



PO Box 50004  
Minneapolis, MN 55405

tel. 612-353-6388  
fax 612-284-8909  
[michaelklema@landspread.com](mailto:michaelklema@landspread.com)  
[www.landspread.com](http://www.landspread.com)

Wednesday December 6, 2023

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-02-11  
Land Application of Solid Waste Additional Sites Application

Ms. Stiner,

Enclosed is an application to add additional land application sites to the referenced permit for Cargill Corn Milling. There are a few items to note in the checklist.

- There will be no increased volume for storage since the previous permit renewal application, so the closure cost estimate has not been revised.
- Land application sites have been or will be soil sampled as necessary prior to application for each site when conditions are suitable.

If you have any questions, please do not hesitate to call.

Sincerely,

Michael Klema  
Environmental Land Management, LLC

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



IOWA DEPARTMENT OF NATURAL  
RESOURCES



Land Application of  
Solid Waste

Additional Sites

Application to add sites to an existing solid waste land application permit must be accompanied by the 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 East Ninth Street  
Des Moines, IA 50319-0034

For questions concerning this application please contact the Department at (515) 281-8646.

**SECTION 1. FACILITY CONTACT INFORMATION**

Permit # 68 -SDP- 12 - 11P -LAN

Solid Waste Generator Name/Address:

1 Cargill Drive, Eddyville, IA 52553

Phone #: 641-969-4500 Fax #: 641-969-3616

**SECTION 2. PERMIT APPLICATION CHECKLIST**

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 the Iowa Administrative Code. One (1) copy of each document shall be submitted. If an application is found by the department to be incomplete, it may be denied and returned to the applicant.

Required Documents			Attached
	Document/Information	Administrative Code	
Section A	List of all the sites being added. For each site include: <ul style="list-style-type: none"><li>Name of site</li><li>Legal description of the site</li><li>Total acres in the site</li><li>Acres to be used for disposal</li><li>Name of landowner or tenant</li></ul>		X
Section B	Financial Assurance. If the additional site(s) will include additional storage of materials, include a revised cost estimate and proof of financial assurance in the revised amount.	IAC 567 121.8	*Checklist

For each site attach the following:			
Section C	Site map or aerial photo of the site showing the following: <ul style="list-style-type: none"> <li>• The specific area where the material will be applied</li> <li>• Buildings, lakes, ponds, watercourses, wetlands, dry runs, rock outcroppings, roads, and other applicable details.</li> <li>• Soil types and slope</li> <li>• Location of wells</li> </ul> <p><i>Please remember that the area to be used for land disposal:</i></p> <ul style="list-style-type: none"> <li>• may not have a slope of greater than 9%,</li> <li>• may not be within 200 feet of an occupied residence</li> <li>• may not be within 500 feet of a well</li> </ul> <p><b>If the specific area requested includes any of the above the entire field will not be approved.</b></p>	IAC 567 121.7(1)"a"(1)  IAC 567 121.7(1)"a"(1)  IAC 567 121.7(1)"a"(2) IAC 567 121.7(1)"a"(1)	X
Section D	Soil testing	IAC 567 121.7(1)"a"(9)	*Checklist
Section E	Water table levels	IAC 567 121.7(1)"a"(10)	X
Section F	Review by Soil Conservation District that includes the following: <ul style="list-style-type: none"> <li>• Soil loss limits applicable to the site</li> <li>• Design soil loss levels for the site</li> <li>• Estimated current soil loss levels</li> </ul> <p><i>The review may be done by the Natural Resources Conservation Service or a Professional Agronomist in lieu of the Soil Conservation District.</i></p>	IAC 567 121.7(1)"a"(3) IAC 567 121.7(1)"a"(6) IAC 567 121.7(1)"a"(7) IAC 567 121.7(1)"a"(8)	X
Section G	Proof of ownership or legal entitlement to use the site. (Agreement with landowner or tenant) <i>One document may be submitted for multiple sites with the same landowner or tenant.</i>	IAC 567 121.7(1)"b"(6)	X

### SECTION 3. APPLICANT CERTIFICATION

<p style="text-align: center;"><b>CERTIFICATION</b></p> <p>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.</p> <p>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.</p>
---

Signature:  Date: 11/29/23

Printed Name: Jonathan Razink Title: Plant Manager

## **Cargill Corn Milling, Eddyville, IA**

### **Iowa DNR Land Application Permit # 68-SDP-12-11 Additional Sites Application Checklist: Sections A-G**

#### **A. List of All Sites Being Added**

1. See attached Additional Sites List and Table 1 Master Site List including additional land application site and all previously approved land application sites. Each site list includes:
  - i. Name of Site
  - ii. Legal Description of Site
  - iii. Total Acres in the Site
  - iv. Acres to be used for disposal / Suitable Acres
  - v. Name of Landowner or Tenant

#### **B. Financial Assurance**

1. Financial assurance will not be updated or changed due to this being a new site addition with no additional volumes expected.

#### **C. Site Map or Aerial Photo of Sites**

1. See attached aerial site map of each additional site detailing:
  - i. The specific area where the material will be applied
    1. Site boundaries outlined on each aerial map
  - ii. Buildings, lakes, ponds, watercourses, wetlands, dry runs, rock outcroppings, roads, and other applicable details
    1. Site features and setbacks detailed on aerial maps
  - iii. Soil types and slope
    1. NRCS soil maps attached for each site
  - iv. Location of wells
    1. IDNR Well Search information attached for each site and active wells highlighted on aerial maps by 500 foot circular setback

#### **D. Soil Testing**

1. Soil testing will be completed as soon as possible prior to application of the site. Additional site soil sampling will be completed as necessary when the site is used for application and discussed in annual agronomist reports.

**E. Water Table Levels**

1. See attached Depth to Water Table outline for each specific site provided by NRCS.

**F. Review by Professional Agronomist**

1. See attached land application site suitability review performed by Extended Ag Services discussing soil loss levels through erosion and flooding potential.
  - i. Extended Ag Services - Jim Nesseth, Certified Agronomist, License # 17118 and Andy Nesseth, Environmental Consultant.
2. See attached T Factor erosion potential outlines for each specific site provided by NRCS.

**G. Proof of Ownership or Legal Entitlement to Use the Site**

1. See attached Contractual Consent of Landowner, Lessee and/or Land Operator for the specific individual with this additional sites application.

Cargill Corn Milling, Eddyville: Permit # 68-SDP-12-11

Site Name	Legal Description	Section	Township	Township Range	County	State	Total Acreage	usable Acreage	Mileage	Farmer Name
Adam Banker	SW1/4	18	Des Moines	71N, 11W	Jefferson	IA	8	8	35	Nick Adam
Adam Bladensburg	NW1/4	15	Pleasant	72N, 12W	Wapello	IA	76	70	31	Nick Adam
Adam Brandon Warren	NE1/4	31	Pleasant	72N, 12W	Wapello	IA	29	27	27	Nick Adam
Adam Clark	SE1/4 Sec 26; NE1/4 Sec 35	26, 35	Pleasant	72N; 12W	Wapello	IA	157	150	31	Nick Adam
Adam Clingan	NE1/4, SE1/4 Sec 14; NE1/4 Sec 23	14, 23	Competine	73N, 12W	Wapello	IA	305	277	29	Nick Adam
Adam Eldon Y	SE1/4	33	Pleasant	72N, 12W	Wapello	IA	46	46	29	Nick Adam
Adam Frescoln	NE1/4 & SE1/4	6	Des Moines	71N, 11W	Jefferson	IA	256	232	34	Nick Adam
Adam Haydock	SW1/4 Sec 2; SE1/4 Sec 3	2, 3	Washington	71N, 12W	Wapello	IA	141	114	31	Nick Adam
Adam Helen Brown	NW1/4 & NE1/4	11	Washington	71N, 12W	Wapello	IA	67	47	32	Nick Adam
Adam Joe's Home	SW1/4	1	Washington	71N, 12W	Wapello	IA	29	14	32	Nick Adam
Adam Libertyville East	NE1/4, SE1/4, SW1/4 Sec 8; NW1/4, SW1/4 Sec 9	8, 9	Liberty	71N, 10W	Jefferson	IA	683	629	43	Nick Adam
Adam Martha's	SE1/4 Sec 14; SW1/4 Sec 13	13, 14	Washington	71N, 12W	Wapello	IA	80	79	33	Nick Adam
Adam McNeil	SW1/4, NW1/4	31	Locust Grove	72N, 11W	Jefferson	IA			33	Nick Adam
Adam Mills Thomas	NW1/4 Sec 6; SW1/4 Sec 31; NE1/4 Sec 1; SE1/4 Sec 36	6, 31, 1, 36	Des Moines, Locust Grove, Washington, Pleasant	71N, 11W; 72N, 11W; 71N, 12W; 72N, 12W	Jefferson, Wapello	IA	202	190	34	Nick Adam
Adam Ohara	SE1/4 Sec 26; SW1/4 Sec 25	25, 26	Competine	73N, 12W	Wapello	IA	113	105	29	Nick Adam
Adam Pacha Home	SW1/4	25	Des Moines	71N, 11W	Jefferson	IA	59	59	43	Nick Adam
Adam Pacha Hoops	SE1/4, SW1/4 Sec 16; NE1/4, NW1/4 Sec 21	16, 21	Des Moines	71N, 11W	Jefferson	IA	240	235	40	Nick Adam
Adam Patrick	NE1/4	12	Washington	71N, 12W	Wapello	IA	40	40	31	Nick Adam
Adam Pilcher	SW1/4	35	Pleasant	72N, 12W	Wapello	IA	70	70	30	Nick Adam
Adam Raymond	NE1/4, NW1/4	15	Washington	71N, 12W	Wapello	IA	210	196	31	Nick Adam
Adam Sauer	SW1/4 Sec 12; NE1/4, NW1/4 Sec 13	12, 13	Washington	71N, 12W	Wapello	IA	316	249	34	Nick Adam
Adam Scherer	SE1/4	13	Washington	71N, 12W	Wapello	IA	84	83	34	Nick Adam
Adam Schipler	SE1/4 Sec 25; NE1/4 Sec 36	25, 36	Pleasant	72N, 12W	Wapello	IA	101	95	31	Nick Adam
Adam Schipler Brothers	SE1/4, SW1/4	36	Pleasant	72N, 12W	Wapello	IA	102	99	31	Nick Adam
Adam Seaton Berg	SE1/4 Sec16; SW1/4 Sec15	15, 16	Pleasant	72N, 12W	Wapello	IA	85	38	31	Nick Adam
Adam Shawn 40	NE1/4	23	Locust Grove	72N, 11W	Jefferson	IA	41	41	37	Nick Adam
Adam Shawn's	SE1/4 Sec11 & NE1/4 Sec14	11, 14	Washington	71N, 12W	Wapello	IA	96	74	33	Nick Adam
Adam Siberson 30	NW1/4	5	Des Moines	71N, 11W	Jefferson	IA	37	37	34	Nick Adam
Adam Siberson HS	SE1/4 Sec 9; SW1/4 Sec 10	9, 10	Washington	71N, 12W	Wapello	IA	58	46	31	Nick Adam
Adam Silo	SE1/4, SW1/4	3	Locust Grove	72N, 11W	Jefferson	IA	201	133	34	Nick Adam
Adam Van Buren River Bottom	SE1/4, SW1/4 Sec 7, NW1/4 Sec 18	7, 18	Village	70N, 11W	Van Buren	IA	303	209	40	Nick Adam
Adam Vittetoe	NW1/4	20	Competine	73N, 12W	Wapello	IA	154	136	26	Nick Adam
Adam Walt Adam	SW1/4 Sec 26; NW1/4 Sec 35	26, 35	Pleasant	72N, 12W	Wapello	IA	293	276	30	Nick Adam
Adam Warren	SE1/4, SW1/4	15	Washington	71N, 12W	Wapello	IA	71	51	32	Nick Adam
Adam Whistler	SE1/4, SW1/4	29	Locust Grove	72N, 11W	Jefferson	IA	80	80	33	Nick Adam
Adam Wycoff	SE1/4 Sec 5; NE1/4 Sec 8	5, 8	Washington	71N, 12W	Wapello	IA	130	128	32	Nick Adam
Akers 125	NE1/4, NW1/4	1	Mantua	72N, 16W	Monroe	IA	124	68	6	Duane Akers
Akers 145	SE1/4, SW1/4 Sec 1; NE1/4 Sec 12	1, 12	Mantua	72N, 16W	Monroe	IA	140	97	7	Duane Akers
Akers 175	NW1/4, SW1/4	30	Columbia	73N, 15W	Wapello	IA	175	140	4	Duane Akers
Akers 200	NE1/4, E1/4, SW1/4	11	Mantua	72N, 16W	Monroe	IA	198	118	8	Duane Akers
Akers 37	SE1/4	25	Pleasant	73N, 16W	Monroe	IA	36	21	4	Duane Akers
Boenders Edgrin	Sec 17	17	Madison	76N; 16W	Mahaska	IA	308	266	26	BJ Boenders
Brown Allison	NW1/4, NE1/4, SW1/4, SE1/4	11	Columbia	73N, 15W	Wapello	IA	188	141	5	Dennis Brown
Brown Arab	NE1/4, NW1/4	12	Columbia	73N, 15W	Wapello	IA	200	100	6	Dennis Brown
Brown Beaver East	NW1/4, SW1/4	27	Harrison	74N; 14W	Mahaska	IA	77	77	6	Dennis Brown
Brown Beaver Home	NW1/4 Sec 25; NE1/4 Sec 26	25, 26	Harrison	74N; 14W	Mahaska	IA	206	198	8	Dennis Brown
Brown Blackwood	NW1/4, SW1/4	4	Columbia	73N, 15W	Wapello	IA	104	90	4	Dennis Brown
Brown Little Bighorn Pasture	NW1/4, NE1/4, SW1/4, SE1/4	1	Columbia	73N, 15W	Wapello	IA	287	99	6	Dennis Brown
Brown Locke-Allgood	NW1/4, NE1/4, SW1/4, SE1/4	10	Columbia	73N, 15W	Wapello	IA	261	236	5	Dennis Brown
Brown Sammons East	SW1/4 Sec 4; SE1/4 Sec 5; NE1/4 Sec 8; NW1/4 Sec 9	4, 5, 8, 9	Richland	73N; 14W	Wapello	IA	273	273	10	Dennis Brown
Brown Sammons Home	SE1/4 Sec 6; NE1/4 Sec 7	6, 7	Richland	73N; 14W	Wapello	IA	63	49	9	Dennis Brown
Cargill Miro	NW1/4 Sec 14; NE4, NW1/4, SE1/4 Sec 15	14, 15	Pleasant	73N, 16W	Monroe	IA	245	134	3	Tom Dykstra
Cargill Monroe	NE1/4, SE1/4 Sec 11; NE1/4, NW1/4, SE1/4, SW1/4 Sec 12; NE1/4, NW1/4, SW1/4 Sec 13; NE1/4 Sec 14	11, 12, 13, 14	Pleasant	73N, 16W	Monroe	IA	1034	565	1	Tom Dykstra
Cargill Wapello	SW1/4 Sec 7; NW1/4 Sec 18	7, 18	Columbia	73N, 15W	Wapello	IA	234	137	1	Luke Harris
CGroenendyk 107	SE1/4, SW1/4 Sec 11; NE1/4 Sec 14	11, 14	Scott	75N, 17W	Mahaska	IA	108	65	20	Calvin Groenendyk
CGroenendyk 36	NE1/4	12	Scott	75N, 17W	Mahaska	IA	36	36	19	Calvin Groenendyk
CGroenendyk 88	NE1/4 Sec 6; NW1/4 Sec 5	5, 6	Garfield	75N, 16W	Mahaska	IA	88	65	17	Calvin Groenendyk
CGroenendyk Davis	SE1/4 Sec 25; NE1/4, SE1/4 Sec 36; NW1/4, SW1/4 Sec 31; NW1/4 Sec 6	25, 36, 31, 6	Wells, West Grove, Fabius	68N, 16W; 68N, 15W; 67N, 15W	Appanose, Davis	IA	415	205	40	Calvin Groenendyk
Dykstra 107b	SE1/4, SW1/4	13	Pleasant	73N, 16W	Monroe	IA	116	97	2	Tom Dykstra
Dykstra 138	NW1/4 Sec 14; NE4, NW1/4, SE1/4 Sec 15	14, 15	Pleasant	73N, 16W	Monroe	IA	138	108	5	Tom Dykstra
Dykstra 140	SW1/4	24	Pleasant	73N, 16W	Monroe	IA	129	82	4	Tom Dykstra
Gardner Home	NE1/4, NW1/4, SW1/4 Sec 6, SE1/4, SW1/4 Sec 31	6, 31	Polk, Cass	72N; 15W, 73N; 15W	Wapello	IA	547	250	8	Gary Gardner
Harris Bartel	SW1/4	34	West Des Moines	74N; 16W	Mahaska	IA	39	38	3	Luke Harris
Harris Cargill 95	NW1/4	18	Columbia	73N; 15W	Wapello	IA	115	62	1	Luke Harris
Harris East Shop	NW1/4	25	Pleasant	73N; 16W	Monroe	IA	165	51	4	Luke Harris
Harris Ethel	SW1/4, SE1/4	21	West Des Moines	74N; 16W	Mahaska	IA	77	50	10	Luke Harris
Harris Lane	NE1/4 & NW1/4 Sec 8, NE1/4 Sec 17	8, 17	Columbia	73N; 15W	Wapello	IA	289	278	3	Luke Harris
Harris McDunough	SW1/4 Sec 2, SE1/4 Sec 3	2, 3	Columbia	73N; 15W	Wapello	IA	86	45	6	Luke Harris
Harris McGee	NE1/4, SE1/4	27	Pleasant	73N; 16W	Monroe	IA	58	41	6	Luke Harris
Harris Pearson	SE1/4 Sec 30, NW1/4 & NE1/4 Sec 31	30, 31	Pleasant	73N; 16W	Monroe	IA	112	82	9	Luke Harris
Harris Powell	SW1/4	32	Harrison	74N; 15W	Mahaska	IA	62	62	3	Luke Harris
Harris Teno	SW1/4 Sec 23, NW1/4 Sec 26	23, 26	Pleasant	73N; 16W	Monroe	IA	74	43	5	Luke Harris
Harris Terry	NW1/4, NE1/4, SW1/4 Sec 28; NE1/4, SE1/4 Sec 29	28, 29	West Des Moines	74N; 16W	Mahaska	IA	307	167	11	Luke Harris
Harris Vanderlinden	SW1/4 Sec 5, NW1/4 & SW1/4 Sec 8	5, 8	Harrison	74N; 15W	Mahaska	IA	122	99	9	Luke Harris
Harris Veen	NW1/4	6	East Des Moines	74N; 16W	Mahaska	IA	76	49	13	Luke Harris
Harris West Shop	SE1/4	26	Pleasant	73N; 16W	Monroe	IA	87	46	4	Luke Harris
Leffler Home	S1/2	31	Adams	71N; 15W	Wapello	IA	264	156	18	Dale Leffler
Magee 350	SE1/4, NE1/4 Sec14	11, 12, 13, 14	Mantua	72N, 16W	Monroe	IA	425	268	10	James McGee
Roberts 120	S1/2 of NW1/4, S1/2 of NE1/4, SW1/4 of SW1/4	36	Pleasant	73N, 16W	Monroe	IA	120	58	6	Brent Roberts
Roberts 20	SE1/4 of NW1/4	31	Columbia	73N, 15W	Wapello	IA	20	11	5	Brent Roberts
Roberts 30	SW1/4 of SW1/4	25	Pleasant	73N, 16W	Monroe	IA	30	15	7	Brent Roberts
Roberts 31	S1/4 of SW1/4	30	Columbia	73N, 15W	Wapello	IA	31	13	5	Brent Roberts
Roberts 70	W1/2 & NE1/4 of SE1/4	35	Pleasant	73N, 16W	Monroe	IA	70	21	6	Brent Roberts
Voss 120	SE1/4 of NW1/4 Sec19; S1/2 of NW1/4 Sec 20	19, 20	Richland	73N, 14W	Wapello	IA	120	73	10	Rowdy Voss
Voss 150	SE1/4 of NW1/4, S1/2 & NE1/4 of NE1/4	31	Richland	73N, 14W	Wapello	IA	148	127	10	Rowdy Voss
Voss 75	E1/2 of NE1/4 of SE1/4 Sec19; N1/2 of SW1/4, N1/2 & E1/2 of SW1/4 of SE1/4 Sec 20	19, 20	Richland	73N, 14W	Wapello	IA	83	58	10	Rowdy Voss
Walker Avery	SE1/4 Sec 5; N1/2 of NE1/4 Sec 8; SW1/4 of SW1/4 Sec 4	4, 5, 8	Mantua	72N, 16W	Monroe	IA	186	111	10	Lawrence Walker
Wheeler Copperhead	NE1/4, NW1/4, SE1/4	13	Adams	71N; 14W	Wapello	IA	328	160	19	Tad Wheeler

