



**Statement of Basis**  
**Air Quality Construction Permit**  
**Glacial Lakes Energy, LLC**  
**Watertown, South Dakota**

**South Dakota Department of Agriculture and Natural Resources**

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## 1.0 Background

On August 25, 2017, the South Dakota Department of Agriculture and Natural Resources (DANR) renewed Glacial Lakes Energy, LLC's (Glacial Lakes Energy) Title V air quality operating permit #28.0501-05 for a dry corn mill ethanol production plant located in Watertown, South Dakota. The following changes have occurred since the Title V air quality operating permit has been issued:

1. February 5, 2018 – Minor Amendment to remove Unit #30 from the permit;
2. April 5, 2019 – Minor Amendment to add two fermenters to Unit #6, add two hammermills to Unit #20, add Unit #43, and remove Unit #32;
3. October 7, 2019 – Minor Amendment to remove the regenerative thermal oxidizer associated with Unit #7;
4. October 1, 2020 – Administrative Amendment to update the permit contact, facility contact and responsible official;
5. May 25, 2021 – Modification to increase ethanol production, operational and short-term limits; and
6. May 3, 2022 – Minor Amendment to remove Units #12 and #19.

## 1.1 Existing Equipment

Table 1-1 provides a list of the units presently permitted which was taken from the current Title V air quality operating permit issued on May 3, 2022.

***Table 1-1 – Description of Permitted Units, Operations, and Processes***

| <b>Unit</b> | <b>Description</b>                                                                                  | <b>Maximum Operating Rate</b> | <b>Control Device</b>                                                                    |
|-------------|-----------------------------------------------------------------------------------------------------|-------------------------------|------------------------------------------------------------------------------------------|
| <b>#1</b>   | Enclosed truck and railcar grain handling system                                                    | 1,120 tons of grain per hour  | 2001 McCormick baghouse and a Mac Pulse Jet Dust Filter baghouse operated in Conjunction |
|             | Transport corn from receiving pits to scalpers by conveyors                                         |                               |                                                                                          |
|             | Two corn scalpers clean corn                                                                        |                               |                                                                                          |
|             | Elevator legs transport cleaned corn from the scalpers to one of three corn bins                    |                               |                                                                                          |
| <b>#2</b>   | Elevator leg transports corn from storage bin to surge bin, weigh belt and hammer mill feed systems | 210 tons of grain per hour    | 2001 McCormick baghouse                                                                  |
|             | Hammer mill grinds corn                                                                             | 40 tons of grain per hour     |                                                                                          |
|             | Elevator leg transports ground corn to fermentation process                                         | 40 tons of grain per hour     |                                                                                          |
| <b>#3</b>   | Elevator leg transports corn from storage bin to surge bin, weigh belt and hammer mill feed systems | 80 tons of grain per hour     | 2001 McCormick baghouse                                                                  |
|             | Hammer mill grinds corn                                                                             | 40 tons of grain per hour     |                                                                                          |
|             | Elevator leg transports ground corn to                                                              | 40 tons of grain per hour     |                                                                                          |

