

# NOTICE

This scan only represents the application as filed. The information contained herein meets the requirements of K.A.R. 5-3-1 or K.A.R. 5-5-1, and has been found acceptable for filing in the office of the Chief Engineer. The application should not be considered to be a complete application as per K.A.R. 5-3-1b or K.A.R. 5-5-2a.

THE STATE OF KANSAS



KANSAS DEPARTMENT OF AGRICULTURE  
Jackie McClaskey, Secretary of Agriculture

DIVISION OF WATER RESOURCES  
David W. Barfield, Chief Engineer

File Number 49924  
This item to be completed by the Division of Water Resources.

WATER RESOURCES  
RECEIVED

APPLICATION FOR PERMIT TO  
APPROPRIATE WATER FOR BENEFICIAL USE

Filing Fee Must Accompany the Application  
(Please refer to Fee Schedule attached to this application form.)

OCT 12 2017  
10:42  
KS DEPT OF AGRICULTURE

To the Chief Engineer of the Division of Water Resources, Kansas Department of Agriculture,  
1320 Research Park Drive, Manhattan, KS 66502:

1. Name of Applicant (Please Print): Capuchin Province of Mid America, Inc (Thomas More Prep-Marian)  
Address: 3553 Wyandot  
City: Denver State CO Zip Code 80211  
Telephone Number: 785-625-6577

2. The source of water is:  surface water in \_\_\_\_\_ (stream)  
OR  groundwater in Big Creek (drainage basin)

Certain streams in Kansas have minimum target flows established by law or may be subject to administration when water is released from storage for use by water assurance district members. If your application is subject to these regulations on the date we receive your application, you will be sent the appropriate form to complete and return to the Division of Water Resources.

3. The maximum quantity of water desired is 24 acre-feet OR \_\_\_\_\_ gallons per calendar year, to be diverted at a maximum rate of 250 gallons per minute OR \_\_\_\_\_ cubic feet per second.

Once your application has been assigned a priority, the requested maximum rate of diversion and maximum requested quantity of water under that priority number can **NOT** be increased. Please be certain your requested maximum rate of diversion and maximum quantity of water are appropriate and reasonable for your proposed project and are in agreement with the Division of Water Resources' requirements.

4. The water is intended to be appropriated for (Check use intended):  
(a)  Artificial Recharge (b)  Irrigation (c)  Recreational (d)  Water Power  
(e)  Industrial (f)  Municipal (g)  Stockwatering (h)  Sediment Control  
(i)  Domestic (j)  Dewatering (k)  Hydraulic Dredging (l)  Fire Protection  
(m)  Thermal Exchange (n)  Contamination Remediation

YOU **MUST** COMPLETE AND ATTACH ADDITIONAL DIVISION OF WATER RESOURCES FORM(S) PROVIDING INFORMATION TO SUBSTANTIATE YOUR REQUEST FOR THE AMOUNT OF WATER FOR THE INTENDED USE REFERENCED ABOVE.

For Office Use Only:  
F.O. 3 GMD 0 Meets K.A.R. 5-3-1 (YES / NO) Use IRR Source GYS County EL By AW Date 10/12/17  
Code REG Fee \$ 200 TR # \_\_\_\_\_ Receipt Date 10/12/17 Check # 49260

10/24/2017 UJM

5. The location of the proposed wells, pump sites or other works for diversion of water is: A battery of (4) wells

Note: For the application to be accepted, the point of diversion location 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. Request 60 days to locate

(A) One in the \_\_\_\_\_ quarter of the \_\_\_\_\_ quarter of the NE quarter of Section 32, more particularly described as being near a point \_\_\_\_\_ feet North and \_\_\_\_\_ feet West of the Southeast corner of said section, in Township 13 South, Range 18W, Ellis County, Kansas.

(B) One in the \_\_\_\_\_ quarter of the \_\_\_\_\_ described as being near a point \_\_\_\_\_ section, in Township \_\_\_\_\_ South, Range \_\_\_\_\_ more particularly \_\_\_\_\_ corner of said \_\_\_\_\_ County, Kansas.

60 Days to locate

(C) One in the \_\_\_\_\_ quarter of the \_\_\_\_\_ described as being near a point \_\_\_\_\_ section, in Township \_\_\_\_\_ South, Range \_\_\_\_\_ more particularly \_\_\_\_\_ corner of said \_\_\_\_\_ County, Kansas.

3900

(D) One in the \_\_\_\_\_ quarter of the \_\_\_\_\_ described as being near a point \_\_\_\_\_ section, in Township \_\_\_\_\_ South, Range \_\_\_\_\_ more particularly \_\_\_\_\_ corner of said \_\_\_\_\_ County, Kansas.

1320

If the source of supply is groundwater, a series of wells, except that a single application may include more than one well, all or battery of wells, which do not exceed a total maximum diversion rate of 800 gallons per minute per well.

