

WATER PERMIT NO. 8555-3

Name of Applicant: **Jon Miller**

Address: **27216 Regal Court, Sioux Falls SD 57108**

Phone: **605 351-6016**

Amount of Water Claimed: **2.22 cfs**

Total Acres: **320 acres**

Source of Water Supply: **groundwater (1 well)**

Water to be used for: **irrigation**

County: **Turner**

Type of Waste Disposal System:

Location: **4 miles west of Hurley**

PRIORITY

Date Received: **10-25-21**

Application/License Fee: **\$ 1350**

Corrected Application Received:

Period of Annual Use: **June 1 – September 30**

Remarks:

Diversion Point: **SE 1/4 NW 1/4 Sec 24-T98N-R54W**

Land to be Irrigated: **NW 1/4 Sec 24 and SW 1/4 Sec 13; all in T98N-R54W**

Depth of Well: **288 feet**

Well Driller:

Remarks:

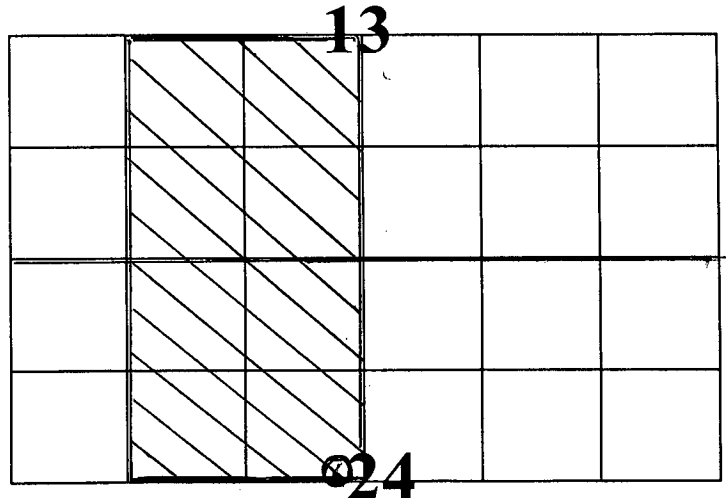
Type of Map: **aerial**

Prepared by:

Reviewed and the Number Assigned on: **10-25-21**

By: **Karen Schlaak**

Notice of Hearing - date to intervene: _____



**SOUTH DAKOTA
WATER PERMIT NO. 8555-3**

Date of first receipt of application October 25, 2021.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 8555-3 to Jon Miller, 27216 Regal Court, Sioux Falls SD 57108 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. 8555-3 appropriates 2.22 cubic feet of water per second from one well to be completed into the Upper Vermillion Missouri West Aquifer (approximately 288 feet deep) located in the SE 1/4 NW 1/4 Section 24 for irrigation of 320 acres located in the NW 1/4 Section 24 and the SW 1/4 Section 13; all in T98N-R54W. This site is located approximately 4 miles west of Hurley 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: June 1 – September 30.
3. The date from which applicant may claim right is October 25, 2021.
4. The date of approval of Permit No. 8555-3 is January 3, 2022.
5. One-fifth of the construction is to be completed on or before July 3, 2024.
6. All construction is to be completed on or before January 3, 2027.
7. Water is to be put to beneficial use on or before January 3, 2031.
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. 8555-3 may be located near domestic wells. 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. 8555-3 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. 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 Agriculture and Natural Resources

MAR 01 2022

date



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

RECEIVED

Mail to: DENR - Water Rights 523 E Capitol Ave Pierre, SD 57501-3182 ph. (605) 773-3352	No. <u>8555-3</u> (office use only)	OCT 25 2021
	Hydrologic Unit <u>10170102</u>	WATER RIGHTS PROGRAM
	Basin <u>Vermillion River</u>	
	Newspaper <u>The New Era, Parker</u> <u>Argus Leader</u>	

PAID

OCT 25 2021

Ck# 7609

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 Jon Miller

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

Mailing Address 27216 Regal Court Sioux Falls ☒ SD ☒ 57108
(Address) (City) (State) (Zip Code)

Phone _____ Mobile 605-351-6016 Email jwthe great@icloud.com

2. Amount of water claimed 2.22 *CFS or 1000 **GPM ***AF Total Acreage 320
(*Cubic Feet per Second) (**Gallons per Minute) (***)Acre Feet - storage capacity of dam/dugout or annual use if applicable)

3. Source of water supply Ground- Upper Vermillion Aquifer

4. Location of point of diversion 1 well in SE1/4 of NW1/4 Section 24-98N-54W
(example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W)

County Turner ☒

5. County or counties where water will be used Turner

6. Annual period during which water is to be used June-September

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
NE 1/4 of NW1/4 24-98N-54W	40	NE 1/4 of SW1/4 13-98N-54W	40
SE 1/4 of NW 1/4 24-98N-54W	40	SE 1/4 of SW1/4 13-98N-54W	40
SW 1/4 of NW 1/4 24-98N-54W	40	SW 1/4 of SW1/4 13-98N-54W	40
NW 1/4 of NW 1/4 24-98N-54W	40	NW 1/4 of SW 1/4 13-98N-54W	40

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

Drill a new irrigation well in the SE corner of the NW 1/4 of 24-98N-54W to irrigate 320 acres

I, Jon Miller Owner, 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.

4 W Hunter

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 Thein Well Drilling
(if yes, please provide copies of logs)b) If existing wells, how many 1 Provide copy of log(s), if available. Drilled by Thein Well

For either Existing or Proposed Wells:

c) Well Depth (required) 288' Depth to Top of Water Bearing Material 166' Depth to Water from Surface _____d) Distance to nearest domestic well on applicant's property 2500 Ft 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)