| Unit | Description                                                                                                                                                                                                                                                         | Maximum Operating Rate                                                                                                                                            | Control Device                                    |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
|      | fermentation process                                                                                                                                                                                                                                                |                                                                                                                                                                   |                                                   |
| #4   | Two corn storage bins                                                                                                                                                                                                                                               | 185,000 bushels per bin and transport 1,120 tons of grain per hour                                                                                                | 2001 McCormick baghouse                           |
| #5   | Dried distiller grain and solubles storage area, elevator leg and load out                                                                                                                                                                                          | 80 tons of grain per hour                                                                                                                                         | 2001 McCormick baghouse                           |
| #6   | Fermentation Process #1 – The fermentation process occurs in four fermenters and the liquid beer is stored in a beer well                                                                                                                                           | 1,600 gallons per minute                                                                                                                                          | Wet scrubber                                      |
|      | Fermentation Process #2 – The fermentation process occurs in three fermenters and the liquid beer is stored in a beer well                                                                                                                                          | 1,600 gallons per minute                                                                                                                                          |                                                   |
|      | Two fermentation tanks                                                                                                                                                                                                                                              | 730,000 gallons each                                                                                                                                              |                                                   |
| #7   | Distiller grain and solubles (DGS) is dried in dryer systems fired with natural gas. The dryer system consists of two ICM DDGS dryers in series. Each dryer has a multi cyclone to collect product. Methane produced by the biomethanator is passed through dryers. | Each dryer has a heat input capacity of 41.6 million Btus per hour. The dryer system is capable of producing 30 tons per hour of dry distiller grain and solubles | Thermal oxidizer and heat recovery boiler system. |
|      | Distillation process distills liquid beer and consists of a mixer, slurry tank, flash tank, yeast tank, beer column, side stripper, rectifier, molecular sieves, 190 proof condenser, and 200 proof condenser                                                       | 74 million gallons of undenatured ethanol per year                                                                                                                |                                                   |
|      | Five centrifuges                                                                                                                                                                                                                                                    | 50 tons per hour per centrifuge                                                                                                                                   |                                                   |
|      | Thermal oxidizer and heat recovery boiler system fired solely with natural gas when dryers are not in operation                                                                                                                                                     | 120 million Btus per hour heat input                                                                                                                              |                                                   |
| #8   | Dried distiller grain and solubles cooling and separating system                                                                                                                                                                                                    | 30 tons per hour of dried distiller grain and solubles                                                                                                            | 2001 McCormick baghouse                           |
| #9   | Ethanol truck load out system                                                                                                                                                                                                                                       | 39 thousand gallons of denatured ethanol per hour                                                                                                                 | Flare                                             |
|      | Flare fired with waste gases and natural gas                                                                                                                                                                                                                        | 3.2 million Btus per hour heat input                                                                                                                              |                                                   |
| #11  | Industrial cooling tower                                                                                                                                                                                                                                            | 4 cells                                                                                                                                                           | Not applicable                                    |
| #13  | Ethanol railcar load out system                                                                                                                                                                                                                                     | 150 thousand gallons of denatured ethanol per hour                                                                                                                | Not applicable                                    |