Farmer Name	Farmer Address	Farmer Phone
Nick Adam	100 1st St, Batavia, IA 52533	(641) 777-5070
Duane Akers	14721 Monroe Wapello Road, Albia, IA 52531	(641) 799-6652
BJ Boenders	2844 Kent Ave, Oskaloosa, IA 52577	(641) 660-3775
Dennis Brown	2779 340th St, Cedar, IA 52543	(641) 933-4896
Tom Dykstra	7377 189th Street, Albia, IA 52531	(641) 777-9711
Gary Gardner	12453 Monroe Wapello Rd, Albia, IA 52531	(641) 777-7773
Calvin Groenendyk	1571 235th St, Oskaloosa, IA 52577	(641) 660-3196
Luke Harris	1438 730th Ave, Albia, IA 52531	(641) 799-8640
Dale Leffler	1193 Monroe Wapello Rd, Blakesburg, IA 52536	(641) 777-6409
James McGee	1799 730th St, Albia, IA 52531	(641) 931-0162
Brent Roberts	13855 Monroe Wapello Rd, Albia, IA 52531	(641) 660-5373
Mark (Rowdy) Voss	16491 190th Ave., Eddyville, IA 52553	(641) 226-7138
Lawrence Walker	12348 County Rd G62, Wapello, IA 52563	(641) 932-5404
Tad Wheeler	4561 194th Ave, Ottumwa, IA 52501	(641) 777-2912

**Cargill Corn Milling, Eddyville, IA - New Site List 11.11.23**

Site Name	Legal Description	Section	Township	Township Range	County	State	Total Acreage	Suitable Acreage	Mileage	Farmer Name
Boenders Edgrin	Sec 17	17	Madison	76N; 16W	Mahaska	IA	308	270	26	BJ Boenders
Harris Bartel	SW1/4	34	West Des Moines	74N; 16W	Mahaska	IA	39	38	3	Luke Harris
Harris Lane	NE1/4 & NW1/4 Sec 8, NE1/4 Sec 17	8, 17	Columbia	73N; 15W	Wapello	IA	289	278	3	Luke Harris
Harris Pearson	SE1/4 Sec 30, NW1/4 & NE1/4 Sec 31	30, 31	Pleasant	73N; 16W	Monroe	IA	112	82	9	Luke Harris
Harris Vanderlinden	SW1/4 Sec 5, NW1/4 & SW1/4 Sec 8	5, 8	Harrison	74N; 15W	Mahaska	IA	122	99	9	Luke Harris
Harris Veen	NW1/4	6	East Des Moines	74N; 16W	Mahaska	IA	76	49	13	Luke Harris

Farmer Name	Farmer Address	Farmer Phone
BJ Boenders	2844 Kent Ave, Oskaloosa, IA 52577	(641) 660-3775
Luke Harris	1438 730th Ave, Albia, IA 52531	(641) 799-8640



Site Name: Boenders Edgrin



Unsuitable for Land Application

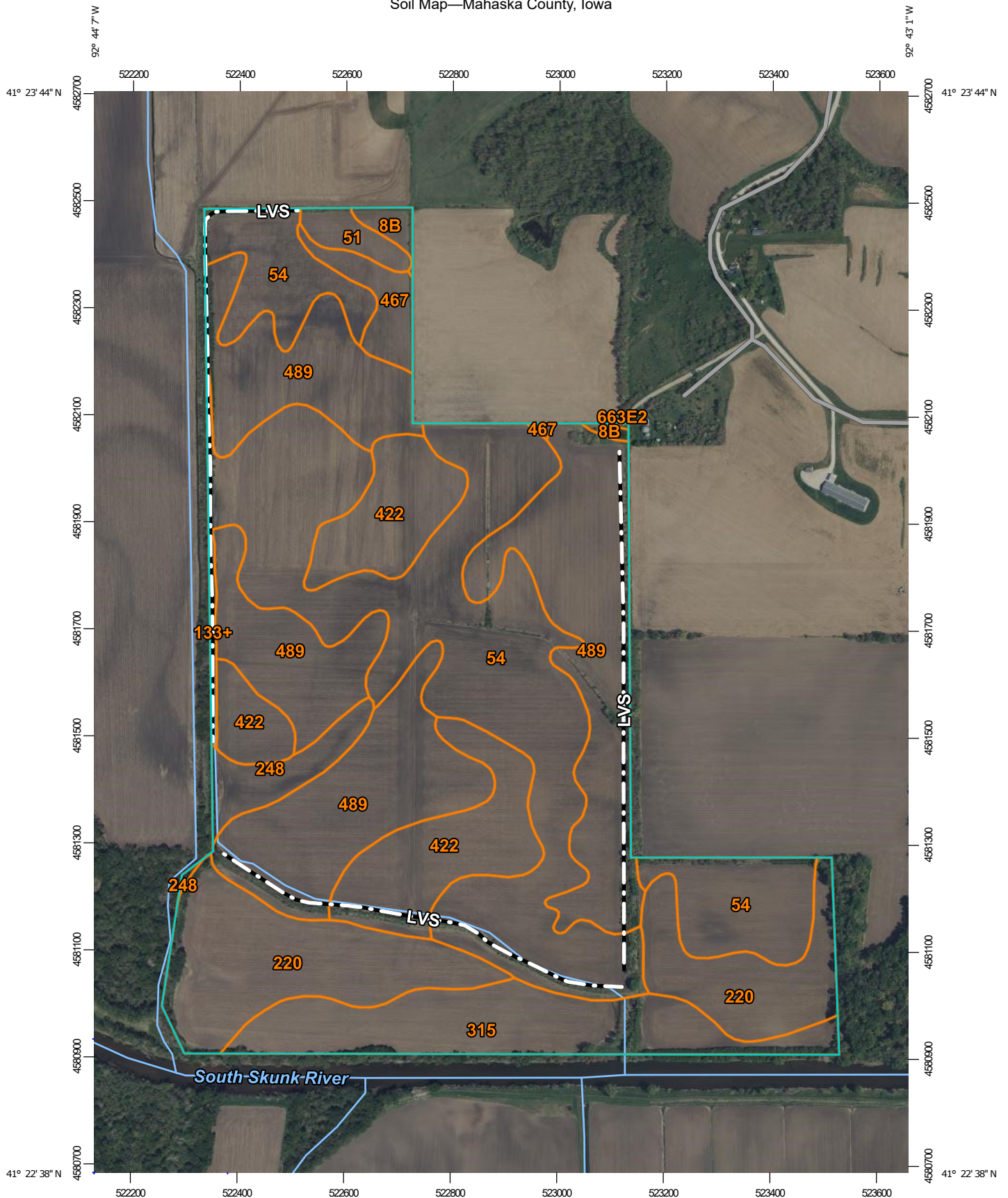
Farmer Name: BJ Boenders Phone: (641)660-3775 Spreadable Acres: 266

I certify I have followed all stockpiling and spreading rules provided by ELM.

Signature \_\_\_\_\_ Date \_\_\_\_\_



# Soil Map—Mahaska County, Iowa



Map Scale: 1:9,850 if printed on A portrait (8.5" x 11") sheet.

0 100 200 400 600 Meters

0 450 900 1800 2700 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84



**Natural Resources  
Conservation Service**

Web Soil Survey  
National Cooperative Soil Survey

9/8/2023  
Page 1 of 3

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
8B	Judson silty clay loam, 2 to 5 percent slopes	1.9	0.6%
51	Vesser silt loam, 0 to 2 percent slopes	3.1	1.0%
54	Zook silty clay loam, 0 to 2 percent slopes, occasionally flooded	99.1	31.9%
133+	Colo silt loam, 0 to 2 percent slopes, occasionally flooded, overwash	1.1	0.4%
220	Nodaway silt loam, 0 to 2 percent slopes	41.1	13.2%
248	Zook silty clay loam, depression, 0 to 1 percent slopes	6.3	2.0%
315	Nodaway-Alluvial land complex, 0 to 2 percent slopes	26.1	8.4%
422	Amana silty clay loam, 0 to 2 percent slopes	34.2	11.0%
467	Radford silt loam, 0 to 2 percent slopes	5.2	1.7%
489	Ossian silt loam, 0 to 2 percent slopes	92.1	29.7%
663E2	Seaton silt loam, 14 to 18 percent slopes, moderately eroded	0.1	0.0%
<b>Totals for Area of Interest</b>		<b>310.3</b>	<b>100.0%</b>

## T Factor

Map unit symbol	Map unit name	Rating (tons per acre per year)	Acres in AOI	Percent of AOI
8B	Judson silty clay loam, 2 to 5 percent slopes	5	1.9	0.6%
51	Vesser silt loam, 0 to 2 percent slopes	5	3.1	1.0%
54	Zook silty clay loam, 0 to 2 percent slopes, occasionally flooded	5	99.1	31.9%
133+	Colo silt loam, 0 to 2 percent slopes, occasionally flooded, overwash	5	1.1	0.4%
220	Nodaway silt loam, 0 to 2 percent slopes	5	41.1	13.2%
248	Zook silty clay loam, depressional, 0 to 1 percent slopes	5	6.3	2.0%
315	Nodaway-Alluvial land complex, 0 to 2 percent slopes	5	26.1	8.4%
422	Amana silty clay loam, 0 to 2 percent slopes	5	34.2	11.0%
467	Radford silt loam, 0 to 2 percent slopes	5	5.2	1.7%
489	Ossian silt loam, 0 to 2 percent slopes	5	92.1	29.7%
663E2	Seaton silt loam, 14 to 18 percent slopes, moderately eroded	5	0.1	0.0%
<b>Totals for Area of Interest</b>			<b>310.3</b>	<b>100.0%</b>

## Description

The T factor is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

## Rating Options

*Units of Measure:* tons per acre per year

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff:* None Specified

## Depth to Water Table

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
8B	Judson silty clay loam, 2 to 5 percent slopes	>200	1.9	0.6%
51	Vesser silt loam, 0 to 2 percent slopes	15	3.1	1.0%
54	Zook silty clay loam, 0 to 2 percent slopes, occasionally flooded	0	99.1	31.9%
133+	Colo silt loam, 0 to 2 percent slopes, occasionally flooded, overwash	0	1.1	0.4%
220	Nodaway silt loam, 0 to 2 percent slopes	122	41.1	13.2%
248	Zook silty clay loam, depressional, 0 to 1 percent slopes	0	6.3	2.0%
315	Nodaway-Alluvial land complex, 0 to 2 percent slopes	122	26.1	8.4%
422	Amana silty clay loam, 0 to 2 percent slopes	30	34.2	11.0%
467	Radford silt loam, 0 to 2 percent slopes	30	5.2	1.7%
489	Ossian silt loam, 0 to 2 percent slopes	0	92.1	29.7%
663E2	Seaton silt loam, 14 to 18 percent slopes, moderately eroded	>200	0.1	0.0%
<b>Totals for Area of Interest</b>			<b>310.3</b>	<b>100.0%</b>

## Description

"Water table" refers to a saturated zone in the soil. It occurs during specified months. Estimates of the upper limit are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

## Well Search

[Print](#) | [Help](#) |

## Well Search Report

Site: Boenders Edgrin

Included in search	No. of wells	Database
X	4	IGS well database General well database maintained by IGS, location accuracy varies 3,730 to 25 ft., last updated 8/2005.
X	0	Public wells Municipal and nonmunicipal public well databases maintained by IGS, location varies 3,730 to 25 ft., under development.
X	0	SDWIS public wells Public well database developed from the Safe Drinking Water Information System database maintained by IDNR, estimated locational accuracy varies from 15m. to 3300m. Created from 5/2005 data.
X	1	Private well tracking system IDNR database management system for Grants-to-counties-covered wells. Locational accuracy unknown, assumed to be +/- 17 m., Last update 7/2005.
X	0	Wells registered for testing Wells tested under Grant-to-Counties program. Locational accuracy varies 1150 to 150 m.; Last update 9/2001, no future updates planned.
X	0	Permitted private wells Wells permitted under Grant-to-Counties program. Locational accuracy varies 1150 to 150 m.; Last update 9/2001, no future updates planned.
X	3	Registered abandoned wells Wells abandoned under Grant-to-Counties program. Locational accuracy varies 1150 to 150 m.; Last update 9/2001, no future updates planned.
X	0	Water use facilities Wells used by facilities permitted to withdraw >25,000 gallons per day, locational accuracy is +/-20m to 1150 m. Created from 7/2005 data.
X	0	Municipal wells and intakes Locational accuracy 220 m., last updated 8/96.
X	0	Ag drainage wells Locational accuracy 100 m., last updated 4/98.

