

WATER PERMIT NO. 8429-3

Name of Applicant: Norman Thorstenson

Address: PO Box 425, Selby SD 57472 Phone: 605 845-6913

Amount of Water Claimed: 1.78 cfs Total Acres: 60 acres

Source of Water Supply: groundwater (one well)

Water to be used for: irrigation County: Campbell

Type of Waste Disposal System:

Location: 9 miles south of Mound City

PRIORITY Date Received: 6-15-20 Application/License Fee: \$ 700

Corrected Application Received: Period of Annual Use: May 1 – Sept 30

Remarks: Requesting diversion rate greater than statutory limit

Diversion Point: NW 1/4 SE 1/4 Sec 32-T125N-
R76W

Land to be Irrigated: S 1/2 NE 1/4, N 1/2 SE 1/4
Sec 32-T125N-R76W

Depth of Well: 300 feet deep

Well Driller:

Remarks:

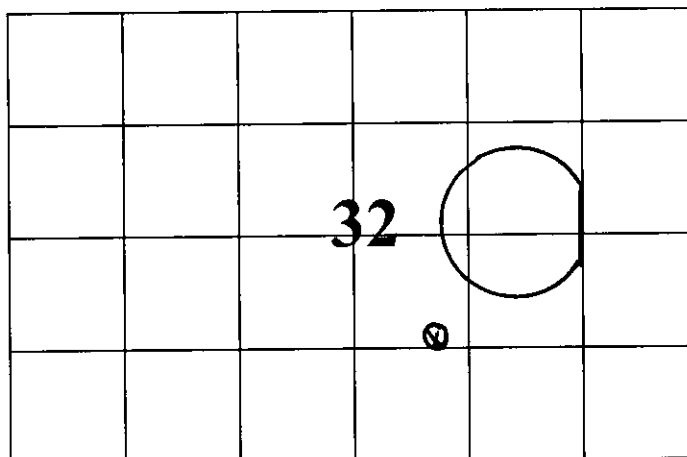
Type of Map: aerial

Prepared by:

Reviewed and the Number Assigned on: 6-15-2020

By: **Karen Schlaak**

Notice of Hearing - date to intervene: _____



FORM 2: Application for Irrigation in South Dakota
(type or print)

Mail to: DENR - Water Rights 523 E Capitol Ave Pierre, SD 57501-3182 ph. (605) 773-3352	No. <u>8429-3</u>	(office use only) Hydrologic Unit <u>10130106</u>
	Basin <u>Missouri River</u>	
	Newspaper <u>Prairie Pioneer, Pollock</u>	
	<u>American News, Aberdeen</u>	

PAID
JUN 15 2020
Ck# 9081

Application For Permit To Appropriate Water For Irrigation

Type of Application: ☒ New ☐ Vested Right ☐ Amendment/Correction to Permit No. _____

(Use predates Mar 2, 1955)

Description of amendment/correction: (i.e. change diversion point(s), add diversion point(s), change use, etc.)

1. Name to Appear on Irrigation Permit Norman Thorstenson

Note: The "Name to Appear on Irrigation Permit" must be the name in which the property to be irrigated is held in.

Mailing Address P.O. Box 425 Selby SD 57472
(Address) (City) (State) (Zip Code)

Phone 605-649-7008 Mobile 605-845-6913 Email _____

2. Amount of water claimed 1.78 *CFS or 800 **GPM ***AF Total Acreage 60
(*Cubic Feet per Second) (**Gallons per Minute) (***)Acre Feet - storage capacity of dam/dugout or annual use if applicable)

3. Source of water supply Well

4. Location of point of diversion 1 Well in NW 1/4 SE 1/4 sec 32-T125N-R76W
(example - 3 wells in SW 1/4 NE 1/4 section 12-T104N-R53W)

County Campbell

5. County or counties where water will be used Campbell

6. Annual period during which water is to be used May 1st to Sep 30th

7. List below each forty acre division, or lot, or fraction thereof and show number of acres to be irrigated in each.
(Attach sheet if more space is needed)

Land Description	Acres	Land Description	Acres
<u>SE 1/4 NE 1/4 Sec 32-125-76</u>	<u>35</u>	<u>SW 1/4 NE 1/4 Sec 32-125-76</u>	<u>9.5</u>
<u>NE 1/4 SE 1/4 Sec 32-125-76</u>	<u>13</u>	<u>NW 1/4 SE 1/4 Sec 32-125-76</u>	<u>2.5</u>

8. Give a description of the project. (Attach sheet if more space is needed)

Irrigate dry land with a center pivot
Requesting diversion rate greater than statutory limit.

RECEIVED

JUN 15 2020

WATER RIGHTS
PROGRAM

I, Norman Thorstenson, the applicant, certify under
Name of Person Title (if applicable)

penalty of perjury that I have read this application, examined the attached map, and that the matters stated are true. I further certify, if acting on behalf of an entity or individual other than myself, that I am authorized to submit this application.

**SOUTH DAKOTA
WATER PERMIT NO. 8429-3**

Date of first receipt of application June 15, 2020.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 8429-3 to Norman Thorstenson, PO Box 425, Selby SD 57472 authorizing the construction of the water use system and the placing of water to beneficial use subject to the following limitations, conditions and qualifications:

1. Water Permit No. 8429-3 appropriates 1.78 cubic feet of water per second (cfs) from one well to be completed into the Grand Aquifer (300 feet deep) located in the NW 1/4 SE 1/4 Section 32 for irrigation of 60 acres located in the S 1/2 NE 1/4, N 1/2 SE 1/4 Section 32; all in T125N-R76W. This site is located approximately 9 miles south of Mound City SD.
2. The amount of the appropriation may not exceed 2 acre feet annually for each acre of land to which water is actually and beneficially applied for irrigation. The water is to be used during the following described annual period: May 1 – September 30.
3. The date from which applicant may claim right is June 15, 2020.
4. The date of approval of Permit No. 8429-3 is September 8, 2020.
5. One-fifth of the construction is to be completed on or before March 8, 2023.
6. All construction is to be completed on or before September 8, 2025.
7. Water is to be put to beneficial use on or before September 8, 2029.
8. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

QUALIFICATIONS

1. The well approved under Water Permit No. 8429-3 will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner under this Permit shall control his withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
2. The well authorized by Permit No. 8429-3 shall be constructed by a licensed well driller and construction of the well and installation of the pump shall comply with Water Management Board Well Construction Rules, Chapter 74:02:04 with the well casing pressure grouted (bottom to top) pursuant to Section 74:02:04:28.
3. Pursuant to SDCL 46-5-6 which allows a greater diversion rate if the method of irrigation, time constraints, or type of soils so requires, Permit No. 8429-3 authorizes a maximum diversion rate of 1.78 cfs for the irrigation of 60 acres with an annual volume not to exceed 2 acre feet of water per acre per year.
4. This Permit is approved subject to the irrigation water use questionnaire being submitted each year.

WATER MANAGEMENT BOARD

By: Eric Gronlund
Eric Gronlund, Chief Engineer
Water Rights Program
Department of Environment and Natural Resources

OCT 08 2020
date



11-02

Date: 5-10-2020

Test hole
T125N Rg. 76w section 32
4-15-20
1500' W of 307 Ave
1350' N of 124 st

0-10.	Brown fine sand
10-12.	Yellow Clay
12-18.	Oxidized gravel & coarse sand
18-33.	Clean coarse sand to gravel
33-62.	Soft blue Clay
62-65.	Coarse sand to gravel
65-71	Till
71-72.	Gravel
72-80.	Blue clay
80-90.	Fine to medium sand
90-91.	Blue clay
91-95.	Fine to medium sand
95-110.	Coarse clean gravel. Drilled nice
110-115.	Clay till
115-120.	Medium sand to coarse gravel blacker more shale mixed
in	
120-125.	Coarse sand to fine gravel drilled nice
125-130.	Fine sand
130-237.	Blue clay till
237-250.	Fine to medium sand
250-270.	Medium to coarse sand
270-280.	Coarse sand
280-290.	Coarse sand
290-300.	Coarse sand with shale/ clay layers
300-310.	Shale

Supplemental Information

(type or print)

1. Well Information (check one or both as applicable) ☒ Drilling new well(s) ☐ Using existing well(s)

a) If new wells, how many 1 Have test holes been drilled ☒ Yes ☐ No Drilled by Manikowski Well Drilling
 (if yes, please provide copies of logs)

b) If existing wells, how many Provide copy of log(s), if available. Drilled by

For either Existing or Proposed Wells:

c) Well Depth (required) 300' Depth to Top of Water Bearing Material 250' Depth to Water from Surface

d) Distance to nearest domestic well on applicant's property Property owned by others No

2. Wastewater Disposal System Information

a) Type of System (i.e. septic tank, drain field)

b) System Capacity (gallons) Year Constructed

c) Connected to the City of Sanitary System

3. Dugout Information

a) Surface Dimensions Depth

b) Depth to water (ground surface to water level)

4. Water Storage Dams

If the proposed water use system contains one or more storage dams, please furnish the information requested below for each dam. The locations of the dams need to be shown on the map submitted with the application.

a) If a private engineering firm or government agency was involved in the design of this dam, please give their name and address:

b) Freeboard

c) Crest Width

Crest Length

d) Height

e) Primary Outlet Capacity

If pipe, diameter

f) Secondary Spillway Capacity

Spillway Width

g) X & Y Slope (e.g. 3 to 1 is a typical slope)

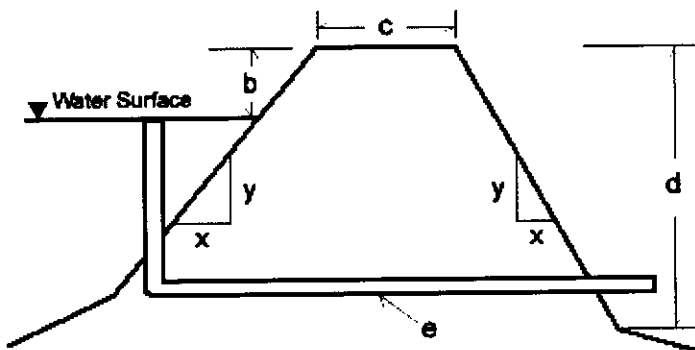
Upstream

Downstream

h) Surface Area of Impoundment

i) Storage Acre Feet

j) Drainage Area Above Dam Acres





6/11/2014

123rd St

Section S32 T125N R76W
Meridian Fifth
State South Dakota
Source [BLM](#)
GLO [GLO Township Records](#)

Calculated Values

Acres 641

Centroid 45.6011500, -100.0585049

Corners NW45.6084147, -100.0688110

NE 45.6083581, -100.0481634

SE 45.5938925, -100.0481797

SW45.5939466, -100.0688664

Quarters This section has 16
quarter/quarters plotted.

