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Monday July 22, 2024

Theresa Stiner  
Iowa Department of Natural Resources  
Land Quality Bureau  
502 E 9<sup>th</sup> Street  
Des Moines, IA 50319-0034

Re: Cargill Corn Milling, Eddyville, IA: Permit # 68-SDP-12-11  
Land Application Permit Renewal Application

Ms. Stiner,

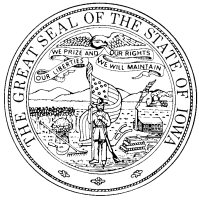
Enclosed is an application for a land application permit renewal for Cargill Corn Milling in Eddyville, IA: Permit # 68-SDP-12-11.

Please contact me with any questions you have with this application.

Sincerely,

Michael Klema  
Environmental Land Management, LLC

Cc: IDNR FO #5, 502 E. 9<sup>th</sup> St., Des Moines, IA 50319  
IDNR FO #6, 1023 W Madison, Washington, IA 52353



Iowa Department of Natural Resources  
Solid Waste Land Application  
Permit Application Form



Application for a solid waste land application must be accompanied by the plans, specifications and additional information required by the applicable solid waste rules under Iowa Administrative Code 567 Chapter 121.

Send completed applications with attached information to:

Iowa Department of Natural Resources  
Land Quality Bureau  
Solid Waste Section  
502 E 9<sup>th</sup> St  
Des Moines, IA 50319-0034

For questions concerning this application please contact the Department at (515) 725-8315.

☐ New Permit

☒ Permit Renewal # 68 -SDP- 12 - 11 -LAN

**Section 1. Contact Information**

Solid Waste Generator Name: Cargill Corn Milling Phone: 641-969-4500  
Address: 1 Cargill Drive City, State, Zip: Eddyville, IA 52553  
Email: - Fax: 641-969-3616

Physical Location of Generating Facility:

Address: 1 Cargill Drive City, State, Zip: Eddyville, IA 52553

Responsible Official Name: Jonathan Razink Phone: 641-969-3768  
Address: 1 Cargill Drive City, State, Zip: Eddyville, IA 52553  
Email: jonathan\_razink@cargill.com Fax: 641-969-3616

Certified Professional Agronomist Name: Jim Nesseth Phone: 507-662-5005  
Address: 507 Milwaukee Street City, State, Zip: Lakefield, MN 56150  
Email: info@extendedag.com License #: 17118 Fax: 507-662-5105

Consultant Name (if any): Michael Klema, Environmental Land Management Phone: 612-353-6388  
Address: PO Box 50004 City, State, Zip: Minneapolis, MN 55405  
Email: michaelklema@landspread.com Fax: 612-284-8909

**Section 2. Waste Type**

Does the material to be land applied contain free liquids<sup>1</sup>? ☐ Yes ☒ No

If the material is a sludge, is it generated by a:

☐ Commercial or industrial wastewater treatment facility

☐ Water supply treatment facility

☐ Air pollution control facility

☒ Other; Please elaborate: Spent diatomaceous earth, spent mycelium, scrap feed

Expected weight (tons) of solid waste to be land applied per year by the facility: 48,000

<sup>1</sup> The presence of free liquids is determined by the paint filter test. The paint filter test is done by placing a 100-milliliter or 100-gram representative sample of the material into a standard mesh number 60 (fine mesh size) conical paint filter for five minutes. Any free liquid visible below the funnel indicates sample failure.

### Section 3. Permit Application Checklist

The following items must be attached. If the permit is being renewed and there is no change from what was submitted with previous applications, the Doc Id# may be listed in lieu of resubmitting the document. Analytical results and a cost closure estimate (for facilities storing material at the application sites) must be submitted with each renewal. Checking the appropriate boxes below certifies that the documents submitted in conjunction with this application form are complete and in compliance with the applicable chapters of Iowa Administrative Code. If an application is found by the DNR to be incomplete, it may be denied and returned to the applicant.

Required Documents		Attached or Doc Id#	
Executive Summary ( <i>permit renewals only</i> ) <ul style="list-style-type: none"> <li>Summary of each special provision of the current permit to determine if it is to remain the same, be revised or be removed.</li> <li>Summary of each permit amendment, if any, that occurred during the current permit cycle to determine if it shall be included with the renewed permit, be revised or be removed.</li> <li>Provide documentation and certification as required for new permit amendment requests and new variance requests from Iowa Administrative Code, if any.</li> </ul>			NA
Description of the material including source, quantity and method of treatment prior to land application	567 IAC 121.7(1)"a"(11)	<input checked="" type="checkbox"/>	
Description of the land application process, including method of application, when application will take place, and equipment to be used	567 IAC 121.7(1)"a"(13) 567 IAC 121.7(1)"a"(14)	<input checked="" type="checkbox"/>	
Analytical results	567 IAC 121.7(1)"a"(12)	<input checked="" type="checkbox"/>	NA
Evidence waste application will not cause adverse effects	567 IAC 121.7(1)"a"(15) through 567 IAC 121.7(1)"a"(17)	<input checked="" type="checkbox"/>	
Site Operation Plan	567 IAC 121.7(1)"a"(18)	<input checked="" type="checkbox"/>	
Emergency Response and Remedial Action Plan	IAC 567 102.14	<input checked="" type="checkbox"/>	
Site Closure Plan	IAC 567 102.12(10)	<input checked="" type="checkbox"/>	
Proof of financial assurance and closure cost estimate (only if material will be stored at application sites)	567 IAC 121.8	<input checked="" type="checkbox"/>	NA
Table of land application sites. Include the following for each application site: <ul style="list-style-type: none"> <li>Site ID</li> <li>County and township</li> <li>Legal description of site</li> <li>Total acres in site</li> <li>Acres eligible for land application</li> <li>Name of landowner</li> </ul>	567 IAC 121.7(1)"a"(4)	<input checked="" type="checkbox"/>	
For each <u>new</u> application site, include the following:			
Aerial photograph with the application area(s) designated	567 IAC 121.7(1)"a"(1)	<input checked="" type="checkbox"/>	NA
Soil map	567 IAC 121.7(1)"a"(2)	<input checked="" type="checkbox"/>	NA
Water table levels	567 IAC 121.7(1)"a"(10)	<input checked="" type="checkbox"/>	NA
Location of wells within one mile of the site	567 IAC 121.7(1)"a"(5)	<input checked="" type="checkbox"/>	NA
Evidence of Natural Resources Conservation Service (NRCS) review and soil loss information	567 IAC 121.7(1)"a"(3) 567 IAC 121.7(1)"a"(6) through 567 IAC 121.7(1)"a"(8)	<input checked="" type="checkbox"/>	NA
Site soil testing	567 IAC 121.7(1)"a"(9)	<input checked="" type="checkbox"/>	NA
Proof of ownership or legal entitlement to use the site (agreement with the land owner)	567 IAC 121.7(1)"b"(6)	<input checked="" type="checkbox"/>	NA

#### Section 4. Applicant Certification

##### Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I further certify that the construction and operation of the above described facility will be in accordance with the plans, specifications, reports and related communications accepted by the Iowa Department of Natural Resources and on file in its office; and in accordance with conditions imposed in the permit issued by the Iowa Department of Natural Resources.

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Printed Name: Jonathan Razink

Title: Facility Manager

**Cargill Corn Milling, Eddyville, IA**  
**Permit # 68-SDP-12-11**  
**Iowa DNR Land Application Permit Application**  
**Application Checklist**

▪ **Executive Summary**

• **Summary of Modifications to Facility**

- No major modifications to the facility.