## Well Search Detail

**Subject:** XY UTM Coordinates: 522931/4581605  
Search Radius (mi): 1

## IGS Well Database

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
278469	<a href="#">11025</a>	T76N, R16W, 16, NW SW NW NW	Calc. +/- 230 ft.	788 (m)	136	NULL	Derondi, J.&J.	Bedrock Depth: 0 Well Type: Unknown
279465	<a href="#">19273</a>	T76N, R16W, 16, SW NE NE NE	Calc. +/- 230 ft.	1389 (m)	145	9/15/1966	Fox, Loftus	Bedrock Depth: 25 Well Type: Unknown
278038	<a href="#">13203</a>	T76N, R16W, 17, NE NE SW SW	Calc. +/- 230 ft.	518 (m)	210	NULL	Phelps, Harold	Bedrock Depth: 46 Well Type: Unknown
279772	<a href="#">41356</a>	T76N, R16W, 21, NW NW SE NW	Calc. +/- 230 ft.	1309 (m)	55	NULL	Pierson Seed Producers	Bedrock Depth: 0 Well Type: Irrigation

## Public Wells

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
No records found from this data source								

## SDWIS public wells

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
No records found from this data source								

## Private Well Tracking System

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
277872	2203978	T76N, R16W, S9	nom. +/- 25m.	1444 (m)	24	8/14/2018	Bruxvoord, Rob	Status: Plugged

## Wells Registered For Testing

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
No records found from this data source								

## Permitted Private Wells

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
--------	----------	----------	----------	------------------	------------	---------------------------	------------------	-------------------



No records found from this data source

**Abandoned Wells (plugged)**

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
276828	42086	T76N, R16W, Sec. 8, SE, NW, NW	Calc. +/- 140m.	1596 (m)	25	n.a.	De Gooy, Gay	Well plugged: 6/26/2000; Well type: > 18" dia.
278086	43609	T76N, R16W, Sec. 17, SE, NW, NW	Calc. +/- 140m.	111 (m)	10	n.a.	Hayes, Helena	Well plugged: 8/24/2000; Well type: > 18" dia.
276833	42284	T76N, R16W, Sec. 8, SE, NW, NW	Calc. +/- 140m.	(m)	35	n.a.	Uitermarkt, De Goey	Well plugged: 6/21/2000; Well type: > 18" dia.

**Water Use Facilities**

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
--------	----------	----------	----------	------------------	------------	---------------------------	------------------	-------------------

No records found from this data source

**Municipal Wells And Intakes**

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
--------	----------	----------	----------	------------------	------------	---------------------------	------------------	-------------------

No records found from this data source

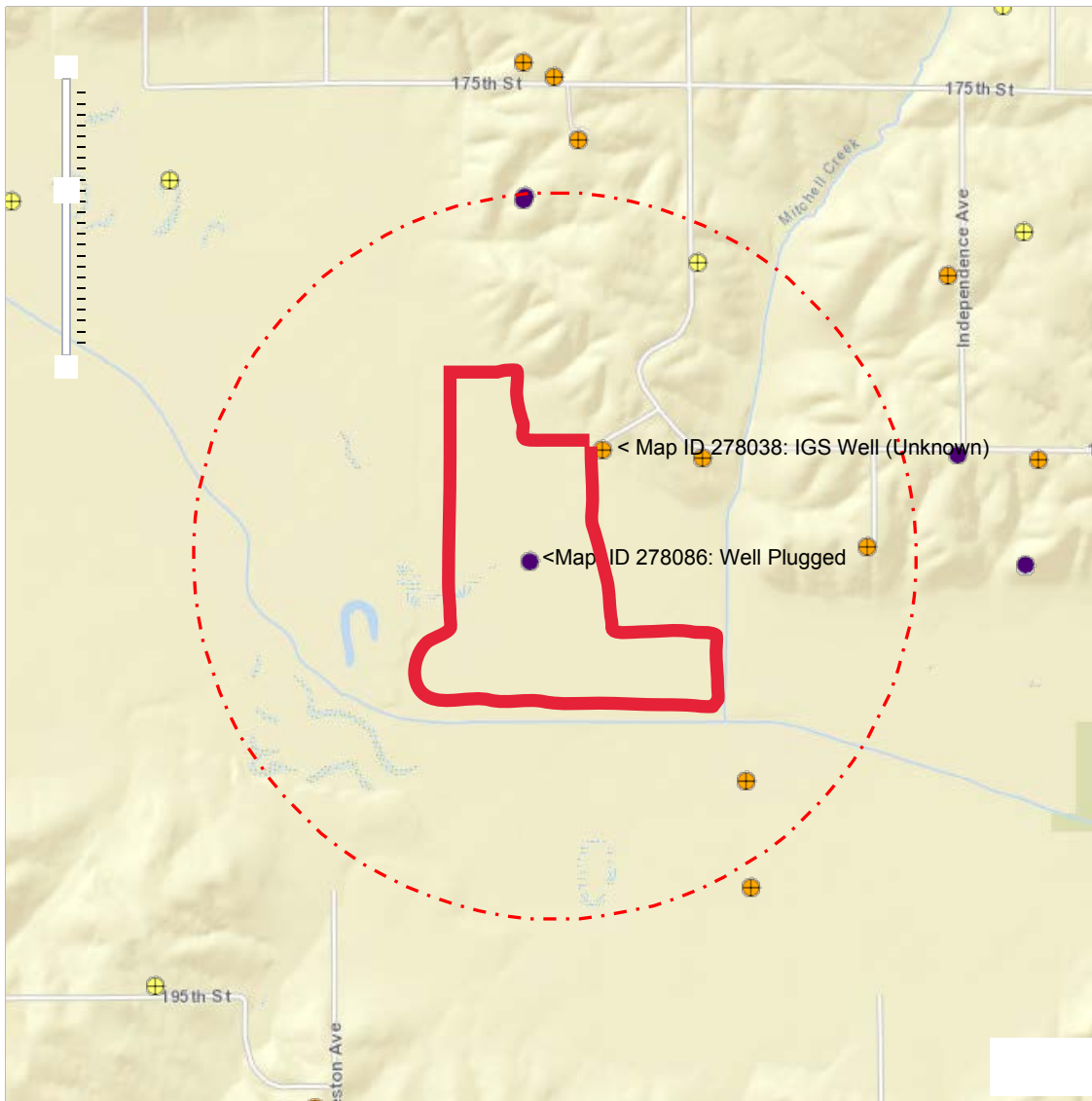
**Ag Drainage Wells**

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
--------	----------	----------	----------	------------------	------------	---------------------------	------------------	-------------------

No records found from this data source

## Well Search Buffered Map

**Subject:** XY UTM Coordinates: 522931/4581605  
Search Radius (mi): 1



### Map Notes:

- UST
- ★ LUST
- ★ Wells

Please refer to the Accuracy column in Well Search Detail.

Since multiple points can be at the same spot ( as those located to the center of a quarter section), points were randomly dispersed within 10 meters around that spot so all points can be seen.

Site Name: Harris Bartel



Unsuitable for Land Application

Farmer Name: Luke Harris

Phone: (641)799-8640

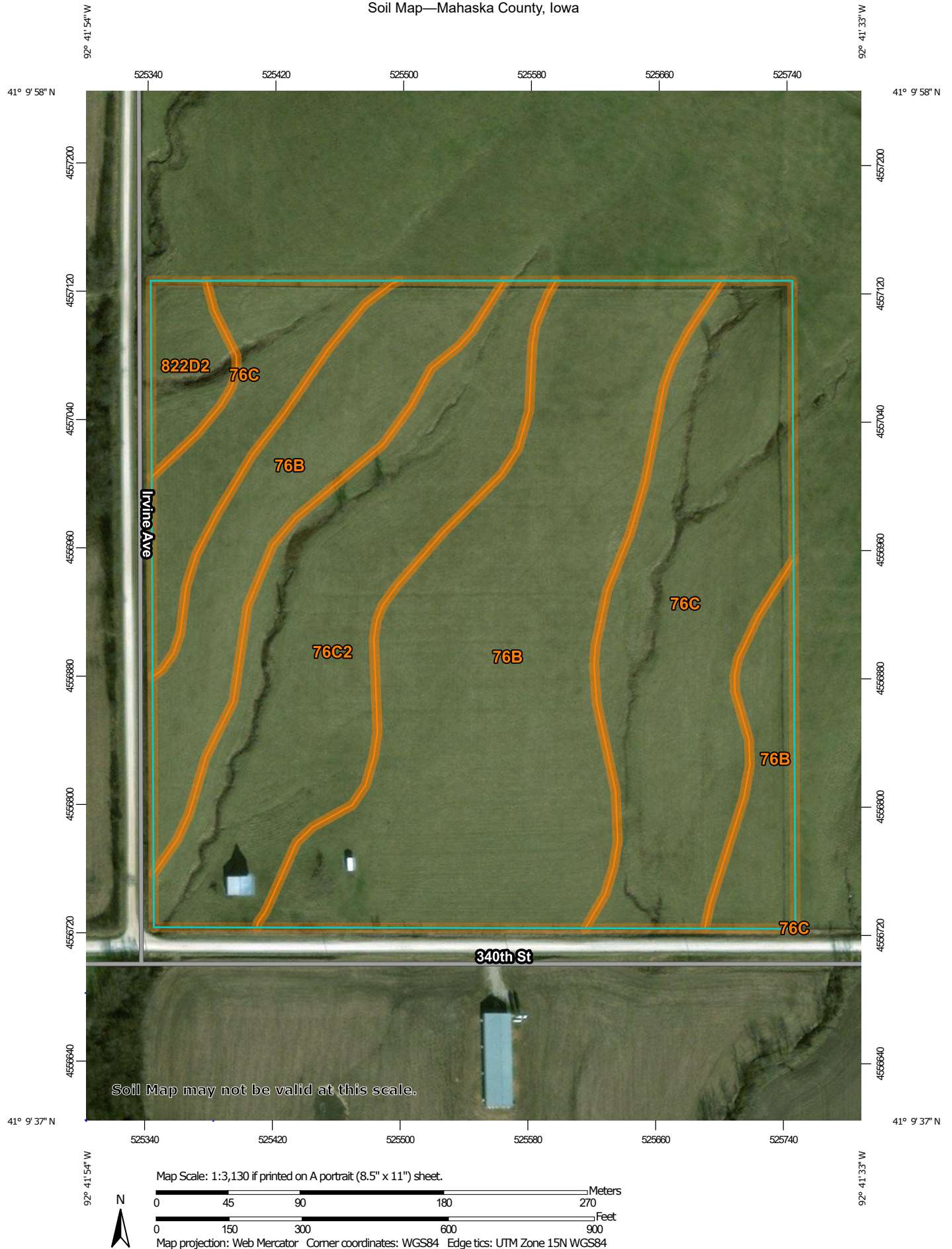
Spreadable Acres: 38

I certify I have followed all stockpiling and spreading rules provided by ELM.

Signature \_\_\_\_\_ Date \_\_\_\_\_



Soil Map—Mahaska County, Iowa



## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
76B	Ladoga silt loam, 2 to 5 percent slopes	19.8	49.3%
76C	Ladoga silt loam, 5 to 9 percent slopes	11.1	27.6%
76C2	Ladoga silt loam, 5 to 9 percent slopes, eroded	8.1	20.3%
822D2	Lamoni silty clay loam, 9 to 14 percent slopes, moderately eroded	1.1	2.8%
<b>Totals for Area of Interest</b>		<b>40.2</b>	<b>100.0%</b>

## T Factor

Map unit symbol	Map unit name	Rating (tons per acre per year)	Acres in AOI	Percent of AOI
76B	Ladoga silt loam, 2 to 5 percent slopes	5	19.8	49.3%
76C	Ladoga silt loam, 5 to 9 percent slopes	5	11.1	27.6%
76C2	Ladoga silt loam, 5 to 9 percent slopes, eroded	5	8.1	20.3%
822D2	Lamoni silty clay loam, 9 to 14 percent slopes, moderately eroded	3	1.1	2.8%
Totals for Area of Interest			40.2	100.0%

## Description

The T factor is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

## Rating Options

*Units of Measure:* tons per acre per year

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff:* None Specified

*Tie-break Rule:* Lower

*Interpret Nulls as Zero:* No



## Depth to Water Table

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
76B	Ladoga silt loam, 2 to 5 percent slopes	122	19.8	49.3%
76C	Ladoga silt loam, 5 to 9 percent slopes	122	11.1	27.6%
76C2	Ladoga silt loam, 5 to 9 percent slopes, eroded	122	8.1	20.3%
822D2	Lamoni silty clay loam, 9 to 14 percent slopes, moderately eroded	30	1.1	2.8%
<b>Totals for Area of Interest</b>			<b>40.2</b>	<b>100.0%</b>

## Description

"Water table" refers to a saturated zone in the soil. It occurs during specified months. Estimates of the upper limit are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

## Rating Options

*Units of Measure:* centimeters

*Aggregation Method:* Dominant Component

*Component Percent Cutoff:* None Specified

*Tie-break Rule:* Lower

*Interpret Nulls as Zero:* No

*Beginning Month:* January

*Ending Month:* December

## Well Search

[Print](#) | [Help](#) |

## Well Search Report

Site: Harris Bartel

Included in search	No. of wells	Database
X	1	IGS well database General well database maintained by IGS, location accuracy varies 3,730 to 25 ft., last updated 8/2005.
X	0	Public wells Municipal and nonmunicipal public well databases maintained by IGS, location varies 3,730 to 25 ft., under development.
X	0	SDWIS public wells Public well database developed from the Safe Drinking Water Information System database maintained by IDNR, estimated locational accuracy varies from 15m. to 3300m. Created from 5/2005 data.
X	4	Private well tracking system IDNR database management system for Grants-to-counties-covered wells. Locational accuracy unknown, assumed to be +/- 17 m., Last update 7/2005.
X	1	Wells registered for testing Wells tested under Grant-to-Counties program. Locational accuracy varies 1150 to 150 m.; Last update 9/2001, no future updates planned.
X	0	Permitted private wells Wells permitted under Grant-to-Counties program. Locational accuracy varies 1150 to 150 m.; Last update 9/2001, no future updates planned.
X	1	Registered abandoned wells Wells abandoned under Grant-to-Counties program. Locational accuracy varies 1150 to 150 m.; Last update 9/2001, no future updates planned.
X	0	Water use facilities Wells used by facilities permitted to withdraw >25,000 gallons per day, locational accuracy is +/-20m to 1150 m. Created from 7/2005 data.
X	0	Municipal wells and intakes Locational accuracy 220 m., last updated 8/96.
X	0	Ag drainage wells Locational accuracy 100 m., last updated 4/98.

**Well Search Detail**

**Subject:** XY UTM Coordinates: 525567/4556949  
Search Radius (mi): 1

**IGS Well Database**

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
298985	<b>19674</b>	T73N, R16W, 3, NE SW SE	Calc. +/- 470 ft.	1276 (m)	107	6/21/1967	Usgs	Bedrock Depth: 34 Well Type: Exploration (Other)

**Public Wells**

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
No records found from this data source								

**SDWIS public wells**

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
No records found from this data source								

**Private Well Tracking System**

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
297606	2216706	T74N, R16W, S34	nom. +/- 25m.	264 (m)	15	3/17/2021	Bartels, Alan	Status: Plugged
297674	2216697	T74N, R16W, S34	nom. +/- 25m.	231 (m)	15	3/17/2021	Bartels, Alan	Status: Plugged
297089	2156904	T74N, R16W, S33	nom. +/- 25m.	623 (m)	35	1/1/1950	Connell, Mike	Status: Plugged
298814	2161540	T73N, R16W, S3	nom. +/- 25m.	(m)	35	1/1/1930	Nollen, Keith	Status: Plugged

**Wells Registered For Testing**

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
297093	59761	T74N, R16W, Sec. 33, SE, NE, NE	Calc. +/- 140m.	573 (m)	80	1940	Groenenboom, Roelofina	Drilling method: Drilled; Known well depth

**Permitted Private Wells**

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
--------	----------	----------	----------	------------------	------------	---------------------------	------------------	-------------------

No records found from this data source

**Abandoned Wells (plugged)**

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
298841	19667	T73N, R16W, Sec. 3, NE, SW, SW	Calc. +/- 1135m.	1171 (m)	28	n.a.	Ver Steegh, Dick, C/O Don Herteen	Well plugged: 7/12/1994; Well type: > 18" dia.

