

Submit To:  
CHIEF ENGINEER  
Division of Water Resources  
Kansas Department of  
Agriculture 1320 Research Park  
Drive Manhattan, KS 66502-5000  
<http://agriculture.ks.gov/dwr>

# APPLICATION FOR PERMIT TO APPROPRIATE WATER FOR BENEFICIAL USE



State of Kansas

**STATUTORY FILING FEE MUST ACCOMPANY THIS APPLICATION**  
**Please refer to the Fee Schedule attached to this application form.**

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File Number: **51406**

This item to be completed by the Division of Water Resources staff.

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12:08 PM

1. Name of Applicant: ILS Land LLC  
Address: 551 SW 30 Rd  
City: Great Bend State: KS Zip Code: 67530-9730  
Phone: 620-792-6166 Email: water@ilsbeef.com

2. The source of water is:  surface water in ---  
(stream)  
 groundwater in Arkansas River  
(drainage basin)

3. The maximum annual quantity of water desired is 148.67  acre-feet  gallons  
to be diverted at a maximum rate of 512  gpm  c.f.s  natural flows  natural evaporation  
 This project involves surface water storage and redirection. The maximum annual quantity of water desired to  
be rediverted is ---  acre-feet  gallons, at a rate of ---  gpm  c.f.s.

### Conversion Factors

1 acre-foot (AF) = 325,851 gallons  
1 million gallons (mg) = 3.07 acre-feet (AF)  
1 cubic foot per second (c.f.s.) = 448.8 gallons per minute (gpm)

**IMPORTANT:** Once your application has been assigned a priority date and file number, the requested maximum rate of diversion and maximum requested annual quantity of water under that priority number can **NOT** be increased. Please be certain your requested maximum rate of diversion and maximum annual quantity of water are appropriate and reasonable for your proposed project.

4. The water is intended to be appropriated for the following use(s):  
 Artificial Recharge\*  Irrigation\*  Recreational\*  Water Power\*  
 Industrial\*  Municipal\*  Stockwatering\*  Sediment Control  
 Domestic  Dewatering  Hydraulic Dredging  Fire Protection  
 Thermal Exchange  Contamination Remediation

**\*IMPORTANT:** You **must** submit a supplemental form providing information to substantiate your request for the quantity of water listed in Item No. 3 for the intended use(s) referenced above

FOR OFFICE USE ONLY															
FO	<u>2</u>	GMD	<u>5</u>	DUA	<u>-</u>	Use	<u>IRR</u>	Source	<u>GW</u>	County	<u>PN</u>	By	<u>KJN</u>	Date	<u>1/27/25</u>
Code	<u>PE-2</u>	Fee \$	<u>300</u>	TR #		Receipt Date	<u>1/27/2025</u>	Check #	<u>2520</u>						

5. The location(s) of the proposed diversion work(s) (well, pumpsite, etc.) are described below. Note that for the application to be accepted, the point of diversion location(s) **must** be described to at least a 10-acre tract, unless you specifically request a 60-day period of time in which to locate the site within a specifically described, minimal legal quarter section of land. You can specify a nickname for the point of diversion via the A.K.A. line to help you identify it.

If the source of supply is groundwater, a separate application shall be filed for each proposed well or battery of wells, except that a single application may include up to four wells within a circle with a quarter (1/4) mile radius in the same local source of supply which do not exceed a maximum diversion rate of 20 gallons per minute per well.

A battery of wells is defined as two or more wells connected to a common pump by a manifold; or not more than four wells in the same local source of supply within a 300-foot radius circle which are being operated by pumps not to exceed a total maximum diversion rate of 800gpm and which supply water to a common distribution system.

