

WATER PERMIT NO. 8739-3

Name of Applicant: **Brook Bye**

Address: **31472 458th Ave, Vermillion SD 57069**

Phone: **605-670-9132**

Amount of Water Claimed: **1.67 cfs**

Total Acres: **80**

Source of Water Supply: **Groundwater**

Water to be used for: **Irrigation**

County: **Clay**

Type of Waste Disposal System:

Location: **Approximately 5 miles northwest of Vermillion**

PRIORITY

Date Received: **3-27-2023**

Application/License Fee: **\$950**

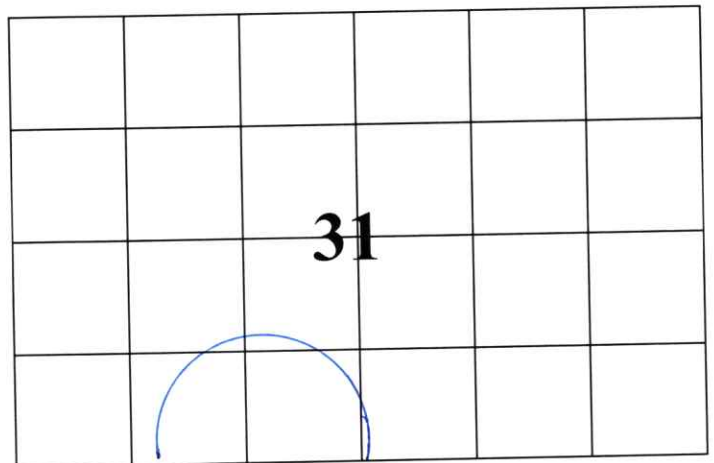
Corrected Application Received:

Period of Annual Use: **May 1 – Oct 30**

Remarks: **Requesting a div rate greater than statutory limit**

Diversion Point: **SE1/4 SW1/4 Sec 31 – T93N-
R52W**

Land to be Irrigated: **NW1/4 SW 1/4, SW1/4
SW1/4, SE1/4 SW1/4, NE1/4 SW 1/4, SW1/4
SE1/4; all in Sec 31 – T93N-R52W**



Depth of Well: **100**

Well Driller:

Remarks:

Type of Map: **aerial**

Reviewed and the Number Assigned on: **3-27-2023**

By: **Rachel Rodriguez**

Notice of Hearing - date to intervene: _____

**SOUTH DAKOTA
WATER PERMIT NO. 8739-3**

Date of first receipt of application March 27, 2023.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 8739-3 to Brook Bye, 31472 458th Avenue, Vermillion SD 57069 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. 8739-3 appropriates 1.67 cubic feet of water per second (cfs) from one well to be completed into the Missouri Elk Point Aquifer (approximately 100 feet deep) located in the SE1/4 SW1/4 Section 31 for irrigation of 80 acres located in the SW1/4, SW1/4 SE1/4 Section 31; all in T93N-R52W. This site is located approximately 5 miles northwest of Vermillion 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 – October 30.
3. The date from which applicant may claim right is March 27, 2023.
4. The date of approval of Permit No. 8739-3 is June 5, 2023.
5. One-fifth of the construction is to be completed on or before December 5, 2025.
6. All construction is to be completed on or before June 5, 2028.
7. Water is to be put to beneficial use on or before June 5, 2032.
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. 8739-3 is located near domestic wells and other wells which may obtain water from the same aquifer. Water withdrawals shall be controlled 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. 8739-3 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. 8739-3 authorizes a maximum diversion rate of 1.67 cfs for the irrigation of 80 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 Agriculture and Natural Resources

JUL 11 2023

date



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

PAID

MAR 27 2023

Ck# 1511

Rec't#

RECEIVED

MAR 27 2023

OFFICE OF
WATER

Mail to: SD DANR, Water Rights 523 E Capitol Ave Pierre, SD 57501-3182 ph. (605) 773-3352	No. <u>8739-3</u> Hydrologic Unit <u>10170102</u> Basin <u>Vermillion River</u> Newspaper <u>Plain Talk 624-2695</u> <u>Daily Press & Dakotan 665-7811</u> (office use only)
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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 Brook - Bye

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

Mailing Address 31472 458th Ave Vermillion SD 57069
(Address) (City) (State) (Zip Code)

Phone 605-624-6511 Mobile 605-670-9132 Email bbye152@icloud.com

2. Amount of water claimed 1.67*CFS or 750**GPM ***AF Total Acreage 80
(*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 water

4. Location of point of diversion 1 well in SE1/4SW1/4 S31 T93N R52W
(example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W)

County Clay

5. County or counties where water will be used Clay

6. Annual period during which water is to be used May 1 - Oct. 30

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
NW SW S31 T93N R52W	2	SWSE S31 T93N R52W	4
SW SW S31 T93N R52W	36		
SE SW S31 T93N R52W	36		
NE SW S31 T93N R52W	2		

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

1 well in SESW S31 T93N R52W to supply well to center pivot

Requesting div rate greater than statutory limit.

I, Brook Bye 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.

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 _____
(if yes, please provide copies of logs)
- b) If existing wells, how many 0 Provide copy of log(s), if available. Drilled by _____

For either existing or proposed wells:

- c) Well Depth (required) 100 Depth to Top of Water Bearing Material 70 Depth to Water from Surface 21
- d) Distance to nearest domestic well on applicant's property N/A Property owned by others N/A

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)

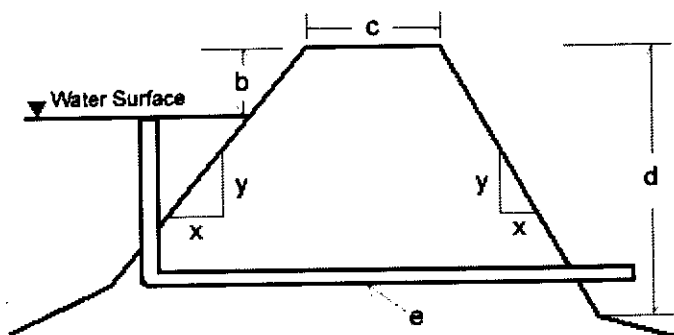
Upstream _____

Downstream _____

h) Area of Impoundment _____

i) Storage _____ Acre Feet

j) Drainage Area Above Dam _____ Acres





93N 53W
Section: 24

93N 52W
Section: 19

93N 52W
Section: 20

93N 52W
Section: 21

93N 53W
Section: 23

93N 53W
Section: 26

93N 53W
Section: 25

93N 52W
Section: 30

93N 52W
Section: 29

93N 52W
Section: 28

93N 53W
Section: 35

93N 53W
Section: 36

93N 52W
Section: 31

93N 52W
Section: 32

93N 52W
Section: 33

92N 53W
Section: 02

92N 53W
Section: 01

92N 52W
Section: 06

92N 52W
Section: 05

92N 52W
Section: 04

92N 53W
Section: 11

92N 53W
Section: 12

92N 52W
Section: 07

92N 52W
Section: 08

92N 52W
Section: 09



Field Name	Design Name	Machine Category	Machine Area (ac)	No. of Towers	Total Machine Length (ft)	Total Irrigated Area (ac)
Pivot_1_332023133820553	Brook Bye - South WW	Large Field Electrical Pivot 8000	67.03	8	1358.12	73.70

Total Project Irrigated Area (ac): 73.70

(Brook Bye - South WW)	Spans and Overhang	Corner	Endgun*	Bender / DropSpan	Polygon
Irrigated Area using (ac)	66.9	0	6.8	0	0.00

* Estimated

Total Span Length (ft) 1320.00				Overhang Length (ft) 36.00				Flex/Transition/Other Lengths (ft) 2.12			
S.No	Diameter	Length (ft)	Cable Size	Motor Options	Tire Size	Bender / DropSpan	Profile	Wheel Track (ft)			
1	6 5/8	180.00	12 ga cable / 11 cond shielded	34 RPM Baldor Helical	14.9 x 24 Non-Directional Tubeless	None	Standard	180.23			
2	6 5/8	180.00	12 ga cable / 11 cond shielded	34 RPM Baldor Helical	14.9 x 24 Non-Directional Tubeless	None	Standard	360.23			
3	6 5/8	160.00	12 ga cable / 11 cond shielded	34 RPM Baldor Helical	14.9 x 24 Non-Directional Tubeless	None	Standard	520.23			
4	6 5/8	160.00	12 ga cable / 11 cond shielded	34 RPM Baldor Helical	14.9 x 24 Non-Directional Tubeless	None	Standard	680.23			
5	6 5/8	160.00	12 ga cable / 11 cond shielded	34 RPM Baldor Helical	14.9 x 24 Non-Directional Tubeless	None	Standard	840.23			
6	6 5/8	160.00	12 ga cable / 11 cond shielded	34 RPM Baldor Helical	14.9 x 24 Non-Directional Tubeless	None	Standard	1000.23			
7	6 5/8	160.00	12 ga cable / 11 cond shielded	34 RPM Baldor Helical	14.9 x 24 Non-Directional Tubeless	None	Standard	1160.23			
8	6 5/8	160.00	12 ga cable / 11 cond shielded	34 RPM Baldor Helical	14.9 x 24 Non-Directional Tubeless	None	Standard	1319.97			

Primary Endgun

Endgun Angles (Brook Bye - South WW)	Endgun 1	Endgun 2
Start Angle	290.00 deg	53.00 deg
End Angle	13.00 deg	90.17 deg

Field Name	Latitude	Longitude	Pivot Road Angle	Pivot Road Offset	Start Angle	End Angle
Pivot_1_332023133820553	42.822814138263006	-97.037178578029	269.89 deg	-	269.89 deg	90.18 deg

RECEIPT

WATER RIGHTS PROGRAM South Dakota Department of Agriculture and Natural Resources

Date March 27, 2023

RECEIVED OF Brook/Shelly Bye 31472 458th Ave., Vermillion SD 57069

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

Fee for Application for Permit No. <u>8739-3</u> to Appropriate Water, to construct and to put water to beneficial use	\$ <u>750.00</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>8739-3</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>950.00</u>

By Eric Gronlund
Chief Engineer

me



**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. 8739-3, Brook Bye**

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. 8739-3, Brook Bye, 31472 458th Avenue, Vermillion SD 57069.

The Chief Engineer is recommending APPROVAL of Application No. 8739-3 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. 8739-3 is located near domestic wells and other wells which may obtain water from the same aquifer. Water withdrawals shall be controlled 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. 8739-3 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. 8739-3 authorizes a maximum diversion rate of 1.67 cfs for the irrigation of 80 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
May 12, 2023

Report to the Chief Engineer
On Water Permit Application No. 8739-3

Brook Bye

May 12, 2023

Water Permit Application No. 8739-3 proposes to divert water at a maximum instantaneous diversion rate of 1.67 cubic feet of water per second (cfs) from one well to be completed into the Missouri: Elk Point aquifer (approximately 100 feet deep) located in SE $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 31 for the irrigation of 80 acres located in the SW $\frac{1}{4}$, SW $\frac{1}{4}$ SE $\frac{1}{4}$, of Section 31; all in T93N-R52W. The applicant is requesting a diversion rate greater than the statutory limit of 1 cfs per 70 acres. The site of interest is located in Clay County approximately five miles northwest of Vermillion, SD.

