Iowa Department of Natural Resources
Draft Title V Operating Permit Fact Sheet

This document has been prepared to fulfill the public participation requirements of 40 CFR Part 70 and 567 Iowa Administrative Code (IAC) 22.107(6). 40 CFR Part 70 contains operating permit regulations pursuant to Title V of the Clean Air Act.

The Iowa Department of Natural Resources (DNR) finds that:

1. POET Biorefining – Gowrie, LLC, located at 1562 320th St, Gowrie, IA has applied to renew their Title V Operating Permit. The designated responsible official of this facility is Andrew Samp.
2. POET Biorefining – Gowrie, LLC is an ethanol production facility. This facility consists of 45 emission units with potential emissions of:

Pollutant	**Abbreviation**	**Potential Emissions** (Tons per Year)
Particulate Matter (≤ 2.5 μm)	$PM_{2.5}$	143.79
Particulate Matter (≤ 10 μm)	PM_{10}	152.19
Particulate Matter	PM	193.63
Sulfur Dioxide	SO_2	1.34
Nitrogen Oxides	NO_x	132.95
Volatile Organic Compounds	VOC	135.67
Carbon Monoxide	CO	122.55
Lead	Lead	0.00
Hazardous Air Pollutants [(1)]	HAP	22.79

[(1)] May include the following: Acetaldehyde, Acrolein, Arsenic Compounds, Benzene, Beryllium Compounds, Cadmium Compounds, Chromium Compounds, Cobalt Compounds, Formaldehyde, Hexane, Manganese Compounds, Mercury Compounds, Methanol, Naphthalene, Nickel, Selenium, Toluene. Acetaldehyde is the single highest total for Single HAP at 8.71 tpy.

3. POET Biorefining – Gowrie, LLC submitted a Title V Operating Permit renewal application on June 1, 2023. Based on the information provided in these documents, DNR has made an initial determination that the facility meets all the applicable criteria for the issuance of an operating permit specified in 567 IAC 22.107.
4. DNR has complied with the procedures set forth in 567 IAC 22.107, including those regarding public notice, opportunity for public hearing, and notification of EPA and surrounding state and local air pollution programs.

DNR procedures for reaching a final decision on the draft permit:

1. The public comment period for the draft permit will run from January 25, 2024 through February 24, 2024. During the public comment period, anyone may submit written comments on the permit. Mail signed comments to Derek Wedemeier at the DNR address shown below. The beginning date of this public comment period also serves as the beginning of the U.S. Environmental Protection Agency's (EPA) 45-day review period, provided the EPA does not seek a separate review period.
2. Written requests for a public hearing concerning the permit may also be submitted during the comment period. Any hearing request must state the person's interest in the subject matter, and the nature of the issues proposed to be raised at the hearing. DNR will hold a public hearing upon finding, on the basis of requests, a significant degree of relevant public interest in a draft permit. Mail hearing requests to Derek Wedemeier at the DNR address shown below.
3. DNR will keep a record of the issues raised during the public participation process, and will prepare written responses to all comments received. The comments and responses will be compiled into a responsiveness summary document. After the close of the public comment period, DNR will make a final decision on the renewal application. The responsiveness summary and the final permit will be available to the public upon request.

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DNR concludes that:

1. DNR has authority under 455B.133 Code of Iowa to promulgate rules contained in 567 IAC Chapters 20-35, including, but not limited to, rules containing emission limits, providing for compliance schedules, compliance determination methods and issuance of permits.
2. DNR has the authority to issue operating permits for air contaminant sources and to include conditions in such permits under 455B.134 Code of Iowa.
3. The emission limits included in this permit are authorized by 455B.133 Code of Iowa and 567 IAC Chapters 20-35.
4. DNR is required to comply with 567 IAC Chapter 22 in conjunction with issuing a Title V Operating Permit.
5. The issuance of this permit does not preclude the DNR from pursuing enforcement action for any violation.