A battery of wells is defined as two or more wells in the same local source of supply not to exceed a total maximum diversion rate of 800 gallons per minute and which supply water to a common distribution system. See defined search area within the attached map.

6. The owner of the point of diversion, if other than the applicant is (please print):

Applicant \_\_\_\_\_ (name, address and telephone number)

\_\_\_\_\_ (name, address and telephone number)

You must provide evidence of legal access to, or control of, the point of diversion from the landowner or the landowner's authorized representative. Provide a copy of a recorded deed, lease, easement or other document with this application. In lieu thereof, you may sign the following sworn statement:

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

Executed on Oct. 10, 2017.

Chad S. Meitner

Applicant's Signature

The applicant must provide the required information or signature irrespective of whether they are the landowner. Failure to complete this portion of the application will cause it to be unacceptable for filing and the application will be returned to the applicant.

7. The proposed project for diversion of water will consist of (4) wells; (4) submersible pumps; distribution sys. and will be completed (by) November 2017  
(number of wells, pumps or dams, etc.)

The first actual application of water for the proposed beneficial use was, or is estimated to be November 2017.  
(Mo/Day/Year)

- 8. 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.

- 9. If you are planning to impound water, please contact the Division of Water Resources for assistance, prior to submitting the application. Please attach a reservoir area capacity table and inform us of the total acres of surface drainage area above the reservoir.

Have you also made an application for a permit for construction of this dam and reservoir with the Division of Water Resources?  Yes  No

- If yes, show the Water Structures permit number here \_\_\_\_\_
- If no, explain here why a Water Structures permit is not required no storage is requested

\_\_\_\_\_

- 10. The application must be supplemented by a U.S.G.S. topographic map, aerial photograph or a detailed plat showing the following information. On the topographic map, aerial photograph, or plat, identify the center of the section, the section lines or the section corners and show the appropriate section, township and range numbers. Also, please show the following information:

- (a) The location of the proposed point(s) of diversion (wells, stream-bank installations, dams, or other diversion works) should be plotted as described in Paragraph No. 5 of the application, showing the North-South distance and the East-West distance from a section line or southeast corner of section.
- (b) If the application is for groundwater, please show the location of any existing water wells of any kind within 1/2 mile of the proposed well or wells. Identify each existing well as to its use and furnish the name and mailing address of the property owner or owners. If there are no wells within 1/2 mile, please advise us.
- (c) If the application is for surface water, the names and addresses of the landowner(s) 1/2 mile downstream and 1/2 mile upstream from your property lines must be shown.
- (d) The location of the proposed place of use should be shown by crosshatching on the topographic map, aerial photograph or plat.
- (e) Show the location of the pipelines, canals, reservoirs or other facilities for conveying water from the point of diversion to the place of use.

A 7.5 minute U.S.G.S. topographic map may be obtained by providing the section, township and range numbers to: Kansas Geological Survey, 1930 Constant, Campus West, University of Kansas, Lawrence, Kansas 66047.

- 11. List any application, appropriation of water, water right, or vested right file number that covers the same diversion points 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.

45499 same owner, different Place of Use and Point of Diversion

A waiver of the regulations closing Big Creek to new appropriations is requested. The field conditions are not Conduive to player safety. Attached are soil data and field development statements from authoritative sources as well as a letter of concern from the Hays Med Center sports trainer working with the applicant.

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12. Furnish the following well information if the proposed appropriation is for the use of groundwater. If the well has not been completed, give information obtained from test holes, if available.

Information below is from:  Test holes  Well as completed  Drillers log attached

| Well location as shown in paragraph No. | (A)   | (B)   | (C)   | (D)   |
|---|-------|-------|-------|-------|
| Date Drilled                            | _____ | _____ | _____ | _____ |
| Total depth of well                     | _____ | _____ | _____ | _____ |
| Depth to water bearing formation        | _____ | _____ | _____ | _____ |
| Depth to static water level             | _____ | _____ | _____ | _____ |
| Depth to bottom of pump intake pipe     | _____ | _____ | _____ | _____ |

13. The relationship of the applicant to the proposed place where the water will be used is that of agent  
(owner, tenant, agent or otherwise)

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

Applicant \_\_\_\_\_  
(name, address and telephone number)  
\_\_\_\_\_  
(name, address and telephone number)

15. The undersigned states that the information set forth above is true to the best of his/her knowledge and that this application is submitted in good faith.

✓ Dated at Hays, Kansas, this 10 day of October, 2017.  
(month) (year)

✓ Chad S. Meitner  
(Applicant Signature)

✓ By Chad S. Meitner  
(Agent or Officer Signature)

✓ Chad S. Meitner  
(Agent or Officer - Please Print)

Assisted by \_\_\_\_\_ Date: \_\_\_\_\_  
(office/title)

49924

Oct. 6, 2017

(Date)

Kansas Department of Agriculture  
Division of Water Resources  
David W. Barfield, Chief Engineer  
1320 Research Park Drive  
Manhattan, Kansas 66502

Re: Application  
File No. \_\_\_\_\_

Minimum Desirable Streamflow

Dear Sir:

I understand that a Minimum Desirable Streamflow requirement has been established by the legislature for the source of supply to which the above referenced application applies.