- (A) One Near the Center of the Northeast quarter of Section 26, more particularly described as being near a point 3,976 feet North and 1,304 feet West of the Southeast corner of said section, in Township 23 South, Range 16 West, Pawnee County, KS. A.K.A: 118
- (B) One in the \_\_\_\_ quarter of the \_\_\_\_ quarter of the \_\_\_\_ quarter of Section \_\_\_\_, more particularly described as being near a point \_\_\_\_ feet North and \_\_\_\_ feet West of the Southeast corner of said section, in Township \_\_\_\_ South, Range \_\_\_\_ West, \_\_\_\_ County, KS. A.K.A: \_\_\_\_
- (C) One in the \_\_\_\_ quarter of the \_\_\_\_ quarter of the \_\_\_\_ quarter of Section \_\_\_\_, more particularly described as being near a point \_\_\_\_ feet North and \_\_\_\_ feet West of the Southeast corner of said section, in Township \_\_\_\_ South, Range \_\_\_\_ West, \_\_\_\_ County, KS. A.K.A: \_\_\_\_
- (D) One in the \_\_\_\_ quarter of the \_\_\_\_ quarter of the \_\_\_\_ quarter of Section \_\_\_\_, more particularly described as being near a point \_\_\_\_ feet North and \_\_\_\_ feet West of the Southeast corner of said section, in Township \_\_\_\_ South, Range \_\_\_\_ West, \_\_\_\_ County, KS. A.K.A: \_\_\_\_
- (E) One in the \_\_\_\_ quarter of the \_\_\_\_ quarter of the \_\_\_\_ quarter of Section \_\_\_\_, more particularly described as being near a point \_\_\_\_ feet North and \_\_\_\_ feet West of the Southeast corner of said section, in Township \_\_\_\_ South, Range \_\_\_\_ West, \_\_\_\_ County, KS. A.K.A: \_\_\_\_

6. The proposed project for diversion of water will consist of one well \_\_\_\_\_  
(number of wells, pumps, dams, etc.)  
and was/will be completed on or by the following date: Fall 2026 \_\_\_\_\_  
(date each was or will be completed)

7. The first actual application of water for the proposed beneficial use was or is estimated to be Fall 2026 \_\_\_\_\_  
(Date)

8. List any application, appropriation of water, water right, or vested right file number that covers the same point(s) of diversion or any of the same place of use described in this application. Also list any other recent modifications made to existing permits or water rights in conjunction with the filing of this application.

Place of Use: Pending new application in NW 26-23-16W // Point of Diversion: none

This application is an offset under K.A.R. 5-25-22 from File Nos. 21177 & 21776 in Zone B.

File No. 21117 and 21776 are currently in a 25.97% response area. These files are also being used as offsets for proposed apps in the SW of 14-23-16W and the NW of 26-23-16W, Pawnee County.

File Nos. 21117 and 21776 will be dismissed if all apps are approved.

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9. Will pesticide, fertilizer, or other foreign substance be injected into the water pumped from the diversion works?  
 Yes  No If yes, a check valve shall be required. All chemigation safety requirements must be met including a chemigation permit and reporting requirements.
10. If you are planning to impound water, please contact DWR prior to submitting this application. Please attach a reservoir area capacity table and inform us of the total acres of surface drainage area above the reservoir.  
 Have you made an application for a permit for construction of this dam and reservoir with DWR?  Yes  No  
 If yes, write the Water Structures permit number here: ---

11. Furnish a detailed topographic or aerial map that depicts the following information:  
 The application **must** be supplemented by a topographic map, aerial photograph or a detailed plat showing the information described in A-D below.
- (A) The center of the section, the section lines or the section corners, and labels showing the appropriate section, township and range numbers, as well as a north arrow and scale,
  - (B) The location of the proposed point(s) of diversion (wells, stream-bank installations, dams, or other diversion works) described in Item No. 5 of the application, showing the North-South distance and the East-West distance from a section line or southeast corner of section,
  - (C) The location of the proposed place of use identified by crosshatching,
  - (D) **For Groundwater Use**, the location of any existing water wells of any kind within 1/2 mile of the proposed well or wells and indicate for each well its type of use and the name and mailing address of the property owner or owners, (If there are no wells within 1/2 mile, please indicate that on the map.)  
  
**For Surface Water Use**, the names and addresses of the landowner(s) 1/2 mile downstream and 1/2 mile upstream from your property lines, and
  - (E) The locations of proposed or existing dams, dikes, reservoirs, canals, pipelines, power houses, and any other structures for the purpose of storing, conveying, or using water.

12. For groundwater use, furnish copies of the driller's logs for all test holes or completed wells. Please ensure that the driller's logs provide depth to the static water level. If driller's logs cannot be obtained for an existing well, provide the following information:

Well location as shown in Item No. 5	(A)	(B)	(C)	(D)	(E)
Date drilled	_____	_____	_____	_____	_____
Total depth of well	_____	_____	_____	_____	_____
Depth to static water level	_____	_____	_____	_____	_____

12. The owner(s) of the point of diversion, if other than the applicant, is/are:  
ILS Land LLC, 551 SW 30 Rd, Great Bend KS 67530-9730 (PersonID 59931-1)  
 (name, address, and phone)  
 \_\_\_\_\_  
 (name, address, and phone)

14. The owner(s) of the property where the water is used, if other than the applicant, is/are:

ILS Land LLC, 551 SW 30 Rd, Great Bend KS 67530-9730 (PersonID 59931-1)  
(name, address, and phone)