• **Summary of Special Provisions**

- Special Provisions 1-11 are listed below as they are in the current permit. All requested revisions and changes are listed in bold type following each item.
1. The permit holder is authorized to land apply up to 8 dry tons per acre per year of Cargill Corn Milling diatomaceous earth or mycelium, up to 5 dry tons per acre per year of scrap feed by-products or a combination of the byproducts generated at the Cargill Corn Milling facility at Eddyville Iowa as indicated in the permit application dated July 14, 2021 (Doc# 100827). If the approved byproducts are applied in combination, the maximum tons per acre will be based on a weighted average so as not to exceed the agronomic rate.
  2. The permit holder shall operate in accordance with IAC 567 Chapter 121 and the approved Operations Plan dated July 14, 2021 as submitted by Environmental Land Management (Doc# 100827). No provision in this permit or the approved site operation plan submitted constitutes a waiver or variance from 567 IAC 121 or the Code of Iowa. Any conflict between a provision of the permit or reference document and Iowa rules or statutes shall be resolved in favor of the duly adopted rules and statutes.
  3. The permit holder is authorized to land apply only on DNR approved sites as shown on the attached Table 1 and the attached maps. Application will not take place on slopes greater than 9%. Application on drainage pathways where erosion would be likely to occur rainfall and snowmelt is prohibited.
  4. At no time may land application occur on sites which will not normally sustain a crop or other soil-stabilizing vegetation or on land for which there is no intent to plant, cultivate and harvest a crop either the same year during the growing season or the year following land application activities. Neither Cargill Corn Milling, nor the application contractor, nor the land owners are authorized to land apply wastes, or allow the application of wastes on land which will lie fallow the following growing season.

5. Land application sites shall have the pH of the surface horizon or plow layer adjusted to and maintained at or above 5.5.
6. Cargill Corn Milling byproducts must not be applied within 200 feet of occupied residences without written approval from the landowner of that residence. A 50 foot buffer must be maintained from a stream, drainage channel, waterway, tile-line surface inlet, or shoreline of a pond.
7. The permit holder is required to have a Certified Professional Agronomist perform an annual inspection of all sites utilized in the particular year to ensure soil properties and constituents being applied are suitable and will meet agronomic rates for the crop that will be produced during that current year. The Agronomist will review soil test results to ensure that the application of the waste will not cause buildup of nutrients in the soil. The results of this inspection shall be submitted to the DNR Main Office by April 1<sup>st</sup> of each year.
8. The permit holder is required to maintain records for three years of the total amounts land applied at each application site. These records must be made available to the DNR upon request. An annual report summarizing the land application at each site shall be submitted to the DNR Main Office using Form 542-3276LAN. The report will be for July through June and due October 1<sup>st</sup>.
9. If applicable, manure management plans must be followed to ensure compliance with Iowa manure regulations. Nutrients from Cargill Corn Milling by-products must be added into the rate calculations of the current Manure Management Plan.
10. Cargill Corn Milling by-product is hereby authorized to be stored at approved land application sites as indicated on the maps attached to this permit. Storage of Cargill Corn Milling by-product is subject to the following conditions:
  - The maximum amount of stored Cargill Corn by-product at a land application site must not exceed the amount that is to be land applied at that particular land application site.
  - Storage of Cargill Corn Milling by-product shall not exceed 270 days at any one time. Cargill Corn Milling is required to maintain records, including dates and daily volume of material hauled and deposited at the land application site on those dates to show compliance of the above requirement. Volume removed and spreading dates must also be tracked. Records must be available for inspection by the DNR upon request.
  - Runoff from stockpiling of Cargill Corn Milling by-products must be controlled at all times.
  - Odor from the stockpiling of Cargill Corn Milling by-product must be controlled at all times. When odor is evident, measures must be taken to

remediate odor from the stockpiles. If odor of the stockpile is not remediated, the stockpile must be removed from the property and disposed of at a permitted Iowa sanitary disposal project (SDP) or hauled out of state on a schedule determined by the DNR.

- 11.** The closure cost estimates dated June 24, 2021 in the amount of \$301,000 as prepared by Thomas K. Madden, P.E., of SEH and initial proof of establishment of a financial assurance mechanism in the amount of \$301,000 are hereby approved. The permit holder shall maintain Surety Bond #190025395 dated May 26, 2012 and the Increase Penalty Rider dated June 22, 2021 established at Liberty Mutual Insurance Company, Eagan, MN as its financial assurance mechanism and agrees to comply with the requirement of all subrules within IAC 567 Chapter 121.8 (455B, 455D) "Financial assurance requirements for land application of wastes."

• **Summary of Each Permit Amendment**

**1. Permit Amendment #1, 11/10/2022**

- a. In accordance with the November 7, 2022 request submitted by Environmental Land Management, the permit holder is authorized to add the following sites. All information submitted, including plat and soil maps (Doc# 104537), is hereby incorporated as provisions of the permit. See attached Table 1 for complete information.
- Adam McNeil
  - Cargill Miro
  - Cargill Monroe
  - Cargill Wapello

**2. Permit Amendment #2, 12/7/2023**

- a. In accordance with the December 6, 2023 request submitted by Environmental Land Management, the permit holder is authorized to add the following sites. All information submitted, including plat and soil maps (Doc# 108389), is hereby incorporated as provisions of the permit. See attached Table 1 for complete information.
- Boenders Edgrin
  - Harris Bartel
  - Harris Lane
  - Harris Pearson
  - Harris Vanderlinden
  - Harris Veen

**3. Permit Amendment #3, 5/13/2024**

- a. In accordance with the May 1, 2024 request submitted by Environmental Land Management, (Doc # 109973) the following site(s) are removed. See attached Table 1 for complete information.
- Adam Silo

- **Summary of Permit Amendment and New Variance Requests**

1. No permit amendment or new variance requests.

- **Description of Material**

Citric Precoat: Citric acid production process description is the fermentation of dextrose to produce citric acid. Dextrose is fermented using a spore to produce citric acid. The mycelium is the filamentous by-product of this fermentation process. Through aerobic fermentation the spores consume the dextrose and produce citric acid. The precoat (diatomaceous earth) is used as a filtering agent to remove denatured proteins from the process. It also is also used as a check filter medium to remove carbon fines and entrained solvent later in the process.

Mycelium: Mycelium is a by-product of the fermentation process that is produced by spores as they digest dextrose and other nutrients. Through aerobic fermentation the organisms consume the dextrose and produce citric acid. When the dextrose is gone, the aeration is stopped and the fermentation process ceases. The mixture is then filtered across a vacuum belt filter to remove the mycelium solids from citric acid broth. The cake of organism biomass is washed with water and a large portion of the material is transferred to our feed process, but the excess becomes our mycelium waste stream.

Refinery Precoat: The refinery produces sugar from cornstarch. Cornstarch is bound with corn gluten (corn oil/protein), which is released during the sugar production. The gluten is then filtered from the sugar stream by passing it through a layer of precoat (diatomaceous earth) on a rotary drum filter. The waste stream is a combination of protein solids and precoat. Additionally, the solid contains some residual sugar and activated carbon fines. Fines are collected in check filters similarly with the precoat.

Scrap Feed: The feed mill will scrap material if any of the materials go out of specifications or are out of condition. These materials can consist of corn, cobs, gluten, fiber, wet feed, high fructose corn syrup, corn germ, steep liquor, citric acid and carbon fines.