| <b>Unit</b> | <b>Description</b>                                                                                                                                                                                             | <b>Maximum Operating Rate</b>                                                                 | <b>Control Device</b>                            |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------|
| <b>#14</b>  | Tank #1 – Aboveground storage tank                                                                                                                                                                             | 750,000 gallons                                                                               | Internal floating roof                           |
| <b>#15</b>  | Tank #2 – Aboveground storage tank                                                                                                                                                                             | 750,000 gallons                                                                               | Internal floating roof                           |
| <b>#16</b>  | Tank #3 – Aboveground storage tank                                                                                                                                                                             | 100,000 gallons                                                                               | Internal floating roof                           |
| <b>#17</b>  | Tank #4 – Aboveground storage tank                                                                                                                                                                             | 100,000 gallons                                                                               | Internal floating roof                           |
| <b>#18</b>  | Tank #5 – Aboveground storage tank                                                                                                                                                                             | 100,000 gallons                                                                               | Internal floating roof                           |
| <b>#20</b>  | One hammer mill                                                                                                                                                                                                | 100 tons of grain per hour                                                                    | 2006 baghouse                                    |
|             | One hammer mill                                                                                                                                                                                                | 100 tons of grain per hour                                                                    |                                                  |
|             | One hammer mill                                                                                                                                                                                                | 100 tons of grain per hour                                                                    |                                                  |
|             | One hammer mill                                                                                                                                                                                                | 100 tons of grain per hour                                                                    |                                                  |
| <b>#21</b>  | Dried distiller grain and solubles cooling system                                                                                                                                                              | 30 tons per hour of dried distillers grain and solubles                                       | 2006 baghouse                                    |
| <b>#23</b>  | Industrial cooling tower with four cells                                                                                                                                                                       | Not applicable                                                                                | Not applicable                                   |
| <b>#24</b>  | Dried distiller grain and solubles dryer system consisting of two ICM dryers in series fired with natural gas                                                                                                  | 42 million Btus per hour per dryer and 30 tons of dried distiller grain and solubles per hour | Thermal oxidizer and heat recovery boiler system |
|             | Distillation process distills liquid beer and consists of a mixer, slurry tank, flash tank, yeast tank, beer column, side stripper, rectifier, molecular sieves, 190 proof condenser, and 200 proof condenser. | 74 million gallons of undenatured ethanol per year                                            |                                                  |
|             | Five centrifuges                                                                                                                                                                                               | 50 tons per hour per centrifuge                                                               |                                                  |
|             | Thermal oxidizer and heat recovery boiler system fired solely with natural gas when dryers are not in operation                                                                                                | 125 million Btus per hour heat input                                                          |                                                  |
| <b>#27</b>  | 2007 Zimmerman grain dryer, model #Z-6055, fired by natural gas                                                                                                                                                | 37.9 million Btu per hour heat input and 152.4 tons of grain per hour                         | Not applicable                                   |
| <b>#28</b>  | Tank #6 – Above ground storage tank                                                                                                                                                                            | 200,000 gallons                                                                               | Internal floating roof                           |
| <b>#29</b>  | Emergency fire pump                                                                                                                                                                                            | 300 horsepower and 2.18 million Btu per hour                                                  | Not applicable                                   |
| <b>#31</b>  | Industrial cooling tower with two cells.                                                                                                                                                                       | Not applicable                                                                                | Not applicable                                   |
| <b>#35</b>  | Grain receiving                                                                                                                                                                                                | 840 tons per hour                                                                             | 2014 Baghouse                                    |
| <b>#37</b>  | Two Ethanol railcar load out systems                                                                                                                                                                           | 288,000 gallons per hour                                                                      | Not applicable                                   |
| <b>#38</b>  | Tank #10 – Aboveground storage tank                                                                                                                                                                            | 1,500,000 gallons                                                                             | Internal floating roof                           |
| <b>#39</b>  | Tank #11 – Aboveground storage tank                                                                                                                                                                            | 1,500,000 gallons                                                                             | Internal floating roof                           |
| <b>#40</b>  | Tank #12 – Aboveground storage tank                                                                                                                                                                            | 1,500,000 gallons                                                                             | Internal floating roof                           |
| <b>#41</b>  | Tank #13 – Aboveground storage tank                                                                                                                                                                            | 200,000 gallons                                                                               | Internal floating roof                           |
| <b>#42</b>  | 2016 John Deere (Clarke), Model #JU6H-UFAD58, fire pump, fired on distillate oil                                                                                                                               | 183 horsepower                                                                                | Not applicable                                   |

| <b>Unit</b> | <b>Description</b>    | <b>Maximum Operating Rate</b> | <b>Control Device</b> |
|-------------|-----------------------|-------------------------------|-----------------------|
| <b>#43</b>  | Corn oil storage tank | 100,000 gallons               | Fixed roof            |

## 1.2 Construction Permit #28.0501-05-10C

On April 12, 2022, DANR issued construction permit #28.0501-05-10C to Glacial Lakes Energy. Glacial Lakes Energy revised the flow rate of Unit #4 and split Unit #20 into two units with their own baghouses. Table 1-2 shows units permitted in construction permit #28-0501-05-10C.

**Table 1-2 – Description of Permitted Units, Operations, and Processes**

| <b>Unit</b> | <b>Description</b>    | <b>Maximum Operating Rate</b>                                      | <b>Control Device</b>   |
|-------------|-----------------------|--------------------------------------------------------------------|-------------------------|
| <b>#4</b>   | Two corn storage bins | 185,000 bushels per bin and transport 1,120 tons of grain per hour | 2001 McCormick baghouse |
| <b>#20a</b> | One hammer mill       | 100 tons of grain per hour                                         | Baghouse                |
|             | One hammer mill       | 100 tons of grain per hour                                         |                         |
| <b>#20b</b> | One hammer mill       | 100 tons of grain per hour                                         | Baghouse                |
|             | One hammer mill       | 100 tons of grain per hour                                         |                         |

## 1.3 Construction Permit #28.0501-05-11C

On June 6, 2023, DANR issued construction permit #28.0501-05-11C to Glacial Lakes Energy. Glacial Lakes Energy upgraded the hammermills associated with Units #20a and #20b from 450 horsepower to 500 horsepower constructed a new hammermill with an operating rate of 100 tons of grain per hour, that will be controlled by a baghouse. Table 1-3 shows units permitted in construction permit #28.0501-05-11C.