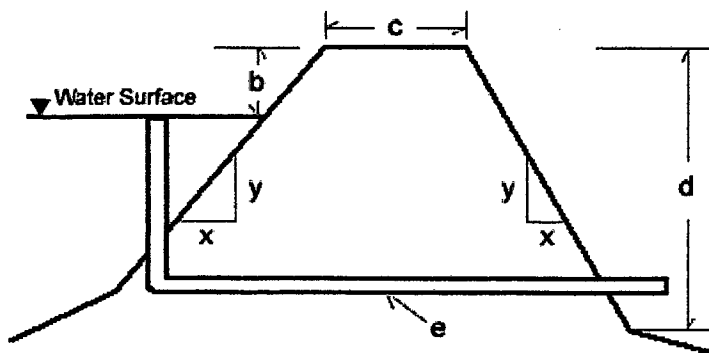
Upstream _____

Downstream _____

h) Surface Area of Impoundment _____

i) Storage _____ Acre Feet

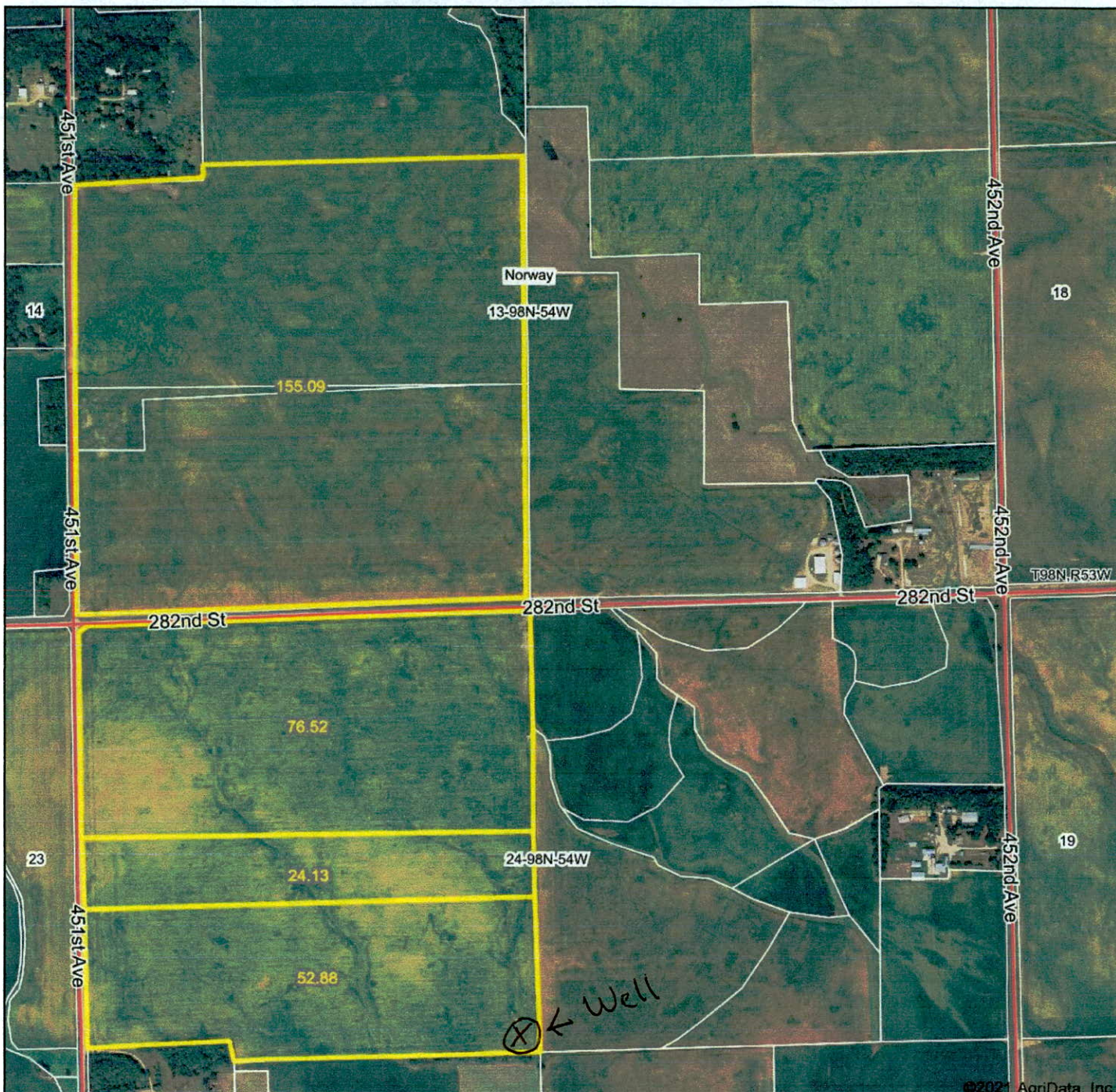
j) Drainage Area Above Dam _____ Acres



Brett Peterson Hurley SD TH # 1 West- Formation Log

<i>Formation Log</i>	<i>From</i>	<i>To</i>
Top Soil	0	2
Yellow Clay	2	17
Sand	17	24
Gray Clay and Sand	24	57
Rock	57	58
Gray Clay	58	77
Fine Sand	77	79
Gray Clay	79	166
Rock	166	167
Sand w/ coal layers	167	213
Sand & coarse gravel w/ coal	213	288
Chalk w/ sand	288	300

Aerial Map



Map Center: 43° 18' 3.65, -97° 10' 15.23

0ft 921ft 1842ft

13-98N-54W
Turner County
South Dakota

Maps Provided By:
surety
CUSTOMIZED ONLINE MAPPING
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Field borders provided by Farm Service Agency as of 5/21/2008.

RECEIPT

WATER RIGHTS PROGRAM South Dakota Department of Agriculture and Natural Resources

Date October 25, 2021

RECEIVED OF PBP Farms Partnership/Jon Miller 45610 282nd St., Hurley SD 57036

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

Fee for Application for Permit No. <u>8555-3</u> to Appropriate Water, to construct and to put water to beneficial use	<u>\$1700.00</u>
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>8555-3</u>	<u>\$200.00</u>
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	<u>\$1900.00</u>

By Eric Gronlund
Chief Engineer
Em



**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

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

**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 8555-3, Jon Miller**

Pursuant to SDCL 46-2A-2, the following is the recommendation of the Chief Engineer, Water Rights Program, Department of Agriculture and Natural Resources concerning Water Permit Application No. 8555-3, Jon Miller, 27216 Regal Court, Sioux Falls SD 57108.

The Chief Engineer is recommending APPROVAL of Application No. 8555-3 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 domestic water uses and water rights, 3) the proposed use is a beneficial use and 4) it is in the public interest as it pertains to matters of public interest within the regulatory authority of the Water Management Board with the following qualifications:

1. The well approved under Water Permit No. 8555-3 may be located near domestic wells. 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. 8555-3 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. 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
December 13, 2021

Report to the Chief Engineer

On Water Permit Application No. 8555-3

Jon Miller

November 17, 2021

Water Permit Application No. 8555-3 proposes to appropriate water at a maximum instantaneous diversion rate of 2.22 cubic feet per second (cfs) from one well to be completed into the Upper Vermillion Missouri: West aquifer (approximately 288 feet deep) located in the SE $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 24 for the irrigation of 320 acres located in the NW $\frac{1}{4}$ of Section 24 and SW $\frac{1}{4}$ of Section 13; all in T98N-R54W. The site is located in Turner County approximately 4 miles west of Hurley, SD.

AQUIFER: Upper Vermillion Missouri: West (UVM: W)

HYDROGEOLOGY:

The Upper Vermillion Missouri aquifer is a buried glacial outwash aquifer composed of fine to coarse sand and gravel with possible intermixed layers of clay and till deposits (Holmes and Filipovic, 2015; Niehus, 1994). The sand and gravel were deposited from braided stream systems or anastomosing channels with multiple depositional events into a bedrock channel which generally trended north to south (Holmes and Filipovic, 2015). The glacial outwash deposits of the Upper Vermillion Missouri aquifer can overlie the Sioux Quartzite, Carlile Shale, or the Greenhorn Limestone in South Dakota (Holmes and Filipovic, 2015). The Upper Vermillion Missouri aquifer is overlain by till that can range in thickness from 0 to 160 feet (Holmes and Filipovic, 2015).

