

State Registration Number
N6996

**RENEWABLE OPERATING PERMIT
STAFF REPORT**

ROP Number
MI-ROP-N6996-2018a

Poet Biorefining – Caro, LLC

SRN: N6996

Located at

1551 Empire Drive, Caro, Michigan 48723

Permit Number: MI-ROP-N6996-2018a

Staff Report Date: August 13, 2018

Amended Date: February 11, 2022

This Staff Report is published in accordance with Sections 5506 and 5511 of Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451). Specifically, Rule 214(1) requires that the Michigan Department of Environment, Great Lakes, and Energy (EGLE), Air Quality Division (AQD), prepare a report that sets forth the factual basis for the terms and conditions of the Renewable Operating Permit (ROP).

TABLE OF CONTENTS

AUGUST 13, 2018 - STAFF REPORT	3
SEPTEMBER 14, 2018 - STAFF REPORT ADDENDUM	8
FEBRUARY 11, 2022 - STAFF REPORT FOR RULE 216(2) MINOR MODIFICATION	9

Michigan Department of Environmental Quality
Air Quality Division

State Registration Number

N6996

RENEWABLE OPERATING PERMIT

ROP Number

MI-ROP-N6996-2018

AUGUST 13, 2018 - STAFF REPORT

Purpose

Major stationary sources of air pollutants, and some non-major sources, are required to obtain and operate in compliance with an ROP pursuant to Title V of the federal Clean Air Act of 1990 and Michigan's Administrative Rules for Air Pollution Control pursuant to Section 5506(1) of Act 451. Sources subject to the ROP program are defined by criteria in Rule 211(1). The ROP is intended to simplify and clarify a stationary source's applicable requirements and compliance with them by consolidating all state and federal air quality requirements into one document.

This Staff Report, as required by Rule 214(1), sets forth the applicable requirements and factual basis for the draft ROP terms and conditions including citations of the underlying applicable requirements, an explanation of any equivalent requirements included in the draft ROP pursuant to Rule 212(5), and any determination made pursuant to Rule 213(6)(a)(ii) regarding requirements that are not applicable to the stationary source.

General Information

Stationary Source Mailing Address:	Poet Biorefining - Caro, LLC 1551 Empire Drive Caro, Michigan 48723
Source Registration Number (SRN):	N6996
North American Industry Classification System (NAICS) Code:	325193
Number of Stationary Source Sections:	1
Is Application for a Renewal or Initial Issuance?	Renewal
Application Number:	201800013
Responsible Official:	David Gloer, General Manager 989-672-1222
AQD Contact:	Matthew Karl, Environmental Quality Analyst 989-439-3779
Date Application Received:	January 26, 2018
Date Application Was Administratively Complete:	January 26, 2018
Is Application Shield in Effect?	Yes
Date Public Comment Begins:	August 13, 2018
Deadline for Public Comment:	September 12, 2018

Source Description

POET Biorefining – Caro, LLC (Poet) is an 89.25 million-gallon (nameplate) ethanol production facility located in Caro that began operation in 2002. The facility was originally permitted under air use permit to install 210-01. Since then, the facility has undergone several updates to equipment and processes and became a major source with the startup of the no-cook BPX process on October 21, 2005. The facility consists of grain receiving, handling, fermentation, distillation, and ethanol loadout equipment.

The following table lists stationary source emission information as reported to the Michigan Air Emissions Reporting System (MAERS) for the year 2017.

TOTAL STATIONARY SOURCE EMISSIONS

Pollutant	Tons per Year
Carbon Monoxide (CO)	8.56
Lead (Pb)	0
Nitrogen Oxides (NO _x)	10.32
Particulate Matter (PM)	11.13
Sulfur Dioxide (SO ₂)	0.12
Volatile Organic Compounds (VOCs)	32.81

See Parts C and D in the ROP for summary tables of all processes at the stationary source that are subject to process-specific emission limits or standards.

Regulatory Analysis

The following is a general description and history of the source. Any determinations of regulatory non-applicability for this source are explained below in the Non-Applicable Requirement part of the Staff Report and identified in Part E of the ROP.

The stationary source is in Tuscola County, which is currently designated by the U.S. Environmental Protection Agency (USEPA) as attainment/unclassified for all criteria pollutants.

The stationary source is subject to Title 40 of the Code of Federal Regulations (CFR) Part 70, because the potential to emit of nitrogen oxides (NO_x), volatile organic compounds (VOCs) and carbon monoxide (CO) exceeds 100 tons per year.

The stationary source is considered to be a “synthetic minor” source in regard to HAP emissions because the stationary source accepted legally enforceable permit conditions limiting the potential to emit of any single HAP regulated by the federal Clean Air Act, Section 112, to less than 10 tons per year and the potential to emit of all HAPs combined to less than 25 tons per year.

The stationary source is considered a “synthetic minor” source in regard to the Prevention of Significant Deterioration regulations of Part 18, Prevention of Significant Deterioration of Air Quality of Act 451, because the stationary source accepted legally enforceable permit conditions limiting the potential to emit of particulate matter (PM), nitrogen oxides (NO_x), volatile organic compounds (VOCs), and carbon monoxide (CO) to less than 250 tons per year.

