Kansas Department of Agriculture
Division of Water Resources
PERMIT OF NEW APPLICATION WORKSHEET

1. File Number:	2. Status Change Date:	3. Field Office:	4. GMD:
49,675	5/18/2017	**02**	

5. Status: ☒ Approved ☐ Denied by DWR/GMD ☐ Dismiss by Request/Failure to Return

6. Enclosures: ☒ Check Valve ☒ N of C Form ☒ Water Tube ☐ Driller Copy ☒ Meter

7a. Applicant(s) New to system ☐ Person ID **6219** Add Seq# **1**

CITY OF GOESSEL
101 S CEDAR PO BOX 347
GOESSEL KS 67053-0347

7c. Landowner(s) New to system ☐ Person ID _____ Add Seq# _____

7b. Landowner(s) New to system ☐ Person ID _____ Add Seq# _____

7a

7d. Misc. New to system ☐ Person ID _____ Add Seq# _____

8. WUR Correspondent New to system ☐ Overlap File (s) WUC Agree ☐ Yes ☐ No Person ID _____ Add Seq# _____ Notarized WUC Form ☐

7a

9. Use of Water: Changing? ☐ Yes ☒ No
☒ Groundwater ☐ Surface Water
☒ IRR ☐ REC ☐ DEW ☐ MUN
☐ STK ☐ SED ☐ DOM ☐ CON
☐ HYD DRG ☐ WTR PWR ☐ ART RECHRG
☐ IND SIC: _____ ☐ OTHER: _____

10. Completion Date: **12/31/2018** 11. Perfection Date: **12/31/2022** 12. Exp Date: _____

13. Conservation Plan Required? ☐ Yes ☒ No Date Required: _____ Date Approved: _____ Date to Comply: _____

14. Water Level Measuring Device? ☐ Yes ☒ No Date to Comply: _____ Date WLMD Installed: _____

Date Prepared: **5/12/17** By: **AJW**
Date Entered: 5/22/2017 By: AM

DWR 1-660 (Revised 09/19/2008)

File No. **49,675**	15. Formation Code: **190**	Drainage Basin: **Little Arkansas River**	County: **MN**	Special Use: **na**	Stream: **na**

16. Points of Diversion									17. Rate and Quantity				
									Authorized		Additional		
T MOD DEL ENT	PDIV	Qualifier	S	T	R	ID	'N	'W	Rate gpm	Quantity af	Rate gpm	Quantity af	Overlap PD Files
✓	85452	NW SE SW	5	21S	1E	1	1,028	3,795	200	20	200	~~200~~ 20	none
MOD													

18. Storage: Rate _____ NF Quantity _____ ac/ft Additional Rate _____ NF Additional Quantity _____ ac/ft

19. Limitation: _____ af/yr at _____ gpm (_____ cfs) when combined with file number(s) _____

Limitation: _____ af/yr at _____ gpm (_____ cfs) when combined with file number(s) _____

20. Meter Required? ☐ Yes ☐ No To be installed by _____ Date Acceptable Meter Installed _____

21. Place of Use						NE¼				NW¼				SW¼				SE¼				Total	Owner	Chg?	Overlap Files
T MOD DEL ENT	PUSE	S	T	R	ID	NE ¼	NW ¼	SW ¼	SE ¼	NE ¼	NW ¼	SW ¼	SE ¼	NE ¼	NW ¼	SW ¼	SE ¼	NE ¼	NW ¼	SW ¼	SE ¼				~~9377, 27456, 40233, 44491, 44492, 44493, 444982, 44995~~
✓	67915	5	21S	1E	1											4	6					10	7A		

Comments: ~~Overlaps because this PU is part of "City of Goessel & Immediate Vicinity"~~

KANSAS DEPARTMENT OF AGRICULTURE
Division of Water Resources

M E M O R A N D U M

TO: Files **DATE:** May 12, 2017

FROM: Alex Whitesell **RE:** Application, File No. 49,675

The City of Goessel has filed the above referenced application for a permit to appropriate water for beneficial use, proposing the appropriation of 20 acre-feet of groundwater from one (1) well, for irrigation use in Marion County.

Based on K.A.R. 5-3-24, the requested quantity of 20 acre-feet exceeds the reasonable amount for irrigation of the proposed 10 acres (1.2 acre-feet per acre in Marion County). However, because the application is proposing to water turf grass, amount of water was justified as follows:

(Average Evapotranspiration 0.17 X Days of Water 275) / 12" = 3.89 AF of ET X 10 acres = 38.9
Minus Annual Useable Precipitation
((31" / 2) X 10 acres) / 12" = 12.9
38.9 AF ET – 12.9 AF precipitation = 26 AF. Therefore, the 20 acre feet requested is adequate and reasonable for the intended use.

The source of water for the pending application was determined to be Equus Beds, based on area wells logs.

The area of the proposed point of diversion is open to new appropriations, subject to safe yield. The specific method for calculating safe yield for unconfined groundwater aquifers is described in K.A.R. 5-3-11. The safe yield area of consideration is the entire two-mile circle, 8,042 acres, calculated using 3.07 inches of potential annual recharge and 75% recharge available for appropriation. The safe yield was calculated to be 1,543.06 acre-feet with total prior appropriation of 108.04 acre-feet leaving 1,435.02 acre-feet available for appropriation. Therefore, the application meets safe yield.

The application is subject to well spacing, as required by K.A.R. 5-4-4. There are no other appropriated wells within 1,320 feet, nor domestic wells reported within 660 feet of the proposed geographic center of the battery of wells. Therefore, the application complies with well spacing requirements.

All well owners within one-half (½) mile of the proposed point of diversion were notified of the application, by a public notice published in the Hillsboro Star-Journal and provided 15 days to submit any comments or concerns related to the proposed appropriation. No comments have been received.

In an email message on May 3, 2017, Jeff Lanterman, Water Commissioner of the Stafford Field Office recommended approval of the application.

Based on the above discussion and the available information, it is recommended that the referenced application be approved.

Alex Whitesell
Environmental Scientist
Water Appropriation Program

1320 Research Park Drive
Manhattan, Kansas 66502
(785) 564-6700

Kansas
Department of Agriculture
agriculture.ks.gov

900 SW Jackson, Room 456
Topeka, Kansas 66612
(785) 296-3556

Jackie McClaskey, Secretary

Governor Sam Brownback

May 22, 2017

FILE COPY

CITY OF GOESSEL
101 S CEDAR PO BOX 347
GOESSEL KS 67053-0347

RE: Appropriation of Water
File No. 49,675

Dear Sir or Madam:

There is enclosed a permit to appropriate water authorizing you to proceed with construction of the proposed diversion works (except those dams and stream obstructions regulated by K.S.A. 82a-301 through 305a), to divert such unappropriated water as may be available from the source and at the location specified in the permit, and to use it for the purpose and at the location described in the permit.

Your attention is directed to the enclosures and to the terms, conditions, and limitations specified in these approval documents. A water meter is required on the proposed diversion works and you must install it prior to water being put to beneficial use in order for you to maintain accurate records of water use. The meter should be used to provide the information required on the annual water use report.

Enclosed is a form which must be used to notify the Chief Engineer that the proposed diversion works have been completed. Failure to notify the Chief Engineer of the Division of Water Resources of the completion of the diversion works within the time allowed, or within any authorized extension of time thereof, will result in the dismissal of this permit. All requests for extensions of time to complete diversion works, or to perfect appropriations, must be submitted to the Chief Engineer before the expiration of time originally set forth in the enclosed permit. Any request for an extension of time shall be accompanied by the required statutory fee, which is currently $100.00. There is also enclosed an information sheet setting forth the procedure to obtain a Certificate of Appropriation which will establish the extent of your water right.

If you have any questions, please contact our office. If you wish to discuss this specific file, please have the file number ready so that we may help you more efficiently.

Sincerely,

Kristen A. Baum

Kristen A. Baum
New Application Unit Supervisor
Division of Water Resources

KAB:ajw
Enclosures
pc: Stafford Field Office

THE STATE OF KANSAS

KANSAS DEPARTMENT OF AGRICULTURE
Jackie McClaskey, Secretary of Agriculture

DIVISION OF WATER RESOURCES
David W. Barfield, Chief Engineer

APPROVAL OF APPLICATION
and
PERMIT TO PROCEED

(This Is Not a Certificate of Appropriation)

This is to certify that I have examined Application, **File No. 49,675** of the applicant

CITY OF GOESSEL
101 S CEDAR PO BOX 347
GOESSEL KS 67053

for a permit to appropriate water for beneficial use, together with the maps, plans and other submitted data, and that the application is hereby approved and the applicant is hereby authorized, subject to vested rights and prior appropriations, to proceed with the construction of the proposed diversion works (except those dams and stream obstructions regulated by K.S.A. 82a-301 through 305a, as amended), and to proceed with all steps necessary for the application of the water to the approved and proposed beneficial use and otherwise perfect the proposed appropriation subject to the following terms, conditions and limitations:

1. That the priority date assigned to such application is **July 18, 2016**.

2. That the water sought to be appropriated shall be used for irrigation use on land, described in the application, as follows:

	NE¼				NW¼				SW¼				SE¼				TOTAL
Sec. Twp. Range	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
5 21S 1E											4	6					10

3. That the authorized source from which the appropriation shall be made is groundwater to be withdrawn by means of one (1) well located in the Northwest Quarter of the Southeast Quarter of the Southwest Quarter (NW¼ SE¼ SW¼) of Section 5, more particularly described as being near a point 1,028 feet North and 3,795 feet West of the Southeast corner of said section, in Township 21 South, Range 1 East, Marion County, Kansas located substantially as shown on the topographic map accompanying the application.

