



**Statement of Basis**

**Air Quality Construction Permit**

**NuStar Pipeline Operating Partnership, L.P.**

**Yankton, South Dakota**

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## 1.0 Background

On March 9, 1998, Kaneb Pipe Line Operating Partnership, LP (Kaneb) was issued Title V air quality operating permit #28.9903-08 for its bulk petroleum marketing terminal in Yankton, South Dakota. On May 29, 2001, the permit was revised to include two storage tanks used to store denatured ethanol. In July 2001, Kaneb's permit was again revised by adding a third storage tank (Tank 01-43) capable of storing denatured ethanol.

On July 1, 2005, Kaneb notified the Department their new parent company would be Valero Logistics Operation, L.P (Valero). On March 26, 2008, Valero notified the Department they were changing their name to NuStar Pipeline Operating Partnership, LP (NuStar). The name change was effective on March 31, 2008.

On November 7, 2011, DENR received a renewal application for NuStar's Title V air quality operating permit. On September 5, 2012, DENR renewed NuStar's Title V air quality operating permit.

On July 12, 2013, DENR received an administrative amendment to change the responsible official. The administrative amendment was issued December 3, 2013.

NuStar is a refined petroleum pipeline terminal. The facility handles refined petroleum products including propane, unleaded regular gasoline, unleaded premium gasoline, #2 fuel oil, #1 fuel oil, diesel and interface. The terminal receives the petroleum liquids through a pipeline network. The Primary Standard Industrial Classification (SIC) Code is 4613.

### 1.1 Existing Permitted Equipment

Table 1.1 provides a list of units covered under the existing Title V air quality operating permit issued on December 3, 2013.

*Table 1.1 – List of permitted processes and equipment*

Unit	Description	Maximum Capacity	Control Equipment
#1	Custom built, two-bay, bottom-fill, petroleum fuels and ethanol, transport truck, loading rack with 16 arms	Not applicable	Not applicable
#2	Tank 02-05 – 1959 GATX above ground, internal floating roof storage tank	76,188 gallon	Not applicable
#3	Tank 05-09 - 1959 GATX above ground, fixed roof storage tank	181,734 gallon	Not applicable
#4	Tank 05-10 - 1959 GATX above ground, fixed roof storage tank	181,734 gallon	Not applicable
#5	Tank 05-11 - 1959 GATX above ground, internal floating roof storage tank	181,734 gallon	Not applicable
#6	Tank 05-12 - 1959 GATX above ground, internal floating roof storage tank	181,734 gallon	Not applicable
#7	Tank 10-09 - 1959 GATX above ground, fixed roof	389,844 gallon	Not applicable

Unit	Description	Maximum Capacity	Control Equipment
	storage tank		
#8	Tank 10-10 - 1959 GATX above ground, fixed roof storage tank	389,844 gallon	Not applicable
#9	Tank 10-11 - 1959 GATX above ground, fixed roof storage tank	389,844 gallon	Not applicable
#10	Tank 10-12 - 1959 GATX above ground, fixed roof storage tank	389,844 gallon	Not applicable
#11	Tank 10-17 - 1963 GATX above ground, fixed roof storage tank	389,180 gallon	Not applicable
#12	Tank 15-02 - 1959 GATX above ground, internal floating roof storage tank	614,082 gallon	Not applicable
#13	Tank 15-03 - 1959 GATX above ground, internal floating roof storage tank	614,082 gallon	Not applicable
#14	Tank 20-01 - 1959 GATX above ground, fixed roof storage tank	796,656 gallon	Not applicable
#15	Tank 20-02 - 1964 GATX above ground, fixed roof storage tank	797,790 gallon	Not applicable
#16	Tank 30-14 – 1964 above ground, internal floating roof storage tank	1,227,996 gallon	Not applicable
#17	Tank 50-01 – 1963 above ground, internal floating roof storage tank	2,048,592 gallon	Not applicable

## 1.2 Proposed Equipment Changes

NuStar is proposing to install a soil vapor extraction unit to remediate ground water and soil at the facility. The soil vapor extraction unit uses pumps and a network of wells to draw air from petroleum contaminated soil. The air exiting the wells contains volatile organic compounds and hazardous air pollutants. A description of the proposed soil vapor extraction unit is displayed in Table 1.2.

