

WATER PERMIT NO. 8464-3

Name of Applicant: Lakeview Hutterian Brethren Inc.

Address: 28748 386th Ave, Lake Andes SD 57356

Phone: 605 491-1112

Amount of Water Claimed: 0.3 cfs (52.5 AF)

Total Acres: NA

Source of Water Supply: groundwater (3 existing wells)

Water to be used for: commercial and domestic use

County: Charles Mix

Type of Waste Disposal System:

Location: 5 miles northeast of Lake Andes

PRIORITY Date Received: 12-17-20

Application/License Fee: \$ 700

Corrected Application Received:

Period of Annual Use: Jan 1 – Dec 31

Remarks: Three water sources

Diversion Point: NW 1/4 SW 1/4 and SW 1/4 NE
1/4 Sec 18-T97N-R64W

Land to be Irrigated: NA

Depth of Well: 840, 248, 400 feet deep

Well Driller:

Remarks:

Type of Map: aerial

Prepared by: Brian Friedrichsen

Reviewed and the Number Assigned on: 12-17-20

By: **Karen Schlaak**

Notice of Hearing - date to intervene: _____

			⊗ Well#3		
		18			
		⊗ Well#1 and 2			

**SOUTH DAKOTA
WATER PERMIT NO. 8464-3**

Date of first receipt of application December 17, 2020.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 8464-3 to Lakeview Hutterian Brethren Inc., c/o Tim Hofer, 28748 386th Ave, Lake Andes SD 57356 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. 8464-3 authorizes a combined 52.5 acre-feet (af) of water annually at a maximum combined pump rate of 0.30 cubic feet of water per second (cfs) from three existing wells. Well #1 is completed into the Dakota Aquifer (840 feet deep) and appropriates 0.1 cfs with an annual volume of 35 af; Well #2 is completed into the Codell Aquifer (400 feet deep) and appropriates 0.1 cfs with an annual volume of 16 af; both wells are located in the NW 1/4 SW 1/4 Section 18; and Well #3 is completed into the Choteau West Aquifer (248 feet deep) and appropriates 0.1 cfs with an annual volume of 1.5 af located in the SW 1/4 NE 1/4 Section 18; all in T97N-R64W. The three wells supply water for either commercial use in animal confinement operations or domestic use purposes, or both. This site is located approximately 5 miles northeast of Lake Andes SD.
2. The water appropriated shall be used for the purpose of commercial and domestic use and may not exceed the amount of water needed for beneficial use.
3. The water is to be used during the following described annual period: January 1 - December 31.
4. The date of approval of Permit No. 8464-3 is March 8, 2021.
5. The date from which applicant may claim right is December 17, 2020.
6. One-fifth of the construction is to be completed on or before September 8, 2023.
7. All construction is to be completed on or before March 8, 2026.
8. Water is to be put to beneficial use on or before March 8, 2030.
9. 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 wells approved under Water Permit No. 8464-3 will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner, under this Permit shall control withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
2. Water Permit No. 8464-3 is subject to compliance with requirements of the Department's Water Pollution Control Permit issued pursuant to SDCL 34A-2-36 or 34A-2-36.2 or 34A-2-112 or 34A-2-124 for concentrated animal feeding operations.

(continued)

3. Water Permit No. 8464-3 is subject to compliance with all existing and applicable Water Management Board Rules including but not limited to:
- a) Chapter 74:54:01 Ground Water Quality Standards,
 - b) Chapter 74:54:02 Ground Water Discharge Permit,
 - c) Chapter 74:51:01 Surface Water Quality Standards,
 - d) Chapter 74:51:02 Uses Assigned to Lakes,
 - e) Chapter 74:51:03 Uses Assigned to Streams, and
 - f) Chapter 74:52:01 through 74:52:11 Surface Water Discharge Provisions
4. The Permit holder shall separately report to the Chief Engineer annually the amount of water withdrawn from the Dakota aquifer, Codell aquifer and the Choteau West aquifer.
5. Water Permit No. 8464-3 authorizes the following total annual diversion:

Aquifer	Diversion Rate	Annual Volume
Dakota aquifer	0.1 cfs	35 acre feet
Codell aquifer	0.1 cfs	16 acre feet
Choteau West aquifer	0.1 cfs	1.5 acre feet

WATER MANAGEMENT BOARD

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

APR 19 2021

date



Mail to: DENR - Water Rights 523 E Capitol Ave Pierre, SD 57501-3182 ph. (605) 773-3352	No. <u>84643</u> (office use only)	Hydrologic Unit <u>10140101</u>
	Basin <u>Missouri River</u>	
	Newspaper <u>Wagner Post</u>	
	<u>Press & Dakotan, Yankton</u>	

PAID
DEC 17 2020
Ck# 53839

Application For Permit To Appropriate Water Within The State Of South Dakota

Check use(s) of water:

☐ Municipal	☐ Water Distribution System	☐ Recreational	☐ Institutional
☐ Rural Water System	☒ Commercial	☐ Fish & Wildlife	☐ Geothermal
☒ Domestic (over 18 gpm)	☐ Industrial	☐ Other	

Type of Application: (check one)

☒ New	☐ Vested Right (Use predates Mar 2, 1955)	☐ Future Use Reservation
☐ Place to Beneficial Use Water Reserved by Future Use Permit No. _____		
☐ Amendment/Correction to Permit No. _____		

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

- Name to Appear on Water Permit LAKEVIEW HUTTERIAN BRETHREN, INC.
Mailing Address 28748 386TH AVENUE LAKE ANDES SD 57356
(Address) (City) (State) (Zip Code)
Phone (605) 487-7992 Mobile (605) 491-1112 Email thofer@hcinet.net
- Amount of water claimed 0.3 *CFS or 135 **GPM and 52.5 ***AF or _____ Gallons
Flow rate and volume are both required. (*Cubic Feet per Second) (**Gallons per Minute) (***)Acre Feet - storage capacity of dam/dugout or annual use)
- Source of water supply DAKOTA AQUIFER (WELL #1), CODELL AQUIFER (WELL #2), CHOTEAU AQUIFER (WELL #3)
- Location of point of diversion 2 WELLS IN NW 1/4 OF SW 1/4 SECTION 18, T97N R64W
1 WELL IN SW 1/4 OF NE 1/4 SECTION 18, T97N R64W County CHARLES MIX
(example - 3 wells in SW 1/4 NE 1/4 section 12-T104N-R53W)
If not a public water supply (e.g. municipal), will water be used outside of the area described above? ☒ Yes ☐ No
If "Yes," where will water be used? MULTIPLE LOCATIONS IN SECTION 18, T97N R64W
(example - NW 1/4 section 12-T104N-R53W)
- County or counties where water will be used CHARLES MIX
- Annual period during which water is to be used JANUARY 1 - DECEMBER 31
- Give a description of the project. When available include any preliminary engineering report or other reports or information that will help explain the project. (Attach sheet if more space is needed)

SEE ATTACHED

RECEIVED

DEC 17 2020

**WATER RIGHTS
PROGRAM**

I, Tim Hofer Secretary/Treasurer, 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)

WELL # 1

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

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

b) If existing wells, how many 1 Provide copy of log(s), if available. Drilled by HUTMACHER BROS.

For either Existing or Proposed Wells:

c) Well Depth (required) 840 Depth to Top of Water Bearing Material 706 Depth to Water from Surface 3

d) Distance to nearest domestic well on applicant's property N/A Property owned by others 2170
(NOT VERIFIED)

2. Wastewater Disposal System Information

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

b) System Capacity (gallons) UNKNOWN Year Constructed ~1980

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)

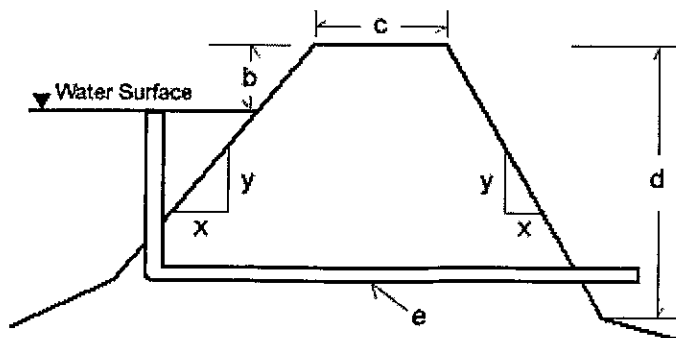
Upstream _____

Downstream _____

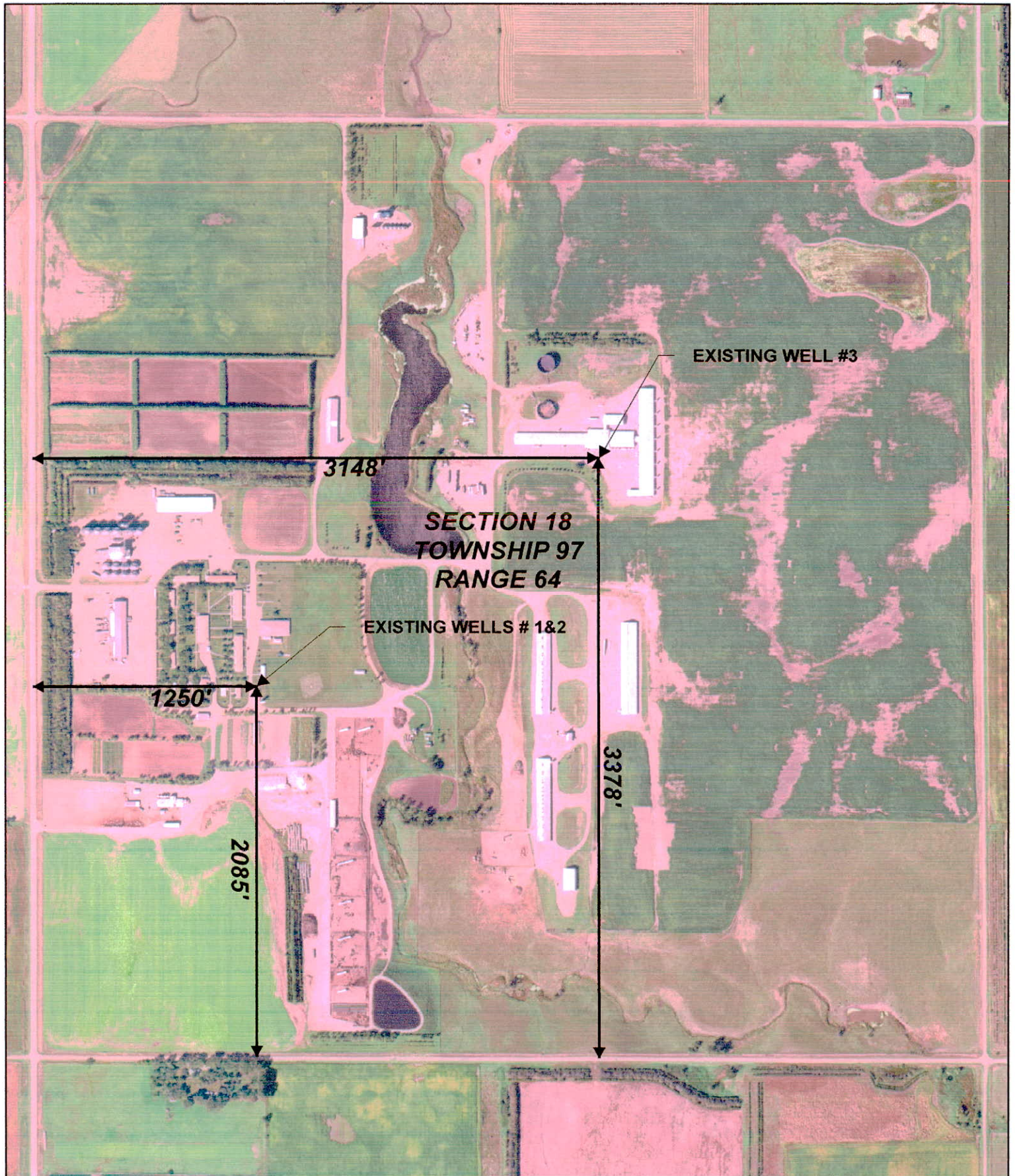
h) Surface Area of Impoundment _____

i) Storage _____ Acre Feet

j) Drainage Area Above Dam _____ Acres



LAKEVIEW EXISTING WELL LOCATIONS



4-78

1

Well Owner: Name <u>Miranda</u> Address _____ Well Location: County <u>Hood River</u> Twp. <u>7N</u> Rg. <u>6E</u> Proposed Use: ☒ Domestic ☐ Municipal ☐ Test Holes ☐ Irrigation ☐ Industrial ☐ Stock Method of Drilling: ☒ Forward Rotary ☐ Bored ☐ Jetted ☐ Reverse Rotary ☐ Cable ☐ Other Well Construction: Diameter of Hole <u>7 1/2"</u> Depth <u>150'</u> Casing ☐ Steel ☒ Concrete ☐ Plastic ☐ Other If other, specify _____ Was casing end left open ☒ Was a well screen installed ☒ Describe Well Screen Diameter _____ Material <u>PVC</u> Slot size _____ Was well gravel packed ☒ Was well grouted ☒ Was water sample taken ☒ Remarks: <u>150' PVC</u> <u>260' PVC</u>	Water Level Information: Static water level <u>3'</u> below land surface If flowing: closed in pressure _____ PSI rate of flow _____ GPM Controlled by: ☒ Valve ☐ Reducers ☐ Other If other; specify _____ Well Test Data: ☐ Pumped <u>Desired</u> ☐ Bailed Describe: _____ ☐ Other _____ Pumping Level Below Land Surface <table style="width: 100%;"> <thead> <tr> <th>ft.</th> <th>After</th> <th>Hrs. pumped</th> <th>GPM</th> </tr> </thead> <tbody> <tr> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> </tbody> </table> Well Log: <table style="width: 100%;"> <thead> <tr> <th rowspan="2">Formation</th> <th colspan="2">Depth</th> </tr> <tr> <th>From</th> <th>To</th> </tr> </thead> <tbody> <tr> <td>PIERRE</td> <td>0</td> <td>244 (3)</td> </tr> <tr> <td>NIOBRARA</td> <td>244</td> <td>310</td> </tr> <tr> <td>CARLE</td> <td>310</td> <td>576</td> </tr> <tr> <td>GREENHORN</td> <td>576</td> <td>618</td> </tr> <tr> <td>GRANDGROVE</td> <td>618</td> <td>706</td> </tr> <tr> <td>DAKOTA</td> <td>706</td> <td>840</td> </tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table> (Use Back if Necessary) Date Completed: <u>8-16-80</u> Driller: <u>Holtmeyer Bros.</u> Driller's or Firm's Name License NO. <u>213</u> Address _____ Signed By _____ Date _____	ft.	After	Hrs. pumped	GPM	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	Formation	Depth		From	To	PIERRE	0	244 (3)	NIOBRARA	244	310	CARLE	310	576	GREENHORN	576	618	GRANDGROVE	618	706	DAKOTA	706	840																																	
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DAKOTA	706	840																																																																							

Supplemental Information

(type or print)

WELL # 3

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

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

b) If existing wells, how many 1 Provide copy of log(s), if available. Drilled by CHASE

For either Existing or Proposed Wells:

c) Well Depth (required) 400 Depth to Top of Water Bearing Material 318 Depth to Water from Surface 246

d) Distance to nearest domestic well on applicant's property 2290' Property owned by others 4100'
(NOT VERIFIED)

2. Wastewater Disposal System Information

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

b) System Capacity (gallons) UNKNOWN Year Constructed ~1980

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

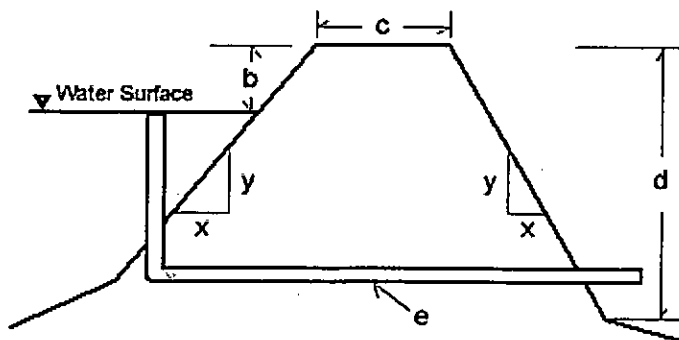
If the proposed water use system contains one or more storage dams, please furnish the information requested below for each dam. The locations of the dams need to be shown on the map submitted with the application.

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 _____



Labeled
~~MADE~~ Well #2
in report

SOUTH DAKOTA WATER WELL COMPLETION REPORT

10-85

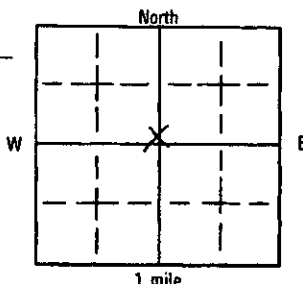
#3

Location $\frac{1}{4}$ Sec 18 Twp 97 Rg 64

County

Charles mix

Please mark well location with an "X"

Well Completion Date 8-24-89

PROPOSED USE:

☒ Domestic ☐ Municipal ☐ Test Holes
☐ Irrigation ☐ Industrial ☒ Stock

Method of Drilling:

mud rotary

CASING DATA:

☐ Steel ☒ Plastic ☐ Other

If other describe _____

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
<u>Sch. 250</u> LB/FT	<u>5</u> IN	<u>0</u> FT	<u>400</u> FT	<u>10</u> IN
_____ LB/FT	_____ IN	_____ FT	_____ FT	_____ IN
_____ LB/FT	_____ IN	_____ FT	_____ FT	_____ IN
_____ LB/FT	_____ IN	_____ FT	_____ FT	_____ IN

GROUT:

Was the well grouted? ☒ YES ☐ NOTo what depth? 300 FEETWhat is grouting material? Cement & BentoniteIf cement, number of sacks? 50Describe grouting procedure traverse pipe

What was grout weight? _____ LB/GAL

SCREEN: ☒ Perforated pipe ☐ ManufacturedDiameter 5 IN Length 80 FEETMaterial Schedule 250Slot Size 14/600 Set From 320 Feet To 400 Feet

Slot Size _____ Set From _____ Feet To _____ Feet

Slot Size _____ Set From _____ Feet To _____ Feet

Other information _____

Was a packer or seal used? ☐ YES ☒ NO

If so, what material? _____

Describe packer(s) and location? _____

Was well disinfected upon completion? ☐ YES ☒ NO

Explain _____

Bacteriological analysis ☐ YES ☐ NO

Laboratory sent to _____

Well Owner:

Name Lake View ColonyAddress Lake Arden, So. Dak.

Well Log:

Depth

Formation	From	To
Clay	0	15
Sand & gravel	15	19
Blue Clay	19	56
Sand	56	81
Blue Sandy Clay	81	128
Coarse sand gravel & rock	128	140
Sand & gravel	140	180
Shale	180	211
Sand & gravel	211	236
Clay	236	251
Sand & gravel	251	254
Chalk	254	318
Sandstone	318	352
Hard Sandstone	352	360
Sandstone	360	400

STATIC WATER LEVEL 246 ? Feet

If flowing: closed in pressure _____ PSI

GPM flow _____ through _____ inch pipe

Controlled by ☐ Valve ☐ Reducers ☐ Other

If other, specify _____

Can well be completely shut in? _____

WELL TEST DATA:

☐ Pumped☐ Bailed☐ OtherDescribe: developed with air

Pumping Level Below Land Surface

_____ ft. After 5 Hrs. pumped 15 GPM

_____ ft. After _____ Hrs. pumped _____ GPM

_____ ft. After _____ Hrs. pumped _____ GPM

REMARKS:

This well was drilled under license # 296

And this report is true and accurate.

Drilling firm Chase Well Drilling, Inc.

Signature of License Representative:

Pat Chase

Signature of Well Owner:

Date

11/28/89

Supplemental Information

(type or print)

WELL # 2

1. Well Information

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

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

b) If existing wells, how many 1 Provide copy of log(s), if available. Drilled by PULLMAN

For either Existing or Proposed Wells:

c) Well Depth (required) 240 Depth to Top of Water Bearing Material 210 Depth to Water from Surface 160

d) Distance to nearest domestic well on applicant's property 50' Property owned by others 2170'
(NOT VERIFIED)

2. Wastewater Disposal System Information

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

b) System Capacity (gallons) UNKNOWN Year Constructed ~1980

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:

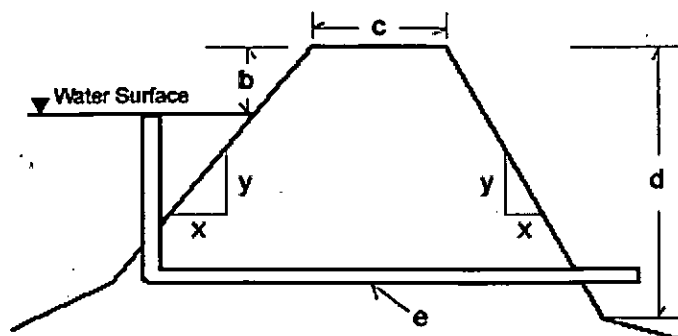
b) Freeboard _____

c) Crest Width _____

Crest Length _____

d) Height _____

e) Primary Outlet Capacity _____



If
f) Sec
S
g) X &
U
D
h) Sur
i) Sto
j) Dra

Labeled well #3
in report

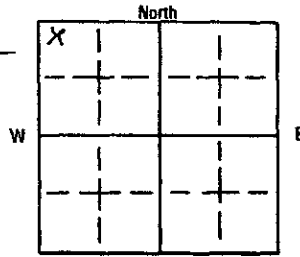
SOUTH DAKOTA WATER WELL COMPLETION REPORT

10-85

Location Nw 1/4 Sec 18 Twp 27 Rg 104

County Charles mix

Please mark well location with an "X"



Well Completion Date 7-8-91

PROPOSED USE:

- ☒ Domestic ☐ Municipal ☐ Test Holes
☐ Irrigation ☐ Industrial ☒ Stock

Method of Drilling:

Forward Rotary

CASING DATA:

- ☐ Steel ☒ Plastic ☐ Other

If other describe _____

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
LB/FT	IN	FT	FT	IN
5	5	0	248	8 3/4

GROUT:

Was the well grouted? ☒ YES ☐ NO

To what depth? 20 FEET

What is grouting material? Cement & Sand

If cement, number of sacks? 7

Describe grouting procedure line to 200 ft.