The Upper Vermillion Missouri aquifer is generally under confined conditions and overlain by till but can also be under water table conditions (Lindgren and Hansen, 1993). On average, the Upper Vermillion Missouri aquifer is 68 feet thick with top of aquifer recorded as deep as 355 ft below land surface (Lindgren and Hansen, 1993). The Upper Vermillion Missouri aquifer underlies approximately 204,832 acres and contains approximately 1,037,400 acre-feet (ac-ft) of recoverable water in storage within Clay, Hutchinson, Lincoln, and Turner Counties (Buhler, 2014; Hedges et al., 1982). It should be noted that the amount of recoverable water in storage of the Upper Vermillion Missouri aquifer was estimated prior to the 2014 update of the aquifer and management unit boundaries delineated by Buhler in 2014 (Holmes and Filipovic, 2015). As a result of the updated approximate boundary of the aquifer, the estimated amount recoverable water in storage could vary.

The Upper Vermillion Missouri aquifer is composed of three management units. The proposed diversion point for Water Permit Application No. 8555-3 is completed into the West management unit of the Upper Vermillion Missouri aquifer. The direction of groundwater movement of the Upper Vermillion Missouri: West aquifer is commonly from north to south (Holmes and Filipovic, 2015). The approximate areal extent of the Upper Vermillion Missouri: West aquifer is displayed in Figure 1 along with the location of the proposed diversion point.

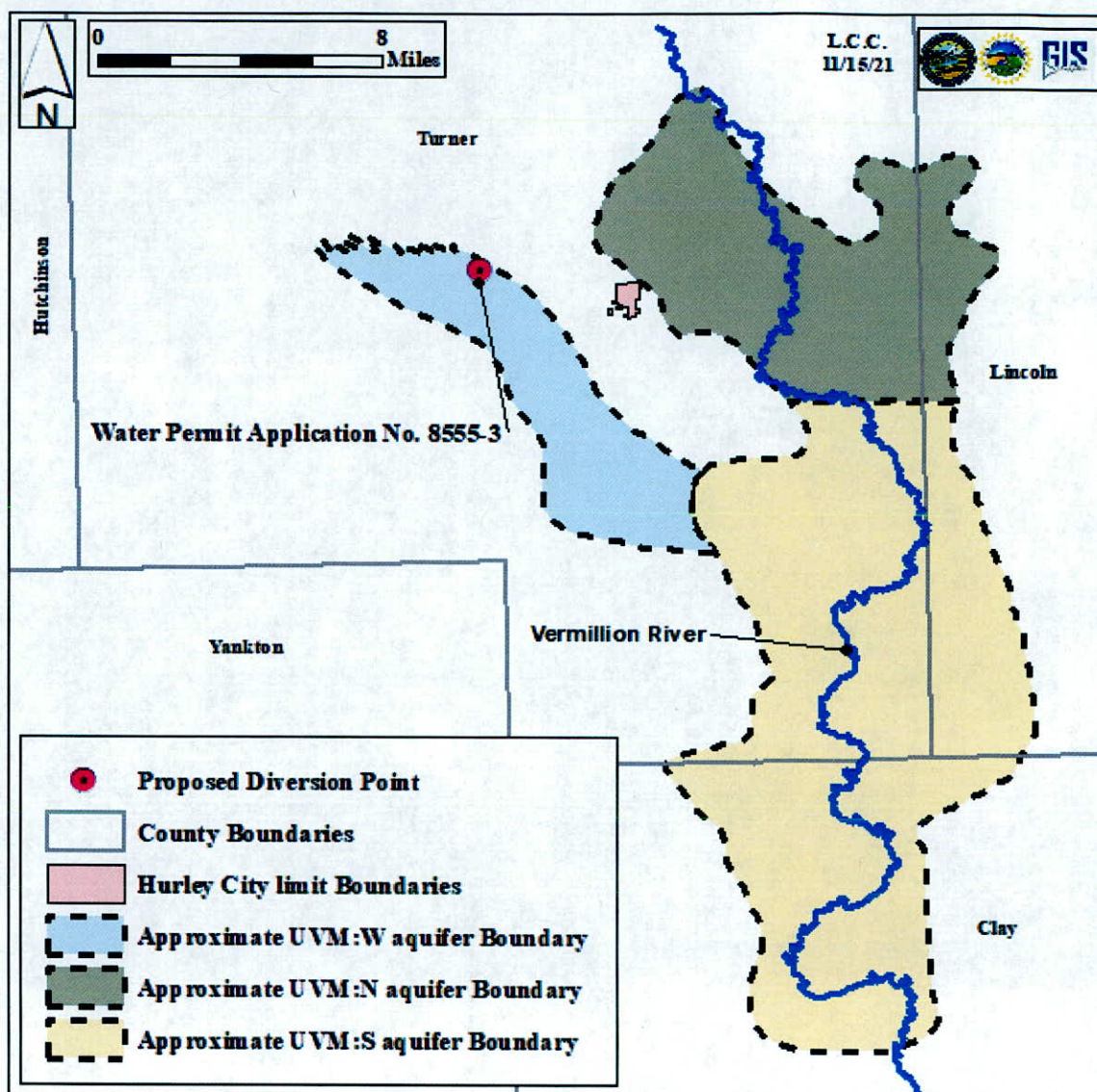


Figure 1: Map of the approximate areal extent of the Upper Vermillion Missouri aquifer including the three management units and the proposed diversion point location of Water Permit Application No. 8555-3 (Buhler, 2014; Hedges et al., 1982; Water Rights, 2021b and 2021c).

A test hole was submitted with Water Permit Application No. 8555-3. The report lists “topsoil” from 0 to 2 feet below land surface, “yellow clay” from 2 to 17 feet, “sand” from 17 to 24 feet, “gray clay and sand” from 24 to 57 feet, “rock” from 57 to 58 feet, “gray clay” from 58 to 77 feet, “fine sand” from 77 to 79 feet, “gray clay” from 79 to 166 feet, “rock” from 166 to 167 feet, “sand with coal layers” from 167 to 213 feet, “sand and coarse gravel with coal” from 213 to 288, and “chalk with sand” from 288 to 300 feet. The static water level was not recorded when the test hole was completed; however well logs within three miles of the proposed diversion point list static water levels ranging from 20 to 30 feet below land surface (Water Rights, 2021d). The Upper Vermillion Missouri: West aquifer is confined at the proposed diversion point based

on the submitted well completion report, water levels, and lithologic logs on file for nearby observation wells (SDGS, 2021; Water Rights, 2021b and 2021d).

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 domestic water uses and water rights, and that the proposed use is a beneficial use and in the public interest as it pertains to matters of public interest within the regulatory authority of the Water Management Board as defined by SDCL 46-2-9 and 46-2-11.” This report will address the availability of unappropriated water and the potential for unlawful impairment of existing domestic water uses and water rights within the Upper Vermillion Missouri: West aquifer.

WATER AVAILABILITY:

Water Permit Application No. 8555-3 proposes to appropriate water from the Upper Vermillion Missouri: West aquifer for irrigation. The probability of unappropriated water being 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. However, an application may be approved for a water distribution system 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.” The Upper Vermillion Missouri: West aquifer is not older than or stratigraphically lower than the Greenhorn Formation (Fahrenbach et al, 2010), and the applicant’s proposed use is not for use in a water distribution system as defined by SDCL 46-1-6(17). Therefore, the average annual recharge and average annual withdrawal rates to and from the Upper Vermillion Missouri: West aquifer must be considered.