DRAFT Title V Application Review Notes

Applicant:	**POET Biorefining - Gowrie**
SIC Code:	2869 (Fuel Grade Ethanol Production)
City:	Gowrie
County:	Webster (FO #2)
EIQ#:	92-6963
Facility#:	94-02-004
Permit #:	18-TV-008R1
Reviewers:	Emilie Peterson, Derek Wedemeier
Date:	

Facility Identification

Facility Name:	POET Biorefining – Gowrie
Facility Location:	1562 320th Street, Gowrie, IA 50543
Responsible Official:	Andrew Samp
Phone:	515-417-9558

Background

POET Biorefining – Gowrie is a fuel-grade ethanol production facility (SIC 2869). The co-product from the manufacture of ethanol at the facility is DDGS (dried distillers grains with solubles), which is used for animal feed supplement.

The facility is limited to processing the following grains: corn, sorghum and wheat:

A. The maximum amount of grain received and/ or processed at Poet Biorefining – Gowrie (Plant No. 94-02-004) shall not exceed 35.80 million bushels per rolling 12-month period. The maximum amount of grain received and/or processed at Poet Biorefining – Gowrie (Plant 94-02-004) shall not exceed 14, 280 tons per day.
B. The maximum amount of DDGS loaded out at Poet Biorefining – Gowrie (Plant No. 92-02-004) shall not exceed 280,320 tons per rolling 12-month period. The maximum amount of CCGS loaded out at Poet Biorefining – Gowrie (Plant 94-02-004) shall not exceed 2,730 tons per day.
C. The undenatured ethanol production for the facility shall not exceed 100 million gallons on a rolling 12-month basis.
D. The owner or operator shall loadout a maximum of 108.15 million gallons of undenatured ethanol, denatured ethanol or E85, combiner per rolling 12-month period on a plantwide basis.
E. The owner or operator shall not use more than 5.15 million gallons of denaturant per rolling 12-month period at this facility.

This is the first renewal permit for the facility. The facility consists of 29 emission points and 13 insignificant units. The Title V application for POET Biorefining – Gowrie was received June 1, 2023.

Regulatory Status

POET Biorefining – Gowrie is a major source for Title V. See Table 1.

Table 1
Title V Major Source by Pollutant

Pollutant	Major for Title V?
PM_{10}	☒
SO_2	☐
NO_x	☒
VOC	☒
CO	☒
Lead	☐
Individual HAP	☐
Total HAPs	☐

HAPs may include Acetaldehyde, Acrolein, Benzene, Formaldehyde, Hexane, Methanol, and Toluene.

Construction Permits

The emission units and associated construction permits are listed in Table 2.

Table 2
Emission Points/Units and Current Construction Permits

Emission Point Number	Emission Unit Number	Emission Unit Description	DNR Construction Permit Number
EP SV1	EU 1	3 Receiving Pits	04-A-497-S10
	EU 2	Grain Legs and Conveying System	
	EU 3	Grain Bin Loading (6 Bins)	
	EU DDGS Loadout	DDGS Loadout	
EP SV2	EU 4	Corn Scalper, Conveyor, Surge Bin	04-A-498-S6
EP SV3	EU 5	Hammermill #1	04-A-499-S7
EP SV4	EU 6	Hammermill #2	04-A-500-S7
EP SV5	EU 7	Hammermill #3	04-A-501-S6
EP SV6	EU 8	Hammermill #4	05-A-486-S6
EP SV22	EU 25	Hammermill #5	06-A-316-S5
EP SV7 (RTO Bypass)	EU 9	Mash Fermentation and Beer Wells	04-A-503-S9
	EU 10	Distillation (Evaporator, Strippers, 3 Molecular Sieves, Rectifier)	
EP SV9	EU 9	7 Batch Mash Fermenters and Beerwell	04-A-505-S13