What was grout weight? _____ LB/GAL

SCREEN: ☐ Perforated pipe ☒ Manufactured

Diameter 5 IN Length 30 FEET

Material Pvc.

Slot Size 0.16 Set From 218 Feet To 248 Feet

Slot Size _____ Set From _____ Feet To _____ Feet

Slot Size _____ Set From _____ Feet To _____ Feet

Other information _____

Was a packer or seal used? ☐ YES ☒ NO

If so, what material? _____

Describe packer(s) and location? _____

Gravel packed

Was well disinfected upon completion? ☒ YES ☐ NO

Explain _____

Bacteriological analysis ☐ YES ☒ NO

Well Owner:

Name Lakeview Colony

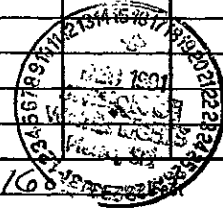
Address RR Lake Andes, SD 57356

Well Log:

Depth

Formation	From	To
Yellow Clay	0	50
Blue Clay	50	80
Blue Clay w/ gravel streak	80	100
Blue Clay w/ dirty sand streak	100	160
Blue Clay w/ sand streaks	160	180
Blue Clay	180	210
Coarse Sand	210	220
Coarse Sand w/ Gravel	220	245
Chalk	245	260

TD 248'



STATIC WATER LEVEL 160

If flowing: closed in pressure _____ PSI

GPM flow _____ through _____ inch pipe

Controlled by ☐ Valve ☐ Reducers ☐ Other

If other, specify _____

Can well be completely shut in? _____

WELL TEST DATA:

☒ Pumped

25 Hrs. in

☐ Bailed

Describe: Art. Completion

☐ Other

Pumping Level Below Land Surface

_____ ft. After _____ Hrs. pumped _____ GPM

_____ ft. After _____ Hrs. pumped _____ GPM

_____ ft. After _____ Hrs. pumped _____ GPM

REMARKS:

This well was drilled under license # 440

And this report is true and accurate.

Drilling firm Fullman Well Drilling

Signature of License Representative:

B-S Ruhl

Signature of Well Owner:



DAKOTA ENVIRONMENTAL, INC.

Engineers...Hydrogeologists...Geologists...Remedial Specialists

December 10, 2020

Eric Gronlund
South Dakota DENR Water Rights
523 East Capitol
Pierre, SD 57501

Re: Lakeview HBI, Charles Mix County, SD
DEC Project No. 22020

Dear Mr. Gronlund:

The following is provided as a description of the proposed application.

Lakeview HBI proposes to obtain a Water Rights Permit for three existing wells used to supply various existing uses on their property, all located within section 18, T97N R64W in Charles Mix County.

Well #1 is the main well used to supply domestic drinking water, as well as stock watering water for the animal confinements on site. This well is completed into the Dakota Aquifer. A maximum pump rate of 45 gallons per minute is available, with estimated peak usage of 30 gallons per minute, and an estimated annual use of 35 acre-feet. This well is located in the northwest quarter of the southwest quarter of section 18, T97N R64W.

Well #2 is located within 50 feet of well #1, but is completed into the Codell Aquifer. It is used to supply the sinks, showers, toilets, laundry, and all other uses in the housing area other than drinking water. It is also available as a backup supply for an existing cattle feedlot. A maximum pump rate of 45 gallons per minute is available, with estimated peak usage of 25 gallons per minute, and an estimated annual use of 16 acre-feet.

Well #3 is located in the southwest quarter of the northeast quarter of section 18, T97N R64W, and is completed into the Choteau Aquifer. This well is used only for washdown water in the swine confinement. A maximum pump rate of 45 gallons per minute is available, with estimated peak usage of 20 gallons per minute, and an estimated annual use of 1.5 acre-feet.

Application is therefore made for a combined maximum available pump rate of 135 gallons per minute, and a combined annual use of 52.5 acre-feet.

Separate copies of form 2A are included for each well and accompanying well log.

We hope you will find the enclosed information adequate for review of this application. As always, please feel free to contact us if you have any questions or require additional information.

Sincerely,

Brian Friedrichsen, PE
Senior Engineer



531050513

ANNUAL REPORT**Domestic Nonprofit Corporation**
SDCL 47-24-6, 59-11-24Secretary of State
500 E. Capitol Ave
Pierre, SD 57501-5070
(605) 773-4845**2020**
FILING YEARPlease Type or Print Clearly in Ink
Please submit one Original
Make payable to the SECRETARY OF STATE

Filing Fee: \$10

Total Fee: \$10

1. Business ID and Name:

NS008801
BUSINESS ID**LAKEVIEW HUTTERIAN BRETHERN, INC.**
BUSINESS NAME2. The jurisdiction under whose law it is formed **SOUTH DAKOTA**

3. The address of the principal executive office (business address):

Actual Street Address

28748 386TH AVE
LAKE ANDES, SD 57356-6730

Mailing Address

28748 386TH AVE
LAKE ANDES, SD 57356-6730

4. The South Dakota Registered Agent's Name:

South Dakota law permits the registered agent to be either (a) a noncommercial registered agent, (b) a commercial registered agent, or (c) an office holder.

(a) The South Dakota Noncommercial Registered Agent's name

Name **JEFFREY T. SVEEN**

Actual Street Address in this State

415 S MAIN ST 400 CAPITOL BLDG
ABERDEEN, SD 57401-4364

Mailing Address in this State

PO BOX 490
ABERDEEN, SD 57402-0490

5. The names and addresses of its principal officers.

Title	Name	Address
President	ELI HOFER	28748 386TH AVENUE, LAKE ANDES, SD, 57356-6730
Vice President	MARVIN WIPF	28748 386TH AVENUE, LAKE ANDES, SD, 57356-6730
Secretary	TIM HOFER	28748 386TH AVENUE, LAKE ANDES, SD, 57356-6730
Treasurer	TIM HOFER	28748 386TH AVENUE, LAKE ANDES, SD, 57356-6730

6. The names and addresses of its directors (governors).

Name	Address
MARVIN WIPF	28748 386TH AVENUE, LAKE ANDES, SD, 57356-6730
DANNY WIPF	28748 386TH AVENUE, LAKE ANDES, SD, 57356-6730
ELI HOFER	28748 386TH AVENUE, LAKE ANDES, SD, 57356-6730
JOE WIPF	28748 386TH AVENUE, LAKE ANDES, SD, 57356-6730
TIM HOFER	28748 386TH AVENUE, LAKE ANDES, SD, 57356-6730

RECEIPT

WATER RIGHTS PROGRAM

South Dakota Department of Environment and Natural Resources

Date December 17, 2020

RECEIVED OF Lakeview Hutterian Brethren Inc. 28748 386th Ave Lake Andes SD 57356

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

Fee for Application for Permit No. <u>8464-3</u> to Appropriate Water, to construct and to put water to beneficial use	\$750.00
Fee for Application for Permit No. _____ to Appropriate Water for Future use	\$
Fee to retain Future Use Permit No. _____ after period of seven years.	\$
Fee for Inspecting Constructed Works, confirming beneficial use and issuing Water License No. <u>8464-3</u>	\$200.00
Fee for Filing Transfer Form _____	\$
Fee for _____	\$
Fee for Issuing New Well Driller's License No. _____	\$
Fee for Renewal of Well Driller's License No. _____	\$
Fee for Issuing Well Pump Installer's License No. _____	\$
Fee for Renewal of Well Pump Installer's License No. _____	\$
(Any Other Work Provided by Law) TOTAL	\$950.00

By *Eric Gronlund*
Chief Engineer *um*

need to refund \$250

Schlaak, Karen

From: Gronlund, Eric
Sent: Sunday, December 6, 2020 3:16 PM
To: Brian Friedrichsen; Schlaak, Karen
Cc: Duvall, Ron
Subject: RE: [EXT] Water rights permit question

Brian:

I believe it can be on one application. However, the application will need to define the pump rate and annual volume from each well.

You indicate the third well is for a single use below the threshold requiring a water right permit. However, if its use is at the same facility just a separate barn, it needs to be included in the water permit application.

If the third well is used to supply a house or if it is used for a sole purpose not connected to the operation (like maybe one mile away) it may qualify for domestic use and not require a water right permit to be obtained.

Eric

From: Brian Friedrichsen <brian@dakotaenv.com>
Sent: Saturday, December 5, 2020 9:22 AM
To: Schlaak, Karen <Karen.Schlaak@state.sd.us>; Gronlund, Eric <Eric.Gronlund@state.sd.us>
Subject: [EXT] Water rights permit question

Karen & Eric,

I have an existing operation that needs to be brought up to current with their permitting. They have three wells on site. One is in the Choteau, one in the Codell, and the third I'm still trying to determine.

The Choteau and Codell wells feed a somewhat common distribution system. When I say somewhat, there are some uses that only are supplied by one or the other, while other uses can be supplied by either. Combined use from both of these wells is above the threshold to require a permit, but one on its own may not be, I'm still trying to work out the numbers.

The third well is used only for a single use which is well below the threshold on its own. However, I'm still trying to find which unit this well is drawing from.

Trying to figure out how to do the application paperwork for this place. Any thoughts?

Do we prepare a separate application for each unit? If withdrawal from one unit is less than the threshold, do we need an application for that unit? Do we combine everything and list estimated withdrawal from each unit on one application as part of the total withdrawal?

Thanks,

--

Brian Friedrichsen



DENR
SOUTH DAKOTA

**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 8464-3, Lakeview Hutterian Brethren, Inc.**

Pursuant to SDCL 46-2A-2, the following is the recommendation of the Chief Engineer, Water Rights Program, Department of Environment and Natural Resources concerning Water Permit Application No. 8464-3, Lakeview Hutterian Brethren Inc., c/o Tim Hofer, Secretary/Treasurer, 28748 386th Avenue, Lake Andes SD 57356.

The Chief Engineer is recommending APPROVAL of Application No. 8464-3 because 1) there is reasonable probability that there is unappropriated water available for the applicant's proposed use, 2) the proposed diversion can be developed without unlawful impairment of existing rights, 3) the proposed use is a beneficial use and, 4) it is in the public interest with the following qualifications:

1. The wells approved under Water Permit No. 8464-3 will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner, under this Permit shall control withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
2. Water Permit No. 8464-3 is subject to compliance with requirements of the Department's Water Pollution Control Permit issued pursuant to SDCL 34A-2-36 or 34A-2-36.2 or 34A-2-112 or 34A-2-124 for concentrated animal feeding operations.
3. Water Permit No. 8464-3 is subject to compliance with all existing and applicable Water Management Board Rules including but not limited to:
 - a) Chapter 74:54:01 Ground Water Quality Standards,
 - b) Chapter 74:54:02 Ground Water Discharge Permit,
 - c) Chapter 74:51:01 Surface Water Quality Standards,
 - d) Chapter 74:51:02 Uses Assigned to Lakes,
 - e) Chapter 74:51:03 Uses Assigned to Streams, and
 - f) Chapter 74:52:01 through 74:52:11 Surface Water Discharge Provisions
4. The Permit holder shall separately report to the Chief Engineer annually the amount of water withdrawn from the Dakota aquifer, Codell aquifer and the Choteau West aquifer.
5. Water Permit No. 8464-3 authorizes the following total annual diversion:

Aquifer	Diversion Rate	Annual Volume
Dakota aquifer	0.1 cfs	35 acre feet
Codell aquifer	0.1 cfs	16 acre feet
Choteau: West aquifer	0.1 cfs	1.5 acre feet

See report on application for additional information.

Eric Gronlund, Chief Engineer
February 16, 2021

Report to the Chief Engineer

On Water Permit Application No. 8464-3

Lakeview Hutterian Brethren, Inc. c/o Tim Hofer

February 16, 2021

Water Permit Application No. 8464-3 proposes to appropriate 52.5 acre-feet of water annually at a maximum combined diversion rate of 0.30 cubic feet of water per second (cfs) from three existing wells. Well #1 is completed into the Dakota aquifer (840 feet deep) and the applicant proposes to appropriate 35 acre-feet of water annually at a maximum instantaneous diversion rate of 0.1 cfs from this well. Well #2 is completed into the Codell aquifer (400 feet deep) and the applicant proposes to appropriate 16 acre-feet of water annually at a maximum instantaneous diversion rate of 0.1 cfs from this well. The Dakota and Codell aquifer wells are located in the NW $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 18-T97N-R64W. Well #3 is completed into the Choteau: West aquifer (248 feet deep) in the SW $\frac{1}{4}$ NE $\frac{1}{4}$ of Section 18-T97N-R64W and the applicant proposes to appropriate 1.5 acre-feet of water annually at a maximum instantaneous diversion rate of 0.1 cfs from this well. The proposed appropriation is for commercial use in animal confinement operations, or for domestic use purposes, or both. The site is located in Charles Mix County approximately five miles northeast of Lake Andes, South Dakota.

AQUIFER: Dakota (DKOT), Codell (CDLL), and Choteau: West (CH: W)

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

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

WATER AVAILABILITY:

Water Permit Application No. 8464-3 proposes to appropriate water from the Dakota, Codell and Choteau: West aquifers. 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 Codell and Choteau: West aquifers are not older than or stratigraphically lower than the Greenhorn Formation; though, the Dakota aquifer is older than and stratigraphically lower than the Greenhorn Formation. However, the applicant proposes at least one use that is not for 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 Dakota, Codell and Choteau: West aquifers must be considered.

DAKOTA AQUIFER

DAKOTA AQUIFER HYDROGEOLOGY:

The Dakota Formation is defined as the first relatively continuous sandstone below the Greenhorn Limestone and it extends downward to the top of the Skull Creek Shale in western and central South Dakota (Schoon, 1971). In eastern South Dakota, the Skull Creek Shale is not continuous and when absent, the Dakota Formation directly overlies Precambrian bedrock or the Inyan Kara Group (Schoon, 1971). In western South Dakota, a stratigraphically equivalent formation to the Dakota Formation is the Newcastle Formation, which has outcrops in the Black Hills (Bredehoeft, et al., 1983). In South Dakota, the Dakota Formation has been subdivided into three units (Schoon, 1971). The upper unit consists of light brown to reddish-brown, fine to medium grained, friable sandstone, interbedded with gray to dark gray shale. Thin, discontinuous beds of lignite are present in the lower part of the upper unit. The middle unit consists of a gray silty clay with small siderite pellets disseminated throughout. The lower unit consists of medium to coarse grained sandstone (Schoon, 1971).

The Dakota aquifer is comprised of the porous and permeable portions of the Dakota Formation and is primarily a confined bedrock aquifer throughout most of South Dakota (Schoon, 1971; Water Rights 2021b and 2021d). In Charles Mix County, the Dakota aquifer has a documented minimum thickness of 88 feet and a documented maximum thickness of 450 feet (Kume, 1977). Schoon (1971) estimated the Dakota Formation underlies 66,500 square miles of South Dakota and has an average thickness of 150 feet. A conservative estimate of the amount of water stored in the Dakota aquifer can be estimated by assuming 15% porosity for the Dakota Formation (Schoon, 1971), multiplied by the average thickness (150 ft) and the areal extent (66,500 sq. miles or 42.5 million acres) of the aquifer to calculate approximately 960 million acre-ft of stored water in South Dakota.

A water well completion report was submitted with Water Permit Application No. 8464-3 for an existing well (840 feet deep) completed into the Dakota aquifer. The well completion report indicates the well is located in the SE $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 18-T97N-R64W. However, the well is actually located in the NW $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 18-T97N-R64W. This well was completed on August 16, 1980 and the photocopy on file of the well completion report has become partially unreadable so the depth values may have slight variance. The well completion report lists "Pierre" from 0 to 244 feet below the ground surface, "Niobrara" from 244 to 374? feet, "Carlile" from 374? to 576 feet, "Greenhorn" from 576 to 618 feet, "Graneros" from 618 to 706 feet, and "Dakota" from 706 to 840 feet below the ground surface (Mathiowetz, 2021; Water Rights, 2021d). It is worth noting it is not possible for the Pierre Shale to be present at the ground surface at this location. The well had a static water level of 3 feet below the ground surface at the time of completion (Water Rights, 2021d). Based on the submitted well completion report and lithologic logs on file for nearby observation wells, the Dakota aquifer is expected to be confined at the well location the applicant proposes to use (SDGS, 2021; Water Rights, 2021b and 2021d).

DAKOTA AQUIFER 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 DENR-Water Rights Program monitors 46 observation wells completed into the Dakota aquifer (Water Rights, 2021b). These observation wells provide data on how the aquifer reacts to regional climatic conditions and local pumping. There are no observation wells completed into the Dakota aquifer in Charles Mix County (Water Rights, 2021b). The four closest observation wells to the well the applicant proposes to use are AU-89A (approximately 27 miles north), HT-80B (approximately 27 miles north), GY-89A (approximately 53 miles northwest) and BL-83A (approximately 57 miles northwest) (as shown in Figure 5). The hydrographs for these observation wells are displayed in Figures 1 to 4 (Water Rights, 2021b). 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.

Most hydrographs for observation wells completed into the Dakota aquifer display a declining trend. A decline in water levels (as seen on the hydrographs in Figures 1 to 4) in a confined aquifer does not necessarily indicate a significant decrease in water stored in the aquifer, as water levels above the top of the aquifer materials are representative of the hydraulic head (water pressure) inside the aquifer. Additionally, there are uncontrolled, flowing wells discharging water from the Dakota aquifer at ground surface, and it is expected water from the aquifer is also being discharged to other aquifers if wells completed into the Dakota aquifer have experienced casing failure. Concerns have developed over time about the decline in artesian head pressure of the Dakota aquifer. Schoon (1971) stated, "The fact that withdrawal from the artesian system exceeds recharge is clearly demonstrated by declining pressures." However, the Water Management Board has found that past declines of the potentiometric surface do not automatically constitute that withdrawals have exceeded recharge (Water Rights, 1987). The Board has concluded that withdrawals exceeding the average annual recharge cannot be determined based solely upon a decline in head pressure, and in theory the Dakota aquifer head pressure is stabilizing relative to withdrawals and discharges (Water Rights, 1987). Overall, the Water Management Board's decision to optimize development of the Dakota aquifer is favorable because by allowing beneficial pumping to occur, it is lowering the amount of pressure in the uncontrolled flowing wells, which is reducing the amount of water being discharged to waste.