\_\_\_\_\_  
(name, address, and phone)

15. The relationship of the applicant to the proposed place where the water will be used is that of:

Owner  Agent  Tenant  Other: \_\_\_\_\_


16. A water use correspondent (WUC) must be designated. The WUC will be mailed the annual water use report, which must be filed with the Division by March 1 of each year. Failure to timely file an accurate water use report will subject the owner(s) to a civil fine of up to \$1,000 and potential suspension of the water appropriation or right. By signing this application, I verify that the owner(s) of the water right or permit have confirmed that the following person or agent should be designated as the WUC:

ILS Farms, WFY Holding Company Inc, 551 SW 30 Rd, Great Bend KS 67530-9730 (PersonID 61230 - 3)  
(name, address, and phone)

17. I understand that if this application is approved, there could be times, as determined by the Division of Water Resources, when I would not be allowed to divert water. This could affect the economics of my decision to appropriate water. Situations where this might occur may include times when minimum desirable streamflow (MDS) requirements are not met, when Assurance District or Water Marketing releases are made from storage in federal reservoirs, when a Water Reservation Right upstream of a federal reservoir is administered, or when water rights administration becomes necessary to prevent impairment.

I declare, under penalty of perjury, that I have legal access to or control of, the point(s) of diversion described in this application from the landowner or the landowner's authorized representative.

By signing below, I verify that the information set forth above is true to the best of my knowledge, I agree with all statements made above, and that this application is submitted in good faith.

  
(Applicant Signature)

01/24/2025  
(Date)

Garret Smith  
(Applicant Name - Please Print)

Director of Farm Operations  
(Applicant Title, if applicable - Please Print)

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Assisted By EKF  
(office/title)

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**IRRIGATION USE  
SUPPLEMENTAL SHEET**

File No. \_\_\_\_\_

Name of Applicant (Please Print): ILS Land LLC

1. Please supply the name and address of each landowner, the legal description of the lands to be irrigated, and designate the actual number of acres to be irrigated in each forty acre tract or fractional portion thereof:

**Landowner of Record NAME:** ILS Land LLC

**ADDRESS:** 551 SW 30 Rd, Great Bend KS 67530-9730 (PersonID 59931-1)

S	T	R	NE¼				NW¼				SW¼				SE¼				TOTAL
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
26	23S	16W	33.75	33.75	33.75	33.75	33.75	33.75	33.75	33.75	33.75								270

**Landowner of Record NAME:** \_\_\_\_\_

**ADDRESS:** \_\_\_\_\_

S	T	R	NE¼				NW¼				SW¼				SE¼				TOTAL
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	

**Landowner of Record NAME:** \_\_\_\_\_

**ADDRESS:** \_\_\_\_\_

S	T	R	NE¼				NW¼				SW¼				SE¼				TOTAL
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	



2. Please complete the following information for the description of the operation for the irrigation project. Attach supplemental sheets as needed.

a. Indicate the soils in the field(s) and their intake rates:

Soil Name	Percent of field (%)	Intake Rate (in/hr)	Irrigation Design Group
<u>See attached map</u>	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
Total:	100 %		

b. Estimate the average land slope in the field(s): \_\_\_\_\_ %

Estimate the maximum land slope in the field(s): \_\_\_\_\_ %

c. Type of irrigation system you propose to use (check one):

Center pivot      \_\_\_\_\_ Center pivot - LEPA      \_\_\_\_\_ "Big gun" sprinkler  
 Gravity system (furrows)      \_\_\_\_\_ Gravity system (borders)      \_\_\_\_\_ Sideroll sprinkler

Other, please describe: \_\_\_\_\_

d. System design features:

i. Describe how you will control tailwater:

ii. For sprinkler systems:

(1) Estimate the operating pressure at the distribution system: \_\_\_\_\_ psi

(2) What is the sprinkler package design rate? \_\_\_\_\_ gpm

(3) What is the wetted diameter (twice the distance the sprinkler throws water) of a sprinkler on the outer 100 feet of the system? \_\_\_\_\_ feet

(4) Please include a copy of the sprinkler package design information.

e. Crop(s) you intend to irrigate. Please note any planned crop rotations:

f. Please describe how you will determine when to irrigate and how much water to apply (particularly important if you do not plan a full irrigation). These systems are proposed to be a part of the nutrient management plan for a proposed stock facility to be located in 23-23S-16W. Water from the lagoons at the facility will be applied to these acres to supplement the freshwater used from the proposed groundwater wells.