Currently, there are no Greenhouse Gas (GHG) applicable requirements to include in the ROP. The mandatory Greenhouse Gas Reporting Rule under 40 CFR Part 98 is not an ROP applicable requirement and is not included in the ROP.

The stationary source has Flexible Group FGNSPSTANKS with Emission Units EUNATGASTANK1 and EUNATGASTANK2 that are subject to the Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984, promulgated in 40 CFR Part 60, Subparts A and Kb.

EUGENSET at the stationary source is subject to the National Emission Standard for Hazardous Air Pollutants (NESHAP) for Stationary Reciprocating Internal Combustion Engines (RICE) promulgated in 40 CFR Part 63, Subparts A and ZZZZ. EUGENSET is currently NOT subject to the Standards of Performance for Stationary Compression Ignition Internal Combustion Engines promulgated in 40 CFR Part 60, Subpart IIII, but may become subject if is reconstructed.

Flexible Groups FGFERM&DIST, FGETHLOAD, FGNSPSTANKS, and FGETHANOLTANKS at the stationary source are subject to the 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, promulgated in 40 CFR Part 60, Subparts A and VVa.

FGFERM&DIST at the stationary source is subject to the federal Compliance Assurance Monitoring (CAM) rule under 40 CFR Part 64 as it has a control device and potential pre-control emissions of VOC and acetaldehyde greater than the major source threshold level. The control device is a packed wet bed scrubber unit (CE004). The facility intends to install a redundant packed wet bed scrubber (CE014) as part of PTI 175-15B which would be subject to the same regulations. The monitoring for the control device is total water flow and pressure drop across the scrubber. Water flow for the scrubber was chosen because control efficiency is a function of the absorbing liquid (water). Pressure drop was chosen as it directly relates to the ability to maintain necessary operation and is also an indicator of scrubber fouling.

FGDDGSDRYERS at the stationary source are subject to the federal CAM rule under 40 CFR Part 64 as it has a control device and potential pre-control emissions of VOC greater than the major source threshold level. The control devices include a thermal oxidizer and heat return boiler (TO&HRB) (CE010) as well as a regenerative thermal oxidizer (RTO) (CE012). The monitoring for the control devices includes the combustion temperature as well as inspection of the burners on the TO and RTO. Combustion temperature was chosen as the destruction efficiency of the TO and RTO is a function of temperature.

FGDDGSDRYERS and EUBOILER at the stationary source are subject to the Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units promulgated in 40 CFR Part 60, Subparts A and Dc.

FGCORN-DDGS at the stationary source is subject to the Standards of Performance for Grain Elevators promulgated in 40 CFR Part 60, Subparts A and DD.

The stationary source had one enforcement issue since the last ROP issuance. On May 18, 2015, POET shut down the packed bed wet scrubber (CE004) on FGFERM&DIST for maintenance outlined in their MAP allowing them to clean the internal packing due to high differential pressure. They were unable to reroute emissions from FGFERM&DIST to the RTO (CE012) resulting in an excess of VOC and Acetaldehyde emissions. This was a violation of the permitted emission limits. The EPA took enforcement action against POET for these exceedances. POET installed a bypass to the RTO to control emissions during scrubber maintenance. The Scrubber Bypass Episode was included In PTI No. 175-15A FGFERM&DIST Special Condition IV.6. The consent decree is no longer in effect.

The monitoring conditions contained in the ROP are necessary to demonstrate compliance with all applicable requirements and are consistent with the "Procedure for Evaluating Periodic Monitoring Submittals."

Please refer to Parts B, C, and D in the draft ROP for detailed regulatory citations for the stationary source. Part A contains regulatory citations for general conditions.

Source-wide Permit to Install (PTI)

Rule 214a requires the issuance of a Source-wide PTI within the ROP for conditions established pursuant to Rule 201. All terms and conditions that were initially established in a PTI are identified with a footnote designation in the integrated ROP/PTI are identified in Appendix 6 of the ROP.

The following table lists all individual PTIs that were incorporated into previous ROPs. PTIs issued after the effective date of ROP No. MI-ROP-N6996-2013 are identified in Appendix 6 of the ROP.

PTI Number			
210-01D			

Streamlined/Subsumed Requirements

This ROP does not include any streamlined/subsumed requirements pursuant to Rules 213(2) and 213(6).

Non-applicable Requirements

Part E of the ROP lists requirements that are not applicable to this source as determined by the AQD, if any were proposed in the ROP Application. These determinations are incorporated into the permit shield provision set forth in Part A (General Conditions 26 through 29) of the ROP pursuant to Rule 213(6)(a)(ii).

Processes in Application Not Identified in Draft ROP

There were no processes listed in the ROP Application as exempt devices under Rule 212(4). Exempt devices are not subject to any process-specific emission limits or standards in any applicable requirement.