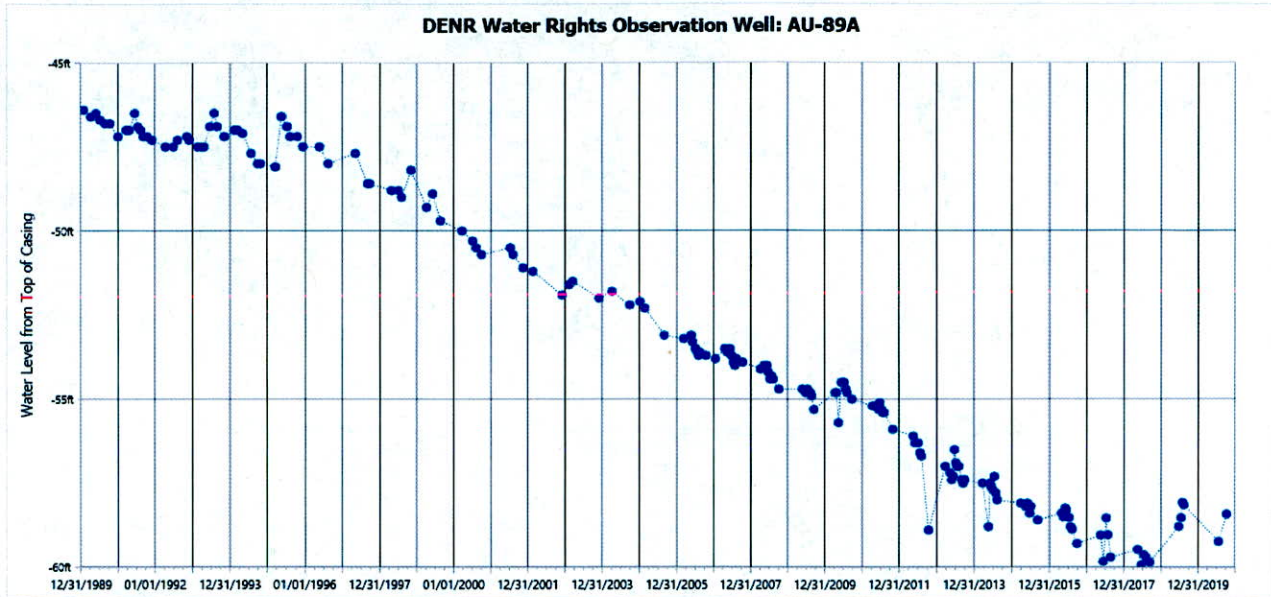


Figure 1. Hydrograph for observation well AU-89A (Water Rights, 2021b)

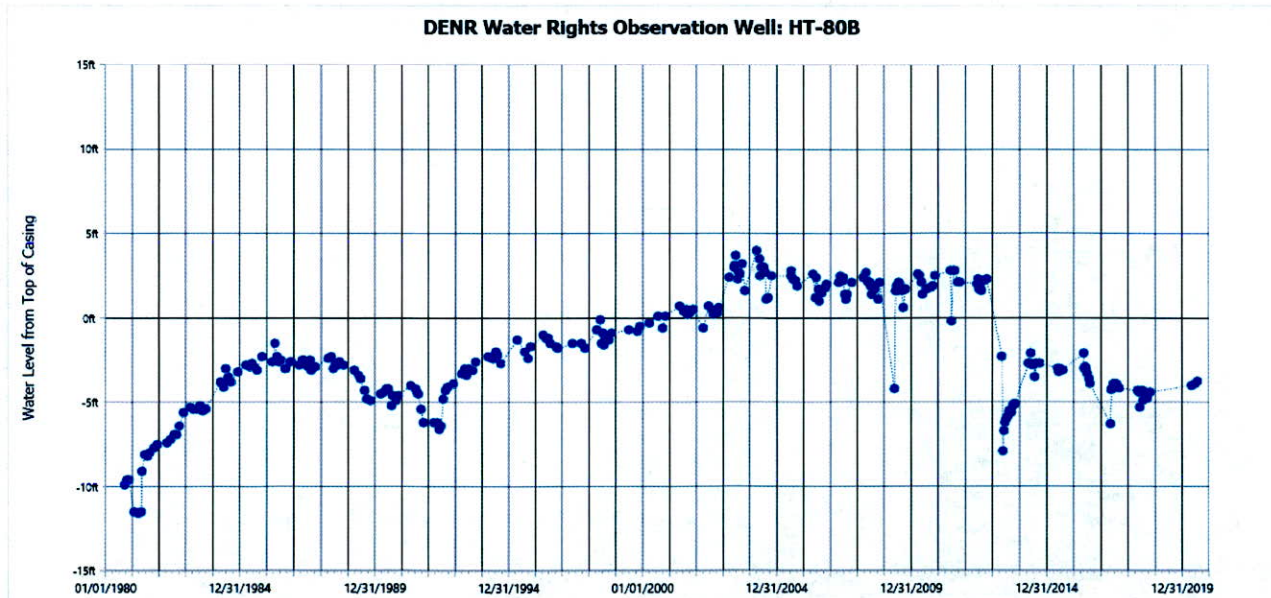


Figure 2. Hydrograph for observation well HT-80B (Water Rights, 2021b)

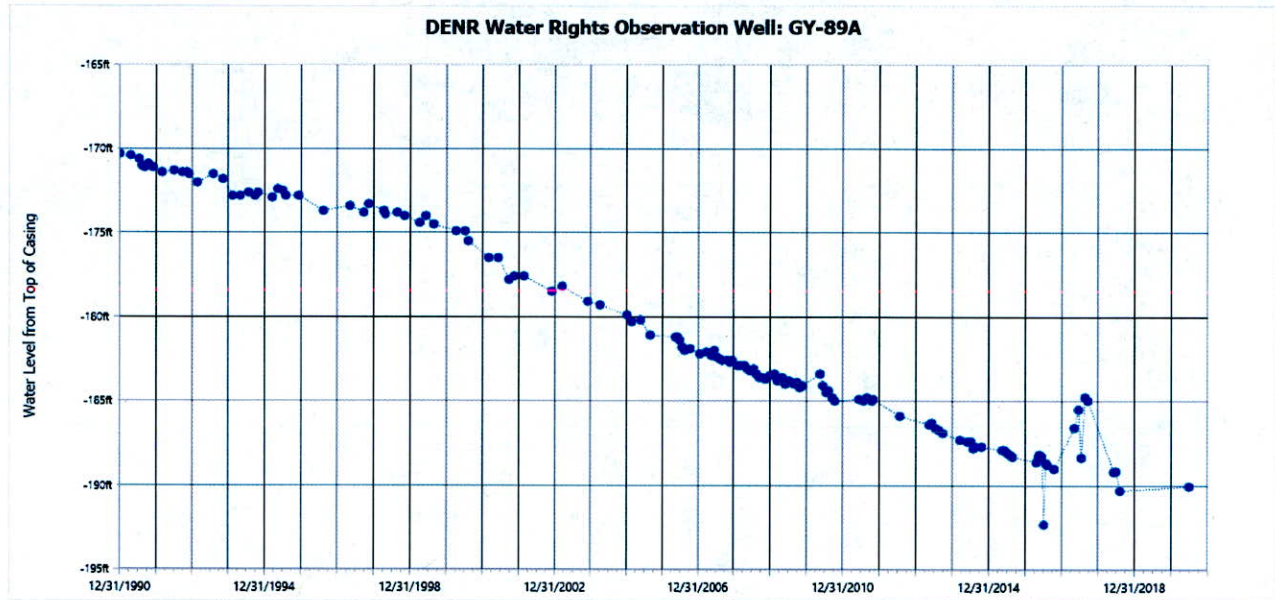


Figure 3. Hydrograph for observation well GY-89A (Water Rights, 2021b)

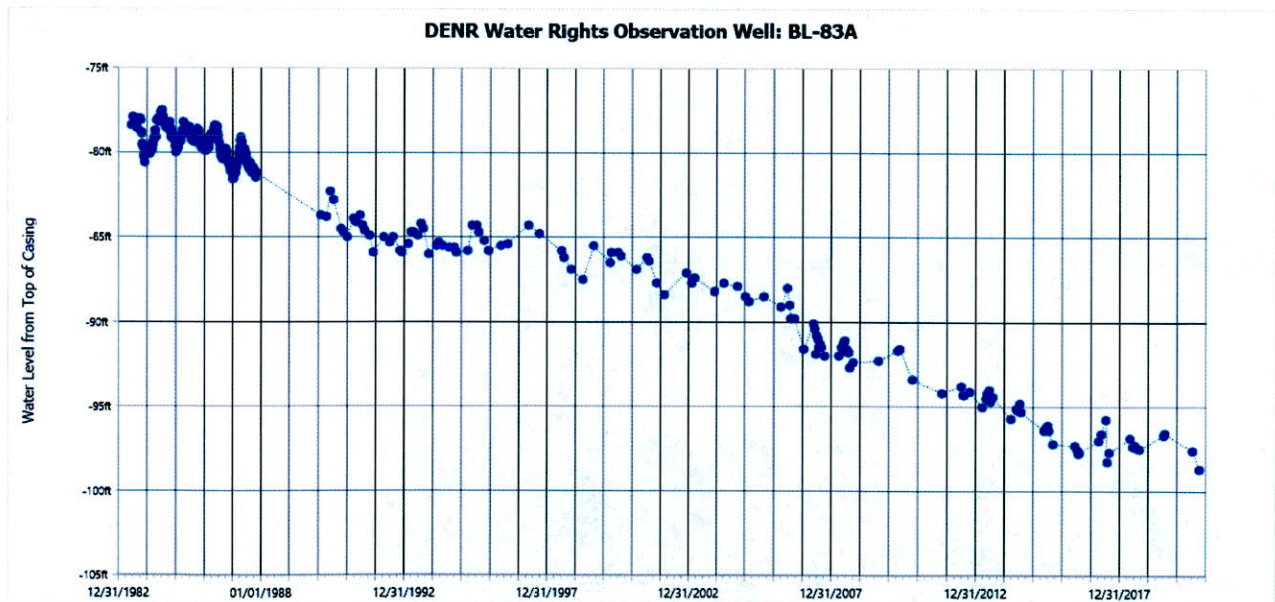


Figure 4. Hydrograph for observation well BL-83A (Water Rights, 2021b)

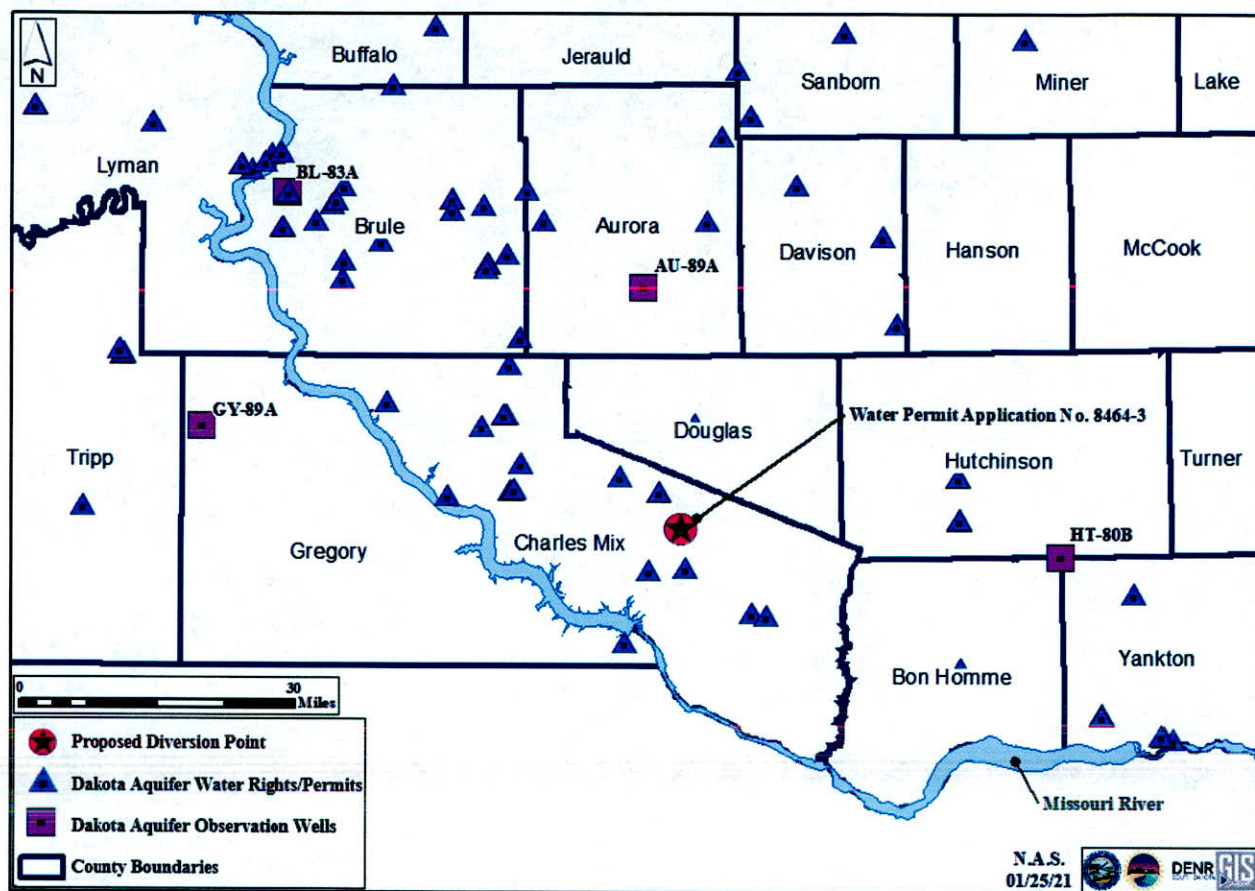


Figure 5. Location of the wells the applicant proposes to use for Water Permit Application No. 8464-3 with the Dakota aquifer water rights/permits within fifty miles of well and observation wells used in this analysis (Water Rights, 2021b and 2021c)

While the overall trend in these historical measurements is downward, observation well ED-85A (approximately 153 miles north of well applicant proposes to use) completed into the Dakota aquifer has recorded a trend that has been stable to slightly increasing from 1991 to 2017 (Figure 6) (Water Rights, 2021b). An aquifer pumping test at the well was the cause for the drawdown in hydraulic head that occurred in 2018 (Figure 6) (Water Rights, 2021b).

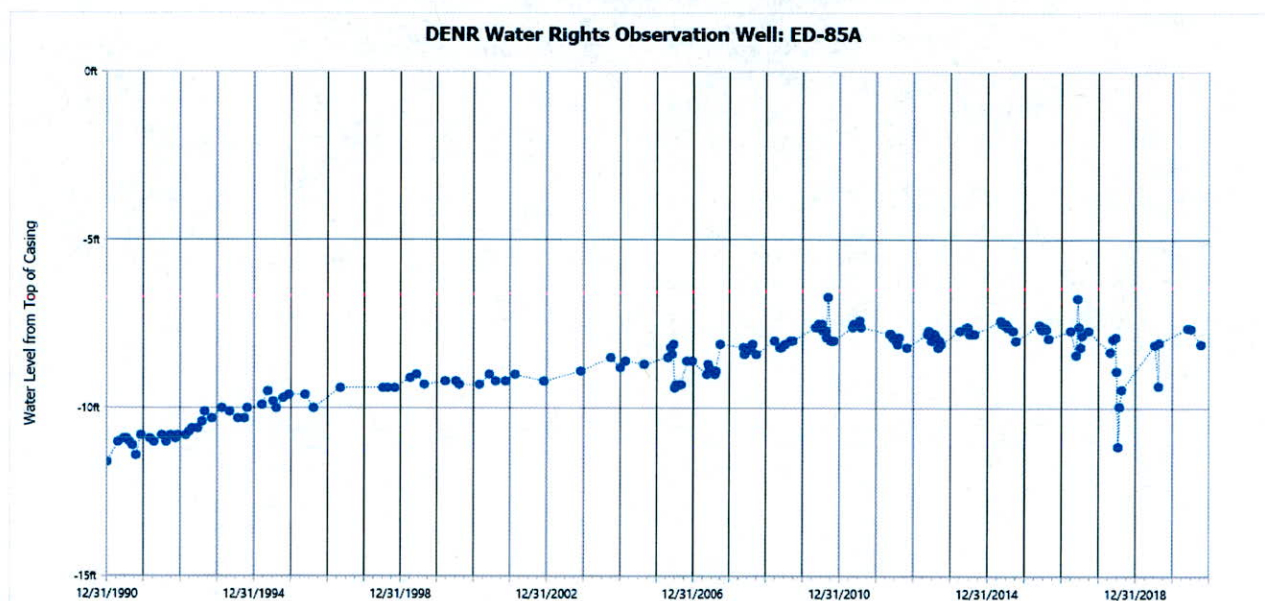


Figure 6. Hydrograph for observation well ED-85A (Water Rights, 2021b)

In addition to the observation well hydrographs, a record of the potentiometric surface is shown through historical accounts. Schoon (1971) developed maps of the potentiometric surface of the Dakota aquifer using data modified from Darton (1909), from the State Engineer's office for the period 1914 to 1915, and a compilation of many reports over the period of 1936 to 1953. Wells that have been completed into the Dakota aquifer within the past three years and are located within two miles of the well applicant proposes to use were used to approximate the current potentiometric surface conditions (Table 4) (Water Rights, 2021d).

Table 4. Historic and current approximate water level elevations near the well the applicant proposes to use (Schoon, 1971; Water Rights, 2021d)

Data Source	Year(s)	Approximate potentiometric surface within two miles of proposed diversion point (feet)
Schoon (1971), after Darton	1909	1,650-1,660
Schoon (1971), State Engineer's Office	1914-1915	1,580-1,590
Schoon (1971)	1936-1953	1,550-1,560
Well Logs Database	2017-Present	1,450-1,550

Throughout South Dakota, the hydrographs for observation wells and the potentiometric surface measurements of the Dakota aquifer show a decreasing trend in hydraulic head (Water Rights, 2021b). The decreasing trend is likely due to the uncontrolled flowing wells which the Water Management Board determined is not a beneficial use of water and does not constitute withdrawal pursuant to SDCL 46-6-3.1 (Water Rights, 1987). Since discharge from uncontrolled flowing wells is likely to continue until water levels in the aquifer decline to being at or below ground surface, continuing to allow beneficial pumping to occur reduces the amount of water being discharged to waste. Therefore, the Water Management Board has allowed development of the Dakota aquifer to continue.

Observation well BL-83A (approximately 57 miles northwest of the well the applicant proposes to use) has ten high-yield wells within approximately ten miles of it (Water Rights, 2021b and 2021c). The lithologic log on file for BL-83A noted the well was drilled 942 feet deep with the top of aquifer is expected to be approximately 878 feet below the ground surface (SDGS, 2021). The lowest recorded static water level on the hydrograph (displayed in Figure 4) is approximately 99 feet, which indicates there was still about 779 feet of artesian head pressure in BL-83A even during drier periods when high-yield irrigation wells are expected to be pumping more water (Water Rights, 2021b). When considering that beneficial withdrawals are more favorable than letting water flow to waste, the amount of artesian head pressure in the Dakota aquifer, and the observation well datasets, there is a reasonable probability unappropriated water from the Dakota aquifer is available for the proposed appropriation.

DAKOTA AQUIFER HYDROLOGIC BUDGET:

Recharge

Recharge to the Dakota aquifer in South Dakota occurs through upward leakage from underlying aquifers with higher artesian pressure than the Dakota aquifer, downward seepage from overlying confining layers and the through infiltration of precipitation on the Newcastle Formation outcrops in the Black Hills (Bredehoeft, et al., 1983; Koch and McGarvie, 1988; Steece and Howells, 1965). Using computer modeling, Bredehoeft, et al. (1983) attempted to match Darton's (1909) potentiometric surface map of the Dakota aquifer to develop a recharge estimate of approximately 79.4 cfs (57,500 acre-feet/year) before well development began. However, many assumptions used in Bredehoeft, et al.'s (1983) recharge estimate were incorrect and outdated. For example, assuming steady-state flow conditions between aquifers is unrealistic of real-world conditions and the recharge estimates used for the Madison and Inyan Kara aquifers in Bredehoeft, et al.'s (1983) analysis are much lower than estimates measured by more recent research (Bredehoeft, et al., 1983; Carter, et al., 2002). While Bredehoeft, et al.'s (1983) estimate can provide a scale of the Dakota aquifer's recharge rate, it cannot be used as an exact value for water management purposes. As the physical properties of aquifers and the locations where adjacent aquifers are in contact with each other are relatively undefined among many other factors, it is unknown whether the true recharge rate of the Dakota aquifer is higher or lower than Bredehoeft et al.'s (1983) estimate.

Discharge

Discharge from the Dakota aquifer in South Dakota occurs through well withdrawals, uncontrolled flowing wells and outflow to overlying adjacent aquifers (Koch and McGarvie, 1988; Steece and Howells, 1965; Water Rights, 2021c). Outflow from the Dakota aquifer to overlying adjacent aquifers occurs on the slope and crest of the Sioux Ridge because the Dakota and other aquifers merge or are hydraulically connected at this location (Steece and Howells, 1965). Additional outflow from the Dakota aquifer to overlying adjacent aquifers occurs because of the high artesian pressure in the Dakota aquifer and through corroded well casings (Steece and Howells, 1965; Water Rights, 2021b).

Currently, there are 240 water rights/permits appropriating water from the Dakota aquifer within South Dakota (Water Rights, 2021c). There are six commercial water rights/permits (Nos. 6011-3, 6516-3, 6629-3, 8199-3, 8252-3, and 8413-3) labeled as withdrawing from a primary aquifer source other than the Dakota aquifer, but the Dakota aquifer is authorized as a secondary water source (Water Rights, 2021c). For the purpose of estimated average annual withdrawals, these six water rights/permits are assumed to be withdrawing their full amount from the Dakota aquifer. Additionally, there are seven future use permits reserving water from the Dakota aquifer (Water Rights, 2021c). For the purpose of estimated average annual withdrawals, the seven future use permits are assumed to be fully developable for a total of 4,237 acre-feet per year (Table 1).

Table 1. Future use water permits for Dakota aquifer with corresponding reserved water volume (Water Rights, 2021c)

Future Use Permit Holder	Amount of Reserved Water (acre-ft)
City of Canton (1262C-3, 5219-3)	1,849
City of Lennox (5101-3, 5101A-3)	0*
South Lincoln RWS (4817-3)	1,448
Lincoln RWS (5155-3)	440
City of Harrisburg (8400-3)	500
Total:	4,237
RWS: Rural Water System, *The City of Lennox has allocated the water they had reserved	

Table 2 summarizes the 222 non-irrigation water rights/permits authorized to appropriate water from the Dakota aquifer, plus the six commercial water rights/permits authorized to appropriate from the Dakota aquifer as a secondary water source, with the estimated annual use for each water right/permit as determined by their limiting 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. The use type determined for each water right/permit was based on the primary use categorized for each water right/permit as some permits have additional uses. Municipal water rights/permits that were identified as being connected to a rural water system are assumed to use zero acre-feet per year on Table 2, as those municipalities have typically maintained a well for backup or emergency use and use a negligible amount of water (Friedeman, 2020). Overall, the average annual withdrawal rate for the Dakota aquifer non-irrigation water rights is approximately 22,453 acre-feet per year (Table 2).