AQUIFER: Missouri: Elk Point (M: EP)

HYDROGEOLOGY:

The Missouri: Elk Point aquifer is a glacial outwash deposit consisting of fine sand to very coarse gravel (Niehus, 1997). The Missouri: Elk Point aquifer underlies approximately 219,100 acres in Clay, Union, and Yankton Counties in South Dakota, and the aquifer contains approximately 3,287,100 acre-feet of recoverable water in storage (Hedges et al., 1982). The Missouri: Elk Point aquifer is hydrologically connected to the Big Sioux, Lower Vermillion-Missouri and Lower James-Missouri aquifers, and the Big Sioux, James, Missouri, and Vermillion Rivers (Niehus, 1994; Stephens, 1967).

The Missouri: Elk Point aquifer is generally under confined conditions in the northwestern part of the aquifer and unconfined conditions in the southern part of the aquifer, and the direction of groundwater movement in the aquifer is generally from the northwest to the southeast (Niehus, 1994 and 1997).

No water well or test hole completion report was submitted with Water Permit Application No. 8739-3. Water well completion reports on file with the DANR-Water Rights Program for wells completed into the Missouri: Elk Point aquifer within approximately one mile of the proposed diversion point have saturated aquifer thicknesses ranging from approximately 40 to 60 feet, with the depth to the top of aquifer materials ranging from approximately 15 to 25 feet below the ground surface, and static water levels at well completion varying from approximately 15 to 25 feet below the ground surface (Water Rights, 2023d). The Missouri: Elk Point aquifer is expected to be unconfined at the proposed diversion point based on the well completion reports on file for nearby wells completed into the aquifer (Water Rights, 2023d).

Figure 1 displays a map of the approximate Missouri: Elk Point aquifer boundary (modified from Hedges et al., 1982) and the location of the proposed diversion point for Water Permit Application No. 8739-3.

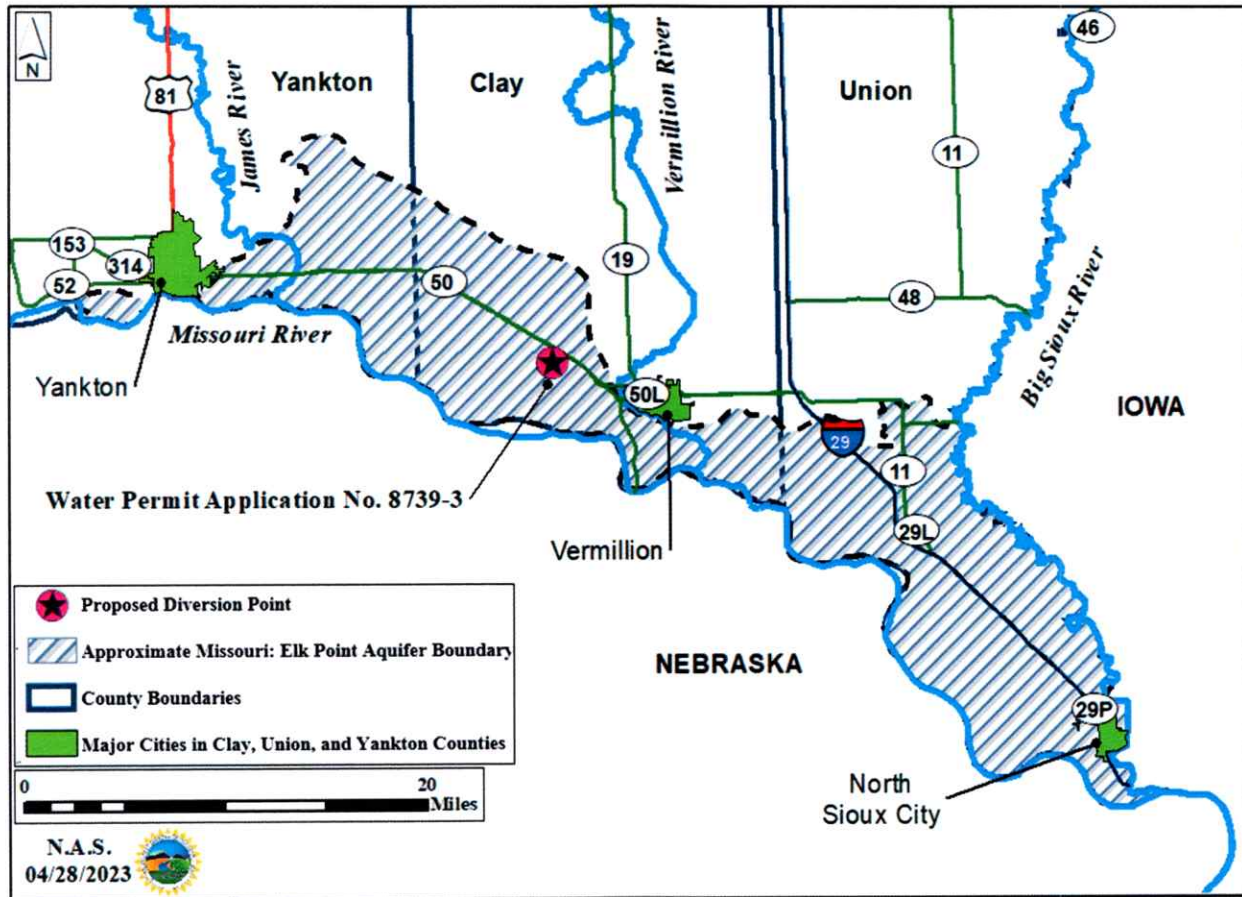


Figure 1. Map of the approximate Missouri: Elk Point aquifer boundary modified from Hedges and others (1982) with the location of the proposed diversion point for Water Permit Application No. 8739-3

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 Missouri: Elk Point aquifer.

WATER AVAILABILITY:

Water Permit Application No. 8739-3 proposes to appropriate water from the Missouri: Elk Point aquifer. 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. 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 Missouri: Elk Point 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 Missouri: Elk Point aquifer must be considered.

HYDROLOGIC BUDGET:

Recharge

Recharge to the Missouri: Elk Point aquifer is primarily through the infiltration of precipitation where the aquifer is at or near the ground surface, seepage from the Big Sioux, James, Missouri, and Vermillion Rivers, inflow from the Lower Vermillion-Missouri and Lower James-Missouri aquifers at the northern boundary of the Missouri aquifer and inflow from the Big Sioux aquifer at the extreme northeastern boundary of the Missouri aquifer, and from the underlying Dakota aquifer in Union County (Condley and Lamkey, 2022; Niehus, 1994 and 1997).

Several studies have been completed to estimate average annual recharge to the Missouri: Elk Point aquifer (Condley and Lamkey, 2022; Hedges et al., 1985; Mathiowetz, 2022; Stephens, 1967; Stonesifer, 2013). A discussion of these studies is available in the hydrologic budget section within the report for Water Permit Application No. 8614-3 - Lewis & Clark Regional Water System completed by Mathiowetz (2022). Collectively, the current estimated average annual recharge rate to the Missouri: Elk Point aquifer is approximately 114,593.9 acre-feet per year assuming full development of the existing water rights/permits held by Lewis & Clark Regional Water System (Mathiowetz, 2022).

Discharge

Discharge from the Missouri: Elk Point aquifer is primarily through well withdrawals, evapotranspiration where the aquifer is at or near the ground surface, outflow to the Big Sioux and Missouri Rivers during periods of low flow and stage, and leakage to the underlying Dakota aquifer (Niehus, 1994 and 1997; Water Rights, 2023c).

Currently, there are 647 water rights/permits authorized to appropriate water from the Missouri: Elk Point aquifer, plus one pending application – Water Permit Application No. 8727-3 proposing to irrigate 10 acres of turf at a golf course in Union County (Water Rights, 2023c). Additionally, there are five future use permits (Nos. 5832-3, 6237-3, 6869-3, 6869A-3, and 7208-3) reserving 1,900 acre-feet of water annually from the Missouri: Elk Point aquifer (Water Rights, 2023c). For the purpose of estimating average annual withdrawals, the future use permits are assumed to be fully developable for a total of 1,900 acre-feet per year.

Table 1 summarizes the 43 non-irrigation water rights/permits (including two irrigation water permits, see paragraph below) authorized to appropriate water from the Missouri: Elk Point aquifer with the estimated annual use for each water right/permit as determined by their limiting diversion rate or annual volume. Historically, average water use by non-irrigation appropriations

limited by an instantaneous diversion rate have been assumed to be pumping 60% of full time at the respective permitted diversion rate. Water rights/permits limited by an annual volume are assumed to withdraw their entire respective annual volume limitation. This is a standard method used by the DNR-Water Rights Program for estimating annual withdrawals by non-irrigation appropriations from an aquifer (Water Rights, 2023c). This method is likely an overestimation of withdrawals.

Water Permit No. 5998-3 is permitted for turf irrigation and Water Permit No. 5998A-3 extends the amount of time allowed for water to be put to beneficial use as authorized by Water Permit No. 5998-3 (Water Rights, 2023c). The estimated use for these two irrigation permits is included with the non-irrigation water rights/permits listed on Table 1, as the permit holder is not required to submit an annual irrigation questionnaire. However, Water Permit No. 5998-3 is authorized for use in a rural water system and the permit holder reports the annual use by Water Permit No. 5998-3 with their other rural water system Missouri: Elk Point aquifer permits, listed on Table 2 (Water Rights, 2023c).

Three municipal water rights were identified as being connected to a rural water system and likely maintain their wells for standby purposes (Drinking Water Program, 2023; Water Rights, 2023c); as such, the average annual water use for these water rights has been estimated to be zero acre-feet per year on Table 1.

Water Permit No. 7059-3 is permitted for recreational use for maintaining the water level of a small lake with a surface area of 17.6 acres (Water Rights, 2023c). It is assumed that the only consumptive use of this water is due to evaporation; however, it is likely there is some seepage through the bottom of the pond (Water Rights, 2023c). Annual evaporation of water from shallow lakes is estimated to be approximately 42 inches per year at the location of the authorized diversion point for Water Permit No. 7059-3 (NOAA, 1982; Water Rights, 2023c), and average annual total precipitation at the Sioux City, Iowa airport was determined to be approximately 29.27 inches over a 30-year period of record (1991 to 2020) (Arguez et al., 2020), which results in the lake to fluctuate approximately 12.73 inches per year. To maintain the water level of the small lake, the estimated use of Water Permit No. 7059-3 is approximately 18.7 acre-feet per year.

Overall, the average annual withdrawal rate for the 43 non-irrigation water rights/permits (including the two irrigation permits not required to submit an annual irrigation questionnaire) authorized to appropriate water from the Missouri: Elk Point aquifer is approximately 70,648 acre-feet per year (Table 1) (Water Rights, 2023c and 2023f).

