or percent recirculation.

3. The scrubbing liquid flow rate, recirculation flow rate for C-31402, flow rate of chemical additions (if chemical addition is utilized), and concentration of the chemical injected (if chemical addition is utilized) into the scrubber shall be maintained at or above the levels recorded during testing. Chemical concentration, as documented by the supplier, shall be recorded upon use of the chemical.

(vii) Observations at least once each day during daylight hours of scrubber operation shall be conducted to determine whether there are atypical operating parameters, visible leaks, noise, or other indications that corrective action is necessary. If corrective action is necessary, it shall occur immediately [Construction Permit CP24-042, Condition XIII.(F)(3), issued October 17, 2024; Title 129, Chapter 6, Section 003.03].

(viii) Flow meters for recording scrubbing liquid and chemical addition flow rates (if chemical addition is utilized) shall be maintained and calibrated according to manufacturer's instructions [Title 129, Chapter 6, Section 003.03].

(c) The source shall operate Fermentation Scrubbers C-1401 (EP 8-1), C-21402 (EP 8-2), and C-31402 (EP 8-3) in accordance with the Fermentation Scrubber #1, #2, and #3 Compliance Assurance Monitoring (CAM) Plans, submitted by the source on February 26, 2025. The CAM requirements include, but are not limited to, the following (See Attachments C, D, and E) [40 CFR 64.6(c); Title 129, Chapter 6, Section 010]:

(i) CAM requirements for scrubber feed water flow rate:

1. An exceedance is defined as a daily average scrubber feed water flow rate of less than the average gallon-per-minute (gpm) flow rate established during the most recent valid performance test.

~~A. An exceedance triggers a response per 40 CFR 64.7(d) and reporting and recordkeeping per 40 CFR 64.9.~~

~~2. The scrubber feed water flow rate shall be measured continuously using a flow meter located in the scrubber feed water line.~~

~~3. The scrubber inlet flow meters shall each be calibrated at least annually.~~

~~A. The acceptance criterion for scrubber inlet flow meter accuracy shall be no more than ± 5 percent of measured value.~~

~~(ii) CAM requirements for re-circulation water flow rate:~~

~~1. An exceedance is defined as a daily average scrubber re-circulation water flow rate of less than the average gallon-per-minute (gpm) flow rate established during the most recent valid performance test.~~

~~A. An exceedance triggers a response per 40 CFR 64.7(d) and reporting and recordkeeping per 40 CFR 64.9.~~

~~2. The scrubber re-circulation water flow rate shall be measured continuously using a flow meter located in the scrubber re-circulation water line.~~

~~3. The scrubber re-circulation water flow meter shall each be calibrated at least annually.~~

~~A. The acceptance criterion for scrubber re-circulation flow meter accuracy shall be no more than ± 5 percent of measured value.~~

~~(iii) CAM requirements for scrubber feed water temperature:~~

~~1. An exceedance is defined as a daily average scrubber feed water temperature of greater than the average temperature established during the most recent valid performance test.~~

~~A. An exceedance triggers a response per 40 CFR 64.7(d) and reporting and recordkeeping per 40 CFR 64.9.~~

~~2. The scrubber feed water temperature shall be measured continuously using a thermocouple located in the scrubber feed water line.~~

~~3. The temperature thermocouple shall be calibrated at least annually.~~

~~A. The acceptance criterion for thermocouple accuracy shall be no more than ± 5 percent of measured value.~~

~~(iv) The source shall comply with the obligations to conduct monitoring and fulfill other obligations as specified in 40 CFR 64.7 and 64.9.~~

(c) Operation and maintenance of distillation scrubbers S-1501 and C-11533 shall be in accordance with the following requirements [Construction Permit CP24-010, Condition III.(C)(3)(a), issued May 7, 2025; Title 129, Chapter 6, 003.03*; Title 129, Chapter 6, 003.03]:

(i) S-1501 and C-11533 shall be operated and control emissions at all times when any of the associated emission units are in operation [Construction Permit CP24-010, Condition III.(C)(3)(a)(i), issued May 7, 2025].

(ii) S-1501 and C-11533 shall be equipped with devices that continuously monitor and record the following operating parameters in the manner described below; except as noted [Construction Permit CP24-010,

Condition III.(C)(3)(a)(ii), issued May 7, 2025; Title 129, Chapter 6, 003.03*; Title 129, Chapter 6, 003.03]:

1. **Scrubbing liquid flow rate shall be monitored and recorded continuously;**
2. **Chemical addition flow rate, if utilized, shall be monitored and recorded continuously;**
3. **Scrubber inlet pressure shall be monitored and recorded continuously; and**
4. **Scrubbing liquid temperature shall be continuously monitored and recorded once per day.**

(iii) When chemical addition is utilized, the total monthly amount of chemical, in gallons, added to S-1501 and C-11533 shall be monitored and recorded [Construction Permit CP24-010, Condition III.(C)(3)(a)(iii), issued May 7, 2025].

(iv) Upon request by DWEE personnel, chemical drawdown checks shall be performed to verify that the flow meter is working correctly [Construction Permit CP24-010, Condition III.(C)(3)(a)(iv), issued May 7, 2025].

(v) The following operating parameters of S-1501 and C-11533 shall be maintained as described below [Construction Permit CP24-010, Condition III.(C)(3)(a)(v), issued May 7, 2025]:

1. **Scrubber liquid shall be comprised of only well water to ensure consistent liquid temperature. In the event that the owner or operator uses an alternate scrubber liquid source, or scrubber liquid recirculation, compliance testing may be required to determine an appropriate scrubber liquid temperature and/or percent recirculation limit.**
2. **The scrubbing liquid flow rate, flow rate of chemical additions, and concentration of the chemical injected into the scrubber shall be maintained at or above the levels recorded during testing. Chemical concentration, as documented by the supplier, shall be recorded upon use of the chemical.**

(vi) Observations at least once each day during daylight hours of scrubber operation shall be conducted to determine whether there are leaks, noise, or other indications that corrective action is necessary. If corrective action is necessary, it shall occur immediately [Construction Permit CP24-010, Condition III.(C)(3)(a)(vi), issued May 7, 2025].

(vii) Flow meters for recording scrubbing liquid and chemical addition flow rates shall be maintained and calibrated according to manufacturer's instructions [Construction Permit CP24-010, Condition III.(C)(3)(a)(vii), issued May 7, 2025].

(d) Except for applicable requirements prescribed in Conditions I and II, this condition establishes no additional specific operational or monitoring requirements for emission points EP-CC-03 and EP-CC-FUG in Condition III.(B)(1).

(4) Recordkeeping and Reporting Requirements:

(a) The source shall maintain the following records for fermentation scrubber C-1404A [Construction Permit CP25-014, Condition III.(B)(5), issued January 26, 2026]:

(i) The source shall maintain records that document the continuously monitored operating parameter data for C-1404A, including the date and time of the readings. The records shall include: [Construction Permit CP25-014, Condition III.(B)(5)(a), issued January 26, 2026]:

1. Scrubbing liquid flow rate [Construction Permit CP25-014, Condition III.(B)(5)(a)(i), issued January 26, 2026];

2. Recirculation liquid flow rate [Construction Permit CP25-014, Condition III.(B)(5)(a)(ii), issued January 26, 2026];

3. Chemical addition flow rate, if utilized [Construction Permit CP25-014, Condition III.(B)(5)(a)(iii), issued January 26, 2026];

4. Scrubber pressure differential [Construction Permit CP25-014, Condition III.(B)(5)(a)(v), issued January 26, 2026];

5. Scrubbing liquid temperature readings [Construction Permit CP25-014, Condition III.(B)(5)(vi), issued January 26, 2026];

6. Recirculation liquid inlet temperature [Construction Permit CP25-014, Condition III.(B)(5)(vii), issued January 26, 2026].

(ii) Monthly records that document the purchase date, concentration, amount, and type of chemical purchased for chemical injection associated with C-1404A [Construction Permit CP25-014, Condition III.(B)(5)(b), issued January 26, 2026].

(iii) Records that document the operating parameters developed during the most recent valid performance test conducted at the facility [Construction Permit CP25-014, Condition III.(B)(5)(c), issued January 26, 2026].

(iv) Records that document the date and time of routine observations with a description, including operating parameters, atypical parameters observed, and any corrective actions taken, for each day C-1404A is in operation [Construction Permit CP25-014, Condition III.(B)(5)(d), issued January 26, 2026].

(v) Records that document corrective action. Each corrective action shall be documented at time of occurrence, including the date, time, observations, and a description of the corrective action [Construction Permit CP25-014, Condition III.(B)(5)(e), issued January 26, 2026].

(vi) Records that document the date and time of routine maintenance and preventive actions performed and that include a description of the actions performed. [Construction Permit CP25-014, Condition III.(B)(5)(f), issued January 26, 2026].

~~(a) The source shall maintain the following records for the scrubbers (C-1401, C-21402, C-31402, S-1501, and C-11533) [Construction Permit CP20-012,~~

~~Condition XIII.(L)(7), issued August 18, 2020; Title 129, Chapter 6, Section 003.03].~~

~~(i) Records documenting date and time of routine observations with a description, including operating parameters (e.g. pressure readings, scrubbant flow rates), atypical parameters observed, and any corrective actions taken, for each day the scrubber (C-1401, C-21402, C-31402, S-1501, and C-11533) is in operation [Title 129, Chapter 6, Section 003.03].~~

~~(ii) Records documenting equipment failures, malfunctions, or other variations, including time of occurrence, remedial action taken, and when corrections were made to the scrubber (C-1401, C-21402, C-31402, S-1501, and C-11533) [Construction Permit CP20-012, Condition XIII.(L)(7)(b), issued August 18, 2020].~~

~~(iii) Records documenting when routine maintenance and corrective actions were performed with a description of the maintenance and/or corrective action performed [Construction Permit CP20-012, Condition XIII.(L)(7)(a), issued August 18, 2020].~~

(b) The source shall maintain the following records for distillation scrubbers S-1501 and C-11533 [Construction Permit CP24-010, Condition III.(C)(5), issued May 7, 2025]:

(i) Records that document the continuously monitored operating parameter data for S-1501 and C-11533, including the date and time of the readings, except as noted. The records shall include: [Construction Permit CP24-010, Condition III.(C)(5)(a), issued May 7, 2025]:

1. Scrubbing liquid flow rate [Construction Permit CP24-010, Condition III.(C)(5)(a)(i), issued May 7, 2025];

2. Chemical addition flow rate [Construction Permit CP24-010, Condition III.(C)(5)(a)(ii), issued May 7, 2025];

3. Scrubber inlet pressure readings [Construction Permit CP24-010, Condition III.(C)(5)(a)(iii), issued May 7, 2025]; and

4. Daily scrubbing liquid temperature readings [Construction Permit CP24-010, Condition III.(C)(5)(a)(iv), issued May 7, 2025].

(ii) Monthly records that document the purchase date, concentration, amount, and type of chemical purchased for chemical injection associated with S-1501 and C-11533. [Construction Permit CP24-010, Condition III.(C)(5)(b), issued May 7, 2025].