For illustration only. User to verify all
information. www.earthpoint.us

Well

307th Ave

Imagery Date: 6/11/2014 12:41 Lat: 45.601564° Lon: -1

Water Rights Program - File Documentation

NAME: Norman Thorstenson

ADDRESS: PO Box 425, Selby

DATE: 6-15-2020

RE: Pending Applicaiton

COMMENTS:

I called Norman Thorstenson regarding the number of acres requested on his application. He indicated he would like the application to be for 60 acres. I told him I would do the breakdown of acres by the quarter-quarter.



Karen Schlaak
Water Rights Program

125N 76W
Section: 30

125N 76W
Section: 29

125N 76W
Section: 28

125N 76W
Section: 31

125N 76W
Section: 32

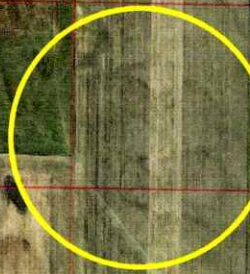
125N 76W
Section: 33

124N 77W
Section: 01

124N 76W
Section: 06

124N 76W
Section: 05

124N 76W
Section: 04



NW	SE	2.5
NE	SE	13
SE	NE	35
SW	NE	9.5

60 Acres

RECEIPT

WATER RIGHTS PROGRAM

South Dakota Department of Environment and Natural Resources

Date June 15, 2020

RECEIVED OF Norman/Leslie Thorstenson PO Box 425 Selby SD 57472

The following amount in fees for services rendered as provided for by law:

Fee for Application for Permit No. <u>8429-3</u> to Appropriate Water, to construct and to put water to beneficial use	\$500.00
Fee for Application for Permit No. _____ to Appropriate Water for Future use	\$
Fee to retain Future Use Permit No. _____ after period of seven years.	\$
Fee for Inspecting Constructed Works, confirming beneficial use and issuing Water License No. <u>8429-3</u>	\$200.00
Fee for Filing Transfer Form _____	\$
Fee for _____	\$
Fee for Issuing New Well Driller's License No. _____	\$
Fee for Renewal of Well Driller's License No. _____	\$
Fee for Issuing Well Pump Installer's License No. _____	\$
Fee for Renewal of Well Pump Installer's License No. _____	\$
(Any Other Work Provided by Law) TOTAL	\$700.00

By Eric Gronlund
Chief Engineer

jm



DENR
SOUTH DAKOTA

**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
denr.sd.gov

**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 8429-3, Norman Thorstenson**

Pursuant to SDCL 46-2A-2, the following is the recommendation of the Chief Engineer, Water Rights Program, Department of Environment and Natural Resources concerning Water Permit Application No. 8429-3, Norman Thorstenson, PO Box 425, Selby SD 57472.

The Chief Engineer is recommending APPROVAL of Application No. 8429-3 because 1) there is reasonable probability that there is unappropriated water available for the applicant's proposed use, 2) the proposed diversion can be developed without unlawful impairment of existing rights, 3) the proposed use is a beneficial use and 4) it is in the public interest with the following qualifications:

1. The well approved under Water Permit No. 8429-3 will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner under this Permit shall control his withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
2. The well authorized by Permit No. 8429-3 shall be constructed by a licensed well driller and construction of the well and installation of the pump shall comply with Water Management Board Well Construction Rules, Chapter 74:02:04 with the well casing pressure grouted (bottom to top) pursuant to Section 74:02:04:28.
3. Pursuant to SDCL 46-5-6 which allows a greater diversion rate if the method of irrigation, time constraints, or type of soils so requires, Permit No. 8429-3 authorizes a maximum diversion rate of 1.78 cfs for the irrigation of 60 acres with an annual volume not to exceed 2 acre feet of water per acre per year.
4. This Permit is approved subject to the irrigation water use questionnaire being submitted each year.

See report on application for additional information.

Eric Gronlund, Chief Engineer
July 29, 2020

Report to the Chief Engineer
On Water Permit Application No. 8429-3
Norman Thorstenson

July 28, 2020

Water Permit Application No. 8429-3 proposes to appropriate water at a maximum instantaneous diversion rate of 1.78 cubic feet per second (cfs) from the Grand aquifer for the irrigation of 60 acres located in the S ½ NE ¼ and N ½ SE ¼ of Section 32; all in T125N-R76W. The proposed diversion point is one well (300 feet deep) to be located in the NW ¼ SE ¼ of Section 32-T125N-R76W in Campbell County located approximately 9 miles south of Mound City, South Dakota. The applicant is requesting a diversion rate greater than the statutory limit of 1.0 cfs per 70 acres.

AQUIFER: Grand (G)

HYDROGEOLOGY

The Grand aquifer is a deep, glacial aquifer that lies in a bedrock valley formed through erosion caused by the pre-glacial ancient Grand River (Christensen, 1977; Hamilton, 1982; Koch, 1970). The aquifer was deposited by glacial meltwater and is composed of sorted and stratified sand, gravel and silt layers, that can contain thin beds of silty clay (Hamilton, 1982; Koch, 1970). The Grand aquifer abruptly increases in thickness from its margins to the deepest part of the bedrock channel in which it lies, with the greatest thicknesses occurring in the deepest areas of the bedrock channels (Hamilton, 1982). In the southwestern portion of McPherson County, the deepest area of the bedrock channel in which the aquifer lies is where a documented maximum thickness of 175 feet for the Grand aquifer has been measured (Hamilton, 1982). Groundwater movement in the Grand aquifer varies depending on location and is primarily under artesian (confined) conditions (Koch, 1970; Hamilton, 1982).

Hedges and others (1982) estimated the areal extent and amount of recoverable water stored in the Grand aquifer (Table 1). Those approximations were based on the best available information at that time. Figure 1 displays the delineation of the Grand aquifer based on the study completed by Hedges and others (1982).

Table 1. Areal extent and amount of recoverable water stored in the Grand aquifer based on the delineation estimated by Hedges and others (1982)

	Campbell	Edmunds	Faulk	Hand	McPherson	Walworth	Total:
Areal Extent (acres)	97,900	112,000	74,200	9,600	44,200	67,200	405,100
Recoverable Water in Storage (acre-feet)	1,469,000	840,000	556,000	48,000	331,000	393,000	3,637,000

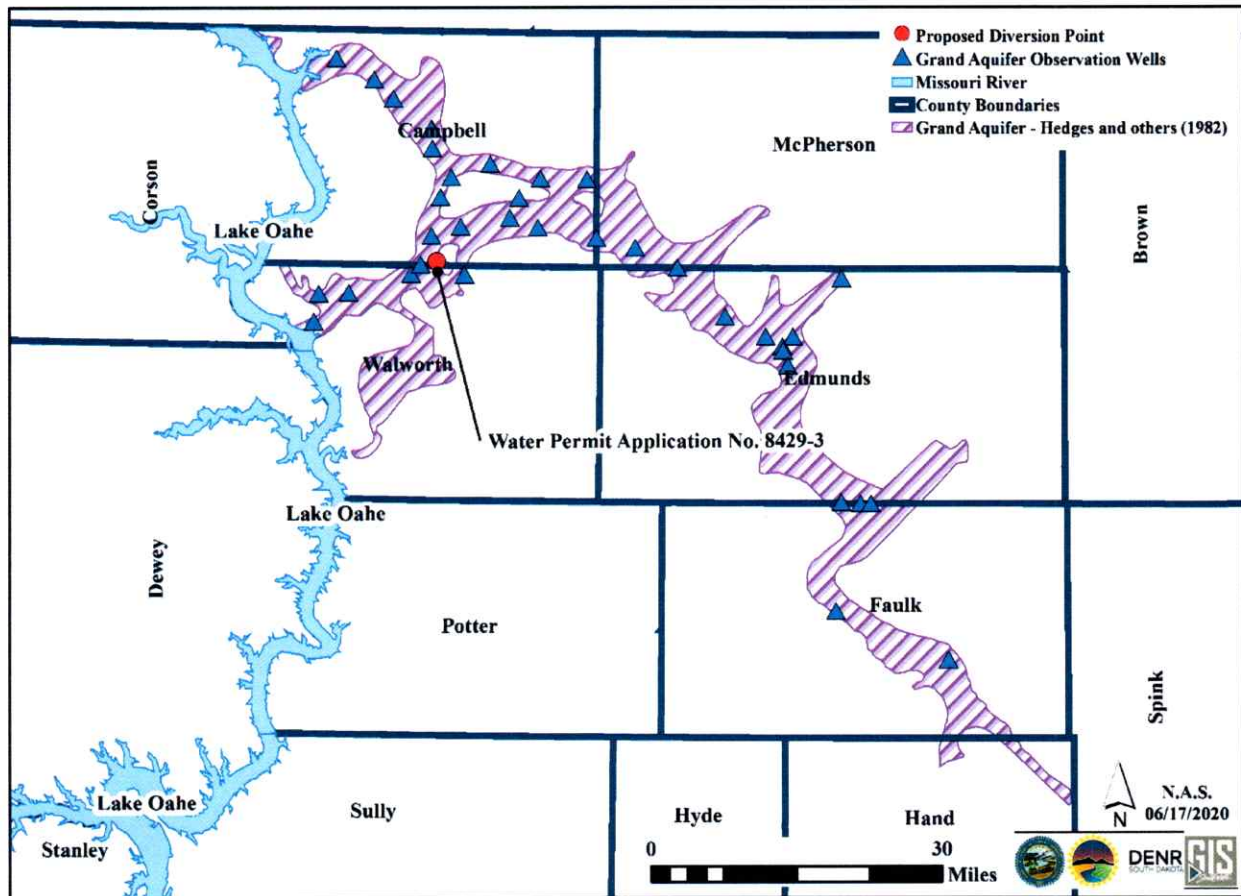


Figure 1. Map of the approximate Grand aquifer boundary delineated by Hedges and others (1982) with the proposed diversion point for Water Permit Application No. 8429-3 and the Grand aquifer observation wells (modified from Hedges et al., 1982)

More recently, the South Dakota Geological Survey (SDGS) has completed additional drilling in Edmunds, Faulk and Hand Counties to aid in developing first occurrence of aquifer materials maps (finalized by Tom Rich) for these counties. A first occurrence of aquifer materials map typically does not identify individual glacial aquifers, but it does provide a map with a range of depths to geologic materials of a mappable extent that have the potential to produce water. In the case of the First Occurrence of Aquifer Materials Map for Edmunds County, some of the mapped aquifer materials included notations on which aquifer's extent they contributed to (Rich, 2010). Since multiple aquifers separated by confining layers can be present vertically at a single location, first occurrence maps only yield information that can potentially contribute to refining aquifer delineation for the upper most aquifer in the sequence. Therefore, depending on location first occurrence maps typically do not offer much understanding into the extent of basal aquifers (glacial aquifers directly overlying bedrock). However, in Edmunds and northern Faulk Counties the Grand aquifer (where present) is generally the uppermost mappable aquifer material so the first occurrence of aquifer materials maps for these counties can be used to determine the areal extent of the materials that compose the Grand aquifer (Hedges et al., 1982; Rich, 2008; Rich, 2010).