HYDROLOGIC BUDGET:

Recharge

Recharge to the Upper Vermillion Missouri: West aquifer occurs through leakage from the Niobrara aquifer and at areas where it is in hydraulic connection with Parker-Centerville aquifer, fractures in the Sioux Quartzite, and direct infiltration of precipitation where the aquifer is at or near land surface (Lindgren and Hansen, 1990; Holmes and Filipovic, 2015).

The groundwater outflow from the Upper Vermillion Missouri: West aquifer was estimated in January of 2014 by Buhler using a flow net analysis. The estimated amount of groundwater outflow the Upper Vermillion Missouri: West aquifer is approximately 2,681 acre-feet/year (ac-ft/yr). While this estimated groundwater outflow rate only consists of one data point, it is the best available estimate of the discharge to the West management unit of the Upper Vermillion Missouri aquifer (Buhler, 2014). The estimated inflow of groundwater or recharge to the Upper Vermillion Missouri: West aquifer has yet to be quantified. Therefore, the outflow from the

Upper Vermillion Missouri: West aquifer can be assumed to be approximately the same amount of recharge the aquifer receives annually.

Discharge

Discharge from the Upper Vermillion Missouri: West aquifer is primarily through well withdrawals and subsurface outflow into Clay County (Lindgren and Hansen, 1990). Currently, there are eight active water rights/permits authorized to appropriate water from the Upper Vermillion Missouri: West aquifer (Water Rights, 2021c). There are also three other active Water Rights (Water Right Nos. 2041-3, 4265-3, and 6662-3) within the aquifer boundary of the West management unit of the Upper Vermillion Missouri aquifer that do not currently have an assigned management unit (Water Rights, 2021c). There are no future use permits reserving water from the Upper Vermillion Missouri: West aquifer presently (Water Rights, 2021c).

Table 1 summarizes the eleven water rights/permits authorized to appropriate water or within the approximate boundary of the Upper Vermillion Missouri: West aquifer with the estimated annual use for each water right/permit as determined by their maximum permitted diversion rate or annual volume. 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 their entire appropriated volume every year. It is estimated that the non-irrigation water rights/permits limited only by a diversion rate will pump at their maximum permitted diversion rate for 60 percent of the time.

One municipal water right (Water Right No. 2041-3) was identified as being connected to a rural water system and maintain their wells for standby purposes (Friedeman, 2020; Water Rights, 2021c); as such, the average annual water use for these water rights has been estimated to be zero ac-ft per year in Table 1. Water Permit No. 8395-3 is limited to an annual withdrawal of 460 ac-ft/yr; however, this permit has yet to report an annual withdrawal from the Upper Vermillion Missouri: West aquifer as a result not being fully developed. For the purpose of estimating the average annual withdrawal rate from the Upper Vermillion Missouri: West aquifer, Water Permit No. 8395-3 is assumed to be fully developable for its authorized appropriation of 460 ac-ft/yr. Overall, the average annual withdrawal rate for the Upper Vermillion Missouri aquifer for non-irrigation water rights/permits is approximately 518.2 ac-ft/yr (Table 1) (Water Rights, 2021c).

Table 1: Water Rights/Permits within the West management unit of the Upper Vermillion Missouri aquifer along with the estimated annual water use for authorized non-irrigation water rights/permits (Water Rights, 2021c).

Permit No.	Name	Use	Status	Diversion Rate (cfs)	Estimated Volume (ac-ft/yr)
2041-3	City of Viborg	MUN	LC	0.96	0*
2506-3	James Reiners	IRR	LC	1.5	
4265-3	James D Bondesen	IRR	LC	0.73	
6662-3	Vannorsdel's Inc	COM, DOM	LC	0.134	58.2
7535-3	Donald Benson	IRR	PE	1.78	
7588-3	Paul Petersen	IRR	PE	1.78	
7602-3	Michael D Stevens	IRR	PE	1.89	
7633-3	Smit Family Farms LLC	IRR	PE	1.78	
7715-3	Allen Vannorsdel	IRR	PE	2.22	
8395-3	Full Circle Dairy LLC	COM	PE	0.67	460
8488-3	Brett Petersen	IRR	PE	1.78	
IRR: Irrigation; COM: Commercial; MUN: Municipal; DOM: Domestic				TOTAL (non-irrigation):	518.2
LC: Licensed Water Permit; PE: Permitted Water Permit					
*Identified as being connected to a Rural Water System					

The reported annual irrigation withdrawals for the eight water rights/permits from the Upper Vermillion Missouri: West aquifer are shown in Table 2. The average annual withdrawal rate for the Upper Vermillion Missouri: West aquifer irrigation water rights/permits that have reported over the period of record is approximately 48.6 ac-ft/yr (Table 2) (Water Rights, 2021a).

Since the number of irrigation water rights/permits has continued to increase, the estimated average annual withdrawal rate for irrigation appropriations for the entire period of record may not accurately reflect the current level of development. The average annual withdrawal rate for irrigation appropriations from 2014 to 2020 better represents the current level of irrigation developments in the Upper Vermillion Missouri: West aquifer. The average annual withdrawal rate for the Upper Vermillion Missouri: West aquifer from 2014 to 2020 is approximately 140.1 ac-ft/yr (Table 2) (Water Rights, 2021a). It is worth noting that these two estimates could be considered slightly conservative. Water Permit No. 8488-3 was approved in 2021 and has not reported an annual withdrawal yet (Water Rights, 2021c). The estimated annual usage (assuming an application rate of 1 ft/ac) for Water Permit No. 8488-3 is 80 ac-ft/yr (Water Rights, 2021c).

Report on Water Permit Application No. 8555-3

Table 2: Reported historic irrigation use from the Upper Vermillion Missouri: West aquifer (Water Rights, 2021a).

Year	No. of Permits Reporting	Reported Pumpage (ac-ft)
1979	5	13.3
1980	5	53.0
1981	6	18.6
1982	3	53.0
1983	3	145.8
1984	5	0
1985	5	3
1986	5	0
1987	4	110
1988	4	1.4
1989	4	39
1990	4	0
1991	4	0
1992	4	0
1993	2	0
1994	2	0
1995	2	0
1996	2	88.4
1997	2	0
1998	3	0
1999	3	0
2000	3	13.9
2001	3	19.9
2002	3	39.8
2003	3	35.9
2004	2	166.3
2005	2	1.7
2006	2	66.3
2007	2	116.7
2008	2	0
2009	2	0
2010	2	0
2011	2	0
2012	1	49.7
2013	1	24.3
2014	5	146.0
2015	5	118.5
2016	5	179.0
2017	5	199.9
2018	5	42.7
2019	5	0
2020	5	294.7
MIN	1	0
MAX	6	294.7
AVG	3	48.6
AVG (2014-2020)	5	140.1

There are domestic wells completed into the Upper Vermillion Missouri: West aquifer that do not require a water right/permit, so the withdrawal amount from those wells is unknown (Water Rights, 2021d). Withdrawals from domestic wells on an average annual basis are not considered to be a significant portion of the hydrologic budget due to their relatively low diversion rates. Additionally, with the development of rural water systems in areas where the Upper Vermillion Missouri: West aquifer is the uppermost aquifer available; it is likely some domestic users may have transitioned to rural water. Therefore, the quantity of water withdrawn by domestic wells is estimated to be negligible to the hydrologic budget for the Upper Vermillion Missouri: West aquifer.