4. That the appropriation sought shall be limited to a maximum diversion rate not in excess of **200 gallons per minute (0.45 c.f.s.)** and to a quantity not to exceed **20 acre-feet** of water for any calendar year.

5. That installation of works for diversion of water shall be completed on or before **December 31, 2018** or within any authorized extension thereof. The applicant shall notify the Chief Engineer and pay the statutorily required field inspection fee of $400.00 when construction of the works has been completed. Failure to timely submit the notice and the fee will result in revocation of the permit. Any request for an extension of time shall be submitted prior to the expiration of the deadline and shall be accompanied by the required statutory fee of $100.00.

6. That the proposed appropriation shall be perfected by the actual application of water to the proposed beneficial use on or before **December 31, 2022** or any authorized extension thereof. Any request for an extension of time shall be submitted prior to the expiration of the deadline and shall be accompanied by the required statutory fee of $100.00.

7. That the applicant shall not be deemed to have acquired a water appropriation for a quantity in excess of the amount approved herein nor in excess of the amount found by the Chief Engineer to have been actually used for the approved purpose during one calendar year subsequent to approval of the application and within the time specified for perfection or any authorized extension thereof.

8. That the use of water herein authorized shall not be made so as to impair any use under existing water rights nor prejudicially and unreasonably affect the public interest.

9. That the right of the appropriator shall relate to a specific quantity of water and such right must allow for a reasonable raising or lowering of the static water level and for the reasonable increase or decrease of the streamflow at the appropriator's point of diversion.

10. That this permit does not constitute authority under K.S.A. 82a-301 through 305a to construct any dam or other obstruction; nor does it grant any right-of-way, or authorize entry upon or injury to, public or private property.

11. That all diversion works constructed under the authority of this permit into which any type of chemical or other foreign substance will be injected into the water pumped from the diversion works shall be equipped with an in-line, automatic quick-closing, check valve capable of preventing pollution of the source of the water supply. The type of valve installed shall meet specifications adopted by the Chief Engineer and shall be maintained in an operating condition satisfactory to the Chief Engineer.

12. That all wells with a diversion rate of 100 gallons per minute or more drilled under the authority of this permit shall have a tube or other device installed in a manner acceptable to, and in accordance with specifications adopted by, the Chief Engineer. This tube or device shall be suitable for making water level measurements and shall be maintained in a condition satisfactory to the Chief Engineer.

13. That an acceptable water flow meter shall be installed and maintained on the diversion works authorized by this permit in accordance with the Kansas Administrative Regulations 5-1-4 through 5-1-12 adopted by the Chief Engineer. This water flow meter shall be used to provide an accurate quantity of water diverted as required for the annual water use report (including the meter reading at the beginning and end of the report year).

14. That the applicant shall maintain accurate and complete records from which the quantity of water diverted during each calendar year may be readily determined and the applicant shall file an annual water use report with the Chief Engineer by March 1 following the end of each calendar year. Failure to file the annual water use report by the due date shall cause the applicant to be subject to a civil penalty.

15. That no water user shall engage in nor allow the waste of any water diverted under the authority of this permit.

16. That failure without cause to comply with provisions of the permit and its terms, conditions and limitations will result in the forfeiture of the priority date, revocation of the permit and dismissal of the application.

17. That the right to appropriate water under authority of this permit is subject to any minimum desirable streamflow requirements identified and established pursuant to K.S.A. 82a-703c for the source of supply to which this water right applies.

This Order shall become a final agency action, as defined by K.S.A. 77-607(b), without further notice to the parties, if a request for hearing or a petition for administrative review is not filed as set forth below.

Request for Hearing. According to K.A.R. 5-14-3(c), any party who desires a hearing must submit a request within 15 days after the date shown on the Certificate of Service attached to this Order. Filing a request for a hearing will give you the opportunity to submit additional facts for consideration, contest any findings made by the Chief Engineer, or present any other information you believe should be considered in this matter. A timely-filed request for hearing will stay the deadline for requesting administrative review of this Order pending the outcome of the hearing.

Petition for Review. The applicant, if aggrieved by this Order, may petition for administrative review, pursuant to K.S.A. 82a-711(c) and K.S.A. 82a-1901(a). The petition must be filed within 30 days after the date shown on the Certificate of Service attached to this Order and must set forth the basis for the review, unless stayed by the timely filing of a request for hearing.

Any request for hearing or petition for administrative review shall be in writing and shall be submitted to the attention of: Chief Legal Counsel, Kansas Department of Agriculture, 1320 Research Park Drive, Manhattan, Kansas 66502, Fax: (785) 564-6777.

Ordered this 18th day of May, 2017, in Topeka, Shawnee County, Kansas.

DIVISION OF WATER RESOURCES
DAVID W. BARFIELD
CHIEF ENGINEER
KANSAS DEPARTMENT of AGRICULTURE

David W. Barfield, P.E.
Chief Engineer
Division of Water Resources
Kansas Department of Agriculture

State of Kansas)
) SS
County of Riley)

The foregoing instrument was acknowledged before me this 18th day of May, 2017, by David W. Barfield, P.E., Chief Engineer, Division of Water Resources, Kansas Department of Agriculture.

STATE OF KANSAS NOTARY PUBLIC
KAREN HUNTER
My Appointment Expires
October 24, 2018

Notary Public

CERTIFICATE OF SERVICE

On this 22nd day of May, 2017, I hereby certify that the foregoing Approval of Application and Permit to Proceed, File No. 49,675, dated May 18th, 2017 was mailed postage prepaid, first class, US mail to the following:

CITY OF GOESSEL
101 S CEDAR PO BOX 347
GOESSEL KS 67053-0347

With photocopies to:

Stafford Field Office

Danielle Wilson

Division of Water Resources

APPLICATION COMPLETE
5/3/17
Reviewer AJW/DWR

THE STATE OF KANSAS

KANSAS DEPARTMENT OF AGRICULTURE
Jackie McClaskey, Secretary of Agriculture

DIVISION OF WATER RESOURCES
David W. Barfield, Chief Engineer

File Number 49,675
This item to be completed by the Division of Water Resources.

WATER RESOURCES RECEIVED
JAN 27 2017
KS DEPT OF AGRICULTURE

WATER RESOURCES RECEIVED
JUL 18 2016
1:50
KS DEPT OF AGRICULTURE

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.)

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

1. Name of Applicant (Please Print): City of Goessel

   Address: 101 S. Cedar PO Box 347

   City: Goessel State KS Zip Code 67053

   Telephone Number: (620) 367-8111

2. The source of water is: ☐ surface water in _____ (stream)

   OR ☒ groundwater in Little Arkansas River (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 20 acre-feet OR _____ gallons per calendar year, to be diverted at a maximum rate of ~~1000~~ 200 *AJW 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. 2 GMD 0 Meets K.A.R. 5-3-1 (YES / NO) Use IRR Source G/S County MN By AJW Date 7/16/16
Code REG Fee $ 200 TR # _____ Receipt Date 7/16/16 Check # 13009
SCANNED

DWR 1-100 (Revised 06/16/2014)

* AJW per phone conversation 12/31/16

7/21/2016 LLM

File No. 491675

5. The location of the proposed wells, pump sites or other works for diversion of water is:

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.

(A) One in the NW quarter of the SE quarter of the SW quarter of Section 5, more particularly described as being near a point 1,026 feet North and 3795 feet West of the Southeast corner of said section, in Township 21 South, Range 1 East (circle one), Marion County, Kansas.

(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 _____ East/West (circle one), _____ County, Kansas.

(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 _____ East/West (circle one), _____ County, Kansas.

(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 _____ East/West (circle one), _____ County, Kansas.

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 (¼) 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 800 gallons per minute and which supply water to a common distribution system.