- **Description of the Disposal Process and Equipment**

The equipment to be used will be a front-end loader, dump truck, and pull-type spreader. The loader will load a truck at the Cargill facility for transportation to the land application site. The material will be stockpiled at the site until spreading conditions and/or appropriate volumes of material are available at the specific sites. The by-product will be loaded at the land application site into a spreader. The



spreaders will discharge the by-products evenly from the rear. The by-products will be surface applied and incorporated into the soil during normal cultivation times of the year. Land application of the by-products will occur throughout the year except when precipitation is imminent and when crops being grown at the site prevent immediate application. The sites will be for crop production and will produce corn, soybeans, alfalfa and/or grass hay each year.

#### ▪ **Analytical Results**

Attached are the most recent analytical results from Midwest Labs and the most recent agronomist's recommendation of that analysis performed by Extended Ag Services.

#### ▪ **Evidence That Waste Application Will Not Cause Adverse Effects**

The diatomaceous earth (citric and refinery precoat), mycelium, and scrap feed byproducts do not contain any toxic materials. Proper land application processes will be adhered to in order to minimize any chance of adverse effects. To reduce the chance of runoff, land application will be suspended when precipitation is imminent or during other adverse weather conditions. All specific setbacks will be adhered to during stockpiling and spreading operations. Recommended application rates will be followed and adjusted according to the agronomic limits of the particular sites. Cumulative metal loading rates have been analyzed in the agronomist recommendations. Therefore, no adverse effects are anticipated from the land application program.

#### ▪ **Site Operation Plan**

See attached Operation Plan.

#### ▪ **Emergency Response and Remedial Action Plan (ERRAP)**

See attached ERRAP.

#### ▪ **Site Closure Plan**

During the life of a specific site, setbacks and application rates guidelines will be followed. By applying the material at appropriate agronomic rates the crops will utilize the nutrients within a year or shortly thereafter as it breaks down and no over fertilization will occur. However, upon the closing of a site, the Department will be notified in writing. We will also monitor that site if the integrity of the site is deemed compromised and take any corrective measures to return that site normalcy which will be detailed in annual reports.

#### ▪ **Proof of Financial Assurance and Closure Cost Estimate**

Thomas Madden, P.E., of SEH in Mason City, IA has completed the most recent closure cost estimate, which is attached to this application. Cargill Corn Milling will provide a surety bond for the estimated amounts.

- **Table of Land Application Sites (Table 1)**

See attached Table 1 for site specific information.

- **Site Maps and Aerial Photographs**

See all submitted site maps for all sites listed on Table 1.

- **Soil Maps**

See all submitted soil maps for permitted sites on Table 1.

- **Site Water Table Levels**

See all submitted water table information for permitted sites on Table 1.

- **Well Specifications**

An Iowa DNR well search has been completed for all sites on Table 1. See all previously submitted well search maps for permitted sites on Table 1.

- **Evidence of NRCS Review & Soil Loss Information**

Jim Nesseth, Certified Professional Agronomist, along with Andrew Nesseth, Environmental Consultant, of Extended Ag Services, have reviewed the site information and have summarized their findings in a reviews previously submitted for all permitted sites. See all submitted soil loss information for permitted sites on Table 1.

- **Site(s) Soil Testing**

Initial site soil sampling will be completed for all sites on Table 1 in which application will take place for the upcoming cropping season. Soil test results will be further examined and discussed for sites applied to in the annual agronomist report.

- **Proof of Ownership/Local Zoning Requirements**

See Table 1 identifying farmers and land operators. See previously submitted consent forms for all previously approved sites.



Midwest Laboratories  
13611 B Street  
Omaha, NE 68144  
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www.midwestlabs.com

ENVIRONMENTAL LAND MGMT LLC - 16041  
PO BOX 50004  
MINNEAPOLIS, MN 55405

Project: Cargill Eddyville

Project Manager: LEE HANSEN

**Reported:**  
2024-05-28 08:34

**Sample ID: Scrap Feed/Refinery Precoat**

**Laboratory ID: 1602581-01**

**Sampled Date/Time: 2024-05-09 09:00**

Analyte	Dry Weight Result	Reporting Limit	Units	As Received Result	Method	Prepared	Analyzed	Analyst	(Container) / Notes
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#### Total Metals

Arsenic	<	0.6	mg/kg dry	< mg/kg	EPA 6020	2024-05-14	2024-05-16	nto7	(C)
Barium	3.8	0.3	mg/kg dry	2.1 mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Cadmium	<	0.1	mg/kg dry	< mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Calcium	9711	11.7	mg/kg dry	5510 mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Chromium	4.3	0.6	mg/kg dry	2.5 mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Copper	9.5	0.6	mg/kg dry	5.4 mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Iron	285.2	2.9	mg/kg dry	161.8 mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Lead	<	2.9	mg/kg dry	< mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Magnesium	715.0	2.9	mg/kg dry	405.7 mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Manganese	17.3	0.6	mg/kg dry	9.8 mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Mercury	<	0.09	mg/kg dry	< mg/kg	EPA 7471	2024-05-15	2024-05-17	mab7	(C)
Molybdenum	1.8	0.6	mg/kg dry	1.0 mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Nickel	2.4	0.6	mg/kg dry	1.4 mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Phosphate (P2O5)	9363	13.3	mg/kg dry	mg/kg	Calculation	2024-05-14	2024-05-15	ras7	
Phosphorus	4089	5.8	mg/kg dry	2320 mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Potash (K2O)	2443	7.0	mg/kg dry	mg/kg	Calculation	2024-05-14	2024-05-15	ras7	
Potassium	2036	5.8	mg/kg dry	1155 mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Selenium	0.8	0.6	mg/kg dry	0.5 mg/kg	EPA 6020	2024-05-14	2024-05-16	nto7	(C)
Silver	<	0.6	mg/kg dry	< mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Sodium	638.4	5.8	mg/kg dry	362.2 mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Sulfur	3861	8.7	mg/kg dry	2191 mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Zinc	24.4	1.2	mg/kg dry	13.9 mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)

#### Environmental Chemistry

Ammonia-N	593	44.1	mg/kg dry	337 mg/kg	SM 4500-NH3 C-2011	2024-05-14	2024-05-14	pes0	(A)
Chloride	672	88	mg/kg dry	381 mg/kg	SM 4500-CL- E-2011	2024-05-15	2024-05-15	nam7	(B)
Hexane Extractable Material (HEM)	267000	1410	mg/kg dry	152000 mg/kg	EPA 9071B	2024-05-20	2024-05-20	gas9	(B)
Total Kjeldahl Nitrogen	36400	441	mg/kg dry	20600 mg/kg	PAI-DK 01	2024-05-14	2024-05-14	pes0	(A)
Nitrate/Nitrite Nitrogen	2.0	1.0	mg/kg dry	1.1 mg/kg	EPA 353.2	2024-05-16	2024-05-16	akn1	(D)
Organic Nitrogen	35800	441	mg/kg dry	mg/kg	Calculation	2024-05-14	2024-05-14	pes0	
pH @ 19.5°C			S.U.	4.20 S.U.	EPA 9045D	2024-05-14	2024-05-14	cvn2	(A)
Percent Solids		0.01	%	56.74 %	SM 2540 G-2015	2024-05-13	2024-05-14	ppj2	(B)
Percent Volatile Solids	71.62	0.01	%	71.62 %	SM 2540 G-2015	2024-05-13	2024-05-14	ppj2	(B)
Total Carbon	48.10	0.18	% dry	27.29 %	ASTM D5373-08(m od)	2024-05-14	2024-05-14	rpk5	(A)

Work Order: 1602581

The result(s) issued on this report only reflect the analysis of the sample(s) submitted. For applicable test parameters, Midwest Laboratories is in compliance with NELAC requirements. Our reports and letters are for the exclusive and confidential use of our clients and may not be reproduced in whole or in part, nor may any reference be made to the work, the results, or the company in any advertising, news release, or other public announcements without obtaining our prior written authorization.