**Table 1-3 – Description of Permitted Units, Operations, and Processes**

| <b>Unit</b> | <b>Description</b>                      | <b>Maximum Operating Rate</b> | <b>Control Device</b> |
|-------------|-----------------------------------------|-------------------------------|-----------------------|
| <b>#20a</b> | One hammermill                          | 100 tons of grain per hour    | Baghouse              |
|             | To allow the upgrade to 500 horsepower. |                               |                       |
|             | One hammermill                          | 100 tons of grain per hour    |                       |
| <b>#20b</b> | To allow the upgrade to 500 horsepower. |                               | Baghouse              |
|             | One hammermill                          | 100 tons of grain per hour    |                       |
|             | To allow the upgrade to 500 horsepower. |                               |                       |
|             | One hammermill                          | 100 tons of grain per hour    |                       |
| <b>#44</b>  | One hammermill                          | 100 tons of grain per hour    | Baghouse              |

#### 1.4 Construction Permit #28.0501-05-12C

On December 19, 2023, DANR issued air quality construction permit #28.0501-05-12C to Glacial Lakes Energy. Table 1-4 shows the permitted changes.

**Table 1-4 – Description of Permitted Units, Operations, and Processes**

| Unit | Description                                                                                                                                                                                                                                                         | Maximum Operating Rate                                                                                                                                            | Control Device                                    |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| #7   | Distiller grain and solubles (DGS) is dried in dryer systems fired with natural gas. The dryer system consists of two ICM DDGS dryers in series. Each dryer has a multi cyclone to collect product. Methane produced by the biomethanator is passed through dryers. | Each dryer has a heat input capacity of 41.6 million Btus per hour. The dryer system is capable of producing 30 tons per hour of dry distiller grain and solubles | Thermal oxidizer and heat recovery boiler system. |
|      | Distillation process distills liquid beer and consists of a mixer, slurry tank, flash tank, yeast tank, beer column, side stripper, rectifier, molecular sieves, 190 proof condenser, and 200 proof condenser                                                       | 74 million gallons of undenatured ethanol per year                                                                                                                |                                                   |
|      | Five centrifuges                                                                                                                                                                                                                                                    | 50 tons per hour per centrifuge                                                                                                                                   |                                                   |
|      | Thermal oxidizer and heat recovery boiler system fired solely with natural gas when dryers are not in operation                                                                                                                                                     | 120 million Btus per hour heat input<br><br>Allow for an increase to 140 million Btus per hour                                                                    |                                                   |
| #24  | Dried distiller grain and solubles dryer system consisting of two ICM dryers in series fired with natural gas                                                                                                                                                       | 42 million Btus per hour per dryer and 30 tons of dried distiller grain and solubles per hour                                                                     | Thermal oxidizer and heat recovery boiler system  |
|      | Distillation process distills liquid beer and consists of a mixer, slurry tank, flash tank, yeast tank, beer column, side stripper, rectifier, molecular sieves, 190 proof condenser, and 200 proof condenser.                                                      | 74 million gallons of undenatured ethanol per year                                                                                                                |                                                   |
|      | Five centrifuges                                                                                                                                                                                                                                                    | 50 tons per hour per centrifuge                                                                                                                                   |                                                   |

| Unit | Description                                                                                                     | Maximum Operating Rate                                                                         | Control Device |
|------|-----------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|----------------|
|      | Thermal oxidizer and heat recovery boiler system fired solely with natural gas when dryers are not in operation | 125 million Btus per hour heat input<br><br>Allow for an increase to 140 million Btus per hour |                |

### 1.5 Construction Permit #28.0501-05-13C

On September 24, 2024, DANR issued an air quality construction permit application for Glacial Lakes Energy that includes the equipment listed in Table 1-5.