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

City of Goessel 101 S. Cedar PO Box 347 Goessel, KS 67053 620-367-8111
(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 July 15, 2016. Jennifer Whitehead, City Clerk
> 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 one (1) well
(number of wells, pumps or dams, etc.)
and (was) (will be) completed (by) Backhus Drilling on 9/19/15.
(Month/Day/Year - each was or will be completed)

8. The first actual application of water for the proposed beneficial use was or is estimated to be 8/1/16.
(Mo/Day/Year)

WATER RESOURCES RECEIVED
JAN 27 2017
KS DEPT OF AGRICULTURE

SCANNED

WATER RESOURCES RECEIVED
JUL 18 2016
KS DEPT OF AGRICULTURE

File No. 491675

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 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 construction of dam or reservoir

11. 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 ½ 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 ½ mile, please advise us.

(c) If the application is for surface water, the names and addresses of the landowner(s) ½ mile downstream and ½ 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.

12. 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.

File No. 49,675

13. 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	9/4/15			
Total depth of well	120ft			
Depth to water bearing formation				
Depth to static water level	18ft			
Depth to bottom of pump intake pipe				

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

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

(name, address and telephone number)

(name, address and telephone number)

16. 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 Goessel, Kansas, this 7th day of July (month), 2016 (year).

Jennifer Whitehead
(Applicant Signature)

By
(Agent or Officer Signature)

Dave Schrag
(Agent or Officer - Please Print)

Assisted by ajw/dwr (office/title) Date: 7/7/2016

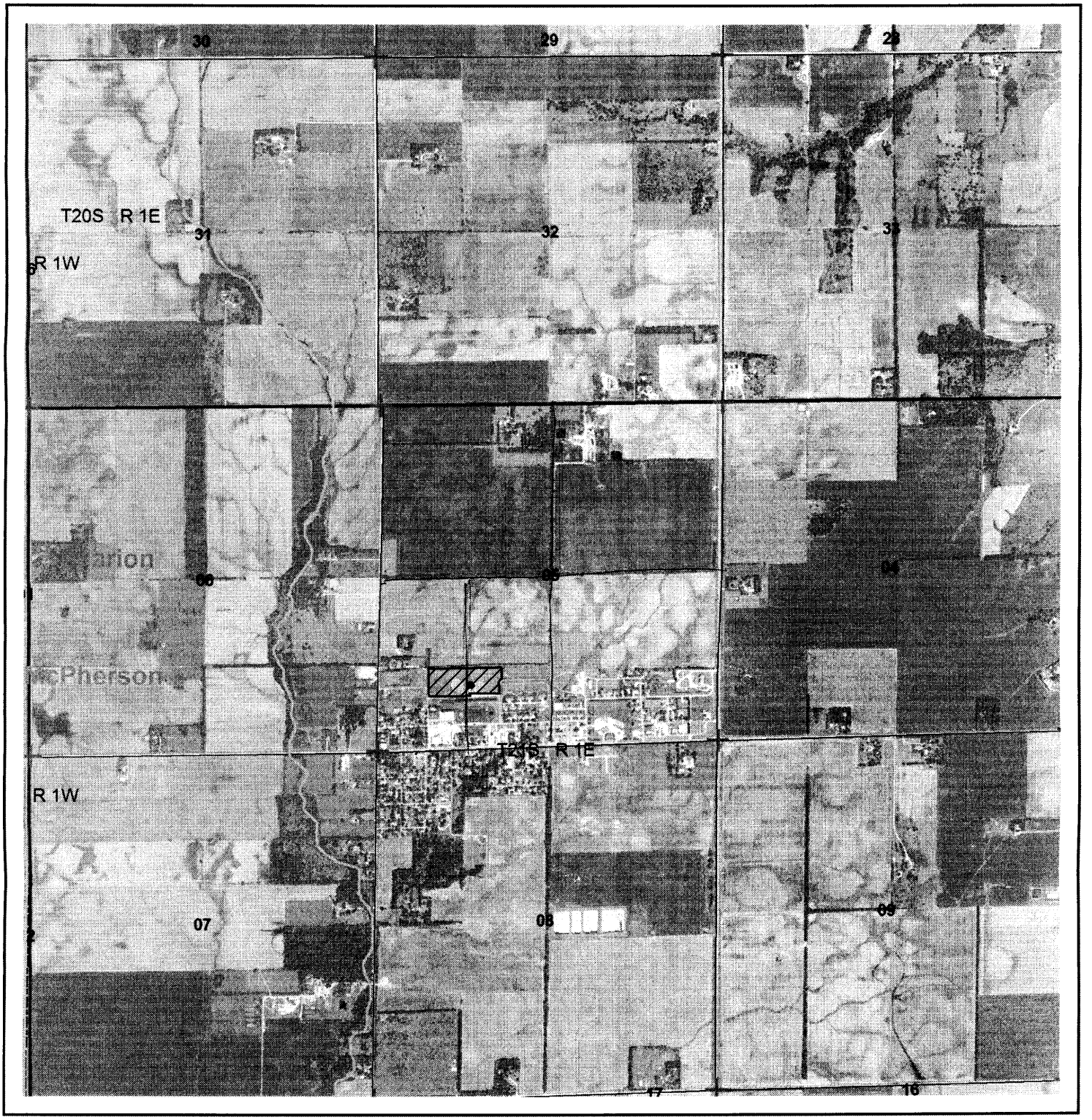
WATER RESOURCES RECEIVED
JAN 27 2017
KS DEPT OF AGRICULTURE

SCANNED

WATER RESOURCES RECEIVED
JUL 18 2016
KS DEPT OF AGRICULTURE

491675

City of Goessel New Application



0 0.25 0.5 0.75 1 Miles

Place of Use

N

All wells of any kind within 1/2 mile of the requested point of diversion have been plotted.

Signature: Jennifer Whitehead, City Clerk

AJW/DWR
Date: 7/7/2016

WATER RESOURCES
RECEIVED
JAN 27 2017

KS DEPT OF AGRICULTURE
WATER RESOURCES
RECEIVED

SCANNED JUL 18 2016

KS DEPT OF AGRICULTURE

IRRIGATION USE
SUPPLEMENTAL SHEET

File No. 44,675

Name of Applicant (Please Print): City of Goessel

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: City of Goessel

ADDRESS: 101 S. Cedar PO Box 347 Goessel, KS 67053

S	T	R	NE¼				NW¼				SW¼				SE¼				TOTAL
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
5	21S	1E											4	6					10

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
Sand	10%		
~~Clay~~	~~10%~~		
Silt & Clay Loam	48%		
Clay	42%		
Total:	100 %		

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

      Estimate the maximum land slope in the field(s): No field %

   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: lawn sprinkler

   d. System design features:

      i. Describe how you will control tailwater: Will be no tailwater

      ii. For sprinkler systems:

         (1) Estimate the operating pressure at the distribution system: 48 psi

         (2) What is the sprinkler package design rate? 16 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? 70 feet

         (4) Please include a copy of the sprinkler package design information. 2 or 3 gallon orifices

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

      None

   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).

      When temperatures & lack of rain require irrigation,

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

7/7/16
(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. 49,675

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.

Jennifer Whitehead
Signature of Applicant

Jennifer Whitehead, City Clerk
(Print Applicant's Name)

State of Kansas)
) ss
County of Marion)

I hereby certify that the foregoing instrument was signed in my presence and sworn to before me this 7th day of July, 2016.

JANICE E VOTH
NOTARY PUBLIC
STATE OF KANSAS
My Appt. Exp. 9-11-2016

Janice E. Voth
Notary Public

My Commission Expires: 9-11-2016

WATER RESOURCES RECEIVED
JAN 27 2017
KS DEPT OF AGRICULTURE

SCANNED

WATER RESOURCES RECEIVED
JUL 18 2016
KS DEPT OF AGRICULTURE

DWR 1-100.171 (Revised 03/27/2008)

49,675

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

COPY

AFFIDAVIT OF PUBLICATION

STATE OF KANSAS, MARION COUNTY, ss:

Melvin Honeyfield, being first duly sworn, deposes and says:

That he is the production manager of the Hillsboro Star-Journal, a weekly newspaper printed in the State of Kansas, and published in and of general circulation in Marion County, Kansas, with a general paid circulation on a weekly basis in Marion County, Kansas, and that said newspaper is not a trade, religious or fraternal publication.

That said newspaper is a weekly newspaper published at least 50 times a year; has been so published continuously and uninterruptedly in said county and state for a period of more than five years prior to the first publication of said notice; and has been admitted at the post office of Marion in said County as Periodical Class matter.

That the attached notice is a true copy thereof and was published in the regular and entire issue of said newspaper, the first publication thereof being made as aforesaid on the 4th day of January, 2017.

