STATE OF NEBRASKA

Dave Heineman
Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY
Michael J. Linder
Director
Suite 400, The Atrium
1200 'N' Street
P.O. Box 98922
Lincoln, Nebraska 68509-8922
Phone (402) 471-2186
FAX (402) 471-2909
website: www.deq.state.ne.us

RE: RESPONSE SUMMARY
Valero Renewable Fuels Company, LLC
2615 260th Street
Albion, Nebraska 68620

NDEQ Facility #85814

To Whom It May Concern:

The Nebraska Department of Environmental Quality (NDEQ) has considered all comments received and has made a final decision to modify and issue the construction Permit for the above referenced facility. This Permit approves significant permit revision for an ethanol manufacturing plant producing approximately 135 million gallons of denatured ethanol annually in accordance with regulations contained in Title 129 - Air Quality Regulations.

The decision regarding issuance of this Construction Permit may be appealed under Neb. Rev. Stat. 81-1509. This appeal shall be done in accordance with the Administrative Procedure Act, Neb. Rev. Stat. Section 84-901 to 84-920 and Title 115 - Rules of Practice and Procedure.

In preparing this summary, the NDEQ reviewed all comments made during the public comment period from August 1, 2012, to August 30, 2012, and listed all comments in the attached Responsiveness Summary. The Responsiveness Summary consists of four sections:

Comment #: The comment is summarized.

Response and Rationale: NDEQ's response to the comment raised and the rationale.

Changes: Any changes to the Permit and/or Fact Sheet are addressed.

Applicable Regulations/Statutes: This is a listing of regulations/statutes pertinent to the comment.

The NDEQ appreciates the time and the conscientious efforts of all that have commented. If you have any questions, please contact Gyanendra Prasai or me at (402) 471-2189.

Sincerely,

{ORIGINAL SIGNED} **9/21/12**

Shelley Schneider, Air Administrator
Air Quality Division

Date

Enclosure

RESPONSE TO PUBLIC COMMENTS SUMMARY
On the Issuance of a Construction Permit for
Valero Renewable Fuels Company, LLC (Facility #85814)

Background Information:

Valero Renewable Fuels Company, LLC (Valero) submitted a Construction Permit application on September 9, 2011. This permit approves the significant permit revision for an ethanol manufacturing plant producing approximately 135 million gallons of denatured ethanol annually.

Andy Roberts, plant manager of Valero, submitted comments to the NDEQ in a letter dated August 22, 2012. The following are NDEQ's responses to the comments received during the public comment period:

COMMENT #1: Valero commented on the Condition II.(A)(3) stating that Valero would like to have clarification as to NDEQ's definition of a physical or operational change and when this condition would be applicable. Valero said that although Condition II.(A)(3)(b) provides examples of activities that NDEQ considers physical and operational changes, the list is not exhaustive and the applicability language contained in the permit requirements remains ambiguous and unclear. To ensure clear compliance expectations, Valero has requested a revision of Condition II.(A)(3) with a specific, unambiguous definition of physical or operational changes so that it is obvious when the requirements of this condition would be applicable.

RESPONSE AND RATIONALE: The purpose of the Condition II.(A)(3) is to require the source to notify the NDEQ when previous testing may no longer be representative of the current operation of the emission unit or control equipment due to any physical or operational changes that may increases the amount of any air pollutant. Since the physical and operational changes can be any, it is not possible for NDEQ to list the specific changes in the permit or Fact Sheet as requested by Valero. However, the NDEQ is committed to work with Valero to help identify whether certain physical or operational changes may be expected to increase emissions, thus requiring notification in accordance with Condition II.(A)(3).

CHANGES: No change has been made.

APPLICABLE REGULATIONS: Title 129, Chapter 34 – Emission Sources; Testing; Monitoring.

Questions regarding this summary may be directed to:

Air Quality Division-Permitting Section
Nebraska Department of Environmental Quality
PO Box 98922
Lincoln, NE 68509-8922

STATE OF NEBRASKA

Dave Heineman
Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY
Michael J. Linder
Director
Suite 400, The Atrium
1200 'N' Street
P.O. Box 98922
Lincoln, Nebraska 68509-8922
Phone (402) 471-2186
FAX (402) 471-2909
website: www.deq.state.ne.us

AIR QUALITY CONSTRUCTION PERMIT

PERMIT NUMBER: CP11-035

Facility Name: Valero Renewable Fuels Company, LLC **NDEQ Facility ID#:** 85814

Mailing Address:
PO Box 188
Albion, Nebraska 68620-0188

Facility Location:
2615 260th Street
Section 26, Township 20N, Range 6W
Albion, Boone County, Nebraska 68620

Project Description: SIGNIFICANT PERMIT REVISION for an ethanol manufacturing plant producing approximately 135 million gallons of denatured ethanol annually

Standard Industrial Classification (SIC) Code: 2869, Industrial Organic Chemicals

Revised or Superseded Permits: This construction permit supersedes Conditions II.(A), III.(A), III.(B), III.(C), III.(D), and III.(G) of construction permit CP10-004 issued November 1, 2011. No other terms or conditions of the original construction permit are being revised or otherwise modified by this document. All other provisions of the original permit are still in effect, and in concert with this permit, constitute the effective construction permit.

Pursuant to Title 129 – Nebraska Air Quality Regulations, Chapter 14, the public has been notified by prominent advertisement of this proposed permit revision and the thirty (30) day period allowed for comments has elapsed. This construction permit approves the proposed revision as identified in the air quality construction permit application #11-035 received September 9, 2011, including any supporting information received prior to issuance of this permit. Additional details of the proposed project, including estimated pollutant emissions caused by the project, can be found in the accompanying Fact Sheet.

Compliance with this permit shall not be a defense to any enforcement action for violation of an ambient air quality standard. The permit holder, owner, and operator of the facility shall assure that the installation, operation, and maintenance of all equipment is in compliance with all of the conditions of this permit.

The undersigned issues this permit on behalf of the Director under the authority of Title 129 – Nebraska Air Quality Regulations as amended April 1, 2012.

9/21/12
Date

{ORIGINAL SIGNED}
Shelley Schneider, Air Administrator
Air Quality Division

TABLE OF CONTENTS

II. SPECIFIC CONDITIONS

(A) The owner/operator of the source shall provide the following notifications to the NDEQ:

(1) The date construction, reconstruction or modification commenced as defined in Chapter 1, Section 031. Notification shall be postmarked no later than 30 days after such date and include a summary description and whether the requirement to commence construction was met through: {Chapter 17, Section 012}

(a) Initiating physical on-site construction activities of a permanent nature that meet the definition of "begin actual construction", or

(b) Entering into binding agreements or contractual obligations. If this option is used, the notice shall also include a brief summary of each binding agreement or contractual obligation entered into, the date of the agreement or contract, and why it cannot be cancelled or modified without substantial loss to the owner or operator.

(2) The date of initial startup of operations postmarked within 15 days after such date. {Chapter 7, Section 002.03}

(3) When the source makes physical or operational changes to an emissions unit or associated control equipment that may cause the previous testing to not represent current operation conditions or emissions, the owner/operator shall submit notification of the change. Such notification shall be postmarked within 15 days after the change. The NDEQ may require performance testing based on review of the specific changes identified in the notification and the potential impact on emissions from the unit(s) and/or performance of the control equipment. {Chapter 34, Section 001}

(a) This notification requirement applies to emissions units and/or control equipment which meet the following requirements, except as provided in condition II.(A)(3)(d):

(i) Emissions from the emissions unit and/or control equipment is subject to an emissions limit; and

(ii) A valid performance test has been conduction for the pollutant to which the emissions limit applies.

(b) Changes that may cause emissions to increase or render previous testing not representative of current operations include, but are not limited to, increasing the capacity of an emissions unit, changing the operational parameters of any control equipment outside of the range allowed for under this permit that makes the control equipment less efficient, changing the type of scrubber packing material, or increasing the inlet pollutant loading of any control equipment.

(c) The notification shall include the date of the changes, a description of the changes made, and an evaluation of the resulting impact on emissions from the emissions units and/or control equipment.

(d) The above notification requirements do not apply when compliance with the emission limitation is demonstrated through the use of a CEMS or PEMS.

(4) When an increase in actual production or operating throughput of process equipment, for which performance testing has been conducted, as follows: {Chapter 34, Sections 001 and 006}

(a) When there is a ten percent (10%) increase in production/throughput rate, based on the average calendar day rate, over the rate recorded during the most recent valid performance test; or,

(b) Each cumulative five percent (5%) increase in production/throughput rate, based on a 30-day rolling average, over the rate recorded during the most recent valid performance test.

(c) The above notification requirements do not apply to emission units that have been tested and use a CEMS or PEMS to demonstrate compliance.

III.(A) Specific Conditions for Grain Handling and Hammermilling

(1) Permitted Emission Points: The source is permitted to construct the emission points and associated emission units identified in the following table:

Emission Point ID#	Required Control Equipment ID# and Description	Emission Unit Description
EP10	C10: Grain Conveyor Baghouse	EU01: Corn Conveyor
EP20	C20: Hammermill Baghouse	EU02, EU03, EU04, and EU05: Hammermills #1, #2, #3, and #4

(2) Emission Limitations and Testing Requirements:

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 Specific Condition II.(D).

Emission Point ID#	Pollutant	Permitted Limit	Averaging Period	Basis for Permit Limit	Performance Testing Required (Yes/No)
EP10	PM[1]	0.11 lb/hr	3-hr or test method average	Chapter 17	No
	PM_{10}[2]	0.11 lb/hr	3-hr or test method average	Chapters 4 and 17	No
EP20	PM[1]	0.29 lb/hr	3-hr or test method average	Chapter 17	No
	PM_{10}[2]	0.29 lb/hr	3-hr or test method average	Chapters 4 and 17	No

[1] Filterable only
[2] Filterable and Condensable

(3) Operational and Monitoring Requirements and Limitations

(a) Emissions from the emission units identified in Condition III.(A)(1) shall be controlled by pollution control equipment as follows: EU01 shall be controlled by C10; and EU02 through EU05 shall be controlled by C20. {Chapters 19 and 20}

(b) Operation and maintenance of each baghouse shall be in accordance with the following requirements: {Chapters 19 and 20}

(i) The baghouse shall be operated and be controlling emissions at all times when the associated emission units are in operation.

(ii) The baghouse shall be equipped with an operational pressure differential indicator. Pressure differential indicator readings shall be recorded at least once each day that the associated baghouse is operating.

(iii) Baghouse filter bags are to be inspected and/or replaced as often as necessary to ensure proper operation or more frequently as indicated by pressure differential indicator readings or other indication of bag failure.

(iv) Observations at least once each day during daylight hours of baghouse operation shall be conducted to determine whether there are visible emissions from the stack, leaks, noise, or other indications that corrective action is needed. If corrective action is required, it shall occur immediately.

(4) Applicable NSPS, NESHAP, and MACT Requirements:

The NDEQ has not identified any NSPS, NESHAP, or MACT requirements that apply to the emission points or emission units listed in Condition III.(A)(1).

(5) Reporting and Recordkeeping Requirements:

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

(b) Filter replacement records including the date the filter replacement occurred and the type of filter installed.

(c) Records documenting the date, time, observations, and corrective actions taken for each day the associated baghouse is in operation.

III.(B) Specific Conditions for Fermentation Operations

(1) Permitted Emission Points: The source is permitted to construct the emission points and associated emission units identified in the following table:

Emission Point ID#	Required Control Equipment ID# and Description	Emission Unit Description
EP40	C40: Fermentation (CO_2) Packed Bed Water Scrubber with chemical addition.[1]	EU23 through EU29: Fermentation Tanks #1 - #7
		EU30: Beerwell

[1] Chemical addition is not required provided the requirements of Section III.(B)(3)(c)

(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 Specific Condition II.(D).

Emission Point ID#	Pollutant	Permitted Limit	Averaging Period	Basis for Permit Limit	Performance Testing Required (Yes/No)
EP40	PM[1]	0.56 lb/hr	3-hour or test method average	Chapter 17	Yes
	PM_{10}[2]	0.56 lb/hr	3-hour or test method average	Chapters 4 and 17	Yes
	VOC	10.0 lb/hr[3]	3-hour or test method average	Chapter 17	Yes
	HAP	65% Control Efficiency or 20.0 $ppm_{v,d}$ for combined HAPs	3-hr or test method average[4]	Chapter 27	Yes

[1] Filterable only
[2] Filterable and Condensable
[3] Expressed as weight of VOC
[4] Speciation and Quantification of HAP composition shall be performed at inlet and outlet.
[5] Performance testing shall be conducted in accordance with Condition III.(B)(2)(b).

(b) Performance testing shall occur within 90 days after the issuance of this permit, unless otherwise specified by the NDEQ. Performance tests must be completed during the third quarter (July 1 through September 30) and submitted to the Department as follows: {Chapter 34}

(i) Performance tests shall be conducted while operating at maximum capacity. At a minimum, the tests shall be performed at the lowest scrubber liquid flow and sodium bisulfate, or other additive, addition rate that will be operated at.

(ii) Performance tests shall be completed and submitted to the Department in accordance with Specific Conditions II.(D)(2) through II.(D)(5).

(3) Operational and Monitoring Requirements and Limitations

(a) Emissions from the emission units identified in Condition III.(B)(1) shall be controlled by pollution control equipment as follows: EU23 through EU30 shall be controlled by C40. {Chapters 19 and 27}

(b) Operation and maintenance of the scrubber shall be in accordance with the following requirements: {Chapters 19 and 27}

(i) The scrubber shall be operated and be controlling emissions at all times when the associated emission units are in operation.

(ii) The scrubber shall be equipped with devices capable of monitoring the following operating parameters in the manner described below:

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

2. Chemical addition flow rate shall be monitored and recorded continuously;

3. Scrubber pressure differential shall be monitored and recorded continuously, and

4. Scrubber liquid temperature shall be monitored by direct measurement and recorded at least once each day.

(iii) The scrubber operating parameters shall be maintained at the levels recorded during the most recent performance test conducted at the facility as described below:

1. Scrubber liquid shall be comprised of only well water to ensure consistent liquid temperature. In the event that Valero chooses to use alternative scrubber liquid source, or scrubber liquid recirculation, compliance testing will be required to determine an appropriate scrubber liquid temperature and 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.

(iv) 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 required, it shall occur immediately.

(v) Flow meters for recording scrubbing liquid and chemical addition flow rates shall be maintained and calibrated according to manufacturer's instructions.

(c) The source may demonstrate through testing performed in accordance with Condition II.(D), or the use of a CEMS, that chemical addition is not necessary. Testing completed

after May 8, 2007, and accepted by the NDEQ, may be used to demonstrate chemical addition is not necessary. {Chapter 17, Chapter 27, and Chapter 34}

(d) Compliance Schedule for Chemical Addition Equipment: Unless the source has testing data demonstrating chemical addition is not necessary, as provided for in Condition III.(B)(3)(c), equipment for continuously recording the scrubbing liquid flow rate and chemical addition flow rate (if chemicals are added) shall be installed by July 10, 2008.

(4) Applicable NSPS, NESHAP, and MACT Requirements:

The NDEQ has not identified any NSPS, NESHAP, or MACT requirements that apply to the emission points or emission units listed in Condition III.(B)(1).

(5) Reporting and Recordkeeping Requirements:

(a) Records that document the operating parameter data for the scrubber, including the date and time of the readings. The record shall include:

(i) Scrubbing liquid flow rate;

(ii) Chemical addition flow rate;

(iii) Scrubber pressure differential readings; and

(iv) Scrubbing liquid temperature readings.

(b) Records documenting the date, time, observations, and corrective actions taken for each day the associated scrubber is in operation.

(c) Records that document the operating parameters developed during the most recent valid performance test conducted at the facility.

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

III.(C) Specific Conditions for Distillation and DGS Drying Operations

(1) Permitted Emission Points: The source is permitted to construct the emission points and associated emission units identified in the following table at the capacities and using the fuel types listed:

Emission Point ID#	Control Equipment ID# and Description	Emission Unit (EU) / EP ID# and Description	Maximum Capacity	Permitted Fuel Type
EP30	C30: TO/HRSG #1 and C31: TO/HRSG #2	EU34: DDGS Dryer #1	45.0 MMBtu/hr 42.0 ton/hr	Natural Gas
		EU35: DDGS Dryer #2	45.0 MMBtu/hr 42.0 ton/hr	Natural Gas
		EU37: DDGS Dryer #3	45.0 MMBtu/hr 42.0 ton/hr	Natural Gas
		EU38: DDGS Dryer #4	45.0 MMBtu/hr 42.0 ton/hr	Natural Gas
		EU36: TO/HRSG #1	122.0 MMBtu/hr	Natural Gas and Biogas
		EU39: TO/HRSG #2	122.0 MMBtu/hr	Natural Gas
		EU06: Mixer		
		EU07 and EU08: Slurry Tanks #1 and #2		
		EU09: Flash Tank		
		EU10: Cook Tubes		
		EU11 and EU12: Liquefaction Tanks #1 and #2		
		EU15 and EU16: Yeast Tanks #1 and #2		
		Molecular Sieves #1 - #6		
		EU17: Beer Column		
		EU18: Side Stripper		
		EU19: Rectifier Column		
		EU20 and EU22: Condensers #1 and #2		
		Centrifuges #1 - #6		
		Evaporators #1 - #8		
		C74: DDGS Cooling Drum Baghouse		

(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 Specific Condition II.(D).

Emission Point ID#	Pollutant	Permitted Limit	Averaging Period	Basis for Permit Limit	Performance Testing Required (Yes/No)
EP30	PM[1]	11.39 lb/hr	3-hr or test method average	Chapter 17	No
	PM_{10}[2]	11.39 lb/hr	3-hr or test method average	Chapters 4 and 17	No
	SO_x[3]	18.6 lb/hr	3-hr or test method average	Chapter 17	No
	NO_x	0.1 lb/MMBtu	30-day rolling average	40 CFR 60 Subpart Db, Chapters 17 and 18	No[6]
		99.8 tons/yr	12-month rolling average	Chapter 17	No[6]
	CO	20.7 lb/hr	3-hr or test method average	Chapter 17	No
	VOC	8.2 lb/hr[4]	3-hr or test method average	Chapter 17	Yes[7]
	HAP	-	3-hr or test method average[5]	Chapter 27	Yes[7]

[1] Filterable only
[2] Filterable and Condensable
[3] SO_x shall be tested while biogas from the Biomethanator system is being combusted in the TO/HRSG
[4] Expressed as weight of VOC
[5] Speciation and Quantification of HAP composition shall be performed at outlet.
[6] Testing is not required since a CEMS, or alternative system, is required to be installed by the NSPS.
[7] Performance testing shall be conducted in accordance with Condition III.(C)(2)(c).

(b) Both TO/HRSGs (C30 and C31) are subject to the applicable emission limitations contained in NSPS, Subpart Db.

(c) Performance testing shall occur within 180 days after the issuance of this permit. Performance tests shall be completed and submitted to NDEQ as follows: {Chapter 34}

(i) Performance tests shall be conducted while operating at maximum capacity.

(ii) Performance tests shall be completed and submitted to NDEQ in accordance with Specific Conditions II.(D)(2) through II.(D)(5).

(3) Operational and Monitoring Requirements and Limitations:

(a) Emissions from the emission units identified in Condition III.(C)(1) shall be controlled by pollution control equipment as follows: EU06 – EU12, EU15 – EU22, EU34-EU38, C74, all molecular sieves, centrifuges, and evaporators shall be controlled by either C30 or C31. Emissions exiting C30 and C31 shall be emitted through a common emission point (EP30). {Chapters 19 and 27}

(b) Operation of each TO/HRSG system shall be in accordance with the following requirements {Chapters 19 and 27}:

(i) The TO/HRSG system shall be operated and be controlling emissions at all times when the associated emission units are in operation.

(ii) TO/HRSG system shall be equipped with a device capable of continuously monitoring and recording the temperature of the thermal oxidation combustion chamber(s).

(iii) All monitored operating parameters of the TO/HRSG system shall be maintained at the levels recorded during the most recent performance test that demonstrated compliance with the permitted emissions limits. Alternative levels may be used provided the owner or operator can justify that better emissions control is being achieved. Prior to compliance being demonstrated the combustion chamber temperature shall not be operated below 1,400 degrees Fahrenheit. Combustion chamber temperature shall be averaged hourly from a minimum of one cycle of sampling, analyzing, and data recording for each successive fifteen minute period. Normal operating parameters, or operating parameter ranges, that demonstrate compliance with the permitted emissions limits, with appropriate averaging periods shall be submitted with the source's operating permit application.

(iv) Observations at least once each day during daylight hours of TO/HRSG operation shall be conducted to determine whether there are visible emissions from the stack, leaks, noise, or other indications that corrective action is necessary. If corrective action is required, it shall occur immediately.

(c) Biogas generated in the biomethanators shall be combusted in the biomethanator flare or TO/HRSG system at all times biogas is being produced. {Chapters 17 and 27}

(4) Applicable NSPS, NESHAP, and MACT Standards:

The following standards apply to both TO/HRSGs:

Applicable Standard	Title	Rule Citation
NSPS, Subpart A	General Provisions	Chapter 18, Sec. 001.01 40 CFR 60.1
NSPS, Subpart Db	Industrial, Commercial, and Institutional Steam Generating Units	Chapter 18, Sec. 001.22 40 CFR 60.40b

(5) Reporting and Recordkeeping Requirements:

(a) Records documenting the date, time, and hourly-average temperatures for each day the associated TO/HRSG is in operation.

(b) Records documenting the date, time, observations, and corrective actions taken for each day the associated TO/HRSG is in operation.

(c) Notifications and record keeping as required by 40 CFR 60.7

(d) Reporting and recordkeeping as required by 40 CFR 60.49b

III.(D) Specific Conditions for DDGS Cooling, Storage, and Loadout

(1) Permitted Emission Points: The source is permitted to construct the emission points and associated emission units identified in the following table:

Emission Point ID#	Required Control Equipment ID# and Description	Emission Unit Description
EP70	C74: DDGS Cooling Drum Baghouse	EU41: DDGS Cooling Drum
EP50	C50: DDGS Storage and Loadout Baghouse	EU31: DDGS Storage Silos
		EU32: DDGS Conveyor
		EU33: DDGS Truck and Rail Loadout Spout

(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 Specific Condition II.(D).

Emission Point ID#	Pollutant	Permitted Limit	Averaging Period	Basis for Permit Limit	Performance Testing Required (Yes/No)
EP70	PM[1]	1.70 lb/hr	3-hr or test method average	Chapter 17	No
	PM_{10}[2]	1.70 lb/hr	3-hr or test method average	Chapters 4 and 17	No
	VOC	1.83 lb/hr	3-hr or test method average	Chapter 17	Yes[4]
	HAP	-	3-hr or test method average[3]	Chapter 27	Yes[4]
EP50	PM[1]	0.16 lb/hr	3-hr or test method average	Chapter 17	No
	PM_{10}[2]	0.16 lb/hr	3-hr or test method average	Chapter 17	No

[1] Filterable only
[2] Filterable and Condensable
[3] Speciation and Quantification of HAP composition shall be performed at outlet.
[4] Performance testing shall be conducted in accordance with Condition III.(D)(2)(b).

(b) Performance testing shall occur within 180 days after the issuance of this permit. Performance tests shall be completed and submitted to NDEQ as follows: {Chapter 34}

(i) Performance tests shall be conducted while operating at maximum capacity.

(ii) Performance tests shall be completed and submitted to NDEQ in accordance with Specific Conditions II.(D)(2) through II.(D)(5).

(3) Operational and Monitoring Requirements and Limitations

(a) Emissions from the emission units identified in Condition III.(D)(1) shall be controlled by pollution control equipment as follows: EU41 shall be controlled by C74; and EU31, through EU33 shall be controlled by C50. {Chapters 19 and 20}

(b) Operation and maintenance of each baghouse shall be in accordance with the following requirements: {Chapters 19 and 20}

(i) The baghouse shall be operated and be controlling emissions at all times when the associated emission units are in operation.

(ii) The baghouse shall be equipped with an operational pressure differential indicator. Pressure differential indicator readings shall be recorded at least once each day that the associated baghouse is operating.

(iii) Baghouse filter bags are to be inspected and/or replaced as often as necessary to ensure proper operation or more frequently as indicated by pressure differential indicator readings or other indication of bag failure.

(iv) Observations at least once each day during daylight hours of baghouse operation shall be conducted to determine whether there are visible emissions from the stack, leaks, noise, or other indications that corrective action is needed. If corrective action is required, it shall occur immediately.

(c) DDGS storage and loadout operations shall be located inside a building. {Chapters 17 and 20}

(4) Applicable NSPS, NESHAP, and MACT Requirements:

The NDEQ has not identified any NSPS, NESHAP, or MACT requirements that apply to the emission points or emission units listed in Condition III.(D)(1).

(5) Reporting and Recordkeeping Requirements:

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

(b) Filter replacement records including the date the filter replacement occurred and the type of filter installed.

(c) Records documenting the date, time, observations, and corrective actions taken for each day the associated baghouse is in operation.

III.(G) Specific Conditions for Emergency Equipment

(1) Permitted Emission Points: The source is permitted to construct the emission points and associated emission units identified in the following table at the capacities and using the fuel types listed:

Emission Point ID#	Control Equipment ID# and Description	Emission Unit ID# and Description	Maximum Rating (HP)	Permitted Fuel Type
EP90	-	EU43: Emergency Fire Pump Engine	300	Diesel Fuel

(2) Emission Limitations and Testing Requirements:

Refer to NSPS, Subpart IIII and/or NESHAP, Subpart ZZZZ for any applicable emission limitations and testing requirements associated with the emission points identified in Condition III.(G)(1).

(3) Operational and Monitoring Requirements and Limitations:

(a) EU43 shall be limited to 250 operating hours per any period of twelve (12) consecutive calendar months. At no time during the first eleven (11) months after start-up shall the engine's total operating hours exceed 250 hours. {Chapter 17}

(b) The emergency fire pump engine shall be equipped with a non-resettable hour meter to record the operating hours.

(c) The facility shall comply with the operational and monitoring requirements and limitations as specified in NSPS, Subpart IIII and NESHAP, Subpart ZZZZ. {Chapters 18 and 28}

(4) Applicable NSPS, NESHAP, and MACT Requirements:

The following standards apply to the emergency fire pump engine (EU67):

Applicable Standard	Title	Rule Citation
NSPS, Subpart A	General Provisions	Chapter 18, Sec. 001.01 40 CFR 60.1
NSPS, Subpart IIII	Stationary Compression Ignition Internal Combustion Engines	Chapter 18. Sec. 001.76 40 CFR 60.4200
NESHAP, Subpart A	General Provisions	Chapter 28, Sec. 001.01 40 CFR 63.1
NESHAP, Subpart ZZZZ	Stationary Reciprocating Internal Combustion Engines	Chapter 28, Sec. 001.88 40 CFR 63.6580

(5) Reporting and Recordkeeping Requirements:

(a) Fuel receipts or equivalent documents showing the volume of diesel fuel purchased from the supplier for the fuel combusted in the fire pump engine. Fuel receipts or equivalent documents shall state the sulfur content, by weight, in the distillate fuel. If the supplier does not provide fuel sulfur content, the permittee shall determine sulfur content by testing each fuel shipment with an NDEQ accepted American Society for Testing and Materials (ASTM) method.