I understand that diversion of water pursuant to this application will be subject to regulation any time Minimum Desirable Streamflow requirements are not being met.

I also 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. I realize that this could affect the economics of my decision to appropriate water.

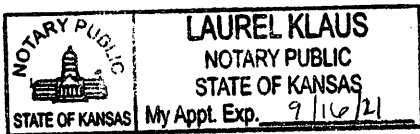
I am aware of the above factors, and with the knowledge thereof, request that the Division of Water Resources proceed with processing and approval, if possible, of the above referenced application.

Chad S. Meitner  
Signature of Applicant

Chad S. Meitner  
(Print Applicant's Name)

State of Kansas )  
County of Ellis ) ss

I hereby certify that the foregoing instrument was signed in my presence and sworn to before me this 6<sup>th</sup> day of October, 2017.



Laurel Klaus  
Notary Public

My Commission Expires: 9/16/21

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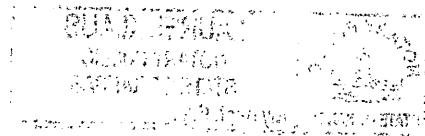
KS DEPT OF AGRICULTURE

**MINIMUM DESIRABLE STREAMFLOW FORM TO BE USED WHEN  
APPLICABLE WHEN FILING AN APPLICATION FOR PERMIT  
TO APPROPRIATE WATER FOR BENEFICIAL USE**

The Kansas Legislature has established minimum desirable streamflows for the streams listed below. If your proposed diversion of water is going to be from one of these watercourses or adjacent alluvial aquifers, please complete the back side of this page and submit it along with your application for permit to appropriate water.

Arkansas River  
Big Blue River  
Chapman Creek  
Chikaskia River  
Cottonwood River  
Delaware River  
Little Arkansas River  
Little Blue River  
Marais des Cygnes River  
Medicine Lodge River  
Mill Creek (Wabaunsee Co. area)  
Neosho River

Ninnescah River  
North Fork Ninnescah River  
Rattlesnake Creek  
Republican River  
Saline River  
Smoky Hill River  
Solomon River  
South Fork Ninnescah  
Spring River  
Walnut River  
Whitewater River



**FEE SCHEDULE**

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

| ACRE-FEET     | FEE  |
|---------------|--|
| 0-100         | \$200.00   |
| 101-320       | \$300.00   |
| More than 320 | \$300.00 plus \$20.00 for each additional 100 acre-feet or any part thereof. |

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

| ACRE-FEET     | FEE   |
|---------------|---|
| 0-250         | \$200.00  |
| More than 250 | \$200.00 plus \$20.00 for each additional 250 acre-feet of storage 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 a permit to appropriate water for water power or dewatering purposes shall be \$100.00 plus \$200.00 for each 100 cubic feet per second, or part thereof, of the diversion rate requested.

Note: The applicant shall notify the Chief Engineer and pay the statutorily required field inspection fee of \$400.00 when construction of the works for diversion has been completed, except that for applications filed on or after July 1, 2009, for works constructed for sediment control use and for evaporation from a groundwater pit for industrial use shall be accompanied by a field inspection fee of \$200.00.

**MAKE CHECKS PAYABLE TO THE KANSAS DEPARTMENT OF AGRICULTURE**

**ATTENTION**

A Water Conservation Plan may be required per K.S.A. 82a-733. A statement that your application for permit to appropriate water may be subject to the minimum desirable streamflow requirements per K.S.A. 82a-703a, b, and c may also be required from you. After the Division of Water Resources has had the opportunity to review your application, you will be notified whether or not you will need to submit a Water Conservation Plan. You also may be required to install a water flow meter or water stage measuring device on your diversion works prior to diverting water. There may be other special conditions or Groundwater Management District regulations that you will need to comply with if this application is approved.