**Table 1-5 – Description of Permitted Units, Operations, and Processes**

| Unit | Description                                                | Maximum Operating Rate                                          | Control Device |
|------|------------------------------------------------------------|-----------------------------------------------------------------|----------------|
| #45  | 2022 Tower Grain Dryer, Model 12010, fired on natural gas. | 117.9 million Btus per hour heat input<br><br>336 tons per hour | Not applicable |

### 1.6 Construction Permit #28.0501-05-14C

On September 11, 2024, DANR issued an air quality construction permit application for Glacial Lakes Energy that includes the equipment listed in Table 1-6.

**Table 1-6 – Description of Permitted Units, Operations, and Processes**

| Unit | Description                | Maximum Operating Rate      | Control Device |
|------|----------------------------|-----------------------------|----------------|
| #46  | Corn Oil Storage Tank      | 100,000 gallons of corn oil | Not Applicable |
| #47  | Corn Oil Rail Loadout Skid | 13,505,000 gallons per year | Not Applicable |

### 1.7 Proposed Changes

On July 23, 2026, DANR received an air quality construction permit application to replace the existing grain storage baghouse, associated with Unit #4. Glacial Lakes also requested an increase in the short-term emission limit for Unit #4 from 0.2 pounds per hour to 0.4 pounds per hour.

## 2.0 New Source Performance Standards

DANR reviewed the New Source Performance Standards listed in 40 CFR Part 60 and determined the following standards may be applicable to Glacial Lakes Energy's proposed construction.

## **2.1 Standards for Grain Elevators**

The provisions under 40 CFR Part 60, Subpart DD is applicable to the following grain elevators:

1. The provisions of this subpart are applicable to any grain terminal elevator, which has a permanent grain storage capacity of 2,500,000 bushels. A grain terminal storage elevator means any grain elevator except those located at animal food manufacturers, pet food manufactures, cereal manufacturers, breweries, and livestock feedlots; or
2. The provisions of this subpart are applicable to any grain storage elevator, which has a permanent grain storage capacity of 1,000,000 bushels. A grain storage elevator means any grain elevator located at any wheat flour mill, wet corn mill, dry corn mill (human consumption), rice mill, or soybean oil extraction plant; and
3. Commences construction, modification, or reconstruction after August 3, 1978.

Glacial Lakes Energy is not requesting to increase permanent grain storage; therefore, the permanent grain storage capacity for this plant is still less than 2,500,000 bushels and is not applicable to Glacial Lakes Energy.

## **2.2 Other New Source Performance Standards**

DANR reviewed the other New Source Performance Standards and determined there are no other standards applicable to the proposed construction.

## **3.0 New Source Review**

In accordance with Administrative Rules of South Dakota (ARSD) 74:36:10:01, New Source Review 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. Glacial Lakes Energy is located near Watertown, South Dakota, which is in attainment or unclassifiable for all the criteria air pollutants regulated under the Clean Air Act; therefore, Glacial Lakes Energy is not subject to New Source Review.

## **4.0 Prevention of Significant Deterioration**

A Prevention of Significant Deterioration 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 pollutants under the Prevention of Significant Deterioration program:

1. Total suspended particulate (PM);
2. Particulate matter with a diameter less than or equal to 10 microns (PM<sub>10</sub>);
3. Particulate matter with a diameter less than or equal to 2.5 microns (PM<sub>2.5</sub>);
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 (VOC);
8. Lead;
9. Greenhouse gases (carbon dioxide, nitrous oxide, methane, etc.)
10. Fluorides;
11. Sulfuric acid mist;
12. Hydrogen sulfide;
13. Reduced sulfur compounds; and
14. Total reduced sulfur.

If the source is considered one of the 28 named Prevention of Significant Deterioration 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. A facility must trigger one of the major source thresholds for another regulated pollutant before greenhouse gas emissions can be considered under the Prevention of Significant Deterioration permitting program. This applies to both new Prevention of Significant Deterioration program sources as well as major source modifications.