Report on Water Permit Application No. 8739-3

Table 1. Estimated annual use for the non-irrigation water rights/permits (plus two irrigation water permits) authorized to divert water from the Missouri: Elk Point aquifer (Drinking Water Program, 2023; Water Rights, 2023c and 2023f)

Permit No.	Name	Status	Priority Date	Use	Authorized Diversion Rate (cfs)	Authorized Annual Volume (acre-feet/year)	Total Estimated Use (acre-feet/year)
4501-3	Eddie Wohl	LC	03/27/1980	COM	0.05		21.7
5616-3	Cimpls Inc	LC	01/31/1992	COM	0.44		191.2
5827-3	Don Lantis	LC	06/08/1994	COM	0.022		9.6
5953-3	H & K Oil Co	LC	08/19/1996	COM	0.037		16.1
6151-3	Vernon & Norma Vakoc	LC	10/04/1999	COM	0.67		291
6580-3	West Shores Acres LLC	LC	01/28/2005	COM	0.10		43.5
8031-3	Dakota Protein Conversion Inc	PE	06/18/2014	COM	0.22		95.6
8147-3	Doug Lafleur	PE	04/06/2015	COM, LCO	1.0	160	162
8381-3	RP Constructors	PE	11/19/2018	COM	0.04	1	1
8403-3	Stockmen's Livestock Inc	PE	06/27/2019	COM	2.0	40	40
8415-3	3 Sons Properties	PE	11/14/2019	COM	0.10	25	25
8435-3	Sioux City Insulation	PE	07/30/2012	COM	0.33	1	1
6744-3	Judith I Grant	PE	07/24/2006	DOM, COM	0.78		339.0
7388-3	Clay RWS Inc	PE	07/30/2012	DOM, IRR	2.0		346
5998-3	Clay RWS Inc	PE	04/21/1997	IRR, DOM	2.2		
5998A-3	Clay RWS Inc	PE	04/21/1997	IRR, DOM	0.0		
5490-3	USGS CERC Field Research Station	LC	11/15/1990	FWP	0.09		39.1
5907-3	US Fish and Wildlife Service	LC	01/26/1996	FWP	3.78		1,642
6733-3	US Fish and Wildlife Service	LC	06/07/2006	FWP	1.11		482.5
7094-3	US Fish and Wildlife Service	LC	12/01/2008	FWP	2.67		1,159.8
5021-3	Vishay-Dale Electronics Inc	LC	05/04/1984	IND	0.10		43.5
5388-3	LG Everist Inc	LC	01/30/1990	IND	0.45		195.6
5453-3	AaLadin Industries Inc	LC	05/24/1990	IND	0.05		21.7
5593-3	Vishay-Dale Electronics Inc	LC	10/31/1991	IND	0.056		24.3
6170-3	Knife River	LC	01/03/2000	IND	0.222		96.5
1255-3	City of Elk Point	LC	01/01/1914	MUN	1.13		491.1
143-3	City of Vermillion	LC	01/21/1956	MUN	1.78		773.7
147-3	City of Vermillion	LC	01/01/1935	MUN	2.66		1,237
6236-3	City of Vermillion	LC	11/06/2000	MUN	2.6	1,161	
6354-3	City of Vermillion	LC	08/12/2002	MUN	0.022		10
1965-3	Town of Gayville	LC	01/01/1914	MUN	0.37		0*
4207-3	Town of Jefferson	LC	01/01/1916	MUN	0.90		391
5118-3	Town of Gayville	LC	01/28/1987	MUN	0.33		0*
5437-3	Dakota Dunes Community Improvement District	LC	04/12/1990	MUN	3.33		2,412
5782-3	City of North Sioux City	LC	08/12/1993	MUN	1.14		495.5
8212-3	City of Yankton	LC	03/25/2016	MUN	20.12	6,050	6,050
7059-3	WE Investments LLC	PE	08/28/2008	REC	3.11		18.7
6736-3	Lewis and Clark RWS	PE	07/08/1994	RWS	27.85	20,165	53,442
7207-3	Lewis and Clark RWS	PE	07/08/1994	RWS	20	12,000	
8613-3	Lewis and Clark RWS	PE	07/16/2007	WDS	29.8	13,000	
8614-3	Lewis and Clark RWS	PE	03/04/2022	RWS	77.61	8,277	
5581-3	Larson's Landing	LC	07/30/1991	SHD	0.089		38.7
5592-3	East Winds Court Inc	LC	10/09/1991	SHD	0.11		0*
						TOTAL:	70,648
*Identified as being connected to a RWS; therefore, water use from aquifer is presumed to be zero acre-feet/year							
COM: Commerical; DOM: Domestic; FWP: Fish and Wildlife Propagation; IND: Industrial; IRR: Irrigation; LCO: Livestock Confinement Operation; MUN: Municipal; REC: Recreation; RWS: Rural Water System; SHD: Suburban Housing Development							

Of the 43 non-irrigation water rights/permits (including the two irrigation permits not required to submit an annual irrigation questionnaire), there are 16 non-irrigation water rights/permits that are required to report their annual usage from the Missouri: Elk Point aquifer (Water Rights, 2023c and 2023f).

Four of the non-irrigation water rights/permits that are required to report (Nos. 8031-3, 8415-3, 8435-3, and 8614-3) are currently under development (or were approved in 2023) and have not reported any withdrawals from the Missouri: Elk Point aquifer to the DANR-Water Rights Program (Water Rights, 2023c). The remaining twelve non-irrigation water rights/permits that are required to report their annual usage from the Missouri: Elk Point aquifer are shown on Table 2 (Water Rights, 2023c and 2023f). The reported usage (as shown on Table 2) for Permit Nos. 8381-3 and 8403-3 (approved in 2018 and 2019) is not necessarily reflective of the future usage of these permits based on information within their respective water permit files (Water Rights, 2023c), and only three years of reported withdrawals (Water Rights, 2023f). Therefore, the estimated use for Permit Nos. 8031-3, 8415-3, 8435-3, 8381-3, and 8403-3 will be based on the method used above: water rights/permits limited by an instantaneous diversion rate have been assumed to be pumping 60% of full time at the respective permitted diversion rate; water rights/permits limited by an annual volume are assumed to withdraw their entire respective annual volume limitation. The estimated average annual withdrawal rate for these permits is listed on Table 1.

Next, the reported use for the City of Yankton (8212-3) and Lewis and Clark Regional Water System (6736-3, 7207-3, and 8613-3) (as shown on Table 2) is steadily increasing (Water Rights, 2023f), as these water users are continually undergoing development (8614-3 was approved in 2023) (Water Rights, 2023c). It is likely these water users will use up to their entire respective annual volume limitation in the future; therefore, the average annual withdrawal rate for these water rights/permits is assumed to be their entire respective annual volume listed on Table 1 (Water Rights, 2023c).

The annual withdrawal rate for Clay Rural Water System Inc (Permit Nos. 5998-3, 5998A-3, and 7388-3) averaged over the last ten years (approximately 346 acre-feet per year) is more reflective of current usage than the entire period of record of reported withdrawals because the first few years the permit holder reported values were during a construction period (Water Rights, 2023c and 2023f). The average annual withdrawal rate based off the reported annual withdrawal rates averaged from 2012 to 2021 on Table 2 for these water permits will be used in this analysis.

Lastly, the annual withdrawal rates for Doug Lafleur (8147-3) and City of Vermillion (147-3, 6236-3) on Table 2 are relatively steady over their respective periods of record (Water Rights, 2023c and 2023f); therefore, the average annual withdrawal rate based on the reported values from each of these water users (as shown on Table 2) is reasonably reflective of the future withdrawals likely to be made by these appropriative users. The average annual withdrawal rate based off the reported annual withdrawal rates averaged over the period of record on Table 2 for these water rights/permits will be used in this analysis.

Table 2. Non-irrigation water rights/permits required to report their respective annual use from the Missouri: Elk Point aquifer (Water Rights, 2023c and 2023f)

	RP Constructors	Stockmen's Livestock Inc	Clay RWS Inc	Doug Lafleur	City of Vermillion	City of Yankton	Lewis and Clark RWS
	8381-3	8403-3	5998-3, 5998A-3, 7388-3	8147-3	147-3, 6236-3	8212-3	6736-3, 7207-3, 8613-3
2003			238		1,363		
2004			483		1,226		
2005			21		1,247		
2006			170		1,252		
2007			217		1,344		0
2008			213		1,199		0
2009			215		1,140		0
2010			183		1,071		0
2011			137		1,127		92
2012			525		1,317		3,836
2013			301		1,183		9,368
2014			307		1,121		11,532
2015			278	202	1,161		15,591
2016			231	202	1,175	66	17,091
2017			276	202	1,215	531	18,051
2018			305	98	1,168	504	18,143
2019	0.0171	1	292	135	1,440	1,370	20,397
2020	0.0224	4.2	461	121	1,373	2,923	21,039
2021	0.2332	5.5	486	170	1,378	3,065	23,537
Max	0.2	5.5	525	202	1,440	3,065	23,537
Min	0.0171	1	21	98	1,071	66	0
Avg	0.091	3.57	281	162	1,237	1,410	14,425*

RWS: Rural Water System *Excluded reported zero values

Currently, there are 606 irrigation water rights/permits authorized to appropriate water from the Missouri: Elk Point aquifer, plus one pending permit application proposing to irrigate 10 acres of turf (Water Rights, 2023c). Irrigation water rights/permits have been typically required to report their annual usage on an irrigation questionnaire since 1979. The estimated average annual withdrawal rate for the Missouri: Elk Point aquifer irrigation water rights/permits that have reported over the period of record is approximately 18,703 acre-feet per year (Table 3) (Water Rights, 2023a). To reflect the current development of irrigation water rights/permits more accurately, the average annual withdrawal rate for irrigation appropriations that have reported from 2012 to 2021 is approximately 27,247 acre-feet per year (Table 3) (Water Rights, 2023a).

The usage for two irrigation water permits (Nos. 5998-3 and 5998A-3) was accounted for on Table 1 with the non-irrigation water rights/permits, as the permit holder is not required to submit an annual irrigation questionnaire (Water Rights, 2023c), resulting in only 604 of the Missouri: Elk Point aquifer irrigation water rights/permits being currently required to submit an annual irrigation questionnaire (Water Rights, 2023c).

Additionally, Water Right No. 6110-3 is authorized to divert water from a well completed into the Dakota aquifer and pump the water into two ponds that receive incidental surface runoff and

possible groundwater inflow from the Missouri: Elk Point aquifer (Water Rights, 2023c). Water Right No. 6110-3 is included in the 606 irrigation water rights/permits authorized to appropriate water from the Missouri: Elk Point aquifer; however, the estimated use for this permit is assumed to be negligible to the overall hydrologic budget due to the minimal amount of water from the Missouri: Elk Point aquifer the permit holder is expected to withdraw. When omitting Water Right No. 6110-3 and Water Permit Nos. 5998-3 and 5998A-3 from this analysis of Missouri: Elk Point aquifer irrigation water rights/permits, 603 water rights/permits remain.

Table 3 lists only 572 water rights/permits as reporting in 2021 (Water Rights, 2023a and 2023c). These 572 water rights/permits listed as reporting in 2021 includes eight water rights/permits (Nos. 3722-3, 5658A-3, 6940-3, 6941-3, 7066-3, 7447-3, 7663-3, 7800-3, and 7941-3) that were incorporated into another water right or cancelled in 2022 (Water Rights, 2023c), resulting in only 563 of the water rights/permits listed as reporting in 2021 being currently active.