**Water Use Facilities**

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
No records found from this data source								

**Municipal Wells And Intakes**

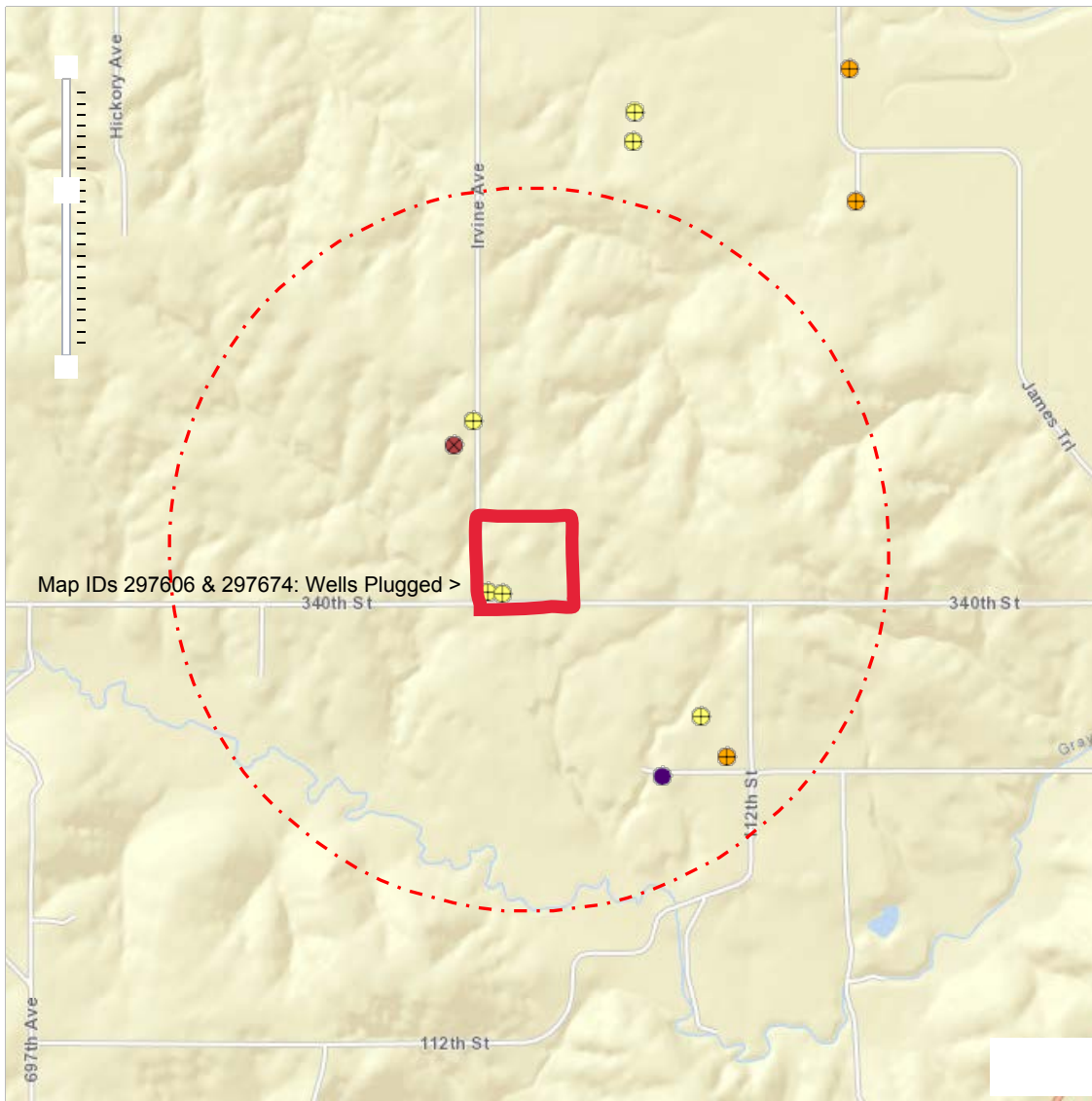
Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
No records found from this data source								

**Ag Drainage Wells**

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
No records found from this data source								

**Well Search Buffered Map**

**Subject:** XY UTM Coordinates: 525567/4556949  
Search Radius (mi): 1

**Map Notes:**

- UST
- ★ LUST
- Wells

Please refer to the Accuracy column in Well Search Detail.

Since multiple points can be at the same spot ( as those located to the center of a quarter section), points were randomly dispersed within 10 meters around that spot so all points can be seen.

Site Name: Harris Lane



Unsuitable for Land Application

Farmer Name: Luke Harris

Phone: (641)799-8640

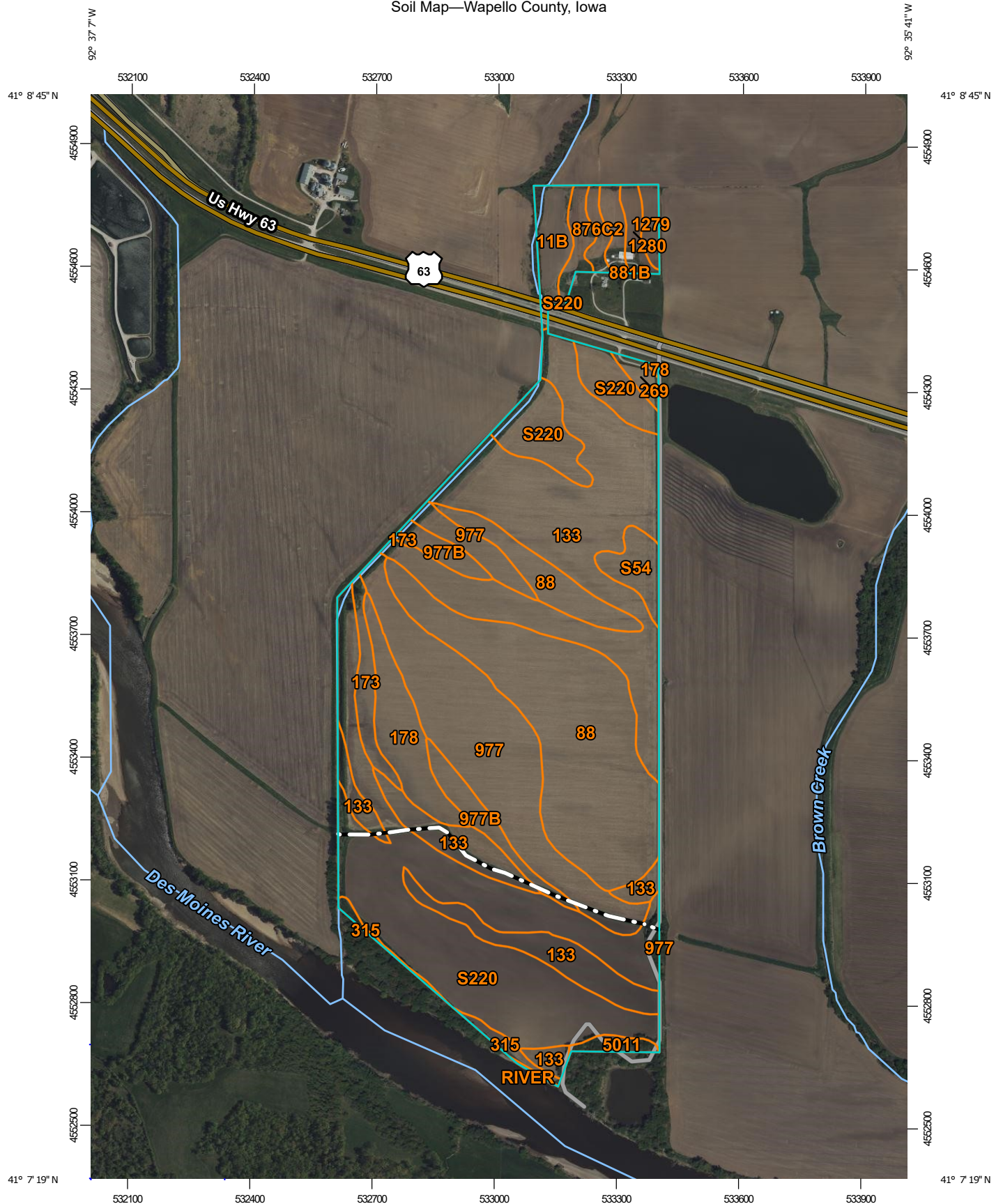
Spreadable Acres: 278

I certify I have followed all stockpiling and spreading rules provided by ELM.

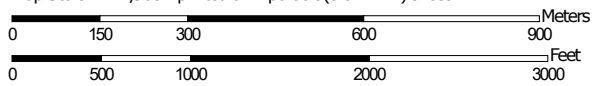
Signature \_\_\_\_\_ Date \_\_\_\_\_



# Soil Map—Wapello County, Iowa



Map Scale: 1:12,900 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84



**Natural Resources  
Conservation Service**

Web Soil Survey  
National Cooperative Soil Survey

9/8/2023  
Page 1 of 4

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
11B	Colo-Ely complex, 0 to 5 percent slopes	5.5	1.9%
88	Nevin silty clay loam, 0 to 2 percent slopes	54.9	18.6%
133	Colo silty clay loam, 0 to 2 percent slopes, occasionally flooded	77.3	26.1%
173	Hoopeston fine sandy loam, 1 to 3 percent slopes	4.7	1.6%
178	Waukee loam, 0 to 2 percent slopes	10.8	3.7%
269	Humeston silt loam, 0 to 2 percent slopes, occasionally flooded	1.7	0.6%
315	Landes-Perks-Nodaway complex, 1 to 3 percent slopes, frequently flooded	2.3	0.8%
592D2	Mystic silt loam, 9 to 14 percent slopes, moderately eroded	3.0	1.0%
876B	Ladoga silt loam, terrace, 2 to 5 percent slopes	2.5	0.9%
876C2	Ladoga silt loam, terrace, 5 to 9 percent slopes, eroded	2.0	0.7%
881B	Otley silty clay loam, terrace, 2 to 5 percent slopes	0.0	0.0%
977	Richwood silt loam, 0 to 2 percent slopes, rarely flooded	38.8	13.1%
977B	Richwood silt loam, 2 to 5 percent slopes	7.8	2.6%
1279	Taintor silty clay loam, terrace, 0 to 2 percent slopes	2.0	0.7%
1280	Mahaska silty clay loam, terrace, 0 to 2 percent slopes	2.6	0.9%
5011	Anthropotic Udorthents, reclaimed sand and gravel pits, 0 to 9 percent slopes	1.7	0.6%
RIVER	Water, rivers and streams	0.1	0.0%
S54	Zook silty clay loam, heavy till, 0 to 2 percent slopes, occasionally flooded	4.6	1.6%
S220	Nodaway silt loam, heavy till, 0 to 2 percent slopes, occasionally flooded	73.4	24.8%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
<b>Totals for Area of Interest</b>		<b>295.8</b>	<b>100.0%</b>

## T Factor

Map unit symbol	Map unit name	Rating (tons per acre per year)	Acres in AOI	Percent of AOI
11B	Colo-Ely complex, 0 to 5 percent slopes	5	5.5	1.9%
88	Nevin silty clay loam, 0 to 2 percent slopes	5	54.9	18.6%
133	Colo silty clay loam, 0 to 2 percent slopes, occasionally flooded	5	77.3	26.1%
173	Hoopeston fine sandy loam, 1 to 3 percent slopes	3	4.7	1.6%
178	Waukee loam, 0 to 2 percent slopes	3	10.8	3.7%
269	Humeston silt loam, 0 to 2 percent slopes, occasionally flooded	5	1.7	0.6%
315	Landes-Perks-Nodaway complex, 1 to 3 percent slopes, frequently flooded	5	2.3	0.8%
592D2	Mystic silt loam, 9 to 14 percent slopes, moderately eroded	3	3.0	1.0%
876B	Ladoga silt loam, terrace, 2 to 5 percent slopes	5	2.5	0.9%
876C2	Ladoga silt loam, terrace, 5 to 9 percent slopes, eroded	5	2.0	0.7%
881B	Otley silty clay loam, terrace, 2 to 5 percent slopes	5	0.0	0.0%
977	Richwood silt loam, 0 to 2 percent slopes, rarely flooded	5	38.8	13.1%
977B	Richwood silt loam, 2 to 5 percent slopes	5	7.8	2.6%
1279	Taintor silty clay loam, terrace, 0 to 2 percent slopes	5	2.0	0.7%
1280	Mahaska silty clay loam, terrace, 0 to 2 percent slopes	5	2.6	0.9%
5011	Anthropotic Udorthents, reclaimed sand and gravel pits, 0 to 9 percent slopes	5	1.7	0.6%

Map unit symbol	Map unit name	Rating (tons per acre per year)	Acres in AOI	Percent of AOI
RIVER	Water, rivers and streams		0.1	0.0%
S54	Zook silty clay loam, heavy till, 0 to 2 percent slopes, occasionally flooded	5	4.6	1.6%
S220	Nodaway silt loam, heavy till, 0 to 2 percent slopes, occasionally flooded	5	73.4	24.8%
Totals for Area of Interest			295.8	100.0%

## Description

The T factor is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

## Rating Options

*Units of Measure:* tons per acre per year

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff:* None Specified

*Tie-break Rule:* Lower

*Interpret Nulls as Zero:* No

## Depth to Water Table

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
11B	Colo-Ely complex, 0 to 5 percent slopes	0	5.5	1.9%
88	Nevin silty clay loam, 0 to 2 percent slopes	30	54.9	18.6%
133	Colo silty clay loam, 0 to 2 percent slopes, occasionally flooded	0	77.3	26.1%
173	Hoopeston fine sandy loam, 1 to 3 percent slopes	30	4.7	1.6%
178	Waukee loam, 0 to 2 percent slopes	>200	10.8	3.7%
269	Humeston silt loam, 0 to 2 percent slopes, occasionally flooded	0	1.7	0.6%
315	Landes-Perks-Nodaway complex, 1 to 3 percent slopes, frequently flooded	122	2.3	0.8%
592D2	Mystic silt loam, 9 to 14 percent slopes, moderately eroded	30	3.0	1.0%
876B	Ladoga silt loam, terrace, 2 to 5 percent slopes	122	2.5	0.9%
876C2	Ladoga silt loam, terrace, 5 to 9 percent slopes, eroded	122	2.0	0.7%
881B	Otley silty clay loam, terrace, 2 to 5 percent slopes	61	0.0	0.0%
977	Richwood silt loam, 0 to 2 percent slopes, rarely flooded	>200	38.8	13.1%
977B	Richwood silt loam, 2 to 5 percent slopes	>200	7.8	2.6%
1279	Taintor silty clay loam, terrace, 0 to 2 percent slopes	0	2.0	0.7%
1280	Mahaska silty clay loam, terrace, 0 to 2 percent slopes	30	2.6	0.9%
5011	Anthropotic Udorthents, reclaimed sand and gravel pits, 0 to 9 percent slopes	122	1.7	0.6%



Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
RIVER	Water, rivers and streams	>200	0.1	0.0%
S54	Zook silty clay loam, heavy till, 0 to 2 percent slopes, occasionally flooded	0	4.6	1.6%
S220	Nodaway silt loam, heavy till, 0 to 2 percent slopes, occasionally flooded	122	73.4	24.8%
<b>Totals for Area of Interest</b>			<b>295.8</b>	<b>100.0%</b>

## Description

"Water table" refers to a saturated zone in the soil. It occurs during specified months. Estimates of the upper limit are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

## Rating Options

*Units of Measure:* centimeters

*Aggregation Method:* Dominant Component

*Component Percent Cutoff:* None Specified

*Tie-break Rule:* Lower

*Interpret Nulls as Zero:* No

*Beginning Month:* January

*Ending Month:* December

## Well Search

[Print](#) | [Help](#) |

## Well Search Report

Site: Harris Lane

Included in search	No. of wells	Database
X	3	IGS well database General well database maintained by IGS, location accuracy varies 3,730 to 25 ft., last updated 8/2005.
X	0	Public wells Municipal and nonmunicipal public well databases maintained by IGS, location varies 3,730 to 25 ft., under development.
X	0	SDWIS public wells Public well database developed from the Safe Drinking Water Information System database maintained by IDNR, estimated locational accuracy varies from 15m. to 3300m. Created from 5/2005 data.
X	3	Private well tracking system IDNR database management system for Grants-to-counties-covered wells. Locational accuracy unknown, assumed to be +/- 17 m., Last update 7/2005.
X	0	Wells registered for testing Wells tested under Grant-to-Counties program. Locational accuracy varies 1150 to 150 m.; Last update 9/2001, no future updates planned.
X	0	Permitted private wells Wells permitted under Grant-to-Counties program. Locational accuracy varies 1150 to 150 m.; Last update 9/2001, no future updates planned.
X	1	Registered abandoned wells Wells abandoned under Grant-to-Counties program. Locational accuracy varies 1150 to 150 m.; Last update 9/2001, no future updates planned.
X	0	Water use facilities Wells used by facilities permitted to withdraw >25,000 gallons per day, locational accuracy is +/-20m to 1150 m. Created from 7/2005 data.
X	0	Municipal wells and intakes Locational accuracy 220 m., last updated 8/96.
X	0	Ag drainage wells Locational accuracy 100 m., last updated 4/98.