(iii) Records that document the operating parameters developed during the most recent valid performance test conducted at the facility. [Construction Permit CP24-010, Condition III.(C)(5)(c), issued May 7, 2025].

(iv) Records that document the date and time of routine observations with a description, including operating parameters, atypical parameters observed, and any corrective actions taken, for each day S-1501 and C-

11533 are in operation. [Construction Permit CP24-010, Condition III.(C)(5)(d), issued May 7, 2025].

(v) Records that document corrective action. Each corrective action shall be documented at time of occurrence, including the date, time, observations, and a description of the corrective action. [Construction Permit CP24-010, Condition III.(C)(5)(e), issued May 7, 2025].

(vi) Records that document the date and time of routine maintenance and preventive actions performed and that include a description of the actions performed. [Construction Permit CP24-010, Condition III.(C)(5)(f), issued May 7, 2025].

~~(b) The source shall keep inspection and maintenance records for the scrubber (C-1401, C-21402, C-31402, S-1501, and C-11533), to demonstrate compliance with Condition III.(B)(4)(b), which shall include the following: [Title 129, Chapter 6, Section 003.03]~~

~~(i) Records that document the operating parameter data for the scrubber (C-1401, C-21402, C-31402, S-1501, and C-11533), including the date and time of the readings. The records shall include:~~

~~1. Continuous scrubbing liquid flow rate data;~~

~~2. Continuous chemical addition flow rate data if chemical addition is utilized;~~

~~3. Continuous scrubber liquid temperature readings for the fermentation scrubbers (C-1401, C-21402, and C-31402).~~

~~4. Distillation scrubber (S-1501 and C-11533) liquid temperatures shall be recorded once per day;~~

~~5. Continuous pressure readings from each of the pressure devices installed on Fermentation tanks #5A, #5B, #5C and the pressure device installed in the common fermentation header piping leading to Scrubber C-21402; and~~

~~6. Continuous inlet pressure readings on distillation scrubbers S-1501 and C-11533.~~

~~(ii) Monthly records that document the amount, concentration, and type of chemical injected into the water supplied to the scrubber if chemical addition is utilized.~~

~~(iii) Monthly records that document the purchase date, concentration, amount, and type of chemical purchased for chemical injection associated with the scrubber if chemical addition is utilized.~~

(c) The source shall keep records of any yeast strains and/or enzyme changes, including the name or identifier of the yeast strain/enzyme and the date the change occurred [Title 129, Chapter 6, Section 003.11***; Title 129, Chapter 6, Section 003.11**].

(d) The source shall maintain the following CAM-related records **for fermenter scrubber C-1404A** [40 CFR 64.9; Title 129, Chapter 6, Section 010***; Title 129, Chapter 6, Section 009**]:

(i) Records of all CAM exceedances.

(ii) Records of all corrective actions taken in response to CAM excursions.

(iii) The Scrubber feed water flow rate shall be recorded at least once every fifteen minutes.

1. A daily average of readings shall be calculated and recorded.

(iv) The re-circulation water flow rate shall be recorded at least once every fifteen minutes.

1. A daily average of readings shall be calculated and recorded.

(v) The Scrubber feed water temperature shall be recorded at least once every fifteen minutes.

1. A daily average of readings shall be calculated and recorded.

(vi) All reporting and recordkeeping as required by 40 CFR 64.9.

(e) Except for applicable requirements prescribed in Conditions I and II, this condition establishes no additional specific recordkeeping or reporting requirements for emission points EP-CC-03 and EP-CC-FUG in Condition III.(B)(1).

The source is requesting that operating permit OP25R1-004, issued August 29, 2025, be revised to accommodate changes associated with the Scrubber Addition for Carbon Capture Project and the Fermenter Addition Project, which were permitted under construction permits CP24-010 and CP25-014. These projects include the removal of the three (3) existing fermentation scrubbers; installation of a new fermentation scrubber; removal of two (2) existing fermenters; installation of a new fermenter; and construction of a new carbon capture facility that is located adjacent to the existing Chief facility operated as CC Hastings Capture Company, LLC.

Condition III.(B) was also updated to include the combined acetaldehyde and combined VOC limits for emission points EP-8-4, EP-CC-003, EP-CC-FUG EP-8-1, EP-8-2, EP-8-3, EP-9, and EP-10

III. REVISED SPECIFIC PERMIT CONDITIONS:

(E) Specific Conditions for DDGS Conveyance, Drying, Storage, and Loadout

(1) Permitted Emission Points:

(a) The following table identifies emission points, emission units, permitted capacities, permitted fuel types, required control equipment the source must operate, and applicable standards at the source at the time of permit issuance, in accordance with operating permit ~~application~~ OP25R1-004, **issued September 2, 2025,** ~~received January 28, 2025,~~ ~~Construction Permit CP20-012, issued August 18, 2020~~, **Construction Permit CP24-010 issued May 7, 2025**~~Construction Permit CP24-042, issued October 17, 2024~~, **Construction Permit CP25-030 issued July 6, 2026, and Significant Operating Permit Revision Application OP26M1-027, received June 9, 2026,** including any supporting information received prior to issuance of this permit:

Control Equipment ID# and Description	Emission Unit Description	Applicable NSPS Requirements	Applicable NESHAP Requirements
Emission Point ID#: EP-11			
F-6201: A&B DDGS Transfer Baghouse; installed in 2014 (1984 original)	EU-11.1: A Dryer DDGS Transfer, 100 tons/day (est.); installed in 1984	None	None
	EU-11.2: B Dryer DDGS Transfer, 100 tons/day (est.); installed in 1984		
Emission Point ID#: EP-13			
C-11801: Dryer Scrubber; installed in 1993 (1984 Original)	EU-13.1: A Dryer, Rotary Steam Disk, 100 tons/day (est.); installed in 2015	None	None
	EU-13.3: B Dryer, Rotary Steam Disk, 100 tons/day (est.); installed in 1993		
Emission Point ID#: EP-20			
N/A	EU-20.1: DDGS Loadout, 50 tons/hr; installed in 1984	None	None
Emission Point ID#: EP-32-1			
N/A	EU-32.1: West WDGS Storage & Loadout	None	None
Emission Point ID#: EP-32-2			
N/A	EU-32-2: North WDGS Storage & Loadout	None	None

(2) Emission Limitations and Testing Requirements:

(a) Pollutant emission rates from each emission point identified in the table below shall not exceed the permitted limits. Performance testing, if required, shall be conducted in accordance with Standard Condition I.(M).

Pollutant	Permitted Limit	Averaging Period	Basis for Permit Limit	Performance Testing Required
Emission Point ID#: EP-11				
PM (Filterable)	4.33 lb/hr (combined limit with EP-1, EP-2, and EP-3)	Three 1-hour test runs or test method average	**Title 129, Chapter 6, Section 003.13*; Title 129, Chapter 3*; Title 129, Chapter 6, Section 003.13** ~~Construction Permit CP20-012, Condition XIII.(E), issued August 18, 2020~~; Title 129, Chapter **3**~~4~~	No
PM_{10}	4.33 lb/hr (combined limit with EP-1, EP-2, and EP-3)	Three 1-hour test runs or test method average	**Title 129, Chapter 6, Section 003.13*; Title 129, Chapter 4*; Title 129, Chapter 6, Section 003.13** ~~Construction Permit CP20-012, Condition XIII.(E), issued August 18, 2020~~; Title 129, Chapter **3**~~4~~	No
Opacity	< 20 Percent[1]	6 Minutes	**Title 129, Chapter 15, Section 001.04*;** Title 129, Chapter 15, Section 001.04	No
Emission Point ID#: EP-13				
VOC	8.30 lb/hr (combined limit with **EP-8-4, EP-CC-003, EP-CC-FUG** ~~EP-8-1, EP-8-2, EP-8-3~~, EP-9, and EP-10)[2]	Three 1-hour test runs or test method average	**Construction Permit CP24-010, Condition III.(D)(2)(a), issued May 7, 2025** ~~CP20-012, Condition XIII.(F), issued August 18, 2020;Title 129, Chapter 4~~	Yes[3]
Acetaldehyde	2.15 lb/hr (combined limit with **EP-8-4, EP-CC-003, EP-CC-FUG** ~~EP-8-1, EP-8-2, EP-8-3~~, EP-9, and EP-10)	Three 1-hour test runs or test method average	**Construction Permit CP24-010, Condition III.(D)(2)(a), issued May 7, 2025** ~~Construction Permit CP20-012, Condition XIII.(A), issued August 18, 2020; Title 129, Chapter 4~~	Yes[3]
Opacity	< 20 Percent[1]	6 Minutes	**Title 129, Chapter 15, Section 001.04*;** Title 129, Chapter 15, Section 001.04	No

[1] Compliance with Condition III.(E)(3)(d) demonstrates compliance with the Opacity limitation.
[2] Expressed as mass of VOC.
[3] Performance testing shall be conducted in accordance with Condition III.(E)(2)(b) for VOCs and Acetaldehyde.

(b) In order to demonstrate compliance with Condition III.(E)(2)(a) and to verify the assumptions used in the permit application, the source shall conduct performance tests for Acetaldehyde and VOC on the DDGS Dryer Scrubber (EP-13). VOC emissions shall be expressed as weight of VOC. The frequency of the testing shall be as follows [**Title 129, Chapter 15, Section 005.01*; Title 129, Chapter 6, Section 003.03*;** Title 129, Chapter 15, Section 005.01; **Title 129,** Chapter 6, Section 003.03]:

(i) Performance testing for Acetaldehyde and VOC required by this condition shall be conducted concurrently (during the same testing period) with Acetaldehyde and VOC testing required for emission points **EP-8-4** ~~EP-8-1, EP-8-2, EP-8-3~~, EP-9, and EP-10 per Conditions III.(B)(2)(b)(ii)**,** ~~and~~ (iii) **and (iv)** [Title 129, Chapter 15, Section 005***; Title 129, Chapter 15, Section 005**].

(3) Operational and Monitoring Requirements:

(a) PM/PM_{10} emissions from the DDGS conveying and storage (EP-11) shall be controlled using a baghouse (F-6201) [**Construction Permit CP25-030, Condition III.(F)(3)(a), issued July 6, 2026**~~Construction Permit CP20-012, Condition XIII.(E)(1), issued August 18, 2020; Title 129, Chapter 4, Section 001*~~].

(b) VOC emissions from the DDGS drying operations (EU-13.1, and EU-13.3) shall be controlled by a scrubber (C-11801). Operation of the scrubber shall be in accordance with the following requirements: [**Construction Permit CP24-010, Condition III.(D)(3)(a), issued May 7, 2025**~~Construction Permit CP24-042, Condition XIII.(F), issued October 17, 2024; Title 129, Chapter 4, Section 001*;~~ **Title 129,** Chapter 6, Section 003.03***; Title 129, Chapter 6, Section 003.03**]

(i) The scrubber shall be operated and be controlling emissions at all times when the associated emission units are in operation. [**Construction Permit CP24-010, Condition III.(D)(3)(a)(i), issued May 7, 2025**~~Construction Permit CP24-042, Condition XIII.(F)(1), issued October 17, 2024; Title 129, Chapter 4, Section 001 Chapter 6, Section 003.03~~]

(ii) The scrubber shall be properly designed, installed, operated and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection and maintenance of the scrubber shall be kept on site and readily available to ~~N~~DWEE representatives [~~Construction Permit CP24-042, Condition XIII.(F)(2), issued October 17, 2024~~; Title 129, Chapter 6, Section 003.03***; Title 129, Chapter 6, Section 003.03**].