Emission Point Number	Emission Unit Number	Emission Unit Description	DNR Construction Permit Number
	EU 10	Distillation (Evaporator, Strippers, 3 Molecular Sieves, Rectifier)	
	EU 14	Centrifuge #1	
	EU 15	Centrifuge #2	
	EU 16	Centrifuge #3	
	EU 17	Centrifuge #4	
	EU 11	DDGS Dryer 1	
	EU 12	DDGS Dryer 2	
	EU 26	Corn Oil Separation System	
EP SV10	EU 19	DDGS Fluid Bed Cooler	04-A-506-S10
EP SV11	EU 20	DDGS Storage Silo	04-A-507-S3
EP SV12	EU 21	DDGS Storage Silo Bypass	04-A-508-S4
EP SV13	EU 22	Boiler #1	04-A-509-S4
EP SV20	EU 23	Boiler #2	05-A-481-S3
EP SV14	EU TK-003	Denaturant or 200 Proof Ethanol Storage Tank	04-A-510-S5
EP SV15	EU TK-001	190 Proof Ethanol Storage Tank	04-A-511-S4
EP SV16	EU TK-002	Denaturant or 200 Proof Ethanol Storage Tank	04-A-512-S6
EP SV17	EU TK-004	200 Proof Ethanol Storage Tank	04-A-513-S5
EP SV18	EU TK-005	200 Proof Ethanol Storage Tank	04-A-514-S5
EP SV21	EU 24	Diesel Generator 2000 kW	05-A-483-S4
EP SV23	EU 14	Centrifuge #1	17-A-215
	EU 15	Centrifuge #2	
	EU 16	Centrifuge #3	
	EU 17	Centrifuge #4	
EP Flare	EU3a	Truck Loadout	04-A-515-S7
	EU3b	Rail Loadout	
EP F001	EU F001	Fugitive Grain Receiving	NA
EP F002	EU F002	Fugitive Unpaved Roads	05-A-484-S6
EP F003	EU F003	Fugitive DDGS Loading	NA
EP F004	EU F004	Equipment Leaks	05-A-485-S3
EP F005	EU F005	Wetcake Production	NA
EP Cooling Tower	EU Cooling Tower	Cooling Tower	05-A-482-S3
EP SV24	EU 26	Corn Oil Separation System	19-A-123

Program Applicability:

- PSD: NO
- Part 61 NESHAP: NO
- NSPS: YES. See Table 3.
  Note that the facility is subject to NSPS Subpart VV – Standards of Performance for *Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry.* However, in accordance with 40 CFR 60.480(e)(2), the facility has chosen to satisfy the requirements of NSPS Subpart VV by complying with the provisions of NSPS 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.

Table 3
NSPS Applicability

EP	Source Description	Permit#	NSPS Subpart
EP SV1	3 Receiving Pits, Elevator - Headhouse & Internal Handling, 6 Grain Bins	04-A-497-S10	A, DD
EP SV2	Grain Handling: Corn Scalper, Conveyor, Surge Bin	04-A-498-S6	A, DD
EP SV7	7 Fermenters, Beerwells, Distillation Process (RTO Bypass)	04-A-503-S9	A, VVa
EP SV13	Boiler 1	04-A-509-S4	A, Db
EP SV20	Boiler 2	05-A-481-S3	A, Db
EP SV14	Denaturant or 200 Proof Ethanol Storage Tank	04-A-510-S5	A, Kb, VVa
EP SV15	190 Proof Ethanol Storage Tank	04-A-511-S4	A, Kb, VVa
EP SV16	200 Proof Ethanol Storage Tank	04-A-512-S6	A, Kb, VVa
EP SV17	200 Proof Ethanol Storage Tank	04-A-513-S5	A, Kb, VVa
EP SV18	200 Proof Ethanol Storage Tank	04-A-514-S5	A, Kb, VVa
EP F001	Grain Receiving Fugitives	08-A-529-S2	A, DD
EP F004	Equipment Leaks	05-A-485-S3	A, VVa

- Part 63 NESHAP: YES

EP SV21 is subject to 40 CFR 63 Subpart ZZZZ
Emission points SV7, SV9, and SV10 are of the source type regulated by NESHAP Subpart VVVVVV – National Emission Standards for *Hazardous Air Pollutants for Chemical Manufacturing Area Sources.* However, stack testing data provided by Iowa Renewable Fuels indicated that the concentrations of acetaldehyde in the liquid and gas stream in the processes of fermentation and distillation are less than the threshold of 0.1% for NESHAP Subpart VVVVVV. Therefore, this facility is NOT subject to NESHAP Subpart VVVVVV.