Hydrologic Budget Summary

The average annual withdrawal rate from the Upper Vermillion Missouri: West aquifer totals approximately 978.3 ac-ft/yr (irrigation: 140.1 ac-ft/yr; non-irrigation: 518.2 ac-ft/yr; Water Permit Application No. 8555-3 (if approved) (assuming an application rate of 1 ft/ac): 320 ac-ft/yr) (Water Rights 2021a and 2021c). The estimated amount of groundwater outflow of the Upper Vermillion Missouri: West aquifer is approximately 2,681 ac-ft/yr (Buhler, 2014). The estimated inflow of groundwater or recharge to the Upper Vermillion Missouri: West aquifer has yet to be quantified. Therefore, the estimated outflow from the Upper Vermillion Missouri: West aquifer is the best available estimate for recharge the aquifer receives annually. Overall, the estimated average annual recharge to the Upper Vermillion Missouri: West aquifer is greater than the estimated average annual withdrawal rate from the aquifer. Therefore, there is a reasonable probability that unappropriated water is available for the appropriation proposed by this permit application.

OBSERVATION WELL DATA:

Administrative Rule of South Dakota (ARSD) 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 DANR-Water Rights Program monitors two observation wells completed into the Upper Vermillion Missouri: West aquifer (Water Rights, 2021b). These observation wells provide data on how the aquifer reacts to regional climatic conditions and local pumping. The closest observation well to the proposed diversion point is observation well TU-77S (approximately 1.8 miles southeast). The hydrographs for these two observation wells are displayed in Figures 2 through 3 (Water Rights, 2021b).

Over their respective periods of record, the hydrographs for the Upper Vermillion Missouri: West 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 conditions between irrigation seasons. This recovery of the aquifer indicates that climatic conditions and therefore, the effects of recharge to

and natural discharges from the aquifer govern the long-term fluctuations of waters levels in the aquifer rather than the impacts of pumping from the Upper Vermillion Missouri: West aquifer. 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.

The two hydrographs for the Upper Vermillion Missouri: West aquifer show a decrease in static water levels in 2021. Observation well TU-77T also shows a historic low static water level of -41.83 ft which was recorded on August 9, 2021 (Figure 2) (Water Rights, 2021b). This decrease in water level and historic low could potentially be attributed to an increase in pumping activity for irrigation as a result of Turner County being in moderate to severe drought conditions throughout the summer season of 2021 and the irrigation season (U.S. Drought Monitor, 2021). In addition, the low static water levels were recorded while the irrigation season was still occurring.

Turner County received 1.4 inches of precipitation less than what is considered normal in 2021 (NOAA, 2021). Moderate to severe drought conditions can cause topsoil to dry and crop yields to decline, which in return, creates a greater demand for groundwater use for irrigators instead of relying on precipitation (NOAA, 2021). The volume of water withdrawn in 2021 from the Upper Vermillion Missouri: West aquifer is not yet available as the DANR-Water Rights Program is currently in the process of collecting 2021 irrigation questionnaires. If the average annual withdrawal rates from the irrigation permits within the Upper Vermillion Missouri: West aquifer increased in 2021, the full extent of that increase will be unknown until the irrigation questionnaire data is available.

Furthermore, these two observation wells generally have more than 60 feet of artesian head pressure. It is highly likely that the drawdown measured in 2021 is primarily reflective of the potentiometric surface of the aquifer equilibrating to the increased withdrawals. The Upper Vermillion Missouri: West aquifer is likely recovering from these low water levels since the irrigation season for 2021 is complete. The most recent data of static water levels for these two observation wells were recorded during the irrigation season (early August). Under the standard Water Rights Program measurement practice, the water level of these two observation wells will be measured next in spring of 2022. Given the available information and past response of the observation wells to drier conditions the water levels in these observation wells are expected to recover with the end on the irrigation season and return to more average climatic conditions. Therefore, 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.

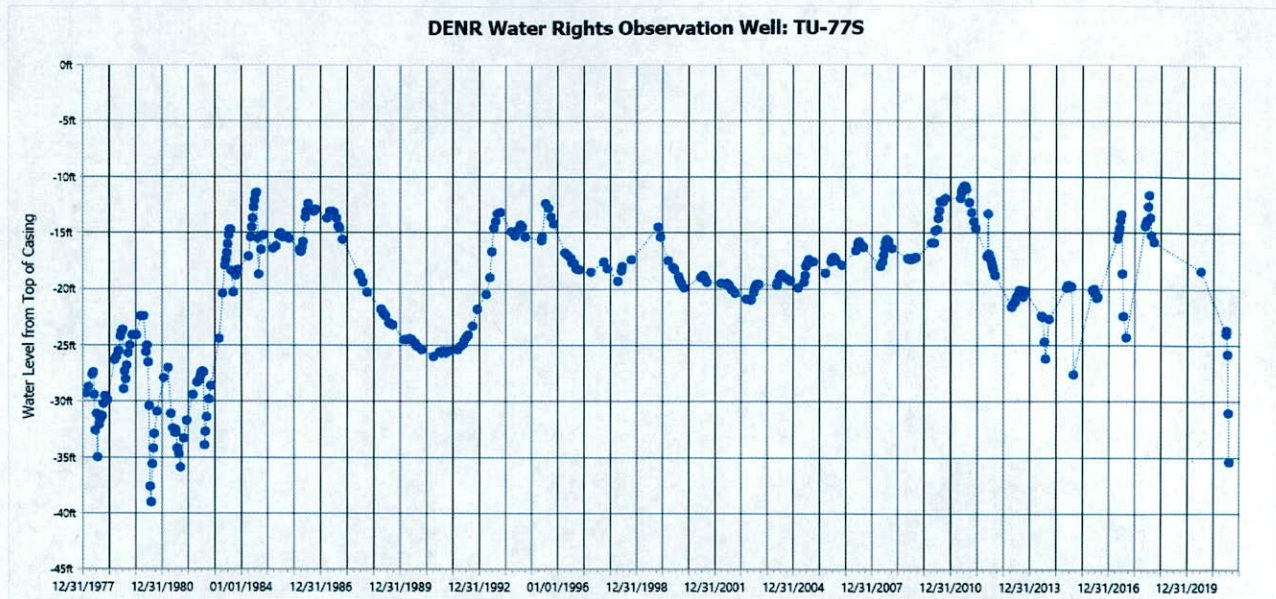


Figure 2: Hydrograph of the Upper Vermillion Missouri: West aquifer observation well TU-77S, located approximately 1.6 miles southeast of the proposed diversion point (Water Rights, 2021b).