After reviewing observation well data and the first occurrence of aquifer materials mapped by Tom Rich (Rich, 2008, 2010, and 2013), there appears to be three separate portions of the Grand aquifer that are not hydrologically connected in the same locations mapped by Hedges and others (1982). Figure 2 displays the delineation of the Grand aquifer based on the Hedges and others (1982) study with modifications based on the First Occurrence of Aquifer Materials Maps for Edmunds, Faulk and Hand Counties (Hedges et al., 1982; Rich, 2008; Rich, 2010; Rich, 2013).

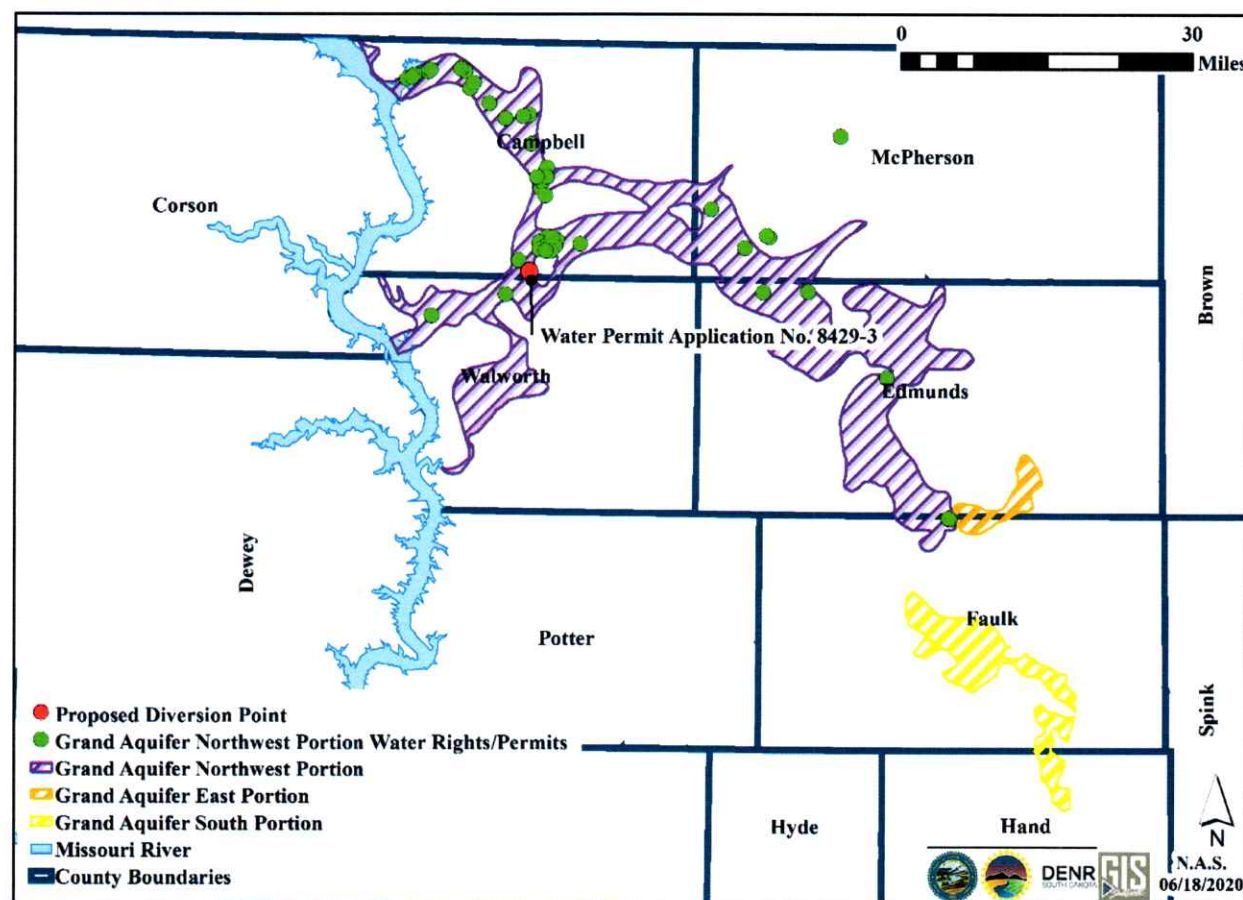


Figure 2. Map of the approximate Grand aquifer boundary modified from Hedges et al. (1982) and Rich (2008, 2010 and 2013) with the proposed diversion point for Water Permit Application No. 8429-3 (modified from Hedges et al., 1982; modified from Rich, 2008; modified from Rich, 2010; modified from Rich, 2013; modified from Kilts, 2019)

For Campbell, Walworth and McPherson Counties, the areal extent for the northwestern portion of the Grand aquifer was determined by utilizing the delineation based on Hedges and others (1982) (Table 2). Hedges and others (1982) estimated areal extent for those counties is the best information currently available since substantial drilling has not been completed. Additionally, the SDGS “Current Projects – Aquifer Delineation” webpage for the First Occurrence of Aquifer Materials mapping work lists additional work in Campbell and McPherson Counties as “In Progress,” and as “Planned” for Walworth County (SDGS, 2020a). The drilling and studies needed to produce these maps are multi-year projects. In these counties, there is a greater presence of shallow aquifers overlying the Grand aquifer; therefore, those shallow aquifers would be mapped as the first occurrence of aquifer material rather than the Grand aquifer. It is

likely it will be several years until enough data is available to further refine the extent of the Grand aquifer boundary in these counties.

For Edmunds and Faulk Counties, the areal extent for the southeastern portion of the Grand aquifer was determined by utilizing the First Occurrence of Aquifer Materials Maps completed by Rich (2008 and 2010) (Table 2). Overall, the estimated area for the northwestern portion of the Grand aquifer (as displayed in Figure 2) is 360,621 acres (Hedges et al., 1982; Rich, 2008; Rich, 2010; Kilts, 2019)

Table 2. Estimated area of the northwestern portion of the Grand aquifer as displayed in Figure 2 (Hedges et al., 1982; Rich, 2008; Rich, 2010; Kilts, 2019)

County	Acres	Source
Campbell	97,900	Hedges et al., (1982) - report text
McPherson	44,200	Hedges et al., (1982) - report text
Walworth	67,200	Hedges et al., (1982) - report text
Edmunds	144,039	estimated from Rich (2010)
Faulk	7,282	estimated from Rich (2008)
Total	360,621	

The proposed diversion point for Water Permit Application No. 8429-3 is located in the northwestern portion of the Grand aquifer. For the remainder of this report, the terms “aquifer” or “Grand aquifer” will be referring to the northwestern portion of the Grand aquifer as shown in Figure 2.

In Campbell County, the Grand aquifer has an average thickness of approximately 100 feet and the depth to the top of the aquifer ranges between 150 to 300 feet below land surface (Koch, 1970).

A test hole was drilled in the NW ¼ SE ¼ of Section 32-T125N-R76W to determine the geologic materials in the vicinity of the applicant’s proposed diversion point. The test hole completion report submitted with Water Permit Application No. 8429-3 indicated several layers of clays, sands and gravels from 0 to 237 feet below the ground surface. Next, a fine to coarse sand was encountered from 237 to 300 feet below the ground surface and was noted as Grand aquifer materials. Lastly, the well driller reported encountering shale from 300 to 310 feet below the ground surface.

Geologic information on well completion reports and lithologic logs for observation wells located in or near T125N-R76W were analyzed to determine the expected Grand aquifer conditions at the applicant’s proposed diversion point. The geologic information on a well completion report for a well located in Section 6-T124N-R76W (approximately 1 miles southeast) specified a static water level of 28 feet (at the time of completion – March 4, 2011) and encountering Grand aquifer materials from 107 to 310 feet below ground surface, indicating confined aquifer conditions at that location (Water Rights, 2020d). The lithologic logs for observation wells CA-80F (approximately 1.3 miles southwest) and CA-78K (approximately 2.3 miles north) both reported encountering Grand aquifer materials at greater than 200 feet below the ground surface (SDGS, 2020b; Water Rights, 2020b). On June 30, 2020 a static water level

(with the water level adjusted to local depth below ground surface) for observation well CA-78K was measured to be 49.03 feet below the ground surface (Water Rights, 2020b). On July 8, 2020 a static water level (with the water level adjusted to local depth below ground surface) for observation well CA-80F was measured to be 32.13 feet below the ground surface (Water Rights, 2020b). Each of these static water level measurements for nearby wells indicate confined aquifer conditions; therefore, the Grand aquifer is expected to be under confined conditions at the applicant's proposed diversion point.

South Dakota Codified Law (SDCL) 46-2A-9

Pursuant to SDCL 46-2A-9, "A permit to appropriate water may be issued only if there is a reasonable probability that there is unappropriated water available for the applicant's proposed use, that the diversion point can be developed without unlawful impairment of existing rights, and that the proposed use is a beneficial use and in the public interest." This report will address the availability of unappropriated water and the potential for unlawful impairment of existing water rights within the Grand aquifer.