(b) Hours of operation for the emergency fire pump engine for each calendar month and for each period of 12 consecutive calendar months.

(c) Notifications and recordkeeping as required by 40 CFR 60.7.

(d) Recordkeeping as required by 40 CFR 60.4214.

Fact Sheet for Permit Number: CP11-035
Date: September 21, 2012

Facility Name: Valero Renewable Fuels Company, LLC **NDEQ Facility ID#:** 85814

Mailing Address:
PO Box 188
Albion, Nebraska 68620-0188

Facility Location:
2615 260th Street
Section 26, Township 20N, Range 6W
Albion, Boone County, Nebraska 68620

Permit Writer: Gyanendra Prasai
Permit Supervisor: Brad Reid
Permit Review: Daniel LeMaistre
Compliance Review: Dallas Dorey

DESCRIPTION OF THE FACILITY:

Valero Renewable Fuels Company, LLC (hereafter referred to as Valero), NDEQ Facility ID# 85814, is a fuel grade ethanol production facility (standard industrial classification, SIC, code 2869 - Industrial Organic Chemicals, not elsewhere classified and North American Industry Classification System, NAICS, code 325193 – Ethyl Alcohol Manufacturing) utilizing a corn dry milling process that began operation September 22, 2007. The facility is located in Albion, Boone County, Nebraska.

Valero has not constructed its own grain receiving operations. Instead, Cargill AgHorizon owned by Cargill Incorporated (hereafter referred to as Cargill), NDEQ Facility ID#01446, provides the grain necessary for ethanol production.

Permitting History:

The facility, under prior ownership, was originally issued a construction permit (CP05-0018) on February 28, 2006, to construct an ethanol manufacturing plant that would produce 123.9 million gallon per year (MMgal/yr) of denatured ethanol. The original permit was amended in a permit (CP06-0011) issued on September 11, 2006, which revised emissions limits, updated HAP calculation methodology, and updated recordkeeping requirements. On May 8, 2008, permit CP08-018m was issued to this facility. Permit CP08-018m was a "reopen for cause" permit that allowed the source to take credit for emissions reductions resulting from chemical addition to the fermentation scrubber water if the chemical addition was necessary to demonstrate compliance with their permitted limits. On May 16, 2008, another revised permit (CP07-0037) was issued which superseded all the existing construction permits CP05-0018, CP06-0011, and CP08-018m in their entirety. In May 2009 the construction permit CP07-0037 was transferred to Valero Renewable Company, LLC.

Again, on November 1, 2011, a revised permit (CP10-004) was issued to the facility that superseded the permit CP07-0037 in its entirety.

DESCRIPTION OF THE PROJECT OR ACTION:

On September 9, 2011, a revision request (application #11-035) for the existing Valero construction permit (CP10-004) was received by the NDEQ. In this application, Valero proposes to increase anhydrous ethanol production from 118 MMgal/yr to 132 MMgal/yr. The increase in ethanol production capacity is based on the result of an internal study that determined Valero could safely increase ethanol production capacity without any physical modification to the facility. To accommodate this production increase,

Valero has requested to increase the emission rates for particulate matter (PM) less than or equal to 10 microns in diameter (PM_{10}). The requested increase in emission rates are based on the pro-rated test results from the site's previous stack testing. The pro-rated test results are based upon upper limit of 99% confidence interval statistical analysis. This permitting action incorporates the following revisions:

- Revise PM and PM_{10} emission limit for Grain Conveyor Baghouse (EP10) and Hammermill Baghouse (EP20).
- Revise PM and PM_{10} emission limits for fermentation scrubber (EP40).
- Revise PM and PM_{10} emission limits for thermal oxidizer with heat recovery steam generator (EP30).
- Revise PM and PM_{10} emission limits for DDGS cooling drum baghouse (EP70).
- Limit the NO_x emissions from the thermal oxidizer with heat recovery steam generator (TO/HRSG) to less than 100 tons per year (EP30), thus keeping this "nested source" less than the 100 tpy PSD major source threshold.
- Remove the dried distiller grains with solubles (DDGS) production limit in Condition III.(C)(3).
- Correct the maximum rating for emergency fire pump engine (EP90).
- Revises the VOC and HAPs emissions from Tanks, liquid loadout, and Equipment leaks.

After this permit revision, the Valero facility will have an estimated production capacity of 132,000,000 gallons per year (gal/yr) of anhydrous ethanol. The anhydrous ethanol will be denatured with gasoline to produce approximately 135 MMgal/yr of denatured ethanol (97.51% anhydrous ethanol and 2.49% denaturant). Distiller grains with solids (DGS) from the process will be converted to animal feed. This will result in the production of up to 831,111 tons/yr modified wet distiller grains with solubles (MWDGS) and up to 415,556 tons/yr DDGS. The difference between the two solid products is moisture content; DDGS contains approximately 10% moisture while MWDGS contains approximately 55% moisture.

Emissions Summary

The total source-wide permitted emissions after the issuance of this permit, separated by facility, are estimated in the following table.

Pollutant	Cargill AgHorizons CP10-019	Valero CP11-035	Source Total
	ton/year	ton/year	ton/year
Particulate Matter(PM)	84.08	107.70	191.78
PM Less than 10 μm in diameter (PM_{10})	26.64	82.34	108.98
PM Less than 2.5 μm in diameter ($PM_{2.5}$)	11.59	73.22	84.81
Sulfur Oxides (SO_x)	0.04	105.11	105.15
Nitrogen Oxides (NO_x)	3.50	102.17	105.67
Carbon Monoxide (CO)	5.88	97.10	102.98
Volatile Organic Compounds (VOC)	0.39	115.40	115.79
Total Reduced Sulfur	-	0.26	0.26
Hazardous Air Pollutants (HAPs)			
Individual HAP: Acetaldehyde	-	< 9.9	< 10
Total HAPs	0.13	< 24.8	< 25

Pollutant	Cargill AgHorizons CP10-019	Valero CP11-035	Source Total
	ton/year	ton/year	ton/year
Greenhouse Gases (GHGs)			
Mass Basis	8,400	634,982	643,383
CO_2e Basis	8,451	636,310	644,761
Mass Basis (excluding biogenic CO_2)	8,400	219,842	228,242
CO_2e Basis (excluding biogenic CO_2)	8,451	221,170	229,621

The changes in emissions from Valero as a result of this permitting action are presented in the following table:

Pollutant	Valero PTE CP10-004	Valero PTE CP11-035	Change in Emissions
	ton/year	ton/year	ton/year
Particulate Matter (PM)	75.73	107.70	31.97
PM Less than 10 µm in diameter (PM_{10})	48.80	82.34	33.54
PM Less than 2.5 µm in diameter ($PM_{2.5}$)[1]	39.93	73.22	33.28
Sulfur Oxides (SO_x)	105.11	105.11	0.00
Nitrogen Oxides (NO_x)	109.14	102.17	-6.98
Carbon Monoxide (CO)	96.79	97.10	0.31
Volatile Organic Compounds (VOC)	112.43	115.40	2.97
Total Reduced Sulfur (TRS)	0.26	0.26	0.00
Hazardous Air Pollutants (HAPs)			
Individual HAP: Acetaldehyde	< 9.9	< 9.9	0.0
Total HAPs	< 24.8	< 24.8	0.0
Greenhouse Gases (GHGs)[1]			
Mass Basis	590,931	634,982	44,052
CO_2e Basis	592,259	636,310	44,052
Mass Basis (excluding biogenic sources)	219,820	219,842	22
CO2e Basis (excluding biogenic sources)	221,148	221,170	22

APPLICABLE REQUIREMENTS AND VARIANCES OR ALTERNATIVES TO REQUIRED STANDARDS:

Chapter 4 – Ambient Air Quality Standards (AAQS)

Due to the increase in PM_{10} and $PM_{2.5}$ that exceeds the modeling thresholds, revised PM_{10} and $PM_{2.5}$ modeling was conducted to demonstrate compliance with the 24-hour NAAQS for PM_{10} and 24-hour and annual for $PM_{2.5}$ and the results are discussed below. The NDEQ has determined that modeling is not required for SO_2, NO_x, and CO because the net increase in emissions of SO_2, NO_x, and CO resulting from

the revisions are below the thresholds above which modeling may be required as specified in the NDEQ's "Atmospheric Dispersion Modeling Guidance for Permits (September 2005)."

1. Air Quality Impact Analysis

The air quality impact analysis for the existing Valero facility consists of a refined modeling analysis to demonstrate that the changes to the existing facility will not cause or contribute to any violations of applicable National Ambient Air Quality Standards (NAAQS) for those pollutants with concentrations above the respective significant impact levels (SILs) in Table 1.0-1 of the Department's *Atmospheric Dispersion Modeling Guidance for Permits* (09/05). A refined analysis was completed using a five year meteorological record as per guidelines found in 40 CFR Part 51, Appendix W, Section 9.0 with a specification for 24-hour PM_{10} and the 24-hour and annual $PM_{2.5}$ because these were the pollutants and averaging periods for which the maximum concentrations from the existing Valero facility were predicted to exceed SILs.

The specifics of the air quality impact analysis can be found in the facility's permitting file at the NDEQ.

2. Refined Modeling Analysis for NAAQS Compliance

The purpose of the refined modeling analysis is to demonstrate that the proposed project will not cause or contribute to violations of applicable NAAQS for PM_{10} (24-hour) and the $PM_{2.5}$ (24-hour and annual). The Nebraska and the National AAQS are shown below:

Nebraska and NAAQS for PM_{10} and $PM_{2.5}$

Pollutant	Averaging Period	Ambient Air Quality Standards ($\mu g/m^3$)	
		National	Nebraska
PM_{10}	24-hour [a]	150	150
$PM_{2.5}$	24-hour [b]	35	35
$PM_{2.5}$	Annual [c]	15	15

[a] Concentration is allowed to be exceeded more than once per year on average over 3 years

[b] 98th percentile, averaged over 3 years

[c] Annual mean, averaged over 3 years

This ambient air quality impact analysis takes into account the combined impacts of emissions from the existing Valero facility, nearby facilities, and background concentrations due to distant major and minor sources and natural sources. Based on the potential emissions from the proposed facility and background concentrations, this analysis demonstrates that the facility is expected to be in compliance with the NAAQS for PM_{10} and $PM_{2.5}$.

2.1. PM_{10} Results

The PM_{10} 24-hour results for NAAQS compliance is shown in the table below. The analysis was completed using a five individual years of meteorological data. The model calculates the second highest 24-hour value for the 24-hour PM_{10} concentration, allowing for one exceedance per year. As shown in the table, the 24-hour concentrations added to the background concentration is predicted to be below the NAAQS.

24-Hour Highest Second High PM_{10} Model Run Results

Year	Modeled Impact ($\mu g/m^3$)	Background ($\mu g/m^3$)	Total ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)
2003	49.5	60	109.5	150
2004	42.0	60	102.0	150
2005	41.1	60	101.1	150
2006	45.4	60	105.4	150
2007	51.5	60	111.5	150

2.2 $PM_{2.5}$ Results

The $PM_{2.5}$ results for 24-hour and annual NAAQS are shown in the tables below. The analysis was completed using a five-year concatenated meteorological record. Because the model is based on only direct or primary $PM_{2.5}$ emissions, the 24-hour $PM_{2.5}$ modeled impact is calculated using a 5-year average of the highest first high concentrations and the annual $PM_{2.5}$ modeled impact is calculated using a 5-year average of the maximum annual concentrations. The 24-hour $PM_{2.5}$ 5-year average of the highest first high value is truncated after the first decimal place to 35.4 $\mu g/m^3$. Since this value is less than 35.5 $\mu g/m^3$, it is rounded to 35 $\mu g/m^3$ to compare with the NAAQS. This approach is consistent with the truncation and rounding procedures for the 24-hour $PM_{2.5}$ NAAQS Rule. As shown in the tables, the 24-hour and the annual concentrations added to the background concentrations are predicted to be below the NAAQS concentrations.

24-Hour $PM_{2.5}$ 5-Year Average of the Highest First High

Modeled Impact (µg/m3)	Background ($\mu g/m^3$)	Total ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)
16.2	19.2	35	35

Annual $PM_{2.5}$ 5-Year Average over 5-Years

Modeled Impact (µg/m3)	Background ($\mu g/m^3$)	Total ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)
2.1	7.4	9.5	15.0

1. Air Quality Impact Summary

The analysis of the Valero facility demonstrates that the facility will comply with applicable PM_{10} and $PM_{2.5}$ AAQS.

To ensure that assumptions used in the modeling remain valid, the facility will have to meet stack height requirements for the various point sources (e.g., baghouse, cyclone), to restrict public access to the facility (e.g., installing a fence in accordance with NDEQ guidelines or implementing other equivalent public access restrictions), to conduct best management practices for maintenance of the haul roads, and to conduct performance testing to verify emissions from major point sources. If the results of the testing are significantly higher than the corresponding values used in the modeling, then the facility may need to remodel to show compliance with the NAAQS and increment.

Chapters 5 – Operating Permit Requirements:

Valero is currently considered a major source (Class I) with regard to the operating permit (OP) program because the PTE of several regulated air pollutants (SO_x, NO_x, and VOC) exceed the major source thresholds of this chapter (100 tons/yr for SO_x, NO_x, VOCs, and GHGs by mass; 100,000 tons/yr for GHGs as CO_2e). Valero submitted a Class I OP application on June 26, 2012.

On June 11, 2012, the NDEQ received a variance request from Valero to exclude CO_2 emissions from fermentation in accordance with the biogenic deferral when determining PSD and title V applicability. The NDEQ acted on this request and issued a variance to Valero on June 28, 2012. Although a variance was requested and granted to exclude biogenic CO_2 from applicability determinations, Valero is still a major source of GHGs.

Chapter 15 – Permit Revisions:

In accordance with Section 005, this proposed revision is classified as a significant permit revision and must follow the normal administrative procedures for public notice. Based on the facility-wide emissions after the issuance of this permit, a $3,000 permit application fee is required in accordance with Chapter 17, Section 003. This revision is "significant' because it includes a change of an emission limit for various emission points.

Chapter 18 – New Source Performance Standards (NSPS), and 40 CFR Part 60:

No additional NSPS requirements are applicable as a result of this permit revision. Applicable NSPS requirements are contained in the fact sheet that accompanied construction permit CP10-004.

Chapter 19 – Prevention of Significant Deterioration (PSD):

This construction permitting action does not trigger the PSD applicability thresholds. Valero is an ethanol manufacturing facility to which the 250 tpy PSD applicability threshold applies. Valero and Cargill (NDEQ ID# 01446) are considered one stationary source with respect to PSD (Refer to the letter dated February 8, 2011, on source grouping re-evaluation for Valero and Cargill written by W. Clark Smith of the NDEQ to Andy Roberts, plant manager of Valero. This letter was in response to Valero's October 6, 2010, letter in which Valero claimed that Valero and Cargill are two separate companies under separate ownership; therefore, they should not be considered under common control) and potential emissions from both facilities are considered for the PSD determination purpose. Potential emissions from Valero and Cargill AgHorizons combined are not expected to exceed 250 tpy for any criteria pollutant. In addition, Valero has requested a limit in annual emissions from TO/HRSG system of less than 100 tons/year to ensure that the TO/HRSG system remains a minor nested source in regards to PSD applicability. Therefore, this facility is not subject to PSD.

Beginning July 1, 2011, any source that constructs or modifies has to address GHGs if emissions of GHGs (by themselves) exceed the major source threshold (100,000 tpy CO_2e) or the significance level (75,000 tpy CO_2e) for any modification at an existing major source. Cargill with Valero has the potential to emit more than 100,000 tpy of GHGs (regardless of whether biogenic emissions are counted) which would make them a major source with respect to the PSD rules however, since the increase in GHGs emission due to this permit modification is less than the significance level of 75,000 tpy CO_2e, this source is not triggered for PSD review.

On July 20, 2011, the USEPA finalized the "Deferral for CO_2 Emissions From Bioenergy and Other Biogenic Sources Under the Prevention of Significant Deterioration (PSD) and Title V Programs." This federal rule allows permitting authorities to exclude CO_2 emissions from biogenic sources from applicability (for both PSD and Title V purposes) for a three year period while the long term effects of

GHGs from these units are evaluated. According to the rule, CO_2 emissions from fermentation will not be considered when calculating CO_2e and GHGs mass emissions from a source. At the date of this permitting action, the NDEQ has not adopted the biogenic deferral into Title 129.

On June 11, 2012, the NDEQ received a variance request from Valero to exclude CO_2 emissions from fermentation in accordance with the biogenic deferral when determining PSD and title V applicability. The NDEQ acted on this request and issued a variance to Valero on June 28, 2012.

Chapter 20 – Particulate Matter Emissions:

No physical modifications will be made to the facility as part of this permitting action. As a result, no additional requirements apply; all previous process weight rate limitations, combustion based PM limitations and opacity requirement of Chapter 20 shall continue to apply.

Chapter 24 – Sulfur Compound Emissions:

The requirements of this chapter only apply to emission units that were constructed prior to February 26, 1974. Since all of the emissions units located at this facility were constructed after this date, therefore no requirements from this chapter apply to Valero.

Chapter 27 – Hazardous Air Pollutants:

Title 129, Chapter 27, Section 002 - Best Available Control Technology (BACT)

This facility is subject to State BACT since the controlled individual HAP emissions exceed 2.5 tons/year and combined HAP emissions exceed 10 tons/year. Since this permitting action does not approve an increase in HAP emissions, no additional BACT analysis was required as part of this permitting action. Valero is expected to continue to comply with the BACT requirements from the previous construction permits.

Title 129, Chapter 27, Section 003 - Maximum Achievable Control Technology

No emission units located at Valero are subject to the case-by-case MACT requirements of this section since the controlled emissions from the source are less than ten (10) tons/year of any individual HAP and less than twenty-five (25) tons/year of combined HAPs.

Chapter 28 – National Emission Standards for Hazardous Air Pollutants (NESHAP):

Only those NESHAP/MACT requirements in which the determinations have been altered or the rules themselves have been revised since the issuance of the construction permit CP10-004 are discussed below. Additional determinations can be found in the fact sheets that accompany permit CP10-004.

Subpart VVVVVV- National Emission Standards for Hazardous Air Pollutants for Chemical Manufacturing Area Sources: This subpart, not yet adopted into Title 129, Chapter 28, 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 target 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 target HAP must be present in feedstocks or must be generated or produced in the CMPU and are present in the process fluid 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 process as defined in §63.11502, that produces a material or a family of materials described by NAICS code 325. A CMPU consists of one or more unit operations and any associated recovery devices and, a CMPU also includes each storage tank, transfer operation, surge control vessel, and bottoms receiver associated with the production of such NAICS code 325 materials. Valero is an area source in one of the source categories to which the rule applies (NAICS code 325193).

On January 30, 2012, the USEPA proposed changes to this subpart, most importantly to the concentrations of target HAP necessary to trigger applicability. Under the proposed revision Valero would be subject to the rule if: (1) they use as feedstock, target HAP at a collective concentration greater than 0.1 percent by weight; (2) organic target HAP are generated as byproduct and are present in the CMPU in any liquid stream (process or waste) at a collective concentration greater than 0.1 percent by weight; or (3) organic target HAP are generated as byproduct and are present in the CMPU in any process vent stream at a collective concentration greater than 50 parts per million by volume (ppm_v). Based on the proposed changes, the NDEQ concludes the source may be subject to the requirements of this rule unless the source can show that the targeted HAPs concentrations are less than the fluid concentrations required by subpart. The compliance date for existing sources is October 29, 2012.

Subpart ZZZZ – Stationary Reciprocating Internal Combustion Engines (RICE) {40 CFR 63.6580, promulgated June 15, 2004 (amended January 18, 2008, March 3, 2010, August 20, 2010, and March 9, 2011)}: This subpart, adopted by reference in Title 129, Chapter 28, Section 001.88, applies to existing, new, or reconstructed stationary reciprocating internal combustion engines (RICE) located at a major or area source of HAP emissions, excluding stationary RICE being tested at a stationary RICE test cell/stand. The emergency fire water-pump engine (maximum rating of 300 hp) at this facility is subject to Subpart ZZZZ. It is considered a new source under the NESHAP because it was constructed after June 12, 2006. As specified in §63.6590 (c), the RICE must meet the emission requirements set forth in 40 CFR 60, NSPS Subpart IIII in order to demonstrate compliance with this subpart.

Permit conditions specific to the proposed permit are discussed as follows:

Revisions to the original conditions have been identified in the following ways; added items are **bold and underlined**, while removed items have a ~~strikethrough~~. The description of changes to the permit conditions are in *italics*. Note that some paragraphs/sections of each condition may not be listed here if there were no changes in that section or paragraph. They may be removed to focus only on the paragraphs/sections that have been revised.

– — –

Condition II. (A): The owner/operator of the source shall provide the following notifications to the NDEQ:

(3) When the source makes physical or operational changes to an emissions unit or associated control equipment that may cause the previous testing to not represent current operation conditions or emissions, the owner/operator shall submit notification of the change. Such notification shall be postmarked within 15 days after the change. The NDEQ may require performance testing based on review of the specific changes identified in the notification and the potential impact on emissions from the unit(s) and/or performance of the control equipment. {Chapter 34, Section 001}

(a) **This notification requirement applies to emissions units and/or control equipment which meet the following requirements, except as provide in condition II.(A)(3)(d):**

(i) **Emissions from the emissions unit and/or control equipment is subject to an emissions limit; and**

(ii) **A valid performance test has been conduction for the pollutant to which the emissions limit applies.**

(b) **Changes that may cause emissions to increase or render previous testing not representative of current operations include, but are not limited to, increasing the capacity of an emissions unit, changing the operational parameters of any control equipment outside of the range allowed for under this permit that makes the control equipment less efficient, changing the type of scrubber packing material, or increasing the inlet pollutant loading of any control equipment.**

(c) **The notification shall include the date of the changes, a description of the changes made, and an evaluation of the resulting impact on emissions from the emissions units and/or control equipment.**

(d) **The above notification requirements do not apply when compliance with the emission limitation is demonstrated through the use of a CEMS or PEMS.**

(4) **When an increase in actual production or operating throughput of process equipment, for which performance testing has been conducted, as follows: {Chapter 34, Sections 001 and 006}**

(a) **When there is a ten percent (10%) increase in production/throughput rate, based on the average calendar day rate, over the rate recorded during the most recent valid performance test; or,**

(b) **Each cumulative five percent (5%) increase in production/throughput rate, based on a 30-day rolling average, over the rate recorded during the most recent valid performance test.**

(c) **The above notification requirements do not apply to emission units that have been tested and use a CEMS or PEMS to demonstrate compliance.**

The notification requirements have been updated since the production has been increased significantly due to this permit revision. The purpose of the Condition II.(A)(3) is to require the source to notify the NDEQ when previous testing is no longer representative of the current operation of the emission unit or control equipment due to changes. The changes could be any that may impact the emissions. Some changes would include, but are not limited to, increasing the capacity of an emission unit (e.g. increasing the throughput of the grain received, increasing the production rates, etc.), changing the operational parameters of control equipment that potentially makes the control equipment less efficient (e.g. using less scrubbing liquid, less chemical addition, or scrubbing liquid with higher temperature in fermentation scrubber, etc.) The NDEQ may then require additional testing to verify the source remains in compliance with the emission limitation after the change is made. Condition II.(A)(4) requires the source to notify the NDEQ when actual production/throughput of equipment increases by set percentages based off data obtained from previous tests. Increasing production or throughput of equipment can render previous

testing not representative of current operations, therefore triggering an assessment by the NDEQ as to whether additional testing is necessary. Examples include heat input or steam generation for a boiler, or the beer feed rate at an ethanol plant. The 5% notifications based on a monthly average are cumulative, thus notification must be made each time the source increases production or throughput 5% (at 5%, 10%, 15%, etc.). Once additional performance testing is completed, this condition 'resets' and notification of the 5% cumulative increases are based from the most recent test data.

– –

Condition III.(A)(2) Emission Limitations and Testing Requirements:

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 Specific Condition II.(D).

Emission Point ID#	Pollutant	Permitted Limit	Averaging Period	Basis for Permit Limit	Performance Testing Required (Yes/No)
EP10	PM[1]/~~PM$_{10}$~~	~~0.09~~ **0.11** lb/hr	3-hr or test method average	Chapter 17	No
	PM_{10}[2]	**0.11 lb/hr**	**3-hr or test method average**	**Chapters 4 and 17**	**No**
EP20	PM[1]/~~PM$_{10}$~~	~~0.26~~ **0.29** lb/hr	3-hr or test method average	Chapter 17	No
	PM_{10}[2]	**0.29 lb/hr**	**3-hr or test method average**	**Chapters 4 and 17**	**No**

[1] Filterable only
[2] Filterable and condensable

Valero requested to revise PM and PM_{10} emission limits for EP10 and EP20 due to the increase in ethanol production. PM and PM_{10} limitations were established in their original permit to avoid PSD. In this permitting action, PM and PM_{10} emission limits were split to avoid confusion when determining if condensable and/or filterable PM would be included to be in compliance with the limit and all PM is assumed to be PM_{10}. No performance testing is required for these emission points to comply with the emission limits because the emission limits has been increased based on the pro-rated test results from the site's previous stack testing to accommodate the increase in production and it is NDEQ's understanding that the source can comply with these emission limits by properly operating and maintaining the control equipments as per Condition III.(A)(3) of this permit.

– –

Condition III.(B)(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 Specific Condition II.(D).

Emission Point ID#	Pollutant	Permitted Limit	Averaging Period	Basis for Permit Limit	Performance Testing Required[5] (Yes/No)

Emission Point ID#	Pollutant	Permitted Limit	Averaging Period	Basis for Permit Limit	Performance Testing Required[5] (Yes/No)
EP40	PM[1]/~~PM$_{10}$~~	~~0.30~~ **0.56** lb/hr	3-hour or test method average	Chapter 17	~~No~~**Yes**
	PM_{10}[2]	**0.56 lb/hr**	**3-hour or test method average**	**Chapters 4 and 17**	**Yes**
	VOC	10.0 lb/hr[1]	3-hour or test method average	Chapter 17	~~No~~**Yes**
	HAP	65% Control Efficiency or 20.0 $ppm_{v,d}$ for combined HAPs	**3-hour or test method average**[4] ~~Speciation and Quantification of HAP composition at inlet and outlet~~	Chapter 27	~~No~~**Yes**

[1] Filterable only
[2] Filterable and condensable
~~[1]~~ **[3]** Expressed as weight of VOC
[4] Speciation and Quantification of HAP composition shall be performed at inlet and outlet.
[5] Performance testing shall be conducted in accordance with Condition III.(B)(2)(b).