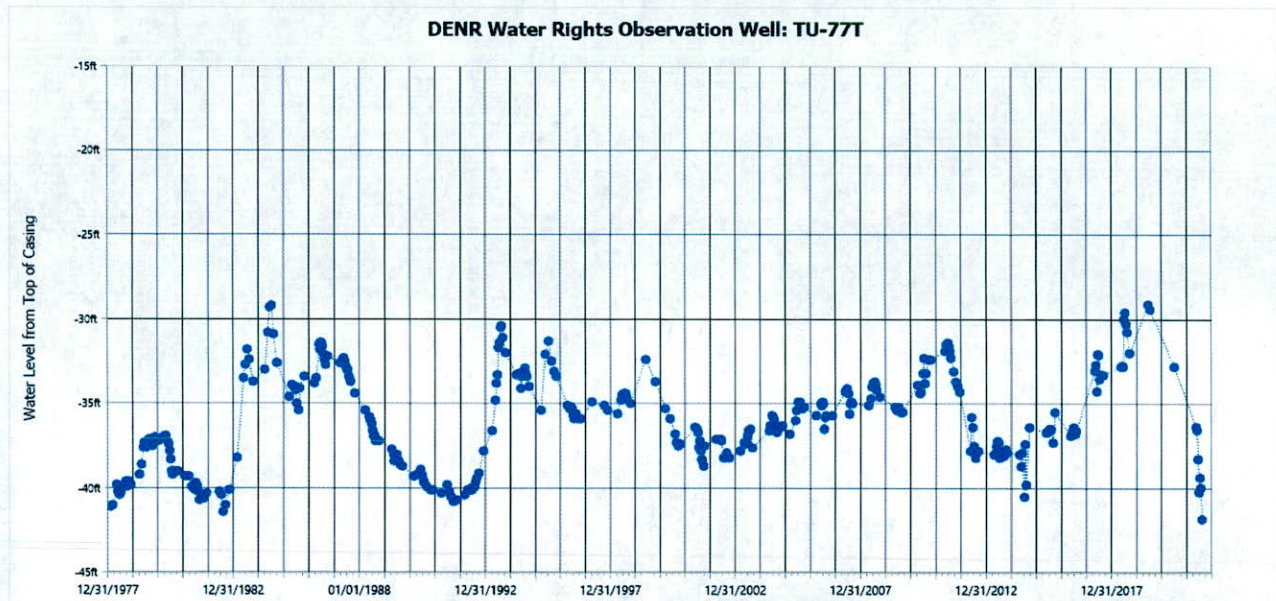


Figure 3: Hydrograph of the Upper Vermillion Missouri: West aquifer observation well TU-77T, located approximately 8.7 miles southeast of the proposed diversion point (Water Rights, 2021b).

POTENTIAL FOR UNLAWFUL IMPAIRMENT OF EXISTING WATER RIGHTS:

Currently, there are eleven water rights/permits authorized to appropriate water from the Upper Vermillion Missouri: West aquifer (Water Rights, 2021c). The nearest water right/permit (not held by the applicant) to the proposed diversion point completed into the Upper Vermillion Missouri: West aquifer is Water Right No. 8395-3 located approximately 0.5 miles east of the proposed diversion point. The location of Water Right No. 8395-3 is shown in Figure 4 along

with the locations of the other ten water rights/permits within the Upper Vermillion Missouri: West aquifer.

There are domestic wells on file with the DANR-Water Rights Program that are completed into the Upper Vermillion Missouri: West aquifer, with the closest domestic well on file (not held by the applicant) approximately 0.5 miles east of the proposed diversion point (Water Rights, 2021d). There could potentially be other domestic wells completed into the Upper Vermillion Missouri: West aquifer near the proposed diversion point that are not on file with the DANR-Water Rights Program.

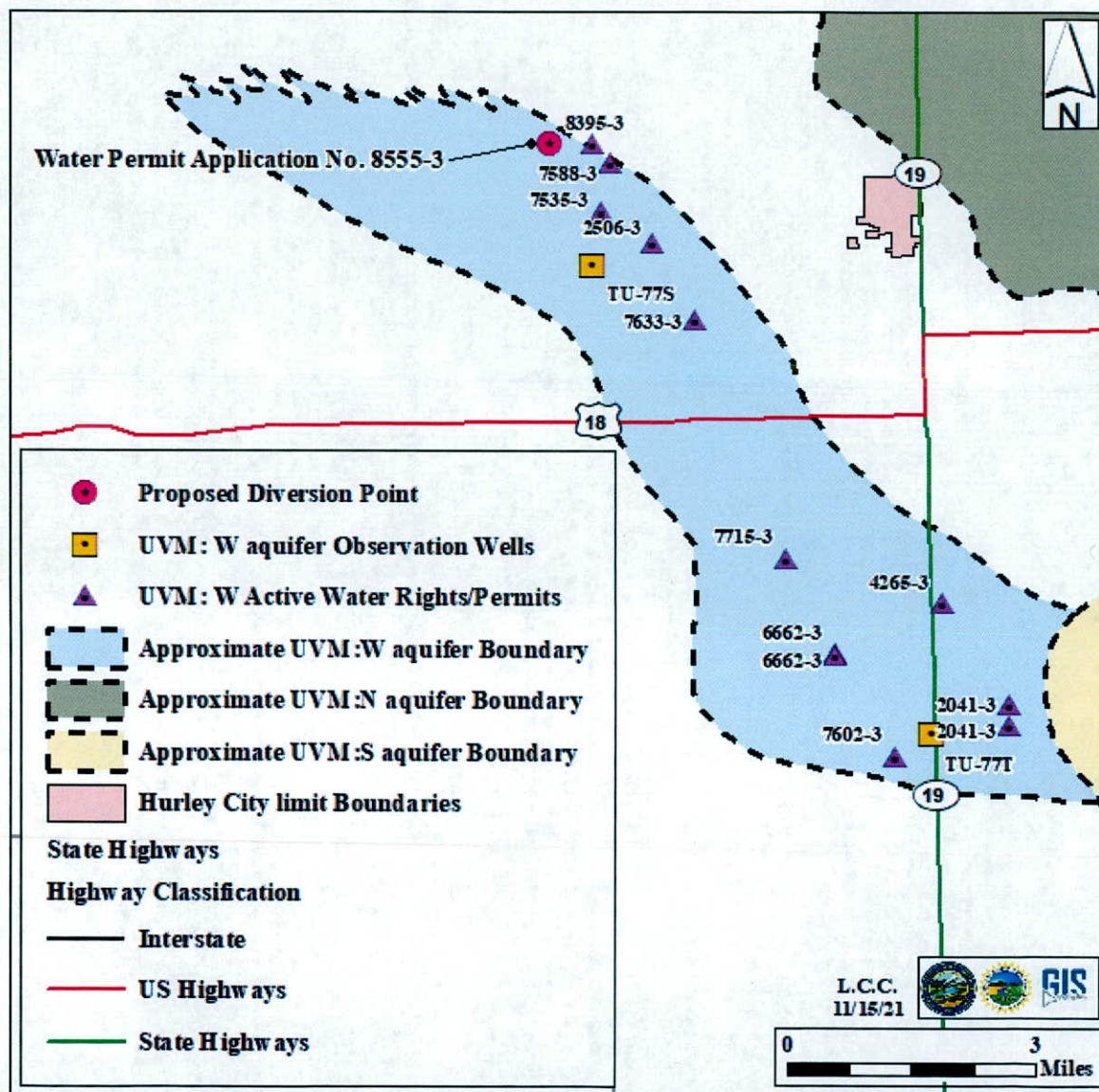


Figure 4: Map of the site location of Water Right Permit Application No. 8555-3, nearby observation wells, and nearby water rights/permits completed into the Upper Vermillion Missouri: West aquifer (Water Rights, 2021b and 2021c).