- Acid Rain: NO
- Stratospheric Ozone Protection: NO
- Prevention of Accidental Releases: YES

- CAM: YES. Emission units qualifying for CAM plans have CAM equivalent construction permit requirements.

Stack Testing

Stack tests required in construction permits and included in the Title V permit are shown in Table 4, below:

Table 4
Stack Tests Required in Construction Permits

EP	Emission Unit Description	Pollutants	Test Due Date
SV7	7 Fermenters, 2 Beer Wells, Distillation Process (RTO Bypass)	VOC, HAPs	Testing within 180 days after the facility has exceeded 400 hours in RTO bypass mode in any twelve-month rolling period.
SV9	Fermentation/Distillation/DDGS Dryers (RTO)	PM, NOx, VOC, CO, Single HAP, Total HAP	Annually[(1)] and Once every 3-years
SV10	DDGS Fluid Bed Cooler	VOC, Single HAP, Total HAP	Once every 3-years
SV21	Non-emergency Diesel Generator	CO	Test every 8,760 hours or 3 years.
F002	Sweeping and Dust Suppression	PM – State	Quarterly (Four times per rolling 12-month period)

[(1)] Stack testing shall be conducted once every three years with a minimum of six (6) months between testing. If a stack test exceeds 90% of appropriate emission limitation, then testing shall revert to annual until four (4) consecutive tests are less than 90% of the appropriate emissions limitation. See permit for full text.

Emission Estimates:

The potential emissions for the facility are listed in Table 5, below:

Table 5
Potential Emissions (PTE)

Pollutant	Potential Emissions (TPY)
$PM_{2.5}$	143.79
PM_{10}	152.19
PM	193.63

SO_2	1.34
NO_x	132.95
VOC	135.67
CO	122.55
Lead	0.00
Total HAP	22.79

Emission Point-Specific Comments

EP SV1:

1. EP SV1 is emissions from corn receiving, handling, and storage. There are three corn receiving pits via truck and rail (EU1), elevator headhouse and internal handling (EU2), and six grain bins (EU3). The grain bins can store 2.862 million bushels of corn. The maximum capacity of the receiving pits is 840 ton/hr.
2. The associated control equipment is CS1 pulse jet baghouse.
3. EP SV1 is subject to NSPS Subpart A and Subpart DD – Standards of Performance for *Grain Elevators* since the bin storage capacity is more than 2.5 million bushels.

EP SV2:

1. EP SV2 is a corn scalper, conveyor, and surge bin with CS2 (pulse jet baghouse) as the control device.
2. EP SV2 is subject to NSPS subparts A and DD.

EP SV3, EP SV4, EP SV5, EP SV6, EP SV22:

1. EP SV3, EP SV4, EP SV5, EP SV6, and EP SV22 are hammermills numbered 1 through 5, respectively. Each hammermill can process 45 tons of corn/hr.
2. The hammermills are equipped with pulse jet baghouse control devices numbered CS3, CS4, CS5, CS6, and CS23.
3. EP SV3, EP SV4, EP SV5, EP SV6, and EP SV22 are not subject to NSPS or NESHAP subparts.
4. An initial stack test is required on one of the five emission points.

EP SV7:

1. EP SV7 is the RTO (regenerative thermal oxidizer) bypass stack. Emissions to the RTO are from 7 batch mash fermenters and a beer well (EU9), and the distillation process equipment which includes an evaporator, strippers, sieves, and a rectifier (EU10).
2. EP SV7 is equipped with a scrubber (CS7).
3. These emission units may bypass the RTO stack (EP SV9) a maximum of 500 hours in any rolling twelve (12) month period.
4. Stack testing for VOC, Single HAP and Total HAPs is required. Performance testing shall be required with the thermal oxidizer (RTO) bypassed if the facility exceed 400 hours of operation in RTO bypass mode in any twelve-month rolling period.