*Table 1.2: Description of Permitted Units, Operations, and Processes*

Unit	Description	Maximum Operating Rate	Control Device
#18	APEX - soil vapor extraction unit	732 actual cubic feet per minute	Not Applicable

NuStar is requesting an emission limit of 10 tons per year of volatile organic compounds for the soil vapor extraction unit.

## 2.0 New Source Performance Standards

DENR reviewed the new source performance standards under 40 CFR Part 60 and determined there are no New Source Performance Standards applicable to the proposed revisions.

### **3.0 New Source Review**

ARSD 74:36:10:01 states that New Source Review (NSR) regulations apply to areas of the state which are designated as nonattainment pursuant to the Clean Air Act for any pollutant regulated under the Clean Air Act. NuStar is located near Yankton, South Dakota, which is in attainment or unclassifiable for all the pollutants regulated under the Clean Air Act. Therefore, the NuStar is not subject to NSR review.

### **4.0 Prevention of Significant Deterioration**

A prevention of significant deterioration (PSD) review applies to new major stationary sources and major modifications to existing major stationary sources in areas designated as attainment under Section 107 of the Clean Air Act for any regulated air pollutant. The following is a list of regulated air pollutants under the PSD program:

1. Total suspended particulate (PM);
2. Particulate with a diameter less than or equal to 10 microns (PM10);
3. Particulate with a diameter less than or equal to 2.5 microns (PM2.5);
4. Sulfur dioxide (SO<sub>2</sub>);
5. Nitrogen oxides (NO<sub>x</sub>);
6. Carbon monoxide (CO);
7. Ozone – measured as volatile organic compounds (VOCs);
8. Lead;
9. Fluorides
10. Sulfuric acid mist;
11. Hydrogen sulfide;
12. Reduced sulfur compounds;
13. Total reduced sulfur; and
14. Greenhouse gases (carbon dioxide, methane, nitrous oxide, etc.).

If the source is considered one of the 28 named PSD source categories listed in Section 169 of the federal Clean Air Act, the major source threshold is 100 tons per year of any regulated air pollutant, except for greenhouse gases. The major source threshold for all other sources is 250 tons per year of any regulated air pollutant, except for greenhouse gases.

One of the 28 source categories listed is “petroleum storage and transfer units with a total storage capacity exceeding 300,000 barrels.” Under the PSD program petroleum refers to unrefined crude oils. The facility stores only refined petroleum fuels, and less than 300,000 barrels; therefore, NuStar is not considered one of the 28 source categories and the PSD threshold for this facility is 250 tons per year.

According to the Clean Air Act, once a pollutant is regulated under any part of the Act, (as was the case with greenhouse gas emissions after the motor vehicle regulations were finalized in March 2010) major new sources or major modifications are subject to the PSD program and Title V air quality operating permit program. Under the Clean Air Act, PSD and Title V air quality

operating permits are required for all sources that emit a regulated air pollutant above 100 or 250 tons per year, depending on the source. This threshold, if applied to greenhouse gases, would greatly increase the number of facilities requiring a PSD review or Title V air quality operating permit. Based on administrative necessity, EPA increased these thresholds through the “Tailoring Rule.”