(iii) The scrubber shall be equipped with devices capable of monitoring the following operating parameters in the manner described below [**Construction Permit CP24-010, Condition III.(D)(3)(a)(ii), issued May 7, 2025**~~Construction Permit CP24-042, Condition XIII.(F)(4), issued October 17, 2024~~; Title 129, Chapter 6, Section 003.03***; Title 129, Chapter 6, Section 003.03**].

1. Scrubbing liquid flow rate and recirculation liquid flow rate shall each be monitored and recorded continuously;

2. Chemical addition flow rate shall be monitored and recorded continuously if chemical addition is utilized;

3. Scrubber inlet pressure shall be monitored and recorded continuously; and,

4. Scrubbing recirculation liquid temperature shall be monitored and recorded continuously.

(iv) If chemical addition is utilized the total monthly amount of chemical, in gallons, added to the scrubber shall be monitored and recorded by the source [**Construction Permit CP24-010, Condition III.(D)(3)(a)(iii), issued May 7, 2025;** Title 129, Chapter 6, Section 003.03***; Title 129, Chapter 6, Section 003.03**] .

(v) If chemical addition is utilized, chemical draw down checks shall be performed upon request by ~~N~~DWEE personnel to verify that the flow meter is working correctly [**Construction Permit CP24-010, Condition III.(D)(3)(a)(iv), issued May 7, 2025** ~~Title 129, Chapter 6, Section 003.03~~].

(vi) The scrubber operating parameters shall be maintained **as described** below ~~at the levels recorded during the most recent valid performance test conducted at the facility~~ [**Construction Permit CP24-010, Condition III.(D)(3)(a)(v), issued May 7, 2025;** Title 129, Chapter 6, Section 003.03***; Title 129, Chapter 6, Section 003.03**].

1. **The scrubbing recirculation liquid temperature shall be maintained at the levels recorded during the most recent valid performance test**, **which** ~~The scrubbing recirculation liquid temperature, "shall be maintained at the levels recorded during the most recent valid performance test"~~ shall mean at or below the tested level(s) under normal operating conditions.

2. The scrubbing liquid flow rates, recirculation liquid flow rates, flow rate of chemical additions (if chemical addition is utilized), and concentration of the chemical injected (if chemical addition is utilized) into the scrubber shall be maintained at or above the levels recorded during testing. Chemical concentration, as documented by the supplier, shall be recorded upon use of the chemical.

(vii) Observations at least once each day during daylight hours of scrubber operation shall be conducted to determine whether there are atypical operating parameters, visible leaks, noise, or other indications that corrective action is necessary. If corrective action is necessary, it shall occur immediately [**Construction Permit CP24-010, Condition III.(D)(3)(a)(vi), issued May 7, 2025**~~Construction Permit CP24-042, Condition XIII.(F)(3), issued October 17, 2024~~; Title 129, Chapter 6, Section 003.03***; Title 129, Chapter 6, Section 003.03**]].

(viii) Flow meters for recording scrubbing liquid, recirculation liquid, and chemical addition flow rates (if chemical addition is utilized) shall be maintained and calibrated according to manufacturer's instructions [**Construction Permit CP24-010, Condition III.(D)(3)(a)(vii);** Title 129, Chapter 6, Section 003.03***; Title 129, Chapter 6, Section 003.03**].

(c) The operation of the baghouse (F-6201) shall be in accordance with the following

requirements~~:~~ [**Construction Permit CP25-030, Condition III.(F)(3)(b), issued July 6, 2026; Title 129, Chapter 6, Section 003.13***~~Construction Permit CP20-012, Condition XIII.(E)(2), issued August 18, 2020~~; ~~Title 129, Chapter 15, Section 005~~**; Title 129, Chapter 6, Section 003.13**]:

(i) The baghouse shall be operated at all times the associated equipment is in operation.

(ii) The baghouse shall be properly installed, operated, and maintained. Manufacturer's instructions, if available, shall be kept on site and readily available to ~~N~~DWEE representatives.

(iii) The baghouse shall be equipped with an operational pressure differential indicator. The pressure differential indicator readings shall be recorded at least once each day that the associated baghouse is operating. The pressure indicator shall be properly installed, operated, calibrated, and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection, and maintenance of the equipment shall be kept on site and readily available to ~~N~~DWEE representatives.

(iv) Routine observations (at least once each day of baghouse operation) shall be conducted to determine whether there are visible emissions from the stack, leaks or noise, atypical pressure differential readings, or other indicators, which may necessitate corrective action. Corrective action shall be taken immediately if necessary.

(v) Collected waste material from the baghouse shall be handled, transported, and stored in a manner that ensures compliance with Condition I.(L).

(vi) Baghouse filter bags are to be inspected and/or replaced according to the operation and maintenance manual or more frequently as indicated by pressure differential indicator readings or other indication of bag failure.

(d) A source representative shall conduct visible emissions surveys for emission point EP-11 on a daily basis. These surveys shall be conducted during daylight hours while each emission unit is operating under normal conditions [Title 129, Chapter 6, Section 003.03***; ~~Chapter 15, Section 001.04~~* Title 129, Chapter 6, Section 003.03**].

(i) For deviation reporting purposes, visible emissions (excluding water vapor) from any emission point shall be considered a deviation and shall be reported in accordance with Condition II.(A).

(4) Recordkeeping and Reporting Requirements:

(a) The source shall maintain the following records for the scrubber (C-11801) [**Construction Permit CP24-010, Condition III.(D)(5), issued May 7, 2025**~~Construction Permit CP20-012, Condition XIII.(L)(7), issued August 18, 2020;~~ Title 129, Chapter 6, Section 003.03***; Title 129, Chapter 6, Section 003.03**]:

(i) Records that document the operating parameters developed during the most recent valid performance test conducted at the facility [Construction Permit CP24-010, Condition III.(D)(5)(c), issued May 7, 2025]

(i**i**) Records documenting date and time of routine observations with a

description, including operating parameters (e.g. pressure readings, scrubbant flow rates), atypical parameters observed, and any corrective actions taken, for each day the scrubber (C-11801) is in operation [**Construction Permit CP24-010, Condition III.(D)(5)(d), issued May 7, 2025;** Title 129, Chapter 6, Section 003.03***; Title 129, Chapter 6, Section 003.03**].

(ii**i**) Records documenting equipment failures, malfunctions, or other variations, including **date and** time of occurrence, **observations,** remedial action taken, and when corrections were made to the scrubber (C-11801) [**Construction Permit CP24-010, Condition III.(D)(5)(e), issued May 7, 2025;** ~~Construction Permit CP20-012, Condition XIII.(L)(7)(b), issued August 18, 2020~~ **Title 129, Chapter 6, Section 003.03*; Title 129, Chapter 6, Section 003.03**].

(**iv**~~iii~~) Records documenting **the date and time** when routine maintenance and corrective actions were performed with a description of the maintenance and/or corrective action performed [**Construction Permit CP24-010, Condition III.(D)(5)(f), issued May 7, 2025** ~~Construction Permit CP20-012, Condition XIII.(L)(7)(a), issued August 18, 2020~~].

~~(b) The source shall keep inspection and maintenance records for the scrubber (C-11801), to demonstrate compliance with Condition III.(E)(4)(b), which shall include the following: [Title 129, Chapter 6, Section 003.03]~~

(**v**) Records that document the operating parameter data for the scrubber (C-11801), including the date and time of the readings. The records shall include **[Construction Permit CP24-010, Condition III.(D)(5)(a), issued May 7, 2025; Title 129, Chapter 6, Section 003.03*; Title 129, Chapter 6, Section 003.03**]:

1. Continuous scrubbing liquid flow rate and recirculation liquid flow rate data;
2. Continuous chemical addition flow rate data if chemical addition is utilized;
3. Continuous scrubber recirculation liquid temperature readings; and
4. Continuous inlet pressure readings.

(**vi**~~ii~~) If chemical addition is utilized, monthly records that document the amount, concentration, and type of chemical injected into the water supplied to the scrubber. **[Construction Permit CP24-010, Condition III.(D)(5)(b), issued May 7, 2025;**

(**vii**~~iii~~) If chemical addition is utilized, monthly records that document the purchase date, concentration, amount, and type of chemical purchased for chemical injection associated with the scrubber. **[Construction Permit CP24-010, Condition III.(D)(5)(b), issued May 7, 2025]**

(c) Inspection and maintenance records for the baghouse (F-6201), to demonstrate compliance with Condition III.(E)(3)(**c**~~d~~) shall include the following~~:~~ [**Construction Permit CP25-030, Condition III.(F)(5)(b), issued July 6, 2026; Title 129, Chapter 6, Section 003.03*; Title 129, Chapter 6, Section 003.03**]~~Construction Permit CP20-012, Condition XIII.(L)(6), issued August 18, 2020~~]**:**

(i) Records documenting when routine observations were performed with a description including pressure differential readings and any atypical observations.

(ii) Records documenting when routine maintenance and corrective actions were performed with a description of the maintenance and/or corrective action performed.

(iii) Records documenting the date, time, and pressure differential reading for each day the baghouse is in operation.

(iv) Filter replacement records including filter type, and date of filter installation.

(v) Records documenting equipment failures, malfunctions, or other variations, including time of occurrence, remedial action taken, and when corrections were made.

(d) The results of each visible emissions survey for ~~each~~ emission point (EP-11) shall be recorded in a log, which shall include, at a minimum, the following items [Title 129, Chapter 6, Section 003.03**; Title 129, Chapter 6, Section 003.03**]:

(i) The emission points included in the survey.

(ii) All emission points from which visible emissions occurred (except for water vapor).

(iii) Emission points for which the emission units were not in operation during the survey.

(iv) Each survey shall be dated and initialed by the person conducting the visible emissions survey.

The source is requesting that operating permit OP25R1-004, issued August 29, 2025, be revised to accommodate changes associated with the Scrubber Addition for Carbon Capture Project and the Fermenter Addition Project, which were permitted under construction permits CP24-010 and CP25-014. These projects include the removal of the three (3) existing fermentation scrubbers; installation of a new fermentation scrubber; removal of two (2) existing fermenters; installation of a new fermenter; and construction of a new carbon capture facility that is located adjacent to the existing Chief facility operated as CC Hastings Capture Company, LLC.