WATER AVAILABILITY

Water Permit Application No. 8429-3 proposes to appropriate water from the Grand aquifer. The probability of unappropriated water available from the aquifer can be evaluated by considering SDCL 46-6-3.1, which requires "No application to appropriate groundwater may be approved if, according to the best information reasonably available, it is probable that the quantity of water withdrawn annually from a groundwater source will exceed the quantity of the average estimated annual recharge of water to the groundwater source. An application may be approved, however, for withdrawals of groundwater from any groundwater formation older than or stratigraphically lower than the greenhorn formation in excess of the average estimated annual recharge for use by water distribution systems." The Grand aquifer is not older than or stratigraphically lower than the Greenhorn Formation, and the proposed use is not for use in a water distribution system. Therefore, average annual recharge and average annual withdrawal must be considered.

OBSERVATION WELL DATA

Administrative Rule of South Dakota (ARSD) Section 74:02:05:07 requires that the Water Management Board shall rely upon the record of observation well measurements in addition to other data to determine that the quantity of water withdrawn annually from the aquifer does not exceed the estimated average annual recharge of the aquifer.

The DENR-Water Rights Program monitors 33 observation wells completed into the northwestern portion of the Grand aquifer (Water Rights, 2020b). These observation wells provide data on how the aquifer reacts to regional climatic conditions and local pumping. The four closest observation wells to the proposed diversion point are CA-80F (approximately 1.3 miles southwest), WL-76E (approximately 2.6 miles southwest), CA-78K (approximately 2.3 miles north) and CA-78I (approximately 4.4 miles northeast) (Water Rights, 2020b and 2020c). Hydrographs for these four observation wells are displayed in Figure 3. Hydrographs were constructed with data points that

are measurements of the static water level in the observation wells adjusted to be the elevation from the ground surface instead of the measured depth below top of well casing.

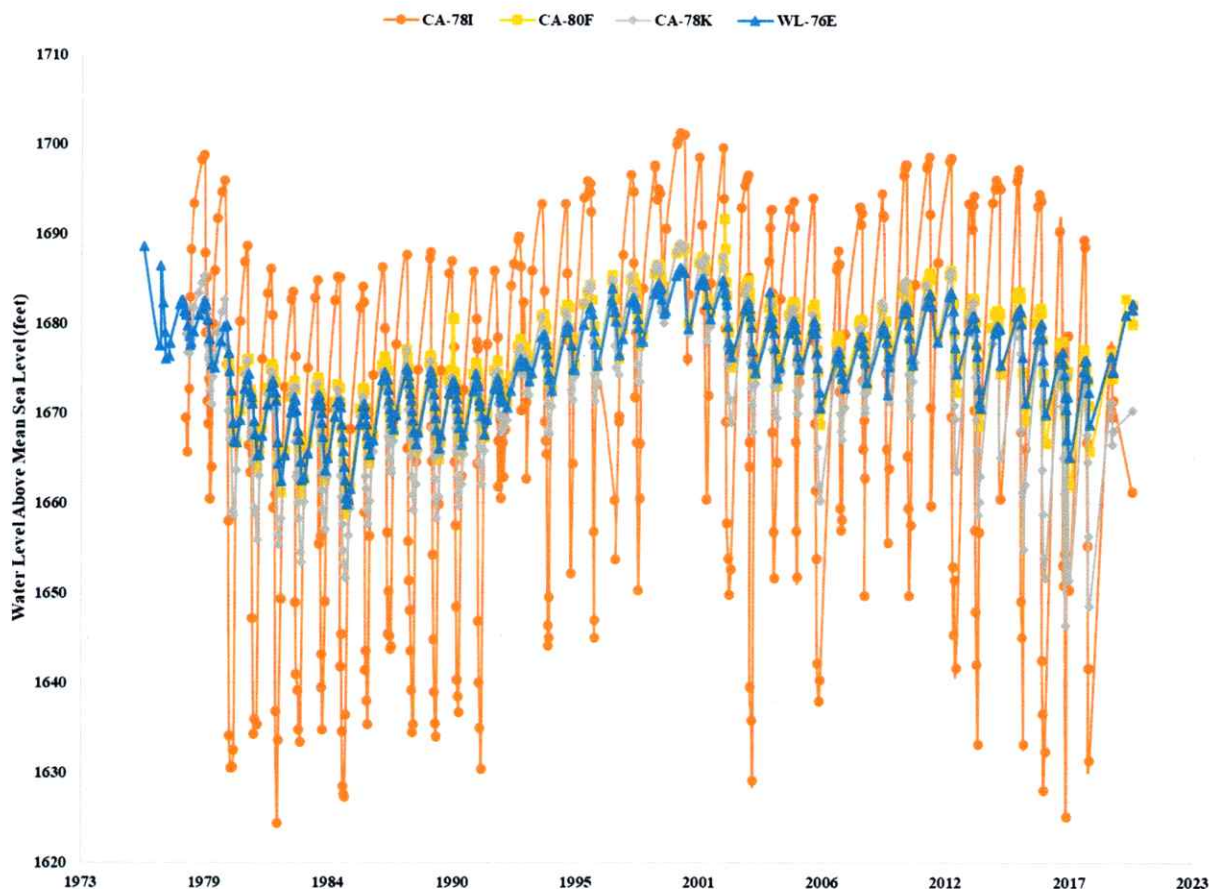


Figure 3. Hydrographs for observation wells WL-76E (ground surface elevation: 1,705.45 feet), CA-78I (ground surface elevation: 1,767.00 feet), CA-80F (ground surface elevation: 1,712.13 feet) and CA-78K (ground surface elevation: 1,719.34 feet) (SDGS, 2020b; Water Rights, 2020b)

The hydrographs in Figure 3 were compared to the other hydrographs for observation wells also completed into the northwestern portion of the Grand aquifer and each have similar trends; therefore, the four observation wells used for this analysis are generally representative of the northwestern portion of the Grand aquifer near the applicant's proposed diversion point.

The hydrographs for the northwestern portion of the Grand aquifer indicate that the aquifer responds well to climatic conditions because water levels are rising during wetter periods (early spring snowmelt and precipitation) and declining to a stable water level during drier periods. Additionally, the water levels in the observation wells display that the amount of recharge to and natural discharge from the aquifer greatly exceeds pumping with the aquifer returning to pre-pumping condition between irrigation seasons. Aquifer recovery indicates that climatic conditions dominate changes in water level to the northwestern portion of the Grand aquifer rather than pumping. By recognizing that both recharge to and natural discharge from an aquifer

can be captured for pumping, the observation well hydrographs demonstrate unappropriated water is available for the proposed appropriation.

HYDROLOGIC BUDGET

Recharge

Recharge to the Grand aquifer in Campbell County, South Dakota occurs through infiltration of water through the overlying sediments and from subsurface inflow from adjacent counties (Koch, 1970). The sediments overlying the aquifer in T125N-R75W and R76W (which encloses the same location as the applicant's proposed diversion point) contain more permeable layers than other areas of Campbell County (Koch, 1970). These permeable layers may allow groundwater from the Selby aquifer to percolate downward to the deep, glacial, Grand aquifer (Koch, 1970). The northwest portion of the Grand aquifer is hydraulically connected to the Missouri River. When the potentiometric surface of the Missouri River is higher than the northwest portion of the Grand aquifer's potentiometric surface, recharge can occur from the river.

Using observation well analysis, Hedges and others (1985) estimated a recharge rate to the unconfined portions of the aquifer to be approximately 4 inches per year. However, these unconfined portions of the Grand aquifer have not been mapped. Hedges and others (1985) have estimated an average annual recharge rate to confined aquifers that ranges from 0.15 to 0.60 inches per year for use by management and development programs. Due to the northwestern portion of the Grand aquifer being mostly under confined conditions and the unconfined portions not being mapped, the lower average annual recharge range of 0.15 to 0.60 inches per year will be used for this analysis.

By multiplying the estimated areal extent of the northwestern portion of the Grand aquifer (360,621 acres) by the average annual recharge rate of 0.15 to 0.60 inches per year, the estimated average annual recharge rate to the northwestern portion of the Grand aquifer varies between 4,507 to 18,031 acre-feet per year (Hedges et al., 1982 and 1985; Rich, 2008; Rich 2010). This is a conservative average annual recharge rate, as the higher recharge rate estimated by Hedges and others (1985) to the unconfined portions of the Grand aquifer is not being considered.

Discharge

Discharge from the Grand aquifer in Campbell County, South Dakota occurs through well withdrawals and subsurface outflow westward toward the Missouri River (Koch, 1970). Currently, there are 46 water rights/permits authorized to appropriate water from the northwestern portion of the Grand aquifer (Water Rights, 2020c).

Table 3 summarizes all non-irrigation water rights/permits authorized to appropriate water from the Grand aquifer with their limiting appropriation and estimated annual use. The amount of water that can be withdrawn was estimated by assuming the non-irrigation water rights/permits limited by an annual volume will withdraw the entire appropriated volume every year. It is estimated that the non-irrigation water rights/permits limited only by a diversion rate will pump at a maximum permitted diversion rate for 60 percent of the time.

The Town of Polluck (Water Right Nos. 778-3 and 5366-3), Town of Glenham (Water Right No. 3998-3), Town of Mound City (Water Right No. 4144-3) and the City of Herreid (Water Right No. 5417-3) are all connected to a rural water system (Drinking Water Program, 2020). These wells for these municipalities are maintained for emergency/standby use (back-up water supply, fire protection etc.) As such, the average annual water use for these municipal rights has been estimated to be zero acre-feet per year in Table 3. The City of Roscoe obtains approximately 75 percent of its water from a rural water system and the City of Hosmer obtains approximately 90 percent of its water from a rural water system (Kilts, 2019). Therefore, it is likely these two municipalities (Water Right Nos. 1705-3 and 4814-3) appropriate less water than the estimated average use values assuming a 60 percent full time pumping rate reflected in Table 3.

Table 3. Estimated average annual water use from non-irrigation water rights in the northwestern portion of the Grand aquifer (Water Rights, 2020c; Drinking Water Program, 2020).