Forty water permits/rights did not submit an irrigation questionnaire form in 2021 that are currently active, accounting for the difference between the 563 currently active water rights/permits listed as reporting in 2021 and the 603 irrigation water rights/permits currently required to submit an annual irrigation questionnaire and annual use being estimated in this analysis (Water Rights, 2023a and 2023c). Of these 40 permits, 37 were issued in 2021, 2022, or 2023 and have not submitted an irrigation questionnaire at this time. Of the remaining three water rights (Nos. 3154-3, 4745-3, and 5935-3), Water Right No. 5935-3 is not required to submit an irrigation questionnaire and Water Right Nos. 3154-3 and 4745-3 did not submit an irrigation questionnaire in 2021 for an unknown reason. Overall, these 37 water permits/rights are authorized to irrigate approximately 3,110 acres (Water Rights, 2023c).

Table 3. Reported historic irrigation use from Missouri: Elk Point aquifer (Water Rights, 2023a)

Year	No. of Permits Reporting	Reported Pumpage (acre-feet)
1979	259	10,258
1980	263	14,937
1981	297	13,931
1982	269	19,143.1
1983	273	11,081
1984	281	9,605.5
1985	282	14,020.7
1986	286	6,324.8
1987	281	13,369
1988	282	28,558.1
1989	292	25,904.3
1990	297	19,508
1991	300	18,877.7
1992	295	1,895
1993	298	1,475.2
1994	295	10,314.9
1995	292	18,761.3
1996	296	9,473.6
1997	305	17,236
1998	313	11,079.5
1999	308	14,877
2000	309	26,551
2001	313	19,115.2
2002	315	23,326.9
2003	314	27,007
2004	322	24,309
2005	335	24,206.1
2006	353	27,943.3
2007	366	30,652
2008	396	16,439
2009	410	6,346
2010	419	2,906.9
2011	431	12,330
2012	445	56,994.7
2013	543	35,090.5
2014	557	12,423.5
2015	563	17,884.1
2016	564	27,869.3
2017	567	37,209.9
2018	570	9,160.7
2019	575	8,736.3
2020	570	26,601
2021	572	40,503.4
Min	259	1,475.2
Max	575	56,994.7
Avg (1979 to 2021)	369	18,703
Avg (2012 to 2021)	553	27,247

Farmer (2018a, 2018b, and 2021) analyzed the amount of water pumped per permitted acre for the period from 1979 to 2005. This period was chosen due to the relatively stable number of permitted acres across the entire period. There was a continual annual increase in the number of permitted acres from 2006 to 2013/2014. Since 2013/2014 the total number of permitted acres has been relatively stable (Mathiowetz, 2022; Water Rights, 2023c). Farmer (2021) determined that it would be best to separate the review of pumpage per permitted acres between crops, such as corn and soybeans, and turf, such as golf courses and lawn irrigation, to describe the pumpage more accurately per permitted acres. Turf irrigation typically requires more water per acre annual than crop irrigation. Mathiowetz (2022) determined over the entire period of record (1979 through 2021), the crop application rate per permitted acre is 0.331 feet per year (3.97 inches per year), and 0.908 feet per year for turf (10.9 inches per year) (Water Rights, 2023a and 2023c).

Currently, there are approximately 83,049.6 acres authorized to be irrigated from the Missouri: Elk Point aquifer (plus pending Water Permit Application No. 8727-3 proposing to irrigate 10 acres of turf), with 809.6 of those acres authorized for turf irrigation (Water Rights, 2023c). Table 4 contains the turf irrigation permits with their respective authorized permitted acres and an estimated average annual use based on Mathiowetz's (2022) application rate per permitted acre (Water Rights, 2023c). By multiplying the application rate of 0.908 feet per acre per year (Mathiowetz, 2022) by the 809.6 acres being turf irrigated (plus 10 acres for pending permit application) (Water Rights, 2023c), the annual use for turf irrigation yields approximately 744.2 acre-feet per year (Table 4). By multiplying the application rate of 0.331 feet per acre per year (Mathiowetz, 2022) by the 82,240 acres (total acres minus turf irrigated acres, including pending Water Permit App No. 8727-3) being crop irrigated (Water Rights, 2023c), the annual use for crop irrigation yields approximately 27,221.4 acre-feet per year. Collectively, the average annual use from the Missouri: Elk Point aquifer for both crop and turf irrigation water rights/permits utilizing Mathiowetz's (2022) application rates is approximately 27,965.64 acre-feet per year.

Table 4. Water rights/permits authorized for irrigation of turf (Water Rights, 2023c)

Permit No.	Name	Status	County	Acres	Total Estimated Use (acre-feet/year)
1294-3	Recreation Development Assn. Inc.	LC	Union	102	92.6
2011-3	TR Golf LLC	LC	Union	95	86.3
5786-3	Dakota Dunes Golf Course	LC	Union	173	157.1
5998-3	Clay Rural Water System Inc	PE	Union	300	272.4
5998A-3	Clay Rural Water System Inc	PE	Union	0	0
5935-3	Ted Waitt	LC	Union	1	0.908
5936-3	Applied Engineering	LC	Yankton	1.8	1.6
8010-3	Ryan Rusher	LC	Yankton	2.5	2.3
8029-3	Dakota Dunes Comm Improvement District	PE	Union	17.8	16.2
8040-3	Heine Electric & Irrigation Inc	LC	Clay	1	0.908
8354-3	TR Golf LLC	PE	Union	30	27.24
8407-3	Gayville-Volin School District 63-1	LC	Yankton	4.5	4.1
8530-3	National Field Archery Association Foundation	LC	Yankton	16	14.5
8560-3	TR Golf LLC	PE	Union	65	59
TOTAL:				809.6	735.1

There are domestic wells completed into the Missouri: Elk Point aquifer that do not require a water right/permit, so the withdrawal amount from those wells is unknown (Water Rights, 2023d). Due to their relatively low diversion rates, withdrawals from domestic wells are not considered to be a significant portion of the hydrologic budget. Additionally, with the development of rural water systems in areas where the Missouri: Elk Point 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 Missouri: Elk Point aquifer.

Hydrologic Budget Summary

The average annual recharge rate to the Missouri: Elk Point aquifer is approximately 114,593.9 acre-feet per year. The average annual withdrawal rate for the water rights/permits authorized to appropriate water from the Missouri: Elk Point aquifer totals approximately 100,540 acre-feet per year (including the estimated use for Water Permit Application No. 8739-3, if approved) (listed on Table 5). Based on the hydrologic budget, there is a reasonable probability unappropriated water is available from the Missouri: Elk Point aquifer for the proposed appropriation.

Table 5. Estimated use from Missouri: Elk Point aquifer (Water Rights, 2023a, 2023c, and 2023f)

Type of Water Right/Permit	Estimated Use (acre-feet/year)
Future Use Reservations	1,900
Non-Irrigation	70,648
Irrigation (Mathiowetz's (2022) turf and crop application rates) including pending application: No. 8727-3	27,966
Application No. 8739-3 (if approved, assuming Mathiowetz's (2022) crop application rate of 0.331 per acre)	26
TOTAL:	100,540

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.

Observation wells provide data on how the aquifer reacts to regional climatic conditions and local pumping. The DANR-Water Rights Program monitors 36 observation wells completed into the Missouri: Elk Point aquifer (Water Rights, 2023b). The four closest observation wells to the proposed diversion point are CL-80B (approximately 3.9 miles southwest), CL-80A

(approximately four miles northwest), YA-80KA (approximately 7.5 miles west), and CL-80C (approximately 7.6 miles southeast) (Water Rights, 2023b). The hydrographs for these observation wells are displayed in Figures 2 to 5 (Water Rights, 2023b). The data points utilized to construct the hydrographs are measurements of the static water level in the observation wells from the top of the well casing. It is worth noting the hydrograph titles display DENR Water Rights Observation Well on the hydrographs when the titles should display DANR Water Rights Observation Well on the hydrographs.

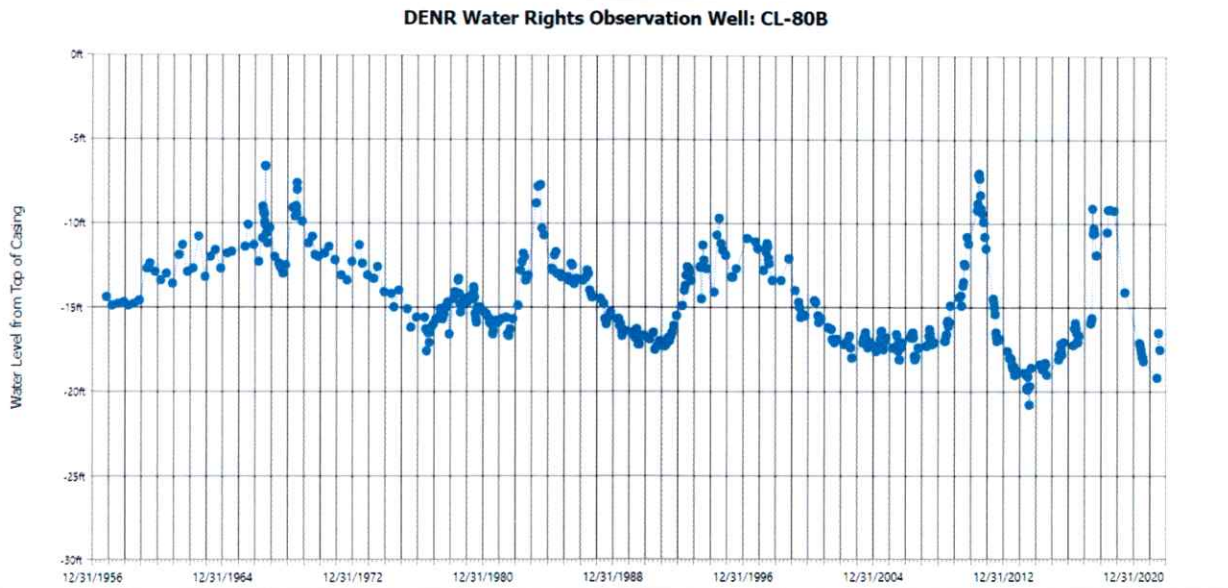


Figure 2. Hydrograph for observation well CL-80B (Water Rights, 2023b)

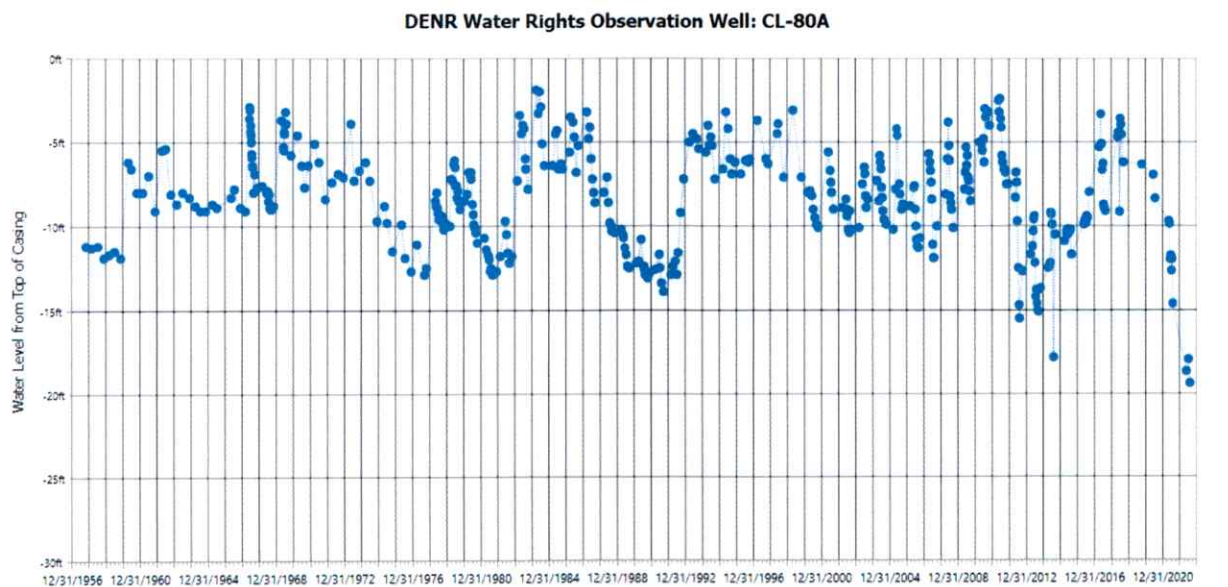


Figure 3. Hydrograph for observation well CL-80A (Water Rights, 2023b)