**CONVERSION FACTORS**

- 1 acre-foot equals 325,851 gallons
- 1 million gallons equal 3.07 acre-feet

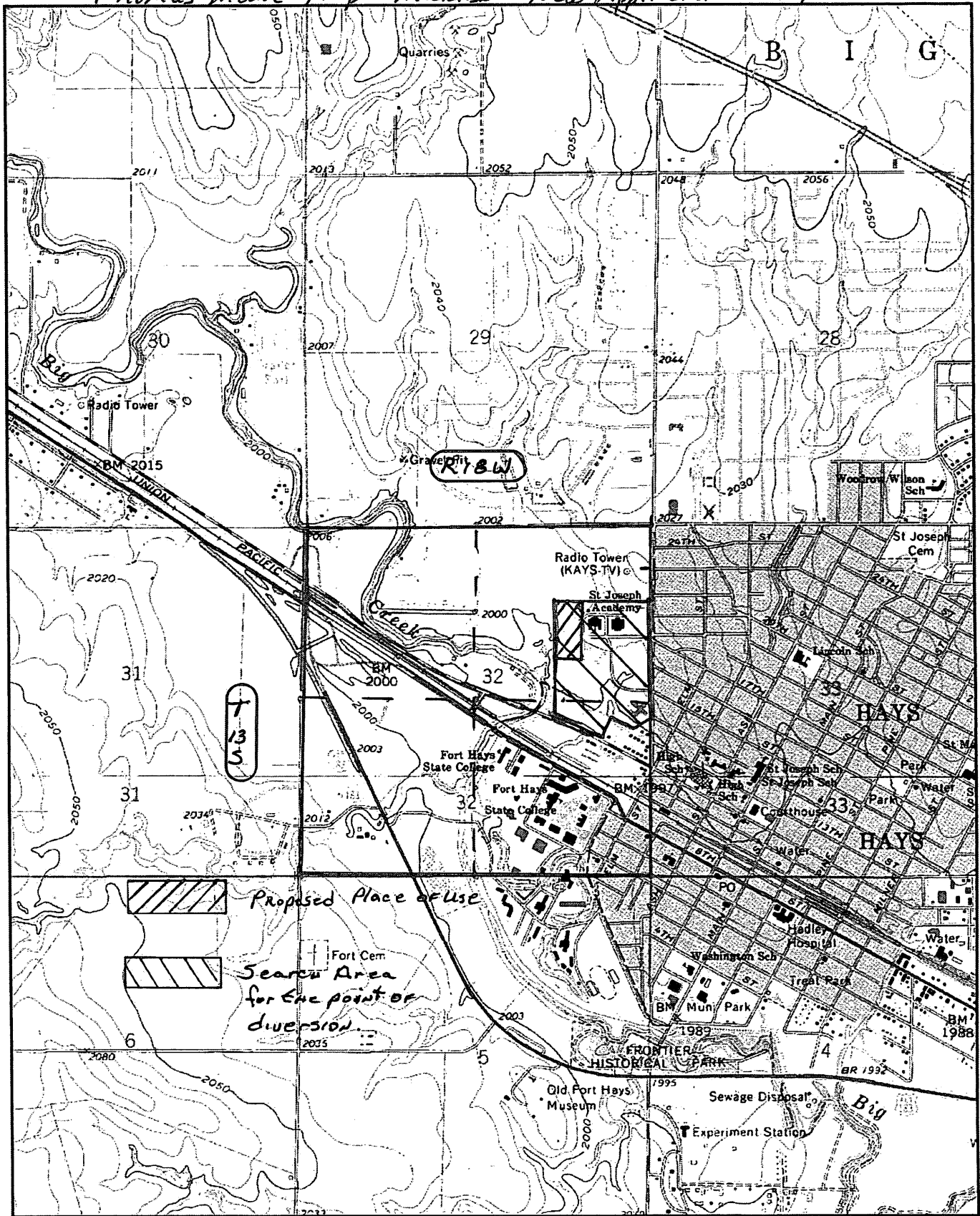
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Thomas Moore Prop - Mason New Application File No.



1:24000 scale

Universal Transverse Mercator (UTM) Projection Zone 14  
North American Datum of 1983

0 0.2 0.4 0.6 0.8 1 Miles



## IRRIGATION USE SUPPLEMENTAL SHEET

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

Name of Applicant (Please Print): Thomas More Prep - Marian

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: Thomas More Prep - Marian  
 ADDRESS: 1701 Hall St. Hays, KS 67601

| S  | T  | R    | NE¼ |     |    |     | NW¼ |    |    |    | SW¼ |    |    |    | SE¼ |    |    |    | TOTAL |  |
|----|----|------|-----|-----|----|-----|-----|----|----|----|-----|----|----|----|-----|----|----|----|-------|--|
|    |    |      | NE  | NW  | SW | SE  | NE  | NW | SW | SE | NE  | NW | SW | SE | NE  | NW | SW | SE |       |  |
| 32 | 13 | 1805 | 1   | 0.5 | 3  | 2.5 |     |    |    |    |     |    |    |    |     |    |    |    | 7     |  |
|    |    |      |     |     |    |     |     |    |    |    |     |    |    |    |     |    |    |    |       |  |
|    |    |      |     |     |    |     |     |    |    |    |     |    |    |    |     |    |    |    |       |  |
|    |    |      |     |     |    |     |     |    |    |    |     |    |    |    |     |    |    |    |       |  |

**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 |       |  |  |  |
|   |   |   |     |    |    |    |     |    |    |    |     |    |    |    |     |    |    |    |       |  |  |  |
|   |   |   |     |    |    |    |     |    |    |    |     |    |    |    |     |    |    |    |       |  |  |  |
|   |   |   |     |    |    |    |     |    |    |    |     |    |    |    |     |    |    |    |       |  |  |  |
|   |   |   |     |    |    |    |     |    |    |    |     |    |    |    |     |    |    |    |       |  |  |  |

49924

September 11, 2017

To whom it may concern,

The current condition of the Thomas More-Prep Marian football fields are not safe for our student athletes to be utilizing. If we were able to have water access throughout the grounds, it would improve their athletic experience immensely, and decrease the number of injuries I face while providing athletic training services to the Junior High and High School.