(b) Performance testing shall occur within 90 days after the issuance of this permit. Performance tests must be completed during the third quarter (July 1 through September 30). Performance tests shall be completed and submitted to NDEQ as follows: {Chapter 34}

(i) Performance tests shall be conducted while operating at maximum capacity. At a minimum, the tests shall be performed at the lowest scrubber liquid flow and sodium bisulfate, or other additive, addition rate that will be operated at.

(ii) Performance tests shall be completed and submitted to NDEQ in accordance with Specific Conditions II.(D)(2) through II.(D)(5).

Valero requested to revise PM and PM_{10} emission limits for EP40 due to the increase in ethanol production. PM and PM_{10} limitations were established in their original permit to avoid PSD. In this permitting action, PM and PM_{10} emission limits were split to avoid confusion when determining if condensable and/or filterable PM would be included to be in compliance with the limit and all PM is assumed to be PM_{10}. In addition, performance testing is required for this emission point to comply with the emission limits since the production has been increased significantly due to this permit revision. Also, the specific averaging period for HAP has been clarified as per source request.

– –

Condition III.(B)(3) Operational and Monitoring Requirements and Limitations

(iii) The scrubber operating parameters shall be maintained at the levels recorded during the most recent performance test conducted at the facility as described below:

1. Scrubber liquid shall be comprised of only well water to ensure consistent liquid temperature. In the event that Valero chooses to use alternative scrubber liquid source, or scrubber liquid recirculation, compliance testing will be required to determine an appropriate scrubber liquid temperature and percent recirculation limit.

~~2. For scrubbing liquid temperature, "maintained at the levels recorded during the most recent valid performance test" shall mean within a range that is representative of the tested level(s) under normal operating conditions, as determined by NDEQ.~~

~~3. For pressure differential, "maintained at the levels recorded during the most recent valid performance test" shall mean within a range that is representative of the tested level(s) under normal operating conditions, as determined by NDEQ.~~

~~4.~~**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.

(iv) 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 required, it shall occur immediately.

(v) Flow meters for recording scrubbing liquid and chemical addition flow rates shall be maintained and calibrated according to manufacturer's instructions.

The operating and monitoring requirements for the scrubber has been revised to be consistent with the most recent standard language, which improves clarity and enforceability. The source is not required to maintain the temperature because the source is using well water as scrubbing liquid. Well water has only very small fluctuations in temperature throughout the year. The source indicated that they use the treated well water in fermentation scrubber. The source is also not required to maintain the pressure differential to the most recent performance test because the pressure differential is dictated by the process and cannot practically be controlled and therefore cannot be reasonably manipulated to either increase or decrease control efficiency. In other words, it is not an operating parameter that is a significant indicator of scrubber performance.

– –

Condition III.(B)(5) Reporting and Recordkeeping Requirements:

~~(a) Records documenting the date, time, temperature and flow rate of scrubbing liquid, and the pressure differential reading for each day the associated scrubber is in operation.~~

(a) Records that document the operating parameter data for the scrubber, including the date and time of the readings. The records shall include:

(i) Scrubbing liquid flow rate;

(ii) Chemical addition flow rate;

(iii) Scrubber pressure differential readings; and

(iv) Scrubbing liquid temperature readings.

(b) Records documenting the date, time, observations, and corrective actions taken for each day the associated scrubber is in operation.

(c) Records that document the operating parameters developed during the most recent valid performance test conducted at the facility.

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

The NDEQ has updated the recordkeeping requirements related to fermentation scrubber to be consistent with the most recent standard language, which improves clarity and enforceability.

– –

Condition III.(C)(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 Specific Condition II.(D).

Emission Point ID#	Pollutant	Permitted Limit	Averaging Period	Basis for Permit Limit	Performance Testing Required (Yes/No)
EP30	$PM^{[1]}$~~/PM_{1}~~ $_{0}$	~~5.2~~ **11.39** lb/hr	3-hr or test method average	Chapter 17	No
	PM_{10}[2]	**11.39 lb/hr**	**3-hr or test method average**	**Chapters 4 and 17**	**No**
	SO_x[~~1~~**3**]	18.6 lb/hr	3-hr or test method average	Chapter 17	No
	NO_x	~~24.4 lb/hr~~ **0.1 lb/MMBtu**	30-day rolling average	**40 CFR 60 Subpart Db,** Chapter**s** 17 **and 18**	No[~~2~~**6**]
		99.8 ton/yr	**12-month rolling average**	**Chapter 17**	**No[6]**
	CO	20.7 lb/hr	3-hr or test method average	Chapter 17	No
	VOC	8.2 lb/hr[~~3~~**4**]	3-hr or test method average	Chapter 17	~~No~~**Yes[7]**

Emission Point ID#	Pollutant	Permitted Limit	Averaging Period	Basis for Permit Limit	Performance Testing Required (Yes/No)
	HAP	-	**3-hour or test method average[5]** ~~Speciation and Quantification of HAP composition at outlet~~	Chapter 27	~~No~~**Yes[7]**

[1]Filterable only
[2]Filterable and Condensable
~~[1]~~[3]SO_x shall be tested while biogas from the Biomethanator system is being combusted in the TO/HRSG
~~[2]~~[4]Expressed as weight of VOC
[5 Speciation and Quantification of HAP composition shall be performed at outlet.
~~[2]~~[6]Testing is not required since a CEMS, or alternative system, is required to be installed by the NSPS.
[7] Performance testing shall be conducted in accordance with Condition III.(C)(2)(c).

(b) Both TO/HRSGs (C30 and C31) are subject to the applicable emission limitations contained in NSPS, Subpart Db.

(c) Performance testing shall occur within 180 days after the issuance of this permit. Performance tests shall be completed and submitted to NDEQ as follows: {Chapter 34}

(i) Performance tests shall be conducted while operating at maximum capacity.

(ii) Performance tests shall be completed and submitted to NDEQ in accordance with Specific Conditions II.(D)(2) through II.(D)(5).

Valero requested to revise PM and PM_{10} emission limits for EP30 due to the increase in ethanol production. PM and PM_{10} limitations were established in their original permit to avoid PSD. In this permitting action, PM and PM_{10} emission limits were split to avoid confusion when determining if condensable and/or filterable PM would be included to be in compliance with the limit and all PM is assumed to be PM_{10}. In addition, performance testing is also required for this emission point for VOC and HAPs to comply with the emission limits since the production has been increased significantly due to this permit revision. No performance testing is required for PM, SOx, and CO because the emission limits for these pollutants are based on the pro-rated test results from the site's previous stack testing to accommodate the increase in production and it is NDEQ's understanding that the source can comply with these emission limits by properly operating and maintaining the control equipments as per Condition III.(C)(3) of this permit. The NOx limit of 24.4 lb/hr has been substituted with 0.1 lb/MMBtu based on NSPS subpart Db. Valero has requested a limit in annual emissions from TO/HRSG system (EP30) of less than 100 tons/year to ensure that the system remains a minor nested source in regards to PSD applicability. Since NO_x emission is the highest among the air pollutants from TO/HRSG, limiting the NO_x emission to less than 100 tons/year will also keep other pollutants below 100 tons/year. Also, the specific averaging period for HAP has been clarified as per source request.

– –

Condition III.(C)(3)(c) ~~The facility shall not produce more than 371,481 tons of DDGS per any period of twelve (12) consecutive calendar months. At no time during the first eleven (11)~~

~~months after start-up shall the DDGS production exceed 371,481 tons. {Chapter 17}~~

Condition III.(C)(3)(d) ~~The DDGS loadout spout shall be installed with a scale capable of measuring the amount of DDGS, in tons, that is loaded out at the facility.~~

Condition III.(C)(3)(~~e~~ **c**)Biogas generated in the biomethanators shall be combusted in the biomethanator flare or TO/HRSG system at all times biogas is being produced. {Chapters 17 and 27}

Valero has requested to remove the DDGS production limit from the permit because it will not accommodate the increase in production for the project. In addition, DDGS production limitation is not required as Valero has already requested a limit in annual emissions from TO/HRSG of less than 100 tons/year to remain minor to PSD applicability.

– –

Condition III.(C)(5) Reporting and Recordkeeping Requirements:

(a) Records documenting the date, time, and hourly-average temperatures for each day the associated TO/HRSG is in operation.

(b) Records documenting the date, time, observations, and corrective actions taken for each day the associated TO/HRSG is in operation.

~~(c) Records documenting the amount of DDGS produced for each calendar month and for each period of 12 consecutive calendar months.~~

(~~d~~**c**) Notifications and record keeping as required by 40 CFR 60.7

(~~e~~**d**) Reporting and recordkeeping as required by 40 CFR 60.~~48b~~ **60.49b**

The recordkeeping requirements related to DDGS production no longer required because the DDGS production limit has been removed from the permit.

– –

Condition III.(D)(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 Specific Condition II.(D).

Emission Point ID#	Pollutant	Permitted Limit	Averaging Period	Basis for Permit Limit	Performance Testing Required (Yes/No)
EP70	$PM^{[1]}$/~~PM_{10}~~	~~0.62~~ **1.70** lb/hr	3-hr or test method average	Chapter 17	No
	$PM_{10}^{[2]}$	**1.70 lb/hr**	**3-hr or test method average**	**Chapters 4 and 17**	**No**

Emission Point ID#	Pollutant	Permitted Limit	Averaging Period	Basis for Permit Limit	Performance Testing Required (Yes/No)
	VOC	1.83 lb/hr	3-hr or test method average	Chapter 17	~~No~~**Yes**[4]
	HAP	-	**3-hr or test method average**[3] ~~Speciation and Quantification of HAP composition at outlet~~	Chapter 27	~~No~~**Yes**[4]
EP50	PM~~/PM$_{10}$~~	0.16 lb/hr	3-hr or test method average	Chapter 17	No
	PM$_{10}$	**0.16 lb/hr**	**3-hr or test method average**	**Chapters 4 and 17**	**No**

[1] Filterable only
[2] Filterable and Condensable
[3] Speciation and Quantification of HAP composition shall be performed at outlet.
[4] Performance testing shall be conducted in accordance with Condition III.(D)(2)(b).

(b) Performance testing shall occur within 180 days after the issuance of this permit. Performance tests shall be completed and submitted to NDEQ as follows: {Chapter 34}

(i) Performance tests shall be conducted while operating at maximum capacity.

(ii) Performance tests shall be completed and submitted to NDEQ in accordance with Specific Conditions II.(D)(2) through II.(D)(5).

Valero requested to revise PM and PM$_{10}$ emission limits for EP70 due to the increase in ethanol production. PM and PM$_{10}$ limitations were established in their original permit to avoid PSD. In this permitting action, PM and PM$_{10}$ emission limits were split to avoid confusion when determining if condensable and/or filterable PM would be included to be in compliance with the limit and all PM is assumed to be PM$_{10}$. In addition, performance testing is required for these emission points for VOC and HAPs to comply with the emission limits since the production has been increased significantly due to this permit revision. No performance testing is required for PM because the emission limits for these pollutants are based on the pro-rated test results from the site's previous stack testing to accommodate the increase in production and it is NDEQ's understanding that the source can comply with these emission limits by properly operating and maintaining the control equipments as per Condition III.(D)(3) of this permit. Also, the specific averaging period for HAP has been clarified as per source request.

– –

Condition III.(G)(1) Permitted Emission Points: The source is permitted to construct the emission points and associated emission units identified in the following table at the capacities and using the fuel types listed:

Emission Point ID#	Control Equipment ID# and Description	Emission Unit ID# and Description	Maximum Rating (HP)	Permitted Fuel Type
EP90	-	EU43: Emergency Fire Pump Engine	~~290~~ **300**	Diesel Fuel

Valero requested to correct the maximum rating of the emergency fire pump engine to identify the as-built maximum capacity of the emergency fire pump engine as 300 horsepower (hp).

– –

STATUTORY OR REGULATORY PROVISIONS ON WHICH PERMIT REQUIREMENTS ARE BASED:

Applicable regulations: Title 129 - Nebraska Air Quality Regulations as amended April 1, 2012.

PROCEDURES FOR FINAL DETERMINATION WITH RESPECT TO THE PROPOSED CONSTRUCTION PERMIT:

The public notice, as required under Title 129 Chapter 14, shall be published on Wednesday, August 1, 2012 in the Albion News newspaper. Persons or groups shall have 30 days from that issuance of public notice (August 30, 2012) to provide the NDEQ with any written comments concerning the proposed permit action and/or to request a public hearing, in accordance with Title 129 Chapter 14. If a public hearing is granted by the Director, there will be a notice of that meeting published at least 30 days prior to the hearing. Persons having comments or requesting a public hearing may contact:

Brad Reid, P.E.-Construction Permitting Supervisor
Air Quality Division
Nebraska Department of Environmental Quality
PO Box 98922
Lincoln, Nebraska 68509-8922

If no public hearing is requested, the permit may be granted at the close of the 30-day comment period. If a public hearing is requested, the Director of the NDEQ may choose to extend the date on which the permit is to be granted until after that public hearing has been held. During the 30-day comment period, persons requiring further information should contact:

Gyanendra Prasai, P.E.
Air Quality Division-Permitting Section
Nebraska Department of Environmental Quality
PO Box 98922
Lincoln, Nebraska 68509-8922

Telephone inquiries may be made at:

(402) 471-2189

TDD users please call 711 and ask the relay operator to call us at (402) 471-2186.

Attachments:
Emission Calculations

Fact Sheet Attachment:

Summary of Revision

Process or Unit	Page #	Pollutants								
		Particulate Matter (PM)	Particulate Matter (PM_{10})	Particulate Matter ($PM_{2.5}$)	Sulfur Oxides (SO_x)	Nitrogen Oxides (NO_x)	Carbon Monoxide (CO)	Volatile Organic Compounds (VOC)	GHGs (CO_2e basis)	HAPs
Valero Renewable Fuels Company, LLC Emissions; Ethanol Plant										
Grain Conveying and Hammermilling	4	R	R	R						
Fermentation Scrubber	5	R	R	R				-	R	-
TO - DDGS	6 - 7	R	R	R	-	-	-	-	-	-
Tanks	13							R		R
Liquid Loadout	14 - 16							R		R
Loadout Vapor Combustion	17 19	-	-	-	-	R	R	-	R	-
DDGS Cooling and Loadout	11 -12	R	R	R				-		-
MWDGS Storage and Loadout	20							R		R
Biomethanator Flare and Pilot	22 - 24	-	-	-	-	-	-	-	-	-
Equipment Leaks	25							R		R
Cooling Tower	21	-	-	-						
Emergency Fire Pump Engine	26	R	R	R	R	R	R	R	R	R
Process Vents	8							R		R
Haul Roads	27	R	R	R						

Fact Sheet Attachment:

Entire Source Summary (Valero Renewable Fuels Company, LLC and Cargill AgHorizons)

Process Data

Maximum Capacity (Anhydrous Ethanol Produced)	132,000,000	gallons per year				
Grain to Ethanol Conversion Factor	2.7	gallons of Ethanol per bushel of corn				
Grain Density:	56	lb/bushel for Corn				
Total Grain Required for Ethanol Plant	1,368,889	ton/yr =	48,888,889	bu/yr =	156.3	ton/hr

Process or Unit	Pollutants (tons/year)											
	Particulate Matter (PM)	Particulate Matter (PM_{10})	Particulate Matter ($PM_{2.5}$)	Sulfur Oxides (SO_x)	Nitrogen Oxides (NO_x)	Carbon Monoxide (CO)	Volatile Organic Compounds (VOC)	**Carbon Dioxide (CO_2)**	**Methane (CH_4)**	**Nitrous Oxide (N_2O)**	**GHGs (mass basis)**	**GHGs (CO_2e basis)[2]**
Valero Renewable Fuels Company, LLC Emissions; Ethanol Plant												
Grain Conveying and Hammermilling	1.75	1.75	1.75	-	-	-	-	-	-	-	-	-
Fermentation Scrubber	2.45	2.45	2.45	-	-	-	43.80	415,140	-	-	415,140	415,140
TO - DDGS	49.89	49.89	49.89	81.47	99.80	90.67	35.92	218,485	4.19	4.01	218,493	219,814
Tanks	-	-	-	-	-	-	3.65	-	-	-	-	-
Liquid Loadout	-	-	-	-	-	-	1.60	-	-	-	-	-
Loadout Vapor Combustion	3.26E-03	3.26E-03	3.26E-03	2.58E-04	0.57	2.88	2.36E-03	241.31	0.009	0.002	241.33	242.24
DDGS Cooling and Loadout	8.22	8.16	8.15	-	-	-	8.02	-	-	-	-	-
MWDGS Storage and Loadout	-	-	-	-	-	-	-	-	-	-	-	-
Biomethanator Flare and Pilot	3.26E-03	3.26E-03	3.26E-03	23.57	0.64	3.30	0.46	1065.13	0.06	0.01	1065.21	1,071
Equipment Leaks	-	-	-	-	-	-	11.18	-	-	-	-	-
Cooling Tower	24.11	16.88	10.13	-	-	-	-	-	-	-	-	-
Emergency Fire Pump Engine	0.08	0.08	0.08	0.08	1.16	0.25	0.09	42.80	0.0017	0.0003	42.80	42.95
Process Vents	-	-	-	-	-	-	10.69	-	-	-	-	-
Haul Roads	21.19	3.12	0.77	-	-	-	-	-	-	-	-	-
Valero Renewable Fuels Company, LLC Total Emissions	**107.70**	**82.34**	**73.22**	**105.11**	**102.17**	**97.10**	**115.40**	**634,974**	**4.26**	**4.02**	**634,982**	**636,310**
Cargill AgHorizons; Grain Facility[1]												
Grain Dryer #1	58.52	14.63	2.50	0.04	3.50	5.88	0.39	8,400	0.161	0.154	8,400	8,451
Grain Dryer #2	58.52	14.63	2.50	0.04	3.50	5.88	0.39	8,400	0.161	0.154	8,400	8,451
Grain Baghouse #1	2.89	3.68	3.68	-	-	-	-					
Grain Baghouse #2	1.45	2.67	2.67	-	-	-	-					
Grain Baghouse #3	1.88	1.88	1.88	-	-	-	-					
Grain Storage Piles	0.17	0.08	0.01	-	-	-	-					
Uncaptured Grain Emissions From Receiving - Truck	1.53	0.34	0.06									
Uncaptured Grain Emissions From Receiving - Rail	0.22	0.05	0.01	-	-	-	-					
Uncaptured Grain Emissions From Shipping - Rail	2.17	0.18	0.03	-	-	-	-					
Uncaptured Grain Emissions From Shipping - Truck	0.60	0.20	0.03	-	-	-	-					
Truck Traffic	14.64	2.93	0.72	-	-	-	-					
Cargill AgHorizons Total Emissions	**84.08**	**26.64**	**11.59**	**0.04**	**3.50**	**5.88**	**0.39**	**8,400**	**0.16**	**0.15**	**8,400**	**8,451**
Source Potential Emissions	**191.78**	**108.98**	**84.81**	**105.16**	**105.67**	**102.98**	**115.79**	**643,374**	**4.42**	**4.18**	**643,383**	**644,761**

[1]Cargill AgHorizons Grain Facility emissions from the Fact Sheet that accompanied the construction permit (CP10-019).

[2] Global Warming Potentials (GWPs) for CO_2, CH_4, and N_2O from 40 CFR 98, Subpart A, Table A-1

CHANGE IN POTENTIAL EMISSIONS (PTE) for Valero Renewable Fuels Company, LLC

	Pollutants (Limited Emissions)								
	PM (tpy)	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**	**SO_2 (tpy)**	**NO_x (tpy)**	**CO (tpy)**	**VOC (tpy)**	**GHG (CO_2e basis) (tpy)**	**GHG (mass basis) (tpy)**
Previous PTE from permit CP10-004	75.73	48.80	39.93	105.11	109.14	96.79	112.43	592,259	590,931
Revised PTE due to permit revision CP11-035	107.70	82.34	73.22	105.11	102.17	97.10	115.40	636,310	634,982
Change in PTE	**31.97**	**33.54**	**33.28**	**0.00**	**-6.98**	**0.31**	**2.97**	**44,052**	**44,052**

Fact Sheet Attachment:

Ethanol Process Information

Process Data

Maximum Capacity (Anhydrous Ethanol Produced)	132,000,000	gallons per year			
Grain to Ethanol Conversion Factor	2.7	gallons of Ethanol per bushel of corn			
Grain Density:	56	lb/bushel for Corn			
Total Grain Receiving Throughput:	1,368,889	ton/yr	=	156.3	ton/hr
	1,368,889	ton/yr	=	48,888,889	bu/yr
DDGS produced by a Bushel of Grain	17	lb DDGS/bushel of Corn			
Dryer is capable of drying % of MWDGS	100%				
DDGS Generated (10% Moisture)	415,556	ton/yr			
DDGS Generated (Dry Basis)	374,000	ton/yr			
100% MWDGS Generated (55% Moisture)	831,111	ton/yr			

Maximum Production/Throughputs

Product #1: Denatured Ethanol (97.51% Ethanol, 2.49% Denaturant)	135,370,731	gallons/year
Product #2: MWDGS	831,111	tons/year
Product #3: DDGS	415,556	tons/year
Raw Material #1: Grain	1,368,889	tons/year
Raw Material #2: Denaturant	3,370,731	gallons/year
Anhydrous Ethanol Produced	132,000,000	gallons/year

Permitted Limitations

DDGS Production Limitation	415,556	ton/year
Biomethananator Flare Operating Hours	8,760.00	hours/year
Emergency Fire Water Pump Engine Operating Hours	250.00	hours/year

Additional Information

Maximum amount of DDGS produced	100	ton/hr
Maximum DDGS Loadout	120	ton/hr
Amount of Grain Transported from Cargill	160	ton/hr

Fact Sheet Attachment:

Grain Conveying and Hammermilling: EP-10 and EP-20

$PM/PM_{10}/PM_{2.5}$ Emissions from Grain Conveying and Hammermilling

Emission Point ID#	Control Equipment ID#	Emission Point Description	(A) Flow Rate	(B) Emission Factor (Grain Loading)	Controlled $PM/PM_{10}/PM_{2.5}$ Emissions[1]	
			dscf/min	grains/dscf	(C) (lb/hour)	(D) = (C)x8760/2000 (ton/year)
EP-10	CE10	Grain Conveyor Baghouse	30,000	0.001	0.11	0.48
EP-20	CE20	Hammermill Baghouse	28,000	0.001	0.29	1.27

Conversion Factors: 7,000 grains per pound; 60 minutes per hour; 8,760 hours per year; 2,000 pounds per ton

[1] PM/PM_{10} emission factor is based on 99% confidence interval statistical analysis applied to test results from site's previous stack testing that includes total (condensable and filterable) particulate and assuming $PM_{2.5}$ emissions equal PM_{10} and PM for baghouses .

Total Emissions from Grain Conveying and Hammermilling

Particulate Matter (PM)	1.75	tons/year
Particulate Matter (PM_{10})	1.75	tons/year
Particulate Matter ($PM_{2.5}$)	1.75	tons/year

Fact Sheet Attachment:

Fermentation Scrubber: EP-40

Emission Units Routed to the Fermentation Scrubber

Emission Unit ID#	Emission Source
EU23	Fermenter #1
EU24	Fermenter #2
EU25	Fermenter #3
EU26	Fermenter #4
EU27	Fermenter #5
EU28	Fermenter #6
EU29	Fermenter #7
EU30	Beerwell

Anhydrous Ethanol Produced (AEP):	132,000,000	gallons/year
	132.00	MMgal/year
	0.0151	MMgal/hr

Pollutant	(A) Controlled Emission Factor (lb/MMgal AEP)	Potential Controlled Emission Rate[1]		Permit Limitations	
		(B) (lb/hr)	(C) = (B) x 8760 / 2,000 (ton/yr)	lb/hour	ton/year
Particulate Matter (PM/PM_{10})	14.90	0.56	2.45	0.56	2.45
Particulate Matter ($PM_{2.5}$)[2]	-	0.56	2.45	-	-
Volatile Organic Compounds (VOC)	-	10.00	43.80	10.00	43.80
Carbon Dioxide (CO_2)[3]	6,290,000	94,781	415,140	-	-
Individual Hazardous Air Pollutants (HAP)					
Acetaldehyde	-	0.7273	3.1856	N/A	<9.9
Acrolein	-	0.4327	1.8952	N/A	<9.9
Formaldehyde	-	0.1160	0.5081	N/A	<9.9
Methanol	-	0.1853	0.8116	N/A	<9.9
Total HAPs	-	1.4613	6.4005	N/A	<24.8

[1] Emission factors are from CP07-0037, unless stated elsewhere. PM/PM_{10} emission factor is based on 99% confidence interval statistical analysis applied to test results from site's previous stack testing that includes total particulate (condensable and filterable). HAPs emission factor is based on stack test results of February 12, 2008 and are considered the average of three test runs.

[2] Assume $PM_{2.5}$ emissions equal PM_{10} and PM for fermentation scrubber

[3] 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

Fact Sheet Attachment:

TO/HRSG Stack (100% DDGS Production: EP-30

Emission Units Routed to the two (2) 122.0 MMBtu/hr TO/HRSG

Emission Unit ID#	Emission Source	Emission Unit ID#	Emission Source	Emission Unit ID#	Emission Source
EU06	Mixer	EU15	Yeast Tank #1	EU35	DDGS Dryer #2
EU07	Slurry Tank #1	EU16	Yeast Tank #2	EU36	TO/HRSG #1
EU08	Slurry Tank #2	EU17	Beer Column	EU37	DDGS Dryer #3
EU09	Flash Tank	EU18	Side Stripper	EU38	DDGS Dryer #4
EU10	Cook Tubes	EU19	Rectifier Column	EU39	TO/HRSG #2
EU11	Liquefaction Tank #1	EU20	190 Proof Condenser		
EU12	Liquefaction Tank #2	EU21	Molecular Sieve		
		EU22	200 Proof Condenser		
		EU34	DDGS Dryer #1		

Process Emissions

Pollutant	Potential Controlled Emission Rate		Permit Limitations	
	(lb/hr)[1]	(ton/yr)[2]	lb/hour	ton/year[2]
Particulate Matter (PM/PM_{10})	11.39	49.89	11.39	49.89
Particulate Matter ($PM_{2.5}$)[3]	11.39	49.89	-	-
Sulfur Dioxide (SO_2)	18.60	81.47	18.60	81.47
Nitrogen Oxides (NO_x)[4]	24.40	106.87	24.40	99.80
Carbon Monoxide (CO)	20.70	90.67	20.70	90.67
Volatile Organic Compounds (VOC)	8.20	35.92	8.20	35.92
Individual Hazardous Air Pollutants (HAP)				
Acetaldehyde	0.533	2.336	N/A	<9.9
Acrolein	0.723	3.168	N/A	<9.9
Formaldehyde	0.049	0.216	N/A	<9.9
Methanol	0.245	1.073	N/A	<9.9
Total HAPs	1.551	6.793	N/A	<24.8

[1] Emission factors are from CP07-0037, unless stated elsewhere. PM/PM_{10} emission factor is based on 99% confidence interval statistical analysis applied to test results from site's previous stack testing that includes total particulate (condensable and filterable). HAPs emission factor is based on stack test results of February 11-14, 2008 and are considered the average of three test runs.