Permit No.	Name	Use	Status	Rate (cfs)	Annual Limit (acre-feet)	Estimated Average Use (acre-feet/year)
778-3	Town of Polluck	MUN	LC	0.56		0.00
1705-3	City of Hosmer	MUN	LC	0.27		117.29
3998-3	Town of Glenham	MUN	LC	0.12		0.00
4144-3	Town of Mound City	MUN	LC	0.22		0.00
4914-3	City of Roscoe	MUN	LC	0.5		217.20
5366-3	Town of Polluck	MUN	LC	0.78		0.00
5417-3	City of Herreid	MUN	LC	1.17		0.00
6012-3	West Polluck Association	COM	LC	0.035		15.20
6111-3	Blumengard Colony	COM	LC	0.45		195.48
6185-3	Blumengard Colony	COM	LC	0.667		289.74
7184-3	Jensen Rock & Sand Inc	IND	LC	0.67	20	20.00
7841-3	Herreid Concrete Inc	IND	LC	1.39	282	282.00
						Total: 1,136.92
COM: Commercial, IND: Industrial, MUN: Municipal, LC: Licensed Water Right						

There are 34 water rights/permits authorized to appropriate water from the northwestern portion Grand aquifer for irrigation use (Water Rights, 2020c). Generally, irrigation water rights/permits are required to report their annual water usage. The estimated average annual withdrawal rate for irrigation appropriations over the period of record (1979-2019) is 2,400.67 acre-feet per year (Table 4) (Water Rights, 2020a).

Two irrigation water permits (Nos. 8402-3 and 8405-3) were approved in 2019 so their usage is not reflected in the estimated average annual withdrawal rate (Water Rights, 2020c). The submission of the 2019 Irrigation Questionnaires indicated Water Permit Nos. 8091-3, 8092-3, 8096-3 and 8097-3 have not been constructed, but are still within their five-year construction period (Water Rights, 2019-2020). These six water permits (8091-3, 8092-3, 8096-3, 8097-3, 8402-3 and 8405-3) combined authorize the irrigation of 1,296 acres each year (Water Rights, 2020c). Additionally, these six water permits are all not to exceed two acre-feet of water annually for each acre of land to which is beneficially applied (Water Rights, 2020c). If these permits applied two acre-feet of water over the 1,296 acres authorized to be irrigated, the estimated average annual use for these six permits is approximately 2,592 acre-feet per year. Generally, the average

water application rates for aquifers east of the Missouri River in South Dakota are estimated to be less than 10 inches per year (compared to maximum allowed volume of 2 acre-feet per year), so it is expected these six water permits will use less than 2,592 acre-feet per year (Water Rights, 2020c). Therefore, the estimated average annual irrigation usage for the northwestern portion of the Grand aquifer is expected to be less than, but can be up to, 4,992.67 acre-feet per year.

Table 4. Reported historic irrigation use from the northwestern portion of the Grand aquifer (Water Rights, 2020a)

Year	No. of Permits	Annual Appropriation (acre-ft)	Reported Pumpage (acre-feet)
1979	22	18,382	1,339
1980	21	17,902	2,334
1981	28	20,782	2,204
1982	22	16,223.60	2,956.40
1983	22	17,681.60	3,067.58
1984	25	19,401.60	3,407
1985	23	18,441.60	3,082
1986	22	18,121.60	2,333
1987	22	18,121.60	2,272
1988	20	16,645.60	2,845.90
1989	20	16,645.60	2,042.10
1990	20	16,645.60	2,335
1991	20	16,645.60	1,853
1992	19	15,632.60	1,205
1993	18	13,760.60	727
1994	17	13,370.60	1,695.41
1995	16	12,890.60	1,092.56
1996	15	11,394.60	1,172.04
1997	15	11,394.60	1,422
1998	15	11,394.60	1,245.11
1999	15	11,394.60	1,162.69
2000	16	10,797.60	1,317.81
2001	16	10,797.60	1,220.14
2002	17	11,061.60	2,645.99
2003	17	11,061.60	1,784.68
2004	17	11,061.60	1,621.84
2005	18	11,701.60	1,842.92
2006	18	11,653.60	3,892.62
2007	19	12,163.40	2,352.04
2008	19	12,163.40	2,660.37
2009	19	12,163.40	2,334.89
2010	19	12,163.40	2,903.84
2011	21	13,219.40	2,428.52
2012	23	13,755.40	3,206.33
2013	28	16,277.40	3,983.22
2014	29	16,817.40	2,984.27
2015	30	17,527.40	4,061.83
2016	34	17,882.60	4,115.18
2017	33	17,474.60	5,180.55
2018	33	17,474.60	4,797.91
2019	32	16,994.60	1,299.83
Max	34	20,782	5,180.55
Min	15	10,797.60	727
Avg	21.34	14,806.95	2,400.67

There are domestic wells that appropriate water from the Grand aquifer and do not require a water right/permit, so the withdrawal amount is unknown (Water Rights, 2020d). Since the introduction of rural water systems, many domestic wells are likely no longer in use. Therefore, the annual quantity of water withdrawn for domestic wells is negligible to the hydrologic budget of the Grand aquifer.

Hydrologic Budget Summary

The average annual recharge rate to the northwestern portion of the Grand aquifer ranges between approximately 4,507 to 18,031 acre-feet per year (Hedges et al., 1982 and 1985; Rich, 2008; Rich 2010). The recharge estimate used for this balance is based on the conservative average annual recharge rate estimated by Hedges and others (1985).

The average annual discharge rate to the northwestern portion of the Grand aquifer plus the appropriation proposed by this application is approximately 6,249.59 acre-feet per year (non-irrigation: 1,136.92 acre-feet/year, irrigation: 4,992.67 acre-feet/year, and Water Permit Application No. 8429-3 (if approved): 120 acre-feet/year) (Water Rights, 2020a and 2020c). It is expected that the withdrawals from irrigation users and Water Permit Application No. 8429-3 would be less than what is being used for this balance, as these values are based on the maximum allowable application of water of two acre-feet per acre to be irrigated.

Given that the conservative recharge rate and an approximate maximum allowable discharge rate are being compared in this balance, and this higher discharge approximation still falls into the lower range of the conservative recharge estimate, along with the observation well data indicating water is available, there is a reasonable probability unappropriated water is available in the northwestern portion of the Grand aquifer for the appropriation requested by Water Permit Application No. 8429-3.

POTENTIAL FOR UNLAWFUL IMPAIRMENT OF EXISTING WATER RIGHTS

Currently, there are 46 water rights/permits authorized to appropriate water from the northwestern portion of the Grand aquifer (Water Rights, 2020c). The closest water right/permit to the diversion point proposed by this application is Water Right No. 6294-3, held by Lazy TV Ranch, and the diversion point for Water Right No. 6294-3 is located approximately 1.5 miles to the northwest (Figure 4) (Table 5) (Water Rights, 2020c).

There are domestic wells on file with the DENR-Water Rights Program that are completed into the northwestern portion of the Grand aquifer, with the closest domestic well on file (not held by the applicant) approximately 0.82 miles to the southwest from the proposed diversion point (Water Rights, 2020d). There are likely other domestic wells completed into the northwestern portion of the Grand aquifer near to the proposed diversion point that are not on file with the DENR-Water Rights Program.

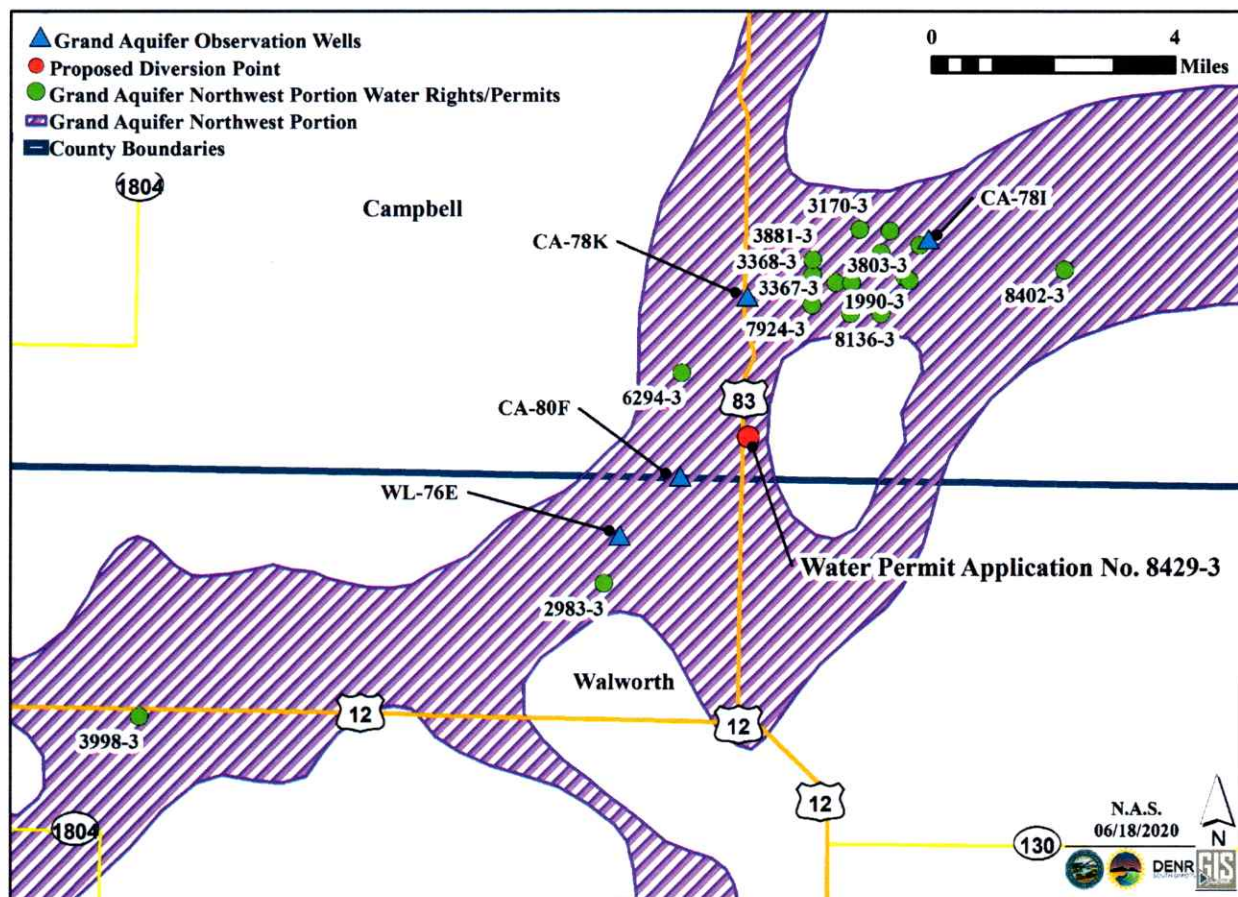


Figure 4. Nearby water rights/permits authorized to withdraw from the northwest portion of the Grand aquifer, the observation wells used for analysis and the proposed diversion point for Water Permit Application No. 8429-3 (Water Rights, 2020b and 2020c)