Mel Honeyfield

Subscribed and sworn to before me this
4th day of January, 2017

Karlene Lovelady

Notary Public, Marion County, Kansas
My appointment expires the
16 day of Aug, 2020
(Seal)

PUBLICATION FEE:
$60.00 plus $5.00 for affidavit(s)

KARLENE LOVELADY
Notary Public - State of Kansas
My Appt. Expires 8/16/20

First published Jan. 4, 2017,
in the Hillsboro Star-Journal
Hillsboro, Kansas (3 times)

PUBLIC NOTICE

The City of Goessel has filed an application with the Kansas Department of Agriculture, Division of Water Resources, 1320 Research Park Drive, Manhattan, Kansas, 66502, for permit to appropriate water for beneficial use, identified as File No. 49,675, which proposes to appropriate groundwater in the drainage basin of Little Arkansas River, to be diverted by means of one (1) well located in the Northwest Quarter of the Southeast Quarter of the Southwest Quarter (NW1/4 SE1/4 SW1/4) of Section 5, more particularly described as being near a point 1,028 feet north and 3,795 feet West of the Southeast corner of said section, in Township 21 South, range 1 East, Marion County, Kansas, in an amount of 20 acre-feet per calendar year to be diverted at a maximum rate of 200 gallons per minute for irrigation of 10 acres. Any interested party is invited to submit written comments to this office on or before February 2, 2017. Persons submitting written comments should specifically indicate their interest in the application in a clear and concise manner.

H-15-1863

[redacted]

Cameron

From: Whitesell, Alex
Sent: Monday, April 17, 2017 11:12 AM
To: Lanterman, Jeff <Jeff.Lanterman@ks.gov>; Conant, Cameron <Cameron.Conant@ks.gov>
Subject: City of Goessel 49675

Jeff and Cameron,

Here is my memo for the City's ball field irrigation. In the memo I used justification from Kansas State University Research. Because this is somewhat sensitive application and because the applicant has not gotten back to me with justified numbers, I used what I had.

If the justification is off or out of place, I have also talked with Elizabeth about using USDA numbers which would be NIR at 80%

(17.1" / 12") x 10 acres = 14.25 acre-feet.

Please let me know if anything needs to be changed. Thank you,

Alex Whitesell
Division of Water Resources
Kansas Department of Agriculture
1320 Research Park Drive
Manhattan, KS
(785) 564 - 6631

My email has changed alex.whitesell@ks.gov

Whitesell, Alex

From: Lanterman, Jeff
Sent: Wednesday, May 03, 2017 3:49 PM
To: Whitesell, Alex
Cc: Conant, Cameron
Subject: FW: City of Goessel 49675
Attachments: turf_grass_justification.pdf; Memo.docx; 49675 map.jpg; well log.pdf

Alex. This one looks ok to approve.

Thanks
Jeff

From: Conant, Cameron
Sent: Wednesday, May 3, 2017 10:47 AM
To: Lanterman, Jeff <Jeff.Lanterman@ks.gov>
Subject: FW: City of Goessel 49675

Jeff, my initial concern with this application not properly covering the football field and surrounding area was put to rest when Alex contacted the city and discussed it. They run municipal water to the football field, so they did correctly show the place of use for this file as only the ball diamonds and the field west of the ball diamonds.

This application is for a single well to cover 10 acres of ball field and surrounding areas with 20AF at 1,000gpm. This is an existing well that has already been drilled. The 1000gpm is not reasonable, but this isn't a small use exemption, so there is no limit on the rate. That said, it's an existing well and if it pumps over 100gpm it will be required to have a measurement tube...it probably does not have one. I guess the measurement tube is an issue we can work out during the new app compliance check/FIR when we see what the well can actually pump. If it tests less than 100gpm, we could remove that requirement. If it tests over 100gpm, they will have to address the measurement tube issue.

JUSTIFICATION REVIEW: The applicant didn't provide additional justification for the higher than reasonable quantity, so Alex took the liberty of reviewing and providing some justification for the "specialty crop" of turf grass. He used a formula that was completed by KSU on Colbert Hills Golf Course in Manhattan to assess their water needs. There are multiple ways to calculate this and I'm fine with the method he used. That said, I used a shorter 195 day growing season and added a 75% irrigation efficiency factor and came up with 19.6AF as reasonable, Alex showed 26AF as reasonable. My method was in line with how GMD#2 and Burns and Mac has done the last couple apps like this inside GMD#2. I think either method is ok and in this case, both show the requested quantity of 20AF is reasonable for a "specialty crop" in this area.

It appears spacing to nearby wells is met, nearby notification was a public notice in the Hillsboro newspaper, no comments received. I've attached rough map. For what it's worth, there are no WWC-5's on file that show domestic wells for lawn and garden in the SW¼...but clearly the wells SE of the 660' circle water their lawns (perhaps with muni water). The majority of the domestic wells with reported WWC-5's are in the 50' range. I've attached the completed log for the ballfield well which was completed to 120'.

I think this can be recommended for approval. We will likely have some work to do with the measurement tube requirement when the time comes but I don't know how we would address the potential issue right now.

Please pass on to Alex if you agree.

How much is a year's worth of water?

Estimating annual water usage on the golf course may not only placate the water police — it could also save money.

Jack Fry, Ph.D.

As water becomes a more costly resource, golf course superintendents find that they must furnish estimates of annual usage to those who provide the water. These estimates are used to develop a water budget specific to a particular golf course. Although this request comes most often when golf courses are in the planning stage or under construction, existing golf courses also may be required to provide estimated annual water requirements to water companies.

Measuring irrigation

Turfgrass irrigation requirements depend on water losses through evapotranspiration (ET) and gains from usable precipitation. Evapotranspiration is the sum of water lost by evaporation from the soil surface and by transpiration through small pores (*stomata*) on leaves. Although water is typically measured in units of volume, such as fluid ounces, pints or gallons, water requirements for large areas of agricultural land, including turf areas, are more easily expressed in units of measure, such as inches or feet. For example, if ET is reported as 1 inch, the amount of water lost is equivalent to water covering the entire surface of the turf area at a depth of 1 inch.

To take this a step further, engineers have determined the volume of water required to cover an acre of ground with 1 foot of water: 325,851.43 gallons or 1 acre-foot of water. Applying 1 foot of water to 3 acres would require 977,554.29 gallons of water (325,851.43 gallons × 3 acres). One acre-inch of water equals 27,154.29 gallons (325,851.43/12). Golf course irrigation requirements are commonly expressed in terms of acre-feet, primarily because this terminology is easier than using "hundreds of thousands" or "tens of millions" of gallons.

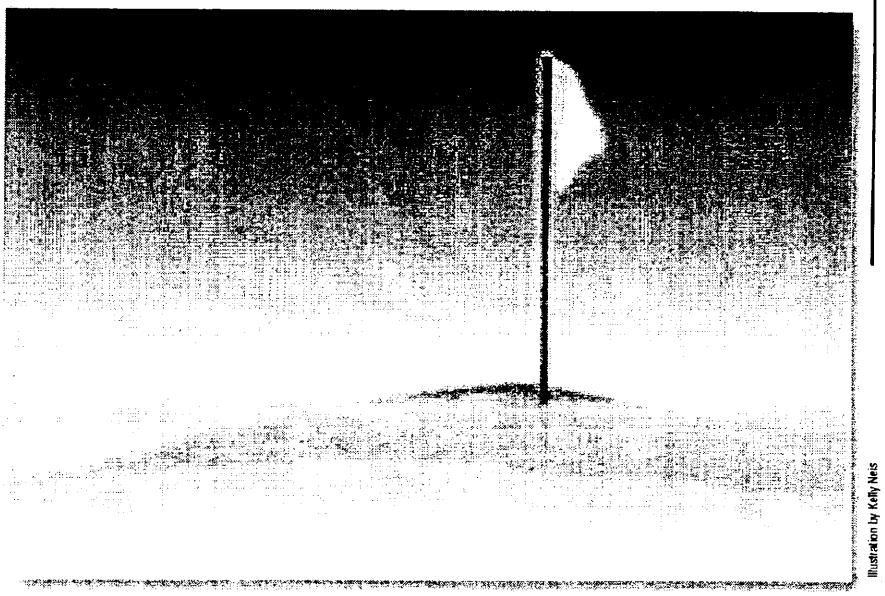


Illustration by Kelly Nels

Irrigation is commonly measured in acre-feet. One acre-foot, the amount of water needed to cover an acre of ground with 1 foot of water, is 325,851.43 gallons.

KEY points
More Info: www.gcsaa.org

- **Water is becoming an increasingly expensive commodity** for golf courses.
- **Municipalities and water companies** often want to know the estimated water use of a golf course before granting construction permits or in times of drought or water restrictions.
- **To determine estimated water use,** it is necessary to know the acreage of irrigated areas and an estimate of average turfgrass ET rates.
- **Once the basic information has been gathered,** simple mathematical formulas can be used to estimate annual water use.