[2] ton/year = lb/hr x 8,760 (hr/yr) / 2,000 (lb/ton)

[3] Considering $PM_{2.5}$ fraction of total PM as 1.0 from CEIDARS $PM_{2.5}$ emission factor scaling table.

[4] Considering NO_x emission rate of 24.40 lb/hr (= 0.1 lb/MMBtu*122MMBtu/hr*2); however, Source requested NOx emission rate of 99.80 tons/yr to ensure that the system remains a minor nested source in regards to PSD applicability.

Fact Sheet Attachment:

TO/HRSG Stack (100% DDGS Production: EP-30
Combustion Emissions

Natural Gas Combustion Emissions from TO/HRSGs (Two (2) 122.0 MMBtu/hr Units) and Dryers (Four (4) 45.0 MMBtu/hr Units)

Total Heat Input Capacity	424.0	MMBtu/hr		
Heat Content of Natural Gas AP-42, Table 1.4-1, Footnote a	1,020	MMBtu/MMscf		
Potential Natural Gas Throughput	0.42	MMscf/hr =	3641.41	MMscf/yr
Limited Natural Gas Throughput	**No Limit**	MMscf/yr		
Limited Operating Hours	**No Limit**	hr/year		

Pollutant	(A) Emission Factor[1] (lb/MMscf)	(B) = (A) x MMscf/hr Emission Rate (lbs/hr)		(D) = (C)/2000 Emission Rate (tons/year)	
		Potential	Limited	Potential	Limited
Benzene	0.0021	8.73E-04	8.73E-04	3.82E-03	3.82E-03
Dichlorobenzene	0.0012	4.99E-04	4.99E-04	2.18E-03	2.18E-03
Hexane	1.8	7.48E-01	7.48E-01	3.28E+00	3.28E+00
Lead Compounds	0.0005	2.08E-04	2.08E-04	9.10E-04	9.10E-04
Naphthalene	0.00061	2.54E-04	2.54E-04	1.11E-03	1.11E-03
Polycyclic Organic Matter (POM)	0.0000882	3.67E-05	3.67E-05	1.61E-04	1.61E-04
Toluene	0.0034	1.41E-03	1.41E-03	6.19E-03	6.19E-03
Arsenic Compounds (ASC)	0.0002	8.31E-05	8.31E-05	3.64E-04	3.64E-04
Beryllium Compounds (BEC)	0.000012	4.99E-06	4.99E-06	2.18E-05	2.18E-05
Cadmium Compounds (CDC)	0.0011	4.57E-04	4.57E-04	2.00E-03	2.00E-03
Chromium Compounds (CRC)	0.0014	5.82E-04	5.82E-04	2.55E-03	2.55E-03
Cobalt Compounds (COC)	0.000084	3.49E-05	3.49E-05	1.53E-04	1.53E-04
Manganese Compounds (MNC)	0.00038	1.58E-04	1.58E-04	6.92E-04	6.92E-04
Mercury Compounds (HGC)	0.00026	1.08E-04	1.08E-04	4.73E-04	4.73E-04
Nickel Compounds (NIC)	0.0021	8.73E-04	8.73E-04	3.82E-03	3.82E-03
Selenium Compounds (SEC)	0.000024	9.98E-06	9.98E-06	4.37E-05	4.37E-05
Total HAPs	1.8134582	0.7538	0.7538	3.3018	3.3018

[1]Emission Factors from AP-42 Tables 1.4-3 and 1.4-4 (7/98)

[2]For Potential Emissions (C) = (B) x 8,760 (hours/year)/2000; For Limited Emissions, if no operational limitations (C) = (B) x 8,760 (hours/year)/2000, if natural gas throughput limitation (C) = Limited Throughput (MMscf/year) x (A) (lb/MMscf), if hourly limitation (C) = Limited Hours (hours/year) x (B)

Greenhouse Gas (GHGs) Emissions

GHGs	(A) Emission Factor[1] (lb/MMscf)	(B) = (A)x MMscf/hr Potential Emission Rate (lbs/hr)	(C) = (B)xOT Potential Emission Rate (lbs/year)	(D) = (C)/2000 Potential Emission Rate (tons/year)
Carbon Dioxide (CO_2)	120,000	49,882	436,969,412	218,485
Methane (CH_4)	2.3	0.9561	8,375	4.19
Nitrous Oxide (N_2O)	2.2	0.9145	8,011	4.01

[1]Emission Factors from AP-42 Table 1.4-2 (7/98)

Fact Sheet Attachment:

Process Vents

Annual Throughput of denatured ethanol= **135,370,731** gallons/yr

Emission Point ID#	Uncontrolled Vent	VOC Concentration[1] (lbs/gallon of denatured ethanol)	VOC Emissions (lb/hr)	VOC Emissions (ton/year)
-	Whole Stillage Tank Vent	6.38E-05	9.86E-01	4.32
-	Thin Stillage Tank Vent	5.62E-05	8.69E-01	3.81
-	Syrup Tank Vent	3.80E-05	5.86E-01	2.57

[1] The VOC emission factors are based upon testing results from similar facilities, accepted by the NDEQ for process tank vents air emission assumptions

Total VOC from Vent Emissions: 2.44 lb/hr
10.69 ton/yr

Hazardous Air Pollutant	**HAP Fraction[2]**	**HAP Emissions**	
		(lb/hr)	**(ton/yr)**
Acetaldehyde	6.74E-03	1.65E-02	7.21E-02
Acrolein	2.96E-05	7.24E-05	3.17E-04
Methanol	1.54E-03	3.77E-03	1.65E-02
Total HAP	-	2.03E-02	8.89E-02

[2] The HAP weight fractions are based upon default weight fractions, accepted by the NDEQ for process tank vents air emission assumptions

Fact Sheet Attachment:

TO/HRSG Stack (100% MWDGS Production): EP-30

Emission Units Routed to the two (2) 122.0 MMBtu/hr TO/HRSG

Emission Unit ID#	Emission Source	Emission Unit ID#	Emission Source	Emission Unit ID#	Emission Source
EU06	Mixer	EU15	Yeast Tank #1	EU35	DDGS Dryer #2
EU07	Slurry Tank #1	EU16	Yeast Tank #2	EU36	TO/HRSG #1
EU08	Slurry Tank #2	EU17	Beer Column	EU37	DDGS Dryer #3
EU09	Flash Tank	EU18	Side Stripper	EU38	DDGS Dryer #4
EU10	Cook Tubes	EU19	Rectifier Column	EU39	TO/HRSG #2
EU11	Liquefaction Tank #1	EU20	190 Proof Condenser		
EU12	Liquefaction Tank #2	EU21	Molecular Sieve		
		EU22	200 Proof Condenser		
		EU34	DDGS Dryer #1		

Process Emissions

Pollutant	Potential Controlled Emission Rate		Permit Limitations	
	(lb/hr)[1]	(ton/yr)[2]	lb/hour	ton/year[2]
Volatile Organic Compounds (VOC)	8.20	35.92	8.20	35.92
Individual Hazardous Air Pollutants (HAP)				
Acetaldehyde	0.6000	2.6280	N/A	<9.9
Formaldehyde	0.2800	1.2264	N/A	<9.9
Methanol	0.2300	1.0074	N/A	<9.9
Total HAPs	1.11	4.86	N/A	<24.8

[1]Controlled Emission Rates (lb/hr) provided by the source in application. Based on information provided by the vendor.

[2]ton/year = lb/hr x 8,760 (hr/yr) / 2,000 (lb/ton)

Greenhouse Gas (GHGs) Emissions

GHGs	(A) Emission Factor[1] (lb/MMscf)	(B) = (A)x MMscf/hr Potential Emission Rate (lbs/hr)	(C) = (B)xOT Potential Emission Rate (lbs/year)	(D) = (C)/2000 Potential Emission Rate (tons/year)
Carbon Dioxide (CO_2)	120,000	28,706	251,463,529	125,732
Methane (CH_4)	2.3	0.5502	4,820	2.4099
Nitrous Oxide (N_2O)	2.2	0.5263	4,610	2.3051

[1]Emission Factors from AP-42 Table 1.4-2 (7/98)

Fact Sheet Attachment:

TO/HRSG Stack (100% MWDGS Production): EP-30
Combustion Emissions

Natural Gas Combustion Emissions from TO/HRSGs (Two (2) 122.0 MMBtu/hr Units)

Total Heat Input Capacity	244.0	MMBtu/hr		
Heat Content of Natural Gas AP-42, Table 1.4-1, Footnote a	1,020	MMBtu/MMscf		
Potential Natural Gas Throughput	0.24	MMscf/hr =	2095.53	MMscf/yr
Limited Natural Gas Throughput	**No Limit**	MMscf/yr		
Limited Operating Hours	**No Limit**	hr/year		

Pollutant	**(A) Emission Factor[1] (lb/MMscf)**	**(B) = (A) x MMscf/hr Emission Rate (lbs/hr)**		**(C) = (B)/2000 Emission Rate[2] (tons/year)**	
		Potential	Limited	Potential	Limited
Particulate Matter (PM/PM_{10})	7.6	1.82E+00	1.82E+00	7.96	7.96
Particulate Matter ($PM_{2.5}$)	7.6	1.82E+00	1.82E+00	7.96	7.96
Sulfur Dioxide (SO_2)	0.6	1.44E-01	1.44E-01	0.63	0.63
Nitrogen Oxides (NO_x)[3]	0.041	1.00E+01	1.00E+01	43.82	43.82
Carbon Monoxide (CO)	84	2.01E+01	2.01E+01	88.01	88.01
Individual Hazardous Air Pollutants (HAP)					
Benzene	0.0021	5.02E-04	5.02E-04	2.20E-03	2.20E-03
Dichlorobenzene	0.0012	2.87E-04	2.87E-04	1.26E-03	1.26E-03
Hexane	1.8	4.31E-01	4.31E-01	1.89E+00	1.89E+00
Lead Compounds	0.0005	1.20E-04	1.20E-04	5.24E-04	5.24E-04
Naphthalene	0.00061	1.46E-04	1.46E-04	6.39E-04	6.39E-04
Polycyclic Organic Matter (POM)	0.0000882	2.11E-05	2.11E-05	9.24E-05	9.24E-05
Toluene	0.0034	8.13E-04	8.13E-04	3.56E-03	3.56E-03
Arsenic Compounds (ASC)	0.0002	4.78E-05	4.78E-05	2.10E-04	2.10E-04
Beryllium Compounds (BEC)	0.000012	2.87E-06	2.87E-06	1.26E-05	1.26E-05
Cadmium Compounds (CDC)	0.0011	2.63E-04	2.63E-04	1.15E-03	1.15E-03
Chromium Compounds (CRC)	0.0014	3.35E-04	3.35E-04	1.47E-03	1.47E-03
Cobalt Compounds (COC)	0.000084	2.01E-05	2.01E-05	8.80E-05	8.80E-05
Manganese Compounds (MNC)	0.00038	9.09E-05	9.09E-05	3.98E-04	3.98E-04
Mercury Compounds (HGC)	0.00026	6.22E-05	6.22E-05	2.72E-04	2.72E-04
Nickel Compounds (NIC)	0.0021	5.02E-04	5.02E-04	2.20E-03	2.20E-03
Selenium Compounds (SEC)	0.000024	5.74E-06	5.74E-06	2.51E-05	2.51E-05
Total HAPs	1.81	0.43	0.43	1.90	1.90

[1]Emission Factors from AP-42 Tables 1.4-3 and 1.4-4 (7/98)

[2]For Potential Emissions (C) = (B) x 8,760 (hrs/yr)/2000; For Limited Emissions, if no operational limitations (C) = (B) x 8,760 (hrs/yr)/2000, if natural gas throughput limitation (C) = Limited Throughput (MMscf/yr) x (A) (lb/MMscf)/2000, if hourly limitation (C) = Limited Hours (hrs/yr) x (B)/2000

[3]NO_x Emission Factor provided by source in application, based on vendor information, and in units of lb/MMBtu

Fact Sheet Attachment:

DDGS Storage and Loadout: EP-50, EP-70, and FS40

PM/PM_{10} Emissions from DDGS Storage and Loadout

Emission Point ID#	Control Equipment ID#	Emission Point Description	(A) Flow Rate	(B) Emission Factor (Grain Loading)	Controlled PM/PM_{10}/$PM_{2.5}$ Emissions	
			dscf/min	grains/dscf	(C) (lb/hour)[1]	(D) = (C)x8760/2000 (ton/year)
EP70	C74	DDGS Cooling Drum Baghouse	50,000	0.002	1.70	7.45
EP50	C50	DDGS Storage and Loadout Baghouse	9,100	0.001	0.16	0.70

Conversion Factors: 7,000 grains per pound; 60 minutes per hour; 8,760 hours per year; 2,000 pounds per ton

[1] PM/PM_{10} emission factor is based on source request and assuming $PM_{2.5}$ emissions equal PM_{10} and PM for baghouses

PM Fugitive Emissions from DDGS Storage and Loadout

Emission Point ID#	Emission Point Description	(A) Hourly Throughput	(B) Annual Throughput	(C) Percent Uncaptured[1]	Emission Factors[2] (lbs/ton)	PM Emissions	
		(tons/hour)	(tons/year)		(D) PM	(E)=(A)x(C)x(D) (lbs/hr)	(F)=(A)x(C)x(D)/2000 (tons/yr)
FS40	DDGS Loadout	120	415,556	10%	0.0033	0.03960	0.07

PM_{10} Fugitive Emissions from DDGS Storage and Loadout

Emission Point ID#	Emission Point Description	(A) Hourly Throughput	(B) Annual Throughput	(C) Percent Fugitives[1]	Emission Factors[2] (lbs/ton)	PM_{10} Emissions	
		(tons/hour)	(tons/year)		(D) PM_{10}	(E)=(B)x(C)x(D) (lbs/hr)	(F)=(B)x(C)x(D)/2000 (tons/yr)
FS40	DDGS Loadout	120	415,556	10%	0.0008	0.01	0.02

$PM_{2.5}$ Fugitive Emissions from DDGS Storage and Loadout

Emission Point ID#	Emission Point Description	(A) Hourly Throughput	(B) Annual Throughput	(C) Percent Fugitives[1]	Emission Factors[2] (lbs/ton)	$PM_{2.5}$ Emissions	
		(tons/hour)	(tons/year)		(D) $PM_{2.5}$	(E)=(A)x(C)x(F) (lbs/hr)	(L)=(B)x(C)x(D)/2000 (tons/yr)
FS40	DDGS Loadout	120	415,556	10%	0.00003	0.0004	0.0007

[1]10% fugitives are assumed since loading operations will occur in an enclosure

[2]Emission Factors are from AP-42 Section 9.9.1 (5/2003). Considering $PM_{2.5}$ fraction of total PM as 0.01 from CEIDARS PM2.5 emission factor scaling table.

Fact Sheet Attachment:

DDGS Storage and Loadout: EP-50, EP-70, and FS40

VOC and HAP Emissions from DDGS Cooling

Maximum Amount of DDGS Produced: 415,556 tons DDGS/year
100.00 tons DDGS/hour

Pollutant	Emission Rate [1]	
	(A) (lb/hr)	(B) = (A) x 8760/2000 (ton/yr)
Volatile Organic Compound (VOC)	1.83	8.02
Individual Hazardous Air Pollutants (HAP)		
Acetaldehyde	0.1933	0.85
Acrolein	0.2833	1.24
Formaldehyde	0.0187	0.08
Methanol	0.0933	0.41
Total HAPs	0.5887	2.58

[1] VOC emission rate is from CP07-0037 issued on May 16, 2008
HAPs emission rate is based on the stack test results of February 12, 2008 (Considered the average of the three test run).

Total Emissions from DDGS Cooling, Storage, and Loadout

Pollutant	Emission Rate	
	(lb/hr)	(tons/year)
Particulate Matter (PM)	1.90	8.22
Particulate Matter (PM_{10})	1.87	8.16
Particulate Matter ($PM_{2.5}$)	1.86	8.15
Volatile Organic Compound (VOC)	1.83	8.02
Individual Hazardous Air Pollutants (HAP)		
Acetaldehyde	0.1933	0.85
Acrolein	0.2833	1.24
Formaldehyde	0.0187	0.08
Methanol	0.0933	0.41
Total HAPs	0.5887	2.58

Fact Sheet Attachment:

Tanks: TK001, TK002, TK003, TK004, TK005, and TK006

Liquid Throughputs

Anhydrous Ethanol Produce	132,000,000	gallons/year
Denaturant Usage:	3,370,731	gallons/year
Denatured Ethanol Produce	135,370,731	gallons/year

Storage Tanks VOC Emission Summary

Tank ID#	Product Stored	Tank Capacity	Throughput	Turnovers	VOC[1]	Amount of VOC from Ethanol[1]	Amount of VOC from Denaturant[1]
		(gallons)	(gallons/year)		(lbs/yr)	(lbs/yr)	(lbs/yr)
TK001	Denatured Ethanol	1,447,000	67,685,366	47	688.29	595.85	92.44
TK002	Denatured Ethanol	1,447,000	67,685,366	47	688.29	595.85	92.44
TK003	200-Proof Ethanol	188,000	132,000,000	702	1,064.34	1,064.34	-
TK004	Denaturant	188,000	3,370,731	18	3,666.43	-	3,666.43
TK005	190-Proof Ethanol	188,000	138,947,368	739	1,111.21	1,111.21	-
TK006	Corrosion Inhibitor	2,300	60,000	26	72.89	-	-

[1]VOC emissions calculated by using EPA's TANKS 4.09d

Total VOC Emissions **7291.45** **lb/yr**
3.65 **ton/yr**

Storage Tanks HAP Emission Summary

Material	Hazardous Air Pollutant	HAP Fraction	HAPs from Individual Tanks (lbs/yr)						Total Individual HAPs	Total Individual HAPs
			TK001	TK002	TK003	TK004	TK005	TK006	lb/year	tons/yr
Anhydrous Ethanol	Acetaldehyde	2.00E-04	0.12	0.12	0.21	-	0.22	-	0.67	3.37E-04
	Methanol	2.00E-04	0.12	0.12	0.21	-	0.22	-	0.67	3.37E-04
Denaturant	Benzene	2.40E-02	2.21	2.21	-	87.85	-	-	92.28	4.61E-02
	n-Hexane	1.31E-01	12.11	12.11	-	480.27	-	-	504.48	2.52E-01
	Toluene	1.44E-02	1.33	1.33	-	52.72	-	-	55.38	2.77E-02
Corrosion Inhibitor	Methanol	0.2	-	-	-	-	-	14.578	14.578	0.007289
						Total HAPs from Storage Tanks:			668.07	0.3340

Components of HAPs in Denaturant and Corrosion inhibitor and HAP fraction has been revised based on information provided by the source; therefore different than in CP10-004

Fact Sheet Attachment:

Ethanol Liquid Loadout: EP-80

Anhydrous Ethanol Loading Rate:	132.00	MMgal/yr
Denaturant Loading Rate:	3.37	MMgal/yr
Denatured Ethanol Loading Rate:	135.37	MMgal/yr

Vapor Recovery Control Efficiency provided in Application

	Truck loadout	Rail loadout
Capture efficiency:	99.0%	99.0%
Control efficiency:	99.0%	99.0%
Overall control efficiency:	98.0%	98.0%

Material Physical Data

	Gasoline (RVP-13)	Ethanol	Denaturant (Natural Gasoline)
Molecular weight (M, lbs/lbs-mole)	62	46.1	66
Temperature (T, deg R)[1]	509.92	509.92	509.69
Vapor pressure (P, psia)[2]	5.7709	0.4673	5.7448
Liquid molecular weight (ML)	92	46.07	92
Density (D, lb/gal)	5.6	6.6	5.6
Liquid Mole Fraction (X)[3]	N/A	0.99	0.01

[1]Temperatures from TANKS 4.09d, average ambient temperature for Grand Island, NE

temperature for Grand Island, NE

Vapor pressure for natural gasoline assumed equal to that of gasoline

[3]Liquid Mole Fraction (X) was calculated as follows, where V = loading rate:

$$X = \frac{\left(\frac{D*V}{ML}\right)}{\left(\frac{D_{ethanol}*V_{ethanol}}{ML_{ethanol}}\right)+\left(\frac{D_{denaturant}*V_{denaturant}}{ML_{denaturant}}\right)}$$

Hazardous Air Pollutant Weight Fractions

Individual HAPs	Weight Fraction of VOC Emissions		
	Gasoline	Ethanol	Denaturant
Acetaldehyde	N/A	2.00E-04	N/A
Benzene	2.40E-02	N/A	2.40E-02
Carbon disulfide	N/A	N/A	N/A
Cumene	N/A	N/A	N/A
Ethyl benzene	N/A	N/A	N/A
n-Hexane	1.31E-01	N/A	1.31E-01
Methanol	N/A	2.00E-04	N/A
Toluene	1.44E-02	N/A	1.44E-02
Xylene	N/A	N/A	N/A
Total HAPs	1.69E-01	4.00E-04	1.69E-01

Saturation Factors

$S_{normal\ dedicated,\ submerged\ loading}$	0.6	Saturation factor
$S_{clean\ cargo,\ submerged\ loading}$	0.5	Saturation factor

Truck loadout is assumed to be non-dedicated trucks, which previous load was unleaded gasoline.
The gasoline vapors are assumed to be displaced by the ethanol, for worst-case assumption.
Rail loadout is assumed to be in dedicated railcars, which previous load was denatured ethanol.

Fact Sheet Attachment:

Ethanol Liquid Loadout: EP-80

VOC Emissions

Denatured Ethanol Emission Factor Calculations

	Truck Loadout Uncontrolled Emission Factor (lbs VOC/Mgal)	Railcar Loadout Uncontrolled Emission Factor	Truck Loadout Controlled Emission Factor (lbs VOC/Mgal)	Railcar Loadout Controlled Emission Factor (lbs VOC/Mgal)
$EF_{gasoline}$	0.874	N/A	0.0174	N/A
$EF_{ethanol}$	0.260	0.260	0.0052	0.0052
$EF_{denaturant}$	0.050	0.050	0.0010	0.0010
EF_{VOC}	1.184	0.310	0.0236	0.0062

VOC emission factor equation from AP-42, Section 5.2.2 - Loading Losses (1/1995)

EF = 12.46*S*P*M/T*(1-eff/100)*X = lbs/Mgal per component

$EF_{gasoline}$ emission factors assumes S =S_{normal} - $S_{clean\ cargo}$ and do not use the Liquid Mole Fraction (X) in the equations.

Total VOC Emission Calculations from Denatured Ethanol Loadout

Loadout Type/Material	(A) Denatured Ethanol Loaded Out (Mgal/year)	(B) Uncontrolled Emission Factor (lbs VOC/Mgal)	(C)=(A)x(B)/2000 Total VOC Emissions (tons/year)	(D) Capture Efficiency (%)	(E)=(C)*(D) Captured VOC Emissions (tons/year)	(F)=(C)-(E) Uncaptured VOC Emissions (tons/year)	(G) Control Efficiency (%)	(H)=(E)x[1-(G)] Captured and Uncontrolled VOC Emissions (tons/year)	(I)=(F)+(H) Total VOC Emissions
100% Loadout by Truck			**80.17**		79.36	**0.80**		**0.7936**	**1.60**
Truck Loadout									
Gasoline	135,371	0.874	59.18	99.00%	58.58	0.59	99.0%	0.5858	1.18
Ethanol		0.260	17.62	99.00%	17.45	0.18	99.0%	0.1745	0.35
Denaturant		0.050	3.37	99.00%	3.33	0.03	99.0%	0.0333	0.07
100% Loadout By Rail			**20.99**		20.78	**0.21**		**0.2078**	**0.42**
Rail Loadout									
Ethanol	135,371	0.260	17.62	99.00%	17.45	0.18	99.0%	0.1745	0.35
Denaturant		0.050	3.37	99.00%	3.33	0.03	99.0%	0.0333	0.07

Fact Sheet Attachment:

Ethanol Liquid Loadout: EP-80
Controlled Hazardous Air Pollutant Emissions assuming 100% Truck Loadout

Hazardous Air Pollutant	Truck Loadout			Maximum Controlled
	Gasoline	Ethanol	Denaturant	
Acetaldehyde	N/A	7.01E-05	N/A	7.01E-05
Benzene	2.82E-02	N/A	1.61E-03	2.98E-02
Carbon disulfide	N/A	N/A	N/A	0.00E+00
Cumene	N/A	N/A	N/A	0.00E+00
Ethyl benzene	N/A	N/A	N/A	0.00E+00
n-Hexane	1.54E-01	N/A	8.78E-03	1.63E-01
Methanol	N/A	7.01E-05	N/A	7.01E-05
Toluene	1.69E-02	N/A	9.63E-04	1.79E-02
Xylene	N/A	N/A	N/A	0.00E+00
Total HAPs	1.99E-01	1.40E-04	1.13E-02	2.11E-01

Controlled Hazardous Air Pollutant Emissions assuming 100% Rail Loadout

Hazardous Air Pollutant	Rail Loadout (ton/yr)		Maximum Controlled HAP Emissions (tons/year)
	Ethanol	Denaturant	
Acetaldehyde	7.01E-05	N/A	7.01E-05
Benzene	N/A	1.61E-03	1.61E-03
Carbon disulfide	N/A	N/A	0.00E+00
Cumene	N/A	N/A	0.00E+00
Ethyl benzene	N/A	N/A	0.00E+00
n-Hexane	N/A	8.78E-03	8.78E-03
Methanol	7.01E-05	N/A	7.01E-05
Toluene	N/A	9.63E-04	9.63E-04
Xylene	N/A	N/A	0.00E+00
Total HAPs	1.40E-04	1.13E-02	1.15E-02

Total Emissions from Denatured Ethanol Loadout

Pollutant	Ethanol Loadout Emissions (tons/year)
Volatile Organic Compounds (VOC)	1.60
Individual HAPs	
Acetaldehyde	7.01E-05
Benzene	2.98E-02
Carbon disulfide	0.00E+00
Cumene	0.00E+00
Ethyl benzene	0.00E+00
n-Hexane	1.63E-01
Methanol	7.01E-05
Toluene	1.79E-02
Xylene	0.00E+00
Total HAPs	2.11E-01

Fact Sheet Attachment:

Loadout Vapor Combustion Unit: EP-80

Flaring Emissions

(A) Denatured Ethanol Loaded Out	135,370,731	gallons/year
(B) Conversion Factor	0.1337	cfm/gallon
(C) Heating Value of Gas	850	Btu/cfm
(D) Annual Heat Input to Flare	15,384.21	MMBtu/year
(D) = (A) x (B) x (C) / 1,000,000		
Flare Heat Input Capacity	6.4	MMBtu/hr
Operating Time	8,760	hr/yr