Condition III.(E) was updated to include the combined acetaldehyde and combined VOC limits for emission points EP-8-4, EP-CC-003, EP-CC-FUG EP-8-1, EP-8-2, EP-8-3, EP-9, and EP-10

Construction Permit CP24-010 Conditions XIII.(E) and XIII.(L)(6) were superseded by Construction Permit CP25-030, which was issued in July 2026, and operating permit Condition III.(E) was updated to include these changes by referencing Title 129, Chapter 6 rather than CP24-010. As the group limit including EP-11 was also changed, but the additional emission points have not yet been constructed, the permitted emission limit for PM for EP-11 was left unchanged and Title 129, Chapter 6 was referenced rather than CP24-010.

III. SPECIFIC CONDITIONS FOR AFFECTED EMISSION POINTS:

(F) Specific Conditions for Equipment Leaks

(1) Permitted Emission Points:

(a) The following table identifies emission points, emission units, permitted capacities, permitted fuel types, required control equipment the source must operate, and applicable standards at the source at the time of permit issuance, in accordance with **operating permit OP25R1-004, issued September 2, 2025, Construction Permit CP25-014 issued January 26, 2026, and Significant Operating Permit Revision Application OP26M1-027, received June 9, 2026**~~operating permit application OP25R1-004, received January 28, 2025, and Construction Permit CP20-012, issued August 18, 2020~~, including any supporting information received prior to issuance of this permit:

Control Equipment ID# and Description	Emission Unit Description	Applicable NSPS Requirements	Applicable NESHAP Requirements
Emission Point ID#: EP-24			
None	Each applicable valve, pump, compressor, pressure relief device, sampling connection system, open-ended valve or line, flange, or other connector in VOC service and any device or system required by NSPS Subpart VV located throughout the ethanol plant	40 CFR Part 60, Subpart A; Title 129, Chapter 12, Section 001.01***; Title 129, Chapter 12, Section 001.01**	None
		40 CFR Part 60, Subpart VV; Title 129, Chapter 12, Section 001.50***; Title 129, Chapter 12, Section 001.50**	None

(2) Emission Limitations and Testing Requirements:

(a) The source shall comply with all applicable emission limitations and testing requirements in NSPS Subpart VV for emission point EP-24 [40 CFR 60 Subparts A and VV; Construction Permit **CP25-014** ~~CP20-012~~, Condition **III.(E)(2), issued January 26, 2026** ~~XIII.(G), issued August 18, 2020; Title 129, Chapter 12, Section 001.50~~].

(i) The source is subject to the applicable testing requirements of 40 CFR 60.485 [~~Construction Permit CP20-012, Condition XIII.(G)(2), issued August 18, 2020~~].

1. Method 21 shall be used to determine the presence of leaking sources [40 CFR 60.485(b)(1)]
2. Method 21 shall be used to determine the background level [40 CFR 60.485(c)(2)]
3. Procedures that conform to the general methods in ASTM E-260, E-168,

E-169 (incorporated by reference – see §60.17) shall be used to determine the percent VOC content in the process fluid that is contained in or contacts a piece of equipment [40 CFR 60.485(d)(1)].

4. Standard reference texts or ASTM D-2879 (incorporated by reference – see §60.17) shall be used to determine the vapor pressure of the components in the liquid in the light liquid service. [40 CFR 60.485(e)(1)]

(3) Operational and Monitoring Requirements:

(a) The source shall comply with all applicable operational and monitoring requirements in NSPS Subpart VV for emission units listed under emission point EP-24 [40 CFR 60 Subparts A and VV; Construction Permit **CP25-014** ~~CP20-012~~, Condition **III.(E)(3), issued January 26, 2026** ~~XIII.(G), issued August 18, 2020; Title 129, Chapter 12, Section 001.50~~].

(i) Equipment under this subpart is defined as each pump, compressor, pressure relief device, sampling connection system, open-ended valve or line, valve, and flange or other connector in VOC service and any devices or systems required by this subpart (40 CFR 60.481) [Construction Permit **CP25-014** ~~CP20-012~~, Condition **III.(E)(3)(a), issued January 26, 2026**~~XIII.(G)(3), issued August 18, 2020~~].

(ii) Emissions will be controlled by the Leak Detection and Repair Program as defined in 40 CFR 60.482-1 through 60.482-10 [Construction ~~Permit CP20-012~~, **Condition III.(E)(3)(a)(1), issued January 26, 2026** ~~XIII.(G)(4), issued August 18, 2020~~].

(4) Recordkeeping and Reporting Requirements:

(a) The source shall keep records including the date in which leak detection testing occurred, which valves, pumps, seals, open-ended lines, flanges, connectors, etc. were tested, and name of the individual who conducted the testing [**Construction Permit CP25-014, Condition III.(E)(5), issued January 26, 2026; Title 129, Chapter 6, 003.03*; Title 129, Chapter 6, 003.03**~~Construction Permit CP20-012, Condition XIII.(L)(11)(a), issued August 18, 2020~~].

(b) The owner or operator shall submit a leak detection and repair report every six (6) calendar months to the Department. The initial semi-annual report shall be submitted beginning six (6) months after the initial startup date [60.487 (a)]. Subsequent reports for each six (6) calendar month reporting period shall be submitted within 45 days following June 30 and December 31 of each year. Each report must be certified by a responsible official and include the following items: [**Construction Permit CP25-014, Condition III.(E)(3)(a)(1), issued January 26, 2026; Title 129, Chapter 6, 003.03*; Title 129, Chapter 6, 003.03**~~Construction Permit CP20-012, Condition XIII.(L)(11)(b), issued August 18, 2020~~]

(i) Date and time testing occurred;

(ii) Name of individual who conducted the testing; and

(iii) Additional information required to be reported to the Department in accordance with 40 CFR 60.480.

(c) The source shall comply with all applicable recordkeeping and reporting

requirements in NSPS Subpart VV for emission point EP-24 [40 CFR 60 Subparts A and VV; **Construction Permit CP25-014, Condition III.(E)(5), issued January 26, 2026**~~Construction Permit CP20-012, Condition XIII.(G), issued August 18, 2020; Title 129, Chapter 12, Section~~ 001.50].

(i) The source is subject to the applicable recordkeeping and reporting requirements of 40 CFR 60.486 and ~~§~~60.487. ~~[Construction Permit CP20-012, Condition XIII.(L)(11)(f), issued August 18, 2020]~~

The source is requesting that operating permit OP25R1-004, issued August 29, 2025, be revised to accommodate changes associated with equipment leaks permitted under construction permit.

Attachment C:

Compliance Assurance Monitoring Plan

Fermentation Scrubber #4 (C-1401A)

MONITORING APPROACH SUBMITTAL

XIII. Background

a. Emission Unit

Description: Fermentation Scrubber #4[1]

Identification: C-1404A (EP 8-4)

Facility: Chief Ethanol Fuels, Inc.
Hastings, Nebraska

b. Applicable Regulation, Emission Limit, and Monitoring Requirements

Emission Limits and Regulation:

Volatile Organic Compounds (VOC) –EP-8-4, EP-CC-03, EP-CC-FUG

8.30 lb/hr combined emission limit, three 1-hour test runs or test method average – Construction Permit CP25-014 Condition III.(B), issued January 26, 2026, and Title 129, Chapter 3

Hazardous Air Pollutants (HAPs) – EP-8-4, EP-CC-03, EP-CC-FUG

2.15 lb/hr combined limit for Acetaldehyde, three 1-hour test runs or test method average – Construction Permit CP25-014 Condition III.(B), issued January 26, 2026, and Title 129, Chapter 3

Monitoring requirements: Monitor scrubber feed water flow rate, recirculation water flow rate, scrubber feed water temperature, and recirculation water inlet temperature

c. Control Technology

CO_2 Scrubber

XIV. Monitoring Approach

The key elements of the monitoring approach are presented in the following table:

[1] **Per the Department's guidance on CAM applicability, if multiple emission units are controlled by the same pollution control device, then CAM shall be assessed based upon the sum of the uncontrolled emissions at the inlet of the pollution control device. This Monitoring Plan has been completed accordingly for the group of multiple emission units that are controlled by the same pollution control device, as allowed by 40 CFR 64.4(f).**

MONITORING APPROACH

I. Indicator	Scrubber Feed Water Flow Rate	Scrubber Feed Water Temperature
Measurement Approach	The scrubber flow rate is measured by a flow meter.	The temperature is measured by thermocouple.
II. Indicator Range	An exceedance is defined as a daily average scrubber feed water flow rate of less than the average gallons-per-minute (gpm) flow rate established during the most recent valid performance test. Exceedances trigger a response per 40 CFR 64.7(d) and reporting and recordkeeping per 40 CFR 64.9.	An exceedance is defined as a daily average scrubber feed water temperature of greater than the average temperature established during the most recent valid performance test. Exceedances trigger a response per 40 CFR 64.7(d) and reporting and recordkeeping per 40 CFR 64.9.
III. Performance Criteria A. Data Representativeness	The scrubber feed water flow rate is measured using a flow meter located in the scrubber feed water line.	The scrubber feed water temperature is measured using a thermocouple located in the scrubber feed water line.
B. Verification of Operational Status	NA	NA
C. QA/QC Practices and Criteria	Annual calibration/instrument check. Acceptance criteria: +/- 5 percent of measured value.	Annual calibration/instrument check. Acceptance criteria: +/- 5 percent of measured value.
D. Monitoring Frequency	Measured continuously.	Measured continuously
Data Collection Procedure	Recorded at least once every fifteen minutes.	Recorded at least once every fifteen minutes.
Averaging Period	A daily average of readings is calculated and recorded.	A daily average of readings is calculated and recorded.

MONITORING APPROACH

I. Indicator	Scrubber Re-circulation Flow Rate	Scrubber Re-circulation Water Temperature
Measurement Approach	The scrubber re-circulation flow rate is measured by a flow meter.	The temperature is measured by a thermocouple.
II. Indicator Range	An exceedance is defined as a daily average scrubber re-circulation water flow rate of less than the average gallon-per-minute (gpm) flow rate established during the most recent valid performance test. Exceedances trigger a response per 40 CFR 64.7(d) and reporting and recordkeeping per 40 CFR 64.9.	An exceedance is defined as a daily average scrubber re-circulation water temperature of greater than the average temperature established during the most recent valid performance test. Exceedances trigger a response per 40 CFR 64.7(d) and reporting and recordkeeping per 40 CFR 64.9.
III. Performance Criteria A. Data Representativeness	The scrubber re-circulation water flow rate is measured using a flow meter located in the scrubber re-circulation water line.	The scrubber re-circulation water temperature is measured using a thermocouple located in the re-circulation inlet line.
B. Verification of Operational Status	NA	NA
C. QA/QC Practices and Criteria	Annual calibration/instrument check. Acceptance criteria: +/- 5 percent of measured value.	Annual calibration/instrument check. Acceptance criteria: +/- 5 percent of measured value.
D. Monitoring Frequency	Measured continuously.	Measured continuously
Data Collection Procedure	Recorded at least once every fifteen minutes.	Recorded at least once every fifteen minutes.
Averaging Period	A daily average of readings is calculated and recorded.	A daily average of readings is calculated and recorded.

JUSTIFICATION

XVIII. Background

Chief Ethanol Fuels, Inc. uses a continuous fermentation process to produce ethanol. Scrubber C-1404A is used to control emissions from the fermentation process. The scrubber is used to reduce VOC and HAP emissions.