## Well Search Detail

**Subject:** XY UTM Coordinates: 532992/4553591  
Search Radius (mi): 1

## IGS Well Database

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
304790	<a href="#">6949</a>	T73N, R15W, 8, NE SE NE SW	Calc. +/- 230 ft.	1027 (m)	109	10/3/1954	Dykstra, C.	Bedrock Depth: 40 Well Type: Unknown
305647	<a href="#">44036</a>	T73N, R15W, 9, SE NW NW SE	Calc. +/- 230 ft.	1552 (m)	135	4/9/1996	Gaass, Peter	Bedrock Depth: 55 Well Type: Livestock
305716	<a href="#">3809</a>	T73N, R15W, 9, SE NW SE NW	Calc. +/- 230 ft.	1543 (m)	160	5/16/1949	Goss, G.	Bedrock Depth: 35 Well Type: Unknown

## Public Wells

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
No records found from this data source								

## SDWIS public wells

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
No records found from this data source								

## Private Well Tracking System

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
303880	2007225	T73N, R15W, S8	nom. +/- 25m.	(m)	125	8/22/1995	FRANKLIN, GEORGE	Status: Active
305566	2007324	T73N, R15W, S9	nom. +/- 25m.	1494 (m)	135	4/9/1996	GAASS, PETER	Status: Active
304742	2125927	T73N, R15W, S4	nom. +/- 25m.	1568 (m)	15	1/1/1955	Hook, Wayne	Status: Plugged

## Wells Registered For Testing

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
No records found from this data source								

## Permitted Private Wells

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
No records found from this data source								

Abandoned Wells (plugged)								
Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
305568	25777	T73N, R15W, Sec. 9, SE, NW, NW	Calc. +/- 140m.	1502 (m)	115	n.a.	Gaass, Peter	Well plugged: 7/3/1996; Well type: < 18" dia.

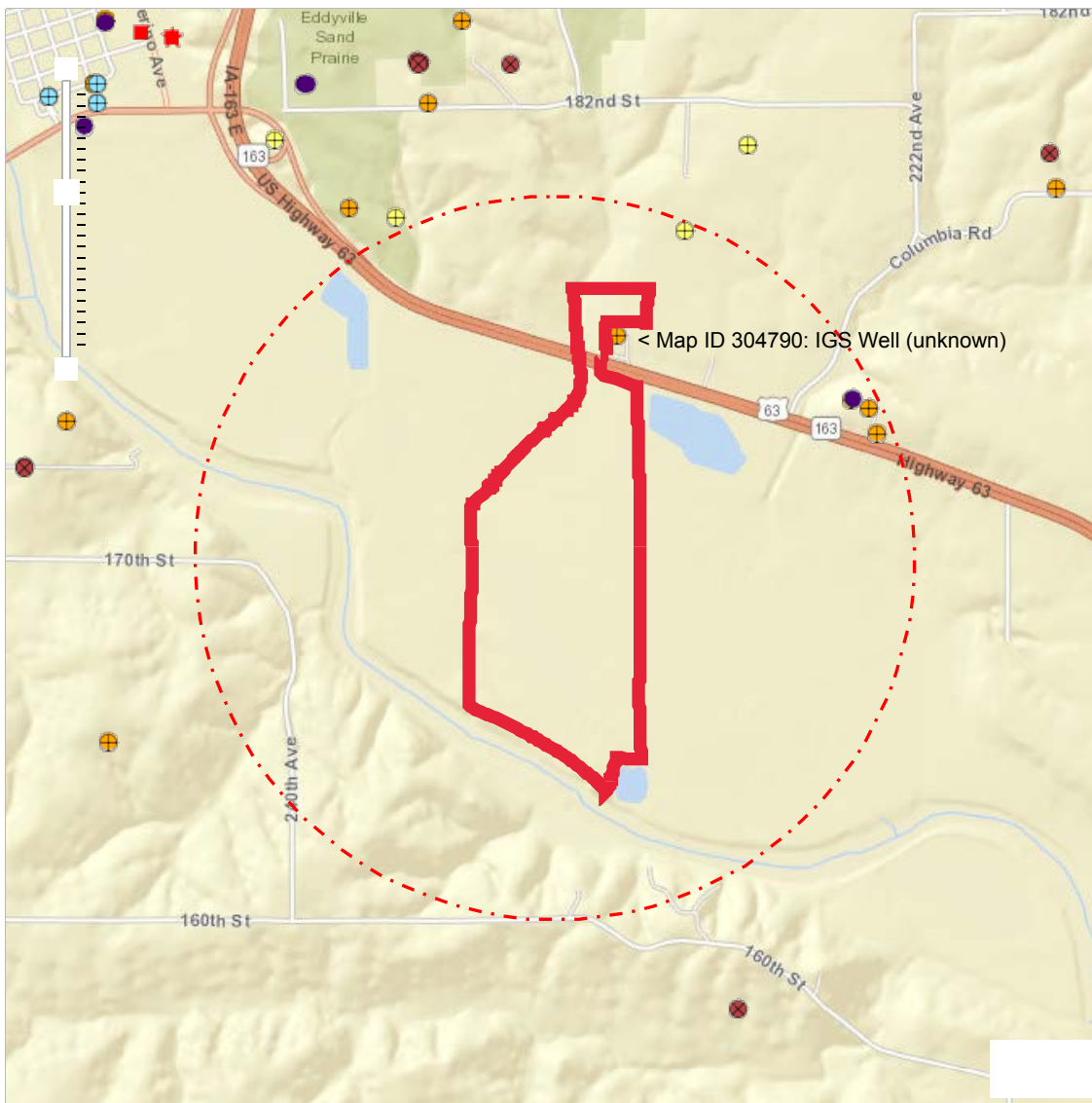
Water Use Facilities								
Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
No records found from this data source								

Municipal Wells And Intakes								
Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
No records found from this data source								

Ag Drainage Wells								
Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
No records found from this data source								

## Well Search Buffered Map

**Subject:** XY UTM Coordinates: 532992/4553591  
Search Radius (mi): 1

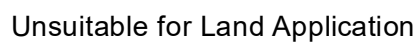
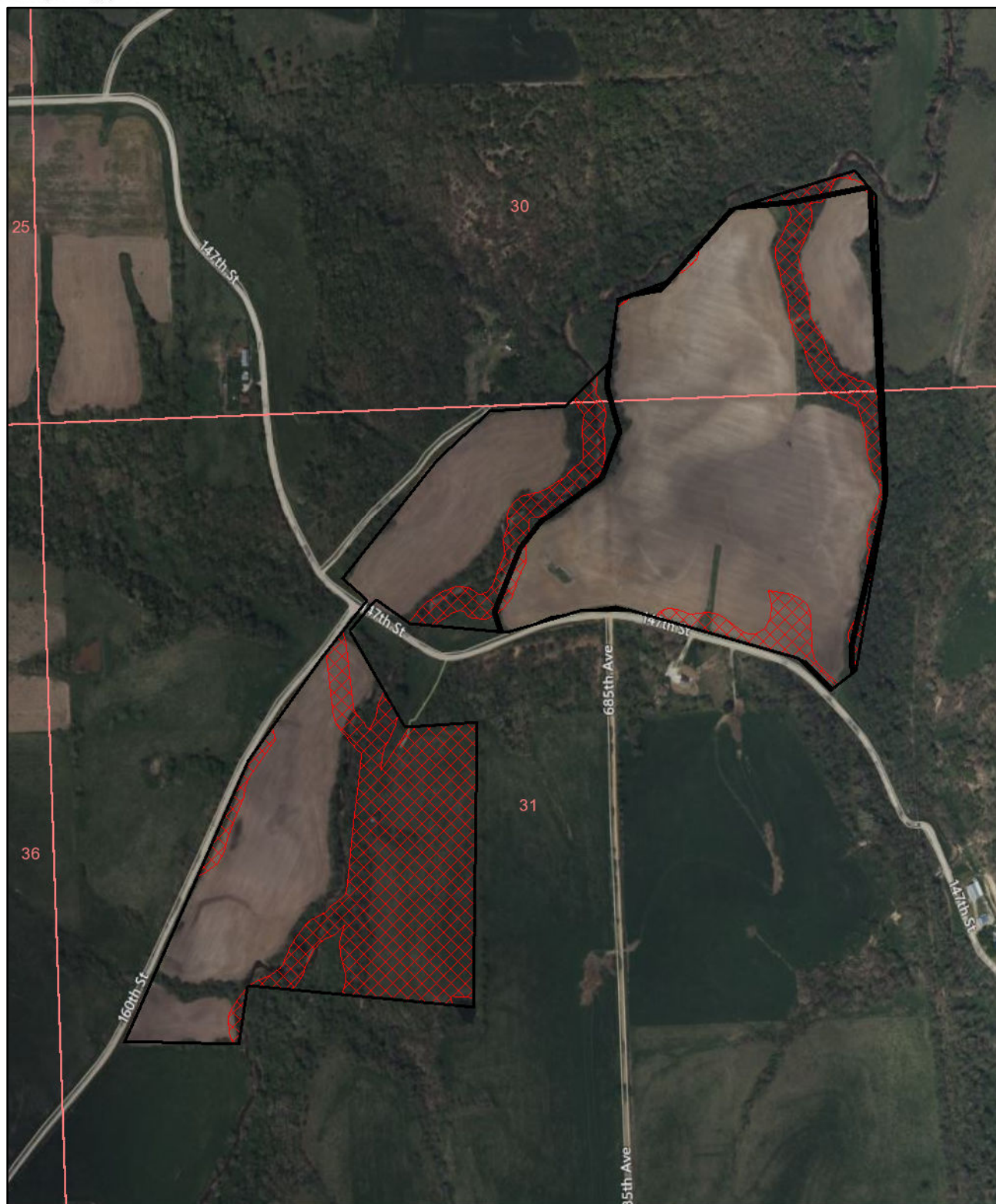


### Map Notes:

- UST
- ★ LUST
- ✱ Wells

Please refer to the Accuracy column in Well Search Detail.

Since multiple points can be at the same spot ( as those located to the center of a quarter section), points were randomly dispersed within 10 meters around that spot so all points can be seen.



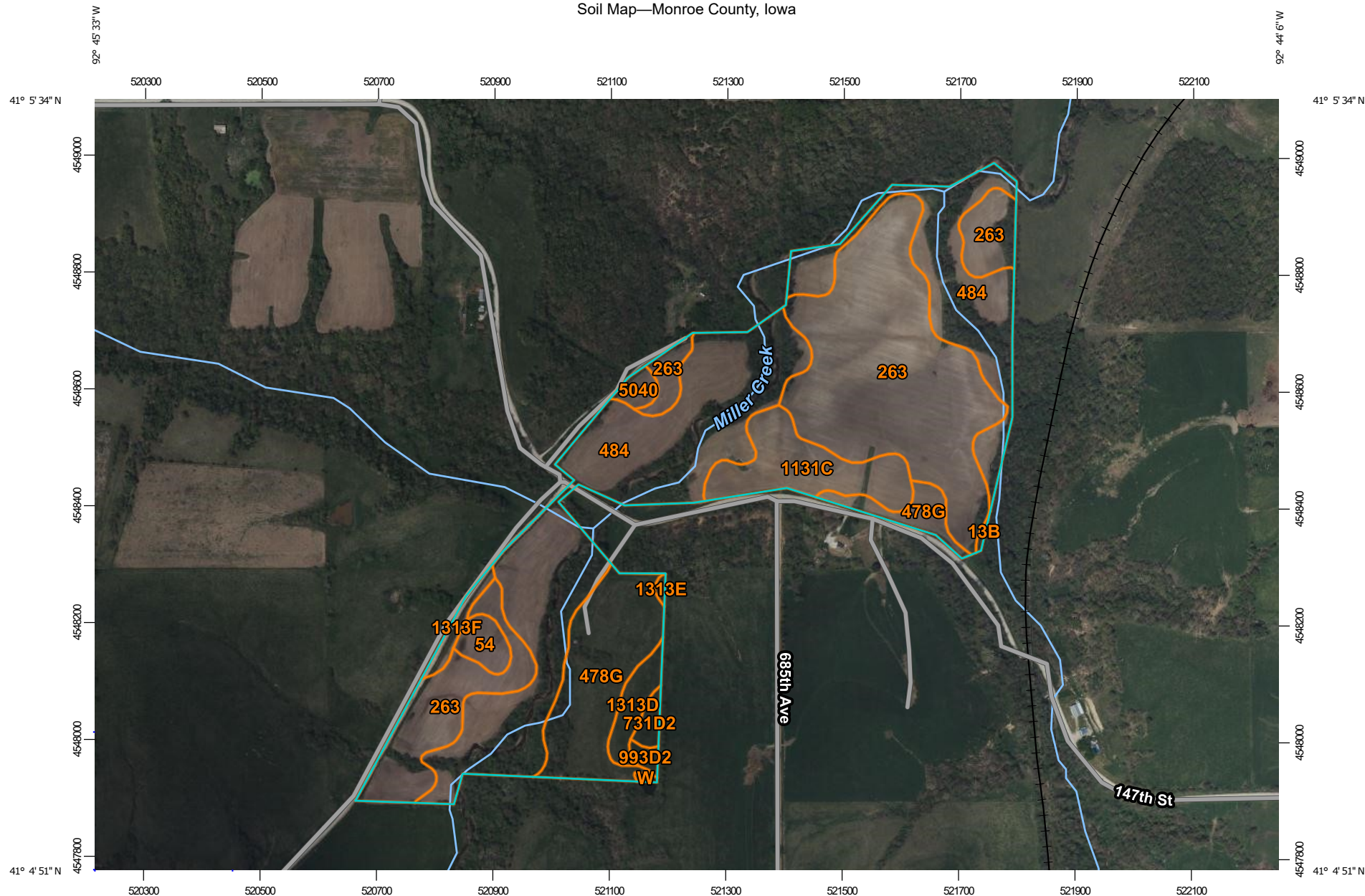
Spreadable Acres: 82

I certify I have followed all stockpiling and spreading rules provided by ELM.

Signature\_\_\_\_\_Date\_\_\_\_\_



# Soil Map—Monroe County, Iowa



Map Scale: 1:9,300 if printed on A landscape (11" x 8.5") sheet.