The fields are very "rough." The grass has not grown in evenly, leaving dirt patches. This change in playing surface makes it difficult for athletes to maintain good footing, causing them to slip; it is also very hard in these parts of the field, which may be contributing to some of the concussions sustained by our athletes over the past few years. If the surface was more even and all grass the athletes would have more cushion when they do go to the ground, most likely decreasing the number of musculoskeletal injuries as well as traumatic brain injuries. It is also prone to damage from normal usage leaving behind holes that athletes then step in. Improving field quality would greatly decrease the number of injuries incurred by these student athletes, leading to a better athletic experience as well as increased quality of life. In the past, athletic directors and coaches have had to go around the field before hosting an event and had to fill in these holes with dirt. These professionals have much better ways to spend their valuable time then patching the field to make it safe for their athletes.

Being in northwest Kansas, we experience hot and humid weather in the fall. This type of weather conditions can easily lead to heat exhaustion and heat illness emergencies. As of right now, there is only one way to provide life-saving care for an athlete in this situation on the TMP Marian campus. We would have to put them in a personal vehicle and drive them to Al Billinger field house and then carry them into the locker room showers while we wait for EMS to arrive on the scene. This process is very time consuming and when dealing with these life threatening heat emergencies, every minute counts. If we were able to get water access near the practice fields, we would be able to set up a cold water bath to submerge the athlete in cool water as soon as the condition is identified. This is considered to be the "gold standard" in care for heat emergencies and yields the best results in saving the lives of those affected.

Please feel free to contact me with any questions,

*Ashleigh Hilligas, ATC*

**Ashleigh Hilligas, ATC** | Athletic Trainer | Outpatient Rehabilitation  
HaysMed, part of The University of Kansas Health System | 785-623-8913  
[ashleigh.hilligas@haysmed.com](mailto:ashleigh.hilligas@haysmed.com) | 2500 Canterbury Drive, Ste. 106, Hays, Kansas 67601

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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>Detroit Silt loam</u> | <u>43.1</u>          | <u>0.6-2.0</u>      | <u>2c</u>               |
| <u>Elkree Silt loam</u>  | <u>55.4</u>          | <u>0.6-2.0</u>      | <u>2c</u>               |
| <u>Roxbury Silt loam</u> | <u>1.5</u>           | <u>0.6-2.0</u>      | <u>2c</u>               |
| Total:                   | 100 %                |                     |                         |

b. Estimate the average land slope in the field(s): 0-1 %  
 Estimate the maximum land slope in the field(s): 1 %

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:  
Soil Moisture Monitor

ii. For sprinkler systems:

- (1) Estimate the operating pressure at the distribution system: 120 psi
- (2) What is the sprinkler package design rate? 20 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? 100 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:

Turfgrass Bermuda

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).

Soil Moisture Monitor

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

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## Ellis County, Kansas

### 3720—Detroit silt loam, rarely flooded

#### Map Unit Setting

*National map unit symbol:* 2tpx8  
*Elevation:* 1,660 to 3,000 feet  
*Mean annual precipitation:* 19 to 30 inches  
*Mean annual air temperature:* 48 to 57 degrees F  
*Frost-free period:* 140 to 190 days  
*Farmland classification:* All areas are prime farmland

#### Map Unit Composition

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

#### Description of Detroit, Rarely Flooded

##### Setting

*Landform:* Stream terraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

##### Typical profile

*Ap - 0 to 6 inches:* silt loam  
*AB - 6 to 13 inches:* silty clay loam  
*Bt1 - 13 to 21 inches:* silty clay loam  
*Bt2 - 21 to 37 inches:* silty clay  
*Bk - 37 to 53 inches:* silty clay loam  
*C - 53 to 79 inches:* silt loam

##### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Moderately well drained  
*Runoff class:* Medium  
*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:* Rare  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 10 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 3.0  
*Available water storage in profile:* High (about 11.4 inches)

49924

**Interpretive groups**

- Land capability classification (irrigated): 1
- Land capability classification (nonirrigated): 2c
- Hydrologic Soil Group: C
- Ecological site: Loamy Terrace - Draft (April 2010) (PE 20-26) (R073XY014KS)
- Hydric soil rating: No