Table 2. Summary of the non-irrigation water rights/permits authorized to appropriate from the Dakota aquifer with estimated annual use determined by their respective diversion rate or annual volume (Friedeman, 2020; Water Rights, 2021c)

Use Type	No. of Water Rights/Permits	Appropriation for Water Rights/Permits limited by Volume (ac-ft/yr)	Appropriation for Water Rights/Permits limited by Diversion Rate (cfs)	Total Estimated Use (ac-ft/yr)
RWS	6	2,005	2.2	2,961
SHD	7		3.33	1,447
REC	2		0.45	195
COM	99	862	11.74	5,961
DOM	11		1.75	762
FWP	4		2.78	1,209
GEO	2		2.33	1,012
INS	2		1.34	582
IND	6	160	0.84	527
MUN	89	3,274	10.41	7,798
TOTAL:	228	6,301	37.2	22,453
RWS: Rural Water System, SHD: Suburban Housing Development, REC: Recreation,				
COM: Commercial, DOM: Domestic, FWP: Fish & Wildlife Propagation, GEO: Geothermal,				
INS: Institutional, IND: Industrial, MUN: Municipal				

Currently, there are 18 irrigation water rights/permits appropriating water from the Dakota aquifer (Water Rights, 2021c). Irrigation water rights/permits have been typically required to report their annual usage on an irrigation questionnaire since 1979. Table 3 lists only 15 water rights/permits appropriating water from the Dakota aquifer as Water Right Nos. 394-3 and 762-3 are not required to submit an irrigation questionnaire, and Water Permit No. 8423-3 (approved in 2020) has not been constructed yet. Collectively, Water Right Nos. 394-3 and 762-3 are authorized to irrigate 31.2 acres (Water Rights, 2021c). Generally, irrigators in eastern South Dakota apply less than one foot of water per acre per year. However, to account for the fluctuation in wet and dry cycles from year to year, the one foot of water per acre per year application rate will be used to liberally estimate the annual withdrawal rate for these irrigation water rights. When applying one foot of water over the 31.2 acres currently authorized to be irrigated under Water Right Nos. 394-3 and 762-3, the estimated annual withdrawal rate for Water Right Nos. 394-3 and 762-3 is approximately 31.2 acre-feet per year (Water Rights, 2021c). Water Permit No. 8423-3 authorizes 42 acres of golf course turf to be irrigated (Water Rights, 2021c). Turf irrigation typically requires more water than crop irrigation so an application rate of two feet of water per acre per year will be used to liberally estimate the annual withdrawal rate for this irrigation water permit. When applying two feet of water over the 42 acres currently authorized to be irrigated under Water Permit No. 8423-3, the estimated annual withdrawal rate for Water Permit No. 8423-3 is approximately 84 acre-feet per year (Water Rights, 2021c).

To give a better representation of the current development of the Dakota aquifer, the average annual withdrawal rate for the irrigation water rights/permits that have reported over the last ten years was estimated. On average, the last ten years of Dakota aquifer irrigation water rights/permits pumped 198.9 acre-feet annually (Table 3) (Water Rights, 2021a). By combining the calculated withdrawal rate for the three irrigation water rights/permits that are not accounted for on Table 3 with the average annual withdrawal rate based on the development of the Dakota aquifer over the last ten years, the average annual withdrawal rate for the 18 Dakota aquifer irrigation water rights/permits is approximately 314.1 acre-feet per year (Water Rights, 2021a and 2021c).

There are domestic wells completed into the Dakota aquifer that do not require a water right/permit, so the withdrawal amount for domestic use is unknown (Water Rights, 2021d). Since the introduction of rural water systems, many domestic wells are likely no longer in use or are not being used as primary water sources. Due to their relatively low diversion rates and the availability of rural water, withdrawals from domestic wells are not considered to be a significant portion of the hydrologic budget for the Dakota aquifer. It is currently unknown how much water is being discharged from the Dakota aquifer through uncontrolled flowing wells. The Water Management Board has previously determined water being discharged through uncontrolled flowing wells is not a beneficial use and does not constitute appropriation pursuant to SDCL 46-6-3.1 (Water Rights, 1987).

Hydrologic Budget Summary

The estimated average annual recharge to the Dakota aquifer has not been accurately quantified. Bredehoeft et al. (1983) estimated a recharge rate of approximately 57,500 acre-feet per year but several factors make it uncertain if that is a high or low estimate. The average annual withdrawal rate for the water rights/permits authorized to appropriate water from the Dakota aquifer totals approximately 27,039.1 acre-feet per year (non-irrigation: 22,453 acre-feet/year, irrigation: 314.1 acre-feet/year, future use reservations: 4,237, and Water Permit Application No. 8464-3 (if approved): 35 acre-feet/year). Based on the hydrologic budget, there is a reasonable probability unappropriated water is available from the Dakota aquifer for the proposed appropriation.

Table 3. Reported historic irrigation use from Dakota aquifer (Water Rights, 2021a)

Year	No. of Permits	Annual Appropriation (acre-feet)	Reported Pumpage (acre-feet)
1979	2	729	38
1980	2	729	110
1981	4	1469	45
1982	5	1,420.52	33.23
1983	5	1,834.76	64.39
1984	4	1,405.76	0
1985	5	1,554.26	8.1
1986	5	1,834.76	238.85
1987	5	1,900.52	1.3
1988	4	1,471.52	452.8
1989	4	1,471.52	265.4
1990	4	1,471.52	234
1991	5	1,481.52	165.42
1992	5	1,501.52	40.4
1993	7	1,521.52	112.4
1994	7	1,455.76	51.89
1995	8	1,051.76	30.83
1996	8	1,117.52	34.38
1997	9	1,127.52	48
1998	9	637.52	175.8
1999	10	703.52	101.57
2000	10	703.52	172.81
2001	11	777.52	160.85
2002	10	763.52	178.87
2003	10	763.52	205.02
2004	10	763.52	153.97
2005	12	1,003.52	146.51
2006	13	1,211.52	232.32
2007	14	1,238.52	199.98
2008	14	1,238.52	196.39
2009	15	1,298.52	130.76
2010	17	1,950.52	171.66
2011	18	2,158.52	174.57
2012	18	2,158.52	298.33
2013	18	2,158.52	256.52
2014	17	2,354.52	162.86
2015	17	2,576.32	236.1
2016	16	2,368.32	195.95
2017	16	2,368.32	229.07
2018	16	2,368.32	156.71
2019	15	2,057.12	107.52
Min	2	637.5	0
Max	18	2,576.3	452.8
Avg (1979 to 2019)	10	1,467.6	146.8
Avg (2010 to 2019)	17	2,251.9	198.9

POTENTIAL FOR UNLAWFUL IMPAIRMENT OF EXISTING WATER RIGHTS WITHIN THE DAKOTA AQUIFER:

Currently, there are 240 water rights/permits authorized to appropriate water from the Dakota aquifer, six commercial water rights/permits authorized to appropriate water the Dakota aquifer as a secondary water source, and seven future use water permits reserving water from the Dakota aquifer (Water Rights, 2021c). The closest water right/permit to the well the applicant proposes to use is Water Right No. 220-3 which is held by US Fish and Wildlife Service. The diversion point for Water Right No. 220-3 is located approximately 4.4 miles south of the well the applicant proposes to use for this application (Table 5) (Figure 7) (Water Rights, 2021c).

There are domestic wells on file with the DENR-Water Rights Program that are completed into the Dakota aquifer, with the closest domestic well on file (not held by the applicant) is approximately 1.7 miles northeast of the well the applicant proposes to use (Water Rights, 2021d). There are potentially other domestic wells completed into the Dakota aquifer near the well the applicant proposes to use that are not on file with the DENR-Water Rights Program.

Table 5. Water rights/permits authorized to withdraw water from the Dakota aquifer within approximately 20 miles of the well the applicant proposes to use, as shown in Figure 7 (Water Rights, 2021c)

Permit No.	Name	Status	Use	Diversion Rate (cfs)
220-3	US Fish and Wildlife Service	LC	FWP	2.22
394-3	Kory Standy	LC	IRR, DOM	0.067
570-3	City of Wagner	LC	MUN, REC	0.55
2328-2	Michael Kirwan	LC	IRR	0.22
5607-3	Jeffrey/Craig Johnson	LC	DOM	0.13
5673-3	Cedar Grove Colony	LC	DOM	0.17
6150-3	Red Rock COOP Association	LC	COM	0.333
6158-3	Ringling Cattle Company	LC	COM	0.133
6298-3	Coyote Ridge Cooperative	LC	COM	0.056
6470-3	Doug Peterson	LC	COM	0.11
6582-3	Dehaan Livestock & Grain	LC	COM	0.156
6597-3	Ringling Cattle Company	LC	COM	0.2
6616-3	Armour Hunters Haven LLP	LC	FWP, REC, DOM	0.123
7204-3	Steven Fousek	PE	COM, GEO	0.133
8152-3	City of Lake Andes	PE	REC	0.17
8228-3	B & B Washout	PE	COM	0.111
8423-3	City of Platte	PE	IRR	0.33
LC: Licensed Water Right; PE: Water Permit, REC: Recreation, COM: Commercial, DOM: Domestic, MUN: Municipal, FWP: Fish & Wildlife Propagation, GEO: Geothermal, IRR: Irrigation				

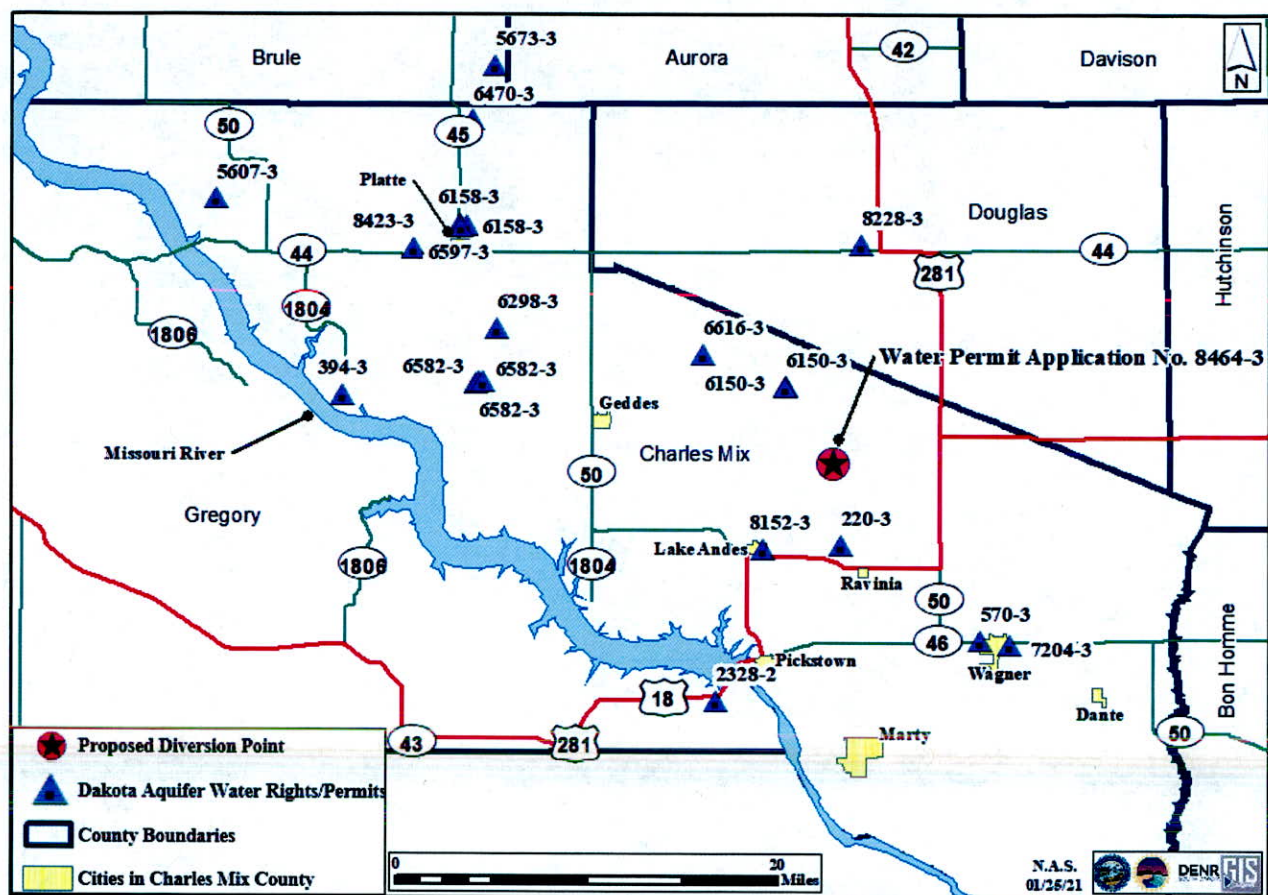


Figure 7. Location of wells the applicant proposes to use for Water Permit Application No. 8464-3 with the Dakota aquifer water rights/permits within approximately 20 miles (Water Rights, 2021b and 2021c)

The Dakota aquifer is under confined conditions near the well location the applicant proposes to use based on the submitted well completion report and lithologic logs on file for nearby observation wells (SDGS, 2021; Water Rights, 2021b and 2021d). Since the Dakota aquifer is expected to be confined at the well the applicant proposes to use, drawdown can extend some distance but the exact drawdown behavior of a well cannot be known without an aquifer performance test. At the well location, the Dakota aquifer has a saturated aquifer thickness of approximately 134 feet with depth to the top of aquifer materials around 706 feet below the ground surface according to the well completion report submitted with the application (Water Rights, 2021d). This would allow for enough thickness for a pump inlet to be placed 20 feet below the top of the aquifer, which is required for the well to be considered adequate under ARSD 74:02:04:20(6). Any drawdown as a result of the proposed diversion is not expected to unlawfully impair nearby adequate wells. In Charles Mix Counties, there are no complaints on file with the DENR-Water Rights Program regarding well interference for adequate wells completed into the Dakota aquifer (Water Rights, 2021e).

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 Dakota 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 thickness of the Dakota aquifer in Charles Mix County, and the lack of well interference complaints from the Dakota aquifer in this county, any drawdown created from the proposed diversion is not expected to cause an unlawful impairment on existing water rights/permits or domestic users with adequate wells. Additionally, the Dakota aquifer well the applicant proposes to use is an existing well that has been in place and is presumed to have been in use for some time without any reported well interference complaints on file with the DENR-Water Rights Program (Water Rights, 2021d and 2021e). Therefore, there is a reasonable probability that any interference from the proposed appropriation will not impose unlawful impairments on existing users with adequate wells.

Special Consideration: Declining Hydraulic Head

As the Dakota aquifer is a confined aquifer, the hydraulic head causes the water within the aquifer to rise above the top of the aquifer. In the late 1800's, wells began being completed into the Dakota aquifer and a decline in the aquifer's hydraulic head occurred whenever a flowing well was drilled and not properly controlled. These uncontrolled wells create a release of pressure contained within the aquifer. The decline has caused some concern on whether the Dakota aquifer withdrawals have exceeded the recharge to the aquifer. The Water Management Board has previously and carefully considered the declining hydraulic head in the Dakota aquifer. In the deliberation and approval of Water Permit No. 5136-3, for Farmland Industries Inc, the Water Management Board approved the findings of facts and conclusions of law containing the following summarized points (Water Rights, 1987):

- The estimated average annual recharge to the Dakota aquifer is not likely to be quantified in the near future;
- Determination of whether the withdrawals exceed the estimated average annual recharge cannot be determined solely by a decline in the hydraulic head;
- SDCL 46-6-6.1 does not require the artesian head to be protected; however, the Board must consider the effect of a limitation or loss of artesian head as one of the factors under the public interest determination;
- The decline in the hydraulic head in the Dakota aquifer has been primarily due to water being discharged through uncontrolled flowing wells;
- "Water discharged from uncontrollable flowing wells does not constitute withdrawal (appropriation) pursuant to SDCL 46-6-3.1;"
- That it is in the public interest to appropriate water rather than allow the water to be discharged to waste by uncontrolled flowing wells;
- That it is not in the public interest to deny a water permit application when the effects of the withdrawal will not be measurable and will not have a significant effect upon the decline or stabilization of the hydraulic head in the Dakota aquifer.

Special Consideration: Well Construction

The well completion report for the well the applicant proposes to use does not meet adequate well construction standards as defined in ARSD 74:02:04:20.

An adequate well has been defined in ARSD 74:02:04:20(6) as:

“A well constructed or rehabilitated to allow various withdrawal methods to be used, to allow the inlet to the pump to be placed not less than 20 feet into the saturated aquifer or formation material when the well is constructed, or to allow the pump to be placed as near to the bottom of the aquifer as is practical if the aquifer thickness is less than 20 feet. ”

The alternative well construction requirements for certain Dakota aquifer wells (74:02:04:35) are not permitted for commercial uses. However, the well to be put to appropriative use in the proposed diversion is a long-term existing well. Any future replacement wells shall meet the adequate well construction standard as defined in ARSD 74:02:04:20. Replacement wells may not be constructed using the alternative construction requirements that are allowed for domestic use wells outlined in ARSD 74:02:04:35.

CONCLUSIONS (For Dakota aquifer well):

1. Water Permit Application No. 8464-3 proposes to appropriate 35 acre-feet of water annually at a maximum instantaneous diversion rate of 0.1 cfs from one existing well completed into the Dakota aquifer for commercial use in animal confinement operations, or domestic use, or both. The site is located in Charles Mix County approximately five miles northeast of Lake Andes, South Dakota
2. Based on the hydrologic budget and observation well data, there is a reasonable probability that unappropriated water is available from the Dakota aquifer to supply the proposed appropriation.
3. There is a reasonable probability that the proposed diversion by Water Permit Application No. 8464-3 will not unlawfully impair adequate wells for existing water rights/permits and domestic users.
4. The decline in the hydraulic head in the Dakota aquifer has been primarily due to water being discharged through uncontrolled flowing wells. It is in the public interest to appropriate water rather than allow the water to be discharged to waste by uncontrolled flowing wells.
5. The proposed use is for commercial use in a feedlot; therefore, any future replacement wells shall meet the adequate well construction standard as defined in ARSD 74:02:04:20.

CODELL AQUIFER

CODELL AQUIFER HYDROGEOLOGY:

The Codell aquifer is a bedrock aquifer that exists in portions of the Codell Sandstone Member of the Upper Cretaceous aged, Carlile Shale (Christensen, 1989). The Codell Sandstone consists of a multicolored, well cemented to uncemented, fine grained sandstone that is interbedded with gray shale and thin limestone layers (Hedges et al., 1982; Christensen, 1989). The sandstone member varies from white to gray or green in color and weathers to a light yellow or orange (Christensen, 1989). The Carlile Shale underlies most of South Dakota but the portion of the Codell Sandstone Member that contains the Codell aquifer is not as extensive (Hedges et al., 1982; Allen et al., 1985). West of the Missouri River, the Codell Sandstone Member has not been documented but the Carlile Shale is present in all areas except for the Black Hills region (Allen et al., 1985). In Charles Mix and Douglas Counties, the Codell aquifer has a documented maximum thickness of 55 feet and an average thickness that ranges from 18 to 40 feet (Kume, 1977). The depth to the top of Codell aquifer materials ranges from 80 to 125 feet below the ground surface in the Missouri bedrock valley to 300 to 400 feet below the ground surface in the Corsica and Choteau bedrock valleys (Kume, 1977).

The Codell aquifer is primarily under confined conditions (SDGS, 2021; Water Rights, 2021b and 2021d). Hedges and others (1982) estimated the minimum distribution of the areal extent of the Codell aquifer to be approximately 4,960,000 acres and contain approximately 9,895,700 acre-feet of recoverable water in storage. It is worth noting there are water rights/permits that use wells completed into the Codell aquifer that plot outside of the aquifer boundaries delineated by Hedges and others (1982) (as shown in Figure 8) (Water Rights, 2021c). Therefore, the Codell aquifer does have a larger areal extent and likely contains more water in storage than what was estimated by Hedges and others (1982). In Charles Mix County, Hedges and others (1982) estimated the minimum distribution of the areal extent of the Codell aquifer to be approximately 725,760 acres and to contain approximately 1,451,500 acre-feet of recoverable water in storage.

A water well completion report was submitted with Water Permit Application No. 8464-3 for an existing well (400 feet deep) completed into the Codell aquifer. The well completion report indicates the well is located in the center of Section 18-T97N-R64W. However, the well is actually located in the NW $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 18-T97N-R64W. The well completion report lists "Clay" from 0 to 15 feet below the ground surface, several varying layers of sand, gravel and clay from 15 to 254 feet, "Chalk" from 254 to 318 feet, "Sandstone" from 318 to 352 feet, "hard Sandstone" from 352 to 360 feet, and "Sandstone" from 360 to 400 feet below the ground surface. The well was screened in sandstone from 320 to 400 feet below the ground surface and had a static water level of 246 feet below the ground surface at the time of completion (August 24, 1989) (Water Rights, 2021d). Based on the submitted well completion report and lithologic logs on file for nearby observation wells, the Codell aquifer is expected to be confined at the well location the applicant proposes to use (SDGS, 2021; Water Rights, 2021b and 2021d).