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ENVIRONMENTAL LAND MGMT LLC - 16041  
PO BOX 50004  
MINNEAPOLIS, MN 55405

Project: Cargill Eddyville

Project Manager: LEE HANSEN

**Reported:**  
2024-05-28 08:34

**Sample ID: Citric Precoat**  
**Laboratory ID: 1602581-02**  
**Sampled Date/Time: 2024-05-09 09:00**

Analyte	Dry Weight	Reporting	Units	As Received	Method	Prepared	Analyzed	Analyst	(Container) /
	Result	Limit		Result					Notes
Total Metals									
Arsenic	<	1.5	mg/kg dry	< mg/kg	EPA 6020	2024-05-14	2024-05-16	nto7	(C)
Barium	5.1	0.8	mg/kg dry	3.1 mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Cadmium	<	0.3	mg/kg dry	< mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Calcium	103.3	30.8	mg/kg dry	63.2 mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Chromium	<	1.5	mg/kg dry	< mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Copper	5.4	1.5	mg/kg dry	3.3 mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Iron	105.2	7.7	mg/kg dry	64.4 mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Lead	<	7.7	mg/kg dry	< mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Magnesium	34.1	7.7	mg/kg dry	20.8 mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Manganese	1.7	1.5	mg/kg dry	1.0 mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Mercury	<	0.08	mg/kg dry	< mg/kg	EPA 7471	2024-05-15	2024-05-17	mab7	(C)
Molybdenum	<	1.5	mg/kg dry	< mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Nickel	<	1.5	mg/kg dry	< mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Phosphate (P2O5)	448.3	35.2	mg/kg dry	mg/kg	Calculation	2024-05-14	2024-05-15	ras7	
Phosphorus	195.7	15.4	mg/kg dry	119.7 mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Potash (K2O)	448.0	18.5	mg/kg dry	mg/kg	Calculation	2024-05-14	2024-05-15	ras7	
Potassium	373.3	15.4	mg/kg dry	228.3 mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Selenium	<	1.5	mg/kg dry	< mg/kg	EPA 6020	2024-05-14	2024-05-16	nto7	(C)
Silver	<	1.5	mg/kg dry	< mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Sodium	1753	15.4	mg/kg dry	1072 mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Sulfur	449.6	23.1	mg/kg dry	274.9 mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Zinc	<	3.1	mg/kg dry	< mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Environmental Chemistry									
Ammonia-N	20.8	16.4	mg/kg dry	12.7 mg/kg	SM 4500-NH3 C-2011	2024-05-14	2024-05-14	pes0	(A)
Chloride	1600	164	mg/kg dry	977 mg/kg	SM 4500-CL- E-2011	2024-05-15	2024-05-15	nam7	(B)
Hexane Extractable Material (HEM)	1620	1310	mg/kg dry	993 mg/kg	EPA 9071B	2024-05-20	2024-05-20	gas9	(B)
Total Kjeldahl Nitrogen	3520	327	mg/kg dry	2150 mg/kg	PAI-DK 01	2024-05-14	2024-05-14	pes0	(A)
Nitrate/Nitrite Nitrogen	<	1.0	mg/kg dry	< mg/kg	EPA 353.2	2024-05-16	2024-05-16	akn1	(D)
Organic Nitrogen	3500	327	mg/kg dry	mg/kg	Calculation	2024-05-14	2024-05-14	pes0	
pH @ 19.5°C			S.U.	2.41 S.U.	EPA 9045D	2024-05-14	2024-05-14	cvn2	(B)
Percent Solids		0.01	%	61.15 %	SM 2540 G-2015	2024-05-13	2024-05-14	ppj2	(B)
Percent Volatile Solids	16.47	0.01	%	16.47 %	SM 2540 G-2015	2024-05-13	2024-05-14	ppj2	(B)
Total Carbon	8.68	0.16	% dry	5.31 %	ASTM D5373-08(m od)	2024-05-14	2024-05-14	rpk5	(A)

Work Order: 1602581

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ENVIRONMENTAL LAND MGMT LLC - 16041  
PO BOX 50004  
MINNEAPOLIS, MN 55405

Project: Cargill Eddyville

Project Manager: LEE HANSEN

**Reported:**  
2024-05-28 08:34

**Sample ID: mycelium**  
**Laboratory ID: 1602581-03**  
**Sampled Date/Time: 2024-05-09 09:00**

	Dry Weight	Reporting		As Received					(Container) /
Analyte	Result	Limit	Units	Result	Method	Prepared	Analyzed	Analyst	Notes
Total Metals									
Arsenic	<	1.2	mg/kg dry	< mg/kg	EPA 6020	2024-05-14	2024-05-16	nto7	(C)
Barium	2.3	0.6	mg/kg dry	0.6 mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Cadmium	<	0.3	mg/kg dry	< mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Calcium	2729	25.5	mg/kg dry	701.5 mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Chromium	<	1.3	mg/kg dry	< mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Copper	20.6	1.3	mg/kg dry	5.3 mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Iron	159.9	6.4	mg/kg dry	41.1 mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Lead	<	6.4	mg/kg dry	< mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Magnesium	166.5	6.4	mg/kg dry	42.8 mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Manganese	4.6	1.3	mg/kg dry	1.2 mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Mercury	<	0.19	mg/kg dry	< mg/kg	EPA 7471	2024-05-15	2024-05-17	mab7	(C)
Molybdenum	<	1.3	mg/kg dry	< mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Nickel	<	1.3	mg/kg dry	< mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Phosphate (P2O5)	4296	29.1	mg/kg dry	mg/kg	Calculation	2024-05-14	2024-05-15	ras7	
Phosphorus	1876	12.7	mg/kg dry	482.3 mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Potash (K2O)	765.5	15.3	mg/kg dry	mg/kg	Calculation	2024-05-14	2024-05-15	ras7	
Potassium	637.9	12.7	mg/kg dry	164.0 mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Selenium	<	1.2	mg/kg dry	< mg/kg	EPA 6020	2024-05-14	2024-05-16	nto7	(C)
Silver	<	1.3	mg/kg dry	< mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Sodium	1028	12.7	mg/kg dry	264.2 mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Sulfur	824.6	19.1	mg/kg dry	212.0 mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Zinc	18.2	2.5	mg/kg dry	4.7 mg/kg	EPA 6010D	2024-05-14	2024-05-15	ras7	(C)
Environmental Chemistry									
Ammonia-N	406	38.9	mg/kg dry	104 mg/kg	SM 4500-NH3 C-2011	2024-05-14	2024-05-14	pes0	(A)
Chloride	139	39	mg/kg dry	36 mg/kg	SM 4500-CL- E-2011	2024-05-15	2024-05-15	nam7	(B)
Hexane Extractable Material (HEM)	20000	3110	mg/kg dry	5140 mg/kg	EPA 9071B	2024-05-20	2024-05-20	gas9	(B)
Total Kjeldahl Nitrogen	15700	778	mg/kg dry	4020 mg/kg	PAI-DK 01	2024-05-14	2024-05-14	pes0	(A)
Nitrate/Nitrite Nitrogen	<	1.0	mg/kg dry	< mg/kg	EPA 353.2	2024-05-16	2024-05-16	akn1	(D)
Organic Nitrogen	15200	778	mg/kg dry	mg/kg	Calculation	2024-05-14	2024-05-14	pes0	
pH @ 19.4°C			S.U.	3.80 S.U.	EPA 9045D	2024-05-14	2024-05-14	cvn2	(B)
Percent Solids		0.01	%	25.71 %	SM 2540 G-2015	2024-05-13	2024-05-14	ppj2	(B)
Percent Volatile Solids	57.88	0.01	%	57.88 %	SM 2540 G-2015	2024-05-13	2024-05-14	ppj2	(B)
Total Carbon	25.44	0.39	% dry	6.54 %	ASTM D5373-08(m od)	2024-05-14	2024-05-14	rpk5	(A)

