



**Elkhorn Valley Ethanol  
Limited Liability Company**

Telephone 816 756-3560  
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**Louis Dreyfus Corporation**  
4800 Main Street  
Suite 600  
Kansas City, Missouri 64112-2502  
United States

Date: December 1, 2010

Re: Method 2A Application – **Excluding Confidential Business Information**

California Air Resources Board  
Stationary Source Division  
Criteria Pollutants Branch - 6th Floor  
1001 I Street  
P.O. BOX 2815  
Sacramento, CA 95812

To: Messrs. John Courtis and Wes Ingram:

Herewith, please find our application and supporting documents for a new fuel lifecycle GHG emissions pathway using the Method 2A application process described in “Establishing New Fuel Pathways under the California Low Carbon Fuel Standard Procedures and Guidelines for Regulated Parties” report by ARB (California Air Resources Board) issued on March 25, 2010.

At the suggestion of CARB personnel, we are using this letter application because the online application form has not been finalized.

We seek a new pathway for our Norfolk ethanol plant located in Norfolk, Nebraska to reflect its low energy use. Approximately 85% of the distillers grains solubles produced at Norfolk is partially-dried modified distillers grains solubles (MDGS) because it has a typical moisture content of 55%wt. The remaining distillers grains solubles co-product is dried to a nominal 10%wt moisture and sold as dried distillers grains solubles (DDGS). Ethanol at the Norfolk plant is produced from corn. Norfolk uses natural gas for its process energy and electricity from the local grid.

The CARB LCFS regulations stipulate that only pathways lower in carbon intensity value than the main pathway that they deviate from can use the Method 2A application. Our pathway

is a sub-pathway of the Corn Ethanol (Midwest; Dry Mill; Dry DGS, NG) Pathway because, except for the points of deviation summarized below, our pathway is identical to the Corn Ethanol (Midwest; Dry Mill; Dry DGS, NG) Pathway described in the Detailed California-Modified GREET Pathway for Corn Ethanol Well-to-Wheel (WTW) lifecycle analysis.<sup>1</sup>

The following sections in the attachment of this application provide the details and documentation of our application for a new pathway under Method 2A. Portions of the following information that we consider Confidential Business Information have been clearly marked as such on each page. Pages in the attachment with Confidential Business Information have been clearly marked as such, *but are not included in this non-confidential version of the application. In this version of the application, the points where elements of Confidential Business Information have been removed from the text or accompanying tables are indicated so as to inform the public that the complete application to the ARB contained additional information to support this application, but that such information is considered by us to be Confidential Business Information.*

We request your approval and would be happy to answer any questions you may have about our application. Following, please find the names and contact information of the persons who are available to answer any questions about our application. Please note that Houston BioFuels Consultants LLC are assisting us with the application and may be contacted if you have questions or comments about our application.

Affiliation:	Louis Dreyfus Corporation	Houston BioFuels Consultants LLC
Name:	Mr. Bruce Chapin, Vice-President	Mr. Logan Caldwell, Consultant
Telephone number:	1-816-756-3560	1-281-360-8515
e-mail address	<a href="mailto:bruce.chapin@ldcom.com">bruce.chapin@ldcom.com</a>	<a href="mailto:lc@hbloc.net">lc@hbloc.net</a>
Mailing Address	4800 Main St. Suite 600 Kansas City, MO 64112-2505	5707 Ridge Vista Drive Kingwood, TX 77345



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<sup>1</sup> Detailed California-Modified GREET Pathway for Corn Ethanol Well-to-Wheel (WTW) lifecycle analysis, Version 2.1, published February 27, 2009.