XIX. Rationale for Selection of Performance Indicators

The emissions from the fermenters and beer well are controlled using a packed bed water scrubber. The performance indicators selected are water injection flow rate to the scrubber and scrubber water temperature. To achieve the desired VOC emission reduction, a minimum water flow rate must be supplied to absorb the given amount of VOC in the gas stream, given the size of the tower and height of the packed bed. The liquid-to-gas (L/G) ratio is a key operating parameter of the scrubber. If the L/G ratio decreases below a certain level, sufficient mass transfer of the pollutant from the gas phase to the liquid phase will not occur. The minimum liquid flow required to maintain the proper L/G ratio at the maximum gas flow and vapor loading through the scrubber can be determined. Maintaining this minimum liquid flow, even during periods of reduced gas flow, will ensure the required L/G ratio is achieved at all times. A water flow and re-circulation rates that ensure compliance with the applicable emission limit were established during testing conducted at maximum capacity. Maintaining these water flow rates will ensure an adequate L/G ratio to ensure compliance with the applicable emission limit.

The scrubber water and re-circulation water temperatures will be monitored and maintained below established temperature levels because temperature affects solubility. In particular, scrubbing efficiency decreases with increasing scrubber water temperature. This parameter is included because Chief has some operational control over scrubber water temperature and because an existing permit establishes temperature as a monitored and maintained parameter.

Finally, the performance indicators selected include, at a minimum, the parameters specified in EPA's Example Monitoring Approach Submittal, Appendix A.4, of the CAM Technical Guidance. In accordance with 40 CFR 64, the selected performance indicators are considered to be presumptively acceptable CAM monitoring.

XX. Rationale for Selection of Indicator Ranges

The indicator ranges chosen for an exceedance for the system are a daily average scrubber feed water flow rate that is less than the average gallon-per-minute (gpm) scrubber water flow rate established during the most recent valid performance test, and a daily average scrubber water temperature that is greater than the average temperature of the scrubber water established during the most recent valid performance test. No changes to the system have taken place that could result in a significant change in the control system performance or the selected ranges or designated conditions for the indicators to be monitored since the performance test was conducted. The daily averaging period for an exceedance is consistent with EPA's Appendix A.4 because parameters are maintained historically at relatively constant

rates; and it is consistent with an existing permit requirement. In addition, compliance can reasonably be assured on the basis of this averaging period because Chief uses a continuous fermentation process.

Existing Attachments C, D, and E were removed as Fermentation Scrubbers #1, #2, and #3 were removed. Attachment C was replaced by the new CAM plan for Scrubber C-1401A.

~~**Attachment C:**~~

~~**Compliance Assurance Monitoring Plan**~~

~~**Fermentation Scrubber #1 (C-1401)**~~

MONITORING APPROACH SUBMITTAL

I. Background

A. Emission Unit

Description: Fermentation Scrubber #1[2]

Identification: C-1401 (EP 8-1)

Facility: Chief Ethanol Fuels, Inc.

Hastings, Nebraska

B. Applicable Regulation, Emission Limit, and Monitoring Requirements

Emission Limits and Regulation:

Volatile Organic Compounds (VOC) – EP's 8-1, 8-2, 8-3, 9, 10, and 13

8.30 lb/hr combined scrubber limit, 3-hour or test method average – Construction Permit CP24-042 Condition XIII.(F), issued October 17, 2024, and Title 129, Chapter 4

Hazardous Air Pollutants (HAP) – EP's 8-1, 8-2, 8-3, 9, 10, and 13

2.15 lb/hr Acetaldehyde, 3-hour or test method average – Construction Permit CP20-012 Condition XIII.(A), issued August 18, 2020, and Title 129, Chapter 4

Monitoring requirements: Monitor scrubber feed water flow rate and scrubber feed water temperature

C. Control Technology

CO_2 Scrubber

II. Monitoring Approach

The key elements of the monitoring approach are presented in the following table:

[2] Per the Department's guidance on CAM applicability, if multiple emission units are controlled by the same pollution control device, then CAM shall be assessed based upon the sum of the uncontrolled emissions at the inlet of the pollution control device. This Monitoring Plan has been completed accordingly for the group of multiple emission units that are controlled by the same pollution control device, as allowed by 40 CFR 64.4(f).

MONITORING APPROACH

I. Indicator	Scrubber Feed Water Flow Rate	Scrubber Feed Water Temperature
Measurement Approach	The scrubber feed water flow rate is measured by a flow meter.	The temperature is measured by a thermocouple.
II. Indicator Range	An exceedance is defined as a daily average scrubber feed water flow rate of less than the average gallons per minute (gpm) flow rate established during the most recent valid performance test. Exceedances trigger a response per 40 CFR 64.7(d) and reporting and recordkeeping per 40 CFR 64.9.	An exceedance is defined as a daily average scrubber feed water temperature of greater than the average temperature established during the most recent valid performance test. Exceedances trigger a response per 40 CFR 64.7(d) and reporting and recordkeeping per 40 CFR 64.9.
III. Performance Criteria A. Data Representativeness	The scrubber feed water flow rate is measured using a flow meter located in the scrubber feed water line.	The scrubber feed water temperature is measured using a thermocouple located in the scrubber feed water line.
B. Verification of Operational Status	NA	NA
C. QA/QC Practices and Criteria	Annual calibration/instrument check. Acceptance criteria: +/- 5 percent of measured value.	Annual calibration/instrument check. Acceptance criteria: +/- 5 percent of measured value.
D. Monitoring Frequency	Measured continuously.	Measured continuously
Data Collection Procedure	Recorded at least once every fifteen minutes.	Recorded at least once every fifteen minutes.
Averaging Period	A daily average of readings is calculated and recorded.	A daily average of readings is calculated and recorded.

JUSTIFICATION

II. Background

Chief Ethanol Fuels, Inc. uses a continuous fermentation process to produce ethanol. Scrubber C-1401 is used to control emissions from the fermentation process. The scrubber is used to reduce VOC and HAP emissions.

III. Rationale for Selection of Performance Indicators

The emissions from the fermenters and beer well are controlled using packed bed water scrubbers. The performance indicators selected are feed water flow rate to the scrubber and scrubber feed water temperature. To achieve the desired VOC emission reduction, a minimum water flow rate must be supplied to absorb the given amount of VOC in the gas stream, given the size of the tower and height of the packed bed. The liquid-to-gas (L/G) ratio is a key operating parameter of the scrubber. If the L/G ratio decreases below a certain level, sufficient mass transfer of the pollutant from the gas phase to the liquid phase will not occur. The minimum liquid flow required to maintain the proper L/G ratio at the maximum gas flow and vapor loading through the scrubber can be determined. Maintaining this minimum liquid flow, even during periods of reduced gas flow, will ensure the required L/G ratio is achieved at all times. A water flow rate that ensures compliance with the applicable emission limit was established during testing conducted at maximum capacity. Maintaining this water flow rate will ensure an adequate L/G ratio to ensure compliance with the applicable emission limit.

The scrubber water temperature will be monitored and maintained below an established temperature because temperature affects solubility. In particular, scrubbing efficiency decreases with increasing scrubber water temperature. This parameter is included because Chief has some operational control over scrubber water temperature and because an existing permit establishes temperature as a monitored and maintained parameter.

Finally, the performance indicators selected include, at a minimum, the parameters specified in EPA's Example Monitoring Approach Submittal, Appendix A.4, of the CAM Technical Guidance. In accordance with 40 CFR 64, the selected performance indicators are considered to be presumptively acceptable CAM monitoring.

IV. Rationale for Selection of Indicator Ranges

The indicator ranges chosen for an exceedance for the system are a daily average scrubber water flow rate that is less than the average gallon-per-minute scrubber water flow rate established during the most recent valid performance test, and a daily average scrubber water temperature that is greater than the average temperature of the scrubber water established during the most recent valid performance test. No changes to the system have taken place that could result in a significant change in the control system performance or the selected ranges or designated conditions for the indicators to be monitored since the performance test was conducted. The daily averaging period for an exceedance is consistent with EPA's Appendix A.4 because parameters are maintained historically at relatively constant rates; and it is consistent with an existing permit requirement. In addition, compliance can reasonably be assured on the basis of this averaging period because Chief uses a continuous fermentation process.

~~**Attachment D:**~~

~~**Compliance Assurance Monitoring Plan**~~

~~**Fermentation Scrubber #2 (C-21402)**~~

MONITORING APPROACH SUBMITTAL

III. Background

A. Emission Unit

Description: Fermentation Scrubber #2[3]

Identification: C-21402 (EP-8-2)

Facility: Chief Ethanol Fuels, Inc.
Hastings, Nebraska

B. Applicable Regulation, Emission Limit, and Monitoring Requirements

Emission Limits and Regulation:

Volatile Organic Compounds (VOC) – EP's 8-1, 8-2, 8-3, 9, 10, and 13

8.30 lb/hr combined scrubber limit, 3-hour or test method average – Construction Permit CP24-042 Condition XIII.(F), issued October 17, 2024, and Title 129, Chapter 14

Hazardous Air Pollutants (HAPs) – EP's 8-1, 8-2, 8-3, 9, 10, and 13

2.15 lb/hr Acetaldehyde, 3- hour or test method average – Construction Permit CP20-012 Condition XIII.(A), issued August 18, 2020 and Title 129, Chapter 3

Monitoring requirements: Monitor scrubber feed water flow rate and scrubber feed water temperature

C. Control Technology

CO_2 Scrubber

IV. Monitoring Approach

The key elements of the monitoring approach are presented in the following table:

[3] Per the Department's guidance on CAM applicability, if multiple emission units are controlled by the same pollution control device, then CAM shall be assessed based upon the sum of the uncontrolled emissions at the inlet of the pollution control device. This Monitoring Plan has been completed accordingly for the group of multiple emission units that are controlled by the same pollution control device, as allowed by 40 CFR 64.4(f).

MONITORING APPROACH

I. Indicator	Scrubber Feed Water Flow Rate	Scrubber Feed Water Temperature
Measurement Approach	The scrubber feed water flow rate is measured by a flow meter.	The temperature is measured by a thermocouple.
II. Indicator Range	An exceedance is defined as a daily average scrubber feed water flow rate of less than the average gallons per minute (gpm) flow rate established during the most recent valid performance test. Exceedances trigger a response per 40 CFR 64.7(d) and reporting and recordkeeping per 40 CFR 64.9.	An exceedance is defined as a daily average scrubber feed water temperature of greater than the average temperature established during the most recent valid performance test. Exceedance trigger a response per 40 CFR 64.7(d) and reporting and recordkeeping per 40 CFR 64.9.
III. Performance Criteria A. Data Representativeness	The scrubber feed water flow rate is measured using a flow meter located in the scrubber feed water line.	The scrubber feed water temperature is measured using a thermocouple located in the scrubber feed water line.
B. Verification of Operational Status	NA	NA
C. QA/QC Practices and Criteria	Annual calibration/instrument check. Acceptance criteria: +/- 5 percent of measured value.	Annual calibration/instrument check. Acceptance criteria: +/- 5 percent of measured value.
D. Monitoring Frequency	Measured continuously.	Measured continuously
Data Collection Procedure	Recorded at least once every fifteen minutes.	Recorded at least once every fifteen minutes.
Averaging Period	A daily average of readings is calculated and recorded.	A daily average of readings is calculated and recorded.