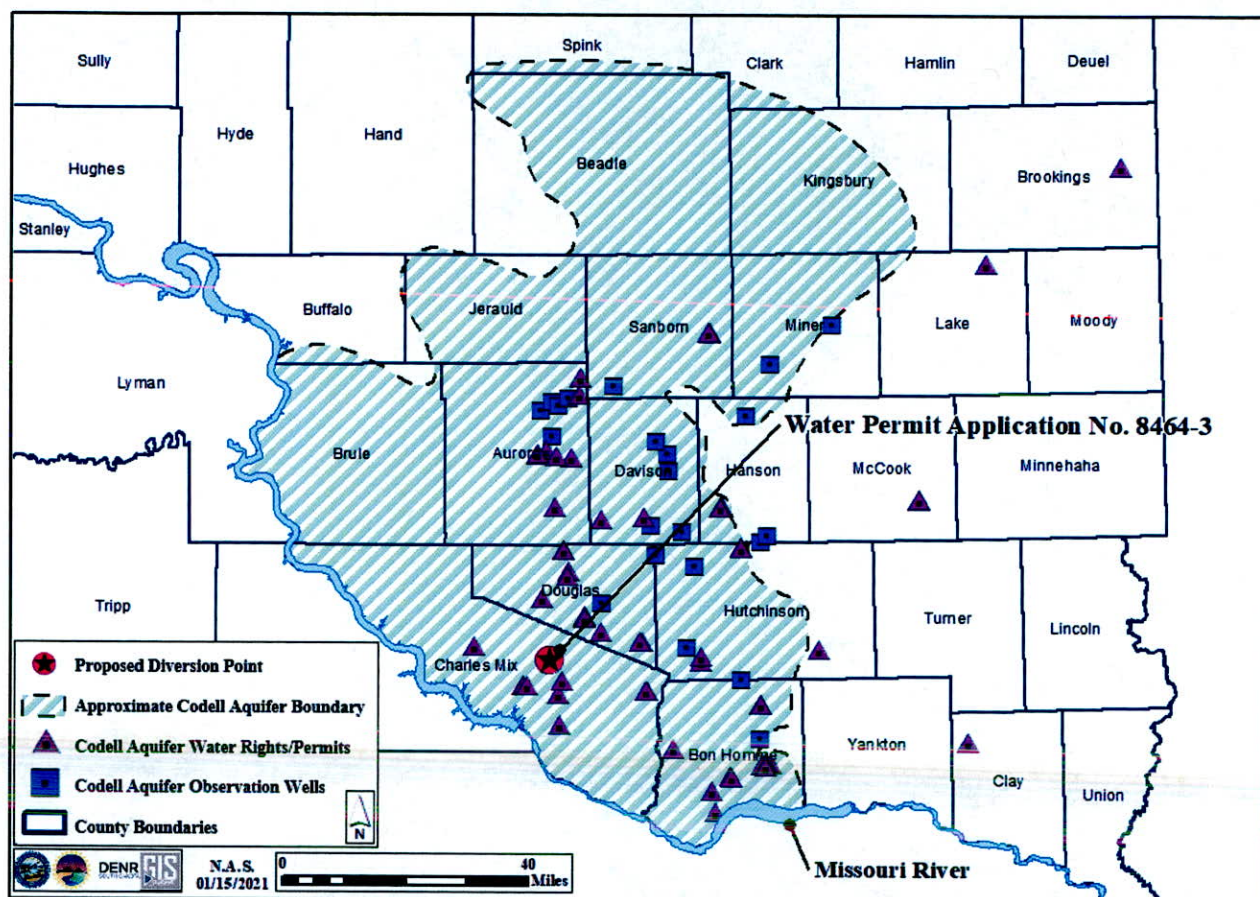


Figure 8. Map of the approximate minimum extent of the Codell aquifer delineated from Hedges and others (1982), the location of the well the applicant proposes to use for Water Permit Application No. 8464-3, and the Codell aquifer water rights/permits and observation wells (modified from Hedges et al., 1982; Water Rights, 2021b and 2021c)

CODELL AQUIFER 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 DENR-Water Rights Program monitors 22 observation wells completed into the Codell aquifer (Water Rights, 2021b). These observation wells provide data on how the aquifer reacts to regional climatic conditions and local pumping. The four closest observation wells to the well the applicant proposes to use are DG-80F (approximately 12.5 miles northeast), HT-87D (approximately 22.5 miles northeast), HT-78D (approximately 24.5 miles northeast) and HT-68D (approximately 28.5 miles northeast) (as shown in Figure 13). The hydrographs for these observation wells are displayed in Figures 9 to 12 (Water Rights, 2021b). 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.

The hydrographs for the Codell 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 during drier periods. Additionally, the hydrographs show the water level in the aquifer has been generally stable or rising over the period of record, indicating no evidence of a significant decrease in artesian head pressure for observation wells completed into Codell aquifer (Water Rights, 2021b). This relatively stable to rising water level in the Codell aquifer supports Hedges and others (1985) conclusion that it is unlikely that withdrawals are approaching or exceeding recharge from the aquifer. Overall, the observation well hydrographs demonstrate there is a reasonable probability unappropriated water from the Codell aquifer is available for the proposed appropriation.

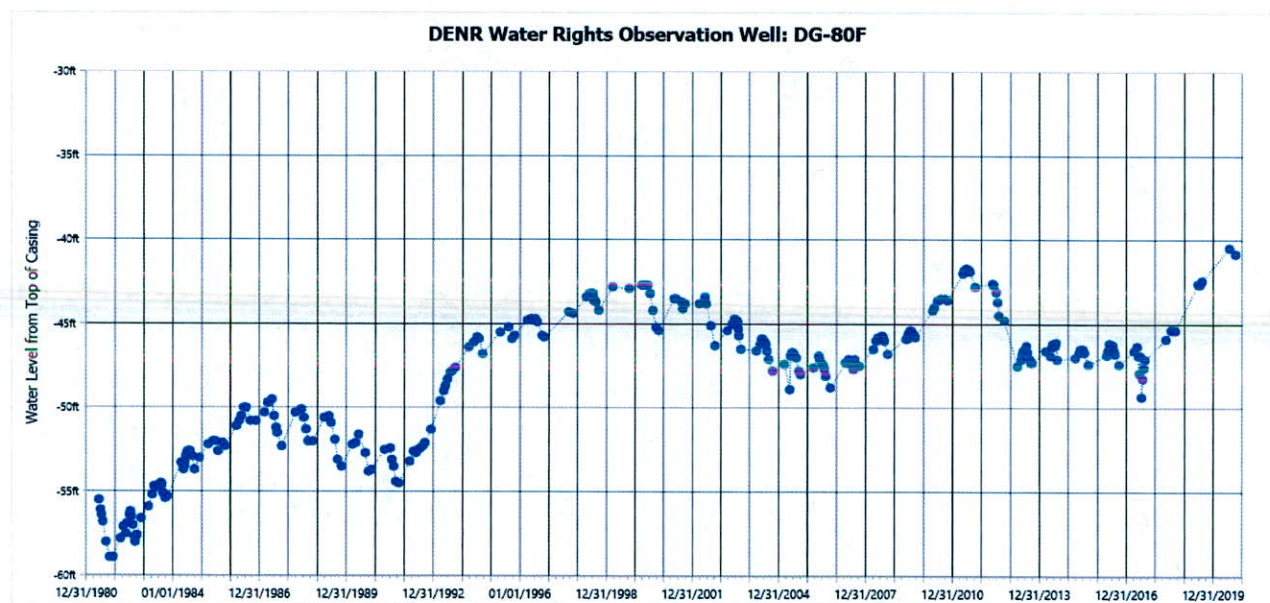


Figure 9. Hydrograph for observation well DG-80F (Water Rights, 2021b)

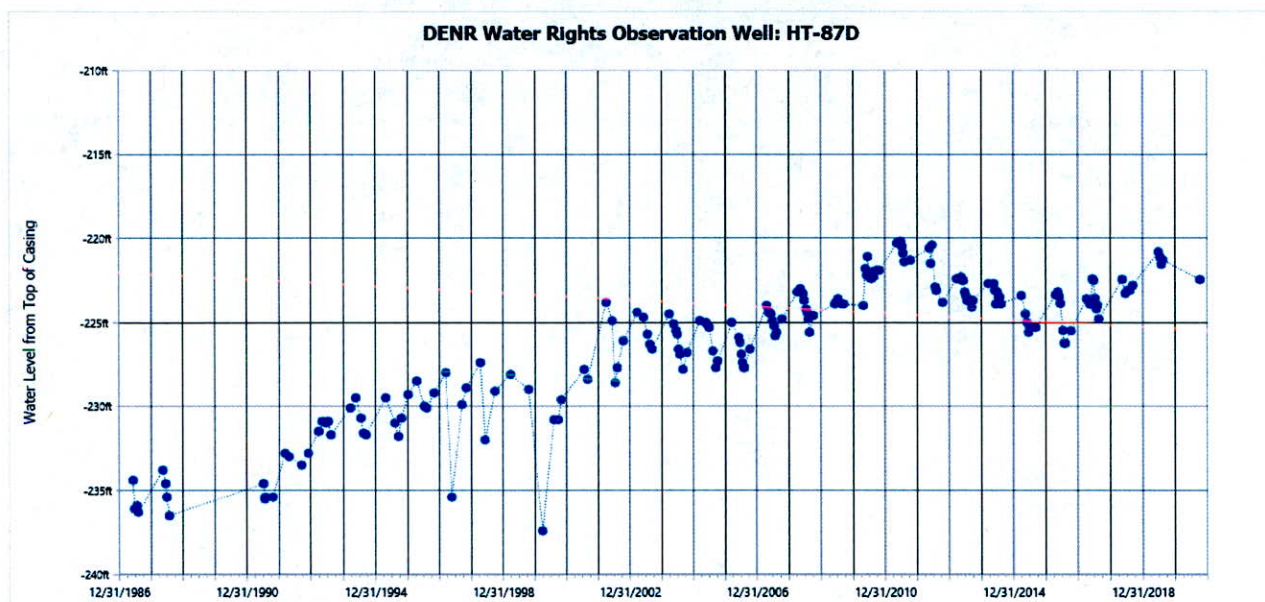


Figure 10. Hydrograph for observation well HT-87D (Water Rights, 2021b)

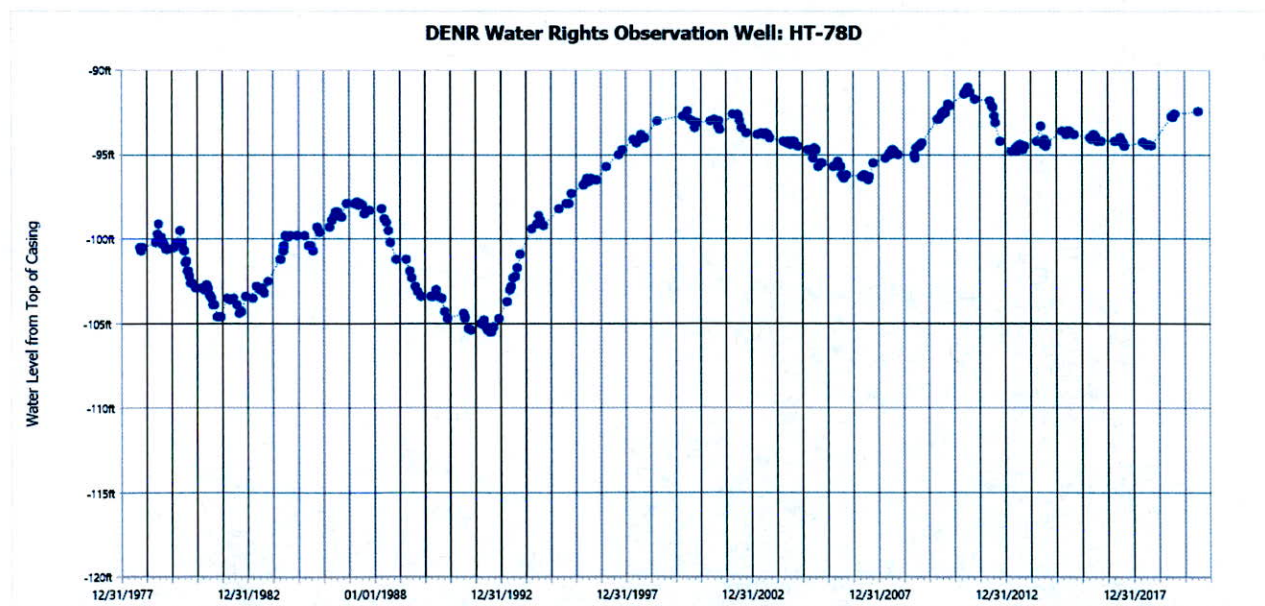


Figure 11. Hydrograph for observation well HT-78D (Water Rights, 2021b)

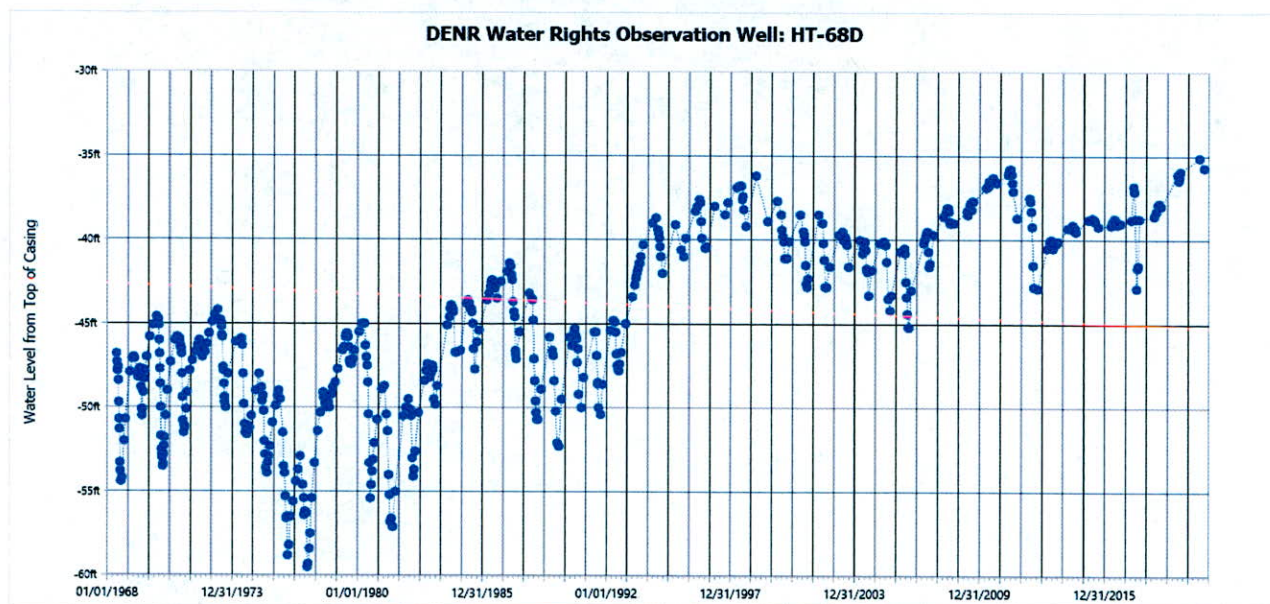


Figure 12. Hydrograph for observation well HT-68D (Water Rights, 2021b)

CODELL AQUIFER HYDROLOGIC BUDGET:

Recharge

Recharge to the Codell aquifer occurs through leakage from the overlying Niobrara aquifer. In Hanson County, recharge to the aquifer may also be through the overlying Floyd: East James aquifer and by leakage through fractures in the underlying Sioux Quartzite (Hansen, 1983). The Codell Sandstone Member outcrops in several locations, particularly along Firesteel Creek (northwest of the City of Mitchell in South Dakota) (Christensen, 1989), which implies that there may be recharge through direct infiltration of precipitation on the outcrop. In Charles Mix and Douglas Counties, some minor local recharge to the Codell aquifer occurs in the Missouri, Choteau and Corsica bedrock channels where the sandstone is beneath and in contact with the outwash (Kume, 1977).

No quantification of the average annual recharge rate to the Codell aquifer has been published. While the estimated recharge rate to the aquifer is unknown, Hedges and others (1985) noted that the "Codell Sandstone" has such high storage with low use, it is unlikely that withdrawals are approaching or exceeding recharge from the aquifer. Additionally, there has been no evidence of a significant decrease in artesian head pressure for wells completed into Codell aquifer (Hedges et al., 1985; Water Rights, 2021b).

Discharge

Discharge from the Codell aquifer occurs through well withdrawals, evapotranspiration where the Codell Sandstone Member outcrops or is near land surface, and by leakage to the James River and Lake Mitchell (Hansen, 1983). In Charles Mix and Douglas Counties, the potentiometric surface of the Codell aquifer slopes to the south towards the Missouri River trench and to the east towards the Choteau channel, which are probably natural discharge areas for the aquifer (Kume, 1977).

Currently, there are 45 water rights/permits authorized to appropriate water from the Codell aquifer (Water Rights, 2021c). Table 6 summarizes the 41 non-irrigation water rights/permits authorized to appropriate water from the Codell aquifer with the estimated annual use for each water right/permit as determined by their limiting 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. Twelve municipal water rights and one institutional water right were identified as being connected to a rural water system and maintain their wells for standby purposes (Drinking Water Program, 2021; Water Rights, 2021c); as such, the average annual water use for these water rights has been estimated to be zero acre-feet per year on Table 6. Overall, the average annual withdrawal rate for the Codell aquifer non-irrigation water rights/permits is approximately 2,340 acre-feet per year (Table 6).

Table 6. Summary of the non-irrigation water rights/permits authorized to appropriate from the Codell aquifer with estimated annual use determined by their respective diversion rate or annual volume (Drinking Water Program, 2021; Water Rights, 2021c)

Permit No.	Name	Status	Use	County	Diversion Rate (cfs)	Annual Volume (acre-feet)	Estimated Use (acre-feet/year)
551-3	State Training School	LC	INS	AU	0.17		73.8
555-3	City of Armour	LC	MUN	DG	0.5		0*
687-3	City of Lake Andes	LC	MUN	CM	0.73		0*
1676-3	Town of Nunda	LC	MUN	LK	0.1		43.4
1694-3	Town of Stickney	LC	MUN	AU	0.11		0*
1892-3	City of Wakonda	LC	MUN	CL	0.33		0*
1966-3	City of Geddes	LC	MUN	CM	0.38		0*
4120-3	City of Plankinton	LC	MUN	AU	0.36		0*
4279-3	City of Delmont	LC	MUN	DG	0.3		0*
4279A-3	City of Delmont	LC	MUN	DG	0		0*
4383-3	Douglas County Cheese Co	LC	IND	DG	0.07		30.4
4402-3	City of Tripp	LC	MUN	HT	0.64		278
4836-3	City of Corsica	LC	MUN	DG	0.13		0*
4977-3	City of Menmo	LC	MUN	HT	0.5		0*
5330-3	City of Avon	LC	MUN	BH	0.33		0*
5477-3	Artesian-Letcher School District	LC	INS	SA	0.05		21.7
5480-3	Cortrust Bank, N.A.	LC	COM	SA	0.04		17.4
5549-3	National Foods Corp	LC	COM	AU	0.26		112.9
5598-3	Storla Sunset Home	LC	INS	AU	0.08		0*
5731-3	St Charles Catholic Church	LC	INS	SA	0.033		14.3
5756-3	Town of Ravina	LC	MUN	CM	0.07		0*
5823-3	DNA Production LLC	LC	COM	DG	0.22		95.6
5978-3	Norfeld Hutterian Brethern Inc	LC	COM	BG	0.111		48.2
5995-3	Bernard Van Vuuren	LC	COM	DG	0.177		76.9
6018-3	National Foods Corp	LC	COM	AU	0.27		117.3
6041A-3	Calvin Berwald	LC	COM	AU	0.08		34.8
6232-3	Rockport Hutterian Brethern	LC	DOM	HS	0.222		96.4
6323-3	New Elm Springs Colony	LC	DOM	HT	0.09		39.1
6539-3	Clearfield Colony	LC	DOM	CM	0.2		86.9
6544-3	City of Armour	LC	REC	DG	1.381		599.9
6762-3	Van Winkle Dairy LP	LC	COM	MC	0.27		117.3
7206-3	Long View Farms LLP	PE	COM	CM	0.067		29.1
7359-3	James C Kokes	LC	COM	BH	0.067		29.1
7851-3	Alan Armstrong	LC	DOM	BH	0.067		29.1
8252-3	Michael Slama	LC	COM	BH	0.09	45	45
8291-3	Jackrabbit Family Farms	PE	COM	DN	0.085	50	50
8303-3	Frank Pravecek	LC	COM	BH	0.12	51	51
8314-3	Cody Schelling	PE	COM	DG	0.07	29	29
8331-3	Rosedale Hutterian Brethern	PE	COM	HS	0.11	72.6	72.6
8444-3	Rosedale Hutterian Brethern	PE	COM	HS	0.056	38	38
8456-3	Shannon Klumb	PE	COM	DN	0.133	63	63
LC: Licensed Water Right; PE: Water Permit						TOTAL:	2,340
MUN: Municipal; IND: Industrial; COM: Commercial; DOM: Domestic; INS: Institutional; REC: Recreation							
AU: Aurora; BG: Brookings; BH: Bon Homme; CL: Clay; CM: Charles Mix; DN: Davison;							
DG: Douglas; HS: Hanson; HT: Hutchinson; LK: Lake; MC: McCook; SN: Sanborn *Identified as being connected to a Rural Water System							

Currently, there are four water rights authorized to appropriate water from Codell aquifer for irrigation use (Water Rights, 2021c). Irrigation water rights/permits are typically required to report their annual water usage; however, there were no irrigation water rights/permits appropriating water from the Codell aquifer from 1987 to 2003 (Water Rights, 2021a and 2021c). The average annual withdrawal rate for the Codell aquifer irrigation water rights/permits that have reported over the period of record (1979 to 1986 and 2004 to 2019) is approximately 76 acre-feet per year (Table 7) (Water Rights, 2021a).