0 100 200 400 600 Meters

0 450 900 1800 2700 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84



**Natural Resources  
Conservation Service**

Web Soil Survey  
National Cooperative Soil Survey

9/8/2023  
Page 1 of 3

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
13B	Olmitz-Colo-Vesser complex, 2 to 5 percent slopes	0.1	0.1%
54	Zook silty clay loam, 0 to 2 percent slopes	1.6	1.4%
263	Okaw silt loam, heavy till, 0 to 2 percent slopes, rarely flooded	41.0	35.7%
478G	Munterville-Rock outcrop complex, 14 to 40 percent slopes	13.6	11.8%
484	Lawson silt loam, 0 to 2 percent slopes	45.5	39.6%
731D2	Pershing silty clay loam, 9 to 14 percent slopes, moderately eroded	0.8	0.7%
993D2	Gara-Armstrong loams, 9 to 14 percent slopes, moderately eroded	0.5	0.4%
1131C	Pershing silt loam, terrace, 5 to 9 percent slopes	7.5	6.5%
1313D	Munterville silt loam, 9 to 14 percent slopes	2.1	1.8%
1313E	Munterville silt loam, 14 to 18 percent slopes	0.2	0.1%
1313F	Munterville silt loam, 18 to 25 percent slopes	1.1	0.9%
5040	Anthropotic Udorthents, 2 to 9 percent slopes	0.9	0.8%
W	Water	0.1	0.1%
<b>Totals for Area of Interest</b>		<b>114.8</b>	<b>100.0%</b>

## T Factor

Map unit symbol	Map unit name	Rating (tons per acre per year)	Acres in AOI	Percent of AOI
13B	Olmitz-Colo-Vesser complex, 2 to 5 percent slopes	5	0.1	0.1%
54	Zook silty clay loam, 0 to 2 percent slopes	5	1.6	1.4%
263	Okaw silt loam, heavy till, 0 to 2 percent slopes, rarely flooded	3	41.0	35.7%
478G	Munterville-Rock outcrop complex, 14 to 40 percent slopes	5	13.6	11.8%
484	Lawson silt loam, 0 to 2 percent slopes	5	45.5	39.6%
731D2	Pershing silty clay loam, 9 to 14 percent slopes, moderately eroded	5	0.8	0.7%
993D2	Gara-Armstrong loams, 9 to 14 percent slopes, moderately eroded	5	0.5	0.4%
1131C	Pershing silt loam, terrace, 5 to 9 percent slopes	5	7.5	6.5%
1313D	Munterville silt loam, 9 to 14 percent slopes	5	2.1	1.8%
1313E	Munterville silt loam, 14 to 18 percent slopes	5	0.2	0.1%
1313F	Munterville silt loam, 18 to 25 percent slopes	5	1.1	0.9%
5040	Anthropotic Udorthents, 2 to 9 percent slopes	5	0.9	0.8%
W	Water		0.1	0.1%
<b>Totals for Area of Interest</b>			<b>114.8</b>	<b>100.0%</b>

## Description

The T factor is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

## Depth to Water Table

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
13B	Olmitz-Colo-Vesser complex, 2 to 5 percent slopes	122	0.1	0.1%
54	Zook silty clay loam, 0 to 2 percent slopes	0	1.6	1.4%
263	Okaw silt loam, heavy till, 0 to 2 percent slopes, rarely flooded	0	41.0	35.7%
478G	Munterville-Rock outcrop complex, 14 to 40 percent slopes	61	13.6	11.8%
484	Lawson silt loam, 0 to 2 percent slopes	30	45.5	39.6%
731D2	Pershing silty clay loam, 9 to 14 percent slopes, moderately eroded	30	0.8	0.7%
993D2	Gara-Armstrong loams, 9 to 14 percent slopes, moderately eroded	>200	0.5	0.4%
1131C	Pershing silt loam, terrace, 5 to 9 percent slopes	30	7.5	6.5%
1313D	Munterville silt loam, 9 to 14 percent slopes	61	2.1	1.8%
1313E	Munterville silt loam, 14 to 18 percent slopes	61	0.2	0.1%
1313F	Munterville silt loam, 18 to 25 percent slopes	61	1.1	0.9%
5040	Anthroptic Udorthents, 2 to 9 percent slopes	122	0.9	0.8%
W	Water	>200	0.1	0.1%
<b>Totals for Area of Interest</b>			<b>114.8</b>	<b>100.0%</b>

## Well Search

[Print](#) | [Help](#) |

## Well Search Report

Site: Harris Pearson

Included in search	No. of wells	Database
X	0	IGS well database General well database maintained by IGS, location accuracy varies 3,730 to 25 ft., last updated 8/2005.
X	0	Public wells Municipal and nonmunicipal public well databases maintained by IGS, location varies 3,730 to 25 ft., under development.
X	0	SDWIS public wells Public well database developed from the Safe Drinking Water Information System database maintained by IDNR, estimated locational accuracy varies from 15m. to 3300m. Created from 5/2005 data.
X	0	Private well tracking system IDNR database management system for Grants-to-counties-covered wells. Locational accuracy unknown, assumed to be +/- 17 m., Last update 7/2005.
X	0	Wells registered for testing Wells tested under Grant-to-Counties program. Locational accuracy varies 1150 to 150 m.; Last update 9/2001, no future updates planned.
X	0	Permitted private wells Wells permitted under Grant-to-Counties program. Locational accuracy varies 1150 to 150 m.; Last update 9/2001, no future updates planned.
X	1	Registered abandoned wells Wells abandoned under Grant-to-Counties program. Locational accuracy varies 1150 to 150 m.; Last update 9/2001, no future updates planned.
X	0	Water use facilities Wells used by facilities permitted to withdraw >25,000 gallons per day, locational accuracy is +/-20m to 1150 m. Created from 7/2005 data.
X	0	Municipal wells and intakes Locational accuracy 220 m., last updated 8/96.
X	0	Ag drainage wells Locational accuracy 100 m., last updated 4/98.

**Well Search Detail**

**Subject:** XY UTM Coordinates: 521226/4548388  
Search Radius (mi): 1

**IGS Well Database**

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
--------	----------	----------	----------	------------------	------------	---------------------------	------------------	-------------------

No records found from this data source

**Public Wells**

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
--------	----------	----------	----------	------------------	------------	---------------------------	------------------	-------------------

No records found from this data source

**SDWIS public wells**

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
--------	----------	----------	----------	------------------	------------	---------------------------	------------------	-------------------

No records found from this data source

**Private Well Tracking System**

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
--------	----------	----------	----------	------------------	------------	---------------------------	------------------	-------------------

No records found from this data source

**Wells Registered For Testing**

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
--------	----------	----------	----------	------------------	------------	---------------------------	------------------	-------------------

No records found from this data source

**Permitted Private Wells**

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
--------	----------	----------	----------	------------------	------------	---------------------------	------------------	-------------------

No records found from this data source

**Abandoned Wells (plugged)**

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
299257	19165	T73N, R17W, Sec. 36, SE, NW, NW	Calc. +/- 1135m.	1531 (m)	24	n.a.	Gibb, Robert, C/O Don Herteen	Well plugged: 5/17/1994; Well type: > 18" dia.

**Water Use Facilities**



Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
No records found from this data source								

**Municipal Wells And Intakes**

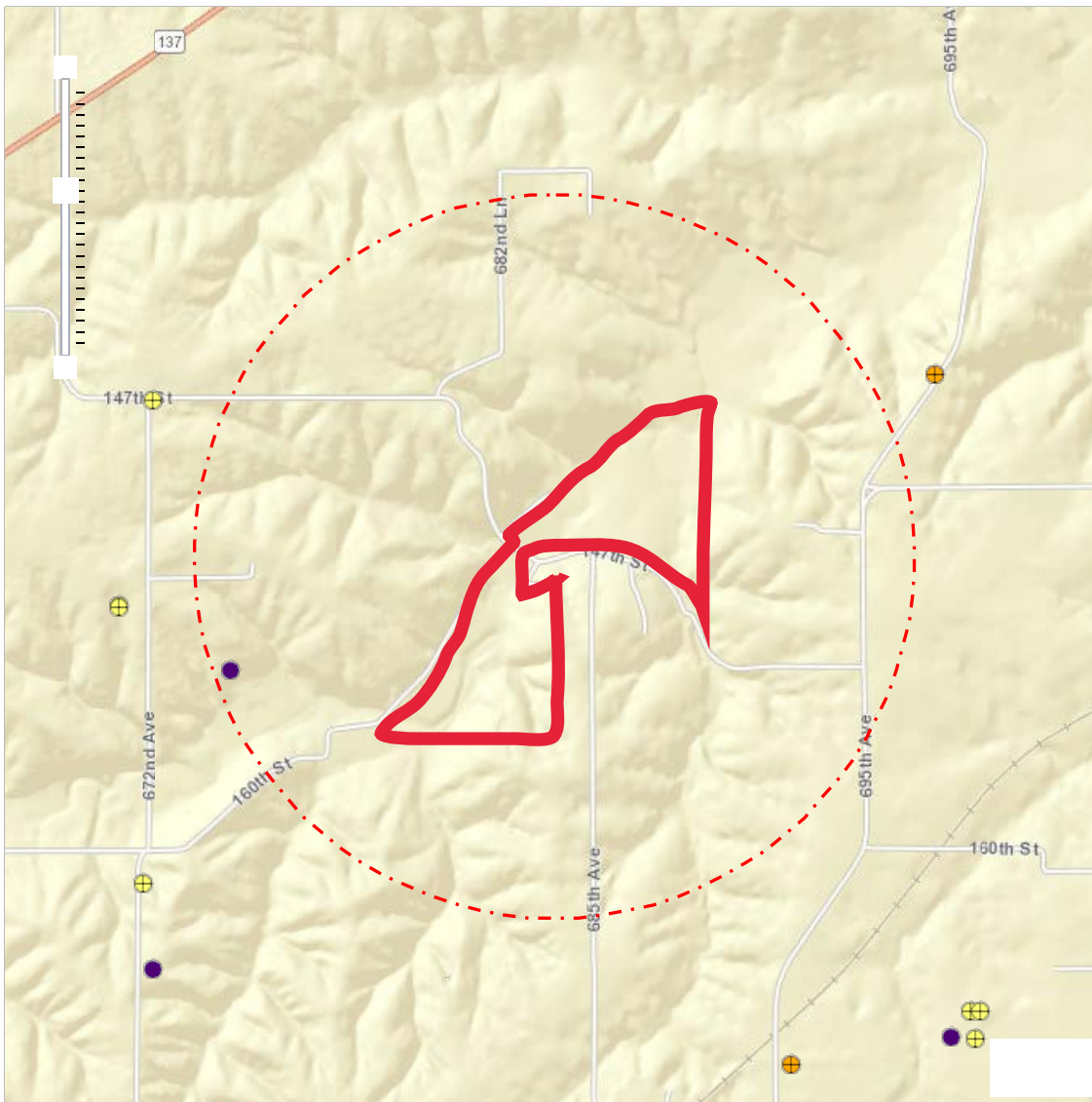
Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
No records found from this data source								

**Ag Drainage Wells**

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
No records found from this data source								

**Well Search Buffered Map**

**Subject:** XY UTM Coordinates: 521226/4548388  
Search Radius (mi): 1

**Map Notes:**

- UST
- ★ LUST
- Wells

Please refer to the Accuracy column in Well Search Detail.

Since multiple points can be at the same spot ( as those located to the center of a quarter section), points were randomly dispersed within 10 meters around that spot so all points can be seen.

Site Name: Harris Vanderlinden



Unsuitable for Land Application

Farmer Name: Luke Harris

Phone: (641)799-8640

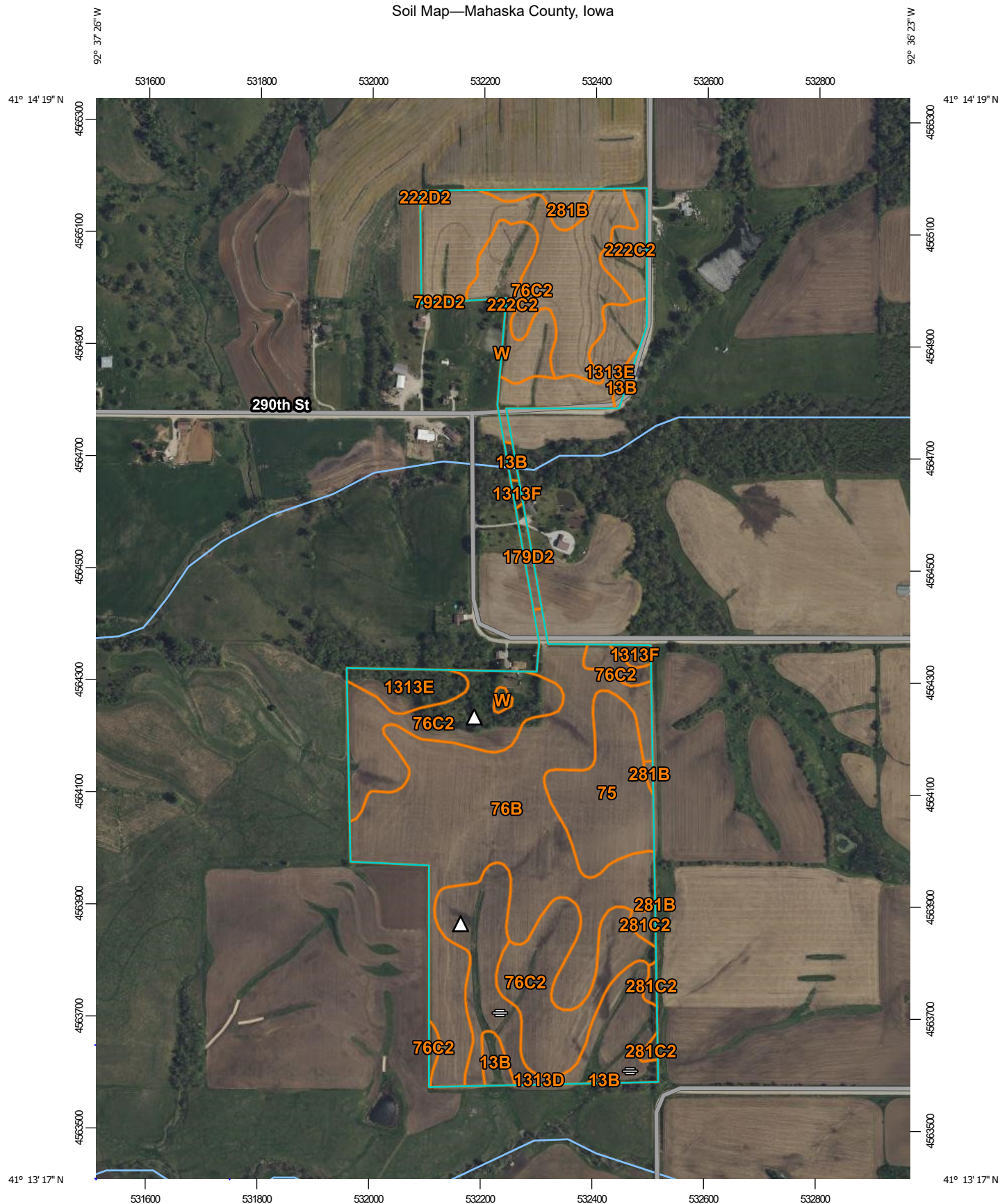
Spreadable Acres: 99

I certify I have followed all stockpiling and spreading rules provided by ELM.

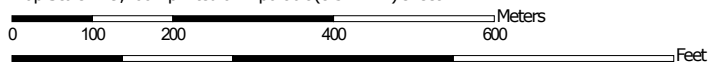
Signature \_\_\_\_\_ Date \_\_\_\_\_



# Soil Map—Mahaska County, Iowa



Map Scale: 1:9,400 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84



**Natural Resources  
Conservation Service**

Web Soil Survey  
National Cooperative Soil Survey

9/8/2023  
Page 1 of 3

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
13B	Nodaway-Vesser silt loams, 2 to 5 percent slopes	1.7	1.4%
75	Givin silt loam, 1 to 3 percent slopes	9.4	7.7%
76B	Ladoga silt loam, 2 to 5 percent slopes	38.0	31.2%
76C2	Ladoga silt loam, 5 to 9 percent slopes, eroded	38.3	31.4%
179D2	Gara loam, 9 to 14 percent slopes, moderately eroded	0.7	0.6%
222C2	Clarinda silty clay loam, 5 to 9 percent slopes, moderately eroded	8.0	6.6%
222D2	Clarinda silty clay loam, 9 to 14 percent slopes, moderately eroded	0.1	0.1%
281B	Otley silty clay loam, 2 to 5 percent slopes	1.7	1.4%
281C2	Otley silty clay loam, 5 to 9 percent slopes, eroded	1.1	0.9%
792D2	Armstrong loam, 9 to 14 percent slopes, moderately eroded	0.0	0.0%
1313D	Munterville silt loam, 9 to 14 percent slopes	13.5	11.0%
1313E	Munterville silt loam, 14 to 18 percent slopes	8.3	6.9%
1313F	Munterville silt loam, 18 to 25 percent slopes	0.7	0.6%
W	Water	0.3	0.2%
<b>Totals for Area of Interest</b>		<b>121.8</b>	<b>100.0%</b>

## T Factor

Map unit symbol	Map unit name	Rating (tons per acre per year)	Acres in AOI	Percent of AOI
13B	Nodaway-Vesser silt loams, 2 to 5 percent slopes	5	1.7	1.4%
75	Givin silt loam, 1 to 3 percent slopes	5	9.4	7.7%
76B	Ladoga silt loam, 2 to 5 percent slopes	5	38.0	31.2%
76C2	Ladoga silt loam, 5 to 9 percent slopes, eroded	5	38.3	31.4%
179D2	Gara loam, 9 to 14 percent slopes, moderately eroded	5	0.7	0.6%
222C2	Clarinda silty clay loam, 5 to 9 percent slopes, moderately eroded	3	8.0	6.6%
222D2	Clarinda silty clay loam, 9 to 14 percent slopes, moderately eroded	3	0.1	0.1%
281B	Otley silty clay loam, 2 to 5 percent slopes	5	1.7	1.4%
281C2	Otley silty clay loam, 5 to 9 percent slopes, eroded	5	1.1	0.9%
792D2	Armstrong loam, 9 to 14 percent slopes, moderately eroded	3	0.0	0.0%
1313D	Munterville silt loam, 9 to 14 percent slopes	5	13.5	11.0%
1313E	Munterville silt loam, 14 to 18 percent slopes	5	8.3	6.9%
1313F	Munterville silt loam, 18 to 25 percent slopes	5	0.7	0.6%
W	Water		0.3	0.2%
<b>Totals for Area of Interest</b>			<b>121.8</b>	<b>100.0%</b>

## Description

The T factor is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.