Pollutant	(E) Emission Factor (lb/MMBtu)	(F) = (E)x MMBtu/hr Potential Emission Rate (lbs/hr)	(G) = (D)x(E) Potential Emission Rate (lbs/year)	(H) = (G)/2000 Potential Emission Rate (tons/year)
Nitrogen Oxides (NO_x)	0.068	0.44	1046.13	0.52
Carbon Monoxide (CO)	0.37	2.37	5692.16	2.85
Volatile Organic Compounds (VOC)	VOCs accounted for in Liquid Loadout			

[1]Emission Factors for Waste Gas from AP-42 Tables 13.5-1 and 13.5-2 (9/91) in lb/MMBtu

Greenhouse Gas Emissions	VOC Emissions Combusted[1]	High Heat Value (HHV)[2]	Emission Factor[2]			Emissions		
			CO_2	CH_4	N_2O	CO_2	CH_4	N_2O
Truck Loadout	(tons/year)	(MMBtu/lb)	(lb/MMBtu)	(lb/MMBtu)	(lb/MMBtu)	(tons/yr)	(tons/yr)	(tons/yr)
Ethanol	17.62	0.0127	150.88	0.0024	0.00024	33.84	0.0005	0.00005
Gasoline and Denaturant	62.54	0.0169	147.33	0.0066	0.00132	155.94	0.0070	0.0014
TOTAL						**189.79**	**0.0075**	**0.0015**

[1] The maximum amount of vapors combusted is based on the maximum amount of ethanol that can be loaded out by truck as shown in the liquid loadout tab

[2] From 40 CFR 98, Subpart C, Tables C-1 and C-2

Fact Sheet Attachment:

Loadout Vapor Combustion Unit: EP-80

Pilot Emissions

Total Heat Input Capacity of Pilot	0.1	MMBtu/hr
Heating Value	1,020	Btu/scf
Operating Time	8,760	hr/yr
Total Natural Gas Usage	0.0001	MMscf/hr

Pollutant	(A) Emission Factor[1] (lb/MMscf)	(B) = (A)x MMscf/hr Potential Emission Rate (lbs/hr)	(C) = (B)xOT Potential Emission Rate (lbs/year)	(D) = (C)/2000 Potential Emission Rate (tons/year)
Particulate Matter (PM/PM_{10})	7.6	0.0007	6.5271	0.0033
Particulate Matter ($PM_{2.5}$)	7.6	0.0007	6.5271	0.0033
Sulfur Dioxide (SO_2)	0.6	0.0001	0.5153	0.0003
Nitrogen Oxides (NO_x)	100	0.0098	85.8824	0.0429
Carbon Monoxide (CO)	84	0.0082	72.1412	0.0361
Volatile Organic Compounds (VOC)	5.5	0.0005	4.7235	0.0024
Greenhouse Gas Emissions (GHGs)				
Carbon Dioxide (CO_2)	120,000	11.7647	103,059	51.53
Methane (CH_4)	2.3	0.0002	2	9.88E-04
Nitrous Oxide (N_2O)	2.2	0.0002	2	9.45E-04
Individual Hazardous Air Pollutants (HAP)				
Benzene	0.0021	2.06E-07	1.80E-03	9.02E-07
Dichlorobenzene	0.0012	1.18E-07	1.03E-03	5.15E-07
Formaldehyde	0.075	7.35E-06	6.44E-02	3.22E-05
Hexane	1.8	1.76E-04	1.55E+00	7.73E-04
Lead Compounds	0.0005	4.90E-08	4.29E-04	2.15E-07
Naphthalene	0.00061	5.98E-08	5.24E-04	2.62E-07
Polycyclic Organic Matter (POM)	0.0000882	8.65E-09	7.57E-05	3.79E-08
Toluene	0.0034	3.33E-07	2.92E-03	1.46E-06
Arsenic Compounds (ASC)	0.0002	1.96E-08	1.72E-04	8.59E-08
Beryllium Compounds (BEC)	0.000012	1.18E-09	1.03E-05	5.15E-09
Cadmium Compounds (CDC)	0.0011	1.08E-07	9.45E-04	4.72E-07
Chromium Compounds (CRC)	0.0014	1.37E-07	1.20E-03	6.01E-07
Cobalt Compounds (COC)	0.000084	8.24E-09	7.21E-05	3.61E-08
Manganese Compounds (MNC)	0.00038	3.73E-08	3.26E-04	1.63E-07
Mercury Compounds (HGC)	0.00026	2.55E-08	2.23E-04	1.12E-07
Nickel Compounds (NIC)	0.0021	2.06E-07	1.80E-03	9.02E-07
Selenium Compounds (SEC)	0.000024	2.35E-09	2.06E-05	1.03E-08
Total HAPs	-	1.85E-04	1.62E+00	8.11E-04

[1]Emission Factors from AP-42 Tables 1.4-1, 1.4-2, 1.4-3, and 1.4-4 (7/98).

Fact Sheet Attachment:

Loadout Vapor Combustion Unit: EP-80
Total Loadout Vapor Combustion Unit Emissions

Pollutant	Total Potential Emission Rate (lb/hr)	Total Potential Emission Rate (tons/year)
Particulate Matter (PM/PM_{10})	0.0007	0.0033
Particulate Matter ($PM_{2.5}$)	0.0007	0.0033
Sulfur Dioxide (SO_2)	0.0001	0.0003
Nitrogen Oxides (NO_x)	0.13	0.57
Carbon Monoxide (CO)	0.66	2.88
Volatile Organic Compounds (VOC)	0.0005	0.0024
Greenhouse Gas Emissions (GHGs)		
Carbon Dioxide (CO_2)	55.09	241.31
Methane (CH_4)	0.0019	0.0085
Nitrous Oxide (N_2O)	0.0005	0.0024
Individual Hazardous Air Pollutants (HAP)		
Benzene	2.06E-07	9.02E-07
Dichlorobenzene	1.18E-07	5.15E-07
Formaldehyde	7.35E-06	3.22E-05
Hexane	1.76E-04	7.73E-04
Lead Compounds	4.90E-08	2.15E-07
Naphthalene	5.98E-08	2.62E-07
Polycyclic Organic Matter (POM)	8.65E-09	3.79E-08
Toluene	3.33E-07	1.46E-06
Arsenic Compounds (ASC)	1.96E-08	8.59E-08
Beryllium Compounds (BEC)	1.18E-09	5.15E-09
Cadmium Compounds (CDC)	1.08E-07	4.72E-07
Chromium Compounds (CRC)	1.37E-07	6.01E-07
Cobalt Compounds (COC)	8.24E-09	3.61E-08
Manganese Compounds (MNC)	3.73E-08	1.63E-07
Mercury Compounds (HGC)	2.55E-08	1.12E-07
Nickel Compounds (NIC)	2.06E-07	9.02E-07
Selenium Compounds (SEC)	2.35E-09	1.03E-08
Total HAPs	1.85E-04	8.11E-04

Fact Sheet Attachment:

Potential to Emit Calculations for Emissions from MWDGS Loadout

Maximum amount of MWDGS produced	831,111	tons/year
	94.88	tons/hour

Pollutant	(A) Emission Factor[1] (lb/ton WDGS)	Potential Emission Rate	
		(B) = (A)x ton WDGS/hr (lb/hr)	(C) = (B)x8760/2000 (ton/yr)
Volatile Organic Compounds (VOC)	0.0083	0.79	3.45
Individual Hazardous Air Pollutants (HAP)			
Acetaldehyde	1.11E-04	0.0105	0.0461
Acrolein	1.67E-05	0.0016	0.0069
Formaldehyde	2.22E-04	0.0211	0.0923
Methanol	4.44E-05	0.0042	0.0185
Total HAPs	-	0.0374	0.1638

[1]Emission Factors based on November 2, 2004 emissions testing at DENCO, LLC in Morris, MN

Fact Sheet Attachment:

Potential to Emit Calculations for Emissions from Cooling Tower

Circulation rate:	3,300,000	gal/hr
	28,908,000	Mgal/yr (based on 8,760 hrs/yr)
Drift loss percent:	0.005	%
Water density:	8.34	lbs/gal
TDS concentration:	4,000	ppm single sample event
	4,000	ppm average annual rate

Emission Factor Calculation for PM and PM_{10}

Emission factor equation from AP-42, Section 13.4-2 (01/1995)

$$\text{PM emission factor} = \left(\frac{ppmTDS}{1{,}000{,}000\,lbswater}\right)\left(\frac{8.34\,lbs}{gal}\,water\right)\left(\frac{1{,}000\,gal}{1Mgal}\right)\left(\frac{0.005}{100}\,driftloss\right)$$

PM emission factor =	0.001668	lbs/Mgal single sample event (highest hourly rate)
PM emission factor =	0.001668	lbs/Mgal average annual rate

Hourly Emissions = (lbs/Mgal single sample event)(hourly throughput gal/hr)(1 Mgal/1,000 gal)
Annual Emissions = (lbs/Mgal average annual rate)(annual throughput Mgal/yr)/(2,000 lbs/ton)

Cooling Tower Emission Summary		
Pollutant	Hourly PTE (lbs/hr)	Annual PTE (tons/year)
PM	5.50	24.11
PM_{10}[1]	3.85	16.88
$PM_{2.5}$[2]	2.31	10.13

PM_{10} and $PM_{2.5}$ emissions estimated to be 70% and 42% (respectively) of total PM emissions based on Appendix A to *Particulate Matter (PM) 2.5 Significance Thresholds and Calculation Methodology* published by the South Coast Air Quality

Fact Sheet Attachment:

Biomethanator Flare: EP-60

Flaring Emissions

Assumptions
- 1% of Biogas is Hydrogen Sulfide = 10,000 ppm
- At Standard Conditions, Weight Concentration, mg/m^3 = ppm x MW_{H2S}/molar volume of gas
- Uncontrolled Emission Rate, lb/hr = Weight Concentration x (g/1000 mg) x (lb/453.6 g) x (m^3/35.313 ft^3) x gas flow (scf/min) x (60 min/hr)

Volume Concentration, H_2S (provided by source)	10,000	ppm
Molecular Weight (MW), H_2S	34	g/mole
Molecular Weight (MW), Biogas	27.10	g/mole
1 Molar volume of gas (at standard condition)	24.45	liters

Component	Percentage	Molecular Weight	
Methane	60%	16	g/mol
Carbon Dioxide	39%	44	g/mol
H_2S	1%	34	g/mol

Weight Concentration, H_2S	13,906	mg/m^3
Gas Flow Rate (provided by source)	56	scf/min
Gas Flow Rate	0.00336	MMscf/hr
Uncontrolled Emission Rate, H_2S	2.92	lb/hr
Uncontrolled Emission Rate, H_2S Based on 8,760 operating hours	12.78	ton/year
Estimated Control Efficiency Control provided by combustion of gas	98.0%	
Controlled Emission Rate, H_2S	0.0583	lb/hr
Controlled Emission Rate, H_2S	0.2555	ton/year
Heat Content of Methane	1,000	Btu/scf
Heat Content of Biogas	600.0	Btu/scf
Operating Time	8760.0	hours/year
Calculated Heat Input of Flare Gas Flow Rate (MMscf/hr) x Heat Content of Biogas (Btu/scf)	2.02	MMBtu/hr

Pollutant	(A) Emission Factors[1]		(B) = (A)xMMBtu/hr Potential Emission Rate (lbs/hr)	(C) = (B)xOT Potential Emission Rate (lbs/year)	(D) = (C)/2000 Potential Emission Rate (tons/year)
Sulfur Dioxide (SO_2)	5.38	lb/hr[2]	5.3809	47137.11	23.57
Nitrogen Oxides (NO_x)	0.068	lb/MMBtu	0.1371	1200.89	0.60
Carbon Monoxide (CO)	0.37	lb/MMBtu	0.7459	6534.26	3.27
Volatile Organic Compounds (VOC)	0.0518	lb/MMBtu	0.1044	914.80	0.46
Hydrogen Sulfide (H_2S)	0.0583	lb/hr[3]	0.0583	511.05	0.26
Carbon Dioxide (CO_2)	114.79	lb/MMBTU[4]	231.417	2027209.77	1013.60
Methane (CH_4)	0.0071	lb/MMBTU[4]	0.014	125.39	0.06
Nitrous Oxides (N_2O)	0.0014	lb/MMBTU[4]	0.003	24.72	0.01

[1]Emission Factors for NO_x, CO, and VOC from AP-42 Tables 13.5-1 and 13.5-2 (9/91), SO_2 and H_2S established from information/calculation above.

[2]SO_2 Emission Factor (lb/hr) = Uncontrolled Emission Rate, H_2S (lb/hr) x Estimated Control Efficiency (%) x (MW_{SO2}/MW_{H2S})

[3]H_2S Emission Factor (lb/hr) = Uncontrolled Emission Rate, H_2S (lb/hr) x Estimated Control Efficiency (%)

[4]Emission Factors for CO_2, CH_4, and N_2O, from 40 CFR 98 Tables C-1 and C-2

Fact Sheet Attachment:

Biomethanator Flare: EP-60
Pilot Emissions

Total Heat Input Capacity of Pilot	0.1	MMBtu/hr
Heating Value	1020	Btu/scf
Operating Time	8760	hr/yr
Total Natural Gas Usage	0.0001	MMscf/hr

Pollutant	(A) Emission Factor[1] (lb/MMscf)	(B) = (A)x MMscf/hr Potential Emission Rate (lbs/hr)	(C) = (B)xOT Potential Emission Rate (lbs/year)	(D) = (C)/2000 Potential Emission Rate (tons/year)
Particulate Matter (PM/PM_{10})	7.6	0.0007	6.53	0.0033
Particulate Matter ($PM_{2.5}$)	7.6	0.0007	6.53	0.0033
Sulfur Dioxide (SO_2)	0.6	0.0001	0.52	0.0003
Nitrogen Oxides (NO_x)	100	0.0098	85.88	0.0429
Carbon Monoxide (CO)	84	0.0082	72.14	0.0361
Volatile Organic Compounds (VOC)	5.5	0.0005	4.72	0.0024
Greenhouse Gas Emissions (GHGs)				
Carbon Dioxide (CO_2)	120,000	11.76	103,059	51.53
Methane (CH_4)	2.3	0.0002	2	0.0010
Nitrous Oxide (N_2O)	2.2	0.0002	2	0.0009
Individual Hazardous Air Pollutants (HAP)				
Benzene	0.0021	2.06E-07	1.80E-03	9.02E-07
Dichlorobenzene	0.0012	1.18E-07	1.03E-03	5.15E-07
Formaldehyde	0.075	7.35E-06	6.44E-02	3.22E-05
Hexane	1.8	1.76E-04	1.55E+00	7.73E-04
Lead Compounds	0.0005	4.90E-08	4.29E-04	2.15E-07
Naphthalene	0.00061	5.98E-08	5.24E-04	2.62E-07
Polycyclic Organic Matter (POM)	0.0000882	8.65E-09	7.57E-05	3.79E-08
Toluene	0.0034	3.33E-07	2.92E-03	1.46E-06
Arsenic Compounds (ASC)	0.0002	1.96E-08	1.72E-04	8.59E-08
Beryllium Compounds (BEC)	0.000012	1.18E-09	1.03E-05	5.15E-09
Cadmium Compounds (CDC)	0.0011	1.08E-07	9.45E-04	4.72E-07
Chromium Compounds (CRC)	0.0014	1.37E-07	1.20E-03	6.01E-07
Cobalt Compounds (COC)	0.000084	8.24E-09	7.21E-05	3.61E-08
Manganese Compounds (MNC)	0.00038	3.73E-08	3.26E-04	1.63E-07
Mercury Compounds (HGC)	0.00026	2.55E-08	2.23E-04	1.12E-07
Nickel Compounds (NIC)	0.0021	2.06E-07	1.80E-03	9.02E-07
Selenium Compounds (SEC)	0.000024	2.35E-09	2.06E-05	1.03E-08
Total HAPs	-	1.85E-04	1.62E+00	8.11E-04

[1]Emission Factors from AP-42 Tables 1.4-1, 1.4-2, 1.4-3, and 1.4-4 (7/98)

Fact Sheet Attachment:

Biomethanator Flare: EP-60

Total Biomethanatoe Flare Emissions

Pollutant	Total Potential Emission Rate (lb/hr)	Total Potential Emission Rate (tons/year)
Particulate Matter (PM/PM_{10})	0.0007	0.0033
Particulate Matter ($PM_{2.5}$)	0.0007	0.0033
Sulfur Dioxide (SO_2)	5.38	23.57
Nitrogen Oxides (NO_x)	0.15	0.64
Carbon Monoxide (CO)	0.75	3.30
Volatile Organic Compounds (VOC)	0.10	0.46
Hydrogen Sulfide (H_2S)	0.0583	0.26
Greenhouse Gas Emissions (GHGs)		
Carbon Dioxide (CO_2)	243.1813	1065.13
Methane (CH_4)	0.0145	0.06
Nitrous Oxide (N_2O)	0.0030	0.01
Individual Hazardous Air Pollutants (HAP)		
Benzene	2.06E-07	9.02E-07
Dichlorobenzene	1.18E-07	5.15E-07
Formaldehyde	7.35E-06	3.22E-05
Hexane	1.76E-04	7.73E-04
Lead Compounds	4.90E-08	2.15E-07
Naphthalene	5.98E-08	2.62E-07
Polycyclic Organic Matter (POM)	8.65E-09	3.79E-08
Toluene	3.33E-07	1.46E-06
Arsenic Compounds (ASC)	1.96E-08	8.59E-08
Beryllium Compounds (BEC)	1.18E-09	5.15E-09
Cadmium Compounds (CDC)	1.08E-07	4.72E-07
Chromium Compounds (CRC)	1.37E-07	6.01E-07
Cobalt Compounds (COC)	8.24E-09	3.61E-08
Manganese Compounds (MNC)	3.73E-08	1.63E-07
Mercury Compounds (HGC)	2.55E-08	1.12E-07
Nickel Compounds (NIC)	2.06E-07	9.02E-07
Selenium Compounds (SEC)	2.35E-09	1.03E-08
Total HAPs	1.85E-04	8.11E-04

Fact Sheet Attachment:

Equipment Leaks: FS-30

Potential to Emit from leaking Ethanol via Equipment Leaks

Type of Component	Plant Area		
	Fermentation	Distillation	Tank Farm
	(A) Percent TOC in Plant Area		
	13%	82%	100%
	(B) Number of Components		
Valves (Gas/Vapor)	0	117	10
Valves (Light Liquid)	179	244	199
Pumps (Light Liquid)	12	8	8
Compressor Seals (Gas/Vapor)	0	0	0
Pressure Relief Valves (Gas/Vapor)	0	16	5
Sampling Connections	0	0	0
Open-ended Lines	0	0	0
Flanges	200	150	100

Type of Component	Total Number of Components	(C) Leaking Emission Factor (kg/hr/source)	VOC Uncontrolled Emissions		(F) LDAR (cont.eff. %)	VOC Controlled Emissions	
			(D) = SUM[(A)x(B)x(C)]x2.21 (lb/hr)	(E) = (D)x8760/2000 (ton/year)		(G) = (D)x[1-(F)] (lb/hr)	(H) = (E)x[1-(F)] (ton/year)
Valves (Gas/Vapor)	127	0.005970	1.40	6.12	87%	0.18	0.80
Valves (Light Liquid)	622	0.004030	3.76	16.48	84%	0.60	2.64
Pumps (Light Liquid)	28	0.019900	0.71	3.11	69%	0.22	0.96
Compressor Seals (Gas/Vapor)	0	0.228000	0.00	0.00	0%	0.00	0.00
Pressure Relief Valves (Gas/Vapor)	21	0.104000	4.16	18.24	87%	0.54	2.37
Sampling Connections	0	0.015000	0.00	0.00	0%	0.00	0.00
Open-ended Lines	0	0.001700	0.00	0.00	0%	0.00	0.00
Flanges	450	0.001830	1.01	4.41	0%	1.01	4.41

VOC Emissions are calculated from *Protocol for Leak Emission Estimates* , EPA-453/R-95-017, November 1995 or based on the design emission rate

Total number of components has been revised based on as-built conditions; therefore the number is different compared to that in CP10-004.

Total VOC Emissions 2.55 lb/hr
11.18 ton/year

Hazardous Air Pollutant	Weight Percent HAP in Product	HAP Emissions	
		lb/hr	ton/year
Acetaldehyde	0.0002	5.10E-04	2.24E-03
Benzene	2.40E-02	6.11E-02	2.68E-01
Carbon Disulfide	0	0.00E+00	0.00E+00
Cumene	0	0.00E+00	0.00E+00
Ethylbenzene	0	0.00E+00	0.00E+00
Hexane	1.31E-01	3.34E-01	1.46E+00
Methanol	2.00E-04	5.10E-04	2.24E-03
Toluene	1.44E-02	3.67E-02	1.61E-01
Xylene	0	0.00E+00	0.00E+00
Total HAPs	-	4.33E-01	1.90E+00

Fact Sheet Attachment:

Emergency Fire Pump Engine: EP-90

Internal Combustion of Diesel Fuel in Engines (< 600 hp)

Total Horsepower	300
Total Heat Input Capacity	2.10

Calculated using a brake-specific fuel consumption (BFSC) factor of 7,000 Btu/HP per AP-42, Table 3.3-1 (10/96), footnote (a)

Sulfur Fuel Limit	0.05
Limited Operating Hours	250

Pollutant	(A) Emission Factor[1] (lb/MMBtu)	(B) = (A)xMMBtu/hr Emission Rate (lbs/hr)	(C) = (B)xOperating Hours Emission Rate (lbs/year)	(D) = (C)/2000 Potential to Emit (tons/year)
Particulate Matter (PM/PM_{10})	0.31	0.65	162.75	0.08
Particulate Matter ($PM_{2.5}$)[2]	0.30	0.63	157.38	0.08
Sulfur Dioxide (SO_x)	0.29	0.61	152.25	0.08
Nitrogen Oxides (NO_x)	4.41	9.26	2315.25	1.16
Carbon Monoxide (CO)	0.95	2.00	498.75	0.25
Volatile Organic Compounds (VOC)	0.36	0.76	189.00	0.09
Greenhouse Gas Emissions (GHGs)				
Carbon Dioxide (CO_2)[3]	163.05	342.41	85603.19	42.80
Methane (CH_4)[3]	6.61E-03	1.39E-02	3.47	1.74E-03
Nitrous Oxides (N_2O)[3]	1.32E-03	2.78E-03	0.69	3.47E-04
Individual Hazardous Air Pollutants (HAP)				
1,3 - Butadiene	3.91E-05	8.21E-05	2.05E-02	1.03E-05
Acetaldehyde	7.67E-04	1.61E-03	4.03E-01	2.01E-04
Acrolein	9.25E-04	1.94E-03	4.86E-01	2.43E-04
Benzene	9.33E-04	1.96E-03	4.90E-01	2.45E-04
Formaldehyde	1.18E-03	2.48E-03	6.20E-01	3.10E-04
Naphthalene	8.48E-05	1.78E-04	4.45E-02	2.23E-05
Polycyclic Organic Matter (POM)	8.32E-05	1.75E-04	4.37E-02	2.18E-05
Toluene	4.09E-04	8.59E-04	2.15E-01	1.07E-04
Xylene	2.85E-04	5.99E-04	1.50E-01	7.48E-05
Total HAPs	-	0.0099	2.47	0.0012

[1]Emission Factors are from AP-42 Tables 3.3-1 and 3.3-2 (10/96)
Conversion Factor: Heat Capacity of Diesel Fuel is 137,000 Btu/gal (AP-42 Appendix A)
Note: Sulfur Dioxide Emission Factor = 1.01 x Sulfur Content (%)
Note: kgal = 1000 gallons
Note: Potential Operating Hours is 8760
[2] Considering PM2.5 fraction of total PM as 0.967 from CEIDARS PM2.5 emission factor scaling table.
[3] Emission factors are from 40 CFR 98, Subpart C , Table C-1 for CO_2, and Table C-2 for CH_4 and N_2O

Emission Calculation: Haul Road Emissions

Haul Road Emissions: FS-10

Paved roads {AP-42 Chapter 13.2.1 (1/11)}

Equation (2): *(modified)*

$$E = k \times (sL)^{0.91} \times (W)^{1.02} \times \left(1 - \frac{P}{4 \times 365}\right)$$

	k
PM	0.011
PM_{10}	0.0022
$PM_{2.5}$	0.00054

Unpaved roads {AP-42 Chapter 13.2.2 (11/06)}

Equation (1a): *(modified)*

$$E = k \times \left(\frac{sC}{12}\right)^{a} \times \left(\frac{W}{3}\right)^{b} \times \left(\frac{365 - P}{365}\right) \times \left(\frac{S}{30}\right)^{d} \times (1 - CE)$$

	k	*a*	*b*	*d*
PM	4.9	0.7	0.45	0.3
PM_{10}	1.5	0.9	0.45	0.5
$PM_{2.5}$	0.15	0.9	0.45	0.5

Haul Road / Traffic Parameters

Activity / Road Description	Road Type / Silt Value		Roundtrip Length (feet)		Truck Weight (tons)			Ave. Speed (mph)	Unrestricted Maximum Throughput (units/yr)	Ave. Truck Capacity (units/truck)		Annual VMT
			empty	full	empty	full	Ave.[1]					
Denatured Delivery	p	3.00	2,737	2,921	15	40	27.9	15	3,370,731	8,000	gal	452
Denatured Ethanol Loadout	p	3.00	2,921	2,737	15	40	27.1	15	135,370,731	8,000	gal	18,133
100% DDGS Loadout	p	3.00	2,243	3,415	15	40	30.1	15	415,556	25	ton	17,812
100% MWDGS Loadout	p	3.00	3,260	2,398	15	40	25.6	15	831,111	25	ton	35,624

[1] Weighted average = {(distance*weight empty)+(distance*weight full)}/(Roundtrip distance)

Emission Calculations

	Emission Factors (lb/VMT)			Potential Emissions (tons/yr)		
	PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$
Denatured Delivery	0.84	0.17	0.04	0.19	0.04	0.01
Denatured Ethanol Loadout	0.81	0.16	0.04	7.36	1.47	0.36
100% DDGS Loadout	0.90	0.18	0.04	~~8.05~~	1.61	0.40
100% MWDGS Loadout	0.77	0.15	0.04	13.65	~~2.73~~	~~0.67~~
Total Annual Emissions[2]:				**21.19**	**3.12**	**0.77**

[2]Total annual emissions exclude emissions associated with DDGS (for PM) since worst case scenario is that all DGS is trucked out as MWDGS. However, worst case scenario for PM_{10} and $PM_{2.5}$ facility-wide occurs when all DGS is trucked out as DDGS due to PM_{10} and $PM_{2.5}$ emissions from the drying process.