Table 7. Reported historic irrigation use from Codell aquifer (Water Rights, 2021a)

Year	No. of Permits	Annual Appropriation (acre-feet)	Reported Pumpage (acre-feet)
1979	3	1,410	210
1980	3	1,410	92
1981	3	1,410	185
1982	2	N/A	N/A
1983	2	N/A	N/A
1984	2	570	124.2
1985	2	570	0
1986	2	570	152
2004	1	74	26.5
2005	1	74	26.5
2006	1	74	11.1
2007	1	74	0
2008	1	74	6.5
2009	1	74	2.7
2010	1	74	2.6
2011	1	74	3.4
2012	1	74	0
2013	4	880	23.6
2014	4	1,086	161.7
2015	4	1,086	191.2
2016	4	1,086	220.4
2017	4	1,086	213.6
2018	4	1,086	9.9
2019	4	1,090	9.3
Average	2	636.6	76

To estimate an annual withdrawal rate based on the current development of the current four Codell aquifer irrigation water rights, the number of developed acres multiplied by a 12-inch application rate will be used. A developed acre in this report was determined as the number of acres authorized to be irrigated by a water permit, or if the water permit has been licensed, the number of acres authorized to be irrigated by a water right. Collectively, these four irrigation water rights are licensed to irrigate 558 acres (Water Rights, 2021c). Generally, irrigators in eastern South Dakota apply less than one foot of water per acre per year. However, to account for the fluctuation in wet and dry cycles from year to year, the one foot of water per acre per year application rate will be used to liberally estimate the annual withdrawal rate for these four irrigation water rights/permits. By assuming an application rate of one foot per developed acre, applied over the 558 acres currently licensed to be irrigated from wells completed into the Codell aquifer, the estimated annual withdrawal rate for the four irrigation water rights is approximately 558 acre-feet per year (Water Rights, 2021c).

There are domestic wells completed into the Codell aquifer that do not require a water right/permit, so the withdrawal amount for domestic use is unknown (Water Rights, 2021d). Since the introduction of rural water systems, many domestic wells are likely no longer in use or are not being used as primary water sources. Due to their relatively low diversion rates and the availability of rural water, withdrawals from domestic wells are not considered to be a significant portion of the hydrologic budget for the Codell aquifer.

Hydrologic Budget Summary

The average annual withdrawal rate from the Codell aquifer totals approximately 2,914 acre-feet per year: non-irrigation: 2,340 acre-feet/year; irrigation: 558 acre-feet/year; Water Permit Application No. 8464-3, if approved, 16 acre-feet/year. This withdrawal volume is less than 0.03 percent of the nearly 10 million acre-feet of recoverable water stored in the Codell aquifer (Hedges et al., 1982). Hedges and others (1985) noted it is unlikely that withdrawals are approaching or exceeding recharge from the aquifer, and there has been no evidence of a significant decrease in artesian head pressure for wells completed into Codell aquifer (Hedges et al., 1985; Water Rights, 2021b). Therefore, there is a reasonable probability unappropriated water is available from the Codell aquifer for the proposed appropriation.

POTENTIAL FOR UNLAWFUL IMPAIRMENT OF EXISTING WATER RIGHTS WITHIN THE CODELL AQUIFER:

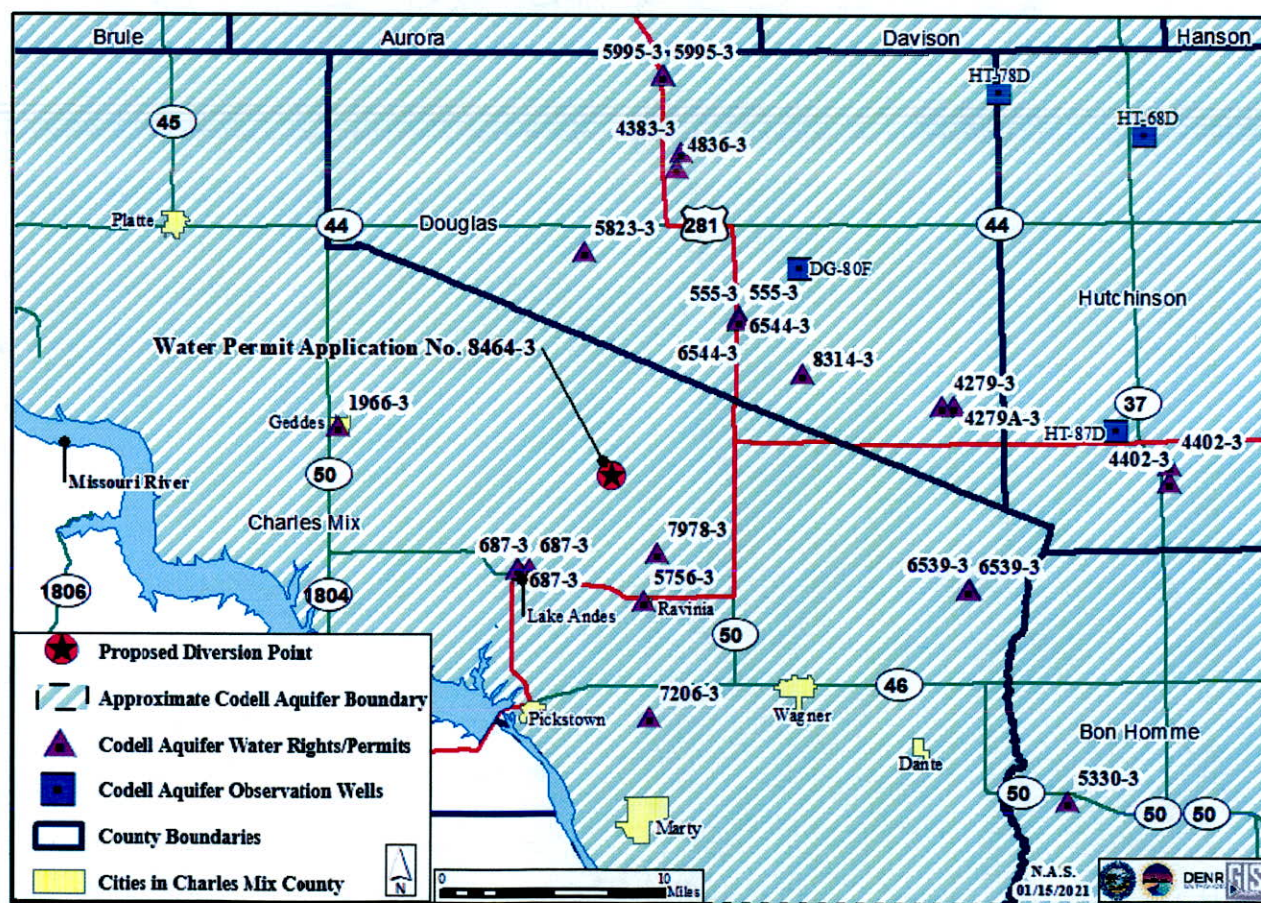
Currently, there are 45 water rights/permits authorized to appropriate water from the Codell aquifer (Water Rights, 2021c). The closest water right/permit to the well the applicant proposes to use is Water Right No. 7978-3 which is held by Chad and Rita Svatos. The diversion point for Water Right No. 7978-3 is located approximately 4.0 miles southeast of the well the applicant proposes to use for this application (Table 8) (Figure 13) (Water Rights, 2021c).

There are domestic wells on file with the DENR-Water Rights Program that are completed into the Codell aquifer, with the closest domestic well on file (not held by the applicant) approximately 4.5 miles west of the well the applicant proposes to use (Water Rights, 2021d). There are potentially other domestic wells completed into the Codell aquifer near the well the applicant proposes to use that are not on file with the DENR-Water Rights Program.

Table 8. Water rights/permits authorized to withdraw water from the Codell aquifer within approximately 20 miles of the well the applicant proposes to use, as shown in Figure 13 (Water Rights, 2021c)

Permit No.	Name	Status	Use	Diversion Rate (cfs)
555-3	City of Armour	LC	MUN	0.5
687-3	City of Lake Andes	LC	MUN	0.73
1966-3	City of Geddes	LC	MUN	0.38
4279-3	City of Delmont	LC	MUN	0.3
4279A-3	City of Delmont	LC	MUN	0
4383-3	Douglas County Cheese Co	LC	IND	0.07
4402-3	City of Tripp	LC	MUN	0.64
4836-3	City of Corsica	LC	MUN	0.13
5330-3	City of Avon	LC	MUN	0.33
5756-3	Town of Ravina	LC	MUN	0.07
5823-3	DNA Production LLC	LC	COM	0.22
5995-3	Bernard Van Vuuren	LC	COM	0.177
6539-3	Clearfield Colony	LC	DOM	0.2
6544-3	City of Armour	LC	REC	1.381
7206-3	Long View Farms LLP	PE	COM	0.067
7978-3	Chad or Rita Svatos	LC	IRR	1.78
8314-3	Cody Schelling	PE	COM	0.07

LC: Licensed Water Right; PE: Water Permit; MUN: Municipal; IND: Industrial;
COM: Commercial; DOM: Domestic; REC: Recreation; IRR: Irrigation

**Figure 13.** Location of the well the applicant proposes to use for Water Permit Application No. 8464-3 with the nearby Codell aquifer water rights/permits and observation wells (Water Rights, 2021b and 2021c)

In Charles Mix County, the Codell aquifer is primarily under confined conditions with some variation in depth to the top of the aquifer and aquifer thickness (SDGS, 2021; Water Rights, 2021c and 2021d). Based on the well completion report submitted with Water Permit Application No. 8464-3, the Codell aquifer is approximately 318 feet below the ground surface near the well the applicant proposes to use, with a static water level approximately 246 feet below the ground surface, which indicates there is approximately 72 feet of artesian head pressure in the Codell aquifer at the site of interest. Since the Codell aquifer is confined at the well the applicant proposes to use, drawdown can extend some distance from pumping a well but the exact drawdown behavior of a well cannot be known without an aquifer performance test. The Codell aquifer is approximately 82 feet thick near the well the applicant proposes to use (Water Rights, 2021d). This would allow for enough thickness for a pump inlet 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 addition, any drawdown as a result of the proposed diversion for this application is expected to impact the applicant's wells before other nearby wells. In Charles Mix County, there are no complaints on file with the DENR-Water Rights Program regarding well interference for wells completed into the Codell aquifer (Water Rights, 2021e).

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 Codell 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 estimated thickness of the Codell aquifer in Charles Mix County, and the lack of well interference complaints from the

Codell aquifer in this county, any drawdown created from the proposed diversion is not expected to cause an unlawful impairment on existing water rights/permits or domestic users with adequate wells. Additionally, the Codell aquifer well the applicant proposes to use is an existing well that has been in place and is presumed to have been in use for some time without any reported well interference complaints on file with the DENR-Water Rights Program (Water Rights, 2021d and 2021e). Therefore, there is a reasonable probability that any interference from the proposed appropriation will not impose unlawful impairments on existing users with adequate wells completed into the Codell aquifer.

CONCLUSIONS (For Codell aquifer well):

1. Water Permit Application No. 8464-3 proposes to appropriate 16 acre-feet of water annually at a maximum instantaneous diversion rate of 0.1 cfs from one existing well completed into the Codell aquifer for commercial use in animal confinement operations, or domestic use, or both. The site is located in Charles Mix County approximately five miles northeast of Lake Andes, South Dakota.
2. Based on the hydrologic budget and observation well data, there is a reasonable probability that unappropriated water is available from the Codell aquifer to supply the proposed appropriation.
3. There is a reasonable probability that the proposed diversion by Water Permit Application No. 8464-3 will not unlawfully impair adequate wells for existing water rights/permits and domestic users.

CHOTEAU: WEST AQUIFER

CHOTEAU: WEST AQUIFER HYDROGEOLOGY:

The well the applicant proposes to use is completed into the West management unit of the Choteau aquifer. The West management unit of the Choteau aquifer has been previously called the Choteau aquifer by Kume (1977). The Choteau: West aquifer as identified by Hedges and others (1982) will be used for the remainder of this report. The Choteau: West aquifer is a basal aquifer that is composed of outwash and western-origin stream deposits that are buried by till (Hedges et al., 1982; Kume, 1977). A basal aquifer generally indicates the aquifer is occupying a bedrock low area and usually in direct contact with the underlying bedrock units, which is the Niobrara Formation at this location (Hedges et al., 1982; Tomhave and Schulz, 2004). The outwash consists of several layers of sand and gravel intermixed with layers of till (Kume, 1977). The Choteau: West aquifer is primarily under confined conditions except for a few localized locations, such as along Dry Choteau Creek, where unconfined conditions have been encountered (Hedges et al., 1985; Kume, 1977; Water Rights, 2021b). Dry Choteau Creek is approximately 22 miles east of the well the applicant proposes to use so unconfined aquifer conditions are not expected at the applicant's site of interest.

Hedges and others (1982) estimated the areal extent and amount of recoverable water stored in the Choteau: West aquifer (Table 9). Figure 14 displays the delineation of the Choteau: West aquifer based on the study completed by Hedges and others (1982). In Charles Mix County, the Choteau: West aquifer varies in saturated aquifer thickness from approximately 25 feet to 75 feet and has a documented maximum thickness of 89 feet (Kume, 1977).

Table 9. Areal extent and amount of recoverable water stored in the Choteau: West aquifer estimated by Hedges and others (1982)

	Bon Homme	Charles Mix	Douglas	TOTAL:
Areal Extent (acres)	20,500	169,600	28,300	218,400
Recoverable Water (acre-feet)	121,480	1,225,370	127,350	1,474,200

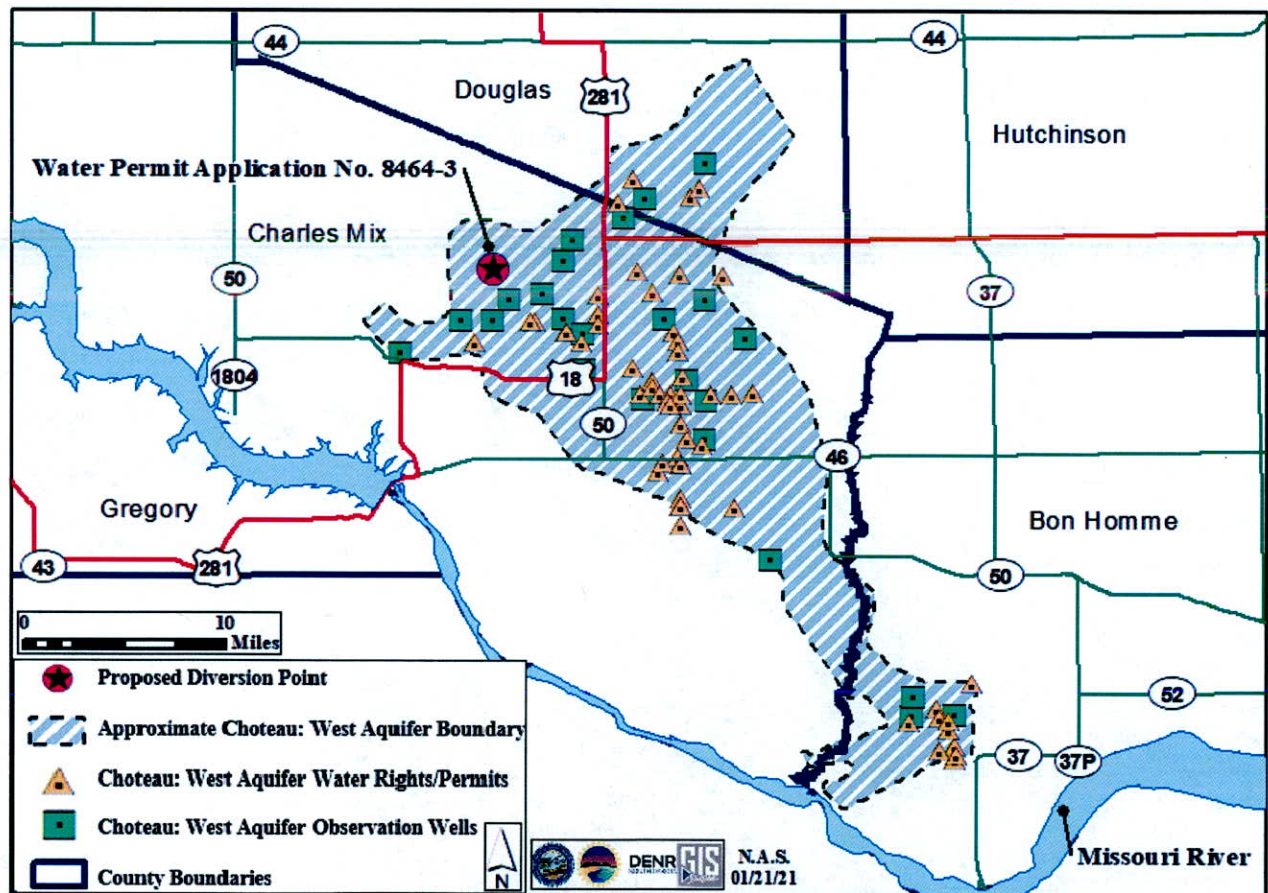


Figure 14. Map of the approximate Choteau: West aquifer boundary delineated from Hedges and others (1982), the location of the well the applicant proposes to use for Water Permit Application No. 8464-3, the Choteau: West aquifer water rights/permits and observation wells (modified from Hedges et al., 1982; Water Rights, 2021b and 2021c)

A water well completion report was submitted with Water Permit Application No. 8464-3 for an existing well (248 feet deep) completed into the Choteau: West aquifer. The well completion report indicates the well is located in the NW ¼ NW ¼ of Section 18-T97N-R64W. However, the well is actually located in the SW ¼ NE ¼ of Section 18-T97N-R64W. The well completion report lists “Yellow Clay” from 0 to 50 feet below the ground surface, “Blue Clay” and variations from 50 to 210 feet, “Coarse Sand” from 210 to 220 feet, “Coarse Sand with Gravel” from 220 to 245 feet and “Chalk” from 245 to 260 feet below the ground surface. The well was screened from 218 to 248 feet below the ground surface and had a static water level of 160 feet below the ground surface at the time of completion (July 8, 1991) (Water Rights, 2021d). Based on the submitted well completion report and lithologic logs on file for nearby observation wells, the Choteau: West aquifer is expected to be confined at the well location the applicant proposes to use (SDGS, 2021; Water Rights, 2021b and 2021d).

CHOTEAU: WEST AQUIFER 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 DENR-Water Rights Program monitors 25 observation wells completed into the Choteau: West aquifer (Water Rights, 2021b). These observation wells provide data on how the aquifer reacts to regional climatic conditions and local pumping. The eight closest observation wells to the well the applicant proposes to use are CM-69C (approximately 1.7 miles southeast), CM-68B (approximately 2.5 miles south), CM-69D (approximately 2.8 miles southeast), CM-77C (approximately 2.9 miles southwest), CM-68A (approximately 3.5 miles east), CM-69A (approximately 4.25 miles northeast), CM-67A (approximately 4.3 miles southeast), CM-67B (approximately 5.5 miles southeast) (as shown in Figure 23). The hydrographs for these observation wells are displayed in Figures 15 to 22 (Water Rights, 2021b). 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.

The hydrographs for the Choteau: 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 slowly decline 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. Aquifer recovery indicates that climatic conditions and therefore, the effects of recharge to and natural discharges from the aquifer governs the long-term fluctuations in water level of aquifer rather than the impacts of pumping from the Choteau: 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 from the Choteau: West aquifer for the proposed appropriation.