**Minor Components**

**Hord, rarely flooded**

- Percent of map unit: 7 percent
- Landform: Stream terraces
- Landform position (three-dimensional): Tread
- Down-slope shape: Linear
- Across-slope shape: Linear
- Ecological site: Loamy Terrace (PE 26-30) (R074XY014KS)
- Hydric soil rating: No

**Roxbury, occasionally flooded**

- Percent of map unit: 5 percent
- Landform: Flood plains
- Down-slope shape: Concave
- Across-slope shape: Linear
- Ecological site: Loamy Lowland - Draft (April 2010) (PE 20-26) (R073XY013KS)
- Hydric soil rating: No

**Mccook, occasionally flooded**

- Percent of map unit: 3 percent
- Landform: Flood plains
- Down-slope shape: Linear
- Across-slope shape: Linear
- Ecological site: Loamy Terrace - Draft (April 2010) (PE 20-26) (R073XY014KS)
- Hydric soil rating: No

**Aquolls, occasionally ponded**

- Percent of map unit: 0 percent
- Landform: Depressions on flood plains
- Down-slope shape: Concave, linear
- Across-slope shape: Concave, linear
- Hydric soil rating: Yes

**Data Source Information**

Soil Survey Area: Ellis County, Kansas  
Survey Area Data: Version 15, Sep 20, 2016

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## Ellis County, Kansas

### 2605—Eltree silt loam, 1 to 3 percent slopes

#### Map Unit Setting

*National map unit symbol:* 2pv95  
*Elevation:* 1,390 to 2,380 feet  
*Mean annual precipitation:* 22 to 28 inches  
*Mean annual air temperature:* 52 to 57 degrees F  
*Frost-free period:* 155 to 180 days  
*Farmland classification:* All areas are prime farmland

#### Map Unit Composition

*Eltree and similar soils:* 90 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Eltree

##### Setting

*Landform:* Paleoterraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Calcareous silty colluvium and/or calcareous silty alluvium

##### Typical profile

*Ap - 0 to 8 inches:* silt loam  
*A - 8 to 26 inches:* silt loam  
*Bk1 - 26 to 35 inches:* silty clay loam  
*Bk2 - 35 to 79 inches:* silt loam

##### Properties and qualities

*Slope:* 1 to 3 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (Ksat):*  
Moderately high (0.20 to 0.60 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 15 percent  
*Available water storage in profile:* Very high (about 12.2 inches)

##### Interpretive groups

*Land capability classification (irrigated):* 2e  
*Land capability classification (nonirrigated):* 2e  
*Hydrologic Soil Group:* C  
*Ecological site:* Limy Upland (Draft) Under Peer Review (PE 20-26)  
(R073XY012KS)

49924

*Hydric soil rating:* No

**Minor Components**

**Armo**

*Percent of map unit:* 10 percent

*Landform:* Paleoterraces

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* Limy Upland (Draft) Under Peer Review (PE 20-26)  
(R073XY012KS)

*Hydric soil rating:* No

**Aquolls**

*Percent of map unit:* 0 percent

*Landform:* Drainageways

*Down-slope shape:* Concave

*Across-slope shape:* Linear

*Hydric soil rating:* Yes

**Data Source Information**

Soil Survey Area: Ellis County, Kansas

Survey Area Data: Version 15, Sep 20, 2016





# Soils

## Understanding soils

Sports turf managers are charged with providing cost effective, safe playing surfaces for athletes. The challenge is to create a uniformly dense turf cover that provides sure footing and one that is able to tolerate and recover from the extreme wear and tear to which high-use fields are subjected to.

Although newer, properly designed fields may be constructed to handle more intense use, many school and community sports fields were built on existing "native soils" that are often less than ideal. These soils may or may not have the best properties for sports field use but in many cases can perform well if managed properly.

Soils are made of varying amounts of:

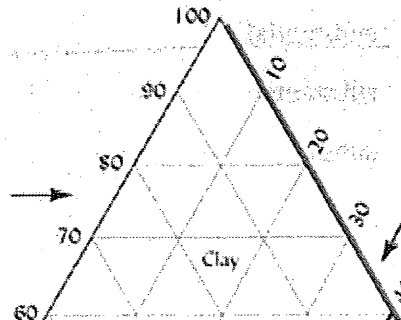
- Mineral solids - grouped into 3 main categories based on particle size; sand, silt, clay
- Organic matter - material that originates from living organisms
- Water - essential for soil and plant life and enables plants to take up nutrients
- Air - that provides the oxygen required by plant roots and soil organisms to grow and function
- Micro-organisms - including bacteria, fungi, actinomycetes, nematodes, etc.
- Macro-organisms - including earthworms, insects and millipedes

To say "the life of the soil" is important is an understatement. The life of the soil (micro and macro-organisms) helps maintain soil structure, suppress some plant pests, breakdown organic matter, mineralize and recycle nutrients, fix nitrogen and detoxify pollutants. Turfgrass management practices that support the "life of the soil" include: using organic amendments, maintaining adequate water and nutrient levels, improving soil porosity and limiting the use of pesticides.