You may attach any additional information you believe will assist in informing the Division of the need for your request.

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**FEE SCHEDULE**

Make checks payable to the Kansas Department of Agriculture.

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1. The fee for an application for a permit to appropriate water for beneficial use, except for domestic, waterpower, dewatering, or sediment control use, shall be (see No. 2 below if requesting storage):

Million Gallons (mg)	Acre-Feet (AF)	Fee
≤ 32.585	≤ 100	\$200.00
32.586 - 104.272	100.1 – 320.0	\$300.00
> 104.272	> 320	\$300.00 plus \$20 for each additional 100AF (32.586mg) or any part thereof

2. The fee for an application in which **storage** of water is requested, except for domestic use, shall be:

Million Gallons (mg)	Acre-Feet (AF)	Fee
≤ 81.462	≤ 249.9	\$200.00
≥ 81.463	≥ 250	\$200.00 plus \$20 for each additional 100AF (32.586mg) or any part thereof

**Note:** If an application requests both direct use *and* storage, the fee charged shall be as determined under No. 1 or No. 2 above, whichever is greater, but not both fees.

3. The fee for an application for **waterpower** or **dewatering** use shall be \$100.00 plus \$200.00 for each 44,880 gallons per minute (100 c.f.s.), or part thereof, of the diversion rate requested.

**IMPORTANT NOTICE**

If this application is approved, the applicant shall notify the Chief Engineer when the diversion works (well, pump, reservoir, pit, etc.) has/have been completed via the *Notice of Completion of Diversion Works* form (DWR 1-203.11) and along with the statutorily required field inspection fee of:

- \$200.00 for sediment control use or groundwater pits for industrial use, or
- \$400.00 for all other uses made of water

Failure to complete the diversion works by the deadline specified in the *Approval of Application and Permit to Proceed* (or any subsequent extension of time of said deadline) and/or failure to submit the proper notice and field inspection fee will result in the dismissal of the appropriation and forfeiture of any priority associated with it.