This information can also be used to determine how many gallons of water have been lost through ET. For example, if 0.25 inch of ET occurred in one day from 40 acres of fairways, the total gallons of water lost can be calculated as follows:

Gallons lost through ET in 1 acre
= ET rate (inches per day) × 27,154.29 gallons
= 0.25 inch × 27,154.29
= 6,788.57 gallons ET per acre

Gallons of ET lost over the entire area
= number of acres of turf × gallons ET per acre
= 40 acres × 6,788.57 gallons ET per acre
= 271,542.8 gallons ET across 40 acres

Case Study: Colbert Hills Golf Course

Given background information on calculating water usage, it is possible to determine annual water requirements for a golf course.

AVG evapotranspiration = 0.17 For Fescue

Irrigate March to October ? How Many days

Estimated irrigation - City of Goessel

AVG ET (0.17) × Days water (275) = 46.75 ÷ 12 = 3.89 AF of ET

$$\times \frac{10 \text{ acres}}{38.9}$$

- Annual useable precip

$(31'' \div 2) \times 10 \text{ acres} \div 12''$

= 12.9 AF

38.9 AF − 12.9 AF

=

26 AF

RESEARCH

The golf course used in the examples presented here is Colbert Hills Golf Course, an 18-hole championship course located in Manhattan, Kan., the home of Kansas State University (KSU).

Irrigated acreage at the course is 5 acres of L-93 creeping bentgrass (*Agrostis stolonifera*) greens mowed at 0.130 inch; 45 acres of Meyer zoysiagrass (*Zoysia japonica*) fairways and tees mowed at 0.5 inch; and 100 acres of turf-type tall fescue (*Festuca arundinacea*) mowed at 2.5 inches. Turf ET values for June to September were based on turfgrass research data conducted at KSU since 1993. Weather-based estimates were used to determine values for March-May and October-November.

1. Measure the acreage of irrigated areas on the golf course.

The acreage of irrigated areas on the golf course may already be on file at the course. If not, the superintendent or a member of the staff should be prepared to spend a few days with a measuring wheel to determine areas for greens, tees, fairways and rough. It is important to determine areas separately, because ET of turf on putting greens is different from ET of fairways, and fairway turf ET may be different from ET in roughs. For more information on determining area, see "The Mathematics of Turfgrass Maintenance" (1).

2. Get an estimate of average turfgrass ET rates.

Turfgrass ET rates can be obtained from numerous sources, including historical weather data, mathematical-based models that employ weather data, evaporation pan data and university turfgrass researchers. Researchers at land-grant universities in several states have measured ET rates of turfgrasses during the growing season.

Turfgrass ET values are almost always reported as water loss under conditions in which soil water was not limiting for plant growth. This is important, because ET declines as soil dries. Evapotranspiration data obtained from weather-based estimates may have to be adjusted for the specific golf course conditions, because some mathematical models provide data appropriate for stands of cool-season grass maintained at a 3- to 6-inch height, considerably higher than turf on most golf courses. Therefore, although the illustration in this article provides a reasonable estimate of annual turfgrass water requirements, many interacting factors may increase or decrease the total amount of water required.

In some cases, interacting factors can be accounted for by using a multiplier, or crop coefficient, to adjust an ET estimate. For example, a crop coefficient may be used to adjust ET for effects of mowing height, irrigation frequency, nitrogen fertility level or soil type. In such a case, university Extension personnel may be able to provide more accurate numbers. (A list of Web sites that provide ET calculators is shown below.)

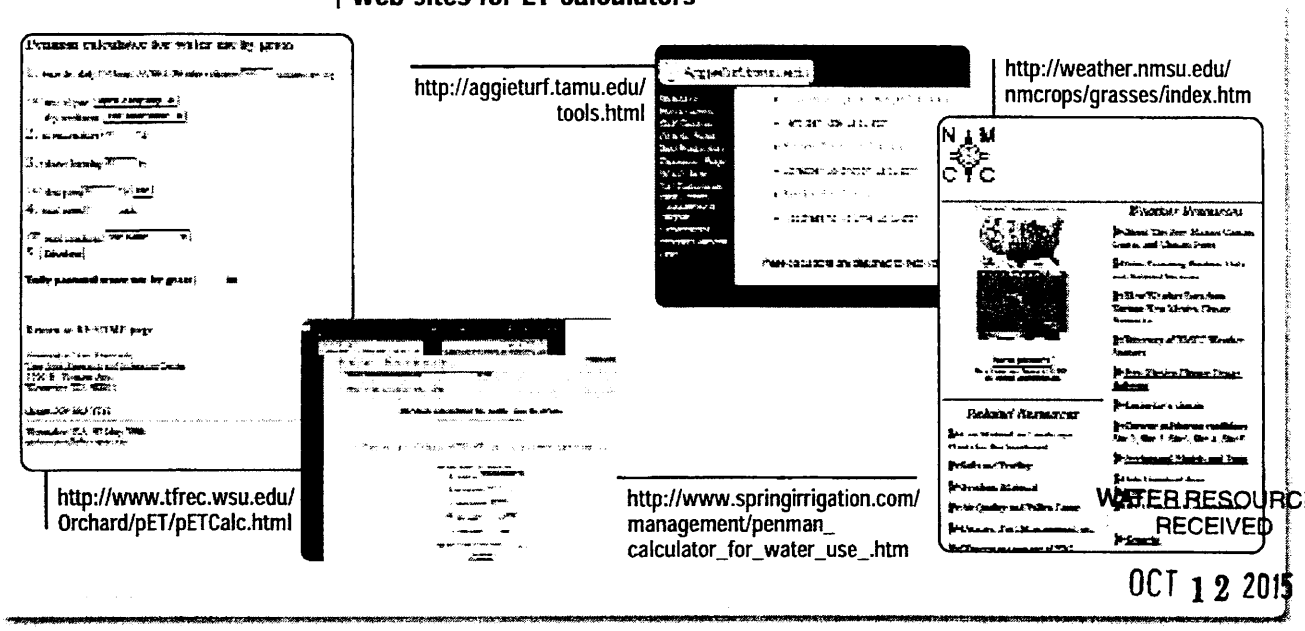
Typical average ET rates during active growth, and under well-watered conditions, range from 0.1 to 0.3 inch per day for cool-season grasses and 0.05 to 0.2 inch per day for warm-season grasses. However, ET can be quite variable, and values can be higher or lower than the ranges provided because many environmental and cultural factors influence ET. (See the table, "Environmental and cultural factors vs. ET.")

ET estimates for each area of the golf course are best broken out by month or by groups of months. In the case study below for a golf course in Manhattan, average ET estimates are provided for March-May, June-September and October-November. Months or groups of months may be divided differently depending on geographic location. For example, superintendents in the southern United States may have significant ET values every month of the year.

3. Determine annual ET rates for the golf course, and then convert to acre-feet.

An example of determining annual ET rates is illustrated by using the average ET loss from 5 acres of creeping bentgrass turf (0.2

HELPdesk | Web sites for ET calculators



http://aggieturf.tamu.edu/tools.html

http://weather.nmsu.edu/nmcrops/grasses/index.htm

http://www.tfrec.wsu.edu/Orchard/pET/pETCalc.html

http://www.springirrigation.com/management/penman_calculator_for_water_use_.htm

inch per day) over the 122-day period from June through September:

Step 1.
Total ET for the time period in inches
= average daily ET in inches
× number of days in the period
= 0.2 inch × 122 days
= 24.4 inches ET

Step 2.
Total ET for the time period in feet
= inches ÷ 12 (12 inches = 1 foot)
= 24.4 inches ÷ 12
= 2.03 feet ET

Step 3.
Acre-feet of ET over the time period
= feet of ET × number of acres of turf
= 2.03 feet ET × 5 acres
= 10.15 acre-feet ET

The total acre-feet of water required for each time period can then be added together to determine the total water requirement for the creeping bentgrass putting greens. (See the table, "Estimating irrigation at Colbert Hills.")