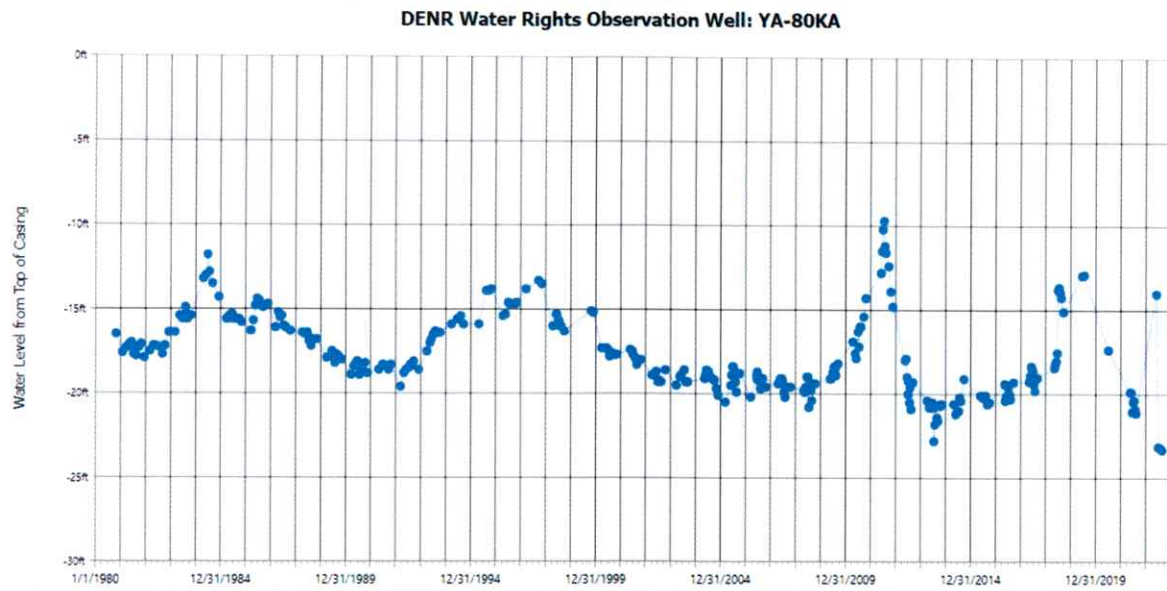


Figure 4. Hydrograph for observation well YA-80KA (Water Rights, 2023b)

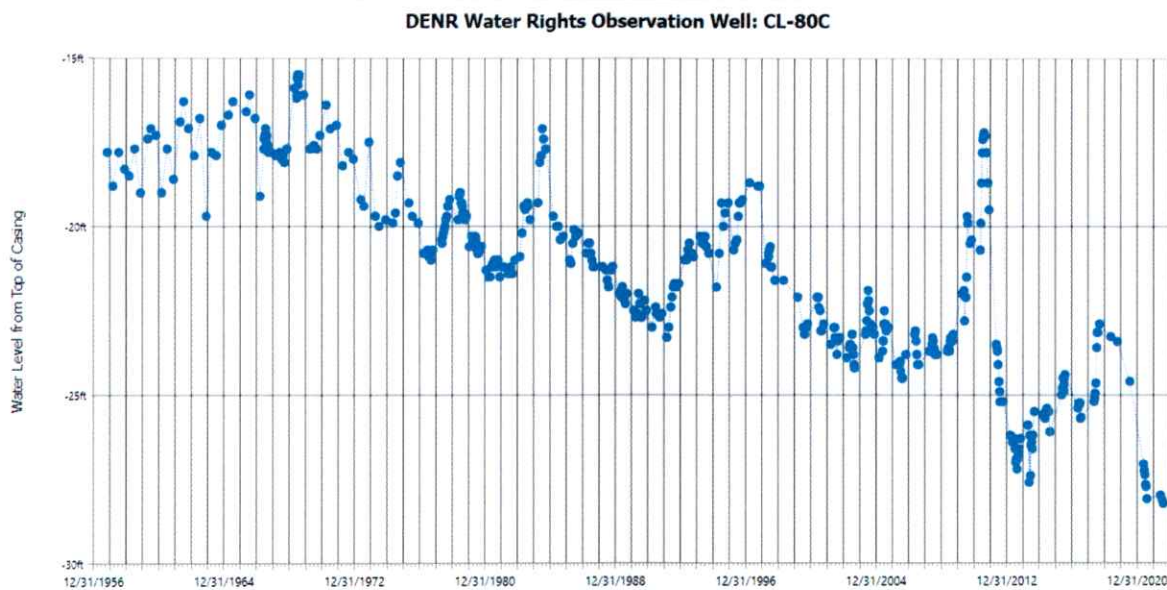


Figure 5. Hydrograph for observation well CL-80C (Water Rights, 2023b)

The hydrographs for these observation wells were compared to hydrographs for other observations wells completed into the Missouri: Elk Point aquifer and each displayed a generally similar trend as shown on the hydrographs displayed in Figures 2 to 5 (Water Rights, 2023b). Several of the Missouri: Elk Point aquifer observation well hydrographs show a gradual long-term downward trend especially those close to the Missouri River, specifically on the hydrograph for observation well CL-80C (Water Rights, 2023b). This downward trend is caused by entrenchment of the Missouri River riverbed and in some places a widening of the channel leading to lower water levels despite the river having the same rate of flow (Elliott and Jacobson, 2022). The lowering of the water level in the Missouri River downstream of the Gavin's Point

Dam and the subsequent lowering of the water level of Missouri: Elk Point aquifer observation wells in close proximity to the river show the strong hydrologic connection between the Missouri River and the Missouri: Elk Point aquifer. This is demonstrated by the very similar water levels between the aquifer and river as shown in the hydrographs in Figures 2 to 6. The lowering of the water levels in the aquifer, especially in close proximity to the Missouri River, is not a sign of over appropriation of the Missouri: Elk Point aquifer.

To demonstrate the connection between the aquifer and the Missouri River, consider the United States Geological Survey (USGS) Stream Gage #06467500, located on the Missouri River at Yankton, SD, and the hydrograph for this gage is shown in Figure 6 (USGS, 2023). By comparing the hydrograph for Stream Gage #06467500 to the observation well hydrographs of the Missouri: Elk Point aquifer (Figures 2 to 5), both show the river and aquifer react to climatic conditions by rising and falling over similar trends (USGS, 2023; Water Rights, 2023b). Additionally, during flood events (such as, the years 2011 and 2019), the water level in the Missouri: Elk Point aquifer, especially where in closer proximity to the Missouri River, rises very quickly beyond what is typically seen for glacial outwash aquifers (Water Rights, 2023b). This indicates there is a hydrologic connection between the Missouri: Elk Point aquifer and the Missouri River. Therefore, when the elevation of the water in the Missouri River is higher than the elevation of water in the aquifer, the river will recharge the aquifer. In contrast, when the elevation of water is higher in the Missouri: Elk Point aquifer, the aquifer naturally discharges to the Missouri River. The observation well water levels simply show the connection between the river and the aquifer and how the aquifer reacts to climatic conditions without showing any long-term effects from pumping. Therefore, there is a reasonable probability unappropriated water is available for this proposed appropriation.

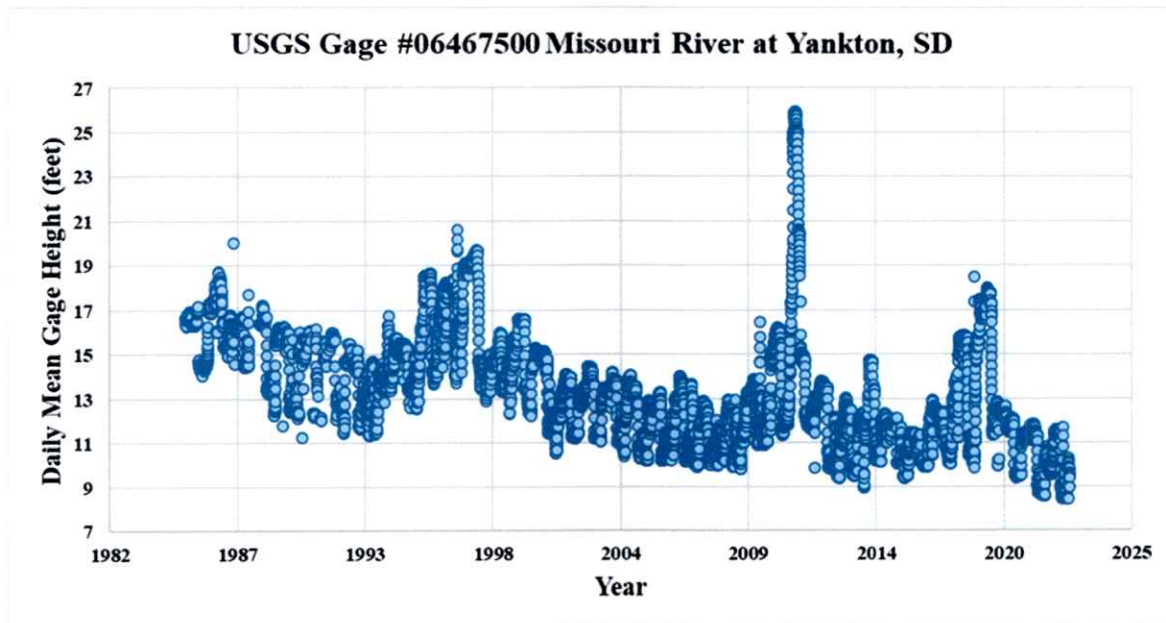


Figure 6. Hydrograph for USGS Stream Gage #06467500 Missouri River at Yankton, SD from 1985 to 2023 (USGS, 2023)

POTENTIAL FOR UNLAWFUL IMPAIRMENT OF EXISTING WATER RIGHTS:

Currently, there are 647 water rights/permits authorized to appropriate water from the Missouri: Elk Point aquifer, plus one pending permit application (Water Rights, 2023c). The closest water right/permit to the proposed diversion point are Water Right No. 7464-3 and Water Permit No. 8716-3, held by D A Olson & Sons and Bob Macy, respectively (Water Rights, 2023c). The diversion points for Water Right No. 7464-3 and Water Permit No. 8716-3 are located approximately 0.9 miles northwest and southeast of the proposed diversion point for this application (Figure 7) (Table 6) (Water Rights, 2023c).