**For assistance with this application, please contact the Division of Water Resources (DWR).**

**Manhattan HQ**  
1320 Research Park Dr.  
Manhattan, KS 66502  
785-564-6638

**Topeka Field Office**  
1131 SW Winding Rd, Ste 400  
Topeka, KS 66615  
785-296-5733

**Stafford Field Office**  
300 S. Main St  
Stafford, KS 67578  
620-234-5311

**Stockton Field Office**  
820 S. Walnut  
Stockton, KS 67669  
785-425-6787

**Garden City Field Office**  
4532 W. Jones Ave, Ste B  
Garden City, KS 67846  
620-276-2901

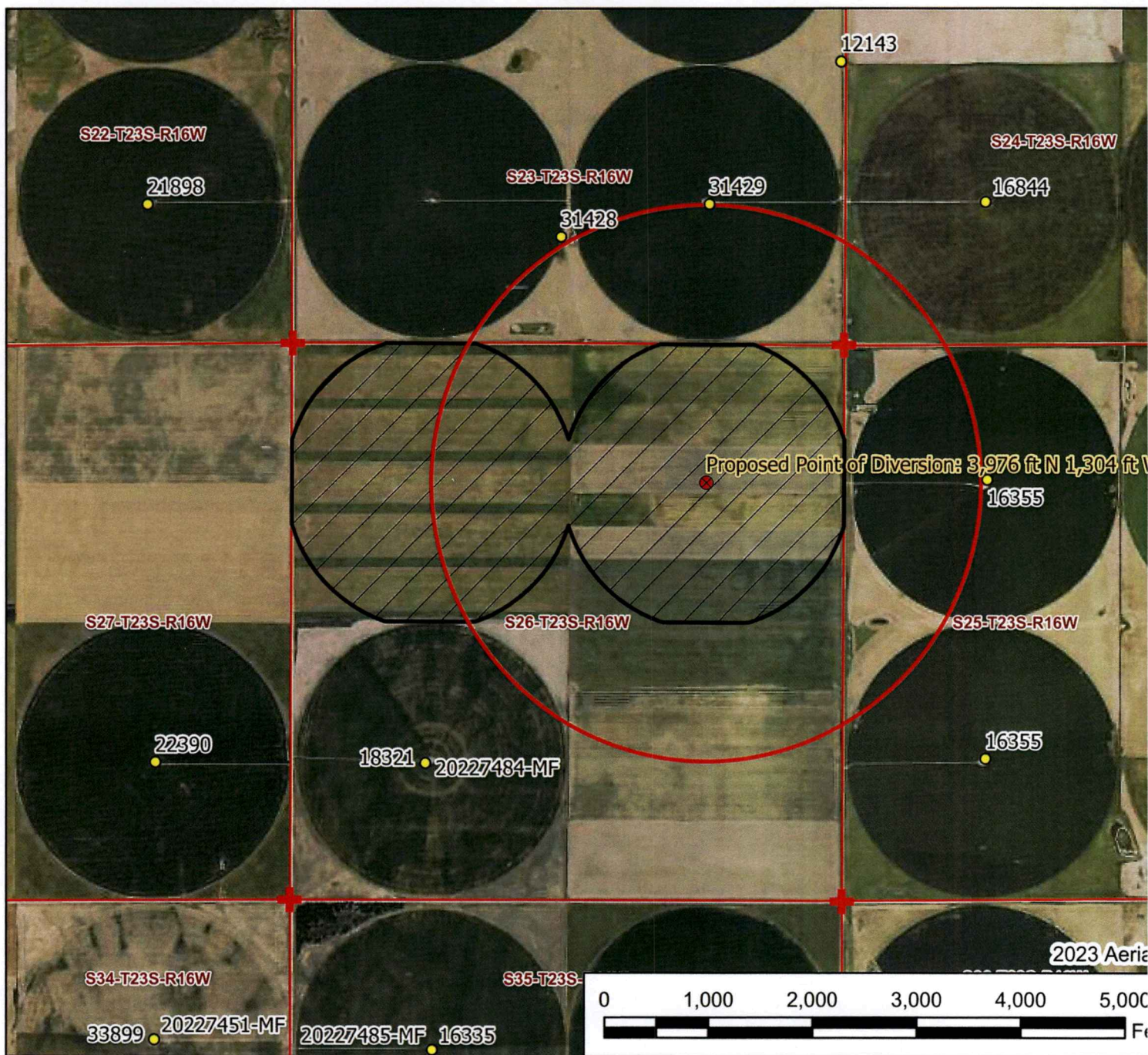
**Helpful Sources of Information**

- DWR Water Appropriation Program <https://agriculture.ks.gov/divisions-programs/dwr/water-appropriation>  
 DWR Water Appropriation Forms <https://agriculture.ks.gov/divisions-programs/dwr/water-appropriation/water-appropriation-forms>  
 KGS Water Well Completion Records <https://www.kgs.ku.edu/Magellan/WaterWell/index.html>  
 DWR Structures Program <https://agriculture.ks.gov/divisions-programs/dwr/dam-safety/permit-requirements>



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**Legend**

- Water Appropriation
- Proposed Point of Diversion
- ★ Domestic Well
- ✚ Section Corner
- Section Line
- Half Mile Circle
- ▨ Proposed Place of Use

# New Application, File No. \_\_\_\_\_

## Permit to Proceed Application Map 26-23S-16W // Pawnee County



To the best of my knowledge, all groundwater wells within one-half mile of the proposed point of diversion have been shown and are owned by the applicant/ correspondent.

*Ganeth Smith*  
Signature / Date

01/24/2025

1/24/2025 EKF/SFFO 1:17,000 sca



Soil Map—Pawnee County, Kansas  
(N 1/2 26-23S-16W PN Co.)



Soil Map may not be valid at this scale.

Map Scale: 1:8,820 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge ticks: UTM Zone 14N WGS84



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Web Soil Survey  
National Cooperative Soil Survey

1/23/2025  
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Soil Map—Pawnee County, Kansas  
(N 1/2 26-23S-16W PN Co.)

**MAP LEGEND**

- |   |   |   |   |                    |
|---|---|---|---|--------------------|
| <b>Area of Interest (AOI)</b>   |  | Area of Interest (AOI)  |  | Spoil Area         |
| <b>Soils</b>  |  | Soil Map Unit Polygons  |  | Stony Spot         |
|    | Soil Map Unit Lines   |  | Very Stony Spot   |                    |
|    | Soil Map Unit Points  |  | Wet Spot  |                    |
| <b>Special Point Features</b>   |  | Blow out  |  | Other              |
|    | Borrow Pit  |  | Special Line Features   |                    |
|    | Clay Spot   | <b>Water Features</b>   |  | Streams and Canals |
|    | Closed Depression   | <b>Transportation</b>   |  | Rails              |
|    | Gravel Pit  |  | Interstate Highways   |                    |
|    | Gravelly Spot   |  | US Routes   |                    |
|    | Landfill  |  | Major Roads   |                    |
|    | Lava Flow   |  | Local Roads   |                    |
|    | Marsh or swamp  | <b>Background</b>   |  | Aerial Photography |
|    | Mine or Quarry  |   |   |                    |
|   | Miscellaneous Water   |   |   |                    |
|  | Perennial Water   |   |   |                    |
|  | Rock Outcrop  |   |   |                    |
|  | Saline Spot   |   |   |                    |
|  | Sandy Spot  |   |   |                    |
|  | Severely Eroded Spot  |   |   |                    |
|  | Sinkhole  |   |   |                    |
|  | Slide or Slip   |   |   |                    |
|  | Sodic Spot  |   |   |                    |