ENVIRONMENTAL AND CULTURAL FACTORS VS. ET

Environmental factor	Influence on ET
Air and soil temperature	Increases with temperature
Sunshine	Increases with intensity and day length
Wind speed	Increases with wind speed
Relative humidity	Decreases with increasing humidity
Cultural factor	
Mowing height	Increases with mowing height
Nitrogen	Increases with nitrogen

4. Subtract usable precipitation to determine net acre-feet of water required.

Not all precipitation that falls is used by the plant. Usable rainfall varies depending on many factors, including precipitation rate, soil type, soil water content and turfgrass rooting characteristics. An accurate measure of precipitation at several locations across the

ESTIMATING IRRIGATION AT COLBERT HILLS

Months	(1) Average daily ET (inches)	(2) No. days	(3) Total ET (inches) (col. 1 × col.2)	(4) Acre-feet/acre (col.3 ÷ 12)	(5) Acres	(6) Total acre-feet (col. 4 × col.5)	(7) Usable precip. (acre-feet over the area given)	(8) Net acre-feet (col.6 – col.7)
CREEPING BENTGRASS GREENS								
March-May	0.10	92	9.2	0.77	5	3.85	2.06	1.79
June-Sept.	0.20	122	24.4	2.03	5	10.15	3.39	6.76
Oct.-Nov.	0.10	61	6.1	0.51	5	2.55	1.01	1.54
Total								10.09
ZOYSIAGRASS FAIRWAYS AND TEES								
March-May	0.08	92	7.36	0.61	45	27	18.5	8.5
June-Sept.	0.17	122	20.74	1.73	45	77.78	30.5	47.28
Oct.-Nov.	0.08	61	4.88	0.41	45	18.45	9.09	9.36
Total								65.14
TALL FESCUE ROUGHS								
March-May	0.12	92	11.04	0.92	100	92	41.13	50.87
June-Sept.	0.27	122	32.94	2.75	100	275	67.8	207.2
Oct.-Nov.	0.12	61	7.32	0.61	100	61	20.2	40.8
Total								298.87

Estimates of acre-feet requirements at Colbert Hills Golf Course in Manhattan,Kan.

course will better document irrigation needs. Less than 0.10 inch of rainfall generally does not provide irrigation usable to the turf. When precipitation is heavy, amounts greater than 1.5 inch are likely to run off. Some water will also move beyond the root zone.

For this example, the bentgrass greens at Colbert Hills GC assume that 50 percent of precipitation is available for turfgrass use. This estimate is conservative because in some years turf in the Midwest may be able to use more than 75 percent of precipitation and irrigation. The greens at Colbert Hills can serve as an example of how usable precipitation is deducted from the total turf water requirements.

Step 1.

Usable precipitation for the period

= normal precipitation ÷ 2 (assuming 50 percent of precipitation is usable)

= 16.28 inches of precipitation ÷ 2

= 8.14 inches of usable precipitation

Step 2.

Total acre-inches of precipitation

= usable precipitation × number of acres

= 8.14 inches of usable precipitation × 5 acres

= 40.7 acre-inches of usable precipitation

Step 3.

Total acre-feet of usable precipitation

= acre-inches of usable precipitation ÷ 12

= 40.7 acre-inches of usable precipitation ÷ 12

= 3.39 acre-feet of usable precipitation

Following the steps outlined above, seasonal water requirements for greens, tees and fairways and rough have been determined for Colbert Hills. (See the table, "Total estimated irrigation for Colbert Hills.")

Based on this process, the annual irrigation requirement for Colbert Hills is 374.10 acre-feet, or 121,901,019 gallons. Of the total water applied, greens receive 2.7 percent, fairways 17.4 percent and rough 79.8 percent.

The Colbert Hills illustration demonstrates how reducing irrigation of the rough could result in significant water savings. This may be accomplished by zoning rough irrigation separately from fairways or using drought-resistant turfgrasses that require only minimal irrigation (e.g., buffalograss in Kansas).

Estimated vs. actual water use

In all likelihood, the water requirement calculated for Colbert Hills represents an amount that will be required during a dry year, such as 2002, but overestimates water requirements in a wet year. Nevertheless, it is better to err on the high side than to submit a request that will not allow for sufficient water. Actual water use may also be less because ET values assumed that turf was growing under well-watered conditions. As mentioned above, ET declines as the soil dries between irrigation or rain. Actual turf ET values will be lower than the calculated values depending on irrigation frequency and other factors. Usable rainfall also may be greater than 50 percent, further reducing the amount of water required.

Once an irrigation budget is determined, the superintendent should strive to stay within the targeted allotment. In fact, some water providers penalize golf courses that exceed the identified goal. For example, the city of Wichita, Kan., currently charges $518.10 per acre-foot of water for golf courses inside the city limits. However, once a course has exceeded its targeted limit, the cost increases to $785.30 per acre-foot.

Irrigation efficiency

The steps outlined above for determining annual irrigation requirements do not take into account the inefficiency of the irrigation system. Poor water distribution will increase the amount of water required to maintain turf quality (2). In the Colbert Hills example, if the system is assumed to be 80 percent efficient, the new water requirement would be 467.63 acre-feet, which is 20 percent higher than originally calculated (374.1 acre-feet ÷ 0.80 = 467.63 acre-feet). Once again, a higher, rather than lower, estimate of irrigation need may help to account for minor problems with distribution uniformity.

Keep in mind, however, that water providers have little empathy for superintendents managing water on courses with inefficient delivery systems. If such problems exist, efforts should be made to correct them, because the money saved on water will more than cover the cost of correcting irrigation system woes.

TOTAL ESTIMATED IRRIGATION FOR COLBERT HILLS

Area	Acre-feet
L-93 creeping bentgrass greens	10.09
Meyer zoysiagrass fairways and tees	65.14
Turf-type tall fescue rough	298.87
Total	374.10

Acknowledgments

Thanks to Dale Bremer, Ph.D.; Paul Davids, CGCS; Kay Drennan; David Gourlay, CGCS; Steve Keeley, Ph.D.; and Cathie Lavis for reviewing this article.

Literature cited

1. Christians,N.,and M.Agnew. 1997.The mathematics of turfgrass maintenance.Ann Arbor Press, Chelsea,Mich.
2. Kopec,D.1994.Adjusting irrigation systems for greater efficiency. *Golf Course Management* 62(8):74-82.

Jack Fry, Ph.D.(jfry@oznet.ksu.edu),is a professor in the department of horticulture, forestry and recreation resources at Kansas State University, Manhattan,Kan.

1320 Research Park Drive
Manhattan, Kansas 66502
(785) 564-6700

Kansas
Department of Agriculture
agriculture.ks.gov

900 SW Jackson, Room 456
Topeka, Kansas 66612
(785) 296-3556

Jackie McClaskey, Secretary

Governor Sam Brownback

December 22, 2016

FILE COPY

CITY OF GOESSEL
101 S CEDAR PO BOX 347
GOESSEL KS 67053

RE: Application
File No. 49,675

Dear Sir or Madam:

Enclosed is a copy of a notification of your application to appropriate water for beneficial use. This notice must be published in a local newspaper once a week for three (3) consecutive weeks at your expense. The date in the publication must allow at least 15 days for public comment following the final publication. Copies of the publication are to be submitted to this office within two (2) weeks of final publication.

Additionally, please initial the front page of the application accepting the change in rate of diversion from 1000 gpm to 200 gpm and return the page to our office.

In order to retain its priority of filing, the original application and attachments must be returned to this office with the requested information on or before **February 5, 2017**, or within any authorized extension of time thereof. According to law, default in refiling of the completed application and attachments within the time allowed shall constitute forfeiture of priority date and dismissal of the application.

If you have any questions, please feel free to contact our office at (785) 564-6631. Please have your file number so that we may help you more efficiently.

Sincerely,

Alex Whitesell
Environmental Scientist
Water Appropriation Program

Enclosure
pc: Stafford Field Office

SCANNED

PUBLIC NOTICE
(To be published in newspaper once a week for three (3) weeks)

The City of Goessel has filed an application with the Kansas Department of Agriculture, Division of Water Resources, 1320 Research Park Drive, Manhattan, Kansas, 66502, for permit to appropriate water for beneficial use, identified as File No. 49,675, which proposes to appropriate groundwater in the drainage basin of Little Arkansas River, to be diverted by means of one (1) well located in the Northwest Quarter of the Southeast Quarter of the Southwest Quarter (NW¼ SE¼ SW¼) of Section 5, more particularly described as being near a point 1,028 feet North and 3,795 feet West of the Southeast corner of said section, in Township 21 South, Range 1 East, Marion County, Kansas, in an amount of 20 acre-feet per calendar year to be diverted at a maximum rate of 200 gallons per minute for irrigation of 10 acres. Any interested party is invited to submit written comments to this office on or before (*date should be 15 days after final publication*). Persons submitting written comments should specifically indicate their interest in the application in a clear and concise manner.

MUNICIPAL WATER CONSERVATION PLAN FOR THE CITY OF GOESSEL

October 3, 2008

Municipal Water Conservation Plan
For the City of Goessel

TABLE OF CONTENTS

INTRODUCTION 3

LONG TERM WATER USE EFFICIENCY 3

Water Use Conservation Goals 3
Water Conservation Practices 3
Education 4
Management 4
Regulation 5

DROUGHT RESPONSE 6

Stage 1: Water Watch 6

Stage 2: Water Warning 7

Stage 3: Water Emergency 8

PLAN REVISION, MONITORING AND EVALUATION 9

INTRODUCTION

The primary objectives of the Water Conservation Plan for the City of Goessel are to develop long-term water conservation plans (Long-Term Water Use Efficiency Section) and short-term water emergency plans (Drought Response Section) to assure the City customers of an adequate water supply to meet their needs. The efficient use of water also has the beneficial effect of limiting or postponing water distribution system expansion and thus limiting or postponing the resultant increases in costs, in addition to conserving the limited water resources of the State of Kansas.