On May 13, 2010, EPA issued the final version of the “Tailoring Rule” for greenhouse gas emissions. The major source threshold for greenhouse gases is listed below:

1. New PSD source because of a criteria air pollutant, the major source threshold for greenhouse gases is 75,000 tons per year of carbon dioxide equivalent or more;
2. New PSD source if greenhouse gas emissions are 100,000 tons per year of carbon dioxide equivalent or more;
3. For an existing PSD source because of a criteria air pollutant, a major modification for greenhouse gases is an increase of 75,000 tons per year of carbon dioxide equivalent or more;
4. For an existing non-PSD source that has the potential to emit 100,000 tons per year of carbon dioxide equivalent emissions or more, a major modification for greenhouse gases is an increase of 75,000 tons per year of carbon dioxide equivalent or more; and
5. In addition to subsection (2) and (4), a specific greenhouse gas, without calculating the carbon dioxide equivalent, also needs to emit greater than 100 or 250 tons per year, whichever is applicable, to be regulated.

NuStar is considered a major source; therefore, any changes to the existing facility require evaluation to determine whether the proposed change is considered a major modification under the PSD program. A major modification under PSD is defined as any physical change or change in the method of operation of a major source resulting in a significant emissions increase of a regulated pollutant and a significant net emissions increase of that pollutant. A significant emissions increase under PSD is defined as a net emissions increase or the potential emissions increase that equals or exceeds the pollutant specific thresholds in Table 4.1 and/or major modifications constructed within 10 kilometers of a Class I area, that impact a Class I area equal to or greater than 1 microgram per cubic meter ( $\mu\text{g}/\text{m}^3$ ) (24-hour average). NuStar is not located within 10 kilometers of a Class I area.

**Table 4.1 PSD major modification thresholds**

<b>Pollutant</b>	<b>Threshold <sup>1</sup></b>
TSP	25 tons per year
PM10	15 tons per year
PM2.5	10 tons per year
SO <sub>2</sub>	40 tons per year
NO <sub>x</sub>	40 tons per year
CO	100 tons per year
Ozone <sup>2</sup>	40 tons per year
Lead	0.6 tons per year
Fluorides	3 tons per year
Sulfuric Acid Mist	7 tons per year

<b>Pollutant</b>	<b>Threshold <sup>1</sup></b>
Hydrogen Sulfide	10 tons per year
Total Reduced Sulfur <sup>3</sup>	10 tons per year
Reduced Sulfur Compounds <sup>3</sup>	10 tons per year
Municipal waste combustor organics <sup>4</sup>	0.0000035 tons per year
Municipal waste combustor metals <sup>5</sup>	15 tons per year
Municipal waste combustor acid gases <sup>6</sup>	40 tons per year
Municipal waste combustor landfills emissions <sup>7</sup>	50 tons per year

<sup>1</sup> -Taken from 40 CFR § 52.21(b)(23)(i);

<sup>2</sup> - Measured as volatile organic compound (VOC) or nitrogen oxide (NO<sub>x</sub>) emissions;

<sup>3</sup> - Including hydrogen sulfide emissions;

<sup>4</sup> - Measured as total tetra-through octa-chlorinated dibenzo-p-dioxins and dibenzofurans;

<sup>5</sup> - Measured as particulate matter;

<sup>6</sup> - Measured as sulfur dioxide and hydrogen chloride; and

<sup>7</sup> - Measured as nonmethane organic compounds.

#### **4.1 PSD Pollutant Applicability**

The primary criterion to determine PSD applicability is whether the proposed project is considered a major modification is based on its potential emissions. Potential to emit is the capability at maximum design capacity to emit a pollutant, except as constrained by federally enforceable permit conditions.

For an existing major stationary source, if both the potential increase in emissions due to the modification itself, and the resulting net emissions change of any regulated or non-criteria pollutants are equal to or greater than the respective pollutant's significant emission rate, the modification is a major modification subject to PSD review.

The PSD regulations have established the following procedure for determining if a proposed project is subject to a PSD review:

1. Determine the potential increase from the proposed project and compare it to the significant emission rates in 40 CFR § 52.21(b)(23). If the potential increase is greater than the significant emission rate, proceed; if not, the source is not subject to a PSD review.
2. Determine the beginning and ending dates of the contemporaneous period as it relates to the proposed modification.
3. Determine which emissions units at the source experienced (or will experience, including any proposed decreases resulting from the proposed project) a creditable increase or decrease in emissions during the contemporaneous period.
4. Determine which emissions changes are creditable.
5. Determine, on a pollutant-by-pollutant basis, the amount of each contemporaneous and creditable emissions increase and decrease.
6. Sum all contemporaneous and creditable increases and decreases with the increase from the proposed modification to determine if a significant net emissions increase will occur.