There are domestic wells on file with the DANR-Water Rights Program that are completed into the Missouri: Elk Point aquifer, with the closest domestic well on file (not held by the applicant) approximately two miles southeast of the proposed diversion point (Water Rights, 2023d). There could potentially be other domestic wells completed into the Missouri: Elk Point aquifer near the proposed diversion point that are not on file with the DANR-Water Rights Program. The location of the domestic wells is based on the location provided at the time of completion by the well driller.

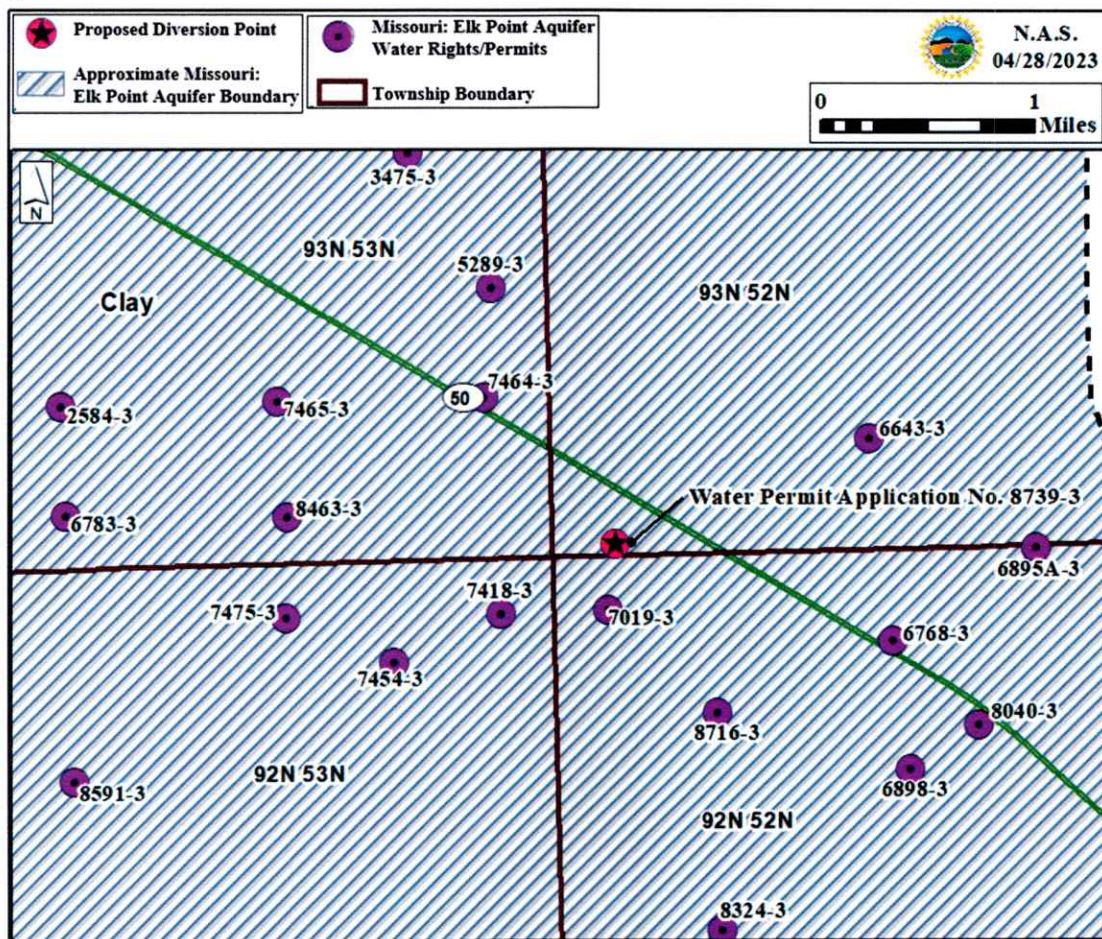


Figure 7. Map of the approximate Missouri: Elk Point aquifer boundary (modified from Hedges and others (1982)), with the location of the proposed diversion point for Water Permit Application No. 8739-3, and the Missouri: Elk Point aquifer water rights/permits within approximately two miles of the proposed diversion point (Water Rights, 2023c)

Table 6. Water rights/permits authorized to withdraw water from the Missouri: Elk Point aquifer within approximately two miles of the proposed diversion point, as shown in Figure 7 (Water Rights, 2023c)

Permit No.	Name	Status	Use	Authorized Acres if IRR	Authorized Diversion Rate (cfs)
2584-3	Freeburg Limited Partnership	LC	IRR	262	3.74
3475-3	D A Olson & Sons	LC	IRR	72	1.03
5289-3	D A Olson & Sons	LC	IRR	116	1.66
6643-3	Freeburg Limited Partnership	LC	IRR	555	4.68
6768-3	Freeburg Limited Partnership	LC	IRR	194.5	2.67
6783-3	D A Olson & Sons	LC	IRR	132	1.78
6895A-3	Freeburg Limited Partnership	LC	IRR	132	1.56
6898-3	Bottolfson Brothers	LC	IRR	344	1.72
7019-3	Brook Bye	LC	IRR	132	1.56
7418-3	Brook Bye	LC	IRR	105	1.5
7454-3	Brook Bye	LC	IRR	156	1.78
7464-3	D A Olson & Sons	LC	IRR	78	1
7465-3	D A Olson & Sons	LC	IRR	133	1.78
7475-3	Brook Bye	LC	IRR	131	1.67
8040-3	Heine Electric & Irrigation Inc	LC	IRR, COM	1	0.33
8324-3	John Freeburg	LC	IRR	162	1.55
8463-3	Brook Bye	PE	IRR	120	1.78
8591-3	Olson & Sons LLC	PE	IRR	80	1.56
8716-3	Bob Macy	PE	IRR	160	1.78

LC: Licensed Water Right; PE: Water Permit; COM: Commercial; IRR: Irrigation

The Missouri: Elk Point aquifer ranges from confined to unconfined aquifer conditions, but is primarily under unconfined conditions (Niehus, 1994 and 1997). Based on the well completion reports for the existing wells within approximately one mile the proposed diversion point, the Missouri: Elk Point aquifer is expected to be unconfined at the proposed diversion point (Water Rights, 2023d). 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 diversion point. The exact drawdown behavior of a well cannot be known without an aquifer performance test. Examination of the hydrographs for observation wells completed into the Missouri: Elk Point aquifer show no signs of being significantly impacted by drawdown caused by pumping, despite usually being located within a mile of several high-yield wells (assumed to be a well with an authorized diversion rate greater than 0.2 cfs) (Water Rights, 2023b and 2023c).

Near the proposed diversion point, the Missouri: Elk Point aquifer has a saturated thickness of approximately 40 to 60 feet (Water Rights, 2023d). This would generally 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 for this application is not expected to unlawfully impair nearby adequate wells. In Clay, Union, and Yankton Counties, there are no substantiated complaints on file with the DNR-Water Rights Program regarding well interference for adequate wells completed into the Missouri: Elk Point aquifer (Water Rights, 2023e).

When considering the saturated thickness of the Missouri: Elk Point aquifer near the proposed diversion point, the generally unconfined nature of the aquifer, and the lack of well interference complaints for adequate wells completed into the Missouri: Elk Point 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.

SDCL 46-5-6:

Pursuant to SDCL 46-5-6, the diversion rate for an irrigation appropriation cannot be in excess of 1.0 cfs per 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...”

If approved, Water Permit Application No. 8739-3 would authorize a maximum instantaneous diversion rate of 1.67 cfs from one well for the irrigation of 80 acres, from May through October, or at a rate of 1.46 cfs per 70 acres. The applicant did not provide a reason for the exceedance, but it appears to be due to a combination of the center pivot size and type of soils being irrigated. The pivot is smaller than a normal, quarter-sized pivot; however, smaller pivots often use a proportionally greater diversion rate to operate properly than their size would indicate is needed. Furthermore, the pivot is only making a partial rotation. A center pivot making a partial rotation uses water at the same rate as a center pivot making a full rotation while irrigating less acres. In addition, the sprinkler nozzle size on the pivot may be larger to effectively apply water to the soils in the area which are sandy (Malo and Ward, 1997) and require a greater application rate due to the high porosity/infiltration rate. These types of reasons fall within SDCL 46-5-6 which allows the Water Management Board to allow a greater diversion rate.

CONCLUSIONS:

1. Water Permit Application No. 8739-3 proposes to divert water at a maximum instantaneous diversion rate of 1.67 cfs from one well to be completed into the Missouri: Elk Point aquifer (approximately 100 feet deep) for the irrigation of 80 acres. The site of interest is located in Clay County approximately five miles northwest of Vermillion, SD.
2. Based on observation well data and the hydrologic budget, there is a reasonable probability that unappropriated water is available from the Missouri: Elk Point aquifer to supply the proposed appropriation.

3. There is a reasonable probability that the proposed diversion by Water Permit Application No. 8739-3 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 cfs per 70 acres likely due to the sprinkler nozzle size, the size and partial rotation orientation of the center pivot, and the sandy soils near the proposed diversion point. These types of reasons fall within SDCL 46-5-6 which allows the Water Management Board to allow a greater diversion rate.

Nakaila Steen

Nakaila Steen
Natural Resources Engineer II
SD DANR - Water Rights Program

Reviewed by:

Adam Mathiowetz

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

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**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.**

May 15, 2023

Brook Bye
31472 458th Ave
Vermillion SD 57069

Dear Mr. Bye:

Water Permit Application No. 8739-3 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 Plain Talk printed at Vermillion SD (Ph # 605 624-2695) and the Daily Press & Dakotan printed at Yankton SD (Ph # 605 665-7811). 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,

Rachel Rodriguez

Rachel Rodriguez
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.

NOTICE OF APPLICATION NO. 8739-3 to Appropriate Water

Notice is given that Brook Bye, 31472 458th Avenue, Vermillion SD 57069 has filed an application for a water permit to appropriate 1.67 cubic feet of water per second (cfs) from one well to be completed into the Missouri Elk Point Aquifer (approximately 100 feet deep) located in the SE1/4 SW1/4 Section 31 for irrigation of 80 acres located in the SW1/4, SW1/4 SE1/4 Section 31; all in T93N-R52W. The applicant is requesting a diversion rate greater than the statutory limit of 1 cfs per 70 acres. This site is located approximately 5 miles northwest of Vermillion SD.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 8739-3 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. 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 June 5, 2023.

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 June 5, 2023.

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Published once at the total approximate cost of_

From: Rodriguez, Rachel
Sent: Friday, May 12, 2023 1:47 PM
To: Kelly Kronaizl
Subject: 8739-3 Brook Bye - Public Notice
Attachments: FORM8.FRM.doc; 8739-3 public.short_final.docx

Attached is a notice to be published on May 26, 2023.

Brook Bye, 31472 458th Avenue, Vermillion SD 57069, (605-670-9132) 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.

Thank you,

Rachel Rodriguez
DANR | Program Assistant
Rachel.Rodriguez@state.sd.us



Rodriguez, Rachel

From: Rodriguez, Rachel
Sent: Friday, May 12, 2023 1:49 PM
To: Kelly Kronaizl
Subject: 8739-3 Brook Bye - Public Notice
Attachments: FORM8.FRM.doc; 8739-3 public.short_final.docx

Attached is a notice to be published on May 26, 2023 in the Yankton Daily Press & Dakotan.