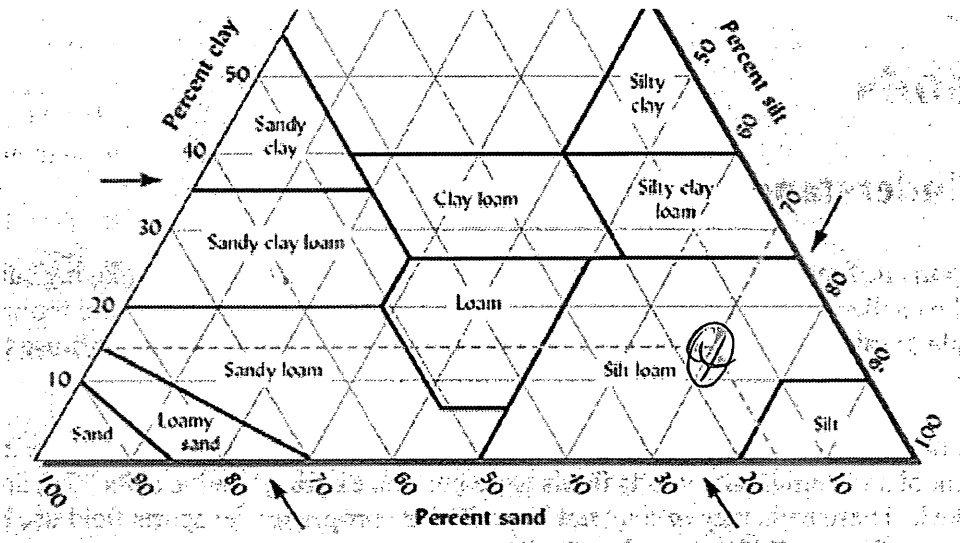
## Importance of soil physical properties

[texture-trianglex500.jpg](#)

The amount of water, air and nutrients available for plant growth is affected by the soil physical properties and turf management practices that



include watering, mowing, and aerifying and how much the fields are used. Determining the physical properties of your soils will ultimately help you determine how to manage them effectively.



**Soil texture** is based on the relative proportion of sand, silt and clay the soil contains and is used to name the soil, for example a sandy loam soil.

Coarse-textured soils (sands, loamy sands, sandy loams) have a large particle size and do not have great water and nutrient holding capacity. They tend to be well drained, dry out faster, and are less likely to compact.

Fine-textured soils (clays, sandy clays, silty clays) have a small particle size. They can hold water and nutrients, take time to dry out, can be easily compacted when wet and often are associated with poor drainage that limits the use of the fields during wet weather.

Soil texture will influence watering and fertilizing management practices on sports fields.

## General soil physical and chemical properties of different soil textures

| Soil texture | Drainage     | Susceptibility to compaction | Water & nutrient-holding capacity |
|--------------|--------------|------------------------------|-----------------------------------|
| sand         | excellent    | little to none               | limited                           |
| loamy sand   | excellent    | limited                      | limited                           |
| sandy loam   | good         | limited to moderate          | moderate                          |
| loam         | good to fair | moderate                     | moderated – substantial           |
| silt loam    | fair to poor | substantial                  | substantial                       |
| clay loam    | fair to poor | substantial                  | substantial                       |
| clay         | poor         | substantial                  | substantial                       |

WATER RESOURCES RECEIVED

OCT 12 2017

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## Determine the soil type

Knowing the soil type is important and can differ from area to area and from field to field. The name of the soil is also necessary when submitting a soil sample for nutrient analysis.

If you are not familiar with the soils you have, you can have a customized Soil Resource Report generated for a particular parcel of land by going to the NRCS (Natural Resources Conservation Service) [Web Soil Survey](#) website.

Or you can use the [SoilWeb for the iPhone](#) app from the California Soil Resource Lab. (Also available for [Android](#).) This application retrieves graphical summaries of soil types associated with the phone's current geographic location. Sketches of soil profiles are linked to their official soil series description.

If soils were brought onto the site, the above methods for determining soil type may not be very useful. Some soil testing laboratories (including the [Cornell Soil Health Testing Lab](#)) can determine soil texture. Also, you can get a good idea of the soil texture by following the texture by feel method. View University of California video: [Soil texture by feel](#).

## Soil structure

Soil structure refers to the arrangement or grouping of soil particles into granules or blocks of soils in various sizes and shapes. A well aggregated soil is good for plant growth because the wider range of pores provides better drainage, aeration and water storage and places for roots to grow. Soil aggregates (crumbs, or clumps) are formed when soil minerals and organic matter are bound together with the help of organic molecules, plant roots, fungi and clays.