#### 4.1 Potential to Emit Criteria Pollutants

The current permit contains enforceable permit conditions to ensure actual emissions from the ethanol plant do not exceed the major source threshold under the Prevention of Significant Deterioration program. Glacial Lakes has a short-term emission limit that restricts the facility's potential particulate matter emissions to less than 238 tons per year. The permit also contains a plant wide emission limit for each criteria air pollutant of 238 tons per 12-month rolling total. Table 4-1 lists Glacial Lakes's short-term emission limits for Unit #4 as derived from the current Title V air quality operating permit.

**Table 4-1 – Current Short-Term Emission Limits (pounds per hour)**

| Unit | Description       | TSP | PM <sub>10</sub> | PM <sub>2.5</sub> |
|------|-------------------|-----|------------------|-------------------|
| #4   | Corn storage bins | 0.2 | 0.2              | 0.2               |

#### 4.2 Potential Emissions

DANR 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, DANR 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.

Potential uncontrolled emissions for each applicable pollutant are calculated from the maximum design capacity listed in the application and assuming the unit operates every hour of every day of the year, while using the fuel that will emit the greatest emissions. Potential uncontrolled emissions are not realistic of the actual emissions and are used only to identify which air quality permit is applicable to Glacial Lakes Energy.

#### 4.2.1 Potential Emissions – Baghouse Replacement

Glacial Lakes Energy is proposing to replace the baghouse associated with Unit #4 and increase the short-term emission limit from 0.2 pounds per hour to 0.4 pounds per hour. DANR will calculate potential emissions based on the proposed emission limit and compare them to the potential emissions based on the existing emission limit.

Potential emissions are calculated using Equation 4.1 and the proposed emission limit of 0.4 pounds per hour and shown in Table 4-2. Table 4-2 also shows the emissions comparison.

##### Equation 4.1 – Potential Emissions

$$\text{Potential Emissions} \left( \frac{\text{tons}}{\text{year}} \right) = \frac{\text{Emission Factor} \left( \frac{\text{pounds}}{\text{hour}} \right) \times 8,760 \left( \frac{\text{hours}}{\text{year}} \right)}{2,000 \left( \frac{\text{pounds}}{\text{ton}} \right)}$$

**Table 4-2 – Potential Emissions (tons per year)**

| Unit | Description       | TSP         | PM <sub>10</sub> | PM <sub>2.5</sub> |
|------|-------------------|-------------|------------------|-------------------|
| #4   | Existing limit    | 0.88        | 0.88             | 0.88              |
|      | Proposed limit    | 1.75        | 1.75             | 1.75              |
|      | <b>Difference</b> | <b>0.87</b> | <b>0.87</b>      | <b>0.87</b>       |

#### 4.2.2 Summary of Facility-wide Potential Emissions

Table 4-3 summarizes the facility-wide potential emissions including the proposed construction.

**Table 4-3 – Potential Emissions (tons per year)**

| Unit                                 | TSP        | PM <sub>10</sub> | PM <sub>2.5</sub> | SO <sub>2</sub> | NO <sub>x</sub> | CO         | VOC        |
|--------------------------------------|------------|------------------|-------------------|-----------------|-----------------|------------|------------|
| <b>Existing Facility<sup>1</sup></b> | <b>219</b> | <b>219</b>       | <b>219</b>        | <b>70</b>       | <b>233</b>      | <b>217</b> | <b>235</b> |
| <b>Limit increase difference</b>     | 0.87       | 0.87             | 0.87              | -               | -               | -          | -          |
| <b>Total</b>                         | <b>220</b> | <b>220</b>       | <b>220</b>        | <b>70</b>       | <b>233</b>      | <b>217</b> | <b>235</b> |

<sup>1</sup> – From air quality construction permit application #28.0501-05-14C.

Based on the new potential limits, Glacial Lakes Energy is still capable of maintaining the plant-wide potential emission limits of 238 tons per year with the proposed baghouse replacement and new short-term limits.