Description of Constants/Variables

E: haul road emissions (lb/VMT)

k, d: dimensionless constants from Draft AP-42 Chapter 13.IV (paved)

k, a, b, c, d: dimensionless constants from AP-42 Tables 13.2.1-1 & 13.2.2-2 (unpaved)

sL: silt loading (g/m^2) of paved road surface

sC: silt content (%) of unpaved road surface

W: average vehicle weight (tons)

P: days/yr with at least 0.01" of precipitation
P = 90 default = 90

S: mean vehicle speed on road (mph)
default = 30, minimum =15

CE: unpaved road, dust control efficiency
CE = 0 % default = 0%

VMT: vehicle miles traveled

Fact Sheet Attachment:

Determining Worst-Case (DDGS or MWDGS Production)

scenario

for emissions from all pollutants other than PM and VOC from ASA Albion, LLC

100% DDGS Production Scenario

Process or Unit	Pollutants (tons/year)						
	Particulate Matter (PM)	Particulate Matter (PM_{10})	Particulate Matter ($PM_{2.5}$)	Sulfur Oxides (SO_x)	Nitrogen Oxides (NO_x)	Carbon Monoxide (CO)	Volatile Organic Compounds (VOC)
TO - DDGS	49.89	49.89	49.89	81.47	106.87	90.67	35.92
DDGS Cooling, Storage, and Loadout	8.22	8.16	8.15	-	-	-	8.02
Truck Traffic (DDGS Loadout)	8.05	1.61	0.40	-	-	-	-
DDGS Production Totals	**66.15**	**59.66**	**58.43**	**81.47**	**106.87**	**90.67**	**43.93**

100% WDGS Production Scenario

Process or Unit	Pollutants (tons/year)						
	Particulate Matter (PM)	Particulate Matter (PM_{10})	Particulate Matter ($PM_{2.5}$)	Sulfur Oxides (SO_x)	Nitrogen Oxides (NO_x)	Carbon Monoxide (CO)	Volatile Organic Compounds (VOC)
TO - MWDGS	7.96	7.96	7.96	0.63	43.82	88.01	35.92
MWDGS Storage and Loadout	-	-	-	-	-	-	3.45
Truck Traffic (MWDGS Loadout)	13.65	2.73	0.67	-	-	-	-
MWDGS Production Totals	**21.61**	**10.69**	**8.63**	**0.63**	**43.82**	**88.01**	**39.37**

Fact Sheet Attachment:

Facility-wide Emissions

Process or Unit	Pollutants (tons/year)							
	Particulate Matter (PM)	Particulate Matter (PM_{10})	Particulate Matter ($PM_{2.5}$)	Sulfur Oxides (SO_x)	Nitrogen Oxides (NO_x)	Carbon Monoxide (CO)	Volatile Organic Compounds (VOC)	Hydrogen Sulfide (H_2S)
Grain Conveying and Hammermilling	1.75	1.75	1.75	-	-	-	-	-
Fermentation Scrubber	2.45	2.45	2.45	-	-	-	43.80	-
TO - DDGS	49.89	49.89	49.89	81.47	99.80	90.67	35.92	-
Tanks	-	-	-	-	-	-	3.65	-
Liquid Loadout	-	-	-	-	-	-	1.60	-
Liquid Loadout Flare	0.0033	0.0033	0.0033	0.0003	0.57	2.88	0.0024	-
DDGS Cooling and Loadout	8.22	8.16	8.15	-	-	-	8.02	-
MWDGS Storage and Loadout	-	-	-	-	-	-	-	-
Biomethanator Flare and Pilot	0.0033	0.0033	0.0033	23.57	0.64	3.30	0.46	0.26
Equipment Leaks	-	-	-	-	-	-	11.18	-
Cooling Tower	24.11	16.88	10.13	-	-	-	-	-
Emergency Fire Pump Engine	0.08	0.08	0.08	0.08	1.16	0.25	0.09	-
Process Vents	-	-	-	-	-	-	10.69	-
Haul Roads	21.19	3.12	0.77	-	-	-	-	-
Facility-wide Emissions	107.70	82.34	73.22	105.11	102.17	97.10	115.40	0.26

Fact Sheet Attachment:

Facility-wide Hazardous Air Pollutant Emissions (tons/year)

Hazardous Air Pollutant	Process or Unit										Total Single Hazardous Air Pollutants
	Fermentation Scrubber	TO Stack	Tanks	Liquid Loadout	Loadout Flare	DDGS Cooling and Loadout	Biomethanator Flare	Equipment Leaks	Process Vents	Fire Pump Engine	
1,3 - Butadiene	-	-	-	-	-	-	-	-		1.03E-05	1.03E-05
Acetaldehyde	3.19E+00	2.34E+00	3.37E-04	7.01E-05	-	8.47E-01	-	2.24E-03	7.21E-02	2.01E-04	6.44
Acrolein	1.90E+00	3.17E+00	-	-	-	1.24E+00	-	-	3.17E-04	2.43E-04	6.30
Benzene	-	3.82E-03	4.61E-02	2.98E-02	9.02E-07	-	9.02E-07	2.68E-01	-	2.45E-04	3.48E-01
Carbon disulfide	-	-	-	0.00E+00	-	-	-	0.00E+00	-	-	0.00E+00
Cumene	-	-	-	0.00E+00	-	-	-	0.00E+00	-	-	0.00E+00
Dichlorobenzene	-	2.18E-03	-	-	5.15E-07	-	5.15E-07	-	-	-	2.19E-03
Ethyl benzene	-	-	-	0.00E+00	-	-	-	0.00E+00	-	-	0.00E+00
Formaldehyde	5.08E-01	2.16E-01	-	-	3.22E-05	8.18E-02	3.22E-05	-	-	3.10E-04	0.81
Hexane	-	3.28E+00	2.52E-01	1.63E-01	7.73E-04	-	7.73E-04	1.46E+00	-	-	5.16
Lead Compounds	-	9.10E-04	-	-	2.15E-07	-	2.15E-07	-	-	-	9.11E-04
Methanol	1.85E-01	1.07E+00	3.37E-04	7.01E-05	-	4.09E-01	-	2.24E-03	1.65E-02	-	1.69
Naphthalene	-	1.11E-03	-	-	2.62E-07	-	2.62E-07	-	-	2.23E-05	1.13E-03
Polycyclic Organic Matter (POM)	-	1.61E-04	-	-	3.79E-08	-	3.79E-08	-	-	2.18E-05	1.83E-04
Toluene	-	6.19E-03	2.77E-02	1.79E-02	1.46E-06	-	1.46E-06	1.61E-01	-	1.07E-04	2.13E-01
Xylene	-	-	-	0.00E+00	-	-	-	0.00E+00	-	7.48E-05	7.48E-05
Arsenic Compounds (ASC)	-	3.64E-04	-	-	8.59E-08	-	8.59E-08	-	-	-	3.64E-04
Beryllium Compounds (BEC)	-	2.18E-05	-	-	5.15E-09	-	5.15E-09	-	-	-	2.19E-05
Cadmium Compounds (CDC)	-	2.00E-03	-	-	4.72E-07	-	4.72E-07	-	-	-	2.00E-03
Chromium Compounds (CRC)	-	2.55E-03	-	-	6.01E-07	-	6.01E-07	-	-	-	2.55E-03
Cobalt Compounds (COC)	-	1.53E-04	-	-	3.61E-08	-	3.61E-08	-	-	-	1.53E-04
Manganese Compounds (MNC)	-	6.92E-04	-	-	1.63E-07	-	1.63E-07	-	-	-	6.92E-04
Mercury Compounds (HGC)	-	4.73E-04	-	-	1.12E-07	-	1.12E-07	-	-	-	4.74E-04
Nickel Compounds (NIC)	-	3.82E-03	-	-	9.02E-07	-	9.02E-07	-	-	-	3.83E-03
Selenium Compounds (SEC)	-	4.37E-05	-	-	1.03E-08	-	1.03E-08	-	-	-	4.37E-05
Total HAPS	5.77E+00	1.01E+01	3.27E-01	2.11E-01	8.11E-04	2.58E+00	8.11E-04	1.90E+00	8.89E-02	1.24E-03	

Total Hazardous Air Pollutants: **20.97**

Fact Sheet Attachment:

Title 129, Chapter 20 Applicability

Title 129, Chapter 20, Section 001

For process weight rates up to 60,000 lbs/hr: $E= 4.10\ p^{0.67}$

For process weight rates in excess of 60,000 lbs/hr: $E= 55.0\ p^{0.11}-40$

where E = rate of emissions in lbs/hr PM and p = process weight rate in tons/hr.

Process	P	E	Unit PM emission rate
Grain Handling Baghouse	320,000 lbs/hr 160.00 tons/hr	56.12 lbs/hr	0.11 lbs/hr
Hammermill Baghouse	320,000 lbs/hr 160.00 tons/hr	56.12 lbs/hr	0.29 lbs/hr
DDGS Cooling Baghouse	200,000 lbs/hr 100.00 tons/hr	51.28 lbs/hr	1.70 lb/hr
TO Stack	200,000 lbs/hr 100.00 tons/hr	51.28 lbs/hr	11.39 lb/hr
DDGS Storage and Loadout Baghouse	240,000 lbs/hr 120.00 tons/hr	53.13 lbs/hr	0.16 lb/hr
Cooling Tower	27,522,000 lbs/hr 13,761 tons/hr	116.90 lbs/hr	5.50 lb/hr

Title 129, Chapter 20, Section 002

Total Heat Input (MMBtu/hr)	Maximum Allowable Emissions of PM (lbs/MMBtu)
10 or less	0.6
Between 10 and 10,000	$1.026/I^{0.233}$ Where I = total heat input in MMBtu/hr.
10,000 or more	0.12

Process equipment	MMBtu/hr	Allowable PM (lbs/MMBtu)	Unit PM emission rate (lbs/MMBtu)
TO Stack	424.00	0.25	0.0269
Loadout Flare	6.40	0.60	0.0001
Fire Pump Engine	2.10	0.60	0.3100
Biomethanator Flare	2.02	0.60	0.0004

STATE OF NEBRASKA

Dave Heineman
Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY
Michael J. Linder
Director
Suite 400, The Atrium
1200 'N' Street
P.O. Box 98922
Lincoln, Nebraska 68509-8922
Phone (402) 471-2186
FAX (402) 471-2909
website: www.deq.state.ne.us

AIR QUALITY CONSTRUCTION PERMIT

PERMIT NUMBER: CP13-026

Facility Name: Valero Renewable Fuels Company, LLC

NDEQ Facility ID#: 85814

Mailing Address:
PO Box 188
Albion, Nebraska 68620-0188

Facility Location:
2615 260th Street
Section 26, Township 20N, Range 6W
Albion, Boone County, Nebraska

Permit Description: MINOR PERMIT REVISION for an ethanol manufacturing plant producing approximately 135 million gallons of denatured ethanol annually

Standard Industrial Classification (SIC) Code: 2869, Industrial Organic Chemicals

Revised or Superseded Construction Permits: This construction permit supersedes Conditions III.(C) of construction permit CP11-035 (issued September 21, 2012). No other terms or conditions of the original construction permit(s) are being revised or otherwise modified by this document. All other provisions of the original permit(s) are still in effect, and in concert with this permit, constitute the effective construction permit.

Pursuant to Title 129 – Nebraska Air Quality Regulations, Chapter 14, this minor permit revision is being issued without public notice or the opportunity for public comment. This construction permit approves the proposed revisions as identified in the Air Quality Minor Permit Revision Request Form #13-026 received May 1, 2013, including any supporting information received prior to issuance of this permit. Additional details of the proposed revision, including estimated pollutant emission changes, can be found in the accompanying Fact Sheet.

Compliance with this permit shall not be a defense to any enforcement action for violation of an ambient air quality standard. The permit holder, owner, and operator of the facility shall assure that the installation, operation, and maintenance of all equipment is in compliance with all of the conditions of this permit.

The undersigned issues this permit on behalf of the Director under the authority of Title 129 – Nebraska Air Quality Regulations as amended December 22, 2012.

9/20/13
Date

Shelley Schneider, Air Administrator
Air Quality Division

TABLE OF CONTENTS

Permit Condition / Summary of Revision	Page
III.(C): Revised the maximum heat input capacities associated with the thermal oxidizers and dryers.	C-1

III.(C) Specific Conditions for Distillation and DGS Drying Operations

(1) Permitted Emission Points: The source is permitted to construct the emission points and associated emission units identified in the following table at the capacities and using the fuel types listed:

Emission Point ID#	Control Equipment ID# and Description	Emission Unit (EU) / EP ID# and Description	Maximum Capacity	Permitted Fuel Type
EP30	C30: TO/HRSG #1 and C31: TO/HRSG #2	EU34: DDGS Dryer #1	55.0 MMBtu/hr 42.0 ton/hr	Natural Gas
		EU35: DDGS Dryer #2	55.0 MMBtu/hr 42.0 ton/hr	Natural Gas
		EU37: DDGS Dryer #3	55.0 MMBtu/hr 42.0 ton/hr	Natural Gas
		EU38: DDGS Dryer #4	55.0 MMBtu/hr 42.0 ton/hr	Natural Gas
		EU36: TO/HRSG #1	145.0 MMBtu/hr	Natural Gas and Biogas
		EU39: TO/HRSG #2	145.0 MMBtu/hr	Natural Gas
		EU06: Mixer		
		EU07 and EU08: Slurry Tanks #1 and #2		
		EU09: Flash Tank		
		EU10: Cook Tubes		
		EU11 and EU12: Liquefaction Tanks #1 and #2		
		EU15 and EU16: Yeast Tanks #1 and #2		
		Molecular Sieves #1 - #6		
		EU17: Beer Column		
		EU18: Side Stripper		
		EU19: Rectifier Column		
		EU20 and EU22: Condensers #1 and #2		
		Centrifuges #1 - #6		
		Evaporators #1 - #8		
		C74: DDGS Cooling Drum Baghouse		

(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 Specific Condition II.(D).

Emission Point ID#	Pollutant	Permitted Limit	Averaging Period	Basis for Permit Limit	Performance Testing Required (Yes/No)
EP30	PM[1]	11.39 lb/hr	3-hr or test method average	Chapter 17	No
	PM_{10}[2]	11.39 lb/hr	3-hr or test method average	Chapters 4 and 17	No
	SO_x[3]	18.6 lb/hr	3-hr or test method average	Chapter 17	No
	NO_x	0.1 lb/MMBtu	30-day rolling average	40 CFR 60 Subpart Db, Chapters 17 and 18	No[6]
		99.8 tons/yr	12-month rolling average	Chapter 17	No[6]
	CO	20.7 lb/hr	3-hr or test method average	Chapter 17	No
	VOC	8.2 lb/hr[4]	3-hr or test method average	Chapter 17	Yes[7]
	HAP	-	3-hr or test method average[5]	Chapter 27	Yes[7]

[1] Filterable only
[2] Filterable and Condensable
[3] SO_x shall be tested while biogas from the Biomethanator system is being combusted in the TO/HRSG
[4] Expressed as weight of VOC
[5] Speciation and Quantification of HAP composition shall be performed at outlet.
[6] Testing is not required since a CEMS, or alternative system, is required to be installed by the NSPS.
[7] Performance testing shall be conducted in accordance with Condition III.(C)(2)(c).

(b) Both TO/HRSGs (C30 and C31) are subject to the applicable emission limitations contained in NSPS, Subpart Db.

(c) Performance testing shall occur within 180 days after the issuance of this permit. Performance tests shall be completed and submitted to NDEQ as follows: {Chapter 34}

(i) Performance tests shall be conducted while operating at maximum capacity.

(ii) Performance tests shall be completed and submitted to NDEQ in accordance with Specific Conditions II.(D)(2) through II.(D)(5).

(3) Operational and Monitoring Requirements and Limitations:

(a) Emissions from the emission units identified in Condition III.(C)(1) shall be controlled by pollution control equipment as follows: EU06 – EU12, EU15 – EU22, EU34-EU38, C74, all molecular sieves, centrifuges, and evaporators shall be controlled by either C30 or C31. Emissions exiting C30 and C31 shall be emitted through a common emission point (EP30). {Chapters 19 and 27}

(b) Operation of each TO/HRSG system shall be in accordance with the following requirements {Chapters 19 and 27}:

(i) The TO/HRSG system shall be operated and be controlling emissions at all times when the associated emission units are in operation.

(ii) TO/HRSG system shall be equipped with a device capable of continuously monitoring and recording the temperature of the thermal oxidation combustion chamber(s).

(iii) All monitored operating parameters of the TO/HRSG system shall be maintained at the levels recorded during the most recent performance test that demonstrated compliance with the permitted emissions limits. Alternative levels may be used provided the owner or operator can justify that better emissions control is being achieved. Prior to compliance being demonstrated the combustion chamber temperature shall not be operated below 1,400 degrees Fahrenheit. Combustion chamber temperature shall be averaged hourly from a minimum of one cycle of sampling, analyzing, and data recording for each successive fifteen minute period. Normal operating parameters, or operating parameter ranges, that demonstrate compliance with the permitted emissions limits, with appropriate averaging periods shall be submitted with the source's operating permit application.

(iv) Observations at least once each day during daylight hours of TO/HRSG operation shall be conducted to determine whether there are visible emissions from the stack, leaks, noise, or other indications that corrective action is necessary. If corrective action is required, it shall occur immediately.

(c) Biogas generated in the biomethanators shall be combusted in the biomethanator flare or TO/HRSG system at all times biogas is being produced. {Chapters 17 and 27}

(4) Applicable NSPS, NESHAP, and MACT Standards:

The following standards apply to both TO/HRSGs:

Applicable Standard	Title	Rule Citation
NSPS, Subpart A	General Provisions	Chapter 18, Sec. 001.01 40 CFR 60.1
NSPS, Subpart Db	Industrial, Commercial, and Institutional Steam Generating Units	Chapter 18, Sec. 001.22 40 CFR 60.40b

(5) Reporting and Recordkeeping Requirements:

(a) Records documenting the date, time, and hourly-average temperatures for each day the associated TO/HRSG is in operation.

(b) Records documenting the date, time, observations, and corrective actions taken for each day the associated TO/HRSG is in operation.

(c) Notifications and record keeping as required by 40 CFR 60.7

(d) Reporting and recordkeeping as required by 40 CFR 60.49b

85814
AIR 011 00050

STATE OF NEBRASKA

Dave Heineman
Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY
Michael J. Linder
Director
Suite 400, The Atrium
1200 'N' Street
P.O. Box 98922
Lincoln, Nebraska 68509-8922
Phone (402) 471-2186
FAX (402) 471-2909
website: www.deq.state.ne.us

AIR QUALITY CONSTRUCTION PERMIT

PERMIT NUMBER: CP10-004

Facility Name: Valero Renewable Fuels Company, LLC **NDEQ Facility ID#:** 85814

Mailing Address:
PO Box 188
Albion, Nebraska 68620-0188

Facility Location:
2615 260th Street
Section 26, Township 20N, Range 6W
Albion, Boone County, Nebraska 68620

Project Description: SIGNIFICANT PERMIT REVISION for an ethanol manufacturing plant producing approximately 121 million gallons of denatured ethanol annually

Standard Industrial Classification (SIC) Code: 2869, Industrial Organic Chemicals

Revised or Superseded Permits: This construction permit supersedes the permit CP07-0037 (issued on May 16, 2008) in its entirety.

Pursuant to Title 129 – Nebraska Air Quality Regulations, Chapter 14, the public has been notified by prominent advertisement of this proposed permit revision and the thirty (30) day period allowed for comments has elapsed. This construction permit approves the proposed revision as identified in the air quality construction permit application #10-004 received February 12, 2010, including any supporting information received prior to issuance of this permit. Additional details of the proposed project, including estimated pollutant emissions caused by the project, can be found in the accompanying Fact Sheet.

Compliance with this permit shall not be a defense to any enforcement action for violation of an ambient air quality standard. The permit holder, owner, and operator of the facility shall assure that the installation, operation, and maintenance of all equipment is in compliance with all of the conditions of this permit.

The undersigned issues this permit on behalf of the Director under the authority of Title 129 – Nebraska Air Quality Regulations as amended June 15, 2011.

Nov 1, 2011
Date

Shelley Schneider, Air Administrator
Air Quality Division

20110036974

Filename: 85814c04.doc.doc

Total Pages: 35

TABLE OF CONTENTS

ABBREVIATIONS, SYMBOLS, and UNITS OF MEASURE

AP-42	Compilation of Air Pollutant Emission Factors, Volume I, Stationary Point and Area Sources
BACT	Best Available Control Technology
bhp	Brake Horsepower
BMP	Best Management Practice
btu	British Thermal Unit
bu	Bushel
CAA	Clean Air Act
CE	Control Equipment
CEM	Continuous Emissions Monitor
CEMS	Continuous Emissions Monitoring System
cf	Cubic feet
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CP	Construction Permit
DGS	Distiller's Grains with Solubles
DDGS	Dry Distillers Grains with Solubles
dscf	Dry Standard Cubic Feet
dscfm	Dry Standard Cubic Feet per Minute
EMIS	Emergency Management Information System
EPA	Environmental Protection Agency
EQC	Environmental Quality Council
EP	Emission Point
ESP	Electrostatic Precipitator
EU	Emission Unit
FID	Facility Identification Number
FDCP	Fugitive Dust Control Plan
FGR	Flue Gas Recirculation
FIP	Federal Implementation Plan
FR	Federal Register
ft	Feet
FTIR	Fourier Transform Infrared
H_2S	Hydrogen Sulfide
HAP	Hazardous Air Pollutant
hp	Horsepower
hr	Hour
LDAR	Leak Detection and Repair
LNB	Low-NO_x Burner
MACT	Maximum Achievable Control Technology
Mgal	One Thousand gallons
MMBtu	One Million British Thermal Units
MMscf	One Million Standard Cubic Feet
MSDS	Material Safety Data Sheet
MW	Megawatt
NAAQS	National Ambient Air Quality Standards
NDEQ	Nebraska Department of Environmental Quality
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
NSPS	New Source Performance Standard
NSR	New Source Review
PAL	Plant-wide Applicability Limit
Pb	Lead (chemical abbreviation)
PbR	Permit-by-Rule
PEMS	Parametric Emissions Monitoring System
PM	Particulate Matter
PM_{10}	Particulate Matter with and aerodynamic diameter equal to or less than 10 microns
$PM_{2.5}$	Particulate Matter with and aerodynamic diameter equal to or less than 2.5 microns
ppb	Parts per Billion
ppm	Parts per Million
ppmv	Parts per Million by volume
ppmvd	Parts per Million by volume, dry basis
PSD	Prevention of Significant Deterioration
PTE	Potential to Emit
RVP	Reid Vapor Pressure
RATA	Relative Accuracy Test Audit
RMP	Risk Management Plan
RTO	Regenerative Thermal Oxidizer
scf	Standard Cubic Feet
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
SO_x	Sulfur Oxides
TDS	Total Dissolved Solids
TO	Thermal Oxidizer
TO/HRSG	Thermal Oxidizer with Heat Recovery Steam Generator
tpy	Tons per year
TRS	Total Reduced Sulfur
TSP	Total Suspended Particulate Matter
ULNB	Ultra Low-NO_x Burner
UST	Underground Storage Tank
UTM	Universal Transverse Mercator
VHAP	Volatile Hazardous Air Pollutant
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compound
WDGS	Wet Distiller's Grains with Solubles

SUMMARY OF REVISIONS

Although this permit completely supersedes permit CP07-0037, only the following permit conditions have been revised or updated.