**MAP INFORMATION**

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
Web Soil Survey URL:  
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Pawnee County, Kansas  
Survey Area Data: Version 23, Sep 5, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 29, 2021—Nov 15, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.



## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
5861	Attica fine sandy loam, 1 to 3 percent slopes	67.8	21.4%
5928	Pratt loamy fine sand, 1 to 5 percent slopes	165.4	52.2%
5944	Saltcreek and Naron fine sandy loams, 1 to 3 percent slopes	9.9	3.1%
5961	Solvay loamy fine sand, 0 to 2 percent slopes	73.6	23.2%
<b>Totals for Area of Interest</b>		<b>316.8</b>	<b>100.0%</b>

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## Pawnee County, Kansas

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### 5944—Saltcreek and Naron fine sandy loams, 1 to 3 percent slopes

#### Map Unit Setting

*National map unit symbol:* 2tt4z  
*Elevation:* 1,660 to 2,610 feet  
*Mean annual precipitation:* 25 to 33 inches  
*Mean annual air temperature:* 55 to 57 degrees F  
*Frost-free period:* 180 to 200 days  
*Farmland classification:* All areas are prime farmland

#### Map Unit Composition

*Saltcreek and similar soils:* 46 percent  
*Naron and similar soils:* 44 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Saltcreek

##### Setting

*Landform:* Dunes on paleoterraces  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Parent material:* Eolian deposits over alluvium

##### Typical profile

*Ap - 0 to 8 inches:* fine sandy loam  
*Bt1 - 8 to 15 inches:* sandy clay loam  
*Bt2 - 15 to 26 inches:* sandy clay loam  
*Bt3 - 26 to 39 inches:* fine sandy loam  
*2Bt4 - 39 to 56 inches:* silty clay  
*2Btk1 - 56 to 66 inches:* silty clay loam  
*2Btk2 - 66 to 79 inches:* silty clay loam

##### Properties and qualities

*Slope:* 1 to 3 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water*  
*(Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 5 percent  
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water supply, 0 to 60 inches:* Moderate (about 8.3 inches)



**Interpretive groups**

*Land capability classification (irrigated): 1*  
*Land capability classification (nonirrigated): 2e*  
*Hydrologic Soil Group: C*  
*Ecological site: R079XY122KS - Sandy Loam*  
*Hydric soil rating: No*

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**Description of Naron**

**Setting**

*Landform: Dunes on paleoterraces*  
*Down-slope shape: Convex*  
*Across-slope shape: Convex*  
*Parent material: Eolian deposits*

**Typical profile**

*Ap - 0 to 12 inches: fine sandy loam*  
*Bt1 - 12 to 34 inches: sandy clay loam*  
*Bt2 - 34 to 51 inches: fine sandy loam*  
*BC - 51 to 66 inches: fine sandy loam*  
*C - 66 to 79 inches: fine sandy loam*

**Properties and qualities**

*Slope: 1 to 3 percent*  
*Depth to restrictive feature: More than 80 inches*  
*Drainage class: Well drained*  
*Runoff class: Low*  
*Capacity of the most limiting layer to transmit water*  
*(Ksat): Moderately high to high (0.60 to 2.00 in/hr)*  
*Depth to water table: More than 80 inches*  
*Frequency of flooding: None*  
*Frequency of ponding: None*  
*Calcium carbonate, maximum content: 3 percent*  
*Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0*  
*mmhos/cm)*  
*Available water supply, 0 to 60 inches: Moderate (about 7.9*  
*inches)*

**Interpretive groups**

*Land capability classification (irrigated): 1*  
*Land capability classification (nonirrigated): 2e*  
*Hydrologic Soil Group: B*  
*Ecological site: R079XY122KS - Sandy Loam*  
*Hydric soil rating: No*

**Minor Components**

**Hayes**

*Percent of map unit: 5 percent*  
*Landform: Dunes on paleoterraces*  
*Down-slope shape: Convex*  
*Across-slope shape: Convex*  
*Ecological site: R079XY122KS - Sandy Loam*