Draft ROP Terms/Conditions Not Agreed to by Applicant

This draft ROP does not contain any terms and/or conditions that the AQD and the applicant did not agree upon pursuant to Rule 214(2).

Compliance Status

The AQD finds that the stationary source is expected to be in compliance with all applicable requirements as of the effective date of this ROP.

Draft ROP Terms/Conditions Not Agreed to by Applicant

This draft ROP does not contain any terms and/or conditions that the AQD and the applicant did not agree upon pursuant to Rule 214(2).

Compliance Status

The AQD finds that the stationary source is expected to be in compliance with all applicable requirements as of the effective date of this ROP.

Action taken by the MDEQ, AQD

The AQD proposes to approve this ROP. A final decision on the ROP will not be made until the public and affected states have had an opportunity to comment on the AQD's proposed action and draft permit. In addition, the USEPA is allowed up to 45 days to review the draft ROP and related material. The AQD is not required to accept recommendations that are not based on applicable requirements. The delegated decision maker for the AQD is Chris Hare, Saginaw Bay District Supervisor. The final determination for

ROP approval/disapproval will be based on the contents of the ROP Application, a judgment that the stationary source will be able to comply with applicable emission limits and other terms and conditions, and resolution of any objections by the USEPA.

State Registration Number
N6996

RENEWABLE OPERATING PERMIT

ROP Number
MI-ROP-N6996-2018

**SEPTEMBER 14, 2018 - STAFF REPORT
ADDENDUM**

Purpose

A Staff Report dated August 13, 2018, was developed to set forth the applicable requirements and factual basis for the draft Renewable Operating Permit (ROP) terms and conditions as required by Rule 214(1) of the administrative rules promulgated under Act 451. The purpose of this Staff Report Addendum is to summarize any significant comments received on the draft ROP during the 30-day public comment period as described in Rule 214(3). In addition, this addendum describes any changes to the draft ROP resulting from these pertinent comments.

General Information

Responsible Official:	David Gloer, General Manager 989-672-1222
AQD Contact:	Matthew Karl, Environmental Quality Analyst 989-439-3779

Summary of Pertinent Comments

No pertinent comments were received during the 30-day public comment period.

Changes to the August 13, 2018 Draft ROP

No changes were made to the draft ROP.

State Registration Number
N6996

RENEWABLE OPERATING PERMIT
FEBRUARY 11, 2022 - STAFF REPORT FOR RULE
216(2) MINOR MODIFICATION

ROP Number
MI-ROP-N6996-2018a

Purpose

On October 30, 2018, the Department of Environment, Great Lakes, and Energy (EGLE), Air Quality Division (AQD), approved and issued Renewable Operating Permit (ROP) No. MI-ROP-N6996-2018 to Poet Biorefining – Caro, LLC pursuant to Rule 214 of the administrative rules promulgated under Act 451. Once issued, a company is required to submit an application for changes to the ROP as described in Rule 216. The purpose of this Staff Report is to describe the changes that were made to the ROP pursuant to Rule 216(2).

General Information

Responsible Official:	Emily Boynton, Plant Manager 989-673-9713
AQD Contact:	Caryn E. Owens, Senior Environmental Engineer 231-878-6688
Application Number:	202200002
Date Application for Minor Modification was Submitted:	December 10, 2021

Regulatory Analysis

The AQD has determined that the change requested by the stationary source meets the qualifications for a Minor Modification pursuant to Rule 216(2).

Description of Changes to the ROP

To incorporate PTI No. 39-19 into the ROP, which is to modify the existing ethanol production facility. The modifications and installations include: Installing an 8th fermentation tank, which exhausts similar to the existing seven fermenters (wet scrubber with bypass to RTO); Increases the combined ethanol and denaturant loadout limit to 95 MMGPY; Re-routes the whole stillage tank from the wet scrubber to the RTO/TO; increased a VOC emission limit on EUFBCOOLER to 7.54 lbs/hr based on a recent stack test; and modified stack vent #25 to a vertical discharge for FGDDGSDRYERS.

Additionally, there were no increases of existing emission limits with the exception of the lb/hr increase for EUFBCOOLER. The PTE calculations were included with the PTI application for the facility that showed it would continue with its synthetic minor status for PSD regulations. The PTI was not required to go through the public participation process.

Compliance Status

The AQD finds that the stationary source is expected to be in compliance with all applicable requirements associated with the emission unit(s) involved with the change as of the date of approval of the Minor Modification to the ROP.

Action Taken by EGLE

The AQD proposes to approve a Minor Modification to ROP No. MI-ROP-N6996-2018, as requested by the stationary source. A final decision on the Minor Modification to the ROP will not be made until any affected states and the United States Environmental Protection Agency (USEPA) has been allowed 45 days to review the proposed changes to the ROP. The delegated decision maker for the AQD is the District Supervisor. The final determination for approval of the Minor Modification will be based on the contents of the permit application, a judgment that the stationary source will be able to comply with applicable emission limits and other requirements, and resolution of any objections by any affected states or the USEPA.