Work Order: 1602581

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July 1, 2024

Environmental Land Management  
1602 11<sup>th</sup> Drive NE  
Austin, MN 55912

RE: Review of Industrial Byproduct for Land Application

Michael,

We have completed your request for a review of the waste by-products generated by Cargill, Inc – Eddyville. The extent of our review focused on the lab analysis of the precoat byproducts (consisting of a combination of spent diatomaceous earth from citric acid and fructose production) along with a mycelium byproduct (a spore used in citric acid production). The materials have historically been analyzed both independently of each other and in combination with each other, therefore this review will be based on a blend of these sample results. Analysis of the material, 16 samples, was conducted by Midwest Labs and Minnesota Valley Testing Laboratories, Inc from April 3, 2014 to May 16, 2018.

It is our understanding that the byproducts will be co-mingled to a mixture of approximately ½ precoat and ½ mycelium. Nutrient analysis discussion is a weighted average of precoat and mycelium mix samples.

The analysis indicates that the product will be handled as a solid material with approximately 43.2% moisture. The product has approximately 10 lbs. of Nitrogen per Wet Ton. The measured Phosphorus was about 1 lbs. per Ton. Potassium measured about 0.6 lbs. per Ton.

Nutrient availability depends on application methods and environmental conditions (soil pH, temperature and precipitation). We would expect 80% of the Phosphorus to immediately available for plant use and 90% of the Potassium to be available in the first year. The sooner the material is incorporated into the soil the profile, the higher the expected plant available nitrogen (other nutrient availabilities will remain the same). Ammonium Nitrogen (NH<sub>4</sub><sup>+</sup>) in the byproduct will be protected from volatilization by assimilating it with negatively charged clay particles in the soil profile. However, the Organic Nitrogen availability is subject to environmental conditions that influence its conversion to Ammonium Nitrogen or Nitrate (NO<sub>3</sub><sup>-</sup>), namely soil temperature, soil moisture, aeration, drainage

management and microbial activity. Due to the ratio of Ammonium Nitrogen and Organic Nitrogen in the material, a conservative estimate of total Nitrogen availability – if incorporated within 24 hours – would be approximately 51% in the first year.

Sodium applications should be limited to less than 170 lbs. per year to avoid toxicity issues (0.8 lbs./Wet Ton were measured). Sodium loading must be managed to preclude a reduction in infiltration (surface crusting), dispersion and migration of clay particles into soil pores, swelling of expandable clays, and a reduced ability of a cover crop to take up water. Sodium is considered de-stabilizing with respect to soil structure. The sodium adsorption ratio (SAR) is the ratio between sodium, and calcium plus magnesium in the effluent. For fine to medium textured soils, a SAR above 8.5 in the effluent can negatively affect the soil structure and/or infiltration rates of the soil. In these instances, calcium and magnesium (gypsum) should be added to reduce the SAR. The SAR of the byproduct was 1.37 – thus, applications are not likely to negatively impact soil structure. The electrical conductivity (salts) of the soils should be monitored to maintain less than 4 mmhoms/cm. *If land applications follow recommendations by appropriately managing frequency and rate of application, no sodium issues are likely.*

The nitrogen and phosphorus of this by-product should be balanced with crop removal rates with the nutrients applied from the by-product. Our recommendation of this material is a maximum land application rate of 18.5 Wet Tons per acre (8.0 Dry Tons). As such, a first year, plant available analysis of 69 – 44 – 14 lbs. can be expected based on this rate (N-P2O5-K2O). The following year another 25% of the total applied nitrogen will be plant available and about 15% would be available in the 3<sup>rd</sup> year following an application. The remaining amount would likely be lost to volatilization. If the material is applied at the same rate without incorporating within 48 hours we estimate plant availability at approximately 66 – 44 – 14 lbs. /acre (~35% first year nitrogen availability).

This recommended application rate will supply a significant portion of the Nitrogen of non-legume crop needs (depending on actual Nitrogen mineralization rates). Therefore, nitrogen from other sources should be managed accordingly. If the land application site has soil tests that dramatically exceed the very high range for phosphorus (+100 ppm Bray1), applications at the recommended rate can be applied annually. Recommended rates are likely below crop removal rates for phosphate (in the absence of other additions) and should not result in increases in soil test phosphorus. Based on the analysis, the land application rate will not exceed the cumulative loading rates outlined in the Region VIII EPA's Biosolids Management Handbook for determining compliance with 40 CFR Part 503.

The byproduct can be targeted on soils testing in all fertility ranges for Phosphorus<sup>1</sup> when planning annual land applications because the nutrient content overall, is relatively low. Adequate soil conservation measures should still be utilized to prevent phosphorus movement offsite in addition to following allow required setbacks and best management practices for application. Regular soil testing should be conducted following applications to monitor changes in soil characteristics.

---

<sup>1</sup> Iowa State University. A General Guide for Crop Nutrient and Limestone Recommendations. PM 1688 (Reprinted April 2011).

This review is independent of any restrictions pertinent to specific field conditions (slope, erosion potential, etc.) and should be considered as such. Specific conditions in a given land application site may require lower application rates to protect the public health, safety and welfare. Please refer to any land application site reviews for further recommended land application restrictions.

This product has the potential to provide significant agronomic benefit to landowners. Please feel free to contact us with any questions or concerns. Thank you for the opportunity to provide our input on your Project.

Sincerely,

A handwritten signature in blue ink that reads "Jim Nesselth".

Jim Nesselth

Certified Agronomist/CCA

License#: 17118

A handwritten signature in blue ink that reads "Andrew Nesselth".

Andrew Nesselth

Environmental Consultant





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info@extendedag.com

January 31, 2020

Environmental Land Management  
1602 11<sup>th</sup> Drive NE  
Austin, MN 55912

RE: Review of Industrial Byproduct for Land Application: Cargill, Inc – Scrap Feed

Michael,

We have completed your request for a review of Scrap Feed by-products generated by Cargill, Inc (Ft. Dodge, Eddyville, and Blair). The extent of our review focused on twenty-two (22) samples taken from those Cargill facilities with scrap feed byproducts that are very similar in makeup. The analysis of the material was conducted by Minnesota Valley Testing Laboratories, Inc or Midwest Laboratories, Inc from April 3, 2014 to January 17, 2019.