#### 4.3 Prevention of Significant Deterioration Summary

Glacial Lakes Energy's potential criteria pollutant emissions will still be less than 250 tons per year; therefore, Glacial Lakes Energy is considered a minor source and is not applicable to the Prevention of Significant Deterioration program. Because Glacial Lakes Energy is not applicable to the Prevention of Significant Deterioration program, a review for greenhouse gas emissions is not warranted or required.

## **5.0 National Emission Standards for Hazardous Air Pollutants**

DANR reviewed the National Emission Standards for Hazardous Air Pollutants under 40 CFR Part 61 and determined there are no standards applicable to the proposed construction.

## **6.0 Maximum Achievable Control Technology Standards**

The federal Maximum Achievable Control Technology Standards are applicable to both major and area sources of hazardous air pollutants. A major source of hazardous air pollutants is defined as having the potential to emit 10 tons or more per year of a single hazardous air pollutant or 25 tons per year or more of a combination of hazardous air pollutants. An area source is a source that is not a major source of hazardous air pollutants.

### **6.1 Potential Hazardous Air Pollutant Emissions**

DANR 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, DANR 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.

Glacial Lakes Energy has a plant wide limit of 9.5 tons of a single hazardous air pollutant and 23.8 tons of a combination of hazardous air pollutants from permitted units and fugitive sources per 12-month rolling period.

The proposed construction does not emit hazardous air pollutants; therefore, potential hazardous air pollutant emissions will not be reviewed.

### **6.2 Maximum Achievable Control Technology Standards**

DANR reviewed the other Maximum Achievable Control Technology Standards and determined there are no other standards applicable to Glacial Lakes Energy's proposed construction.

## **7.0 State Requirements**

### **7.1 Permit Type**

Glacial Lakes Energy's existing operations are covered under a Title V air quality operating permit. In accordance with Administrative Rules of South Dakota (ARSD) 74:36:20:01, a construction permit is required for all modifications to an existing source; therefore, Glacial Lakes Energy is required to obtain a construction permit for the proposed changes.

## **7.2 State Emission Limits**

According to Administrative Rules of South Dakota (ARSD) 74:36:06, South Dakota has air emission limits for particulate matter and sulfur dioxide. The emission limits apply to industry units and fuel burning units. The units associated with Valero's proposed changes either do not have the potential to emit sulfur dioxide or particulate matter or have short-term emission limits that are more stringent than the state emission limits. Due to these reasons, the state emission limits for particulate matter and sulfur dioxide are not applicable to the units with the proposed changes.

Visible emissions are applicable to any unit that discharges to the ambient air. In accordance with Administrative Rules of South Dakota (ARSD) 74:36:12, a facility may not discharge into the ambient air more than 20 percent opacity for all units. Valero must control the opacity at less than 20 percent for all units that emit to the ambient air.

## **7.3 Performance Tests**

In accordance with Administrative Rules of South Dakota (ARSD) 74:36:11:02, the Secretary may require a performance test, if necessary, to demonstrate compliance with an applicable emission limit. DANR will require Glacial Lakes Energy Unit #4 be tested for particulate matter to verify compliance with the new short-term emission limit.

## **7.4 Title V Air Quality Operating Permit Revision**

Glacial Lakes Energy is required to operate within the requirements stipulated in their Title V air quality operating permit. Glacial Lakes Energy is required to submit an application to modify its Title V air quality permit within 12 months after the replacement of the baghouse associated with Unit #4.

## **8.0 Recommendation**

Based on the above findings, Glacial Lakes Energy is required to construct and operate within the requirements stipulated in the following regulations:

- ARSD 74:36:06 – Regulated Air Pollutant Emissions;
- ARSD 74:36:11 – Stack Performance Testing;
- ARSD 74:36:12 – Control of Visible Emissions; and
- ARSD 74:36:20 – Construction Permits for New Sources and Modifications.

Based on the information submitted in the air quality construction permit application, DANR recommends conditional approval of a construction permit for Glacial Lakes Energy's operations near Watertown, South Dakota. Questions pertaining to this recommendation should be directed to Samantha Olmstead, Engineer III, Department of Agriculture and Natural Resources – Air Quality Program.