EP SV9:

1. EP SV9 is the RTO stack. Emissions units for the emission point are 7 batch mash fermenters and a beer well (EU9), distillation equipment (EU10), distiller's grain dryer 1

(EU11), distiller's grain dryer 2 (EU12), 4 centrifuge units (EU14 through EU17) and a corn oil separation system (EU26).
2. EU9 and EU10 are controlled by a scrubber (CS7); EU11 and EU12 are controlled by multi-cyclones (CS9 and CS10). The scrubber and multi-cyclones vent to the RTO (CS11). EU's 14-17 and EU 26 are controlled by a RTO (CS11).
3. Stack testing for PM, NO_x, VOC, CO, single HAP and total HAP is required once every Stack testing shall be conducted once every three years with a minimum of six (6) months between testing. If a stack test exceeds 90% of appropriate emission limitation, then testing shall revert to annual until four (4) consecutive tests are less than 90% of the appropriate emissions limitation.. Stack testing shall be completed no later than August 31, 2024.

EP SV10:

1. EP SV10 is emissions from the DDGS fluid bed cooler (EU19). The capacity of the cooler is 30 tons of DDGS per hour.
2. The DDGS fluid bed cooler is controlled by a baghouse (CS12).
3. The facility is limited to a maximum production/processing of 280,320 tons of dry DDGS per twelve-month rolling period plant wide.
4. Stack testing was completed for PM on 8/15/2023. Results for this test exceeded the S9-version construction permit emission limits. The construction permit was modified to increase the PM, PM10, and PM2.5 emission limits. Construction permit 04-A-506-S10 was issued 11/28/2023. No additional PM/PM10/PM2.5 stack test will be required for this unit during this renewal.
5. Stack testing is required for VOC, single HAP, and total HAP once every three years. Stack testing was passed August 15, 2023.

EP SV11:

1. EP SV11 is emissions from the DDGS storage silo (EU20). The silo capacity is 30 tons per hour.
2. A baghouse (CS13) is the control device for this emission point.
3. EP SV11 is not subject to NSPS or NESHAP subparts.

EP SV12:

1. EP SV12 is the DDGS storage silo bypass (EU21). The silo bypass capacity is 30 tons/hr.
2. A filter (CS14) is the control device for this emission point.
3. See permit content for detailed emission and operational limits requirements.
4. EP SV12 is not subject to NSPS or NESHAP subparts.
5. Stack testing is not required at this time.

EP SV13, EP SV20:

1. EP SV13 and EP SV20 are boiler 1 (EU22) and boiler 2 (EU23). The boilers are fired on natural gas. The rated capacity of each boiler is 143 MMBtu/hr.
2. The boilers are equipped with low NO_x burners.
3. EP SV13 and EP SV20 are subject to NSPS Subpart A and Subpart Db - Standards of Performance for *Industrial-Commercial-Institutional Steam Generating Units.*

4. These units **are not** subject to NESHAP JJJJJJ – National Emission Standards for Hazardous Air Pollutants *for Industrial, Commercial, and Institutional Boilers Area Sources* even though the units are located at an area source since the boilers only fire on natural gas.
5. EP SV13 and EP SV20 **are not** subject to NESHAP Subpart DDDDD – National Emission Standards for Hazardous Air Pollutants for *Industrial Commercial Institutional Steam Generating Boilers and Process Heaters*, because the boilers are not located at a major source of HAP.
6. The combined total amount of natural gas combusted in Boilers # 1 (SV 13) and Boilers #2 (SV 20) is limited to 2,505.36 MMSCF per year on a twelve month rolling basis.
7. The permit requires CEM for measuring nitrogen oxide emissions discharged to the atmosphere. The CEM is required to be operated and data collected as required under 40 CFR 60.48b(c), (d), (e) and (f), or to use an approved alternative monitoring plan.

EP SV14:

1. EP SV14 (EU TK-003) is a 126,900 gallon, denaturant or 200 proof ethanol storage tank.
2. EP SV14 is equipped with an internal floating roof.
3. EP SV14 is subject to NSPS subparts A, Kb, and VVa.
4. Recordkeeping of VOC and total HAPs are required.
5. No O&M plan is required at this time.