The City of Goessel has undertaken a number of steps to ensure a dependable water supply for our customers. The water supply for our City is obtained from wells. The City also has an emergency interconnection with Rural Water District No. 4, however we have not had the need to purchase water from the District. Treated water storage facilities consist of one 100,000 gallon elevated tank. Our City water supply and distribution system have ample capacity to meet current customer demands and future projected demands for several years, except during drought periods. The City of Goessel believes that our Municipal Water Conservation Plan represents an additional major step in ensuring our customers of a dependable water supply in future years.

LONG-TERM WATER USE EFFICIENCY

Water Use Conservation Goals

The City of Goessel used 125 gallons per person per day (GPCD) in 2006. This GPCD figure included:

Water sold to residential/commercial customers;
Water distributed for free public services (parks, cemeteries, swimming pools etc.); and
Water lost by leaks in the water distribution system.

However, the GPCD figure does not include municipally supplied water for industries that use over 200,000 gallons per year. According to Figure 1, shown in the 2006 Kansas Municipalities Water Use Publication, our City is located in Region 7. From this publication it was determined that our City GPCD water use was 125, which was 17 percent above the regional average of 107 GPCD among cities in Region 7 during 2006. The City desires to set a water use conservation goal for usage not to exceed 107 GPCD based on the regional average of the last five years (2002 thru 2006). Our City anticipates not exceeding this goal by carrying out the specific actions that are outlined in our plan.

Water Conservation Practices

This subsection of the plan summarizes the current education, management and regulation efforts that relate to the long-term conservation of water in the City. Specific practices that will be undertaken to conserve water are listed and a target date to begin each practice is also shown.

Education

The City water bills show the total number of gallons of water used during the billing period and the amount of the bill. Water conservation tips are not normally provided with the water bills. The City has not provided information on water conservation to the local news media on a regular basis and has not encouraged the Board of Education and teachers to become involved in water conservation presentations in schools.

The City has chosen the following conservation practices and target dates for the Education Component of the Long-Term Water Use Efficiency Section of our Water Conservation Plan.

Education Conservation Practices to be Taken	Target Date
1. Water bills will show the amount of water used in gallons and the cost of the water.	Implemented

Management

The City of Goessel has water meters on all water supplies and water pumped to the distribution system. Any new supply will have an individual meter on each source of supply. These meters are read daily. The master meters are less than five years old, however, accuracy of the meters is not known. The City plans to being testing the master meters for accuracy every three beginning in 2010.

Water meters were installed for all residential/commercial customers; however, the amount of water provided free of charge to the City Park is not metered. Customer meters are scheduled for an accuracy check and possible repair or replacement upon receiving a request to do so from the customer.

The City of Goessel reads each customer's water meter and mails a monthly water bill to each customer every month. Customer water meters are generally read approximately the 4th week of the month; however, the meter reader sometimes deviates from the scheduled time period.

Water leaks from the City public water distribution system are repaired when customers report significant leaks from the water mains or are located by City Personnel. Water pressure is not checked unless customers complain that their water pressure is too low.

The water rate structure for the City was passed in December 1998. The minimum monthly water bill is $13.00 for residential customers, which allows each customer to use up to ,1500 gallons of water each month. Water use in excess of 1,500 gallons is charged $1.75 per 1,000 gallons.

The City of Goessel realizes that much greater emphasis must be placed on obtaining accurate measurement of water use at our source and at customer meters and that a water use records system must be developed that can be used to more effectively and efficiently manage the City public water distribution system. For that reason, the City of Goessel has chosen the following conservation practices and target dates for the Management component of the Long-Term Water Use Efficiency Section of our Water Conservation Plan.

Management Conservation Practices to be Taken	Target Date
1. All source water will have meters installed and the meters will be repaired or replaced within two weeks when malfunctions occur.	Implemented
2. Meters for source water will be tested for accuracy at least once every three years. Each meter will be repaired or replaced if its test measurements are not within industry standards (such as AWWA standards).	April 2010
3. Meters will be installed at all residential service connections and at all other service connections whose annual water use may exceed 300,000 gallons, including separate meters for municipally operated irrigation systems which irrigate more than one acre of turf.	Implemented
4. All meters for source water will be read at least on a monthly basis and meters at individual service connections will be read at least once every two months.	Implemented
5. A reading will be taken at each source water meter at the same time that meters for individual service connections are read.	Implemented
6. A water utility will implement a water management review, which will result in a specified change in water management practices or implementation of a leak detection and repair program or plan, whenever the amount of unsold water (amount of water provided free for public service, used for treatment purposes, water loss, etc.) exceeds 20 percent of the total source water for a four month time period.	Implemented
7. Water sales will be based on the amount of water used.	Implemented
8. A water rate structure designed to curb excessive use of water will be evaluated.	Implemented

Regulation

The City of Goessel does not have any water conservation regulations in effect at the present time. Because of our ability to supply water during normal periods, regulatory controls on water use are included only in the Drought Response section of this plan and water drought/emergency ordinance where they constitute the primary means for conserving water during a supply shortage.

Goessel does not have a plumbing code, and has not felt the need to incorporate mandatory use of water conservation units in the plumbing code. The enforcement of any regulations to require use of any water conservation plumbing measures would be very difficult. Most new homes and/or remodeling projects do include the use of water conservation toilets and faucets.

DROUGHT RESPONSE

The City of Goessel addresses its short-term water shortage problems through a series of stages based on conditions of supply and demand with accompanying triggers, goals and actions. Each stage is more stringent in water use than the previous stage since water supply conditions are more deteriorated. The Public Works Director is authorized by ordinance to implement the appropriate conservation measures.

Stage 1: Water Watch

Goals

The goals of this stage are to heighten awareness of the public on water conditions and to maintain the integrity of the water supply system.

Triggers

This stage is triggered by any one of the following conditions:

1. The City's storage has fallen below 85 percent capacity, and will not recover;
2. Groundwater levels have fallen 5 feet below the normal seasonal level; or
3. Demand for one day is in excess of 0.142 million gallons per day.

Education Actions

1. Water-saving tips will be included in billings to water utility customers.

Management Actions

1. The City wells will be cleaned and flushed to maintain them at their most efficient condition.
2. Leaks will be repaired within 48 hours of detection.
3. The City will monitor its use of water and will curtail activities such as hydrant flushing and street cleaning.

Regulation Actions

The public will be asked to curtail some outdoor water use and to make efficient use of indoor water, i.e. wash full loads, take short showers, don't let faucets run, etc.

Stage 2: Water Warning

Goals

The goals of this stage are to reduce peak demands by 20 percent and to reduce overall weekly consumption by 10 percent .

Triggers

This stage is triggered by any one of the following conditions:

1. The City's storage has fallen below 70 percent capacity, and will not recover;
2. Pumping lowers water level to within 10 feet of the top of the well screens;
3. Groundwater levels have fallen 10 feet below the normal seasonal level; or
4. Demand for one day is in excess of 0.178 million gallons per day.

Education Actions

1. The City will make weekly news releases to the local media describing present conditions and indicating the water supply outlook for the upcoming week.
2. Water conservation articles will be provided to the local newspaper.
3. Water-saving tips will be included in billings to water utility customers.

Management Actions

1. The City water supplies will be monitored daily.
2. Leaks will be repaired within 24 hours of detection.
3. Pumpage at wells will be reduced to decrease drawdown and to maintain water levels over well screens.
4. The City will curtail its water usage, including operation of fountains, watering of City grounds and washing of vehicles.
5. Reserve supplies, such as standby well fields or lakes, will be prepared for use.

Regulation Actions

These regulation actions apply to City residents.

1. An odd/even lawn watering system will be imposed on City residents. Residents with odd-numbered addresses will water on odd days; even addresses will water on even days.
2. Outdoor water use, including lawn watering and car washing will be restricted to before 12:00 pm and after 7:00 pm.
3. Refilling of swimming pools will be allowed one day a week after sunset.
4. Outdoor watering will be restricted to use of a hand-held hose or bucket only.
5. Excess water use charges for usage of water over the amount used in the winter will be considered.
6. Waste of water will be prohibited.

Stage 3: Water Emergency

Goals

The goals of this stage are to reduce peak demands by 50 percent and to reduce overall weekly consumption by 25 percent.

Triggers:

This stage is triggered by any one of the following conditions:

1. The City's storage has fallen below 50 percent capacity;
2. Pumping lowers water level to within 5 feet of the top of the well screens;
3. Groundwater levels have fallen 15 feet below the normal seasonal level;
4. Demand for one day is in excess of 0.198 million gallons per day; or
5. Emergency conditions related to repairs or water quality.