JUSTIFICATION

V. Background

Chief Ethanol Fuels, Inc. uses a continuous fermentation process to produce ethanol. Scrubber C-21402 is used to control emissions from the fermentation process. The scrubber is used to reduce VOC and HAP emissions.

VI. Rationale for Selection of Performance Indicators

The emissions from the fermenters and beer well are controlled using packed bed water scrubbers. The performance indicators selected are feed water flow rate to the scrubber and scrubber feed water temperature. To achieve the desired VOC emission reduction, a minimum water flow rate must be supplied to absorb the given amount of VOC in the gas stream, given the size of the tower and height of the packed bed. The liquid-to-gas (L/G) ratio is a key operating parameter of the scrubber. If the L/G ratio decreases below a certain level, sufficient mass transfer of the pollutant from the gas phase to the liquid phase will not occur. The minimum liquid flow required to maintain the proper L/G ratio at the maximum gas flow and vapor loading through the scrubber can be determined. Maintaining this minimum liquid flow, even during periods of reduced gas flow, will ensure the required L/G ratio is achieved at all times. A water flow rate that ensures compliance with the applicable emission limit was established during testing conducted at maximum capacity. Maintaining this water flow rate will ensure an adequate L/G ratio to ensure compliance with the applicable emission limit.

The scrubber water temperature will be monitored and maintained below an established temperature because temperature affects solubility. In particular, scrubbing efficiency decreases with increasing scrubber water temperature. This parameter is included because Chief has some operational control over scrubber water temperature and because an existing permit establishes temperature as a monitored and maintained parameter.

Finally, the performance indicators selected include, at a minimum, the parameters specified in EPA's Example Monitoring Approach Submittal, Appendix A.4, of the CAM Technical Guidance. In accordance with 40 CFR 64, the selected performance indicators are considered to be presumptively acceptable CAM monitoring.

VII. Rationale for Selection of Indicator Ranges

The indicator ranges chosen for an exceedance for the system are a daily average scrubber water flow rate that is less than the average gallon-per-minute scrubber water flow rate established during the most recent valid performance test, and a daily average scrubber water temperature that is greater than the average temperature of the scrubber water established during the most recent valid performance test. No changes to the system have taken place that could result in a significant change in the control system performance or the selected ranges or designated conditions for the indicators to be monitored since the performance test was conducted. The daily averaging period for an exceedance is consistent with EPA's Appendix A.4 because parameters are maintained historically at relatively constant rates; and it is consistent with an existing permit requirement. In addition, compliance can reasonably be assured on the basis of this averaging period because Chief uses a continuous fermentation process.

~~**Attachment E:**~~

~~**Compliance Assurance Monitoring Plan**~~

~~**Fermentation Scrubber #3 (C-31402)**~~

MONITORING APPROACH SUBMITTAL

VIII. Background

a. Emission Unit

Description:	Fermentation Scrubber #3[4]
Identification:	C-31402 (EP 8-3)
Facility:	Chief Ethanol Fuels, Inc.
	Hastings, Nebraska

b. Applicable Regulation, Emission Limit, and Monitoring Requirements

Emission Limits and Regulation:

Volatile Organic Compounds (VOC) – EP's 8-1, 8-2, 8-3, 9, 10, and 13

8.30 lb/hr combined scrubber limit, 3-hour or test method average – Construction Permit CP24-042 Condition XIII.(F), issued October 17, 2024, and Title 129, Chapter 4

Hazardous Air Pollutants (HAPs) – EP's 8-1, 8-2, 8-3, 9, 10, and 13

2.15 lb/hr Acetaldehyde, 3-hour or test method average – Construction Permit CP20-012 Condition XIII.(A), issued August 18, 2020, and Title 129, Chapter 3

Monitoring requirements:	Monitor scrubber feed water flow rate, recirculation water flow rate, scrubber feed water temperature, and recirculation water inlet temperature

c. Control Technology

CO_2 Scrubber

IX. Monitoring Approach

The key elements of the monitoring approach are presented in the following table:

[4] Per the Department's guidance on CAM applicability, if multiple emission units are controlled by the same pollution control device, then CAM shall be assessed based upon the sum of the uncontrolled emissions at the inlet of the pollution control device. This Monitoring Plan has been completed accordingly for the group of multiple emission units that are controlled by the same pollution control device, as allowed by 40 CFR 64.4(f).

MONITORING APPROACH

I. Indicator	Scrubber Feed Water Flow Rate	Scrubber Feed Water Temperature
Measurement Approach	The scrubber flow rate is measured by a flow meter.	The temperature is measured by thermocouple.
II. Indicator Range	An exceedance is defined as a daily average scrubber feed water flow rate of less than the average gallons per minute (gpm) flow rate established during the most recent valid performance test. Exceedances trigger a response per 40 CFR 64.7(d) and reporting and recordkeeping per 40 CFR 64.9.	An exceedance is defined as a daily average scrubber feed water temperature of greater than the average temperature established during the most recent valid performance test. Exceedances trigger a response per 40 CFR 64.7(d) and reporting and recordkeeping per 40 CFR 64.9.
III. Performance Criteria A. Data Representativeness	The scrubber feed water flow rate is measured using a flow meter located in the scrubber feed water line.	The scrubber feed water temperature is measured using a thermocouple located in the scrubber feed water line.
B. Verification of Operational Status	NA	NA
C. QA/QC Practices and Criteria	Annual calibration/instrument check. Acceptance criteria: +/- 5 percent of measured value.	Annual calibration/instrument check. Acceptance criteria: +/- 5 percent of measured value.
D. Monitoring Frequency	Measured continuously.	Measured continuously
Data Collection Procedure	Recorded at least once every fifteen minutes.	Recorded at least once every fifteen minutes.
Averaging Period	A daily average of readings is calculated and recorded.	A daily average of readings is calculated and recorded.

MONITORING APPROACH

I. Indicator	Scrubber Re-circulation Flow Rate	Scrubber Re-circulation Water Temperature
Measurement Approach	The scrubber re-circulation flow rate is measured by a flow meter.	The temperature is measured by a thermocouple.
II. Indicator Range	An exceedance is defined as a daily average scrubber re-circulation water flow rate of less than the average gallon-per-minute (gpm) flow rate established during the most recent valid performance test. Exceedances trigger a response per 40 CFR 64.7(d) and reporting and recordkeeping per 40 CFR 64.9.	An exceedance is defined as a daily average scrubber re-circulation water temperature of greater than the average temperature established during the most recent valid performance test. Exceedances trigger a response per 40 CFR 64.7(d) and reporting and recordkeeping per 40 CFR 64.9.
III. Performance Criteria A. Data Representativeness	The scrubber re-circulation water flow rate is measured using a flow meter located in the scrubber re-circulation water line.	The scrubber re-circulation water temperature is measured using a thermocouple located in the re-circulation inlet line.
B. Verification of Operational Status	NA	NA
C. QA/QC Practices and Criteria	Annual calibration/instrument check. Acceptance criteria: +/- 5 percent of measured value.	Annual calibration/instrument check. Acceptance criteria: +/- 5 percent of measured value.
D. Monitoring Frequency	Measured continuously.	Measured continuously
Data Collection Procedure	Recorded at least once every fifteen minutes.	Recorded at least once every fifteen minutes.
Averaging Period	A daily average of readings is calculated and recorded.	A daily average of readings is calculated and recorded.

JUSTIFICATION

XVIII. Background

Chief Ethanol Fuels, Inc. uses a continuous fermentation process to produce ethanol. Scrubber C-31402 is used to control emissions from the fermentation process. The scrubber is used to reduce VOC and HAP emissions.

XIX. Rationale for Selection of Performance Indicators

The emissions from the fermenters and beer well are controlled using packed bed water scrubbers. The performance indicators selected are water injection flow rate to the scrubber and scrubber water temperature. To achieve the desired VOC emission reduction, a minimum water flow rate must be supplied to absorb the given amount of VOC in the gas stream, given the size of the tower and height of the packed bed. The liquid-to-gas (L/G) ratio is a key operating parameter of the scrubber. If the L/G ratio decreases below a certain level, sufficient mass transfer of the pollutant from the gas phase to the liquid phase will not occur. The minimum liquid flow required to maintain the proper L/G ratio at the maximum gas flow and vapor loading through the scrubber can be determined. Maintaining this minimum liquid flow, even during periods of reduced gas flow, will ensure the required L/G ratio is achieved at all times. A water flow and re-circulation rates that ensure compliance with the applicable emission limit were established during testing conducted at maximum capacity. Maintaining these water flow rates will ensure an adequate L/G ratio to ensure compliance with the applicable emission limit.

The scrubber water and re-circulation water temperatures will be monitored and maintained below established temperature levels because temperature affects solubility. In particular, scrubbing efficiency decreases with increasing scrubber water temperature. This parameter is included because Chief has some operational control over scrubber water temperature and because an existing permit establishes temperature as a monitored and maintained parameter.

Finally, the performance indicators selected include, at a minimum, the parameters specified in EPA's Example Monitoring Approach Submittal, Appendix A.4, of the CAM Technical Guidance. In accordance with 40 CFR 64, the selected performance indicators are considered to be presumptively acceptable CAM monitoring.

XX. Rationale for Selection of Indicator Ranges

The indicator ranges chosen for an exceedance for the system are a daily average scrubber feed water flow rate that is less than the average gallon-per-minute (gpm) scrubber water flow rate established during the most recent valid performance test, and a daily average scrubber water temperature that is greater than the average temperature of the scrubber water established during the most recent valid performance test. No changes to the system have taken place that could result in a significant change in the control system performance or the selected ranges or designated conditions for the indicators to be monitored since the performance test was conducted. The daily averaging period for an exceedance is consistent with EPA's Appendix A.4 because parameters are maintained historically at relatively constant rates; and it is consistent with an existing permit requirement. In addition, compliance can reasonably be assured on the basis of this averaging period because Chief uses a continuous fermentation process.

Existing Attachments C, D, and E were removed as Fermentation Scrubbers #1, #2, and #3 were removed.

STATUTORY OR REGULATORY PROVISIONS ON WHICH PERMIT REQUIREMENTS ARE BASED:

Applicable regulations: Title 129 - Nebraska Air Quality Regulations as amended September 28, 2022.

Compliance with this permit shall not be a defense to any enforcement action for violation of an ambient air quality standard.