Brook Bye, 31472 458th Avenue, Vermillion SD 57069, (605-670-9132) has been notified to contact you to authorize publication and arrange for payment.

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

Thank you,

Rachel Rodriguez
DANR | Program Assistant
Rachel.Rodriguez@state.sd.us



AFFIDAVIT OF PUBLICATION

YANKTON DAILY PRESS AND DAKOTAN

RECEIVED

JUN 01 2023

OFFICE OF
WATER

BROOK BYE
31472 458TH AVE
VERMILLION SD 57069

STATE OF SOUTH DAKOTA
COUNTY OF YANKTON

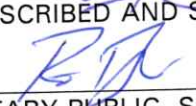
KELLY HERTZ, BEING FIRST DULY SWORN ON OATH DEPOSES
AND SAYS THAT (S)HE IS THE MANAGING EDITOR OF YANKTON
MEDIA INC, A CORPORATION, THE PRINTER AND THE PUBLISHER OF THE
YANKTON DAILY PRESS AND DAKOTAN, A LEGAL DAILY NEWSPAPER
PUBLISHED AND CIRCULATED IN THE CITY OF YANKTON, SAID COUNTY
AND STATE, AND ONE OF THE OFFICIAL NEWSPAPERS OF THE SAID
COUNTY OF FACTS STATED IN THIS AFFIDAVIT; THAT THE ANNEXED
NOTICE OF APPLICATION NO.

TAKEN FROM THE PAPER, IN WHICH IT WAS LAST PUBLISHED IN THE
NEWSPAPER ON THE 26th DAY OF May, 2023
THAT THE FULL AMOUNT OF THE FEE CHARGED FOR THE PUBLICATION
OF SAID NOTICE TO WIT \$40.32 ENSURES TO THE
BENEFITS OF THE PUBLISHER OF SAID NEWSPAPER AND THAT NO
AGREEMENT AND UNDERSTANDING FOR THE DIVISION THEREOF HAS
BEEN MADE WITH ANY OTHER PERSON, AND THAT NO PART THEREOF
HAS BEEN AGREED TO BE PAID TO ANY PERSON WHOMSOEVER.

PUBLISHED ON: 05/26/2023

FILED ON: 05/26/2023


SUBSCRIBED AND SWORN TO BEFORE ME THIS 26th DAY OF May, 2023


NOTARY PUBLIC, SOUTH DAKOTA
MY COMMISSION EXPIRES 5/23/29



Ad text : NOTICE OF APPLICATION NO.
8739-3 to Appropriate Water

Notice is given that Brook Bye, 31472 458th Avenue, Vermillion SD 57069 has filed an application for a water permit to appropriate 1.67 cubic feet of water per second (cfs) from one well to be completed into the Missouri Elk Point Aquifer (approximately 100 feet deep) located in the SE1/4 SW1/4 Section 31 for irrigation of 80 acres located in the SW1/4, SW1/4 SE1/4 Section 31; all in T93N-R52W. The applicant is requesting a diversion rate greater than the statutory limit of 1 cfs per 70 acres. This site is located approximately 5 miles northwest of Vermillion SD.

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Published once at the total approximate cost of \$40.32 and can be viewed free of charge at www.sdpublicnotices.com

Published May 26, 2023.

AFFIDAVIT OF PUBLICATION

RECEIVED

MAY 30 2023

OFFICE OF
WATER

PLAIN TALK

BROOK BYE
31472 458TH AVE
VERMILLION SD 57069

STATE OF SOUTH DAKOTA
COUNTY OF CLAY

BETH RYE, BEING FIRST DULY SWORN ON OATH DEPOSES
AND SAYS THAT (S)HE IS THE ADVERTISING DIRECTOR OF YANKTON
MEDIA INC, A CORPORATION, THE PRINTER AND THE PUBLISHER OF THE
PLAIN TALK, A LEGAL WEEKLY NEWSPAPER PUBLISHED AND CIRCULATED
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AGREEMENT AND UNDERSTANDING FOR THE DIVISION THEREOF HAS
BEEN MADE WITH ANY OTHER PERSON, AND THAT NO PART THEREOF
HAS BEEN AGREED TO BE PAID TO ANY PERSON WHOMSOEVER.

PUBLISHED ON: 05/26/2023

FILED ON: 05/26/2023


SUBSCRIBED AND SWORN TO BEFORE ME THIS 26th DAY OF May, 2023

 8-31-27
NOTARY PUBLIC, SOUTH DAKOTA
MY COMMISSION EXPIRES 03/06/2029



Notice is given that Brook Bye, 31472 458th Avenue, Vermillion SD 57069 has filed an application for a water permit to appropriate 1.67 cubic feet of water per second (cfs) from one well to be completed into the Missouri Elk Point Aquifer (approximately 100 feet deep) located in the SE1/4 SW1/4 Section 31 for irrigation of 80 acres located in the SW1/4, SW1/4 SE1/4 Section 31; all in T93N-R52W. The applicant is requesting a diversion rate greater than the statutory limit of 1 cfs per 70 acres. This site is located approximately 5 miles northwest of Vermillion SD.

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Published once at the total approximate cost of \$40.32 and can be viewed free of charge at www.sdpublicnotices.com

Published May 26, 2023.

Rodriguez, Rachel

*removed
rec report
because
file was
too large to
send*

From: Rodriguez, Rachel
Sent: Friday, May 12, 2023 2:24 PM
To: bbye152@icloud.com
Subject: 8739-3 Brook Bye - Public Notice
Attachments: Letter8739-3.pdf; 8739-3 public.short_final.docx

Attached is a copy of the letter sent to you and the public notice for your water permit application. As stated in the letter, **please contact the paper(s) as soon as possible to authorize publication and arrange for payment.** This information is being mailed to you today.

Thank you,

Rachel Rodriguez
DANR | Program Assistant
Rachel.Rodriguez@state.sd.us





**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

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

JUL 11 2023

Brook Bye
31472 458th Avenue
Vermillion SD 57069

Dear Mr. Bye:

Enclosed is Water Permit No. 8739-3 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



**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

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

STATE OF SOUTH DAKOTA)
) SS
COUNTY OF HUGHES)

**Affidavit of Public Notice
on DANR Website**

Pursuant to SDCL § 46-2A-4, public notice of the following application was posted on the DANR web site at <https://danr.sd.gov/public>. The posted public notice is the same notice as published in the pertinent newspaper(s) and a copy of the public notice is maintained in the application file. If the application is contested, the posting is moved to the DANR contested case website at <https://danr.sd.gov/public/ContestedCase.aspx> until final action is taken on the application pursuant to SDCL § 46-2A-4.

Application No.: 8739-3

Name of Applicant: Brook Bye

Date of Posting: 5/22/2023

Date of Removal: 7/11/2023



Ron Duvall, Water Rights Permitting Administrator

7/14/23

Date

Subscribed and sworn to before me, a notary public, this 14 day of July, 2023.



Notary Public - South Dakota
My commission expires:

**Rachel Rodriguez
My Commission Expires
May 16, 2029**

(SEAL)



8739-3

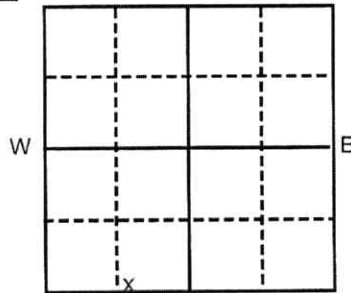
SD EForm - 1621LD V1

SOUTH DAKOTA WATER WELL COMPLETION REPORT

11-02

Location SE 1/4 SW 1/4 Sec 31 Twp 93N Rg 52WCounty CLAY

North

Please mark well
location with an "X"

Well Completion Date

July 24, 2023

1 Mile

Distance to nearest potential pollution source (septic tank, abandoned well, feed lot, etc.)?

980 ft. from SEPTIC SYSTEM (identify source)

PROPOSED USE:

☐ Domestic/Stock ☐ Municipal ☐ Business ☐ Test holes
☒ Irrigation ☐ Industrial ☐ Institutional ☐ Monitoring well

METHOD OF DRILLING:

ROTARY

CASING DATA:

☐ Steel ☒ Plastic ☐ Other

If other describe

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
LB/FT	16 IN	0 FT	80 FT	22 IN
LB/FT	IN	FT	FT	IN
LB/FT	IN	FT	FT	IN

GROUTING DATA:

Grout Type	No. of Sacks	Grout Weight	From	To
Groutwell DF	7	Lb/gal	0 Ft	25 Ft
		Lb/gal	Ft	Ft

Describe grouting procedure

TREMIE

SCREEN:

☐ Perforated pipe ☒ Manufactured
Diameter 16 Inches Length 40 Total FeetMaterial PVCSlot Size .060 Set From 80 Feet to 100 FeetOther information 16" PVC Slot Size .050 from 100'-120'WAS A PACKER OR SEAL USED? ☐ Yes ☒ No

If so, what material?

Describe packer(s) and location

DISINFECTION: Was well disinfected upon completion?

☒ Yes, How? HTH TabletsLab to which water
quality sample sent for analysisWell Owner: Brook Bye

Business Name:

Address: 31472 458th AveCity, State, Zip: Vermillion ☒ SD ☒ 57069

WELL LOG:

FORMATION	DEPTH	
	FROM	TO
Top Soil	0	3
Tan Silty Clay	3	19
Gray Sandy Clay	19	25
Gray Fine Sand with Clay Layers	25	58
Sand, Gravel, Rocks	58	62
Gray Fine Sand	62	76
Sand, Gravel, Rocks	76	80
Sand, Small Gravel	80	117
Fine Sand	117	120

STATIC WATER LEVEL 18 FEETIf flowing: closed in pressure PSIGPM flow through Inch pipeControlled by ☐ Valve ☐ Reducers ☐ OtherReduced flow rate GPM

Can well be completely shut in?

WELL TEST DATA:

☐ Pumped Describe:☐ Bailed☐ Other

Pumping Level Below Land Surface

 Ft. After Hrs. pumped GPM Ft. After Hrs. pumped GPMIf pump installed, pump rate: GPM

REMARKS

Latitude: 42.822814Longitude: -97.037179Elevation: 1152This well was drilled under license # 810 and this report is true and accurate.Drilling firm: Heine Electric & Irrigation, Inc.

Signature of License Representative:

Signature of Well Owner or Equitable Property Holder:

RECEIVED

AUG 14 2023

Date: 8-14-23OFFICE OF
WATER

Report of Examination of Works and/or Application of Water to Beneficial Use
For Permit No. 8739-3

I have this day, July 10, 2024, made a thorough examination of the water use systems owned by Brook Bye, 31472 458th Ave, Vermillion, SD 57069, holder of Permit No. 8739-3, bearing the priority date of March 27, 2023. This permit authorizes the diversion of 1.67 cu. ft. per second of the waters of groundwater (Missouri: Elk Point Aquifer) authorizing the irrigation of 80 acres located in Clay County.