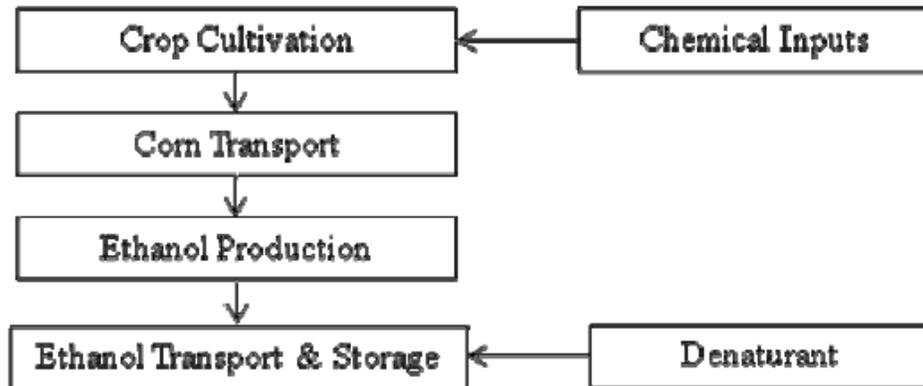
## **Attachments**

### Section Number and Contents

- I. WTW Diagram of Norfolk Sub-Pathway of the Corn Ethanol (Midwest; Dry Mill; Dry DGS, NG) Pathway
- II. Norfolk Plant Information
- III. Table of CA-GREET Model Inputs for Norfolk Pathway
- IV. Basis for the Input Values
- V. CA-GREET Model Output and Analysis of Results
- VI. Production Range of Norfolk Pathway
- VII. Sustainability of Norfolk Pathway
- VIII. Impact on Land Use
- IX. Documents supporting Annual Quantities of Corn, DGS, Ethanol, Natural Gas and Power

## I. WTW Diagram of NORFOLK Sub-Pathway of the Midwest Corn Ethanol Pathway

Figure 1: WTW Components of the NORFOLK Pathway are Identical to the Corn Ethanol (Midwest; Dry Mill; Dry DGS, NG) Pathway<sup>2</sup>



*Figure 1. WTT Components for Ethanol Transported to California*

<sup>2</sup> Detailed California-Modified GREET Pathway for Corn Ethanol Well-to-Wheel (WTW) lifecycle analysis, Page 4, Version 2.1, published February 27, 2009.

## II. NORFOLK Plant Information

### NORFOLK Plant Info

#### 1. EPA Facility ID Number

The EPA number is 48333 and the facility ID number is 70095.

#### 2. Plant Location

The plant is located at 3002 North Victory Road, Norfolk, NE 68701

#### 3. History –

The plant starting grinding corn on September 7, 2007 and has been in operation since then.

#### 4. Capacity Notes –

The Air Permit capacity is 53 million gallons of denatured ethanol production per year.

#### 5. Technology –

The plant was designed by Fagen and the technology is from ICM Inc.

#### 6. Feedstock Type –

Corn has be the sole feedstock for that plant since it started production and to this date.

#### 7. Product

The plant has only been producing denatured ethanol for fuel use to this date.

#### 8. Co-Products

The co products are partially modified distillers grains solubles (MDGS) with a typical moisture of 55% wt, and dried distillers grains solubles with a nominal moisture of 10-11% wt.