Permit Condition / Summary of Revision	Page
II.(F): Revised stack heights to as-built heights.	4
II.(G): Changed the word "approved" to "accepted". The permit limit of 9.0 tpy for any single individual HAP and 24.0 tpy of combined HAPs have been increased to 9.9 tpy and 24.8 tpy respectively.	5
III.(A): Removed the adjective "initial" from "performance testing" and revised PM_{10} limits to PM/PM_{10} emission limits in Condition III.(A)(2). Removed requirement for an inventory of spare baghouse bags [Condition III.(A)(3)(b)(v)]. Revised wording to specifically state that the NDEQ has not identified any applicable NSPS, NESHAP or MACT in Condition III.(A)(4).	A-1 & 2
III.(B): Removed the adjective "initial" from "performance testing" and revised PM_{10} limits to PM/PM_{10} emission limits in Condition III.(B)(2). Revised the requirements related to the operation and maintenance of the scrubber in Conditions III.(B)(3)(b)(ii), (iii) and (iv) for clarity. Revised wording to specifically state that the NDEQ has not identified any applicable NSPS, NESHAP or MACT in Condition III.(B)(4).	B-1, 2 & 3
III.(C): Revised table in Condition III.(C)(1) to indicate that only two liquefaction tanks were built and updated the Condition III.(C)(3)(a). Removed the adjective "initial" from "performance testing" and PM_{10} limits have been revised to PM/PM_{10} emission limits in Condition III.(C)(2). Removed monitoring requirements and limitations related to DDGS Drum exhaust in Conditions III.(C)(3)(f) and (g) and the related recordkeeping requirements in Conditions III.(C)(5)(d) and (e).	C-1 & 2
III.(D): Revised table in Condition III.(D)(1) to indicate that there is only a single spout. Removed the adjective "initial" from "performance testing" and revised PM_{10} limits to PM/PM_{10} emission limits in Condition III.(D)(2). Removed requirement for an inventory of spare baghouse bags [Condition III.(D)(3)(b)(v)]. Removed monitoring requirements and limitations related to DDGS Drum exhaust in Conditions III.(D)(3)(d) and (e) and associated recordkeeping requirements in Conditions III.(D)(5)(d) and (e). Revised wording to specifically state that the NDEQ has not identified any applicable NSPS, NESHAP or MACT in Condition III.(D)(4).	D-1 & 2
III.(E): Revised table in Condition III.(E)(2) to indicate as-built tank dimensions and removed "anhydrous" from the 190 proof tank description.	E-1
III.(F): Revised "Vapor Recovery Flare" to "Vapor Combustion Unit" in Conditions III.(F)(1), (3)(b), and (3)(c). Revised wording in Condition III.(F)(4) to specifically state that the NDEQ has not identified any applicable NSPS, NESHAP or MACT.	F-1

III.(G): Revised wording in Condition III.(G)(2) to specifically state to refer to NSPS, Subpart IIII and/or NESHAP, Subpart ZZZZ for any applicable emission limitations and testing requirements associated with the fire-pump engine. Added the specific fuel sulfur limit from NSPS IIII in Condition III.(G)(3)(c) and allowed alternate recordkeeping requirement for fuel sulfur content in Condition III.(G)(5)(a).	G-1
III.(H): Revised wording in Condition III.(H)(2) to specifically state that this permit does not establish any emission limitations associated with the emission point. Revised wording in Condition III.(H)(4) to specifically state that the NDEQ has not identified any applicable NSPS, NESHAP or MACT. Moved the requirement to keep the drift loss guarantee on site and readily available to NDEQ representatives, upon request, from Condition III.(H)(3)(a) to Condition III.(H)(5)(c). The TDS concentration of the cooling water in the cooling tower has been revised to 4,000 ppm in Conditions III.(H)(3)(b) and (c).	H-1
III.(I): Revised the heat input capacity of biomethanator flare to 2.02 MMBtu from 6.4 MMBtu/hr. Removed the operating hour limitation for the Biomethanator flare in Condition III.(I)(3)(c). Revised wording in Condition III.(I)(4) to specifically state that the NDEQ has not identified any applicable NSPS, NESHAP or MACT.	I-1
III.(K): Increased silt limit to 3.00 g/m^2 in Condition III.(K)(2)(a) and removed the silt loading performance testing requirement in Condition III.(K)(2)(b). Revised wording in Condition III.(K)(4) to specifically state that the NDEQ has not identified any applicable NSPS, NESHAP or MACT.	K-1
IV: Based on the stack test results of February 11-14, 2008, HAP emission factors has been revised for (i) Fermentation Operations, (ii) Distillations and DGS Drying Operation, and (iii) DDGS Cooling, Storage, and Loadout.	IV-1

I. GENERAL CONDITIONS

(A) This permit is not transferable to another source or location. {Chapter 17}

(B) Holding of this permit does not relieve the owner or operator of the source from the responsibility to comply with all applicable portions of the Nebraska Air Quality Regulations and any other requirements under local, State, or Federal law. Any permit noncompliance shall constitute a violation of the Nebraska Environmental Protection Act and the Federal Clean Air Act, and is grounds for enforcement action or permit revocation. {Chapter 41 & Chapter 17, Section 011}

(C) Application for review of plans or advice furnished by the Director will not relieve the owner or operator of legal compliance with any provision of these regulations, or prevent the Director from enforcing or implementing any provision of these regulations. {Chapter 37}

(D) Any owner or operator who failed to submit any relevant facts or who submitted incorrect information in a permit application shall, upon becoming aware of such failure or incorrect submittal, promptly submit such supplementary facts or corrected information. If the owner or operator wishes to make changes at the source that will result in change(s) to values, specifications, and/or locations of emission points that were indicated in the permit application (or other supplemental information provided by the owner or operator and reviewed by the NDEQ in issuance of this permit), the owner or operator must receive approval from the NDEQ before the change(s) can be made. In addition, any modification which may result in an adverse change to the air quality impacts predicted by atmospheric dispersion modeling (such as changes in stack parameters or increases in emission rates, potential emissions, or actual emissions) shall have prior approval from the NDEQ. The owner or operator shall provide all necessary information to verify that there are no substantive changes affecting the basis upon which this permit was issued. Information may include, but not be limited to, additional engineering, modeling and ambient air quality studies. {Chapter 17, Section 006, 007, & 008}

(E) Approval to construct, reconstruct and/or modify the source will become invalid if a continuous program of construction is not commenced within 18 months after the date of issuance of the construction permit, if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable period of time. {Chapter 17, Section 012}

(F) The owner or operator shall allow the NDEQ, EPA or an authorized representative, upon presentation of credentials to: {Neb. Rev. Statute §81-1504}

(1) Enter upon the owner or operator's premises at reasonable times where a source subject to this permit is located, emissions-related activity is conducted or records are kept, for the purpose of ensuring compliance with the permit or applicable requirements;

(2) Have access to and copy, at reasonable times, any records, for the purpose of ensuring compliance with the permit or applicable requirements;

(3) Inspect at reasonable times any facilities, pollution control equipment, including monitoring and air pollution control equipment, practices, or operations, for the purpose of ensuring compliance with the permit or applicable requirements;

(4) Sample or monitor at reasonable times substances or parameters for the purpose of ensuring compliance with the permit or applicable requirements.

(G) When requested by the NDEQ, the owner or operator shall submit completed emission inventory forms for the preceding year to the Department by March 31 of each year. {Chapter 6}

(H) Open fires are prohibited except as allowed by Chapter 30.

(I) Particulate Matter – General Requirements: {Chapter 32}

(1) The owner or operator shall not cause or permit the handling, transporting or storage of any material in a manner, which allows particulate matter to become airborne in such quantities and concentrations that it remains visible in the ambient air beyond the property line.

(2) The owner or operator shall not cause or permit the construction, use, repair or demolition of a building, its appurtenances, a road, a driveway, or an open area without applying all reasonable measures to prevent particulate matter from becoming airborne and remaining visible beyond the property line. Such measures include, but not limited to, paving or frequent cleaning of roads, driveways and parking lots; application of dust-free surfaces; application of water; and planting and maintenance of vegetative ground cover.

(J) If and when the Director declares an air pollution episode as defined in Chapter 38, Sections 003.01B, 003.01C, or 003.01D, the owner or operator shall immediately take all required actions listed in Title 129, Appendix I until the Director declares the air pollution episode terminated.

(K) This permit may be revised (reopened and reissued) or revoked for cause in accordance with Title 129 and Title 115, Rules of Practice and Procedure. Conditions under which this permit will be revised or revoked for cause, include but are not limited to: {Chapter 15, Section 006}

(1) A determination by the Director, or the Administrator of EPA that:

(a) the permit must be revised to ensure compliance with the applicable requirements;

(b) the permit contains a material mistake or that inaccurate statements were made in the emissions standards or other terms or conditions of the permit.

(2) The existence at the source of unresolved noncompliance with applicable requirements or a term or condition of the permit, and refusal of the owner or operator to agree to an enforceable schedule of compliance to resolve the noncompliance;

(3) The submittal by the owner or operator of false, incomplete, or misleading information to the NDEQ or EPA;

(4) A determination by the Director that the source or activity endangers human health or the environment and that the danger cannot be removed by a revision of the permit; or

(5) The failure of the owner or operator to pay a penalty owed pursuant to court order, stipulation and agreement, or order issued by the Administrator of the EPA.

II. SPECIFIC CONDITIONS

(A) The owner/operator of the source shall provide the following notifications to the NDEQ:

(1) The date construction, reconstruction or modification commenced as defined in Chapter 1, Section 031. Notification shall be postmarked no later than 30 days after such date and include a summary description and whether the requirement to commence construction was met through: {Chapter 17, Section 012}

(a) Initiating physical on-site construction activities of a permanent nature that meet the definition of "begin actual construction", or

(b) Entering into binding agreements or contractual obligations. If this option is used, the notice shall also include a brief summary of each binding agreement or contractual obligation entered into, the date of the agreement or contract, and why it cannot be cancelled or modified without substantial loss to the owner or operator.

(2) The date of initial startup of operations postmarked within 15 days after such date. {Chapter 7, Section 002.03}

(B) Recordkeeping: Records of all measurements, results, inspections, and observations as required to ensure compliance with all applicable requirements shall be maintained on-site as follows:

(1) All calculations and records required throughout this permit shall be completed no later than the fifteenth (15^{th}) day of each calendar month and shall include all information through the previous calendar month, unless otherwise specified in this permit.

(2) All records required throughout this permit shall be kept for a minimum of five years and shall be clear and readily accessible to NDEQ representatives, unless otherwise specified in this permit.

(3) Copies of all notifications, reports, test results, and plans.

(4) Calibration records for all operating parameter monitoring equipment.

(5) Operation and Maintenance manuals, or equivalent documentation, detailing proper operation and maintenance of all permitted emission units, required control equipment, and required monitoring equipment shall be kept for the life of the equipment.

(6) Records documenting equipment failures, malfunctions, or other variations, including date and time of occurrence, remedial action taken, and when corrections were made to each piece of permitted equipment, required control equipment, and required monitoring equipment.

(C) All permitted emission units, control equipment, and monitoring equipment shall be properly installed, operated, and maintained. {Chapter 34, Section 006 and Chapter 35 Sections 006.02 and 006.05}

(D) The performance tests required in the permit shall be completed and submitted to the NDEQ as follows: {Chapter 34}

(1) Performance tests shall be conducted while operating at maximum capacity (operating conditions producing the highest emissions or loading to the control device) within sixty (60) days after reaching the maximum capacity, but not more than 180 days after the start-up of operations of each unit, unless otherwise specified by the NDEQ.

(2) Testing shall be conducted according to the methodologies found in Title 129, Chapter 34, Section 002, or other NDEQ approved methodologies.

(3) Performance tests shall be conducted for a minimum of three (3) one-hour runs unless another run-time is specified by the applicable Subpart or as deem appropriate by the NDEQ.

(4) The owner or operator of a source shall provide the NDEQ at least thirty (30) days written notice prior to testing to afford the NDEQ an opportunity to have an observer present. The owner or operator shall also provide the NDEQ with an emissions testing protocol at least thirty (30) days prior to testing.

(5) The owner or operator shall monitor and record the operating parameters for process and control equipment during the performance testing required in the permit.

(6) A written copy of the test results signed by the person conducting the test shall be provided to the NDEQ within forty-five (45) days of completion of the test and will, at a minimum, contain the following items:

(a) A description of the source's operating parameters (i.e. production rates, firing rates of combustion equipment, fuel usage, etc.), control equipment parameters (i.e. baghouse fan speeds, scrubber liquid flow rates, chemical addition flow rates (if used), etc.), and ambient conditions (i.e. weather conditions, etc.) during testing.

(b) Copies of all data sheets from the test run(s).

(c) A description and explanation of any erroneous data or unusual circumstance(s) and the cause for such situation.

(d) A final conclusion section describing the outcome of the testing.

(E) Any emissions due to malfunctions, unplanned shutdowns, and ensuing start-ups that are, or may be, in excess of applicable emission limits shall be reported to the NDEQ in accordance with Chapter 35, Section 005.

(F) The following conditions apply to the verification of NAAQS modeling analysis: {Chapter 4}

(1) The stack dimensions of the following emission points shall be constructed at or above the heights indicated below:

Emission Point ID#	Emission Point Name	Minimum Stack Height (ft)
EP10	Grain Conveyor Baghouse	45

Emission Point ID#	Emission Point Name	Minimum Stack Height (ft)
EP20	Hammermill Baghouse	45
EP30	TO/HRSG Stack	126
EP40	CO_2 Scrubber	76
EP50	DDGS Storage and Loading Baghouse	45
EP70	DDGS Cooling Drum Baghouse	42
EP80	Ethanol Loadout Vapor Combustion Unit	11
EP100	Cooling Tower	45

A site survey, or similar documentation containing the as-built stack dimensions and the method(s) used to determine the as built stack heights, shall be maintained on-site and kept for the life of the source. If stack dimensions do not comply with the table above, the owner or operator shall notify the NDEQ prior to start-up of any emission unit and, if requested, submit a revised air dispersion modeling analysis to the NDEQ to ensure that the source will not interfere with the attainment or maintenance of the ambient air quality standards in Chapter 4.

(2) The owner or operator shall sufficiently restrict public access to the source at the ambient air boundary relied upon in the air dispersion modeling analysis for the NAAQS compliance demonstration.

(a) An ambient air restriction plan detailing the measures for restricting public access (such as fencing) shall be submitted to the Department at least 90 days prior to initial startup of operations. The public access restrictions must be in place prior to initial startup of operations.

(b) A site survey or similar documentation demonstrating compliance with the ambient air restriction plan shall be kept on site and a copy submitted to the Department within 180 days after initial startup of operations. The site survey or similar documentation shall provide sufficient detail to verify that the ambient air restriction plan has been fully implemented.

(G) At no time during any period of twelve (12) consecutive calendar months, and at no time during the first eleven (11) months after start-up, shall the total emissions from the source equal or exceed the following emission limits: {Chapters 27 and 28}

(1) 9.9 tons of any individual HAP

(2) 24.8 tons of total combined HAPs

Compliance with the emissions limitations above shall be demonstrated by performing emission calculations every month and every period of twelve (12) consecutive months using the calculation methodology in Attachment IV. If testing is required, the emission factors and pound per hour (lb/hr) emission rates presented in Attachment IV shall be replaced with data obtained from the most current, accepted emissions test conducted in accordance with Specific Condition II.(D).

III.(A) Specific Conditions for Grain Handling and Hammermilling

(1) Permitted Emission Points: The source is permitted to construct the emission points and associated emission units identified in the following table:

Emission Point ID#	Required Control Equipment ID# and Description	Emission Unit Description
EP10	C10: Grain Conveyor Baghouse	EU01: Corn Conveyor
EP20	C20: Hammermill Baghouse	EU02, EU03, EU04, and EU05: Hammermills #1, #2, #3, and #4

(2) Emission Limitations and Testing Requirements:

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 Specific Condition II.(D).

Emission Point ID#	Pollutant	Permitted Limit	Averaging Period	Basis for Permit Limit	Performance Testing Required (Yes/No)
EP10	PM/PM_{10}	0.09 lb/hr	3-hr or test method average	Chapter 17	No
EP20	PM/PM_{10}	0.26 lb/hr	3-hr or test method average	Chapter 17	No

(3) Operational and Monitoring Requirements and Limitations

(a) Emissions from the emission units identified in Condition III.(A)(1) shall be controlled by pollution control equipment as follows: EU01 shall be controlled by C10; and EU02 through EU05 shall be controlled by C20. {Chapters 19 and 20}

(b) Operation and maintenance of each baghouse shall be in accordance with the following requirements: {Chapters 19 and 20}

(i) The baghouse shall be operated and be controlling emissions at all times when the associated emission units are in operation.

(ii) The baghouse shall be equipped with an operational pressure differential indicator. Pressure differential indicator readings shall be recorded at least once each day that the associated baghouse is operating.

(iii) Baghouse filter bags are to be inspected and/or replaced as often as necessary to ensure proper operation or more frequently as indicated by pressure differential indicator readings or other indication of bag failure.

(iv) Observations at least once each day during daylight hours of baghouse operation shall be conducted to determine whether there are visible emissions from the

stack, leaks, noise, or other indications that corrective action is needed. If corrective action is required, it shall occur immediately.

(4) Applicable NSPS, NESHAP, and MACT Requirements:

The NDEQ has not identified any NSPS, NESHAP, or MACT requirements that apply to the emission points or emission units listed in Condition III.(A)(1).

(5) Reporting and Recordkeeping Requirements:

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

(b) Filter replacement records including the date the filter replacement occurred and the type of filter installed.

(c) Records documenting the date, time, observations, and corrective actions taken for each day the associated baghouse is in operation.

III.(B) Specific Conditions for Fermentation Operations

(1) Permitted Emission Points: The source is permitted to construct the emission points and associated emission units identified in the following table:

Emission Point ID#	Required Control Equipment ID# and Description	Emission Unit Description
EP40	C40: Fermentation (CO_2) Packed Bed Water Scrubber with chemical addition.[1]	EU23 through EU29: Fermentation Tanks #1 - #7
		EU30: Beerwell

[1] Chemical addition is not required provided the requirements of Section III.(B)(3)(c)

(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 Specific Condition II.(D).

Emission Point ID#	Pollutant	Permitted Limit	Averaging Period	Basis for Permit Limit	Performance Testing Required (Yes/No)
EP40	PM/PM_{10}	0.30 lb/hr	3-hour or test method average	Chapter 17	No
	VOC	10.0 lb/hr[1]	3-hour or test method average	Chapter 17	No
	HAP	65% Control Efficiency or 20.0 $ppm_{v,d}$ for combined HAPs	Speciation and Quantification of HAP composition at inlet and outlet	Chapter 27	No

[1] Expressed as weight of VOC

(3) Operational and Monitoring Requirements and Limitations

(a) Emissions from the emission units identified in Condition III.(B)(1) shall be controlled by pollution control equipment as follows: EU23 through EU30 shall be controlled by C40. {Chapters 19 and 27}

(b) Operation and maintenance of the scrubber shall be in accordance with the following requirements: {Chapters 19 and 27}

(i) The scrubber shall be operated and be controlling emissions at all times when the associated emission units are in operation.

(ii) The scrubber shall be equipped with devices capable of monitoring the following operating parameters in the manner described below:

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

2. Chemical addition flow rate shall be monitored and recorded continuously;

3. Scrubber pressure differential shall be monitored and recorded continuously, and

4. Scrubber liquid temperature shall be monitored by direct measurement and recorded at least once each day.

(iii) The scrubber operating parameters shall be maintained at the levels recorded during the most recent performance test conducted at the facility as described below:

1. Scrubber liquid shall be comprised of only well water to ensure consistent liquid temperature. In the event that Valero chooses to use alternative scrubber liquid source, or scrubber liquid recirculation, compliance testing will be required to determine an appropriate scrubber liquid temperature and percent recirculation limit.

2. For scrubbing liquid temperature, "maintained at the levels recorded during the most recent valid performance test" shall mean within a range that is representative of the tested level(s) under normal operating conditions, as determined by NDEQ.

3. For pressure differential, "maintained at the levels recorded during the most recent valid performance test" shall mean within a range that is representative of the tested level(s) under normal operating conditions, as determined by NDEQ.

4. 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.

(iv) 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 required, it shall occur immediately.

(c) The source may demonstrate through testing performed in accordance with Condition II.(D), or the use of a CEMS, that chemical addition is not necessary. Testing completed after May 8, 2007, and accepted by the NDEQ, may be used to demonstrate chemical addition is not necessary. {Chapter 17, Chapter 27, and Chapter 34}

(d) Compliance Schedule for Chemical Addition Equipment: Unless the source has testing data demonstrating chemical addition is not necessary, as provided for in Condition III.(B)(3)(c), equipment for continuously recording the scrubbing liquid flow rate and chemical addition flow rate (if chemicals are added) shall be installed by July 10, 2008.

(4) Applicable NSPS, NESHAP, and MACT Requirements:

The NDEQ has not identified any NSPS, NESHAP, or MACT requirements that apply to the emission points or emission units listed in Condition III.(B)(1).

(5) Reporting and Recordkeeping Requirements:

(a) Records documenting the date, time, temperature and flow rate of scrubbing liquid, and the pressure differential reading for each day the associated scrubber is in operation.

(b) Records documenting the date, time, observations, and corrective actions taken for each day the associated scrubber is in operation.

III.(C) Specific Conditions for Distillation and DGS Drying Operations

(1) Permitted Emission Points: The source is permitted to construct the emission points and associated emission units identified in the following table at the capacities and using the fuel types listed:

Emission Point ID#	Control Equipment ID# and Description	Emission Unit (EU) / EP ID# and Description	Maximum Capacity	Permitted Fuel Type
EP30	C30: TO/HRSG #1 and C31: TO/HRSG #2	EU34: DDGS Dryer #1	45.0 MMBtu/hr 42.0 ton/hr	Natural Gas
		EU35: DDGS Dryer #2	45.0 MMBtu/hr 42.0 ton/hr	Natural Gas
		EU37: DDGS Dryer #3	45.0 MMBtu/hr 42.0 ton/hr	Natural Gas
		EU38: DDGS Dryer #4	45.0 MMBtu/hr 42.0 ton/hr	Natural Gas
		EU36: TO/HRSG #1	122.0 MMBtu/hr	Natural Gas and Biogas
		EU39: TO/HRSG #2	122.0 MMBtu/hr	Natural Gas
		EU06: Mixer		
		EU07 and EU08: Slurry Tanks #1 and #2		
		EU09: Flash Tank		
		EU10: Cook Tubes		
		EU11 and EU12: Liquefaction Tanks #1 and #2		
		EU15 and EU16: Yeast Tanks #1 and #2		
		Molecular Sieves #1 - #6		
		EU17: Beer Column		
		EU18: Side Stripper		
		EU19: Rectifier Column		
		EU20 and EU22: Condensers #1 and #2		
		Centrifuges #1 - #6		
		Evaporators #1 - #8		
		C74: DDGS Cooling Drum Baghouse		

(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 Specific Condition II.(D).

Emission Point ID#	Pollutant	Permitted Limit	Averaging Period	Basis for Permit Limit	Performance Testing Required (Yes/No)
EP30	PM/PM_{10}	5.2 lb/hr	3-hr or test method average	Chapter 17	No
	SO_x[1]	18.6 lb/hr	3-hr or test method average	Chapter 17	No
	NO_x	24.4 lb/hr	30-day rolling average	Chapter 17	No[2]
	CO	20.7 lb/hr	3-hr or test method average	Chapter 17	No
	VOC	8.2 lb/hr[3]	3-hr or test method average	Chapter 17	No
	HAP	-	Speciation and Quantification of HAP composition at outlet	Chapter 27	No

[1]SO_x shall be tested while biogas from the Biomethanator system is being combusted in the TO/HRSG
[2]Testing is not required since a CEMS, or alternative system, is required to be installed by the NSPS.
[3]Expressed as weight of VOC

(b) Both TO/HRSGs (C30 and C31) are subject to the applicable emission limitations contained in NSPS, Subpart Db.

(3) Operational and Monitoring Requirements and Limitations:

(a) Emissions from the emission units identified in Condition III.(C)(1) shall be controlled by pollution control equipment as follows: EU06 – EU12, EU15 – EU22, EU34-EU38, C74, all molecular sieves, centrifuges, and evaporators shall be controlled by either C30 or C31. Emissions exiting C30 and C31 shall be emitted through a common emission point (EP30). {Chapters 19 and 27}

(b) Operation of each TO/HRSG system shall be in accordance with the following requirements {Chapters 19 and 27}:

(i) The TO/HRSG system shall be operated and be controlling emissions at all times when the associated emission units are in operation.

(ii) TO/HRSG system shall be equipped with a device capable of continuously monitoring and recording the temperature of the thermal oxidation combustion chamber(s).

(iii) All monitored operating parameters of the TO/HRSG system shall be maintained at the levels recorded during the most recent performance test that demonstrated compliance with the permitted emissions limits. Alternative levels may be used provided the owner or operator can justify that better emissions control is being achieved. Prior to compliance being demonstrated the combustion chamber temperature shall not be operated below 1,400 degrees Fahrenheit. Combustion chamber temperature shall be averaged hourly from a minimum of one cycle of sampling, analyzing, and data recording for each successive fifteen minute period. Normal operating parameters, or operating

parameter ranges, that demonstrate compliance with the permitted emissions limits, with appropriate averaging periods shall be submitted with the source's operating permit application.

(iv) Observations at least once each day during daylight hours of TO/HRSG operation shall be conducted to determine whether there are visible emissions from the stack, leaks, noise, or other indications that corrective action is necessary. If corrective action is required, it shall occur immediately.

(c) The facility shall not produce more than 371,481 tons of DDGS per any period of twelve (12) consecutive calendar months. At no time during the first eleven (11) months after start-up shall the DDGS production exceed 371,481 tons. {Chapter 17}

(d) The DDGS loadout spout shall be installed with a scale capable of measuring the amount of DDGS, in tons, that is loaded out at the facility.

(e) Biogas generated in the biomethanators shall be combusted in the biomethanator flare or TO/HRSG system at all times biogas is being produced. {Chapters 17 and 27}

(4) Applicable NSPS, NESHAP, and MACT Standards:

The following standards apply to both TO/HRSGs:

Applicable Standard	Title	Rule Citation
NSPS, Subpart A	General Provisions	Chapter 18, Sec. 001.01 40 CFR 60.1
NSPS, Subpart Db	Industrial, Commercial, and Institutional Steam Generating Units	Chapter 18, Sec. 001.22 40 CFR 60.40b

(5) Reporting and Recordkeeping Requirements:

(a) Records documenting the date, time, and hourly-average temperatures for each day the associated TO/HRSG is in operation.

(b) Records documenting the date, time, observations, and corrective actions taken for each day the associated TO/HRSG is in operation.

(c) Records documenting the amount of DDGS produced for each calendar month and for each period of 12 consecutive calendar months.

(d) Notifications and record keeping as required by 40 CFR 60.7

(e) Reporting and recordkeeping as required by 40 CFR 60.48b

III.(D) Specific Conditions for DDGS Cooling, Storage, and Loadout

(1) Permitted Emission Points: The source is permitted to construct the emission points and associated emission units identified in the following table:

Emission Point ID#	Required Control Equipment ID# and Description	Emission Unit Description
EP70	C74: DDGS Cooling Drum Baghouse	EU41: DDGS Cooling Drum
EP50	C50: DDGS Storage and Loadout Baghouse	EU31: DDGS Storage Silos
		EU32: DDGS Conveyor
		EU33: DDGS Truck and Rail Loadout Spout

(2) Emission Limitations and Testing Requirements:

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 Specific Condition II.(D).

Emission Point ID#	Pollutant	Permitted Limit	Averaging Period	Basis for Permit Limit	Performance Testing Required (Yes/No)
EP70	PM/PM_{10}	0.62 lb/hr	3-hr or test method average	Chapter 17	No
	VOC	1.83 lb/hr	3-hr or test method average	Chapter 17	No
	HAP	-	Speciation and Quantification of HAP composition at outlet	Chapter 27	No
EP50	PM/PM_{10}	0.16 lb/hr	3-hr or test method average	Chapter 17	No

(3) Operational and Monitoring Requirements and Limitations

(a) Emissions from the emission units identified in Condition III.(D)(1) shall be controlled by pollution control equipment as follows: EU41 shall be controlled by C74; and EU31, through EU33 shall be controlled by C50. {Chapters 19 and 20}.

(b) Operation and maintenance of each baghouse shall be in accordance with the following requirements: {Chapters 19 and 20}

(i) The baghouse shall be operated and be controlling emissions at all times when the associated emission units are in operation.

(ii) The baghouse shall be equipped with an operational pressure differential indicator. Pressure differential indicator readings shall be recorded at least once each day that the associated baghouse is operating.

(iii) Baghouse filter bags are to be inspected and/or replaced as often as necessary to ensure proper operation or more frequently as indicated by pressure differential indicator readings or other indication of bag failure.

(iv) Observations at least once each day during daylight hours of baghouse operation shall be conducted to determine whether there are visible emissions from the stack, leaks, noise, or other indications that corrective action is needed. If corrective action is required, it shall occur immediately.

(c) DDGS storage and loadout operations shall be located inside a building. {Chapters 17 and 20}

(4) Applicable NSPS, NESHAP, and MACT Requirements:

The NDEQ has not identified any NSPS, NESHAP, or MACT requirements that apply to the emission points or emission units listed in Condition III.(D)(1).

(5) Reporting and Recordkeeping Requirements:

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

(b) Filter replacement records including the date the filter replacement occurred and the type of filter installed.

(c) Records documenting the date, time, observations, and corrective actions taken for each day the associated baghouse is in operation.

III.(E) Specific Conditions for Tanks

(1) Permitted Emission Points: The source is permitted to construct the storage and process tanks identified in the following table at the capacities and for the storage of the products listed:

Emission Point ID# & Unit ID#	Maximum Storage Capacity (gallons)	Product Stored in Tank
EP160/TK005	188,000	190 Proof Ethanol
EP140/TK003	188,000	200 Proof Ethanol
EP150/TK004	188,000	Denaturant
EP120/TK001	1,447,000	Denatured Ethanol
EP130/TK002	1,447,000	Denatured Ethanol
EP170/TK006	2,300	Corrosion Inhibitor

(2) Emission Limitations and Testing Requirements:

This permit does not establish any emission limitations and testing requirements associated with the emission points identified in Condition III.(E)(1).