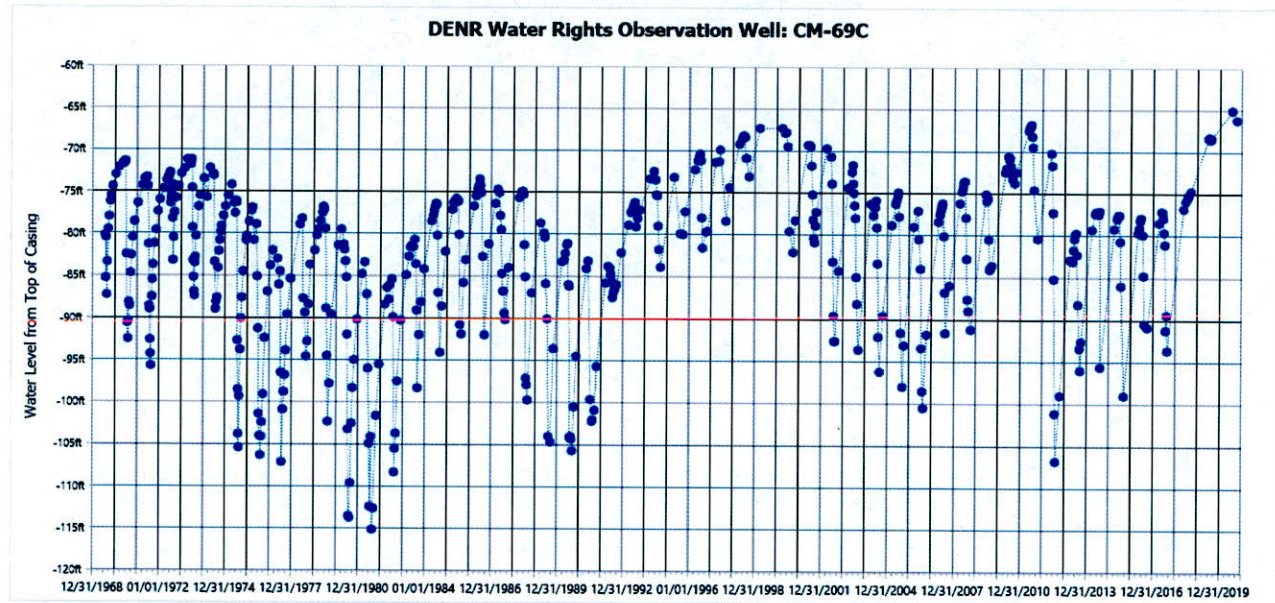


Figure 15. Hydrograph for observation well CM-69C (Water Rights, 2021b)

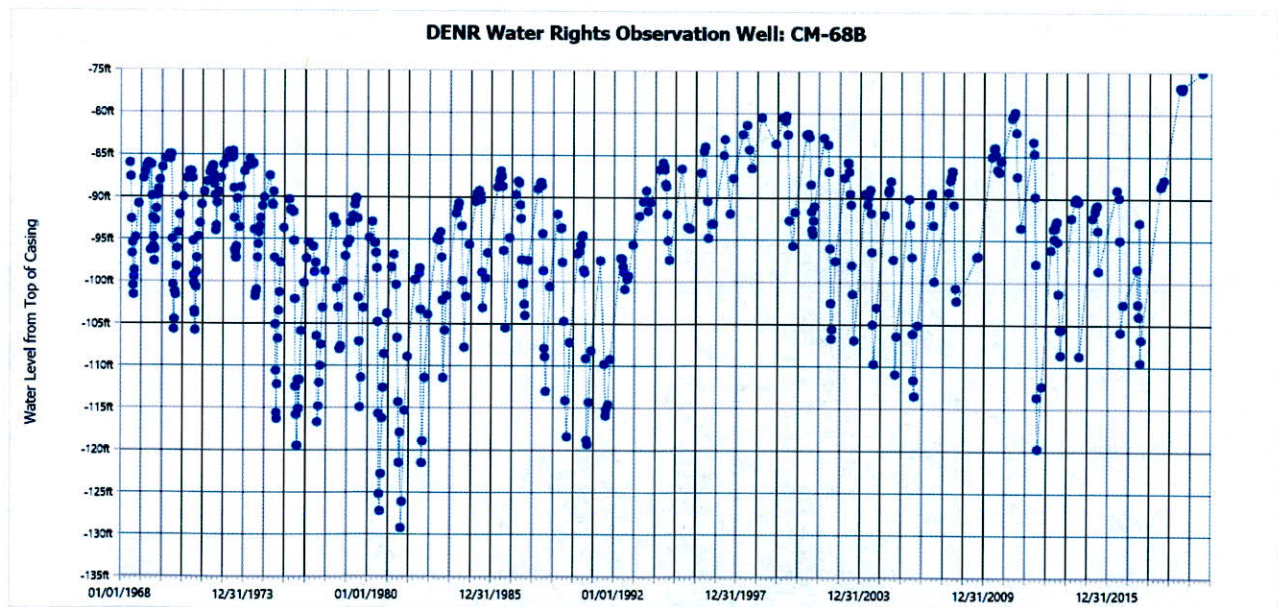


Figure 16. Hydrograph for observation well CM-68B (Water Rights, 2021b)

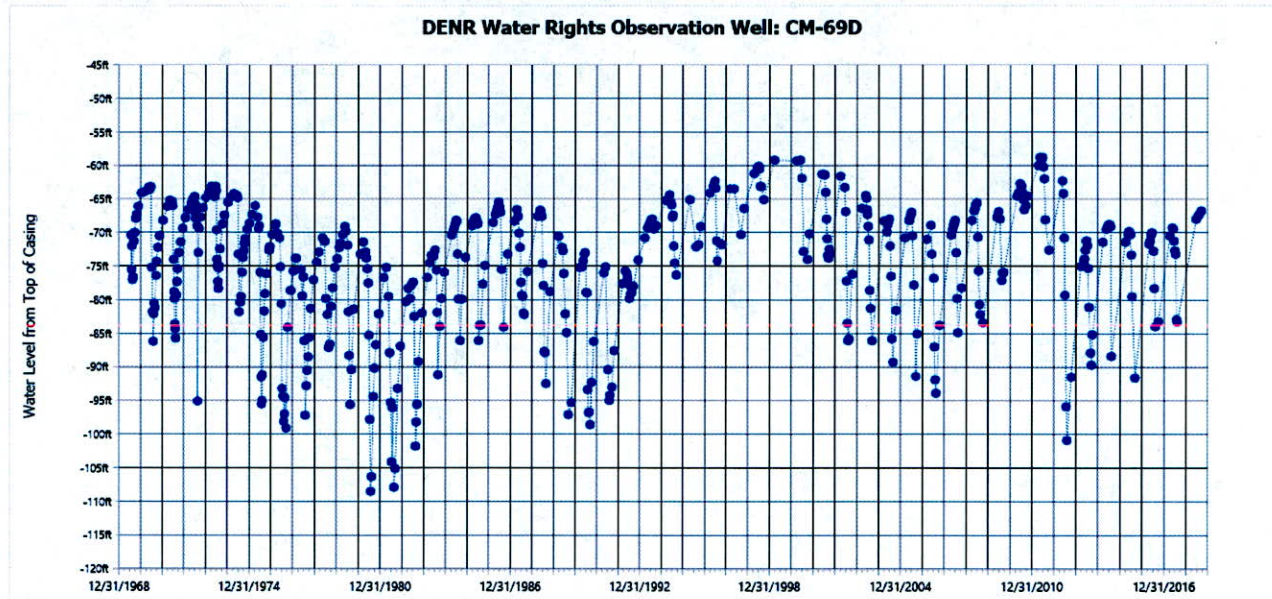


Figure 17. Hydrograph for observation well CM-69D (Water Rights, 2021b)

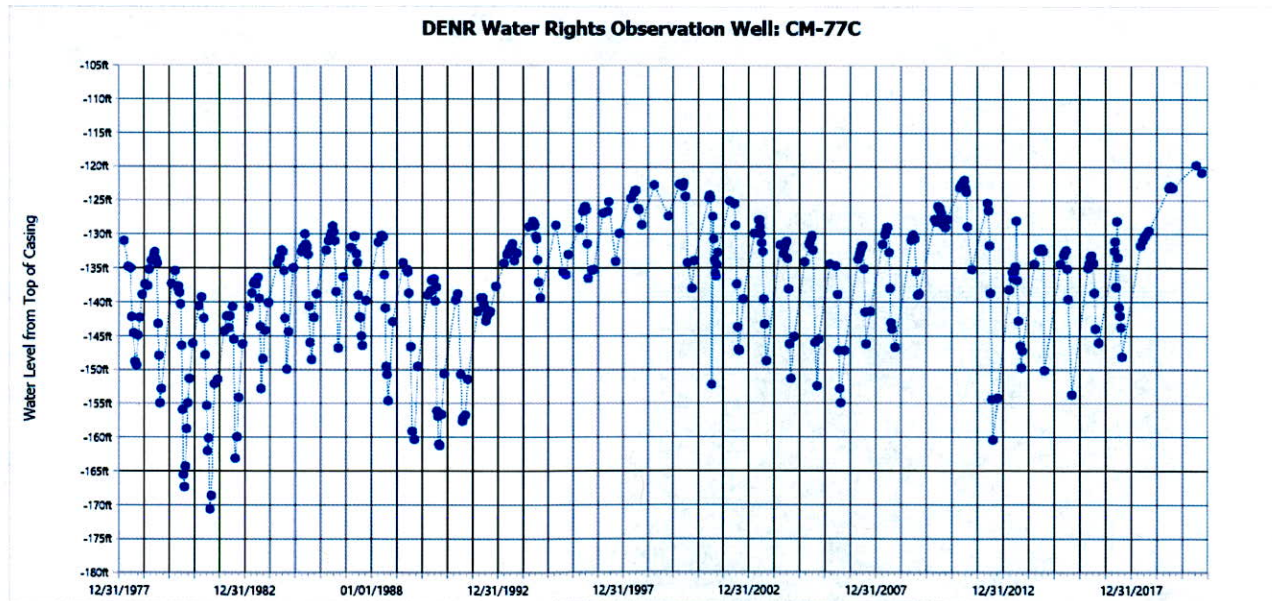


Figure 18. Hydrograph for observation well CM-77C (Water Rights, 2021b)

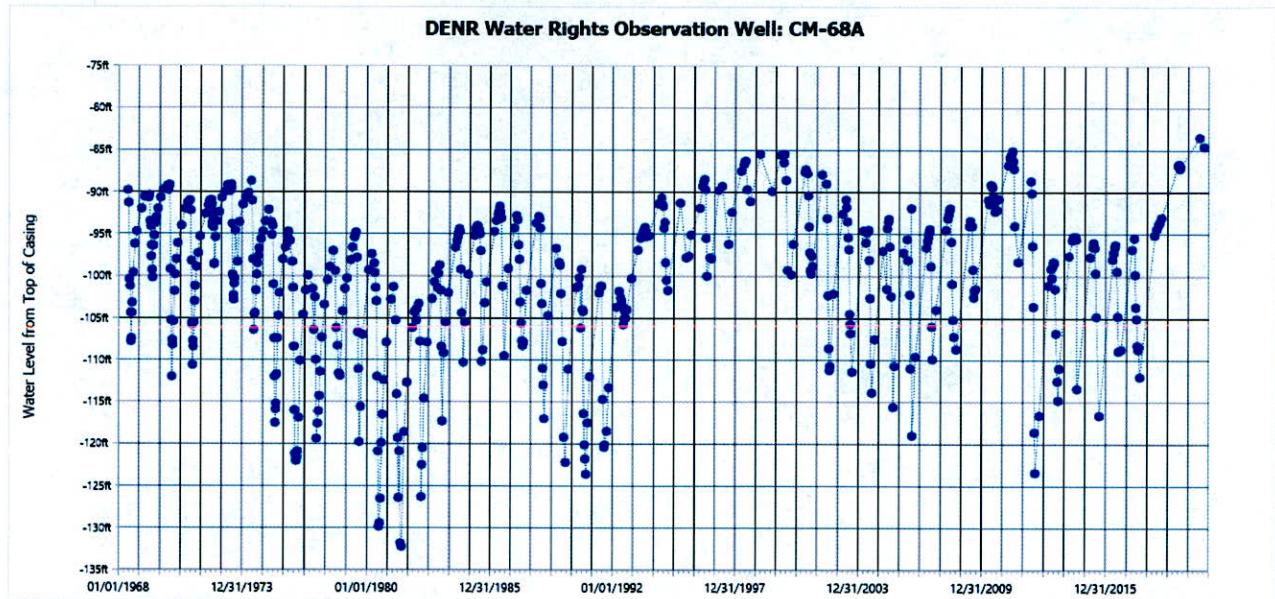


Figure 19. Hydrograph for observation well CM-68A (Water Rights, 2021b)

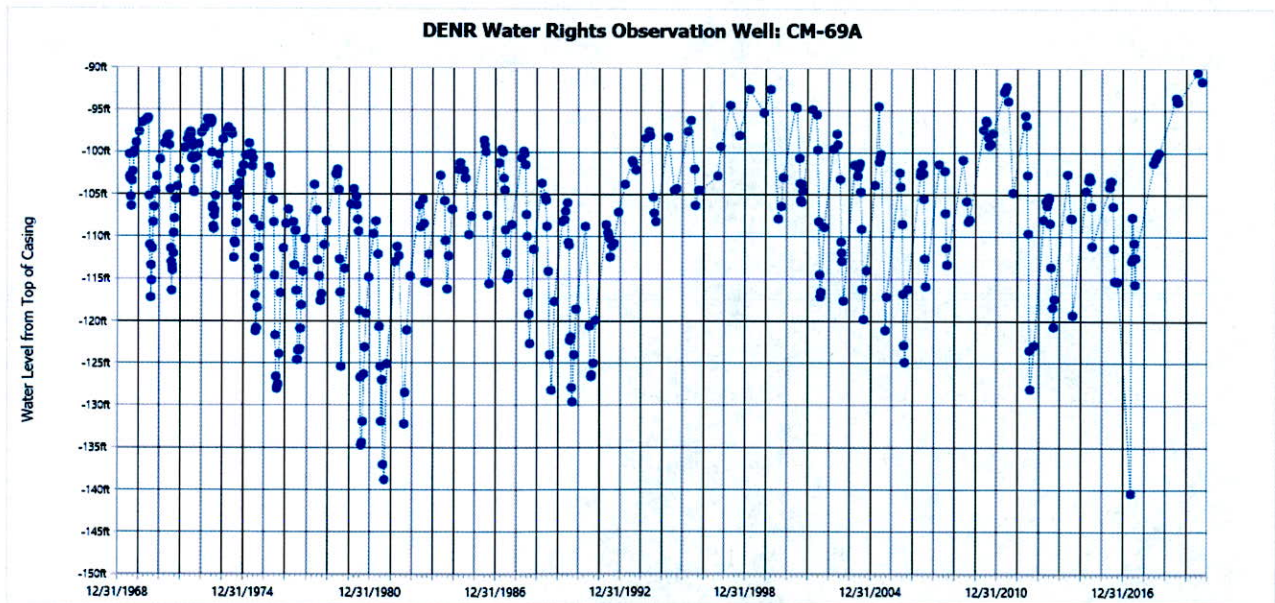


Figure 20. Hydrograph for observation well CM-69A (Water Rights, 2021b)

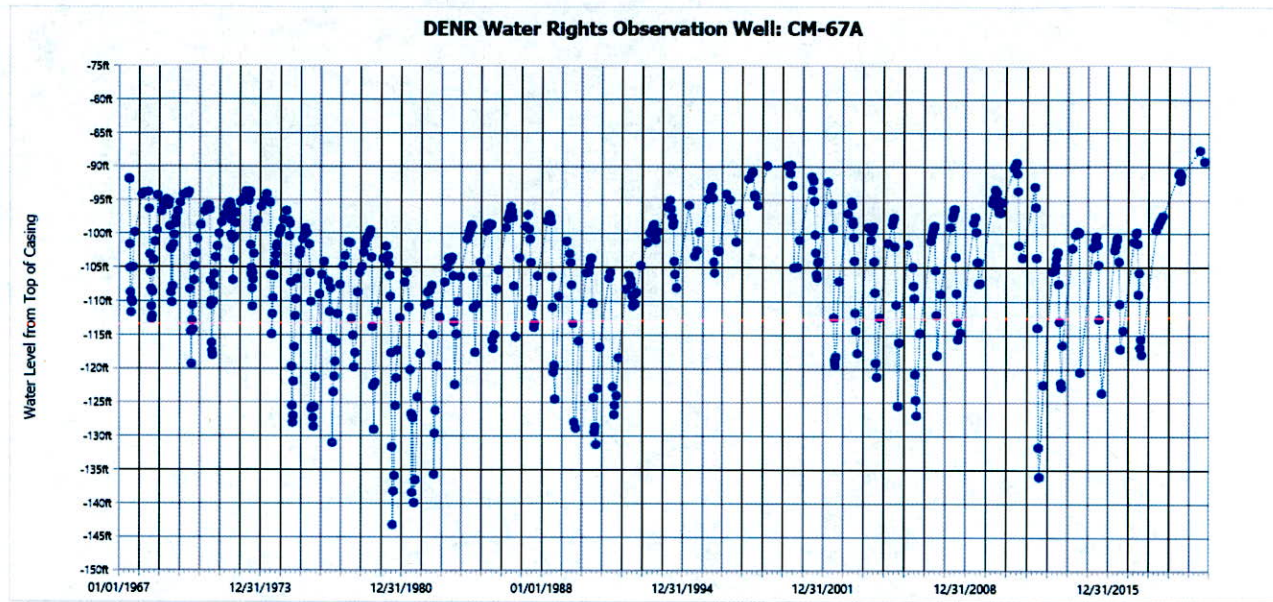


Figure 21. Hydrograph for observation well CM-67A (Water Rights, 2021b)

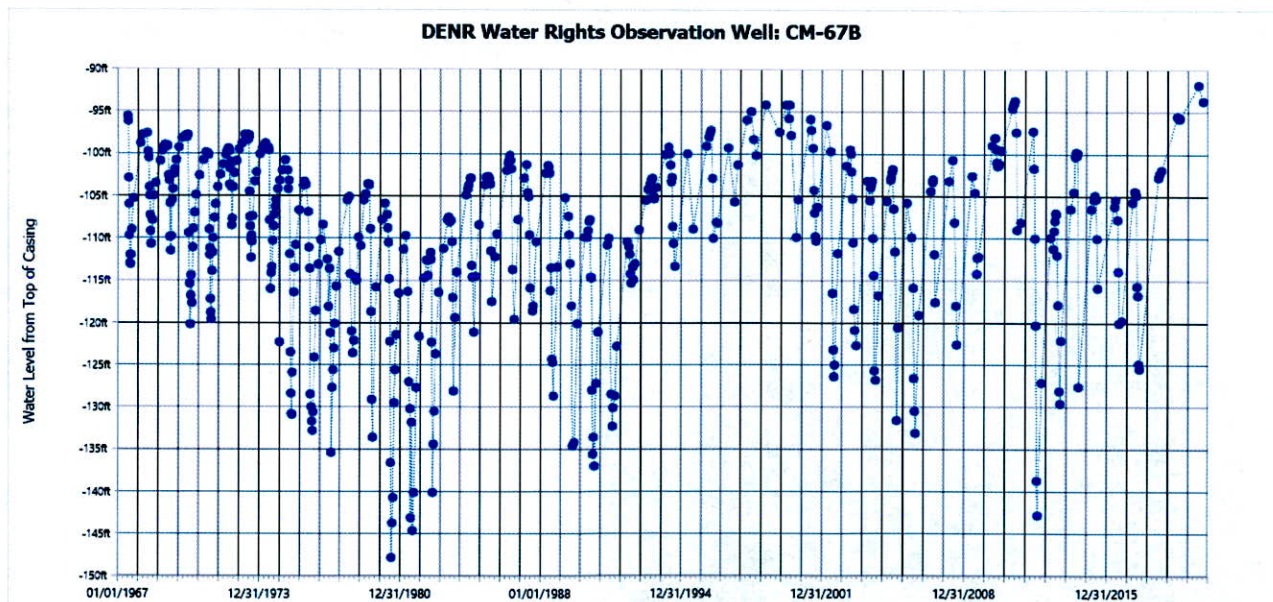


Figure 22. Hydrograph for observation well CM-67B (Water Rights, 2021b)

CHOTEAU: WEST AQUIFER HYDROLOGIC BUDGET:

Recharge

Recharge to the Choteau: West aquifer occurs primarily from adjacent till and numerous saturated lenticular outwash bodies, and possibly from the Niobrara Marl in Charles Mix and Douglas Counties (Kume, 1977). Observation well data shows there is a potential for leakage from the Niobrara aquifer to the Choteau: West aquifer in T98W-R63W and possibly other areas along the northwestern side of the Choteau: West aquifer (Water Rights, 2021b). In Bon Homme County, recharge to the aquifer comes from seepage from Choteau Creek and Dry Choteau Creek, and percolation through till cover where the aquifer is near land surface (Jorgenson, 1971).

Using observation well analysis, Hedges and others (1985) estimated a recharge rate to the unconfined portions of the Choteau: West aquifer to be approximately 4.1 inches per year. However, there is no delineation of the unconfined area of the aquifer available. Hedges and others (1985) have developed a recharge rate range of 0.15 to 0.6 inches per year to the confined portions of buried aquifers for use in development and management programs. Since the Choteau: West aquifer is primarily under confined conditions, it would be more accurate to use the recharge rate range for buried, confined aquifers developed by Hedges and others (1985) to estimate recharge to the Choteau: West aquifer. Using a recharge rate of 0.15 to 0.6 inches per year, the average annual recharge rate to the Choteau: West aquifer ranges between 2,730 to 10,920 acre-feet per year.

Discharge

Discharge from the Choteau: West aquifer occurs through natural water losses to springs, seepage into surrounding drift and bedrock, and well withdrawals (Kume, 1977; Water Rights, 2021c). Currently, there are 52 water rights/permits authorized to appropriate water from the Choteau: West aquifer (Water Rights, 2021c). Table 10 summarizes the six non-irrigation water rights/permits authorized to appropriate water from the Choteau: West aquifer with the estimated annual use for each water right/permit as determined by their limiting 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. The City of Wagner (Water Right Nos. 569-3 and 1782-3) is connected to Randall Community Water District and uses this rural water system as their primary water source (Drinking Water Program, 2021); as such, the average annual water use for these water rights has been estimated to be zero acre-feet per year on Table 10. Overall, the average annual withdrawal rate for the Choteau: West aquifer non-irrigation water rights is approximately 351.4 acre-feet per year (Table 10).