Education Actions

1. The City will make weekly news releases to the local media describing present conditions and indicating the water supply outlook for the next day.
2. The City will hold public meetings to discuss the emergency, the status of the City water supply and further actions, which need to be taken.

Management Actions

1. The City water supplies will be monitored daily.
2. Leaks will be repaired within 24 hours of detection.
3. Pumpage at wells will be reduced to decrease drawdown and to maintain water levels over well screens.
4. The City will seek additional emergency supplies from other users, the state or the federal government.

Regulation Actions

These regulation actions apply to City residents.

1. Outdoor water use will be banned.
2. Waste of water will be prohibited.

PLAN REVISION, MONITORING & EVALUATION

The City of Goessel will establish a monthly management practice of reviewing monthly totals for water production, residential/commercial sales, water provided free-of-charge, and "unaccounted for water". Problems noted during the monthly review will be solved as soon as possible.

The City of Goessel Municipal Water Conservation Plan will be reviewed during the month of April each year and on a more frequent basis during drought or other water shortage conditions. If the water conservation GPCD goals for the previous year are not met, then the City will review the data collected from the previous year in relationship to the status and effectiveness of the conservation practices that are outlined in our plan and will provide a status report to the DWR which will also include any additional water conservation practices that may need to be taken in order for the city to achieve and maintain its water use conservation GPCD goals.

WATER WELL RECORD Form WWC-5

Division of Water Resources App. No. _____ Well ID _____

☐ Original Record ☐ Correction ☐ Change in Well Use

1 LOCATION OF WATER WELL: County: Marion | Fraction: ¼ ¼ ¼ ¼ | Section Number | Township Number T | S | Range Number R ☐E ☐W

2 WELL OWNER: Last Name: City of Goessel First: Business: Address: Address: City: Goessel State: KS ZIP: 67053

Street or Rural Address where well is located (if unknown, distance and direction from nearest town or intersection): If at owner's address, check here: ☑

3 LOCATE WELL WITH "X" IN SECTION BOX: N / W / E / S; NW, NE, SW, SE; |---------1 mile---------|

4 DEPTH OF COMPLETED WELL: 120 ft.
Depth(s) Groundwater Encountered: 1) 12 ft. 2) 95 ft. 3) 1 ft., or 4) ☐ Dry Well
WELL'S STATIC WATER LEVEL: 12 ft.
☐ below land surface, measured on (mo-day-yr) 9-22-15
☐ above land surface, measured on (mo-day-yr) .....
Pump test data: Well water was ..... ft. after ..... hours pumping ..... gpm
Well water was ..... ft. after ..... hours pumping ..... gpm
Estimated Yield: 20 gpm
Bore Hole Diameter: 7 in. to 45 ft. and 7 7/8 in. to 120 ft.

5 Latitude: ..... (decimal degrees)
Longitude: ..... (decimal degrees)
Datum: ☐ WGS 84 ☐ NAD 83 ☐ NAD 27
Source for Latitude/Longitude:
☐ GPS (unit make/model: .....) (WAAS enabled? ☐ Yes ☐ No)
☐ Land Survey ☐ Topographic Map
☐ Online Mapper: .....

6 Elevation: ..... ft. ☐ Ground Level ☐ TOC
Source: ☐ Land Survey ☐ GPS ☐ Topographic Map ☐ Other .....

7 WELL WATER TO BE USED AS:
1. Domestic: ☐ Household ☑ Lawn & Garden ☐ Livestock
2. ☐ Irrigation
3. ☐ Feedlot
4. ☐ Industrial
5. ☐ Public Water Supply: well ID .....
6. ☐ Dewatering: how many wells? .....
7. ☐ Aquifer Recharge: well ID .....
8. ☐ Monitoring: well ID .....
9. Environmental Remediation: well ID ..... ☐ Air Sparge ☐ Soil Vapor Extraction ☐ Recovery ☐ Injection
10. ☐ Oil Field Water Supply: lease .....
11. Test Hole: well ID ..... ☐ Cased ☐ Uncased ☐ Geotechnical
12. Geothermal: how many bores? ..... a) Closed Loop ☐ Horizontal ☐ Vertical b) Open Loop ☐ Surface Discharge ☐ Inj. of Water
13. ☐ Other (specify): .....

Was a chemical/bacteriological sample submitted to KDHE? ☐ Yes ☑ No If yes, date sample was submitted: .....
Water well disinfected? ☑ Yes ☐ No

8 TYPE OF CASING USED: ☐ Steel ☑ PVC ☐ Other ..... CASING JOINTS: ☑ Glued ☐ Clamped ☐ Welded ☐ Threaded
Casing diameter 5 in. to 120 ft., Diameter ..... in. to ..... ft., Diameter ..... in. to ..... ft.
Casing height above land surface 1 in. Weight Sched 40 lbs./ft. Wall thickness or gauge No. .....

TYPE OF SCREEN OR PERFORATION MATERIAL:
☐ Steel ☐ Stainless Steel ☐ Fiberglass ☑ PVC ☐ Other (Specify) .....
☐ Brass ☐ Galvanized Steel ☐ Concrete tile ☐ None used (open hole)

SCREEN OR PERFORATION OPENINGS ARE:
☐ Continuous Slot ☑ Mill Slot ☐ Gauze Wrapped ☐ Torch Cut ☐ Drilled Holes ☐ Other (Specify) .....
☐ Louvered Shutter ☐ Key Punched ☐ Wire Wrapped ☐ Saw Cut ☐ None (Open Hole)

SCREEN-PERFORATED INTERVALS: From 105 ft. to 120 ft., From ..... ft. to ..... ft., From ..... ft. to ..... ft.
GRAVEL PACK INTERVALS: From 18 ft. to 120 ft., From ..... ft. to ..... ft., From ..... ft. to ..... ft.

9 GROUT MATERIAL: ☐ Neat cement ☐ Cement grout ☑ Bentonite ☐ Other .....
Grout Intervals: From 0 ft. to 18 ft., From ..... ft. to ..... ft., From ..... ft. to ..... ft.

Nearest source of possible contamination:
☐ Septic Tank ☐ Lateral Lines ☐ Pit Privy ☐ Livestock Pens ☐ Insecticide Storage
☐ Sewer Lines ☐ Cess Pool ☐ Sewage Lagoon ☐ Fuel Storage ☐ Abandoned Water Well
☑ Watertight Sewer Lines ☐ Seepage Pit ☐ Feedyard ☐ Fertilizer Storage ☐ Oil Well/Gas Well
☐ Other (Specify) .....
Direction from well? S Distance from well? 150 ft.

10 FROM	TO	LITHOLOGIC LOG	FROM	TO	LITHO. LOG (cont.) or PLUGGING INTERVALS
0	10	Clay			
10	25	Sand + Water			
25	44	Blue + Gray Shale			
44	45	Crumbled Shale	Same Water		
45	120	Gray Shale			

Notes:

WATER RESOURCES RECEIVED JUL 18 2016 KS DEPT OF AGRICULTURE

SCANNED

11 CONTRACTOR'S OR LANDOWNER'S CERTIFICATION: This water well was ☑ constructed, ☐ reconstructed, or ☐ plugged under my jurisdiction and was completed on (mo-day-year) 7-15-16 and this record is true to the best of my knowledge and belief. Kansas Water Well Contractor's License No. 1512 This Water Well Record was completed on (mo-day-year) 7-18-16 under the business name of Rackley Drilling

INSTRUCTIONS: Send one copy to WATER WELL OWNER and retain one copy for your records. Submit fee of $5.00 for each constructed well along with one (white) copy to Kansas Department of Health and Environment, Bureau of Water, Geology Section, 1000 SW Jackson St., Suite 420, Topeka, Kansas 66612-1367. Telephone (785) 296-3565.

Visit us at http://www.kdheks.gov/waterwell/index.html KSA 82a-1212 Revised 9/10/2012

1320 Research Park Drive
Manhattan, Kansas 66502
Jackie McClaskey, Secretary

Kansas
Department of Agriculture

Phone: (785) 564-6700
Fax: (785) 564-6777
Email: ksag@kda.ks.gov
www.agriculture.ks.gov
Sam Brownback, Governor

July 18, 2016

CITY OF GOESSEL
101 S CEDAR PO BOX 347
GOESSEL KS 67053

RE: Application
File No. 49675

Dear Sir or Madam:

Your application for permit to appropriate water in 5-21S-1E in Marion 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,

Brent A. Turney

Brent A Turney, P.G.
Change Application Unit Supervisor
Water Appropriation Program

BAT: ALH
pc: TOPEKA Field Office
GMD

SCANNED