(3) Operational and Monitoring Requirements and Limitations:

TK001 through TK005 shall each be equipped with a fixed roof in combination with an internal floating roof, in accordance with the specifications in 40 CFR 60.112b(a)(1). Each tank is also subject to the inspection requirements as required by 40 CFR 60.113b(a). {Chapters 18 and 27}

(4) Applicable NSPS, NESHAP, and MACT Standards:

The following standards apply to TK001, TK002, and TK004:

Applicable Standard	Title	Rule Citation
NSPS, Subpart A	General Provisions	Chapter 18, Sec. 001.01 40 CFR 60.1
NSPS, Subpart Kb	Volatile Organic Liquid Storage Vessels (Including Liquid Storage Vessels)	Chapter 18, Sec. 001.62 40 CFR 60.110b

(5) Reporting and Recordkeeping Requirements:

(a) Notifications and recordkeeping as required by 40 CFR 60.7 for TK001, TK002, and TK004.

(b) Reporting and recordkeeping as required by 40 CFR 60.115b for TK001, TK002, and TK004.

(c) Inspection records documenting compliance with Condition III.(E)(3).

III.(F) Specific Conditions for Ethanol Loadout

(1) Permitted Emission Point: The source is permitted to construct the emission point and associated emission units identified in the following table at the capacities and using the fuel types listed:

Emission Point ID#	Control Equipment ID# and Description	Emission Unit (EU) / EP ID# and Description	Maximum Capacity	Permitted Fuel Type
EP80	C80: Vapor Combustion Unit	EU42: Vapor Combustion Unit	6.4 MMBtu/hr Combustion Unit	Ethanol Vapors
			0.1 MMBtu/hr pilot	Natural Gas
		D-EtOH Rail Loadout #1		
		D-EtOH Truck Loadout		
		D-EtOH Rail Loadout #2		

(2) Emission Limitations and Testing Requirements:

This permit does not establish any emission limitations or testing requirements associated with the emission point identified in Condition III.(F)(1).

(3) Operational and Monitoring Requirements and Limitations:

(a) The source shall use submerged or bottom loading when transferring liquid product from the storage tanks to tanker railcar or tanker trucks. {Chapters 19 and 27}

(b) Truck and rail loadout of liquid product shall be controlled by a closed vapor recovery system with an enclosed vapor combustion unit (C80) at all times liquid product loadout is occurring. {Chapters 19 and 27}

(c) When ethanol loadout is occurring, a flame shall be present at the vapor combustion unit. The facility shall install an appropriate safety device or flame monitoring system to ensure that truck and rail loadout cannot occur without the presence of a flame. {Chapters 19 and 27}

(4) Applicable NSPS, NESHAP, and MACT Requirements:

The NDEQ has not identified any NSPS, NESHAP, or MACT requirements that apply to the emission points or emission units listed in Condition III.(F)(1).

(5) Reporting and Recordkeeping Requirements:

Reporting and Recordkeeping as required in Conditions II.(A) and II.(C).

III.(G) Specific Conditions for Emergency Equipment

(1) Permitted Emission Points: The source is permitted to construct the emission points and associated emission units identified in the following table at the capacities and using the fuel types listed:

Emission Point ID#	Control Equipment ID# and Description	Emission Unit ID# and Description	Maximum Rating (HP)	Permitted Fuel Type
EP90	-	EU43: Emergency Fire Pump Engine	290	Diesel Fuel

(2) Emission Limitations and Testing Requirements:

Refer to NSPS, Subpart IIII and/or NESHAP, Subpart ZZZZ for any applicable emission limitations and testing requirements associated with the emission points identified in Condition III.(G)(1).

(3) Operational and Monitoring Requirements and Limitations:

(a) EU43 shall be limited to 250 operating hours per any period of twelve (12) consecutive calendar months. At no time during the first eleven (11) months after start-up shall the engine's total operating hours exceed 250 hours. {Chapter 17}

(b) The emergency fire pump engine shall be equipped with a non-resettable hour meter to record the operating hours.

(c) The facility shall comply with the operational and monitoring requirements and limitations as specified in NSPS, Subpart IIII and NESHAP, Subpart ZZZZ. {Chapters 18 and 28}

(4) Applicable NSPS, NESHAP, and MACT Requirements:

The following standards apply to the emergency fire pump engine (EU67):

Applicable Standard	Title	Rule Citation
NSPS, Subpart A	General Provisions	Chapter 18, Sec. 001.01 40 CFR 60.1
NSPS, Subpart IIII	Stationary Compression Ignition Internal Combustion Engines	Chapter 18. Sec. 001.76 40 CFR 60.4200
NESHAP, Subpart A	General Provisions	Chapter 28, Sec. 001.01 40 CFR 63.1
NESHAP, Subpart ZZZZ	Stationary Reciprocating Internal Combustion Engines	Chapter 28, Sec. 001.88 40 CFR 63.6580

(5) Reporting and Recordkeeping Requirements:

(a) Fuel receipts or equivalent documents showing the volume of diesel fuel purchased from the supplier for the fuel combusted in the fire pump engine. Fuel receipts or equivalent documents shall state the sulfur content, by weight, in the distillate fuel. If the supplier

does not provide fuel sulfur content, the permittee shall determine sulfur content by testing each fuel shipment with an NDEQ accepted American Society for Testing and Materials (ASTM) method.

(b) Hours of operation for the emergency fire pump engine for each calendar month and for each period of 12 consecutive calendar months.

(c) Notifications and recordkeeping as required by 40 CFR 60.7.

(d) Recordkeeping as required by 40 CFR 60.4214.

III.(H) Specific Conditions for Cooling Tower

(1) Description of Emission Point: The source is permitted to construct the emission point and associated emission units identified in the following table with the number of cooling tower cells and at the circulation rate listed:

Emission Point ID#	Control Equipment ID# and Description	Emission Unit ID# and Description	Number of Cooling Tower Cells	Maximum Circulation Rate (gal/hr)
EP100	-	FS50: Cooling Tower	4	3,300,000

(2) Emission Limitations and Testing Requirements:

This permit does not establish any emission limitations associated with the emission point identified in Condition III.(H)(1). Testing shall be conducted to ensure compliance with the TDS limitation established and is discussed below.

(3) Operational and Monitoring Requirements and Limitations:

(a) Drift loss from each cooling tower shall be limited to 0.005 percent. Verification of drift loss shall be by manufacturer's guarantee. {Chapter 17}

(b) TDS concentration of the cooling water in the cooling tower shall not exceed 4,000 ppm for any single sampling event. A representative TDS sample shall be collected and tested from each cooling tower a minimum of once per calendar month. The test method used to determine TDS concentration shall be in accordance with an EPA approved method and be documented. {Chapter 4 and 17}

(c) TDS concentration of the cooling water in the cooling tower shall not exceed an average of 4,000 ppm in any period of twelve (12) consecutive calendar months. At no time during the first eleven (11) months after startup shall the average of the previous months' TDS concentration equal or exceed 4,000 ppm. {Chapter 17}

(4) Applicable NSPS, NESHAP, and MACT Requirements:

The NDEQ has not identified any NSPS, NESHAP, or MACT requirements that apply to the emission points or emission units listed in Condition III.(H)(1).

(5) Reporting and Recordkeeping Requirements:

(a) TDS concentration in cooling tower water for each sampling event and test method used.

(b) TDS concentration in the cooling tower water for each calendar month and for each period of 12 consecutive calendar months.

(c) Manufacturer's drift loss guarantee shall be kept on site and readily available to Department representatives, upon request, for the life of the unit.

III.(I) Specific Conditions for Biomethanator Operations

(1) Permitted Emission Points: The source is permitted to construct the emission points and associated emission units identified in the following table at the capacities and using the fuel types listed:

Emission Point ID#	Control Equipment ID# and Description	Emission Unit ID# and Description	Maximum Capacity	Permitted Fuel Type
EP60	C90: Biomethanator Flare	C90: Biomethanator Flare	2.02 MMBtu/hr flare	Biogas
			0.1 MMBtu/hr pilot	Natural Gas
		Biomethanators #1 through #4		

(2) Emission Limitations and Testing Requirements:

This permit does not establish any emission limitations or testing requirements associated with the emission point identified in Condition III.(I)(1).

(3) Operational and Monitoring Requirements and Limitations:

(a) Biogas generated from the biomethanators shall be combusted in the biomethanator flare or TO/HRSG system at all times biogas is being produced. {Chapters 17 and 27}

(b) When biogas is being routed to the biomethanator flare, a flame shall be present at the flare. The facility must install an appropriate safety device or flame monitoring system to ensure that biogas cannot be sent to the biomethanator flare without the presence of a flame. {Chapters 17 and 27}

(4) Applicable NSPS, NESHAP, and MACT Requirements:

The NDEQ has not identified any NSPS, NESHAP, or MACT requirements that apply to the emission points or emission units listed in Condition III.(I)(1).

(5) Reporting and Recordkeeping Requirements:

(a) Hours that biogas is routed to the biomethanator flare for combustion for each calendar month and for each period of 12 consecutive calendar months.

III.(J) Specific Conditions for the Equipment Leaks (FS30)

(1) Description of Emission Points:

Each 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.

(2) Emission Limitations and Testing Requirements:

Emission limitations and testing requirements as established by 40 CFR 60 Subpart VV. {Chapter 18}

(3) Operational and Monitoring Requirements and Limitations:

Operational and Monitoring Requirements and Limitations as established by 40 CFR 60 Subpart VV. {Chapter 18}

(4) Applicable NSPS, NESHAP, and MACT Standards

Applicable Standard	Title	Rule Citation
NSPS, Subpart A	General Provisions	Chapter 18, Sec. 001.01 40 CFR 60.1
NSPS, Subpart VV	Equipment Leaks in the Synthetic Organic Chemicals Manufacturing Industry	Chapter 18, Sec. 001.14 40 CFR 60.480

(5) Reporting and Recordkeeping Requirements:

(a) Notifications and record keeping as required by 40 CFR 60.7.

(b) Record keeping and reporting as required by 40 CFR 60.486 and 40 CFR 60.487.

(c) Records including the date in which leak detection testing occurred, which valves, pumps, seals, open-ended lines, flanges, connectors, etc. were tested, and who conducted the testing.

(d) The owner or operator shall submit a semi-annual 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:

(i) Date and time testing occurred

(ii) Who conducted the testing

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

III.(K) Specific Conditions for Haul Roads (FS10)

(1) Permitted Emission Point:

All on-site haul roads with production-related truck traffic shall be paved. The paved haul roads shall comply with the following conditions {Chapters 17, 20, and 32}

(2) Emission Limitations and Testing Requirements:

The haul road silt loading shall not exceed 3.0 g/m^2. {Chapter 17}

(3) Operational and Monitoring Requirements and Limitations:

(a) The owner or operator shall develop, maintain, and implement a Best Management Practices (BMP) plan to control emissions from haul roads and to comply with Conditions I.(I) and III.(K)(2). The effectiveness of the BMP to minimize emissions from haul roads and maintain the permitted silt loading value will be demonstrated by compliance with Condition I.(I). Chapter 32}

(b) For each day of operation, the owner or operator shall conduct a survey of the plant property and haul roads to determine if visible fugitive emissions are being generated and leaving plant property during truck traffic activity. Implementation of fugitive dust control shall be taken upon observation of visible fugitive emissions leaving plant property or more frequency in accordance with the BMP plan. Documentation of all corrective actions and daily surveys shall be maintained in a log that shall accompany the BMP plan. {Chapter 32}

(4) Applicable NSPS, NESHAP, and MACT Requirements:

The NDEQ has not identified any NSPS, NESHAP, or MACT requirements that apply to the emission points or emission units listed in Condition III.(K)(1).

(5) Reporting and Recordkeeping Requirements:

(a) The BMP plan shall be kept onsite and a copy shall be submitted to the Department within thirty (30) days after initial startup of operations. {Chapter 32}

(b) Records documenting use of fugitive dust control measures on haul roads. {Chapter 32}

(c) Records of haul road visible emissions checks taken daily during operation and a description of corrective action taken, if needed. {Chapter 32}

(d) Records documenting when silt load testing was completed and the results of each testing.

IV. HAP Emission Calculation Methodology

To demonstrate compliance with Specific Condition II.(F), emissions shall be calculated each calendar month using data from the following sources listed in descending order of preference. For compliance purposes, total HAP is equivalent to the sum of individual HAPs.

a. Most recent, valid performance test results performed within the past five year
b. Manufacturer's guarantees and Material Safety Data Sheet (MSDS)
c. Manufacturer/engineering estimates
d. Emission factors from AP-42 or other EPA published documents

Emission factors and pound per hour (lb/hr) emission rates presented in Attachment IV shall be replaced with data obtained from the most current, approved emissions test conducted in accordance with Specific Condition II.(D).

If it is necessary to convert uncontrolled to controlled emissions, multiply the uncontrolled emissions by one minus the overall control efficiency (fraction) of the control equipment.

Additional individual HAPs not specifically addressed in this calculation method that are found to be emitted from the emission points listed below must be incorporated into the facility-wide HAP calculation.

Fermentation Operations

Emissions from the fermentation (CO_2) scrubber shall each be calculated using Equation (1).

(1) $E_S = (CEF_S) \times OT_S / (2000 \text{ lbs/ton})$

Where
E_S = Emissions from Scrubber (tons/month)
CEF_S = Controlled process emission factor (lbs/hr)
OT_S = Number of hours of Scrubber Operation (hr/month)

Hazardous Air Pollutant	Controlled Process Emission Factors (lbs/hr)[1]
	Fermentation Scrubber
Acetaldehyde	0.7273
Acrolein	0.4327
Formaldehyde	0.1160
Methanol	0.1853
Total HAPs	1.4613

[1] **Emission factors based on stack test results of Feb. 11-14, 2008**

Distillation and DGS Drying Operations

Emissions from EP30 shall each be calculated using Equation (2a) or (2b)

(2a) $E_{DRTO} = \{(EF) \times (NG_U)\}] / (2000 \text{ lbs/ton})$

(2b) $E_{DRTO} = (ER_{DRTO}) \times OT / (2000 \text{ lbs/ton})$

Where E_{30} = Emissions from EP30 (tons/month)
EF = Natural Gas Emission factor (lbs/MMscf)
NG_U = Natural Gas Usage in both TO/HRSG systems and all DDGS Dryers (MMscf/month)
ER_{30} = Emission Rate (lbs/hr)
OT = Operating Time (hours/month)

Hazardous Air Pollutant	Controlled Process Emission Factors
Process HAPs	**Lb/hr[2]**
Acetaldehyde	0.533
Acrolein	0.723
Formaldehyde[1]	0.049
Methanol	0.245
Combustion HAPs	**Lb/MMscf**
Benzene	0.0021
Dichlorobenzene	0.0012
Hexane	1.8
Lead Compounds	0.0005
Naphthalene	0.00061
Polycyclic Organic Matter (POM)	0.0000882
Toluene	0.0034
Arsenic Compounds (ASC)	0.0002
Beryllium Compounds (BEC)	0.000012
Cadmium Compounds (CDC)	0.0011
Chromium Compounds (CRC)	0.0014
Cobalt Compounds (COC)	0.000084
Manganese Compounds (MNC)	0.00038
Mercury Compounds (HGC)	0.00026
Nickel Compounds (NIC)	0.0021
Selenium Compounds (SEC)	0.000024
Total HAP	**2.3039 lb/hr**

[1] Formaldehyde Emission Factor include emissions from fuel combustion
[2] **Emission factors based on stack test results of Feb. 11-14, 2008**

DDGS Cooling, Storage, and Loadout

Emissions from the DDGS Cooling Drum Baghouse shall each be calculated using Equation (3).

(3) $E_{DDGS} = (CEF_{DDGS}) \times OT_{DDGS} / (2000 \text{ lbs/ton})$

Where E_{DDGS} = Emissions from DDGS Cooling Drum Baghouse (tons/month)
CEF_{DDGS} = Controlled process emission factor (lbs/hr)
OT_{DDGS} = Operating hours of DDGS Cooling Drum Baghouse (hr/month)

Hazardous Air Pollutant	Controlled Process Emission Factors (lbs/hr)[1]
Acetaldehyde	0.1933
Acrolein	0.2833
Formaldehyde	0.0187
Methanol	0.0933
Total HAPs	0.5887

[1] **Emission factors based on stack test results of Feb. 11-14, 2008**

Storage Tanks

VOC emissions from storage tanks shall be calculated using the EPA's TANKS program. HAP emissions from each of the storage tanks shall be calculated using Equation (4).

(4) $E_{ST\text{-}HAP} = (E_{ST\text{-}VOC})$ x (HAP Fraction)

Where: $E_{ST\text{-}HAP}$ = Individual HAP emissions from storage tank (tons/month)
$E_{ST\text{-}VOC}$ = VOC emissions from storage tank (tons/month) from TANKS
HAP Fraction = HAP Fraction in material stored in storage tank

Material	Hazardous Air Pollutant	HAP Fraction
Corrosion Inhibitor	Xylene	1.0
Anhydrous Ethanol	Acetaldehyde	2.00E-04
	Methanol	2.00E-04
Denaturant	Benzene	2.50E-03
	Carbon Disulfide	2.00E-05
	Cumene	1.00E-04
	Ethyl Benzene	5.00E-05
	n-Hexane	5.00E-02
	Toluene	5.00E-03
	Xylenes	5.00E-04

Ethanol Loadout

Emissions from liquid product loadout shall each be calculated using Equations (5a) through (5j).

(5a) $E_{VOC,LL} = E_{VOC,LL,T} + E_{VOC,LL,R}$

(5b) $E_{VOC,LL,T} = E_{VOC,LL,T,G} + E_{VOC,LL,T,E} + E_{VOC,LL,T,D}$

(5c) $E_{VOC,LL,T} = \{[(EF_{VOC,LL,T,G}) \times (P_{LL,T})] + [(EF_{VOC,LL,T,E}) \times (P_{LL,T})] + [(EF_{VOC,LL,T,D}) \times (P_{LL,T})]\} / (2000 \text{ lbs/ton})$

(5d) $E_{VOC,LL,R} = E_{VOC,LL,R,E} + E_{VOC,LL,R,D}$

(5e) $E_{VOC,LL,R} = \{[(EF_{VOC,LL,R,E}) \times (P_{LL,R})] + [(EF_{VOC,LL,R,D}) \times (P_{LL,R})]\} / (2000 \text{ lbs/ton})$

Where

$E_{VOC,LL}$	= VOC Emissions from liquid loadout (tons/month)
$E_{VOC,LL,T}$	= VOC Emissions from liquid loadout into Trucks (tons/month)
$E_{VOC,LL,R}$	= VOC Emissions from liquid loadout into Railcars (tons/month)
$E_{VOC,LL,T,G}$	= VOC Emissions from displacing gasoline from Trucks (tons/month)
$E_{VOC,LL,T,E}$	= VOC Emissions from loading ethanol into Trucks (tons/month)
$E_{VOC,LL,T,D}$	= VOC Emissions from loading denaturant into Trucks (tons/month)
$EF_{VOC,LL,T,G}$	= VOC Controlled Emission Factor for displacing gasoline from Trucks (lbs/Mgal)
$EF_{VOC,LL,T,E}$	= VOC Controlled Emission Factor for loading ethanol into Trucks (lbs/Mgal)
$EF_{VOC,LL,T,D}$	= VOC Controlled Emission Factor for loading denaturant into Trucks (lbs/Mgal)
$P_{LL,T}$	= Product loaded into Trucks (Mgal/month)
$E_{VOC,LL,R,E}$	= VOC Emissions from loading ethanol into Railcars (tons/month)
$E_{VOC,LL,R,E}$	= VOC Emissions from loading denaturant into Railcars (tons/month)
$EF_{VOC,LL,R,E}$	= VOC Controlled Emission Factor for loading ethanol into Railcars (lbs/Mgal)
$EF_{VOC,LL,R,D}$	= VOC Controlled Emission Factor for loading denaturant into Railcars (lbs/Mgal)
$P_{LL,R}$	= Product loaded into Railcars (Mgal/month)

Pollutant	Controlled Emission Factors (lbs/Mgal)	
	Truck Loadout	Rail Loadout
VOC		
Gasoline	0.0173	
Ethanol	0.0051	0.0051
Denaturant	0.0020	0.0020

(5f) $E_{HAP,LL} = E_{HAP,LL,T} + E_{HAP,LL,R}$

(5g) $E_{HAP,LL,T} = E_{HAP,LL,T,G} + E_{HAP,LL,T,E} + E_{HAP,LL,T,D}$

(5h) $E_{HAP,LL,T} = (E_{VOC,LL,T,G} \times WF_{HAP,G}) + (E_{VOC,LL,T,E} \times WF_{HAP,E}) + (E_{VOC,LL,T,D} \times WF_{HAP,D})$

(5i) $E_{HAP,LL,R} = E_{HAP,LL,R,E} + E_{HAP,LL,R,D}$

(5j) $E_{HAP,LL,R} = (E_{VOC,LL,R,E} \times WF_{HAP,E}) + (E_{VOC,LL,R,D} \times WF_{HAP,D})$

Where:

$E_{HAP,LL}$	= HAP emissions from liquid loadout (tons/month)
$E_{HAP,LL,T}$	= HAP Emissions from liquid loadout into Trucks (tons/month)
$E_{HAP,LL,R}$	= HAP Emissions from liquid loadout into Railcars (tons/month)
$E_{HAP,LL,T,G}$	= HAP Emissions from displacing gasoline from Trucks (tons/month)
$E_{HAP,LL,T,E}$	= HAP Emissions from loading ethanol into Trucks (tons/month)
$E_{HAP,LL,T,D}$	= HAP Emissions from loading denaturant into Trucks (tons/month)
$WF_{HAP,G}$	= Weight Fraction of HAP in gasoline (HAP/VOC)
$WF_{HAP,E}$	= Weight Fraction of HAP in ethanol (HAP/VOC)
$WF_{HAP,D}$	= Weight Fraction of HAP in denaturant (HAP/VOC)
$E_{HAP,LL,R,E}$	= HAP Emissions from loading ethanol into Railcars (tons/month)

$E_{HAP,LL,R,D}$ = HAP Emissions from loading denaturant into Railcars (tons/month)

Pollutants	Weight Fraction of HAP Emissions		
	Gasoline	Ethanol	Denaturant
Individual HAPs			
Acetaldehyde	N/A	2.00E-04	N/A
Benzene	2.50E-03	N/A	2.50E-03
Carbon disulfide	2.00E-05	N/A	2.00E-05
Cumene	1.00E-04	N/A	1.00E-04
Ethyl benzene	5.00E-05	N/A	5.00E-05
n-Hexane	5.00E-02	N/A	5.00E-02
Methanol	N/A	2.00E-04	N/A
Toluene	5.00E-03	N/A	5.00E-03
Xylene	5.00E-04	N/A	5.00E-04
Total HAPs	5.82E-02	4.00E-04	5.82E-02

Loadout vapor combustion unit and Biomethanator Flare Pilots

Emissions from the loadout vapor combustion unit and biomethanator flare pilots shall each be calculated using Equation (6).

(6) $E_U = (EF) \times (NG_U) \ / (2000 \text{ lbs/ton})$

Where E_U = Emissions from Unit (tons/month)
EF = Emission factor (lbs/MMscf)
NG_U = Natural Gas Usage of Unit (MMscf/month)

Pollutant	Emission Factor (lb/MMscf)
Individual HAPs	
Benzene	0.0021
Dichlorobenzene	0.0012
Formaldehyde	0.075
Hexane	1.8
Lead Compounds	0.0005
Naphthalene	0.00061
Polycyclic Organic Matter (POM)	0.0000882
Toluene	0.0034
Arsenic Compounds (ASC)	0.0002
Beryllium Compounds (BEC)	0.000012
Cadmium Compounds (CDC)	0.0011
Chromium Compounds (CRC)	0.0014
Cobalt Compounds (COC)	0.000084
Manganese Compounds (MNC)	0.00038
Mercury Compounds (HGC)	0.00026
Nickel Compounds (NIC)	0.0021

Pollutant	Emission Factor (lb/MMscf)
Selenium Compounds (SEC)	0.000024
Total HAPs	1.89

WDGS Storage

Emissions from the WDGS storage shall be calculated using Equation (7).

(7) $E_{WC} = (EF_{WC}) \times (P_{WC}) / (2{,}000 \text{ lbs/ton})$

Where:
E_{WC} = Emissions from WDGS storage (tons/month)
EF_{WC} = Emission factor for WDGS storage (lbs/ton WDGS)
P_{wc} = WDGS stored as product (tons WDGS/month)

Pollutant	Emission Factor (lb/ton)
Acetaldehyde	1.11E-04
Acrolein	1.67E-05
Formaldehyde	2.22E-04
Methanol	4.44E-05
Total HAPs	3.94E-04

Emergency Fire Pump Engine

Emissions from the emergency firewater pump engine shall be calculated using Equation (8).

(8) $E_E = (EF_E) \times (HI_E) \times OT / (2000 \text{ lbs/ton})$

Where
E_E = Emissions from Engine (tons/month)
EF_E = Emission factor for Engine (lbs/MMBtu)
HI_E = Heat Input of Engine (MMBtu/hr)
OT = Operating Time of Engine (hours/month)

Pollutant	Emission Factor (lb/MMBtu)
Individual Hazardous Air Pollutants (HAP)	
1,3 – Butadiene	3.91E-05
Acetaldehyde	7.67E-04
Acrolein	9.25E-04
Benzene	9.33E-04
Formaldehyde	1.18E-03
Naphthalene	8.48E-05
Polycyclic Organic Matter (POM)	8.32E-05
Toluene	4.09E-04
Xylene	2.85E-04
Total HAPs	4.71E-03

Equipment Leaks

VOC emissions from equipment leaks shall be calculated using Equation (9a). HAP emissions from equipment leaks shall be calculated using Equation (9b). These equations are based on compliance with the LDAR program.

(9a) $LK, _{VOC} = \{\Sigma[(N\text{-}LK) \times (EF\text{-}LK) \times (1-(CE\text{-}LK/100))]\} \times (OH\text{-}LK) \times (2.21 \text{ lbs/kg}) / (2,000 \text{ lbs/ton})$

Where:
$LK, _{VOC}$ = VOC emissions from equipment leaks (tons/month)
Σ = Summation over all types of components
N-LK = Number of components in each type
EF-LK= Equipment leak emission factor (kg/hr/source)
CE-LK = Control efficiency of LDAR system (%)
OH-LK = Operating hours

(9b) $LK, _{HAP} = (LK, _{VOC}) \times (PPM\text{-}LK/10^6)$

Where:
$LK, _{HAP}$ = HAP emissions from equipment leaks (tons/month)
$LK, _{VOC}$ = VOC emissions from equipment leaks (tons/month)
PPM-LK = HAP content of anhydrous ethanol (ppm by weight)

-END OF DOCUMENT-