EP SV15:

1. EP SV15 (EU TK-001) is a 250,000 gallon, 190 proof ethanol storage tank equipped with an internal floating roof.
2. EP SV15 is subject to NSPS subparts A and Kb. The facility has chosen to comply with the provisions of NSPS Subpart VVa to satisfy the requirements of NSPS VV.
3. VOC recordkeeping is required.

EP SV16:

1. EP SV16 (EU TK-002) is a 250,000 gallon, 200 proof ethanol or denaturant storage tank equipped with an internal floating roof.
2. EP SV16 is subject to NSPS subparts A, Kb, and VVa.
3. VOC and Total HAP recordkeeping is required.

EP SV17 and EP SV18:

1. EP SV17 (EU TK-004) and EP SV18 (EU TK-005) are 1,500,000 gallon, 200 proof ethanol storage tanks equipped with internal floating roofs.
2. EP SV17 and EP SV18 are subject to NSPS subparts A, Kb, and VVa.
3. VOC recordkeeping is required.
4. No O&M plan is required at this time.

EP SV19:

1. Construction permit 18-A-163 for this emission point has been rescinded.

EP SV21:

1. EP SV21 (EU24) is emissions from a non-emergency diesel generator. The engine is used as part of a curtailment program.
2. The manufacture date of the engine is December 19, 1999.
3. The rated capacity of the generator is 2000 kW.
4. An oxidation catalyst (CO reduction) is used as control equipment for this emission point.
5. EP SV21 is subject to NESHAP Subpart ZZZZ - National Emission Standards for Hazardous Air Pollutants for *Stationary Reciprocating Internal Combustion Engines*. The generator engine is an existing (construction commenced before June 12, 2006), non-emergency, > 500 HP engine, <30 L/cylinder displacement. The permit contains specific NESHAP requirements.
6. The engine shall not operate more than 450 hours per rolling 12-month period.
7. Stack testing is required for CO, every three years.

EP SV23

1. EP SV23 are four centrifuges, EU14, EU15, EU16, and EU17.
2. The rated capacity is 350 gallons per minute of whole stillage, each.
3. It is not subject to NSPS.

EP Flare:

1. EP Flare (EU Truck and Rail Loadout) is emissions from the ethanol loadout via truck and rail. The capacity of the loadout operation is 650 gal/min by truck and 2400 gal/min by rail.
2. The flare is the control device.

EP F001:

1. EP F001 (EUF001) is grain receiving fugitive emissions.
2. EP F001 is subject to CFR Part 60, Subpart DD *Standards of Performance for Grain Elevators* as specified in 40 CFR Part 60 §60.300 at this time.

EP F002:

1. EP F002 (EUF002) is fugitive dust emissions from the unpaved plant haul roads.
2. Quarterly silt testing and recordkeeping are required.

EP F003:

1. This emission point is Fugitive DDGS Loadout.

EP F004:

1. EP F004 (EUF004) is VOC fugitive emissions from equipment leaks.
2. The facility controls fugitive emissions from equipment using leak detection and repair (LDAR).
3. EP F004 is subject to NSPS subparts A and VV, but the facility has chosen to comply with NSPS Subpart VVa.

EP F005:

1. EP F005 (EUF005) is for Wetcake production.
2. There is an emission limit for fugitive dust.
3. This emission point is not subject to NSPS or NESHAP subparts.

EP Cooling Tower:

1. EP Cooling Tower (EU Cooling Tower) is emissions from a cooling tower with a rated capacity of 30,000 gals/min.
2. The control equipment for this emission point is a mist eliminator.
3. This emission point is not subject to NSPS or NESHAP subparts.

EP SV24: Corn Oil Separation System:

1. This unit was permitted in 2019 for EU26 which previously had a small unit exemption (SUE).
2. This unit is subject to a 0.01 lb/hr VOC limit.
3. This emission point is not subject to NSPS or NESHAP subparts.