Inspection contacts: Brook Bye

A. Works used to divert the water:

Well Information

- 1) Well Drilling Firm: Heine Electric & Irrigation, Inc.
- 2) No. of Wells: 1
- 3) Depth(s): 120 feet
- 4) Well log is available: Yes

Casing:

- 1) Diameter: 16 inches
- 2) Length: 80 feet
- 3) Type: Plastic

Screen:

- 1) Diameter: 16 inches
- 2) Length: 40 feet
- 3) Type: PVC
- 4) Static water level: 18 feet

Pump:

- 1) Make: Wilo
- 2) Model: SPI10.1200-1S.300
- 3) Capacity: 750 GPM

Motor:

- 1) Make: Wilo
- 2) Model No.: Unknown
- 3) Horsepower rating: 30 hp

B. Works used to transport water to place of use:

- 1) Type: Aluminum Size: 8 inches Length: 20 feet

C. Works used to apply water to beneficial use:

Center Pivot:

- 1) Make: Valley
- 2) Overall length: 1,358 feet
- 3) Number of towers: 8
- 4) End gun: Yes Range: 95 feet
- 5) Capacity: 750 GPM

Chemigation Equipment:

- 1) Does chemigate: No

D. Compliance with Permit Requirements:

- 1) Permit qualifications being abided by: Yes
2) Irrigation Questionnaires checked to determine if permit owner started irrigation by the end of construction period: New in 2023
3) Exceptions to compliance are: None

E. Condition and Location:

- 1) The system is in good condition with the point(s) of diversion located as follows:
The well is 40 feet north and 1,410 feet east of the southwest corner of Section 31-T93N-R52W (Latitude 42.82283, Longitude -97.03712– SE1/4 of the SW1/4).
2) The works are capable of diverting and conveying to the places of use 1.67 cu. ft. per second of water from the well which is to be used for irrigation purposes. Water has been put to beneficial use to the maximum extent as follows: All in

Section 31-T93N-R52W

<u>NW1/4SW1/4</u>	<u>2 acres</u>
<u>NE1/4SW1/4</u>	<u>2 acres</u>
<u>SW1/4SW1/4</u>	<u>34 acres</u>
<u>SE1/4SW1/4</u>	<u>35 acres</u>
<u>SW1/4SE1/4</u>	<u>3 acres</u>

comprising a total of 76 acres of land and the license should be issued for 1.67 cfs.

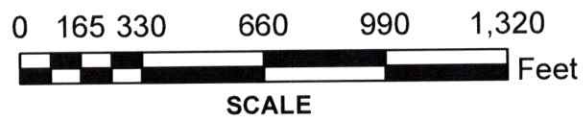
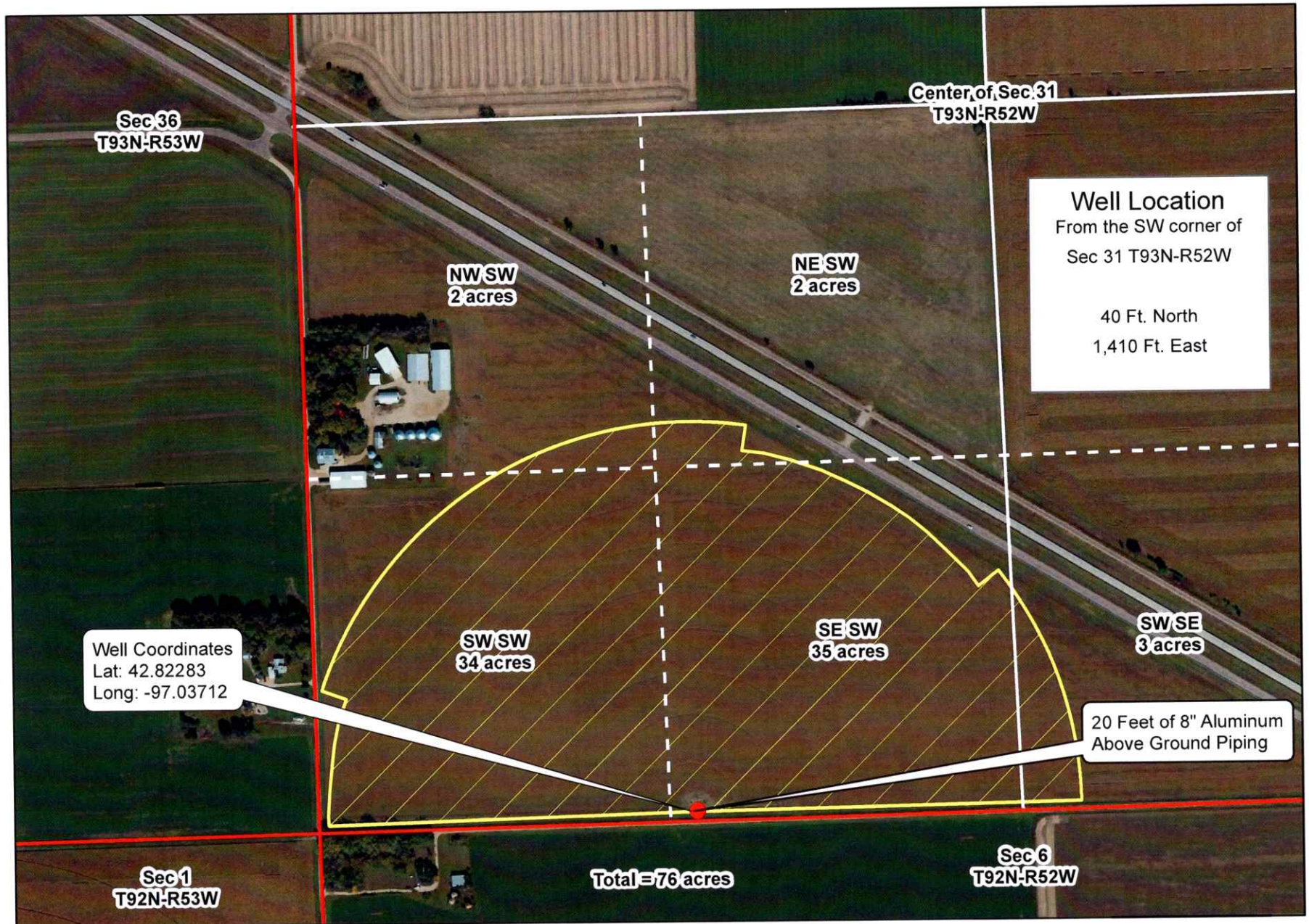
- 3) All structures, wells and lands on map: Yes

F. Comments or other permit(s) associated with the project: The pump and motor information was obtained from Heine Electric & Irrigation, Inc.

Keith DeJong, PE Ret.
Water Rights Inspector
DANR, Water Rights Program

Date report completed: July 11, 2024

Water Permit No. 8739-3



Keith DeJong
Keith DeJong, PE Ret.
Staff Engineer
July 11, 2024

NOTICE OF COMPLETION OF WORKS AND
APPLICATION OF WATER TO BENEFICIAL USE

Date July 10 2023

MAIL TO: PMB 2020
DANR - Water Rights Program
523 E. Capitol Ave
Pierre, SD 57501-3182

Phone: (605) 773-3352

FROM: Brook Bye
(name)

31472 458th Ave
(address)

Vermillion SD 57069 605-670-9132
(city) (state) (zip) (phone)

I have completed the construction of the water use system and I have put the water to beneficial use to the maximum extent it is going to be used.

Water Permit No. 8739-3 states that the water use system is to be constructed by
June 5, 2028, and water is to be put to beneficial use by June 5, 2032.
(date) (date)

The water use system was completed on July 2023.
(date)

Applying the water to beneficial use was completed on July 2023.
(date)

You may schedule an investigation so that the water license may be issued.

Brook Bye
(signature)





**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

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

JUL 22 2024

8739-3

Brook Bye
31472 458th Ave
Vermillion SD 57069

Dear Mr. Bye:

Enclosed is Water License No. 8739-3. This is the final water right document completing your process of obtaining a Water Right. Included with your license is a map prepared by the staff engineer who conducted the field investigation.

For your information SDCL 46-6-27 requires that if in the future, the owner of an existing well, constructs a replacement well and does not plan to use the old well, the old well is considered abandoned and must be plugged. Also, any well that is being used or is not considered abandoned must be valved and controlled, if flowing, or sealed and capped so that no leaking occurs either underground or at the surface.

So long as you use the water beneficially, as stated in the Water License, State Water Laws provide that you have a continuing right to use the water. If you have any questions, please contact our office.

Sincerely,

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

enclosures

**STATE OF SOUTH DAKOTA
WATER LICENSE NO. 8739-3**

(1) Brook Bye, 31472 458th Ave, Vermillion SD 57069, made Application No. 8739-3, March 27, 2023, for a water permit to divert 1.67 cubic feet of water per second from groundwater, one well (Missouri: Elk Point Aquifer), Clay County, South Dakota for irrigation purposes. Permit No. 8739-3, with a priority date of March 27, 2023, was approved June 5, 2023, and issued to the applicant for diversion of water with construction of the described water supply system to be completed on or before June 5, 2028, and for the application to beneficial use of water on or before June 5, 2032.

The permit holder submitted a Notice of Completion of Works and Application of Water to Beneficial Use form on July 10, 2023. The Notice stated the diversion system was completed and the water was placed to beneficial use in July 2023.

(2) It is certified that the permit holder has complied with the provisions of South Dakota State Law relating to completion of the construction of the water supply system and is entitled to divert 1.67 cubic feet of water per second for beneficial use. The location of the diversion point is:

- 40 ft N & 1,410 ft E of the SW corner Section 31, T93N, R52W (SE ¼ SW ¼)
(Latitude 42.82283 & Longitude -97.03712)

(3) The amount of 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 – October 30.

(4) The permit holder has complied with the provisions of South Dakota State Law relating to the application of water to beneficial use to irrigate to following land:

Section 31, T93N, R52W	
NE ¼ SW ¼	2 acres
NW ¼ SW ¼	2 acres
SW ¼ SW ¼	34 acres
SE ¼ SW ¼	35 acres
SW ¼ SE ¼	3 acres
TOTAL: 78 acres	

(5) Pursuant to South Dakota Water Law 46-5-30.1 Brook Bye, the holder and/or owner of Water Right No. 8739-3 is issued a license to appropriate water, the right to use 1.67 cubic feet of water per second from groundwater, one well (Missouri: Elk Point Aquifer), with a priority date of March 27, 2023, from the location specified in (2) of this license for irrigation purposes.

This license is subject to South Dakota Water Law, any limitations or conditions listed in Water Right No. 8739-3 and subject to the following qualifications:

1. The well approved under Water Permit No. 8739-3 is located near domestic wells and other wells which may obtain water from the same aquifer. Water withdrawals shall be controlled so there is not a reduction of needed water supplies is adequate domestic well or in adequate wells having prior water rights.

continued

2. The well authorized by Permit No. 8739-3 shall be construction 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. *(The well was drilled in 2023 by Heine Electric & Irrigation Inc. A copy of the well completion report is on file with the Water Rights Program.)*
3. Pursuant SDCL 46-55-6 which allows a greater diversion rate if the method of irrigation, time constraints, or type of soils so requires, Permit No. 8739-3 authorizes a maximum diversion rate of 1.67 cfs for the irrigation of 80 acres with an annual volume not to exceed 2 acre-feet of water per acre per year. *(Irrigation is limited to 76 acres, based on the system as developed.)*
4. This Permit is approved subject to the irrigation water use questionnaire being submitted each year.


Eric Gronlund, Chief Engineer
Water Rights Program
Department of Agriculture and Natural Resources

JUL 22 2024

date