DWEE Facility ID# 58049
Operating Permit Revision Application OP26M1-027

Facility-Wide PTE: OP25R1-004

Facility-Wide PTE from OP25R1-004										
Pollutants	**III.(A) & (E) Grain & DDGS & WDGS Handling**	**III.(B) & (E) Fermentation & Distillation**	**III.(C) Boilers**	**III.(D) Ethanol Loadout & Denaturant Receiving**	**III.(F) Equipment Leaks**	**III.(G) Tanks**	**III.(H) Haul Roads**	**III.(I) Cooling Towers**	**III.(J) Emergency Engines**	**Total Potential Emissions**
PM	44.50		3.28	4.41E-04				9.26	4.60E-02	**57.09**
PM10	25.54		13.10	1.76E-03				6.48	4.46E-02	**45.18**
PM2.5	8.51		13.10	1.76E-03				3.89	4.46E-02	**25.55**
PM (fugitive)	3.07						89.36			**92.43**
PM10 (fugitive)	0.88						17.99			**18.87**
PM2.5 (fugitive)	0.15						2.67			**2.82**
SOx			1.03	1.39E-04					9.17E-02	**1.13**
NOx			133.24	1.57					2.32	**137.13**
CO			77.45	7.08					20.33	**104.86**
VOC	3.15	36.35	9.48	3.39	43.63	4.94			3.55	**104.50**
Hazardous Air Pollutants										
1,1,2,2-Tetrachloroethane									8.54E-05	**8.54E-05**
1,1,2-Trichloroethane									5.17E-05	**5.17E-05**
1,3-Butadiene									2.25E-03	**2.25E-03**
1,3-Dichloropropene									4.29E-05	**4.29E-05**
Acetaldehyde	4.22E-02	9.42		4.41E-04	8.73E-03	8.90E-04			9.66E-03	**9.48**
Acrolein	6.34E-03	0.64							8.91E-03	**0.65**
Benzene			3.62E-03	0.11	0.10	7.34E-03			5.62E-03	**0.23**
Carbon Disulfide										
Carbon Tetrachloride									5.98E-05	**5.98E-05**
Chlorobenzene									4.36E-05	**4.36E-05**
Chloroform									4.63E-05	**4.63E-05**
Cumene				5.61E-02						**5.61E-02**
Dichlorobenzene			2.07E-03	2.78E-07						**2.07E-03**
Ethyl Benzene				6.86E-02					7.19E-05	**6.86E-02**
Ethylene Dibromide									7.19E-05	**7.19E-05**
Formaldehyde	8.43E-02	3.30E-02	0.13	1.74E-05					6.96E-02	**0.32**
Hexane			3.10	0.42	5.09	0.37				**8.99**
Methanol	1.69E-02	0.86		4.41E-04	8.73E-03	8.90E-04				**0.89**
Methylene Chloride									1.39E-04	**1.39E-04**
Naphthalene			1.05E-03	1.41E-07					3.54E-04	**1.41E-03**
Polycyclic Organic Matter			1.52E-04	2.05E-08					5.02E-04	**6.54E-04**
Styrene				2.19E-02					4.02E-05	**2.20E-02**
Toluene			5.86E-03	0.59					2.01E-03	**0.60**
Vinyl Chloride									2.42E-05	**2.42E-05**
Xylenes				0.49					7.46E-04	**0.49**
Arsenic Compounds			3.45E-04	4.64E-08						**3.45E-04**
Beryllium Compounds			2.07E-05	2.78E-09						**2.07E-05**
Cadmium Compounds			1.90E-03	2.55E-07						**1.90E-03**
Chromium Compounds			2.41E-03	3.25E-07						**2.41E-03**
Cobalt Compounds			1.45E-04	1.95E-08						**1.45E-04**
Lead Compounds			8.62E-04	1.16E-07						**8.62E-04**
Manganese Compounds			6.55E-04	8.81E-08						**6.55E-04**
Mercury Compounds			4.48E-04	6.03E-08						**4.48E-04**
Nickel Compounds			3.62E-03	4.87E-07						**3.62E-03**
Selenium Compounds			4.14E-05	5.57E-09						**4.14E-05**
Total HAPs	0.15	10.95	3.26	1.76	5.21	0.38	0	0	9.79E-02	**21.80**
Greenhouse Gases										
CO2		245,460.96	205,713.80	27.67					639.13	**451,841.56**
CH4		0	3.88	5.21E-04					1.39E-02	**3.89**
N2O		0	0.39	5.21E-05					1.59E-03	**0.39**
Total GHGs (mass basis)		245,460.96	205,718.07	27.67	0	0	0	0	639.15	**451,845.84**
Total GHGs (CO2e)		245,460.96	205,925.10	27.70	0	0	0	0	639.94	**452,053.70**

Facility-Wide PTE: Post Revision

Facility-Wide PTE Post Projects (Scrubber Addition for Carbon Capture and Fermenter Addition)												
Pollutants	**Grain & DDGS & WDGS Handling**	**Fermentation & Distillation**	**Boilers**	**Ethanol Loadout & Denaturant Receiving**	**Equipment Leaks[1]**	**Tanks**	**Haul Roads**	**Cooling Towers**	**Emergency Engines**	**CC Plant[2]**	**Total Potential Emissions**	**Change in Emissions**
PM	44.50		3.28	4.41E-04				9.26	4.60E-02		**57.09**	0.00
PM10	25.54		13.10	1.76E-03				6.48	4.46E-02		**45.18**	0.00
PM2.5	8.51		13.10	1.76E-03				3.89	4.46E-02		**25.55**	0.00
PM (fugitive)	3.07						89.36				**92.43**	0.00
PM10 (fugitive)	0.88						17.99				**18.87**	0.00
PM2.5 (fugitive)	0.15						2.67				**2.82**	0.00
SOx			1.03	1.39E-04					9.17E-02		**1.13**	0.00
NOx			133.24	1.57					2.32		**137.13**	0.00
CO			77.45	7.08					20.33		**104.86**	0.00
VOC	3.15	36.35	9.48	3.39	45.86	4.94			3.55	[2]	**106.73**	**2.23**
Hazardous Air Pollutants												
1,1,2,2-Tetrachloroethane									8.54E-05		**8.54E-05**	0.00E+00
1,1,2-Trichloroethane									5.17E-05		**5.17E-05**	0.00E+00
1,3-Butadiene									2.25E-03		**2.25E-03**	0.00E+00
1,3-Dichloropropene									4.29E-05		**4.29E-05**	0.00E+00
Acetaldehyde	4.22E-02	9.42		4.41E-04	9.17E-03	8.90E-04			9.66E-03	[2]	**9.48E+00**	**4.46E-04**
Acrolein	6.34E-03	0.28							8.91E-03	[2]	**2.91E-01**	-3.63E-01
Benzene			3.62E-03	0.11	1.15	7.34E-03			5.62E-03		**1.27E+00**	**1.04E+00**
Carbon Disulfide					0.00						**9.17E-04**	**9.17E-04**
Carbon Tetrachloride									5.98E-05		**5.98E-05**	0.00E+00
Chlorobenzene									4.36E-05		**4.36E-05**	0.00E+00
Chloroform									4.63E-05		**4.63E-05**	0.00E+00
Cumene				5.61E-02	0.00						**6.07E-02**	**4.59E-03**
Dichlorobenzene			2.07E-03	2.78E-07							**2.07E-03**	0.00E+00
Ethyl Benzene				6.86E-02	2.29E-03				7.19E-05		**7.09E-02**	**2.29E-03**
Ethylene Dibromide									7.19E-05		**7.19E-05**	0.00E+00
Formaldehyde	8.43E-02	1.93E-02	0.13	1.74E-05					6.96E-02	[2]	**3.02E-01**	-1.37E-02
Hexane			3.10	0.42	2.29	0.37					**6.18E+00**	-2.80E+00
Methanol	1.69E-02	0.18		4.41E-04	9.17E-03	8.90E-04				[2]	**2.07E-01**	-6.78E-01
Methylene Chloride									1.39E-04		**1.39E-04**	0.00E+00
Naphthalene			1.05E-03	1.41E-07					3.54E-04		**1.41E-03**	0.00E+00
Polycyclic Organic Matter			1.52E-04	2.05E-08					5.02E-04		**6.54E-04**	0.00E+00
Styrene				2.19E-02					4.02E-05		**2.20E-02**	0.00E+00
Toluene			5.86E-03	0.59	0.23				2.01E-03		**8.29E-01**	**2.29E-01**
Vinyl Chloride									2.42E-05		**2.42E-05**	0.00E+00
Xylenes				0.49	2.29E-02				7.46E-04		**5.10E-01**	**2.29E-02**
Arsenic Compounds			3.45E-04	4.64E-08							**3.45E-04**	0.00E+00
Beryllium Compounds			2.07E-05	2.78E-09							**2.07E-05**	0.00E+00
Cadmium Compounds			1.90E-03	2.55E-07							**1.90E-03**	0.00E+00
Chromium Compounds			2.41E-03	3.25E-07							**2.41E-03**	0.00E+00
Cobalt Compounds			1.45E-04	1.95E-08							**1.45E-04**	0.00E+00
Lead Compounds			8.62E-04	1.16E-07							**8.62E-04**	0.00E+00
Manganese Compounds			6.55E-04	8.81E-08							**6.55E-04**	0.00E+00
Mercury Compounds			4.48E-04	6.03E-08							**4.48E-04**	0.00E+00
Nickel Compounds			3.62E-03	4.87E-07							**3.62E-03**	0.00E+00
Selenium Compounds			4.14E-05	5.57E-09							**4.14E-05**	0.00E+00
Total HAPs	0.15	9.89	3.26	1.76	3.72	0.38	0	0	9.79E-02		**19.25**	-2.55E+00
Greenhouse Gases												
CO2		245,460.96	205,713.80	27.67					639.13	[2]	**451841.56**	0.00
CH4		0	3.88	5.21E-04					1.39E-02		**3.89**	0.00
N2O		0	0.39	5.21E-05					1.59E-03		**0.39**	0.00
Total GHGs (mass basis)		245,460.96	205,718.07	27.67	0	0	0	0	639.15	[2]	**451845.84**	0.00
Total GHGs (CO2e)		245,460.96	205,925.10	27.70	0	0	0	0	639.94	[2]	**452053.70**	0.00

[1] Equipment leaks have been revised to account for changes in component counts

[2] Worst-case PTE assumes emissions from C-1404A are vented to atmosphere from EP-8-4 rather than routed to the CC Plant.

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Fermentation Scrubber
Emission Point: EP-8-4

EP-8-4: Fermentation Scrubber #4[1]			
Pollutant	Emission Factor lb/hr	Emission Rate tpy	Emission Factor Source[2]
VOC[3]	8.300	36.35	Permit Limit
HAPS			
Acetaldehyde[3]	2.15	9.42	Permit Limit
Acrolein	0.0629	0.28	July 2025 Stack Test
Formaldehyde	0.0044	1.93E-02	July 2025 Stack Test
Methanol	0.0410	0.18	July 2025 Stack Test

[1] Emission points EP-8-1, EP-8-2, and EP-8-3 have been decommissioned and replaced with scrubber EP-8-4.

[2] Acrolein, Formaldehyde, and Methanol emission factors from July 2025 testing and includes a 10% safety factor.