The six-step procedure is discussed in detail in the following subsections.

## 4.2 Emission Factors

DENR uses stack test results to determine air emissions whenever stack test data is available from the source or a similar source. When stack test results are not available, DENR relies on manufacturing data, material balance, EPA’s Compilation of Air Pollutant Emission Factors (AP-42, Fifth Edition, Volume 1) document, the applicant’s application, or other methods to determine potential air emissions.

Based on a pilot test conducted at the facility, NuStar indicated in the application the volatile organic compound emission rate for the soil vapor extraction unit will be 46 pounds per day.

## 4.3 Potential Annual Emission Rates

Table 4.2 lists the DENR calculated potential annual volatile organic emissions for the project, considering uncontrolled emissions as well as the PSD significance rate. The volatile organic compound emissions were calculated based on 365 days of operation per year using Equation 4-1. There will not be any total suspended particulate matter, particulate matter 10 microns in diameter or less, particulate matter less than or equal to 2.5 microns in diameter, sulfur dioxide, nitrogen oxide, carbon monoxide, hydrogen sulfide, reduced sulfur compounds and total reduced sulfur and carbon dioxide equivalent emissions from the proposed construction.

### *Equation 4-1 – Uncontrolled emission calculations (tons per year)*

$$\text{Emissions } \frac{\text{tons}}{\text{year}} = \frac{46 \frac{\text{pounds}}{\text{day}} \times 365 \frac{\text{days}}{\text{year}}}{2,000 \frac{\text{pounds}}{\text{ton}}} = 8.4 \frac{\text{tons}}{\text{year}}$$

**Table 4.2 – Regulated Air Pollutants Significant Emission Comparison (Tons per year)**

<b>Pollutant</b>	<b>Project Uncontrolled Emissions</b>	<b>Significant Rate</b>	<b>PSD Review</b>
TSP	0	25	<b>No</b>
PM10	0	15	<b>No</b>
PM2.5 (direct emissions)	0	10	<b>No</b>
PM2.5 (measured as SO2)	0	40	<b>No</b>
PM2.5 (measured as NOx)	0	40	<b>No</b>
Sulfur dioxide	0	40	<b>No</b>
Nitrogen oxides	0	40	<b>No</b>
Carbon monoxide	0	100	<b>No</b>
Ozone (measured as VOC)	8.4	40	<b>No</b>
Ozone (measured as NOx)	0	40	<b>No</b>
Lead	0	0.6	<b>No</b>

In the application NuStar requested an emission limit of 10 tons per year for the soil vapor extraction unit. The uncontrolled potential volatile organic compound emissions for the soil vapor extraction unit are less than the significant rate for ozone (measured as VOC). Therefore,

the requested emission limit is not necessary. Since, the first step in the PSD applicability process is less than the significant rate, no further analysis is required and this project is not applicable to the PSD program. Based on the US Supreme Court's decision and because NuStar is not applicable to the PSD program, a review for greenhouse gas emissions is not warranted or required.

## 5.0 National Emission Standards for Hazardous Air Pollutants

DENR reviewed the National Emission Standards for Hazardous Air Pollutants in 40 CFR Part 61 and determined that there are no National Emission Standards for Hazardous Air Pollutants standards applicable to NuStar's proposed construction.

## 6.0 Maximum Achievable Control Technology Standards

The federal Maximum Control Technology Standards are applicable to both major and area sources of hazardous air pollutants (HAPs). A major source of hazardous air pollutants is a facility that has the potential to emit greater than 10 tons of a single hazardous air pollutant or 25 tons of any combination of hazardous air pollutants. An area source is a source that is not a major source of hazardous air pollutants.