*Hydric soil rating:* No

**Funmar**

*Percent of map unit:* 3 percent

*Landform:* Paleoterraces

*Landform position (three-dimensional):* Tread

*Down-slope shape:* Convex

*Across-slope shape:* Convex

*Ecological site:* R079XY115KS - Loamy Plains

*Hydric soil rating:* No

**Taver**

*Percent of map unit:* 1 percent

*Landform:* Paleoterraces

*Landform position (three-dimensional):* Tread

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* R079XY107KS - Clayey Plains

*Hydric soil rating:* No

**Carbika**

*Percent of map unit:* 1 percent

*Landform:* Depressions on interdunes on paleoterraces

*Down-slope shape:* Concave

*Across-slope shape:* Concave

*Ecological site:* R079XY133KS - Wet Subirrigated

*Hydric soil rating:* Yes

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## Data Source Information

Soil Survey Area: Pawnee County, Kansas

Survey Area Data: Version 23, Sep 5, 2024



## Pawnee County, Kansas

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### 5961—Solvay loamy fine sand, 0 to 2 percent slopes

#### Map Unit Setting

*National map unit symbol:* 2xlj3

*Elevation:* 1,660 to 2,610 feet

*Mean annual precipitation:* 25 to 33 inches

*Mean annual air temperature:* 55 to 57 degrees F

*Frost-free period:* 180 to 200 days

*Farmland classification:* Farmland of statewide importance

#### Map Unit Composition

*Solvay and similar soils:* 85 percent

*Minor components:* 15 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Solvay

##### Setting

*Landform:* Interdunes on paleoterraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Eolian deposits over alluvium

##### Typical profile

*Ap - 0 to 5 inches:* loamy fine sand

*2Bt1 - 5 to 23 inches:* fine sandy loam

*2Bt2 - 23 to 37 inches:* fine sandy loam

*2BC1 - 37 to 58 inches:* fine sandy loam

*2BC2 - 58 to 79 inches:* loamy fine sand

##### Properties and qualities

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Somewhat poorly drained

*Runoff class:* Low

*Capacity of the most limiting layer to transmit water*

*(Ksat):* Moderately high to high (0.60 to 2.00 in/hr)

*Depth to water table:* About 24 to 48 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water supply, 0 to 60 inches:* Moderate (about 7.7 inches)

##### Interpretive groups

*Land capability classification (irrigated):* 2e

*Land capability classification (nonirrigated):* 2e

*Hydrologic Soil Group:* C

*Ecological site:* R079XY132KS - Subirrigated  
*Hydric soil rating:* No

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### Minor Components

#### Hayes

*Percent of map unit:* 10 percent  
*Landform:* Dunes on paleoterraces  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Ecological site:* R079XY122KS - Sandy Loam  
*Hydric soil rating:* No

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#### Carway, frequently ponded

*Percent of map unit:* 3 percent  
*Landform:* Open depressions on interdunes on paleoterraces  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Ecological site:* R079XY133KS - Wet Subirrigated  
*Hydric soil rating:* Yes

#### Carbika, frequently ponded

*Percent of map unit:* 2 percent  
*Landform:* Closed depressions on interdunes on paleoterraces  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Ecological site:* R079XY133KS - Wet Subirrigated  
*Hydric soil rating:* Yes

## Data Source Information

Soil Survey Area: Pawnee County, Kansas  
Survey Area Data: Version 23, Sep 5, 2024

## Pawnee County, Kansas

### 5928—Pratt loamy fine sand, 1 to 5 percent slopes

#### Map Unit Setting

*National map unit symbol:* 2r9c6

*Elevation:* 1,660 to 2,610 feet

*Mean annual precipitation:* 25 to 33 inches

*Mean annual air temperature:* 55 to 57 degrees F

*Frost-free period:* 180 to 200 days

*Farmland classification:* Farmland of statewide importance

#### Map Unit Composition

*Pratt and similar soils:* 85 percent

*Minor components:* 15 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Pratt

##### Setting

*Landform:* Dunes on paleoterraces

*Down-slope shape:* Convex

*Across-slope shape:* Convex

*Parent material:* Eolian deposits

##### Typical profile

*Ap - 0 to 8 inches:* loamy fine sand

*Bt - 8 to 24 inches:* loamy fine sand

*E and Bt - 24 to 43 inches:* loamy fine sand

*E and Bt - 43 to 64 inches:* fine sand

*C - 64 to 79 inches:* fine sand

##### Properties and qualities

*Slope:* 1 to 5 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Well drained