It is our understanding that these products are exempt from industrial by-product permitting because they fall under a crop residue exemption. The analysis indicates that the product will be handled as a solid material with approximately 50% moisture. The product has approximately 28 lbs. of Nitrogen per dry Ton. The measured Phosphorus was also about 4 lbs. per Ton; Potassium was about 5.5 lbs. per Ton. Zinc, another agronomically important nutrient was present with about 0.2 lbs. per Ton. In addition, nearly 3 lbs. of Sulfur per Ton was also measured. There is some variation in the sampling results and continued additional testing is recommended.

Nutrient availability depends on application methods and environmental conditions (soil pH, temperature and precipitation). Estimates for nutrient availability are historically derived from research conducted by the Land Grant college system. Little research exists on the typical nutrient availability of biosolids. However, due to the similarity in how nutrients become available through mineralization in the soil, using crop available nutrient estimates for dry manure is acceptable. The University of Nebraska and Iowa State University are used as references for estimating plant available nutrients for the Cargill by-product.

We would expect 70-80% of the Phosphorus to immediately available for plant use and 70-90% of the Potassium to be available in the first year. The estimated Zinc and Sulfur availability in the first year would be approximately 60%.

Determining nitrogen availability is complex. The sooner the material is incorporated into the soil the profile, the higher the expected plant available nitrogen (other nutrient availabilities will remain the same). Ammonium Nitrogen ( $\text{NH}_4^+$ ) in the byproduct will be protected from volatilization by assimilating it with negatively charged clay particles in the soil profile. However, the Organic Nitrogen availability is subject to environmental conditions that influence its conversion to Ammonium Nitrogen or Nitrate ( $\text{NO}_3^-$ ), namely soil temperature, soil moisture, aeration, drainage management and microbial activity. Iowa State University<sup>1</sup> and University of Nebraska-Lincoln<sup>2</sup> estimate that approximately 25-50% of total Nitrogen in solid manure will be plant available in year one. Due to the ratio of Ammonium Nitrogen and Organic Nitrogen in the material, a conservative estimate of total Nitrogen availability – if incorporated within 24 hours – would be approximately 35% in the first year.

Sodium applications should be limited to less than 170 lbs. per year to avoid toxicity issues (1.5 lbs. per Ton were measured). Sodium loading must be managed to preclude a reduction in infiltration (surface crusting), dispersion and migration of clay particles into soil pores, swelling of expandable clays, and a reduced ability of a cover crop to take up water. Sodium is considered de-stabilizing with respect to soil structure. The sodium adsorption ratio (SAR) is the ratio between sodium, and calcium plus magnesium in the effluent. For fine to medium textured soils, a SAR above 8.5 in the effluent can negatively affect the soil structure and/or infiltration rates of the soil. In these instances, calcium and magnesium (gypsum) should be added to reduce the SAR. The adjusted SAR of the byproduct was 4.1 – thus, applications are not likely to negatively impact soil structure. In fact, the ratio of calcium to sodium is such that it will likely improve soil structure. Regardless, the electrical conductivity (salts) of the soils should be monitored to maintain less than 4 mmhoms/cm. *If land applications follow recommendations by appropriately managing frequency and rate of application, no sodium issues are likely.*

The nitrogen and phosphorus of this by-product should be balanced with crop removal rates with the nutrients applied from the by-product. Our recommendation of this material is a maximum land application rate of 10 Wet Tons per acre (5 Dry Tons), incorporated immediately. As such, a first year, plant available an analysis of 97 – 74 – 59 – 19 – 1 lbs. (N-P2O5-K2O-SO4-Zn) can be expected based on this rate. The following year another 25% of the total applied nitrogen will be plant available and about 15% would be available in the 3<sup>rd</sup> year following an application. The remaining amount would likely be lost to volatilization. If the material is applied at the same rate without incorporating within 48 hours, we estimate plant availability at approximately 108 – 74 – 59 – 19 – 1 lbs. /acre (~39% first year nitrogen availability).

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<sup>1</sup> Sawyer, J.E., Mallarino, A.P. (2016). Using Manure Nutrients for Crop Production. PMR 1003. Pages 1-8. <https://store.extension.iastate.edu/Product/Using-Manure-Nutrients-for-Crop-Production-PDF>

<sup>2</sup> Shapiro, C. A., Johnson, L., Millmier, A., Koelsch, R.K. (2015). Determining Crop Available Nutrients from Manure. NebGuide. G1335. Pages 1-6. <http://extensionpublications.unl.edu/assets/pdf/g1335.pdf>

This recommended application rate will supply a significant portion of the Nitrogen of non-legume crop needs (depending on actual Nitrogen mineralization rates). Therefore, nitrogen from other sources should be managed accordingly for the given crop rotation. If the land application site has soil tests that dramatically exceed the very high range for phosphorus<sup>3</sup> (+50 ppm Bray1), applications at the recommended rate should be limited to *once every two years*. Recommended rates are likely at or below crop removal rates for phosphate (in the absence of other additions) for a corn and soybean cropping system with yields typical for the state of Iowa. Based on the analysis, the land application rate will not exceed the cumulative loading rates outlined in the Region VIII EPA's Biosolids Management Handbook for determining compliance with 40 CFR Part 503.

The product has a high concentration of nitrogen relative to other nutrients and this is the limiting factor for determining application rates. Adequate soil conservation measures should still be utilized to prevent phosphorus movement offsite in addition to following all required setbacks and best management practices for application. Regular soil testing should be conducted following applications to monitor changes in soil characteristics.

This review is independent of any restrictions pertinent to specific field conditions (slope, erosion potential, etc.) and should be considered as such. Specific conditions in a given land application site may require lower application rates to protect the public health, safety and welfare. Please refer to any land application site reviews for further recommended land application restrictions.

This product has the potential to provide significant agronomic benefit to landowners. Please feel free to contact us with any questions or concerns. Thank you for the opportunity to provide our input on your Project.

Sincerely,



Jim Nesselth  
Certified Agronomist/CCA  
License#: 17118



Andrew Nesselth  
Environmental Consultant

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<sup>3</sup> Iowa State University. A General Guide for Crop Nutrient and Limestone Recommendations. PM 1688 (Reprinted April 2011).

**Cargill Corn Milling – Eddyville, IA**  
**68-SDP-12-11**

**Land Application Site Operation Plan**

**Updated: July 2, 2024**

**Land Application Permit Application Checklist**  
**IDNR 567, Chapter 121.7(1)**

**a. Operation Plan Outline**

- 1) See submitted aerial maps and well search maps.
- 2) See submitted soil maps.
- 3) See submitted review of sites by Extended Ag Services.
- 4) See submitted master site list table for site acres.
- 5) See submitted well search reports.
- 6) See submitted soil map tables and reviews.
- 7) See submitted soil map tables and reviews.
- 8) See submitted soil map tables and reviews.
- 9) Site soil sampling will be completed at each specific site used for land application in a season. Soil data will be analyzed and discussed in the annual agronomist reports.
- 10) See submitted soil map tables.
- 11) See attached Permit Renewal Application form, and Permit Renewal Application Checklist: Description of Material.
- 12) See attached analytical report from Midwest Labs.
- 13) See attached Permit Renewal Application form, Permit Renewal Application Checklist: Description of Disposal Process and Equipment, and byproduct review from Extended Ag Services.
- 14) See attached Permit Renewal Application form, Permit Renewal Application Checklist: Description of Disposal Process and Equipment, and byproduct review from Extended Ag Services.
- 15) See byproduct review by Extended Ag Services. Annual agronomist reports will discuss site soil information.
- 16) See byproduct review by Extended Ag Services. See analytics from Midwest Labs.
- 17) See submitted aerial and soil maps along with land application site reviews.
- 18) Operational requirements of 121.7(1) “c” & “d”.**
  - c. Operating requirements for land application sites
    - 1) The general public and livestock will not be given access to the land application sites for two months after application, unless the Department grants variance to this rule.