The Upper Vermillion Missouri: West aquifer is generally under confined conditions in Turner County (SDGS, 2021). The diversion point is expected to be under confined conditions based on the submitted test hole formation log, water levels, and lithologic logs on file for the nearby observation wells (Water Rights, 2021d). Observation well data (see Figures 2 through 3) documents drawdown from withdrawals of existing wells near the proposed diversion point. While the static water levels two observation wells within the Upper Vermillion Missouri: West aquifer have declined in 2021, there is still artesian head pressure available. Therefore, pumping from the diversion point is not expected to significantly lower water levels within the aquifer. Drawdown created by pumping a well generally does not extend far from the pumped well in an unconfined aquifer, however, in a confined aquifer, drawdown from pumping could extend a distance from the proposed diversion point. The exact drawdown behavior cannot be known without an aquifer performance test. In Turner County, there have been no complaints submitted to the DANR-Water Rights Program regarding potential well interference for wells completed into the Upper Vermillion Missouri: West aquifer (Water Rights, 2021e).

Within approximately nine miles of the diversion point for this application, the Upper Vermillion Missouri: West aquifer has saturated aquifer thickness ranging from approximately 21 to 76 feet, with the depth to the top of aquifer materials ranging from approximately 52 to 215 feet below land surface, and static water levels at well completion varying from approximately 28 to 41 feet below land surface (SDGS, 2021; Water Rights 2021b and 2021d). This would allow for sufficient saturated 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).

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:

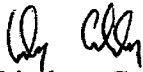
“A well in which the pump intake was set at least 20 feet below the top of the aquifer at the time of construction or, if the aquifer is less than 20 feet thick, is as near to the bottom of the aquifer as is practical and the water level of the aquifer has declined to a level that the pump will no longer 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 the 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 Upper Vermillion Missouri: West aquifer at their location. However, when considering the statutes (SDCL 46-1-4 and 46-6-6.1), rules (ARSD 74:02:04:20(6) and (7)), the saturated thickness of the aquifer, the amount of artesian head pressure in observation wells and appropriative user's wells completed into the Upper Vermillion Missouri: West aquifer, any drawdown created from the proposed diversion is not expected to cause an unlawful impairment on existing water right/permit holders 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.

CONCLUSIONS:

1. Water Permit Application No. 8555-3 proposes to appropriate water at a maximum instantaneous diversion rate of 2.22 cfs from one well to be completed into the Upper Vermillion Missouri: West aquifer. The site is located in Turner County approximately 4 miles west of Hurley, SD.
2. There is a reasonable probability that unappropriated water is available from the Upper Vermillion Missouri: West aquifer for this proposed appropriation based on the hydrological budget and observation well data.
3. There is a reasonable probability this diversion will not unlawfully impair adequate wells authorized by existing water rights or domestic use wells.


Lindsey Cederberg
Natural Resources Engineer I
SD DANR - Water Rights Program

Reviewed by:


Adam Mathiowetz, PE
Natural Resources Engineer IV
SD DANR - Water Rights Program

References

- Buhler, K. A., Report to the Chief Engineer on 21 Water Permit Applications from the Upper Vermillion Missouri aquifer, SD DANR Water Rights Program, Joe Foss Bldg., Pierre, South Dakota, 2014.
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- Water Rights, 2021a. "1979-2020 Irrigation Summaries by Aquifer", SD DANR-Water Rights Program, Joe Foss Building, Pierre, SD.
- Water Rights, 2021b. Observation Well Data, SD DANR-Water Rights Program, Joe Foss Bldg, Pierre, SD.
- Water Rights, 2021c. Water Right/Permit Files, SD DANR-Water Rights Program, Joe Foss Bldg, Pierre, SD.

Water Rights, 2021d. Well Completion Reports, SD DANR-Water Rights Program, Joe Foss Bldg, Pierre, SD.

Water Rights, 2021e. County Files, SD DANR-Water Rights Program, Joe Foss Bldg, Pierre, SD.

PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA)
County of Turner) SS

I, Melissa Schultz

certify that the attached printed Notice was taken
from the New Era

printed and published in Parker

County of Turner and

state of South Dakota. The notice was published

in the newspaper on the following date:

December 23rd, 2021

Cost of Printing \$50.48

Melissa Schultz
(Signature)

Paul R. Harms
(Title)

January 6th 2022
(Date Signed)

NOTICE OF APPLICATION NO. 8555-3 TO APPROPRIATE WATER

Notice is given that Jon Miller, 27216 Regal Court, Sioux Falls SD 57108 has filed an application for a water permit to appropriate 2.22 cubic feet of water per second from one well to be completed into the Upper Vermillion Missouri West Aquifer (approximately 288 feet deep) located in the SE 1/4 NW 1/4 Section 24 for irrigation of 320 acres located in the NW 1/4 Section 24 and the SW 1/4 Section 13; all in T98N-R54W. This site is located approximately four miles west of Hurley SD.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 8555-3 with qualifications because 1) unappropriated water is available, 2) existing domestic water uses and water rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest as it pertains to matters within the regulatory authority of the Water Management Board. The Chief Engineer's recommendation with qualifications, the application, and staff report are available at <https://danr.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 this application or recommendation shall allege that the application, upon approval, will cause injury to the person that is unique from any injury suffered by the public in general. The injury must concern a matter either within the regulatory authority found in SDCL 46-2A-9 for approval or denial of the application, or other matter concerning the application within the regulatory authority of the board to act upon as defined by SDCL 46-2-9 and 46-2-11 or both

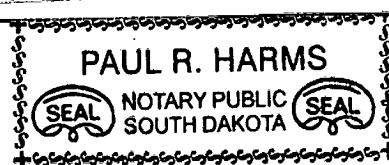
requirements and wishing to be a party of record in a contested case hearing shall file a written petition to oppose the application with BOTH the applicant and Chief Engineer. A petition opposing the application shall be filed on a form provided by the Chief Engineer. The petition form is available online at <https://danr.sd.gov> public or by contacting the Chief Engineer. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501" or call (605) 773-3352. The applicant's mailing address is given above. If contesting the Chief Engineer's recommendation the applicant shall also file a petition. A petition filed by either an interested person or the applicant must be filed by Jan. 3, 2022.

The petition shall include a statement describing the unique injury upon approval of the application on the petitioner, the petitioner's reasons for opposing the application, and the name and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained.

Any interested person may file a comment on the application with the Chief Engineer. The comment shall be filed on a form provided by the Chief Engineer and is available online at <https://danr.sd.gov> public or by calling (605) 773-3352 or writing the Chief Engineer at the address provided above. Filing a comment does not make the commenter a party of record or a participant in any hearing that may be held. Any comment must be filed by Jan. 3, 2022.

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



Argus Leader

P.O. Box 677349, Dallas, TX 75267-7349

Account No.: SFA-078306
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PO #:
Lines : 148
Ad Total: \$48.38

WATER RIGHTS PROGRAM
523 E CAPITOL JOE FOSS BLDG
PIERRE, SD 57501

This is not an invoice

of Affidavits 1

Account No.: SFA-078306
Ad No.: 0005047081

Argus Leader AFFIDAVIT OF PUBLICATION

RECEIVED

DEC 27 2021

WATER RIGHTS
PROGRAM

State of Wisconsin

County of Brown

I being duly sworn, says: That The Argus Leader is, and during all the times hereinafter mentioned was, a daily legal newspaper published at Sioux Falls, Minnehaha County, South Dakota; that affiant is and during all of said times, was an employee of the publisher of such newspaper and has personal knowledge of the facts stated in this affidavit; that the notice, order or advertisement, a printed copy of which is hereto attached, was published in said newspaper issue(s) :

Saturday, December 18, 2021

Sworn to and subscribed before me this 18 day of December, 2021.