Both air and water occupy the pores spaces created within and between soil aggregates. Air can be found in the larger pores (macropores) and water is held in the smaller pores (micropores).

Soil structure can be destroyed by over use and traffic and can be improved over time by incorporating amendments through topdressing.

## Drainage management

Soils for sports turf must have good footing and traction for athlete safety and performance.

Soils that are easily compacted, have a low amount of organic matter, have poor nutrient and water holding capacity and poor drainage are not suitable for sports turf.

Organic soil amendments (i.e. compost, peats) function by enhancing soil structure (in non-sandy soils) and aeration as well as contributing to improved nutrient and water retention. Soil resiliency can also be increased with organic amendments. [Learn more about composts and compost testing](#).

Inorganic amendments (i.e. sand, calcined clay, diatomaceous earth) can be used to improve drainage and aeration along with water and nutrient holding capacity.

Long term improvement in soil properties can be achieved by topdressing. Topdressing with ¼ - ½” of screened high quality compost or lesser amounts of sand after aggressively core aerating the soil will begin to improve the soil’s drainage and aeration properties. Depending on your goals this may need to be repeated a couple of times per year.

| Soil texture   | Management strategies   |
|--|---|
| Coarse-textured soils: <ul style="list-style-type: none"> <li>• Sands</li> <li>• Loamy sands</li> <li>• Sandy loams</li> </ul> | <ul style="list-style-type: none"> <li>• Add organic amendments to increase organic matter content, improve water and nutrient holding capacity and support microbial activity.</li> <li>• Fertilize carefully: apply smaller amounts of fertilizer more often or use organic or slow release fertilizers. Do not apply if heavy rain is expected.</li> </ul> |
| Fine-textured soils: <ul style="list-style-type: none"> <li>• Clays</li> <li>• Sandy clays</li> <li>• Silty clays</li> </ul>   | <ul style="list-style-type: none"> <li>• Add organic amendments or sand to improve aeration and drainage. Using organic amendments can also support and enhance microbial activity.</li> <li>• Do not use when wet.</li> </ul>  |

## Compaction

Compaction breaks down soil structure and reduces the amount of pores space for air exchange, which is necessary for root growth and microbial activity. It also reduces the amount and rate that water can infiltrate into the soil and percolate down through the soil profile.

Compaction is more likely to occur on fine-textured soils and less likely a problem on fields with coarse textured soils.

Management options include various cultivation practices such as coring, slicing, spiking, grooving, water and air injection, drilling and solid tine cultivation. These operations still must be done at the correct time, at the proper depth when soil conditions are not wet and are required more often on high use fields.

## Drainage

Drainage is the removal of excess water from the soil surface and/or soil profile either by gravity or artificial means. Some fields may have adequate drainage because the field was constructed properly. However, poor drainage is one of the most common problems of high use sports fields.

### Improving Surface Drainage

When water remains on the field surface and does not drain many problems occur including slippery and unsafe conditions. Games are cancelled and maintenance practices are delayed.



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Sam Brownback, Governor

October 17, 2017

CAPUCHIN PROVINCE OF MID-AMERICA  
THOMAS MORE, PREP-MARIAN  
3553 WYANDOT  
DENVER CO 80211

**FILE COPY**

RE: Application  
File No. 49924

Dear Sir or Madam:

Your application for permit to appropriate water in 32-13S-18W in Ellis County, was received and has been assigned the file number noted above.

As a matter of record, the Division of Water Resources has on hand a large number of applications awaiting processing. Therefore to be fair to all concerned, and so that we can process those applications on hand in the order they were received, we intend to concentrate on the backlog of applications until the issue is resolved. Once review of your application has begun, we will contact you, if additional information is required.

In accordance with the provisions of the Kansas Water Appropriation Act, a portion of which is included below, the use of water as proposed prior to approval of the application is unlawful. Once approved, compliance with the terms, conditions and limitations of the permit is necessary. Conservation of the water resources of Kansas is required.

**Section 82a-728 of the Kansas Water Appropriation Act, provides (a) except for the appropriation of water for the purpose of domestic use, . . . it shall be unlawful for any person to appropriate or threaten to appropriate water from any source without first applying for and obtaining a permit to appropriate water in accordance with the provisions of the Water Appropriation Act or for any person to violate any condition of a vested right, appropriation right or an approved application for a permit to appropriate water for beneficial use.**

**(b) (1) The violation of any provision of this section by any person is a class C misdemeanor . . .**

**A class C misdemeanor is punishable by a fine not to exceed \$500 and/or a term of confinement not to exceed one month in the county jail. Each day that the violation occurs constitutes a separate offense.**

If you have any questions, please contact me at (785) 564-6645. If you wish to discuss a specific file, please have the file number ready so that we may help you more efficiently.

Sincerely,

Kristen A. Baum  
New Applications Unit Supervisor  
Water Appropriation Program

BAT: dlw  
pc: STOCKTON Field Office  
GMD