Table 5. Water permits/rights authorized to withdraw from the northwest portion of the Grand aquifer shown in Figure 6 (Water Rights, 2020c)

Permit No.	Name	Status	Use	Rate (cfs)	Acres
1990-3	Kenneth Brockel	LC	IRR	1.93	132
2983-3	BKV Thorstenson Ranch LLLP	PE	IRR	1.93	135
3170-3	Douglas L Salverson	LC	IRR	2.23	264
3367-3	Dick or Konny Lacey	PE	IRR	3	320
3368-3	Dick or Konny Lacey	PE	IRR	3	320
3803-3	Iverson Farms LTD	LC	IRR	1.78	264
3881-3	Dick or Konny Lacey	PE	IRR	2	160
3882-3	Dick or Konny Lacey	PE	IRR	2	160
3998-3	Town of Glenham	LC	MUN	0.12	
4448-3A	Iverson Farms LTD	LC	IRR	1.89	132
4602-3	Kenneth R Brockel	LC	IRR	1.89	136
4705-3	Iverson Farms LTD	LC	IRR	1.78	264
6294-3	Lazy TV Ranch	LC	IRR	1.88	132
7924-3	Brandon Ritter	PE	IRR	2	270
8136-3	Richard D and Konny R Lacey Living Trust	LC	IRR	1.78	272
8159-3	Lacey Living Trust	LC	IRR	1.78	78
8402-3	Roger Volzke	PE	IRR	3.33	240

LC: Licensed Water Right, PE: Water Permit, IRR: Irrigation, MUN: Municipal

The northwestern portion of the Grand aquifer is expected to be under confined conditions at the applicant's proposed diversion point based on the lithologic logs on file and static water levels measured for nearby domestic wells and observation wells (SDGS, 2020b; Water Rights, 2020b and 2020d). Since the northwestern portion of the Grand aquifer is expected to be confined at the proposed diversion point, drawdown can extend some distance but the exact drawdown behavior of a well cannot be known without an aquifer performance test. Observation well CA-78I (approximately 4.4 miles northeast of proposed diversion point) has over 10 high-yield irrigation wells within 2.25 miles of it (Water Rights, 2020b and 2020c). The drawdown from pumping can be seen in the hydrograph for CA-78I, along with the aquifer returning to pre-pumping conditions between irrigation seasons (Figure 5) (Water Rights, 2020b). The lithologic log on file for CA-78I noted the well was drilled 320 feet deep and was screened in the bottom 25 feet (SDGS, 2020b; Water Rights, 2020b). Therefore, the top of aquifer is expected to be approximately 295 feet below the ground surface. The lowest recorded static water level on the hydrograph is approximately 145 feet, which indicates there was still about 150 feet of artesian head pressure in CA-78I even during drier periods when high-yield irrigation wells are expected to be pumping more water (Water Rights, 2020b).

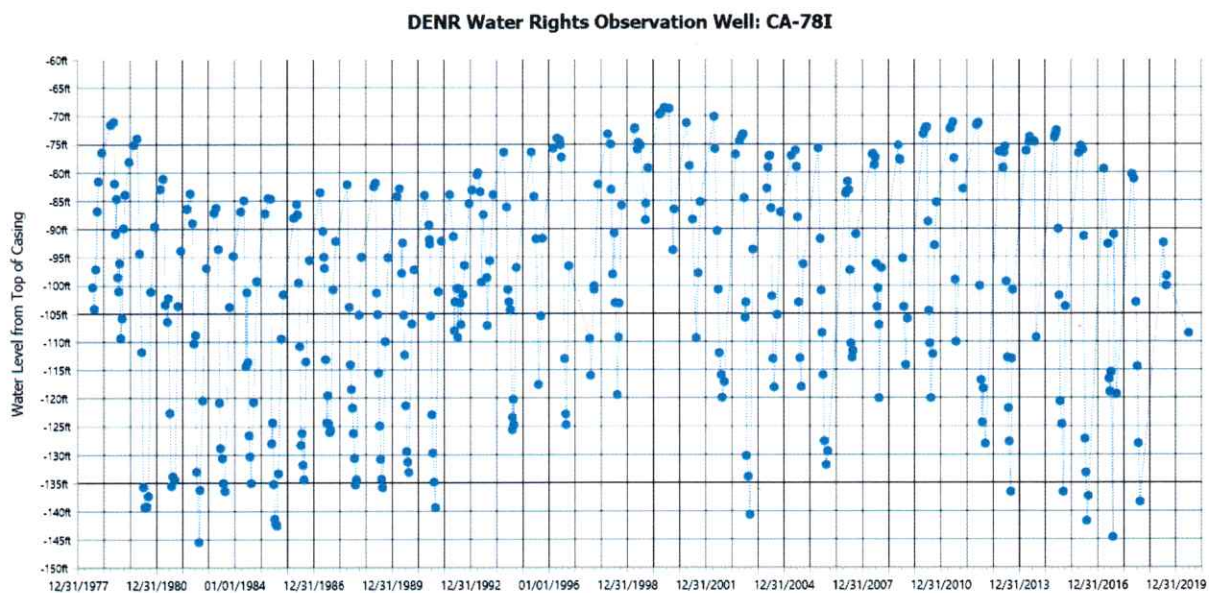


Figure 5. Hydrograph for observation well CA-78I (Water Rights, 2020b)

In Campbell County, the Grand aquifer has an average thickness of approximately 100 feet with depth to the top of Grand aquifer materials around 237 feet below the ground surface according to the test hole log submitted with the application (Koch, 1970). This would allow for enough thickness for a pump to be placed 20 feet below the top of the aquifer, which is required for the well to be considered adequate under ARSD 74:02:04:20 (6). Any drawdown as a result of the proposed diversion is not expected to unlawfully impair nearby adequate wells. In Campbell County, there are no complaints on file with the DENR-Water Rights Program regarding well interference for wells completed into the Grand aquifer (Water Rights, 2020e).

The Water Management Board recognizes that putting water to beneficial use requires a certain amount of drawdown to occur. The Board has developed rules to allow water to be placed to maximum beneficial use without the necessity of maintaining artesian head pressure for domestic use. The Water Management Board defined an “adversely impacted domestic well” in ARSD 74:02:04:20(7) as:

“A well in which the pump intake was set at least 20 feet below the top of the aquifer at the time of construction or, if the aquifer is less than 20 feet thick, is as near to the bottom of the aquifer as is practical and the water level of the aquifer has declined to a level that the pump will no longer deliver sufficient water for the well owner’s needs”.

The Water Management Board considered the delivery of water by artesian head pressure versus maximum beneficial use during the issuance of Water Right No. 2313-2 for Coca-Cola Bottling Company of the Black Hills. The Board adopted Findings of Facts and Conclusions of Law that noted the reservation of artesian head pressure for delivery of water would be inconsistent with SDCL 46-1-4 which states, “general welfare requires that the water resources of the state be put to beneficial use to the fullest extent of which they are capable...” (Water Rights, 1995). Furthermore, the Water Management Board found if increased cost or decreased production as a result of impacts on artesian head pressure by legitimate users is to be considered as an unlawful impairment, it would also conflict with SDCL 46-1-4 (Water Rights, 1995). With that in mind, some existing well owners may need to install or lower pumps depending on the specific characteristics of the northwestern portion of the Grand aquifer at their location. However, when considering the statutes (SDCL 46-1-4 and 46-6-6.1), ARSD 74:02:04:20 (6) and (7), the thickness of the northwestern portion of the Grand aquifer in the applicant’s location, and the lack of well interference complaints, any drawdown created from the proposed diversion is not expected to cause an unlawful impairment on existing water rights/permits or domestic users with adequate wells. Therefore, there is a reasonable probability that any interference from the proposed appropriation will not impose unlawful impairments on existing users with adequate wells.

SDCL 46-5-6:

Pursuant to SDCL 46-5-6, the diversion rate for an irrigation appropriation cannot be in excess of one cfs for every 70 acres, or “the equivalent thereof.” The statute does provide that: “The Water Management Board may allow a greater diversion, in volume or rate or both, if the method of irrigation, any time constraints on diversion of water, or the type of soil so requires....” Water Permit Application No. 8429-3 proposes to divert water at a maximum instantaneous diversion rate of 1.78 cfs for the irrigation of 60 acres or at a rate of 2.08 cfs per 70 acres. While the applicant did not provide a specific reason, often center pivot systems require certain flow rates to operate. This is likely the reason for the request. This reason has been accepted by the Water Management Board in the past.

CONCLUSIONS

1. Water Permit Application No. 8429-3 proposes to appropriate water from the northwestern portion of the Grand aquifer at a maximum instantaneous diversion rate of 1.78 cfs.
2. Based on observation well data and the hydrologic budget, there is a reasonable probability that unappropriated water is available from the northwestern portion of the Grand aquifer to supply the proposed appropriation.
3. There is a reasonable probability that the proposed diversion by Water Permit Application No. 8429-3 will not unlawfully impair adequate wells for existing water rights/permits and domestic users.
4. The applicant is requesting a diversion rate greater than the statutory limit of 1.0 cfs per 70 acres. The applicant did not provide a reason for the request. The request was presumably made due to the irrigation system requirements. Requests for a diversion rate greater than the statutory limit for this reason have been accepted by the Water Management Board in the past.



Nakaila Steen
Natural Resources Engineer I
SD DENR - Water Rights Program

Reviewed by:



Adam Mathiowetz PE
Natural Resources Engineer III
SD DENR -Water Rights Program

References

- Christensen, C.M., 1977. Geology and Water Resources of McPherson, Edmunds and Faulk Counties Part I: Geology. Bulletin 26. SDGS. Vermillion, SD.
- Drinking Water Program., 2020. Drinking Water System Information. SD DENR – Drinking Water Program Online Database. Accessed June 19, 2020.
<<http://denr.sd.gov/des/dw/sysinfomap.aspx>>
- Hamilton, L.J., 1982. Geology and Water Resources of McPherson, Edmunds and Faulk Counties Part II: Water Resources. Bulletin 26. SDGS. Vermillion, South Dakota.
- Hedges, L.S., Allen, J., Holly, D.E., 1985. Evaluation of Ground-Water Resources Eastern South Dakota and Upper Big Sioux River, South Dakota and Iowa, Task 7: Ground Water Recharge; U.S. Army Corps of Engineers Contract DACW 45-80-C-0185.