- 2) Land application sites will be soil tested and those results will be analyzed and discussed by the agronomist in the annual agronomist report.
  - 3) Land application will cease prior to a rain event or other runoff possibility.
  - 4) Land application sites will not be used when frozen or snow covered conditions prohibit unless precautions are taken to avoid runoff.
  - 5) If the department requires, a groundwater-monitoring program could be implemented.
  - 6) In the event of significant leachate, the department will be notified and a plan for controlling that leachate will be submitted.
  - 7) Sludge sampling will be performed annually at a minimum for all constituents required by the permit application. Additional sampling will be done as necessary.
  - 8) All site application records will be maintained and submitted to the department on quarterly report forms and will be discussed further on annual agronomist reports.
  - 9) If sites are no longer in use, the department will be notified to remove them from the Table 1.
  - 10) If the department requires, closed sites will be monitored.
- d. Additional operating requirements for land application. If any of the following additional operating items are required by the department, all efforts will be made to comply with those requests:
- 1) Telephone on site.
  - 2) Sanitary facilities on site.
  - 3) Fence to control access to site.
  - 4) Permit copy on site.
  - 5) Signage containing name, permit number, closed to public and the owner's name and phone number.

# **Emergency Response and Remedial Action Plan for Cargill Corn Milling – Eddyville, IA & Environmental Land Management, LLC**

## **A. Facility Information**

***Permitted Agency:*** Cargill Corn Milling, Eddyville, IA

***DNR Permit Number:*** 68-SDP-12-11P-LAN

***Facility Description:*** Environmental Land Management (ELM) land applies citric precoat and refinery precoat (diatomaceous earth filtration by-products), spent mycelium, and scrap feed by-products generated by Cargill Corn Milling in Eddyville, IA. Land application locations are on agricultural land in Monroe, Wapello, Mahaska, Appanoose, Jefferson, Davis and Keokuk Counties, Iowa.

***Responsible Officials and Contact Information:***

Jonathan Razink, Facility Manager, Cargill: 641-969-3768

Lee Hansen, President, ELM: 507-438-1580

***Project Location:*** Various sites near Eddyville, Iowa.

***Site and Environs Map:*** See submitted maps for all sites listed on permit Table 1.

**B. Regulatory Requirements:** Cargill Corn Milling is seeking to renew a permit to operate an industrial land application project at different land application sites in Iowa in accordance with Chapter 455B of the Iowa code. This ERRAP has been developed by ELM is being submitted with other permit renewal application documentation.

## **C. Emergency Conditions – Response and Remedial Action**

- 1. Failure of Utilities:** During our land application process, there is no reliance upon natural gas, liquid propane or electricity. All of our trucks and spreaders operate on gas or diesel engines.
- 2. Weather Related Events:** In the case of violent weather or a natural disaster event (tornado, flood, intense rainfall), delivery of the material to land application sites would cease for the duration of the event and no land application would take place during such an event. If stockpiled material were moved by a tornado, all efforts would be made to recoup and re-pile the moved material. In the case of windstorms, material may be delivered to a land application site since the material would be heavy enough to resist blowing conditions, however, spreading activity would be limited, if any. If stockpiled material were eroded and moved by intense rainstorms, machinery would be used to push up and re-pile that material after the rainfall event was over. If stockpiled material were struck by lightning, there

could be a chance of a stockpile catching fire, in which case water truck, loader and/or bulldozer would be dispatched to the stockpile for mitigation. Stockpiling in flood zones would be minimal and flood affects should also be minimal. However, if a flood affected a stockpile, any material that eroded away from the stockpile would be pushed up and re-piled after the flood recedes. In all weather conditions and events we can discontinue spreading or delivery until conditions improve or the event is over.

**3. Fire and Explosions:** The by-products do not have any history of catching on fire or exploding and they do not contain anything flammable or toxic. All trucks are equipped with fire extinguishers and radios/cell phones to summon assistance. If there was a disabled vehicle on the road, the truck can be towed back to the facility where the by-product can be transferred to a working vehicle. There are no fuels or utilities associated with this waste material. The material is loaded is loaded and unloaded outside and all working areas are outside, there are no indoor facilities associated. The by-product is cool when it leaves the production site and there are no gases associated with the by-products. There are no buildings associated with the transportation or stockpiling of this material so there are no evacuation procedures.

**4. Regulated Waste Spills and Releases:** The by-product materials consists of diatomaceous earth and filtered proteins, spent mycelium, and scrap feed. Unless there was a heavy rain event, there is typically little leachate present at a stockpile site. If there is leachate it is typically contained within 50 feet of the stockpile and cleaned up when loading the spreaders. There are no gases associated with theses by-products. It is transported daily in dump trucks and deposited on approved land for storage until weather or seasonal conditions permit land application. There is no litter or airborne particulates associated with this material. There are no drainage systems associated with the land application sites. If an off-site release occurred during transport, equipment and personnel are in place for timely clean up and transfer. The IDNR spill response team as well as Cargill, Inc. personnel will be notified in a timely manner.

**5. Hazardous Material Spills and Releases:** The by-products are not hazardous.

**6. Mass Movement of Land and Waste:** In the event of an earthquake, delivery would be ceased until conditions normalized. An earthquake should not affect an existing stockpile. Slope failure should not affect a stockpile of material due to the limitation of a stockpile being on a slope of 9% or less. If waste were to shift or subside due to an earthquake, slope failure, sinkhole, etc., machinery (excavators, loaders, or bulldozer) can be employed to recapture any material shifted.

**7. Emergency and Release Notifications and Reporting:**

Shift Manager, Cargill: Tel. 641-777-8643

Mike Septer Cargill: Tel. 641-969-7502

Nate Hansen Hansen, ELM: Tel. 651-261-4139

Michael Klema, ELM: Tel. 203-506-1814  
David Klema, ELM: Tel. 617-461-2395  
Local Fire Department: Tel. 911  
Local Police Department: Tel. 911  
Theresa Stiner, Iowa DNR: Tel. 515-725-8315  
Iowa DNR Office #5: Tel. 515-725-0268  
Iowa DNR Spill Response: Tel. 515-725-8694  
Iowa DNR Spill Response notification due within 6 hours of spill/release  
Iowa DNR Spill Report due within 30 days of spill/release

- 8. Emergency Waste Management Procedures:** All transportation machinery is equipped with radios and/or operator cell phones and can immediately make contact for assistance in an emergency. There are multiple delivery sites and typically multiple route options in place for matters of weather and other circumstances. Deliveries to land application sites can be ceased at any time if necessary or wastes can be diverted to secondary options.
- 9. Primary Emergency Equipment Inventory:** The trucks are equipped with communication devices, first aid and fire extinguishers. Heavy machinery and water truck are also readily available if needed. Other water sources and hydrants will be available in certain locations.
- 10. Emergency Aid:** Truck and machinery operators are equipped with communication devices if emergency aid is needed. In a medical emergency local emergency services would be contacted through 911.
- 11. ERRAP Training Requirements:** Annual ERRAP training will be provided to personnel involved in the hauling and spreading activities by ELM management and attendees will be recorded. Training will include proper handling of the byproduct from the plant to the eventual land application site as well as emergency operations.
- 12. Reference Tables, Figures and Maps:** Table 1 maps show the locations of the sites. Primary contacts are listed in the “Emergency and Release Notifications and Reporting”.