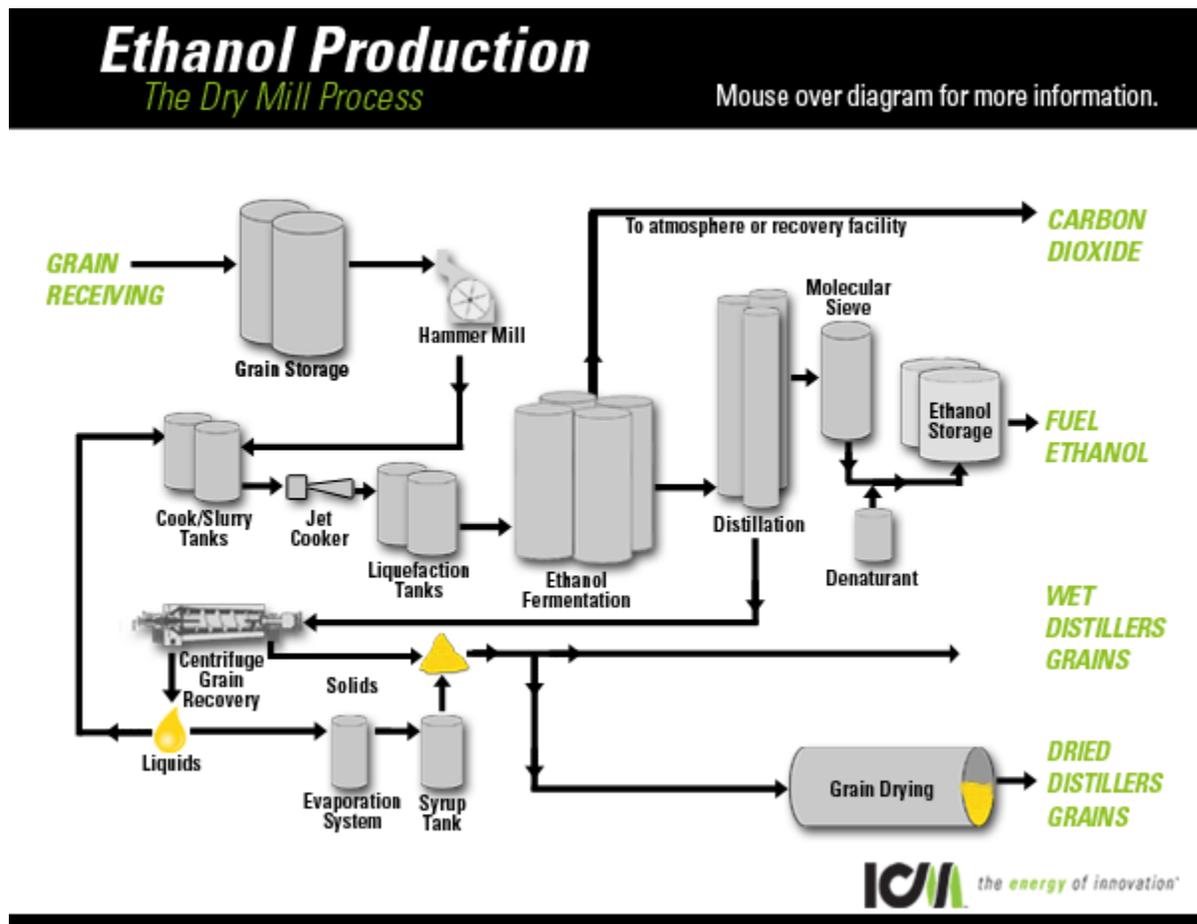
9. Process fuel –

The fuel use for process is natural gas supplied by Black Hills Energy.

10. Power supply –

The electricity used for power is supplied by Elkhorn Rural Public Power District.

11. Process Flow Description



Source: ICM Inc.

12. Process Block Flow Diagram and Energy and Material Balance - **Confidential Business Information and is not included in this non-confidential version of the application.**

13. The latest version of the plant's air permits including information about the equipment in the plant that generate emissions from the combustion of fuel are contained in a separate file accompanying this application.

### III. Table of CA-GREET Model Inputs for NORFOLK Pathway

Table 1: CA-GREET Model Inputs for the NORFOLK Pathway

**Table 1 is considered Confidential Business Information and is not included in this non-confidential version of the application.**

### IV. Basis for the Input Values

The input values presented in this application are based on the total natural gas and power consumed by NORFOLK from January 1, 2009 through December 31, 2009, (the “Production Period”). Since the input values are in terms of per gallon of anhydrous ethanol, the total of each utility value has been divided by the total gallons of anhydrous ethanol produced during the Production Period.

Table 2: Calculation of the Input Values

**Table 2 is considered Confidential Business Information and is not included in this non-confidential version of the application.**

## V. CA-GREET Model Output and Analysis of Results

The NORFOLK pathway carbon intensity value is a sub-pathway of the Midwest, Dry-Mill, 100% DDGS Co-product, 100% natural gas fuel ethanol plant pathway. The carbon intensity value of the base pathway is 98.4 gCO<sub>2</sub>e/MJ. The carbon intensity value of the Louis Dreyfus Norfolk ethanol plant ethanol is 87.2 gCO<sub>2</sub>e/MJ.

Table 3: CI of Existing Midwest Dry Mill, 100% DDGS, 100% Natural Gas Fuel Pathway

CARB Lookup Table Reference Pathway: Midwest Dry Mill Ethanol Plant, 100% DDGS, NG Fuel Pathway							
IPPC factors	CA-GREET Model Output		Calculations to convert Output to g/CO <sub>2</sub> e/MJ				
	Corn	Ethanol	Btu or Grams per mmbtu of Fuel Throughput			gCO <sub>2</sub> e/mmbtu	gCO <sub>2</sub> e/MJ
gCO <sub>2</sub> e/g	US Avg Corn	100% DDGS	Corn w/loss	Total corn + EtOH			
Total energy	187,247	1,469,428	187,434	1,656,863			
VOC	16.8	55.5	17	72			
CO	151.3	31.4	151	183			
CH <sub>4</sub>	25	17.4	17	91	2,277.0		2.16
N <sub>2</sub> O	298	41.7	42	42	12,571.0		11.92
CO <sub>2</sub>	1	15,064	15,079	56,433	56,433.4		53.49
<b>Sub-total lifecycle CI before denaturant and lt. vehicle combustion</b>						71,281.4	67.57
Denaturant and lt. vehicle combustion effects factor							0.80
<b>Total Lifecycle CI before ILUC with denaturant and lt. vehicle combustion effects included</b>							68.37
Indirect Land Use Change Factor (ILUC)							30
<b>Total CI of Pathway including Indirect Land Use Change</b>							98.37
Note: The calculated result of this pathway prior to making the input changes for the Louis Dreyfus Norfolk ethanol plant is 67.57 gCO <sub>2</sub> e/MJ. This matches the Corn Ethanol WTW Analysis result of 67.6 gCO <sub>2</sub> e/MJ (Table B. GHG Emissions Summary for Dry and Wet Mill Corn Ethanol, page 5) before the denaturant and light vehicl combustion factor of 0.8 gCO <sub>2</sub> e/MJ is added.							