- Hedges, L.S., Burch, S.L., Iles, D.L., Barari, R.A., and Schoon, R.A., 1982. Evaluation of Ground-Water Resources Eastern South Dakota and Upper Big Sioux River, South Dakota and Iowa. Task 1: Bedrock Topography and Distribution, Task 2: Extent of Aquifers, Task 3: Ground-Water Storage, Task 4: Computerized Data Base, Final Report. U.S. Army Corps of Engineers Contract DACW 45-80-C-0185.
- Kilts, W., 2019. Report on Water Permit Application 8405-3: JD Bieber Enterprises Inc. SD DENR - Water Rights Program, Joe Foss Bldg., Pierre, South Dakota.
- Koch, N.C., 1970. Geology and Water Resources of Campbell County South Dakota; Part II- Water Resources; SDGS Bulletin 20. Vermillion, South Dakota: SD DENR-Geological Survey.
- Rich, T., 2008. First Occurrence of Aquifer Materials in Faulk County, South Dakota; Aquifer Materials Map 30 scale 1:100,000. Department of Environment and Natural Resources.
- Rich, T., 2010. First Occurrence of Aquifer Materials in Edmunds County, South Dakota; Aquifer Materials Map 31 scale 1:100,000. Department of Environment and Natural Resources.
- Rich, T., 2013. First Occurrence of Aquifer Materials in Hand County, South Dakota; Aquifer Materials Map 35 scale 1:100,000. Department of Environment and Natural Resources.
- SDGS, 2020a. South Dakota Geological Survey Current Projects. "Aquifer Delineation." Accessed June 18, 2020. < <http://www.sdgs.usd.edu/currentprojects/aquifer.aspx> >
- SDGS, 2020b. South Dakota Geological Survey Lithologic Logs Database. Accessed July 28, 2020.
- Water Rights, 1995. Findings of Fact, Conclusions of Law, and Final Decision in the Matter of Water Permit Application No. 2313-2, Coca-Cola Bottling Company of the Black Hills. DENR-Water Rights Program file for Water Right No. 2313-2. Pierre, SD.
- Water Rights, 2019-2020. Water Rights 2019 Irrigation Questionnaires: SD DENR-Water Rights Program, Joe Foss Bldg. Pierre, South Dakota.
- Water Rights, 2020a. "1979-2019 Irrigation Summaries by Aquifer": SD DENR-Water Rights Program, Joe Foss Bldg, Pierre, SD.
- Water Rights, 2020b. Observation Well Data, SD DENR-Water Rights Program, Joe Foss Bldg, Pierre, SD.
- Water Rights, 2020c. Water Right/Permit Files, SD DENR-Water Rights Program, Joe Foss Bldg, Pierre, SD
- Water Rights, 2020d. Well Completion Report Files, SD DENR-Water Rights Program, Joe Foss Bldg, Pierre, SD.
- Water Rights, 2020e. County Files, SD DENR-Water Rights Program, Joe Foss Bldg, Pierre, SD.

RECEIVED

AFFIDAVIT OF PUBLICATION SEP 03 2020

STATE OF SOUTH DAKOTA}

WATER RIGHTS
PROGRAM

§

COUNTY OF BROWN}

Carla Spring being duly sworn, on his/her oath says: That the AMERICAN NEWS is a daily newspaper of general circulation, printed and published in Aberdeen, Brown County, South Dakota, by the Aberdeen News Company, a corporation, and has been such a newspaper during the times hereinafter mentioned; That affiant is an employee and principal clerk of said publisher and has personal knowledge of all facts stated in this affidavit; That the advertisement headed:

Legal # 877564
Notice of Application

a printed copy of which is hereunto attached, was printed and published in the regular and entire issue of said newspaper, and not in a supplement thereof, once each

day for 1 successive day.
The first publication being made on the 28th day of Aug, 2020.
The second publication being made on the _____ day of _____, 2020.
The third publication being made on the _____ day of _____, 2020.
The fourth publication being made on the _____ day of _____, 2020.
The fifth publication being made on the _____ day of _____, 2020.
The sixth publication being made on the _____ day of _____, 2020;

That said newspaper is a legal newspaper published five days or more each week; with a bona fide circulation of more than two hundred copies daily; published in the English language within the said county of Brown for more than one year prior to the first publication of said notice; and printed in whole in an office maintained at the place of publication of said newspaper; That the whole amount of the fee paid for the publication of the annexed notice is \$ 49.42, which insures solely to the benefit of said publisher; That no agreement or understanding for a division thereof had been made with any other person; and That no part thereof has been agreed to be paid to any person whomsoever.

Carla Spring
Subscribed and sworn to before me this 28th day of Aug, 2020.

Daily Circulation 10,000

Orin Salf Notary Public, Brown County, SD.

My commission expires March 20, 2025

(No. 877564)
(August 28, 2020 - 1T)

NOTICE OF APPLICATION
NO. 8429-3 to Appropriate Water

Notice is given that Norman Thorstenson, PO Box 425, Selby SD 57472 has filed an application for a water permit to appropriate 1.78 cubic feet of water per second (cfs) from one well to be completed into the Grand Aquifer (300 feet deep) located in the NW 1/4 SE 1/4 Section 32 for irrigation of 60 acres located in the S 1/2 NE 1/4, N 1/2 SE 1/4 Section 32; all in T125N-R76W. The applicant is requesting a diversion ratorstenson greater than the statutory limit of 1 cfs per 70 acres. This site is located approximately 9 miles south of Mound City SD.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 8429-3 with qualifications because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest. The Chief Engineer's recommendation with qualifications, the application, and staff report are available at <http://denr.sd.gov/public> or contact Ron Duvall for this information, or other information, at the Water Rights Program address provided below.

Any person interested in opposing or supporting this application or recommendation must file a written petition with BOTH the applicant and Chief Engineer. The applicant must file a petition if contesting the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by September 8, 2020.

The petition may be informal but must include a statement describing the petitioner's interest in the application, the petitioner's reasons for opposing or supporting the application, and the signature and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained.

If the applicant does not contest the recommendation of the Chief Engineer and no petition to oppose the application is received, the Chief Engineer shall act on the application pursuant to the recommendation with no hearing held before the Water Management Board. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled, and the Water Management Board will consider this application. Notice of the hearing will be given to the applicant and any person filing a petition.

Published once at the total approximate cost of \$49.42.



RECEIVED

AUG 28 2020

WATER RIGHTS
PROGRAM

**NOTICE OF
APPLICATION NO.
8429-3**

to Appropriate Water

Notice is given that Norman Thorstenson, PO Box 425, Selby SD 57472 has filed an application for a water permit to appropriate 1.78 cubic feet of water per second (cfs) from one well to be completed into the Grand Aquifer (300 feet deep) located in the NW 1/4 SE 1/4 Section 32 for irrigation of 60 acres located in the S 1/2 NE 1/4, N 1/2 SE 1/4 Section 32; all in T125N-R76W. The applicant is requesting a diversion rate greater than the statutory limit of 1 cfs per 70 acres. This site is located approximately 9 miles south of Mound City SD.

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The petition may be informal but must include a statement describing the petitioner's interest in the application, the petitioner's reasons for opposing or supporting the application, and the signature and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained.

If the applicant does not contest the recommendation of the Chief Engineer and no petition to oppose the application is received, the Chief Engineer shall act on the application pursuant to the recommendation with no hearing held before the Water Management Board. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled, and the Water Management Board will consider this application. Notice of the hearing will be given to the applicant and any person filing a petition.

Published once at the total approximate cost of \$25.48

Affidavit of Publication

STATE OF SOUTH DAKOTA,
COUNTY OF CAMPBELL, ss.

I, Lori Cox, being first duly sworn, on oath says, that she is the bookkeeper of the Prairie Pioneer, a weekly newspaper published in Pollock, County of Campbell, and has full and personal knowledge of all the facts herein stated; that said newspaper is a legal newspaper and has a bona fide circulation of at least two hundred copies weekly, and has been published within said county for fifty-two successive weeks next prior to the publication of the notice herein mentioned; that the

Notice of Application No. 8429-3 to Appropriate Water

Norman Thorstenson

a printed copy of which, taken from the paper in which same was published, is attached to this sheet, and is made a part of this Affidavit, was published in said newspaper at least once each week for 1 successive week, on the day of each week on which said newspaper was regularly published to-wit:

August 13, 2020

That the full amount of the fees for the publication of the annexed notice is \$25.48

Lori Cox

Subscribed and sworn to before me this 21st

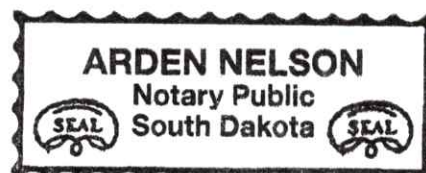
day of August, 2020

Arden Nelson

Arden Nelson, Notary Public

State of South Dakota

My commission expires August 1, 2025



NOTICE OF APPLICATION NO. 8429-3 to Appropriate Water

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Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 8429-3 with qualifications because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest. The Chief Engineer's recommendation with qualifications, the application, and staff report are available at <http://denr.sd.gov/public> or contact Ron Duvall for this information, or other information, at the Water Rights Program address provided below.

Any person interested in opposing or supporting this application or recommendation must file a written petition with BOTH the applicant and Chief Engineer. The applicant must file a petition if contesting the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by September 8, 2020.

The petition may be informal but must include a statement describing the petitioner's interest in the application, the petitioner's reasons for opposing or supporting the application, and the signature and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained.

If the applicant does not contest the recommendation of the Chief Engineer and no petition to oppose the application is received, the Chief Engineer shall act on the application pursuant to the recommendation with no hearing held before the Water Management Board. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled, and the Water Management Board will consider this application. Notice of the hearing will be given to the applicant and any person filing a petition.

Published once at the total approximate cost of_

Schlaak, Karen

From: Schlaak, Karen
Sent: Monday, August 3, 2020 1:45 PM
To: Prairie Pioneer (pioneer@valleytel.net)
Subject: 8429-3, Norman Thorstenson
Attachments: 8429-3public.short.docx; FORM8.FRM.doc

Attached is a notice to be published on August 13, 2020.