Dwaine Roberts

Legal Clerk

Vicky Felty

Notary Public, State of Wisconsin, County of Brown

9/9/28

My Commission expires

VICKY FELTY
Notary Public
State of Wisconsin

RECEIVED

DEC 27 2021

WATER RIGHTS
PROGRAM

NOTICE OF
APPLICATION NO. 8555-3
to Appropriate Water

Notice is given that Jon Miller, 27216 Regal Court, Sioux Falls SD 57108 has filed an application for a water permit to appropriate 2.22 cubic feet of water per second from one well to be completed into the Upper Vermillion Missouri West Aquifer (approximately 288 feet deep) located in the SE 1/4 NW 1/4 Section 24 for irrigation of 320 acres located in the NW 1/4 Section 24 and the SW 1/4 Section 13, all in T98N-R54W. This site is located approximately 4 miles west of Hurley SD.

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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 \$48.38

5031319 Dec. 18, 2021

RECEIVED
DEC 27 2021
WATER RIGHTS
PROGRAM

Schlaak, Karen

From: Schlaak, Karen
Sent: Tuesday, December 14, 2021 10:48 AM
To: 'legals@argusleader.com'
Subject: 8555-3, Jon Miller
Attachments: 8555-3public.short_final.docx; FORM8.FRM.doc

Attached is a notice to be published on December 23, 2021.

Brett Petersen, 45610 282nd St, Hurley SD 57036 (605 351-6026) 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
DANR - Water Rights Program
(605) 773-3352
Website: <https://danr.sd.gov>



Schlaak, Karen

From: Schlaak, Karen
Sent: Tuesday, December 14, 2021 10:47 AM
To: New Era
Subject: 8555-3, Jon Miller
Attachments: 8555-3public.short_final.docx; FORM8.FRM.doc

Attached is a notice to be published on December 23, 2021.

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

Karen Schlaak
DANR - Water Rights Program
(605) 773-3352
Website: <https://danr.sd.gov>





**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

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

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

December 14, 2021

Jon Miller
27216 Regal Court
Sioux Falls SD 57108

Dear Mr. Miller:

Water Permit Application No. 8555-3 for irrigation use have been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice has been sent to the The New Era printed at Parker (Ph # 605 297-4419) and the Argus Leader printed at Sioux Falls (Ph # 605 331-2200). 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

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.

c: Brett Petersen, 45610 282nd St, Hurley SD 57036

NOTICE OF APPLICATION NO. 8555-3 to Appropriate Water

Notice is given that Jon Miller, 27216 Regal Court, Sioux Falls SD 57108 has filed an application for a water permit to appropriate 2.22 cubic feet of water per second from one well to be completed into the Upper Vermillion Missouri West Aquifer (approximately 288 feet deep) located in the SE 1/4 NW 1/4 Section 24 for irrigation of 320 acres located in the NW 1/4 Section 24 and the SW 1/4 Section 13; all in T98N-R54W. This site is located approximately 4 miles west of Hurley SD.

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Any person interested in opposing this application or recommendation shall allege that the application, upon approval, will cause injury to the person that is unique from any injury suffered by the public in general. The injury must concern a matter either within the regulatory authority found in SDCL 46-2A-9 for approval or denial of the application, or other matter concerning the application within the regulatory authority of the board to act upon as defined by SDCL 46-2-9 and 46-2-11, or both. Any person meeting the petitioner requirements and wishing to be a party of record in a contested case hearing shall file a written petition to oppose the application with BOTH the applicant and Chief Engineer. A petition opposing the application shall be filed on a form provided by the Chief Engineer. The petition form is available online at <https://danr.sd.gov/public> or by contacting the Chief Engineer. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501" or call (605) 773-3352. The applicant's mailing address is given above. If contesting the Chief Engineer's recommendation, the applicant shall also file a petition. A petition filed by either an interested person or the applicant must be filed by January 3, 2022.

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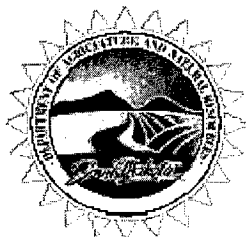
Published once at the total approximate cost of _

Schlaak, Karen

From: Schlaak, Karen
Sent: Tuesday, December 14, 2021 12:46 PM
To: brettjpetersen@gmail.com
Subject: Water Permit Application Nos. 8555-3 and 8557-3
Attachments: 8555-3, Jon Miller.pdf; 8557-3, Buzz Wilson.pdf

Attached is a copy of the report, chief engineer recommendation and information regarding the public notice for the two water permit applications. As stated in the letter, please contact the papers as soon as possible to authorize publication and arrange for payment. This information is being mailed to you today.

Karen Schlaak
DANR - Water Rights Program
(605) 773-3352
Website: <https://danr.sd.gov>



February 24, 2022

PAYMENT REQUEST FORM

PAYEE: Jon Miller
27216 Regal Court
Sioux Falls SD 57108

FROM: DANR Water Rights Program
523 E. Capitol Ave
Pierre, SD 57501-3181

DESCRIPTION OF SERVICE, PRODUCE OR TRANSFER

Over Payment of Water Permit Application

AMOUNT: \$550.00

FUNDING SOURCE:

GENERAL: X

FEDERAL:

OTHER:

COMMENTS:

AUTHORIZATION: *Eric H. Lundberg* 2/28/2012

I declare and affirm under the penalties of perjury that this claim is in all things, true and correct. I further agree to comply with the provisions of the Civil Rights Act of 1964 and regulations issued thereunder relating to nondiscrimination in federal assisted programs.



**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

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

MAR 01 2007

Jon Miller
27216 Regal Court
Sioux Falls SD 57108

Dear Mr. Miller:

Enclosed is Water Permit No. 8555-3 authorizing construction of the water diversion system and beneficial use of the water, not exceeding the limits as specified in the Water Permit.

An application/license filing fee of \$1,900.00 was submitted with the application. The correct fee for this permit is \$1,350.00. \$550.00 will be refunded to you. The refund check should be received within the next couple of weeks.

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

Brett Peterson Hurley SD Sec 24 12" well - Formation Log

<i>Formation Log</i>	<i>From</i>	<i>To</i>
Top Soil	0	2
Yellow Clay	2	17
Sand	17	24
Gray Clay and Sand	24	57
Rock	57	58
Gray Clay	58	77
Fine Sand	77	79
Gray Clay	79	166
Rock	166	167
Sand w/ coal layers	167	213
Sand & coarse gravel w/ coal	213	290

Brett Petersen Sec 24 Hurley SD

Legend

Brett Peterson TH # 2W 280'

Brett Peterson 12" 289' well
BP TH # 1 W 300'

Section 24 Hurley SD

451st Ave

452nd Ave

283rd St

34

283rd St

34

283rd St

452nd Ave

Google Earth

3000 ft