Table 4: Louis Dreyfus Norfolk Plant CI Calculation based on the CA-GREET Model Output

Louis Dreyfus Norfolk Plant Sub-Pathway of the Midwest Dry Mill Ethanol Plant, 100% DDGS, NG Fuel Pathway							
IPPC factors	CA-GREET Model Output		Calculations to convert Output to g/CO <sub>2</sub> e/MJ				
	Corn	Ethanol	Btu or Grams per mmbtu of Fuel Throughput			gCO <sub>2</sub> e/mmbtu	gCO <sub>2</sub> e/MJ
gCO <sub>2</sub> e/g	Midwest Corn	Norfolk DGS Mix	Corn w/ loss	Total Corn + EtOH			
Total energy	192,346	1,298,336	192,538	1,490,875			
VOC	17	54.183	17	71			
CO	152	23.087	152	175			
CH <sub>4</sub>	25	18	18	72	1,797.8		1.70
N <sub>2</sub> O	298	42	42	42	12,544.5		11.89
CO <sub>2</sub>	1	15,383	15,398	45,114	45,114.0		42.76
<b>Sub-total lifecycle CI before denaturant and lt. vehicle combustion</b>						59,456.3	56.36
Denaturant and lt. vehicle combustion effects factor							0.80
<b>Total Lifecycle CI before ILUC with denaturant and lt. vehicle combustion effects included</b>							57.16
Indirect Land Use Change Factor (ILUC)							30
<b>Total CI of Pathway including Indirect Land Use Change</b>							87.16

## **VI. Production Range of NORFOLK Pathway**

The new pathway should be applicable to the NORFOLK facilities for at least 100% to 133% of Nameplate Capacity.

### Discussion

Nameplate capacity for the plant is 40 million gallons per year but the State of Nebraska air permit for the plant limits production to 53 million gallons.

## **VII. Sustainability of NORFOLK Pathway**

The NORFOLK facility was designed and constructed using well-established modern designs and equipment and is managed by professional staff well-qualified to assure that over time the energy efficiency of and emissions from the facility do not deteriorate. Any deterioration would result in a less profitable business. Thus the sustainability of the plant is well aligned with the business objectives of the owners.

## **VIII. Impact on Land Use**

Any difference between the land use of this sub-pathway and that of the Corn Ethanol (Midwest; Dry Mill; Dry DGS, NG) Pathway is negligible.

## **IX. Documents supporting Annual Quantities of Ethanol, Natural Gas and Power**

Table 5: Summary of Inputs and Outputs during calendar 2009

**Table 5 is considered Confidential Business Information and is not included in this non-confidential version of the application.**

Documents (invoices) authenticating the amounts shown in the table above are included on the following pages. . **These pages are not included in this non-confidential version of the application.** The following table is a summary of the monthly natural gas and utility invoices.

Table 6: Summary of Monthly Natural Gas and Electricity Invoice Amounts

**Table 6 is considered Confidential Business Information and is not included in this non-confidential version of the application.**



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4800 Main Street  
Suite 600  
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64112-2505  
United States

Telephone 816 756-3560  
Fax 816 573-5690

October 11, 2010

TO: CARB

RE: Norfolk Ethanol Plant – Accuracy of Data

This is to certify that the annual quantities of corn, undenatured ethanol, denatured ethanol, denaturant, modified and dry distillers grains solubles summarized in Louis Dreyfus application for a new pathway for the Norfolk ethanol plant are true and accurate. These quantities represent the true and accurate production at the ethanol plant located at 3002 North Victory Road, Norfolk, Nebraska owned by Louis Dreyfus Corporation.

Respectfully,

A handwritten signature in blue ink, appearing to read 'RRC' with a flourish at the end.

Bruce Chapin  
Vice President – Director of Operations  
Louis Dreyfus Corporation