## Depth to Water Table

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
13B	Nodaway-Vesser silt loams, 2 to 5 percent slopes	122	1.7	1.4%
75	Givin silt loam, 1 to 3 percent slopes	30	9.4	7.7%
76B	Ladoga silt loam, 2 to 5 percent slopes	122	38.0	31.2%
76C2	Ladoga silt loam, 5 to 9 percent slopes, eroded	122	38.3	31.4%
179D2	Gara loam, 9 to 14 percent slopes, moderately eroded	>200	0.7	0.6%
222C2	Clarinda silty clay loam, 5 to 9 percent slopes, moderately eroded	0	8.0	6.6%
222D2	Clarinda silty clay loam, 9 to 14 percent slopes, moderately eroded	0	0.1	0.1%
281B	Otley silty clay loam, 2 to 5 percent slopes	61	1.7	1.4%
281C2	Otley silty clay loam, 5 to 9 percent slopes, eroded	61	1.1	0.9%
792D2	Armstrong loam, 9 to 14 percent slopes, moderately eroded	30	0.0	0.0%
1313D	Munterville silt loam, 9 to 14 percent slopes	61	13.5	11.0%
1313E	Munterville silt loam, 14 to 18 percent slopes	61	8.3	6.9%
1313F	Munterville silt loam, 18 to 25 percent slopes	61	0.7	0.6%
W	Water	>200	0.3	0.2%
<b>Totals for Area of Interest</b>			<b>121.8</b>	<b>100.0%</b>

## Well Search

[Print](#) | [Help](#) |

## Well Search Report

Site: Harris Vanderlinden

Included in search	No. of wells	Database
X	4	IGS well database General well database maintained by IGS, location accuracy varies 3,730 to 25 ft., last updated 8/2005.
X	0	Public wells Municipal and nonmunicipal public well databases maintained by IGS, location varies 3,730 to 25 ft., under development.
X	0	SDWIS public wells Public well database developed from the Safe Drinking Water Information System database maintained by IDNR, estimated locational accuracy varies from 15m. to 3300m. Created from 5/2005 data.
X	3	Private well tracking system IDNR database management system for Grants-to-counties-covered wells. Locational accuracy unknown, assumed to be +/- 17 m., Last update 7/2005.
X	0	Wells registered for testing Wells tested under Grant-to-Counties program. Locational accuracy varies 1150 to 150 m.; Last update 9/2001, no future updates planned.
X	0	Permitted private wells Wells permitted under Grant-to-Counties program. Locational accuracy varies 1150 to 150 m.; Last update 9/2001, no future updates planned.
X	1	Registered abandoned wells Wells abandoned under Grant-to-Counties program. Locational accuracy varies 1150 to 150 m.; Last update 9/2001, no future updates planned.
X	0	Water use facilities Wells used by facilities permitted to withdraw >25,000 gallons per day, locational accuracy is +/-20m to 1150 m. Created from 7/2005 data.
X	0	Municipal wells and intakes Locational accuracy 220 m., last updated 8/96.
X	0	Ag drainage wells Locational accuracy 100 m., last updated 4/98.

## Well Search Detail

**Subject:** XY UTM Coordinates: 532222/4564319  
Search Radius (mi): 1

## IGS Well Database

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
298969	<a href="#">1418</a>	T74N, R15W, 17, NW NW NE NE	Calc. +/- 230 ft.	1423 (m)	210	NULL	Bernstion	Bedrock Depth: 20 Well Type: Unknown
298734	<a href="#">79531</a>	T74N, R15W, 8, NE NE SW	Maps/Air Photos +/- 20 m.	760 (m)	420	NULL	Meinders, Bernard	Bedrock Depth: 69 Well Type: Private
298853	<a href="#">862</a>	T74N, R15W, 8, SW SE SW SW	Calc. +/- 230 ft.	1104 (m)	177	NULL	Sopher	Bedrock Depth: 20 Well Type: Unknown
297195	<a href="#">300</a>	T74N, R15W, 6, SE SE SW SE	Calc. +/- 230 ft.	912 (m)	200	NULL	Tullis	Bedrock Depth: 0 Well Type: Unknown

## Public Wells

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
No records found from this data source								

## SDWIS public wells

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
No records found from this data source								

## Private Well Tracking System

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
298789	2130071	T74N, R15W, S8	nom. +/- 25m.	609 (m)	100	9/5/1943	Brostrom, Randy	Status: Plugged
298413	2114607	T74N, R15W, S18	nom. +/- 25m.	1587 (m)	10	12/9/1950	Johnson, Charles	Status: Plugged
298788	2192289	T74N, R15W, S8	nom. +/- 25m.	(m)	31	1/1/1900	Vandonselaar, david	Status: Plugged

## Wells Registered For Testing

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
No records found from this data source								

Permitted Private Wells								
Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
No records found from this data source								

Abandoned Wells (plugged)								
Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
297400	33004	T74N, R15W, Sec. 5, SW, NW, SE	Calc. +/- 570m.	(m)	18	n.a.	Reeves, John W.	Well plugged: 10/4/1998; Well type: > 18" dia.

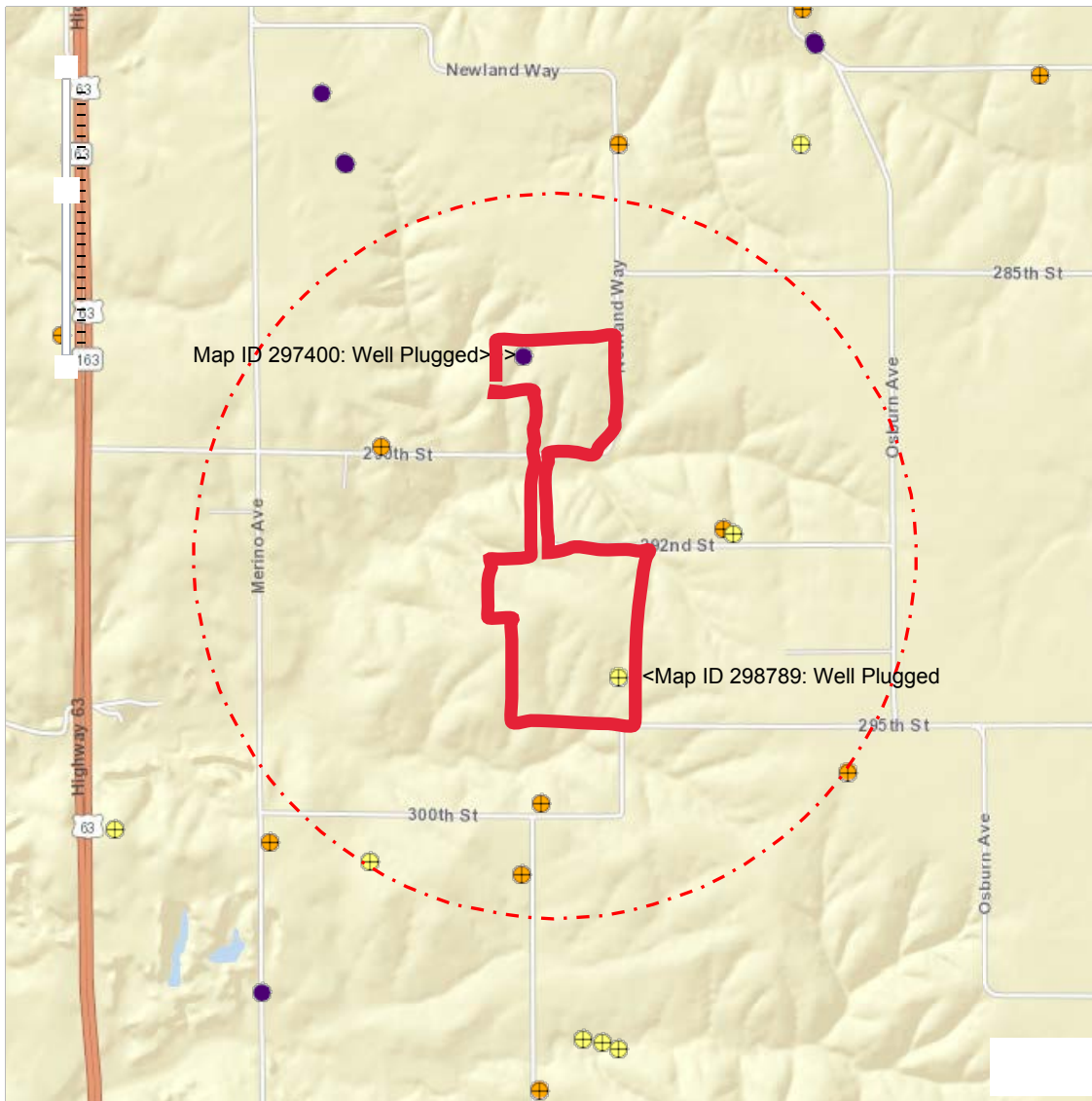
Water Use Facilities								
Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
No records found from this data source								

Municipal Wells And Intakes								
Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
No records found from this data source								

Ag Drainage Wells								
Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
No records found from this data source								

## Well Search Buffered Map

**Subject:** XY UTM Coordinates: 532222/4564319  
Search Radius (mi): 1



### Map Notes:

- UST
- ★ LUST
- Wells

Please refer to the Accuracy column in Well Search Detail.

Since multiple points can be at the same spot ( as those located to the center of a quarter section), points were randomly dispersed within 10 meters around that spot so all points can be seen.

Site Name: Harris Veen



Unsuitable for Land Application

Farmer Name: Luke Harris

Phone: (641)799-8640

Spreadable Acres: 49

I certify I have followed all stockpiling and spreading rules provided by ELM.

Signature \_\_\_\_\_ Date \_\_\_\_\_



# Soil Map—Mahaska County, Iowa



## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
54+	Zook silt loam, overwash, 0 to 2 percent slopes	8.4	10.5%
133	Colo silty clay loam, 0 to 2 percent slopes, occasionally flooded	11.7	14.7%
212	Kennebec silt loam, 0 to 2 percent slopes	25.0	31.4%
220	Nodaway silt loam, 0 to 2 percent slopes	8.8	11.0%
315	Nodaway-Alluvial land complex, 0 to 2 percent slopes	2.0	2.5%
485	Spillville loam, 0 to 2 percent slopes, occasionally flooded	23.8	29.9%
<b>Totals for Area of Interest</b>		<b>79.6</b>	<b>100.0%</b>

## T Factor

Map unit symbol	Map unit name	Rating (tons per acre per year)	Acres in AOI	Percent of AOI
54+	Zook silt loam, overwash, 0 to 2 percent slopes	5	8.4	10.5%
133	Colo silty clay loam, 0 to 2 percent slopes, occasionally flooded	5	11.7	14.7%
212	Kennebec silt loam, 0 to 2 percent slopes	5	25.0	31.4%
220	Nodaway silt loam, 0 to 2 percent slopes	5	8.8	11.0%
315	Nodaway-Alluvial land complex, 0 to 2 percent slopes	5	2.0	2.5%
485	Spillville loam, 0 to 2 percent slopes, occasionally flooded	5	23.8	29.9%
<b>Totals for Area of Interest</b>			<b>79.6</b>	<b>100.0%</b>

## Description

The T factor is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

## Rating Options

*Units of Measure:* tons per acre per year

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff:* None Specified

*Tie-break Rule:* Lower

*Interpret Nulls as Zero:* No

## Depth to Water Table

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
54+	Zook silt loam, overwash, 0 to 2 percent slopes	0	8.4	10.5%
133	Colo silty clay loam, 0 to 2 percent slopes, occasionally flooded	0	11.7	14.7%
212	Kennebec silt loam, 0 to 2 percent slopes	122	25.0	31.4%
220	Nodaway silt loam, 0 to 2 percent slopes	122	8.8	11.0%
315	Nodaway-Alluvial land complex, 0 to 2 percent slopes	122	2.0	2.5%
485	Spillville loam, 0 to 2 percent slopes, occasionally flooded	30	23.8	29.9%
<b>Totals for Area of Interest</b>			<b>79.6</b>	<b>100.0%</b>

## Description

"Water table" refers to a saturated zone in the soil. It occurs during specified months. Estimates of the upper limit are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

## Rating Options

*Units of Measure:* centimeters

*Aggregation Method:* Dominant Component

*Component Percent Cutoff:* None Specified

*Tie-break Rule:* Lower

*Interpret Nulls as Zero:* No

*Beginning Month:* January

*Ending Month:* December

## Well Search

[Print](#) | [Help](#) |

## Well Search Report

Site: Harris Veen

Included in search	No. of wells	Database
X	0	IGS well database General well database maintained by IGS, location accuracy varies 3,730 to 25 ft., last updated 8/2005.
X	0	Public wells Municipal and nonmunicipal public well databases maintained by IGS, location varies 3,730 to 25 ft., under development.
X	0	SDWIS public wells Public well database developed from the Safe Drinking Water Information System database maintained by IDNR, estimated locational accuracy varies from 15m. to 3300m. Created from 5/2005 data.
X	1	Private well tracking system IDNR database management system for Grants-to-counties-covered wells. Locational accuracy unknown, assumed to be +/- 17 m., Last update 7/2005.
X	3	Wells registered for testing Wells tested under Grant-to-Counties program. Locational accuracy varies 1150 to 150 m.; Last update 9/2001, no future updates planned.
X	0	Permitted private wells Wells permitted under Grant-to-Counties program. Locational accuracy varies 1150 to 150 m.; Last update 9/2001, no future updates planned.
X	5	Registered abandoned wells Wells abandoned under Grant-to-Counties program. Locational accuracy varies 1150 to 150 m.; Last update 9/2001, no future updates planned.
X	0	Water use facilities Wells used by facilities permitted to withdraw >25,000 gallons per day, locational accuracy is +/-20m to 1150 m. Created from 7/2005 data.
X	0	Municipal wells and intakes Locational accuracy 220 m., last updated 8/96.
X	0	Ag drainage wells Locational accuracy 100 m., last updated 4/98.

**Well Search Detail**

**Subject:** XY UTM Coordinates: 521004/4565944  
Search Radius (mi): 1

**IGS Well Database**

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
--------	----------	----------	----------	------------------	------------	---------------------------	------------------	-------------------

No records found from this data source

**Public Wells**

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
--------	----------	----------	----------	------------------	------------	---------------------------	------------------	-------------------

No records found from this data source

**SDWIS public wells**

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
--------	----------	----------	----------	------------------	------------	---------------------------	------------------	-------------------

No records found from this data source

**Private Well Tracking System**

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
287967	2121062	T74N, R16W, S6	nom. +/- 25m.	605 (m)	100	7/6/1967	Haselhuhn, Carolyn	Status: Active

**Wells Registered For Testing**

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
288927	1499	T74N, R16W, Sec. 6, SE, SE, NE	Calc. +/- 285m.	1325 (m)	17	1981	Geomost, Chester	Drilling method: Sandpoint; Known well depth
287058	34928	T74N, R16W, Sec. 6, NW, NW, NW	Calc. +/- 285m.	418 (m)	40	1900	Von Remthan, Russell	Drilling method: Dug;
287071	34929	T74N, R16W, Sec. 6, NW, NW, SE	Calc. +/- 285m.	407 (m)	35	1900	Von Remthan, Russell	Drilling method: Dug;

**Permitted Private Wells**

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
--------	----------	----------	----------	------------------	------------	---------------------------	------------------	-------------------

No records found from this data source

**Abandoned Wells (plugged)**



Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
287280	32003	T74N, R17W, Sec. 1, SE, NW, SE	Calc. +/- 570m.	(m)	25	n.a.	Mahaska Co Fair Board	Well plugged: 4/15/1998; Well type: < 18" dia.
287279	32004	T74N, R17W, Sec. 1, SE, NW, SE	Calc. +/- 570m.	1216 (m)	25	n.a.	Nance, Billie	Well plugged: 4/15/1998; Well type: > 18" dia.
288111	39616	T74N, R16W, Sec. 6, SE, NW, NW	Calc. +/- 140m.	609 (m)	21	n.a.	Patrick, Glenn	Well plugged: 1/24/2000; Well type: > 18" dia.
287341	13087	T74N, R16W, Sec. 6, NW, NE, SW	Calc. +/- 140m.	(m)	20	n.a.	Veldhuisen, Kathryn Hoyt	Well plugged: 9/23/1991; Well type: > 18" dia.
287995	22528	T74N, R16W, Sec. 6, NE, SE, NW	Calc. +/- 570m.	670 (m)	20	n.a.	Versteegh, Bros.	Well plugged: 9/25/1995; Well type: > 18" dia.