Building a Better World  
for All of Us®

June 24, 2021

RE: Engineer's Opinion of Probable Cost for  
Site Closure  
Land Application Project - Cargill Corn  
Milling  
SEH No. ENVLM 161228 14.00

Theresa Stiner  
Iowa Department of Natural Resources  
Energy and Waste Management Bureau  
502 East 9th Street  
Des Moines, IA 50319

Dear Ms. Stiner:

The following engineer's estimate is to be used for the basis of financial assurance as required in IAC 567-121.8. The costs detailed below are based on a third party land application of stored solid waste due to the permit holders failure to properly land apply wastes in accordance with 567-121.7 we have taken into consideration location, materials and the volume of storage available based on the information provided by Environmental Land Management. The maximum estimated storage volume of material is limited to approximately 36,000 tons stockpiled over a typical growing season (270 days). Cargill produces the by-product at a rate of approximately 4,000 tons per month. Due to the audit process required by Cargill, it would be highly unlikely that more than the above volume of material would allowed to be stockpiled prior to Cargill realizing there was an issue with disposal.

The material consists of diatomaceous earth filtration by-product from citric acid and fructose production, spent mycelium and scrap feed. This material is applied over 218 active sites in Monroe, Wapello, Appanoose, Mahaska, Jefferson, Davis and Keokuk Counties.

#### Engineer's Estimate of Probable Cost

<u>Item</u>	<u>Quantity</u>	<u>Cost</u>	<u>Total</u>
Mobilization <sup>1</sup>	1 LS	\$25,500	\$25,500
Material Application <sup>2</sup>	36,000 TON	\$7.25	\$261,000
Management <sup>3</sup>	1 LS	\$14,500	<u>\$14,500</u>
	TOTAL		\$301,000

Engineers | Architects | Planners | Scientists

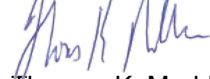
Short Elliott Hendrickson Inc., 215 North Adams Avenue, Mason City, IA 50401-3119  
SEH is 100% employee-owned | [sehinc.com](http://sehinc.com) | 641.424.6344 | 888.908.8166 fax

Notes:


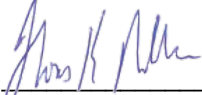
- <sup>1</sup> Mobilization includes all costs associated with transportation of equipment, material and workers to the site. Costs also include obtaining land, easements and soil tests necessary for application.  
<sup>2</sup> Application includes loading and spreading. Costs are based on information submitted by Environmental Land Management.  
<sup>3</sup> Management includes all reporting requirements.

Please call if you have any questions.

Sincerely,



Thomas K. Madden, PE  
Project Manager

	<p>I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Iowa.</p> <p> _____ Thomas K. Madden, PE</p> <p><u>6/24/2021</u> (Date)</p> <p>License Number 15573 My License renewal date is: December 31, 2022.</p> <p>Responsible for the following sections:</p> <p>All sections</p>
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## Increase PENALTY RIDER

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BOND NO. 190025395

To be attached and form a part of Bond No. 190025395 dated the 26th day of April, 2012, executed by Liberty Mutual Insurance Company as surety, on behalf of Cargill, Incorporated as current principal of record, and in favor of State of Iowa - Department of Natural Resources, as Obligee, and in the amount of Two Hundred Eighty Seven Thousand Dollars and 00/100 (\$287,000.00).

In consideration of the agreed premium charged for this bond, it is understood and agreed that Liberty Mutual Insurance Company hereby consents that effective from the 22nd day of June, 2021, said bond shall be amended as follows:

THE BOND PENALTY SHALL BE Increased:

FROM: Two Hundred Eighty Seven Thousand Dollars and 00/100 (\$287,000.00)

TO: Three Hundred One Thousand Dollars and 00/100 (\$301,000.00)

The Increase of said bond penalty shall be effective as of the 22nd day of June, 2021, and does hereby agree that the continuity of protection under said bond subject to changes in penalty shall not be impaired hereby, provided that the aggregate liability of the above mentioned bond shall not exceed the amount of liability assumed by it at the time the act and/or acts of default were committed and in no event shall such liability be cumulative.

Signed, sealed and dated this 22nd day of June, 2021.

Cargill, Incorporated  
PRINCIPAL

BY: 

Jayme D. Olson  
Corporate Vice President  
and Treasurer

Liberty Mutual Insurance Company  
SURETY

BY: 

Michele L. Grogan, ATTORNEY-IN-FACT



This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Liberty Mutual Insurance Company  
The Ohio Casualty Insurance Company  
West American Insurance Company

Certificate No: **8205014- 190057**

## POWER OF ATTORNEY

**KNOWN ALL PERSONS BY THESE PRESENTS:** That The Ohio Casualty Insurance Company is a corporation duly organized under the laws of the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Ann Higgins; Danielle Schmitt; Kelsey Ratcliffe; Kesha N. Greene; Michele L. Grogan

all of the city of Minneapolis state of MN each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 11th day of March, 2021.



Liberty Mutual Insurance Company  
The Ohio Casualty Insurance Company  
West American Insurance Company

By:

David M. Carey  
David M. Carey, Assistant Secretary

State of PENNSYLVANIA ss  
County of MONTGOMERY

On this 11th day of March, 2021 before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of Liberty Mutual Insurance Company, The Ohio Casualty Company, and West American Insurance Company, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.



Commonwealth of Pennsylvania - Notary Seal  
Teresa Pastella, Notary Public  
Montgomery County  
My commission expires March 28, 2025  
Commission number 1126044  
Member, Pennsylvania Association of Notaries

By:

Teresa Pastella  
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

### ARTICLE IV – OFFICERS: Section 12. Power of Attorney.

Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and execution of any such instruments and to attach thereto the seal of the Corporation. When so executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

### ARTICLE XIII – Execution of Contracts: Section 5. Surety Bonds and Undertakings.

Any officer of the Company authorized for that purpose in writing by the chairman or the president, and subject to such limitations as the chairman or the president may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Company by their signature and execution of any such instruments and to attach thereto the seal of the Company. When so executed such instruments shall be as binding as if signed by the president and attested by the secretary.

**Certificate of Designation** – The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

**Authorization** – By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 22nd day of June, 2021.



By:

Renee C. Llewellyn  
Renee C. Llewellyn, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

For bond and/or Power of Attorney (POA) verification inquiries, please call 610-832-8240 or email HOSUR@libertymutual.com.

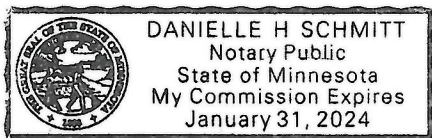


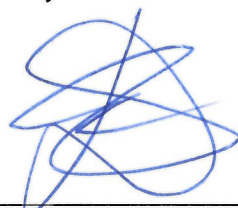
ACKNOWLEDGMENT BY SURETY

STATE OF Minnesota }  
County of Hennepin } ss.

On this 22<sup>nd</sup> day of June, 2021, before me personally  
appeared Michele L. Grogan, known to, me to be the Attorney-in-Fact of  
Liberty Mutual Insurance Company, the corporation  
that executed the within instrument, and acknowledged to me that such corporation executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, at my office in the aforesaid County, the day and  
year in this certificate first above written.



  
\_\_\_\_\_  
Notary Public in the State of Minnesota  
County of Hennepin