*Runoff class:* Very low

*Capacity of the most limiting layer to transmit water (Ksat):* High to very high (6.00 to 20.00 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 2 percent

*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water supply, 0 to 60 inches:* Low (about 6.0 inches)

##### Interpretive groups

*Land capability classification (irrigated):* 2e

*Land capability classification (nonirrigated):* 3e

*Hydrologic Soil Group:* A

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*Ecological site:* R079XY121KS - Sand Plains  
*Hydric soil rating:* No

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**Minor Components**

**Naron**

*Percent of map unit:* 5 percent  
*Landform:* Dunes on paleoterraces  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Ecological site:* R079XY122KS - Sandy Loam  
*Hydric soil rating:* No

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**Carway**

*Percent of map unit:* 5 percent  
*Landform:* Depressions on interdunes on paleoterraces  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Ecological site:* R079XY133KS - Wet Subirrigated  
*Hydric soil rating:* Yes

**Attica**

*Percent of map unit:* 3 percent  
*Landform:* Dunes on paleoterraces  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Ecological site:* R079XY122KS - Sandy Loam  
*Hydric soil rating:* No

**Tivin**

*Percent of map unit:* 2 percent  
*Landform:* Dunes on paleoterraces  
*Down-slope shape:* Linear, convex  
*Across-slope shape:* Linear, convex  
*Ecological site:* R079XY103KS - Choppy Sands  
*Hydric soil rating:* No

**Data Source Information**

Soil Survey Area: Pawnee County, Kansas  
Survey Area Data: Version 23, Sep 5, 2024

## Pawnee County, Kansas

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### 5861—Attica fine sandy loam, 1 to 3 percent slopes

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#### Map Unit Setting

*National map unit symbol:* 2w9kd  
*Elevation:* 1,660 to 2,610 feet  
*Mean annual precipitation:* 25 to 33 inches  
*Mean annual air temperature:* 55 to 57 degrees F  
*Frost-free period:* 180 to 200 days  
*Farmland classification:* All areas are prime farmland

#### Map Unit Composition

*Attica and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Attica

##### Setting

*Landform:* Dunes on paleoterraces  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Parent material:* Eolian deposits

##### Typical profile

*Ap - 0 to 8 inches:* fine sandy loam  
*Bt - 8 to 21 inches:* fine sandy loam  
*BC - 21 to 40 inches:* fine sandy loam  
*C - 40 to 79 inches:* loamy fine sand

##### Properties and qualities

*Slope:* 1 to 3 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Very low  
*Capacity of the most limiting layer to transmit water (Ksat):* High (2.00 to 6.00 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water supply, 0 to 60 inches:* Moderate (about 8.4 inches)

##### Interpretive groups

*Land capability classification (irrigated):* 2e  
*Land capability classification (nonirrigated):* 2e  
*Hydrologic Soil Group:* A  
*Ecological site:* R079XY122KS - Sandy Loam

Hydric soil rating: No

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**Minor Components**

**Hayes**

Percent of map unit: 5 percent  
Landform: Dunes on paleoterraces  
Down-slope shape: Convex  
Across-slope shape: Convex  
Ecological site: R079XY122KS - Sandy Loam  
Hydric soil rating: No

**Pratt**

Percent of map unit: 3 percent  
Landform: Dunes on paleoterraces  
Down-slope shape: Convex  
Across-slope shape: Convex  
Ecological site: R079XY121KS - Sand Plains  
Hydric soil rating: No

**Naron**

Percent of map unit: 3 percent  
Landform: Dunes on paleoterraces  
Down-slope shape: Convex  
Across-slope shape: Convex  
Ecological site: R079XY122KS - Sandy Loam  
Hydric soil rating: No

**Shellabarger**

Percent of map unit: 2 percent  
Landform: Paleoterraces  
Down-slope shape: Linear  
Across-slope shape: Linear  
Ecological site: R079XY122KS - Sandy Loam  
Hydric soil rating: No

**Carbika**

Percent of map unit: 1 percent  
Landform: Depressions on interdunes on paleoterraces  
Down-slope shape: Concave  
Across-slope shape: Concave  
Ecological site: R079XY133KS - Wet Subirrigated  
Hydric soil rating: Yes

**Carway**

Percent of map unit: 1 percent  
Landform: Depressions on interdunes on paleoterraces  
Down-slope shape: Concave  
Across-slope shape: Concave  
Ecological site: R079XY133KS - Wet Subirrigated



*Hydric soil rating: Yes*

## Data Source Information

Soil Survey Area: Pawnee County, Kansas  
Survey Area Data: Version 23, Sep 5, 2024

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