**Water Use Facilities**

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
No records found from this data source								

**Municipal Wells And Intakes**

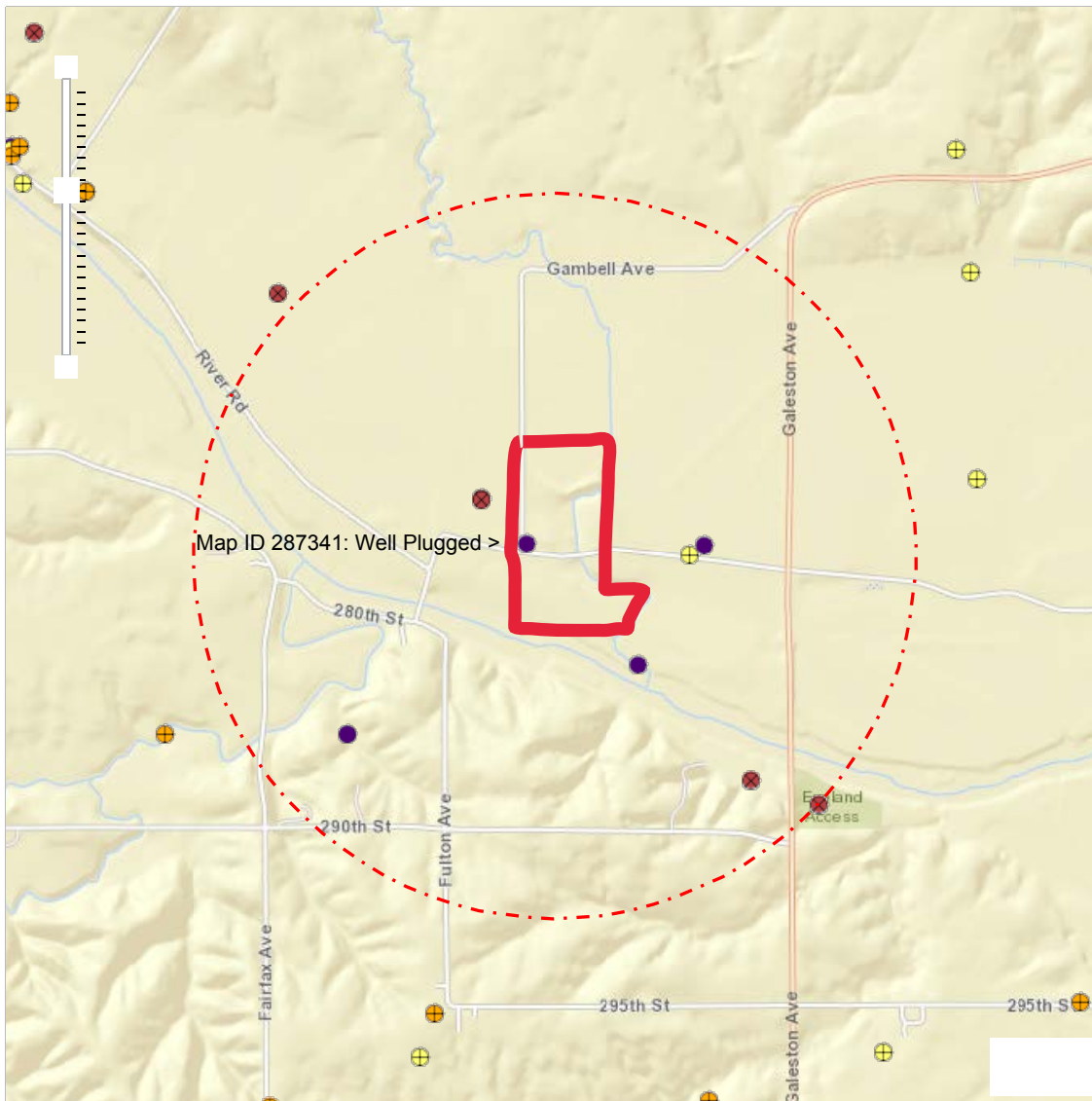
Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
No records found from this data source								

**Ag Drainage Wells**

Map ID	Well No.	Location	Accuracy	Dist. From Point	Well Depth	Construction/ Permit Date	Owner/Permittees	Other Information
No records found from this data source								

**Well Search Buffered Map**

**Subject:** XY UTM Coordinates: 521004/4565944  
Search Radius (mi): 1

**Map Notes:**

- UST
- ★ LUST
- Wells

Please refer to the Accuracy column in Well Search Detail.

Since multiple points can be at the same spot (as those located to the center of a quarter section), points were randomly dispersed within 10 meters around that spot so all points can be seen.



202 South Highway 86  
Lakefield, MN 56150  
507.662.5005 phone  
507.662.5105 fax  
info@extendedag.com

August 2, 2023

Environmental Land Management

1602 11<sup>th</sup> Drive NE

Austin, MN 55912

RE: Review of Potential Land Application Sites – Cargill Eddyville, Wapello, Mahaska, Monroe County

Michael,

We have completed our review of the proposed land application sites for the Cargill facility in Eddyville, Iowa. Thank you for the opportunity to provide our input on this project. The following fields were included in this review, all acres are approximate:

County: Site Name	Total Acres
Mahaska	545.9
Boenders Edgrin	308.4
Harris Bartel	39.3
Harris Vanderlinden	122.2
Harris Veen	76.1
Monroe	111.8
Harris Pearson	111.8
Wapello	289.4
Harris Lane	289.4
<b>Grand Total</b>	<b>947.1</b>

Imagery provided by the National Ag Imagery Program (2017) was utilized to determine whether land application sites were in crop production, pasture/hay or non-farmed land. Overall, the land application sites have few significant limitations in regard to slope steepness and length and general erosion potential.

There are approximately 947.1 acres available for land application of the industrial by-product across all three counties. The land application sites are dominated by silt loam, silty clay loam and loam soils with approximately 95.3% of the tillable acres having acceptable slopes for the land application the Cargill byproducts (0-9%). According to the NRCS soil survey, 26.0% of the soil is classified as having slight erosion

potential and 6.1% are classified as having moderate erosion potential. The remaining acres have little to no concerns regarding erosion potential. A total of 12.8% of the tillable acres are considered a highly erodible land unit. Field specific planning and/or residue management should be utilized when applying the byproduct to reduce the potential for movement offsite, on all sites. Application can and should be limited to areas with the lowest slope first and then be directed to areas with structural controls in place to control soil erosion. The application of the byproduct is not expected to conflict with any Conservation Plans associated with the observed soils. A summary of slope ratings for the potential land application sites is included below:

Slope Range	Total Acres
-----	4.5
0-1%	5.6
0-2%	721.7
1-3%	14.8
2-5%	79.6
5-9%	76.2
9-14%	23.7
14-18%	8.2
14-40%	12.1
18-25%	1.0
<b>Grand Total</b>	<b>947.1</b>

Approximately 18.7% of the soils identified as potential land application sites are listed by the NRCS soil survey as commonly or frequently flooded. Still, it is assumed that agricultural drain tile has been installed, to varying degrees, on soils with poor or somewhat poor drainage. Flooding frequency is not expected to be a limiting factor for land application. However, land application on saturated soils should be avoided at all times. Further, land application on fields with higher slope ranges and predicted rainfall within 24 hours should be limited. A complete breakdown of flooding frequency ratings is shown below:

NRCS Flooding Frequency: Drainage Class	Total Acres
-----	4.5
(blank)	4.5
NONE	269.4
Poor	15.0
Somewhat poor	17.9
Moderately well-Somewhat poor	13.4
Moderately well	160.8
Well-Moderately well	2.5
Well	59.7
RARE	56.8
Somewhat poor	56.8
OCCAS	399.7
Poor	206.7

Somewhat poor	84.0
Moderately well-Somewhat poor	23.2
Moderately well	75.0
Poor-Very poor	1.1
Somewhat poor-Poor	4.3
Very poor	5.6
<b>COMMON</b>	<b>127.3</b>
Poor	78.0
Moderately well	49.3
<b>FREQ</b>	<b>50.4</b>
Moderately well	50.2
Excessive	0.2
<b>PONDED</b>	<b>39.1</b>
Poor	39.1
<b>Grand Total</b>	<b>947.1</b>

Determining appropriate land application rates for any by-product is dependent on the most restrictive variable. This can be either slope, erosivity, flooding potential, soil fertility levels, soil texture or byproduct characteristics, to name a few. The recommendations given herein are independent of any byproduct reviews and only consider the known field characteristics discussed in this review.

Application rates of approximately 10 Wet Tons per acre are appropriate for the slope conditions of the land application sites discussed in this review. Appropriate measures should be taken to ensure minimal movement of the waste respect to adequate setbacks from sensitive features (surface water, karst features, conduits to water and high slopes) and land application rates. Special care should be given to applying wastes no less than 48 hours prior to rainfall events of greater than 0.5 inches. Wastes should be incorporated whenever possible, if such practices do not conflict with existing NRCS conservation plans. Applications of organic by-products can result in improved soil fertility, tilth and structure, if properly managed. The soils and parent material on the proposed land application site are naturally acidic to pH neutral in nature. Agricultural lime should be used to ensure the soil pH is above 6.0 prior to land application of any byproducts.

### **Summary**

The specified land application material should be evaluated for constituents that pose a risk to the general health and welfare of the public. In general, land utilized for the land application of solid waste containing nutrients needed for pasture or crop production will benefit from such applications. Careful consideration should be taken to ensure nutrients are not applied at levels greater than crop need, once soils have reached the high fertility range as defined by Iowa State University.

In summary, we believe the field conditions are very suitable for land application of solid wastes done in accordance with all applicable rules, permits and laws. If you have any questions, please do not hesitate to contact us.



Sincerely,

A handwritten signature in blue ink that reads "Jim Nesseth". The script is cursive and fluid.

Jim Nesseth  
Certified Agronomist  
License #: 17118

A handwritten signature in blue ink that reads "Andrew Nesseth". The script is cursive and fluid.

Andrew Nesseth  
Environmental Consultant  
NRCS Technical Service Provider

## Contractual Consent of Landowner

**Landowner, Lessee and/or Landoperator:** BJ Boender

**Location of storage sites and spreading site(s):** All sites owned, leased and rented.

**Description of byproduct to be stored and land applied on site(s):** Cargill processes corn into citric acid, corn sugar, and livestock feed. Diatomaceous earth is a byproduct of these processes and is combined during filtration with denatured proteins, which is referred to as precoat. Mycelium is a fermentation organism, which is killed after the fermentation process and is a separate byproduct. Black cake is mycelium that is further processed. Corn fiber, germ & gluten are scrap livestock feed no longer deemed edible. These byproducts are what we will be storing and land applying on your field(s). The byproducts will either be stored and land applied individually or in combination.

**Byproducts are generated from:** Cargill Inc, located in Eddyville, IA

Analysis of precoat, mycelium, ag lime mix byproducts on a "as received" basis:

*\*\*\*Analysis is not guaranteed for agronomic value. Byproduct output will be variable.*

Total Solids	50.75 %	Barium	2.2	mg/kg
Calcium	2.62 %	Chromium	1.7	mg/kg
Tot.Kjeldahl Nitrogen	0.70 %	Copper	5.2	mg/kg
Ammonia Nitrogen	0.03 %	Iron	206.2	mg/kg
Phosphorus	0.05 %	Manganese	2.3	mg/kg
Potassium	0.03 %	Magnesium	0.08	%
Sodium	0.08 %	Sulfur	0.09	%
Chloride	0.02 %	Zinc	0.002	%

Analysis of black cake byproducts mixed with 10% hydrated lime on a "as received" basis:

*\*\*\*Analysis is not guaranteed for agronomic value. Byproduct output will be variable.*

Total Solids	49.8 %	Lead	none detected
pH	6.3	Chromium	none detected
Tot.Kjeldahl Nitrogen	0.52 %	Molybdenum	none detected
Ammonia Nitrogen	0.02 mg/kg	Nickel	none detected
Phosphorus	200 mg/kg	Zinc	none detected
Potassium	100 mg/kg	Selenium	none detected
Chloride	1.83 %	Mercury	none detected
Sodium	200 mg/kg	Arsenic	none detected
Copper	32.4 mg/kg	Cadmium	none detected

Analysis of scrap feed byproduct on an "as received" basis:

*\*\*\*Analysis is not guaranteed for agronomic value. Byproduct output will be variable.*

Total Solids	49.0 %	Barium	19.1	mg/kg
Calcium	0.81 %	Chromium	1.7	mg/kg
Tot.Kjeldahl Nitrogen	2.39 %	Copper	5.7	mg/kg
Ammonia Nitrogen	0.10 %	Iron	1632	mg/kg

Phosphorus	0.34 %	Manganese	26.1 mg/kg
Potassium	0.47 %	Molybdenum	2.0 mg/kg
Sodium	0.11 %	Nickel	2.0 mg/kg
Chloride	0.14 %	Sulfur	0.25 %
Magnesium	0.16 %	Zinc	0.018 %

\*\*\*Check with your Agronomist to verify that these nutrients and other constituents are not harmful to the crops you are growing during the coming year.

**This material may contain off specification feed products and it should not be considered safe for consumption by livestock. By accepting this material for land application the landowner, lessee and/or land operator shall not allow consumption of this material, whether stockpiled or land applied, by livestock.**

I have reviewed this information and am authorized to hereby give permission to Environmental Land Management, LLC to store and land apply precoat and/or precoat/mycelium/ag lime on the spreading sites. If, in the future, I decide not to allow Environmental Land Management, LLC to store and land apply the aforementioned byproducts on these sites, I will inform them before it is delivered to the sites.

Signed: \_\_\_\_\_ Date: 11/13/2023

BT Boender

### Contractual Consent of Landowner

Landowner, Lessee and/or Landoperator: Luke Harris

Location of storage sites and spreading site(s): All sites owned, leased and rented.

Description of byproduct to be stored and land applied on site(s): Cargill processes corn into citric acid, corn sugar, and livestock feed. Diatomaceous earth is a byproduct of these processes and is combined during filtration with denatured proteins, which is referred to as precoat. Mycelium is a fermentation organism, which is killed after the fermentation process and is a separate byproduct. Corn fiber, germ & gluten are scrap livestock feed no longer deemed edible. These byproducts are what we will be storing and land applying on your field(s). The byproducts will either be stored and land applied individually or in combination.

Byproducts are generated from: Cargill Inc, located in Eddyville, IA

Analysis of precoat and mycelium blended byproducts on a "as received" basis:

\*\*\*Analysis is not guaranteed for agronomic value. Byproduct output will be variable.

Total Solids	45.1 %	Arsenic	none detected
Calcium	1.09 %	Barium	10.4 mg/kg
Tot.Kjeldahl Nitrogen	1.05 %	Cadmium	none detected
Ammonia Nitrogen	0.03 %	Chromium	1.4 mg/kg
Phosphorus	0.10 %	Copper	3.7 mg/kg
Potassium	0.07 %	Lead	none detected
Sodium	0.09 %	Manganese	none detected
Chloride	0.03 %	Mercury	none detected
Magnesium	0.08 %	Molybdenum	none detected
Sulfur	0.09 %	Nickel	none detected
Zinc	0.002 %	Selenium	none detected
Iron	76.4 mg/kg	Silver	none detected

Analysis of scrap feed byproducts on an "as received" basis:

\*\*\*Analysis is not guaranteed for agronomic value. Byproduct output will be variable.

Total Solids	49.7 %	Arsenic	none detected
Calcium	2.45 %	Barium	1.56 mg/kg
Tot.Kjeldahl Nitrogen	2.68 %	Cadmium	none detected
Ammonia Nitrogen	0.18 %	Chromium	1.53 mg/kg
Phosphorus	0.37 %	Copper	4.33 mg/kg
Potassium	0.45 %	Lead	none detected
Sodium	0.12 %	Manganese	8.6 mg/kg
Chloride	0.13 %	Mercury	none detected
Magnesium	0.24 %	Molybdenum	none detected
Sulfur	0.28 %	Nickel	1.27 mg/kg
Zinc	0.01 %	Selenium	0.26 mg/kg
Iron	121.3 mg/kg	Silver	none detected

\*\*\*Check with your Agronomist to verify that these nutrients and other constituents are not harmful to the crops you are growing during the coming year.

**This material may contain off specification feed products and it should not be considered safe for consumption by livestock. By accepting this material for land application the landowner, lessee and/or land operator shall not allow consumption of this material, whether stockpiled or land applied, by livestock.**

I have reviewed this information and am authorized to hereby give permission to Environmental Land Management, LLC to store and land apply precoat, mycelium and/or scrap feed on the spreading sites. If, in the future, I decide not to allow Environmental Land Management, LLC to store and land apply the aforementioned byproducts on these sites, I will inform them before it is delivered to the sites.

Signed: Luke Harris

Date: 10-15-2022