Norman Thorstenson, PO Box 425, Selby SD 57472 (605 845-6913) has been notified to contact you to authorize publication and arrange for payment.

Please send the affidavit or return the attached Proof of Publication form ASAP to the Water Rights Program, 523 E Capitol, Pierre SD 57501.

Let me know if you have questions. Please acknowledge receipt of this email.

Karen Schlaak
Water Rights Program
(605) 773-3352



DENR
SOUTH DAKOTA

Schlaak, Karen

From: Schlaak, Karen
Sent: Monday, August 3, 2020 1:45 PM
To: Aberdeen American News (aan-legals@aberdeennews.com)
Subject: 8429-3, Norman Thorstenson
Attachments: 8429-3public.short.docx; FORM8.FRM.doc

Attached is a notice to be published on August 13, 2020.

Norman Thorstenson, PO Box 425, Selby SD 57472 (605 845-6913) has been notified to contact you to authorize publication and arrange for payment.

Please send the affidavit or return the attached Proof of Publication form ASAP to the Water Rights Program, 523 E Capitol, Pierre SD 57501.

Let me know if you have questions. Please acknowledge receipt of this email.

Karen Schlaak
Water Rights Program
(605) 773-3352



*Carla called 8/25/20
didn't receive notice
& Mr. Thorstenson
didn't call.*

Schlaak, Karen

From: Schlaak, Karen
Sent: Tuesday, August 25, 2020 1:44 PM
To: Aberdeen News Legals (aan-legals@aberdeennews.com)
Subject: 8429-3, Norman Thorstenson
Attachments: 8429-3public.short.docx; FORM8.FRM.doc

Hi Carla,

I just talked with Norman Thorstenson and he said it would be easier for him if you would call him and he would authorize publication and arrange for payment.
His number is 605 845-6913.

Attached is a notice to be published on August 28, 2020.

Please send the affidavit or return the attached Proof of Publication form ASAP to the Water Rights Program, 523 E Capitol, Pierre SD 57501.

Let me know if you have questions. Please acknowledge receipt of this email.

Karen Schlaak
Water Rights Program
(605) 773-3352





DENR
SOUTH DAKOTA

**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
denr.sd.gov

**NOTE: TO BE SURE OF PUBLICATION ON
THE CORRECT DATES, CONTACT
THE NEWSPAPERS RIGHT AWAY.**

August 3, 2020

Norman Thorstenson
PO Box 425
Selby SD 57472

Dear Mr. Thorstenson:

Water Permit Application No. 8429-3 for use has been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice has been sent to the Prairie Pioneer printed at Pollock SD (Ph # 605 889-2320) and the American News printed at Aberdeen SD (Ph # 605 225-4100). You will need to contact the newspapers and authorize publication of this notice. For your information, a copy of the notice, the recommendation of the Chief Engineer and report on the application are enclosed. Please review the notice prior to publication and notify this office, if you have any corrections or questions.

Be sure to contact the above newspapers to authorize publication of your Notice and to arrange for payment. Early contact with the papers can eliminate delays. Upon receiving authorization from you, the publishers have been instructed to publish your notice. The newspapers have also been instructed to send us the Proof of Publication. We must receive Proof of Publication before action can be taken on the application.

Sincerely,

Karen Schlaak
Water Rights Program
(605) 773-3352

enclosures

NOTE: If you plan to contest any part of the Chief Engineer's recommendation, you must file a petition pursuant to the procedures outlined in the attached notice of hearing. The Water Management Board will then consider your concerns during a hearing on the application.

Instruction to Newspaper - Publish the Notice on August 13, 2020. The applicant is responsible for payment.

NOTICE OF APPLICATION NO. 8429-3 to Appropriate Water

Notice is given that Norman Thorstenson, PO Box 425, Selby SD 57472 has filed an application for a water permit to appropriate 1.78 cubic feet of water per second (cfs) from one well to be completed into the Grand Aquifer (300 feet deep) located in the NW 1/4 SE 1/4 Section 32 for irrigation of 60 acres located in the S 1/2 NE 1/4, N 1/2 SE 1/4 Section 32; all in T125N-R76W. The applicant is requesting a diversion rate greater than the statutory limit of 1 cfs per 70 acres. This site is located approximately 9 miles south of Mound City SD.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 8429-3 with qualifications because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest. The Chief Engineer's recommendation with qualifications, the application, and staff report are available at <http://denr.sd.gov/public> or contact Ron Duvall for this information, or other information, at the Water Rights Program address provided below.

Any person interested in opposing or supporting this application or recommendation must file a written petition with BOTH the applicant and Chief Engineer. The applicant must file a petition if contesting the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by August 24, 2020.

The petition may be informal but must include a statement describing the petitioner's interest in the application, the petitioner's reasons for opposing or supporting the application, and the signature and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained.

If the applicant does not contest the recommendation of the Chief Engineer and no petition to oppose the application is received, the Chief Engineer shall act on the application pursuant to the recommendation with no hearing held before the Water Management Board. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled, and the Water Management Board will consider this application. Notice of the hearing will be given to the applicant and any person filing a petition.

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SOUTH DAKOTA

**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
denr.sd.gov

OCT 06 2020

Norman Thorstenson
PO Box 425
Selby SD 57472

Dear Mr. Thorstenson:

Enclosed is Water Permit No. 8529-3  authorizing construction of the water diversion system and beneficial use of the water, not exceeding the limits as specified in the Water Permit.

Form 10, *Notice of Completion of Works and Application of Water to Beneficial Use*, is enclosed. Please return this completed form after you have finished the system and have put the water to beneficial use. An investigation can then be scheduled so the water license may be issued, thus completing the acquisition of a water right.

An informational sheet *Common Water Right Questions?* is also enclosed. This sheet is intended to answer some of the questions associated with obtaining and keeping a water right.

Sincerely,



Eric Gronlund, Chief Engineer
Water Rights Program
(605) 773-3352

enclosures

8429-3



**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 E. CAPITOL AVE
PIERRE SD 57501-3182
danr.sd.gov

December 7, 2021

8429-3

Rory Thorstenson
13067 308th Ave
Selby SD 57472

Dear Mr. Thorstenson:

I am writing to acknowledge receipt of your irrigation questionnaires and the questionnaire for Water Permit No. 8429-3, listed under Norman Thorstenson.

Enclosed is a partially completed "Notice of Transfer of Ownership" form for use in filing an ownership change on Water Permit No. 8429-3. Please review and complete as needed. Upon completion, please sign and return the form to our office with a required filing fee of \$50. The check or money order for the fee can be made payable to the Water Rights Program.

Sorry to hear about your dad. Thank you for updating the water permit. If I can answer any questions for you, please let me know.

Sincerely,

Genny McMath
Water Rights Program
605 773-3352
Genny.mcmath@state.sd.us

enclosure

8429-3

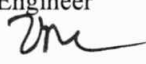
RECEIPT**WATER RIGHTS PROGRAM**

South Dakota Department of Agriculture and Natural Resources

Date December 15, 2021RECEIVED OF Rory/Linda Thorstenson 13067 308th Ave., Selby SD 57472

The following amount in fees for services rendered as provided for by law:

Fee for Application for Permit No. _____ to Appropriate Water, to construct and to put water to beneficial use	\$ _____
Fee for Application for Permit No. _____ to Appropriate Water for Future use	\$ _____
Fee to retain Future Use Permit No. _____ after period of seven years.	\$ _____
Fee for Inspecting Constructed Works, confirming beneficial use and issuing Water License No. _____	\$ _____
Fee for Filing Transfer Form <u>8429-3</u>	<u>\$50.00</u>
Fee for _____	\$ _____
Fee for Issuing New Well Driller's License No. _____	\$ _____
Fee for Renewal of Well Driller's License No. _____	\$ _____
Fee for Issuing Well Pump Installer's License No. _____	\$ _____
Fee for Renewal of Well Pump Installer's License No. _____	\$ _____
(Any Other Work Provided by Law) TOTAL	<u>\$50.00</u>

By Eric Gronlund
 Chief Engineer


PAID

DEC 15 2021

Ck# 20980

NOTICE OF TRANSFER OF OWNERSHIP

To: Chief Engineer
Water Rights Program, DANR
523 E. Capitol
Pierre, SD 57501-3181

RECEIVED

No. 8429-3

DEC 15 2021

Date: _____

WATER RIGHTS
PROGRAM

I/We request that Water Permit No. 8429-3

formerly owned by: Norman Thorstenson

be transferred to: (name & address) Rory Thorstenson

13067 308th Ave, Selby SD 57472

Telephone No. 605 848-7788

Title to the following described land(s)/property has been transferred as described above:

60 acres – S ½ NE ¼ and N ½ SE ¼ Section 32, T125N, R76W

I/We understand that the validity of Water Permit No. 8429-3 has not been determined by this transfer action. If I/We have any questions on validity, I/We understand that only the Water Management Board has the authority to determine if a water permit/right is valid (see note).

You are requested to file this "Notice of Transfer" in the appropriate file with the Water Rights Program, as evidence of the change of ownership.

A fee of Fifty Dollars (\$50.00) is required to cover the filing fees as required under SDCL 46-2-13. This form must be signed by the new owner.

I/We Rory Thorstenson, the new owner, certify that the above information is true and correct.



(Signed by new owner)

NOTE: Water permits may be cancelled for nonconstruction after the five year construction period has expired. Once a water permit is developed and the water used, the permit becomes a right. A water right may be lost for three reasons:

1. Abandonment - no intent to use water and use is abandoned.
2. Forfeiture - no use of water for three year period without legal excuse.
3. For a third violation of a condition of a water permit/right.

8429-3



**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 E. CAPITOL AVE
PIERRE SD 57501-3182
danr.sd.gov

December 7, 2021

8429-3

Rory Thorstenson
13067 308th Ave
Selby SD 57472

Dear Mr. Thorstenson:

I am writing to acknowledge receipt of the transfer of ownership form and filing fee you submitted for changing ownership on Water Permit No. 8429-3.

The ownership change has been completed. Water Permit No. 8429-3 formerly held by Norman Thorstenson is now listed in your name.

A receipt for the filing fee is enclosed. If I can answer any questions for you, please let me know.

Sincerely,

Genny McMath
Water Rights Program
605 773-3352
Genny.mcmath@state.sd.us

enclosure