[3] VOC and Acetaldehyde emission factors are permitted limits. Each limit is a group limit that includes EP-8-4, EP-9, EP-10, EP-13, EP-CC-03, and EP-CC-FUG

Fermentation - GHG's
EP-8-4

Denatured Ethanol Production:	80,000,000 gallons/year
Anhydrous Ethanol Production:	78,048,000 gallons/year

Pollutant	Emission Factor lb CO_2/gal of ethanol produced[1]	Emission Rate	
		lb/hr	tpy
CO_2	6.290	56,041.32	245,460.96

[1] CO_2 emissions have been estimated using an emission factor of 6.29 pounds of CO_2 emitted per gallon of ethanol produced. Emission factor from RTI International's December 14, 2010, draft "Greenhouse Gas Emissions Estimation Methodologies for Biogenic Emissions from Selected Source Categories: Solid Waste Disposal, Wastewater Treatment, Ethanol Fermentation" found on EPA's TTN website on 6/7/11.

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Equipment Leaks
Emission Point: EP-24

Volatile Organic Carbon Leaks

Process Stream	Equipment Component Source	Product	Component Count	Emission Factor (kg/comp.-hr)[1]	Emission Factor (lb/comp.-hr)	Control Effectiveness[2]	TOC Weight[3] (%)	VOC Emissions (tpy)
Fermentation	Valves	Heavy Liquid	715	0.000203	0.0004	84%	13.00%	0.0292
	Pumps	Heavy Liquid	27	0.00862	0.0190	69%	13.00%	0.0906
	Pressure-Relief Valves	Gas/Vapor	16	0.104	0.2293	87%	13.00%	0.2715
	Sampling Connections	All	30	0.015	0.0331	69%	13.00%	0.1751
	Flanges (connectors)	All	2397	0.00183	0.0040	69%	13.00%	1.7070
Distillation	Valves	Gas/Vapor	199	0.00597	0.0132	87%	81.70%	1.2184
	Valves	Light Liquid	1106	0.00403	0.0089	84%	81.70%	5.6261
	Pumps	Light Liquid	30	0.0199	0.0439	69%	81.70%	1.4600
	Pressure-Relief Valves	Gas/Vapor	45	0.104	0.2293	87%	81.70%	4.7998
	Sampling Connections	All	25	0.015	0.0331	69%	81.70%	0.9171
	Flanges (connectors)	All	4215	0.00183	0.0040	69%	81.70%	18.8643
Tank Farm	Valves	Gas/Vapor	1	0.00597	0.0132	87%	100.00%	0.0075
	Valves	Light Liquid	408	0.00403	0.0089	84%	100.00%	2.5403
	Pumps	Light Liquid	10	0.0199	0.0439	69%	100.00%	0.5957
	Pressure-Relief Valves	Gas/Vapor	3	0.104	0.2293	87%	100.00%	0.3917
	Sampling Connections	All	4	0.015	0.0331	69%	100.00%	0.1796
	Flanges (connectors)	All	1275	0.00183	0.0040	69%	100.00%	6.9844
Total								**45.86**

[1]Emission factors are the SOCMI emission factors from Protocol for Equipment Leak Emission Estimates, EPA-453/R-95-017, Table 2-1. The emission factors were converted from kg/comp-hr to lb/comp-hr, by using conversion factor 2.2046 lb/kg (conversion factor from AP-42 Appendix A).

[2]Control Effectiveness are from Protocol for Equipment Leak Emission Estimates, EPA-453/R-95-017, Table 5-2.

[3]Default DWEE values for TOC weight.

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Equipment Leaks
Emission Point: EP-24

HAP Emission Calculation		
HAP	**Fraction**	**Emissions (tpy)**
Acetaldehyde	0.0002	9.17E-03
Benzene	0.0250	1.15
Carbon Disulfide	0.0000	9.17E-04
Cumene	0.0001	4.59E-03
Ethylbenzene	0.0001	2.29E-03
Hexane	0.0500	2.29
Methanol	0.0002	9.17E-03
Toluene	0.0050	0.23
Xylenes	0.0005	2.29E-02
Total HAPs	-	**3.72**

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TEG Reboiler Still Vent
Emission Point ID#: EP-CC-03
Emission Unit ID#: EU-CC-03

EP-CC-03 (EU-CC-03): TEG Reboiler Still Vent		
	Emission Rate[1]	
Pollutant	(lb/hr)[2]	(tpy)
VOC	5.96	26.12
CO2	329.06	1,441.30
CO2e	329.06	1,441.30
Hazardous Air Pollutants		
Acetaldehyde	0.10	0.45
Acrolein	7.20E-03	3.15E-02
Formaldehyde	4.57E-05	2.00E-04
Methanol	6.92E-02	0.30
Total HAP Emissions	0.1791	0.78

[1] Emissions from EP-CC-03 result from the vapor stream that would be emitted by EP-8-4 being routed to EP-CC-03.

[2] Emission rates provided by design company were simulated in HYSYS utilizing input gas analysis. Emissions include a 20% safety factor to account for operational and gas quality variability.

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CO2 Compressor Rodpacking
Emission Point ID#: EP-CC-FUG
Emission Unit ID#: EU-CC-01

Compressor Data[1]		
Number of Inlet Compressors:	2	
Hours of Operation:	8760	hr/yr
Maximum Flow per Hour: [2]	360	scf/hour
Max Hourly Vent Rate:	41.50	lb/hr
Total Annual Flow:	3.1536	MMscf/yr
Total Annual Exhausted Gas:	181.75	tons/yr
Conversion Factor:	379.30	scf/lb-mol
Molecular Weight of Inlet Gas:	43.72	lb/lb-mol

EP-CC-FUG (EU-CC-01): CO2 Compressor Rodpacking			
Pollutant	**Mass Fraction**[1]	**Emission Rate**[1]	
		lb/hr	**tons/yr**
VOC	1.09E-04	5.43E-03	2.38E-02
CO2	0.987	49.15	215.26
CO2e	-	49.15	215.26
Individual HAPs			
Acetaldehyde	2.29E-05	1.14E-03	4.99E-03
Acrolein	4.59E-07	2.29E-05	1.00E-04
Formaldehyde	3.74E-08	1.86E-06	8.16E-06
Methanol	9.75E-07	4.85E-05	2.13E-04
Total HAPs	-	**1.21E-03**	**5.32E-03**

[1] Compressor data, mass fractions, and emission rates provided by design company were simulated in HYSYS utilizing input gas analysis. Emissions include a 20% safety factor to account for operational and gas quality variability.

[2] Total combined flow for two compressors.

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CO2 Blowdown Vapors
Emission Point ID#: EP-CC-FUG
Emission Unit ID#: EU-CC-02

Compressor Data[1]		
Max Hourly Vent Rate:	31,671.22	lb/hr
Total Annual Flow:	3.30	MMscf/yr
Total Annual Blowdown Gas:	190.00	tons/yr
Conversion Factor:	379.30	scf/lb-mol
Molecular Weight of Inlet Gas:	43.72	lb/lb-mol

EP-CC-FUG (EU-CC-2): CO2 Blowdown Vapors			
Pollutant	**Mass Fraction**[1]	**Emission Rate**[1]	
	lb/lb	**lb/hr**	**tons/yr**
VOC	1.09E-04	4.14	2.49E-02
CO2	0.987	37,511.39	225.04
CO2e	-	37,511.39	225.04
Individual HAPs			
Acetaldehyde	2.29E-05	8.70E-01	5.22E-03
Acrolein	4.59E-07	1.74E-02	1.05E-04
Formaldehyde	3.74E-08	1.42E-03	8.53E-06
Methanol	9.75E-07	3.71E-02	2.22E-04
TOTAL HAPs	-	9.26E-01	5.56E-03

[1] Compressor data, mass fractions, and emission rates provided by design company were simulated in HYSYS utilizing input gas analysis. Emissions include a 20% safety factor to account for operational and gas quality variability.

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Fugitive Equipment Leaks
Emission Point ID#: EP-CC-FUG
Emission Unit ID#: EP-CC-04

EP-CC-FUG (EU-CC-04): VOC Emissions from Equipment Leaks at CC Plant								
Type of Component	**Product**	**# of Components[1]**	**TOC Leaking Emission Factor [2]**	**TOC Emission Rate**		**VOC Weight[3]**	**VOC Emission Rate**	
		Count	**(kg/comp.-hr)**	**(lb/hr)**	**(tpy)**	**(%)**	**(lbs/hr)**	**(tpy)**
Valves	Gas/Vapor	278	0.0045	2.7580	12.0800	0.011%	3.03E-04	1.33E-03
Others	Gas/Vapor	17	0.0088	0.3298	1.4446	0.011%	3.63E-05	1.59E-04
Connectors	Gas/Vapor	787	0.0002	0.3470	1.5199	0.011%	3.82E-05	1.67E-04
Open-ended Lines	Gas/Vapor	19	0.0020	0.0838	0.3669	0.011%	9.22E-06	4.04E-05
						Total VOC Emissions	**3.87E-04**	**1.70E-03**

[1] Component counts provided by design company.
[2] Emission factors from EPA Protocol for Equipment Leak Emission Estimates. EPA-453/R-95-017. Table 2-4: Oil and Gas Production Operations.
[3] VOC weight based on estimated composition of inlet gas.

EP-CC-FUG (EU-CC-04): CO2 Emissions from Equipment Leaks at CC Plant								
Type of Component	**Product**	**# of Components[1]**	**TOC Leaking Emission Factor [2]**	**TOC Emission Rate**		**CO2 Weight[3]**	**CO2 Emission Rate**	
		Count	**(kg/comp.-hr)**	**(lb/hr)**	**(tpy)**	**(%)**	**(lbs/hr)**	**(tpy)**
Valves	Gas/Vapor	278	0.0045	2.7580	12.0800	98.67%	2.72	11.92
Others	Gas/Vapor	17	0.0088	0.3298	1.4446	98.67%	0.33	1.43
Connectors	Gas/Vapor	787	0.0002	0.3470	1.5199	98.67%	0.34	1.50
Open-ended Lines	Gas/Vapor	19	0.0020	0.0838	0.3669	98.67%	0.08	0.36
						Total CO2 Emissions	**3.47**	**15.21**

[1] Component counts provided by design company.
[2] Emission factors from EPA Protocol for Equipment Leak Emission Estimates. EPA-453/R-95-017. Table 2-4: Oil and Gas Production Operations.
[3] CO2 weight based on estimated composition of inlet gas.

CC Hastings Capture Company, LLC
DWEE Facility ID# 121646
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Fugitive Equipment Leaks
Emission Point ID#: EP-CC-FUG
Emission Unit ID#: EP-CC-04

HAP Emission Calculation			
		Emissions	
HAP	HAP Fraction[1]	(lb/hr)	(tpy)
Acetaldehyde	2.00E-05	7.04E-05	3.08E-04
Acrolein	5.00E-07	1.76E-06	7.71E-06
Formaldehyde	4.00E-08	1.41E-07	6.16E-07
Methanol	1.00E-06	3.52E-06	1.54E-05
Total		**7.58E-05**	**3.32E-04**

[1] HAP weights based on estimated composition of inlet gas.