### 6.1 Potential HAP Emissions

According to the application the vapors from the soil vapor extraction unit will consist of vapors from weathered gasoline, gasoline, and diesel. Therefore, DENR used the baseline values for gasoline vapor phase hazardous air pollutants – volatile organic compounds weight percentages listed in Table 11.3-2 of the EPA's January 2001 document *Gasoline Marketing (Stage I and Stage II)* to determine the hazardous air pollutants from the soil vapor extraction unit, which are displayed in Table 6.1.

**Table 6.1: Gasoline Vapor Phase HAP-VOC Weight Percentages**

HAP Component	Percentage of Total VOC emissions
Benzene	0.9 %
Ethyl Benzene	0.1 %
Toluene	1.3 %
Xylene	0.5 %
2,2,4-Trimethylpentane	0.8 %
Hexane	1.6 %
Cumene	0.05 %
<b>Total =</b>	<b>5.25 %</b>

Based on the hazardous air pollutants – volatile organic compound percentages above, hexane will be the single hazardous air pollutant emitted in the greatest amount. Table 6.2 identifies the potential hazardous air pollutant emissions from the Soil Vapor Extraction Unit.

**Table 6.2 – Potential Loading Rack Emissions**

	<b>Total HAP</b>	<b>Hexane</b>
VOC emissions (tons per year)	8.4	-
HAP percentage	5.25%	-
Hexane percentage	-	1.6%
HAP total (tons per year)	0.4	
Hexane Total (tons per year)	-	0.1
Existing Facility Total <sup>1</sup>	22 tons/year	7 tons/year
<b>Total</b>	<b>22 tons/year</b>	<b>7 tons/year</b>

<sup>1</sup> – The potential hazardous air pollutants for the existing facility total were derived from the June 2012 Statement of Basis.

The potential to emit is less than 10 tons of a single hazardous air pollutant, and has the potential to emit less than 25 tons of any combination of hazardous air pollutants. Therefore, NuStar is still considered an area source for hazardous air pollutants.

DENR reviewed the Maximum Achievable Control Technology Standards under 40 CFR Part 63 and determined none are currently applicable to the construction project.

## **7.0 State Emission Limits**

The State of South Dakota has established total suspended particulate matter and sulfur dioxide emission limits in ARSD 74:36:06 and a standard for opacity in ARSD 74:36:12. In accordance with ARSD 74:36:12:01, each unit is subject to a visible emission limit of less than 20 percent opacity.

In accordance with 74:36:06:01 and 74:36:06:02 the state particulate limit and sulfur dioxide emission limits do not apply, as NuStar’s proposed construction project does not emit particulate matter and sulfur dioxide.

### **7.1 Title V Air Quality Operating Permit**

Any source operating in South Dakota that meets the requirements of Administrative Rules of South Dakota (ARSD) 74:36:05:03 is required to obtain a Title V air quality permit. NuStar is currently operating under a Title V air quality permit. In accordance with the ARSD 74:36:05:03.01, NuStar is required to submit an application to modify its Title V air quality permit within 12 months after initial startup of this project.

### **7.2 Performance Tests**

Conditions will be placed in the construction permit requiring stack testing to be completed once the soil vapor extraction unit is installed and operational. The stack test will be conducted to

verify the volatile organic compound emission rate provided in the application. A condition will also be placed in the permit that will allow DENR to require additional stack tests if warranted.

## **8.0 Recommendation**

NuStar will be required to comply with the requirements stipulated in the following regulations:

1. ARSD 74:36:06 – Regulated Air Pollutant Emissions;
2. ARSD 74:36:11 – Performance testing;
3. ARSD 74:36:12 – Control of Visible Emissions; and
4. ARSD 74:36:20 – Construction Permits for New Sources or Modifications.

Based on the information submitted in the air quality permit application, DENR recommends conditional approval of an air quality construction permit for NuStar in Yankton, South Dakota. Questions regarding this permit review should be directed to Earl Berg, Engineer I.