Table 10. Summary of the non-irrigation water rights/permits authorized to appropriate from the Choteau: West aquifer with estimated annual use determined by their respective diversion rate or annual volume (Drinking Water Program, 2021; Water Rights, 2021c)

Permit No.	Name	Status	Use	County	Diversion Rate (cfs)	Estimated Use (acre-feet/year)
296-3	Charles H Ahrens	LC	REC/DOM	CM	0.3	130.3
297-3	Charles H Ahrens	LC	REC	CM	0.3	130.3
569-3	City of Wagner	LC	MUN	CM	1.1	0*
1782-3	City of Wagner	LC	MUN	CM	0.89	0*
7276-3	Red and Lori Sparks	LC	COM/LCO	DG	0.134	58.2
7403-3	Craig Vanderlei	LC	DOM	BH	0.075	32.6
LC: Licensed Water Right; REC: Recreation; DOM: Domestic; MUN: Muncipal					TOTAL:	351.4
COM: Commercial; LCO: Livestock Confinement Operation; CM: Charles Mix; DG: Douglas; BH: Bon Homme						
*The City of Wagner is connected to Randall Community Water District (Mathiowetz, 2017)						

Currently, there are 46 irrigation water rights/permits appropriating water from the Choteau: West aquifer (Water Rights, 2021c). Irrigation water rights/permits have been typically required to report their annual usage on an irrigation questionnaire since 1979. The average annual withdrawal rate for the Choteau: West aquifer irrigation water rights/permits that have reported over the period of record is approximately 2,481 acre-feet per year (Table 11) (Water Rights, 2021a).

There are domestic wells completed into the Choteau: West aquifer that do not require a water right/permit, so the withdrawal amount is unknown (Water Rights, 2021d). Since the introduction of rural water systems, many domestic wells are likely no longer in use or are not being used as primary water sources. Due to their relatively low diversion rates and the availability of rural water, withdrawals from domestic wells are not considered to be a significant portion of the hydrologic budget for the Choteau: West aquifer.

Hydrologic Budget Summary

The average annual recharge rate to the Choteau: West aquifer ranges between approximately 2,730 to 10,920 acre-feet per year. The average annual withdrawal rate from the Choteau: West aquifer totals approximately 2,834 acre-feet per year: non-irrigation: 351.4 acre-feet/year; irrigation: 2,481 acre-feet/year; Water Permit Application No. 8464-3, if approved, 1.5 acre-feet/year. While the withdrawal rate from the Choteau: West aquifer is on the lower end of the recharge range to the Choteau: West aquifer, recharge to the Choteau: West aquifer is likely greater than 2,730 acre-feet per year and the observation well data supports using the middle to the higher end of the recharge rate range. Therefore, there is a reasonable probability unappropriated water is available from the Choteau: West aquifer for the proposed appropriation.

Table 11. Reported historic irrigation use from Choteau: West aquifer (Water Rights, 2021a)

Year	No. of Permits	Annual Appropriation (acre-feet)	Reported Pumpage (acre-feet)
1979	49	21,477	2,933
1980	47	21,477	2,644
1981	48	21,657	3,132
1982	39	20,936	1,647
1983	40	21,762	1,369
1984	44	24,771	1,692
1985	43	23,811	2,377
1986	42	23,109	2,986
1987	42	23,081	2,198
1988	44	23,246	4,537.4
1989	45	23,566	3,984.1
1990	45	23,401	3,716
1991	45	23,081	4,057
1992	46	23,244.8	1,683
1993	45	21,835.8	334.2
1994	41	20,146.8	2,026
1995	42	20,410.8	999.5
1996	42	19,087.8	1,795.6
1997	42	19,087.8	1,509
1998	42	18,976	697.5
1999	40	19,676	1,248
2000	33	16,476	3,009.1
2001	33	16,476	1,625.2
2002	33	15,996	3,223.9
2003	33	15,696	2,526.3
2004	34	18,844	2,819.1
2005	36	19,564	2,896.8
2006	36	19,944	3,598.8
2007	34	19,108	3,363.6
2008	34	19,212	2,444
2009	35	19,492	1,163.8
2010	35	19,324	614.8
2011	35	19,324	1,872.8
2012	33	17,312	6,042.8
2013	43	20,906	4,141.1
2014	45	21,296	3,966.3
2015	46	21,882	4,306.9
2016	44	21,174	2,800.7
2017	47	22,486	3,323.2
2018	45	22,156	122.4
2019	46	22,494	285.4
Min	33	15,696	122.4
Max	49	24,770.80	6,042.8
Avg	41	20,659	2,481

POTENTIAL FOR UNLAWFUL IMPAIRMENT OF EXISTING WATER RIGHTS WITHIN THE CHOTEAU: WEST AQUIFER:

Currently, there are 52 water rights/permits authorized to appropriate water from the Choteau: West aquifer (Water Rights, 2021c). The closest water right/permit to the well the applicant proposes to use is Water Right No. 4594-3 which is held by David L and Diane Herrold. The diversion point for Water Right No. 4594-3 is located approximately 3.3 miles southeast of the well the applicant proposes to use for this application (Table 12) (Figure 23) (Water Rights, 2021c).

There are domestic wells on file with the DENR-Water Rights Program that are completed into the Choteau: West aquifer, with the closest domestic well on file (not held by the applicant) is approximately 3.1 miles northeast of the well the applicant proposes to use (Water Rights, 2021d). There are potentially other domestic wells completed into the Choteau: West aquifer near the well the applicant proposes to use that are not on file with the DENR-Water Rights Program.

Table 12. Water rights/permits authorized to withdraw water from the Choteau: West aquifer within approximately five miles of the well the applicant proposes to use, as shown in Figure 23 (Water Rights, 2021c)

Permit No.	Name	Status	Use	Diversion Rate (cfs)
1095-3	Hamad Assam Corporation	LC	IRR	2
1355-3	Barbara Specht	LC	IRR	1.42
2216-3	Charles Eitemiller	LC	IRR	1.89
2217-3	Charles Eitemiller	LC	IRR	1.89
4594-3	David L and Diane Herrold	LC	IRR	2.56
7628-3	Charles and Theresa Eitemiller	LC	IRR	1.94
7816-3	Otto F Fousek	PE	IRR	1.78
LC: Licensed Water Right; PE: Water Permit; IRR: Irrigation				

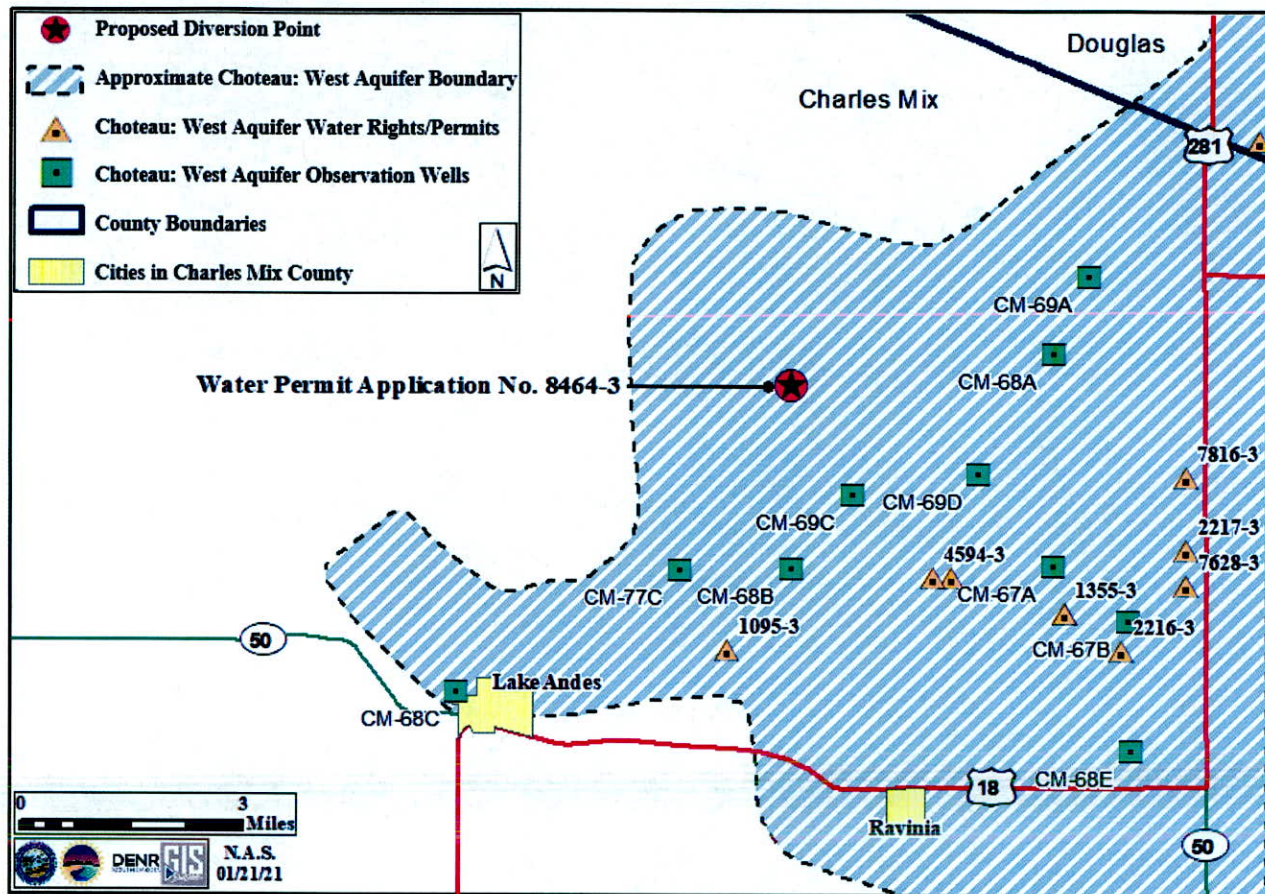


Figure 23. Location of well the applicant proposes to use for Water Permit Application No. 8464-3 with the nearby Choteau: West aquifer water rights/permits and observation wells (Water Rights, 2021b and 2021c)

The Choteau: West aquifer is expected to be confined at the existing well the applicant proposes to use based on the submitted well completion report and lithologic logs on file for nearby observation wells (SDGS, 2021; Water Rights, 2021b and 2021d). Since the Choteau: West aquifer is expected to be confined at the well the applicant proposes to use, drawdown can extend some distance but the exact drawdown behavior of a well cannot be known without an aquifer performance test. Observation well CM-67B (approximately 5.5 miles southeast of the well the applicant proposes to use) has seven high-yield irrigation wells within approximately two miles of it (Water Rights, 2021b and 2021c). The drawdown from pumping can be seen on the hydrograph for CM-67B, along with the aquifer returning to pre-pumping conditions between irrigation seasons (Figure 22) (Water Rights, 2021b). The lithologic log on file for CM-67B noted the well was drilled 241 feet deep with the top of aquifer is expected to be approximately 192 feet below the ground surface (SDGS, 2021). The lowest recorded static water level on the hydrograph is approximately 148 feet, which indicates there was still about 44 feet of artesian head pressure in CM-67B even during drier periods when high-yield irrigation wells are expected to be pumping more water (Water Rights, 2021b).

At the well location, the Choteau: West aquifer has a saturated aquifer thickness of approximately 25 feet with depth to the top of aquifer materials around 220 feet below the ground surface according to the well completion report submitted with the application (Water Rights, 2021d). This would allow for enough thickness for a pump inlet to be placed 20 feet below the top of the aquifer, which is required for the well to be considered adequate under ARSD 74:02:04:20(6). Any drawdown as a result of the proposed diversion is not expected to unlawfully impair nearby adequate wells. In Charles Mix County, there are no complaints on file with the DENR-Water Rights Program regarding well interference for adequate wells completed into the Choteau: West aquifer (Water Rights, 2021e).

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 Choteau: 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 aquifer thickness of the Choteau: West aquifer in Charles Mix County, and the lack of well interference complaints for adequate wells completed into the Choteau: West aquifer in this county, any drawdown created from the proposed diversion is not expected to cause an unlawful impairment on existing water rights/permits or domestic users with adequate wells. Additionally, the Choteau: West aquifer well the applicant proposes to use is an existing well that has been in place and is presumed to have been in use for some time without any reported well interference complaints on file with the DENR-Water Rights Program (Water Rights, 2021d and 2021e). Therefore, there is a reasonable probability that any interference from the proposed appropriation will not impose unlawful impairments on existing users with adequate wells.

In the 1950's, there was a concern over the impact of irrigation development to artesian head pressure in this area. Irrigation pumping caused declines in the water levels in domestic wells resulting in some wells no longer flowing at the ground surface and other wells requiring their pumps to be lowered. These early controversies have been resolved and the most recent issue in the area regarding the Choteau: West aquifer was a complaint regarding a pump no longer being able to pump water that was filed in 1989 (Water Rights, 2021e). That issue was resolved by lowering the pump inlet. The changes to South Dakota water law since then no longer protect artesian head pressure as a means of water delivery and have made these controversies into non-issues.

CONCLUSIONS (For Choteau: West aquifer well):

1. Water Permit Application No. 8464-3 proposes to appropriate 1.5 acre-feet of water annually at a maximum instantaneous diversion rate of 0.1 cfs from one existing well completed into the Choteau: West aquifer for commercial use in animal confinement operations. The site is located in Charles Mix County approximately five miles northeast of Lake Andes, South Dakota.
2. Based on the hydrologic budget and observation well data, there is a reasonable probability that unappropriated water is available from the Choteau: West aquifer to supply the proposed appropriation.
3. There is a reasonable probability that the proposed diversion by Water Permit Application No. 8464-3 will not unlawfully impair adequate wells for existing water rights/permits and domestic users.



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

Reviewed by:



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

References

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

Schlaak, Karen

From: Schlaak, Karen
Sent: Tuesday, February 16, 2021 11:44 AM
To: thofer@hcinet.net
Cc: Brian Friedrichsen
Subject: Water Permit Application No. 8464-3
Attachments: 0525.pdf; 8464-3 Lakeview Hutterian Brethren Inc.docx

Attached is a copy of the report, chief engineer recommendation and information regarding the public notice for your water permit application. As stated in the letter, please contact the papers as soon as possible to authorize publication On February 24, 2021 and arrange for payment. This information is being mailed to you today.

Karen Schlaak
Water Rights Program
(605) 773-3352



Affidavit of Publication

RECEIVED

STATE OF SOUTH DAKOTA)

MAR 24 2021

)SS

WATER RIGHTS
PROGRAM

COUNTY OF CHARLES MIX)

Barbra Pechous, of said County and State being first duly sworn on her oath says: That The Wagner Post is a legal newspaper of general circulation, printed and published in Wagner, in said County and State, by Barbra Pechous, and has been such newspaper during the time herein mentioned; and that I, Barbra Pechous, the undersigned, of said newspaper in charge of the advertising department thereof, and have personal knowledge of all the facts stated in this affidavit; a printed copy of which is hereunto attached, was printed and published in the regular and entire issue of said newspaper and not in supplement, once each week for 1 successive weeks.

1st publication made on 24 day of Feb, 2021
2nd publication made on _____ day of _____, 2021
3rd publication made on _____ day of _____, 2021
4th publication made on _____ day of _____, 2021
5th publication made on _____ day of _____, 2021

That said newspaper is a legal newspaper, and has a bonafide circulation of more than two hundred copies weekly, and has been published within the County of Charles Mix for more than fifty-two successive weeks prior to the first publication of said notice, and is printed in an office maintained in Wagner, South Dakota, the place of publication of said newspaper. That the full amount of the fee for the publication of the annexed notice is

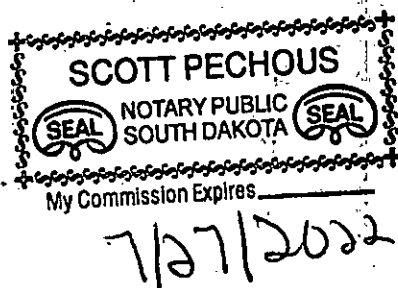
\$ 31.58

Barbra Pechous

Subscribed and sworn before me this 19 day of March, 2021.

Scott Pechous

Notary Public



NOTICE OF APPLICATION TO APPROPRIATE WATER

Notice of application no. 8464-3 to Appropriate Water

Notice is given that Lakeview Hutterian Brethren, Inc., c/o Tim Hofer, 28748 386th Ave, Lake Andes SD 57356 has filed an application for a water permit to appropriate a combined 52.5 acre-feet (af) of water annually at a maximum combined pump rate of 0.30 cubic feet of water per second (cfs) from three existing wells. Well #1 is completed into the Dakota Aquifer (840 feet deep) and proposes to appropriate 0.1 cfs with an annual volume of 35 af; Well #3 is completed into the Codell Aquifer (400 feet deep) and proposes to appropriate 0.1 cfs with an annual volume of 16 af; both wells are located in the NW 1/4 SW 1/4 Section 18; and Well #3 is completed into the Choteau West Aquifer @248 feet deep) and proposes to appropriate 0.1 cfs with an annual volume of 1.5 af located in the SW 1/4 NE 1/4 Section 18, all in T97N-R64W. The three wells supply water for either commercial use in animal confinement operations or domestic use purposes, or both. This site is located approximately 5

miles northeast of Lake Andes SD.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 8464-3 with qualifications because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest. The Chief Engineer's recommendation with qualifications, the application, and staff report are available at <http://denr.sd.gov/public> or contact Ron Duvall for this information, or other information, at the Water Rights Program address provided below.

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

or the applicant must be filed by March 8, 2021.

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

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

Published once at the total approximate cost of: \$31.58.

Published: February 24, 2021.

AFFIDAVIT OF PUBLICATION

YANKTON DAILY PRESS AND DAKOTAN

RECEIVED

FEB 26 2021

WATER RIGHTS
PROGRAM

LAKEVIEW HUTTERIAN BRETHREN
ATTN: TIM HOFER
28748 386TH AVE
LAKE ANDES SD 57356

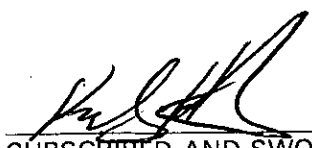
STATE OF SOUTH DAKOTA
COUNTY OF YANKTON

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
2 + 24 NOTICE OF APPLICATIO

TAKEN FROM THE PAPER, IN WHICH IT WAS LAST PUBLISHED IN THE
NEWSPAPER ON THE 24th DAY OF February, 2021
THAT THE FULL AMOUNT OF THE FEE CHARGED FOR THE PUBLICATION
OF SAID NOTICE TO WIT: \$28.67 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: 02/24/2021

FILED ON: 02/24/2021


SUBSCRIBED AND SWORN TO BEFORE ME THIS 24th DAY OF February, 2021


NOTARY PUBLIC, SOUTH DAKOTA
MY COMMISSION EXPIRES 07/04/2026

Ad text : 2+24

NOTICE OF APPLICATION

NO. 8464-3 to Appropriate Water

Notice is given that Lakeview Hutterian Brethren, Inc., c/o Tim Hofer, 28748 386th Ave, Lake Andes SD 57356 has filed an application for a water permit to appropriate a combined 52.5 acre-feet (af) of water annually at a maximum combined pump rate of 0.30 cubic feet of water per second (cfs) from three existing wells. Well #1 is completed into the Dakota Aquifer (840 feet deep) and proposes to appropriate 0.1 cfs with an annual volume of 35 af; Well #2 is completed into the Codell Aquifer (400 feet deep) and proposes to appropriate 0.1 cfs with an annual volume of 16 af; both wells are located in the NW 1/4 SW 1/4 Section 18; and Well #3 is completed into the Choteau West Aquifer (248 feet deep) and proposes to appropriate 0.1 cfs with an annual volume of 1.5 af located in the SW 1/4 NE 1/4 Section 18; all in T97N-R64W. The three wells supply water for either commercial use in animal confinement operations or domestic use purposes, or both. This site is located approximately 5 miles northeast of Lake Andes SD.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 8464-3 with qualifications because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest. The Chief Engineer's recommendation with qualifications, the application, and staff report are available at <http://denr.sd.gov/public> or contact Ron Duvall for this information, or other information, at the Water Rights Program address provided below.

Any person interested in opposing or supporting this application or recommendation must file a written petition with BOTH the applicant and Chief Engineer. The applicant must file a petition if contesting the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352) and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by March 8, 2021.

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Published once at the total approximate cost of \$28.67



DENR
SOUTH DAKOTA

**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

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

February 16, 2021

Lakeview Hutterian Brethren
c/o Tim Hofer
28748 386th Ave
Lake Andes SD 57356

Dear Mr. Hofer:

Water Permit Application No. 8464-3 for commercial and domestic use has been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice has been sent to the Wagner Post printed at Wagner SD (Ph # 605 384-5616) and the Daily Press and 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,

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.

NOTICE OF APPLICATION NO. 8464-3 to Appropriate Water

Notice is given that Lakeview Hutterian Brethren, Inc., c/o Tim Hofer, 28748 386th Ave, Lake Andes SD 57356 has filed an application for a water permit to appropriate a combined 52.5 acre-feet (af) of water annually at a maximum combined pump rate of 0.30 cubic feet of water per second (cfs) from three existing wells. Well #1 is completed into the Dakota Aquifer (840 feet deep) and proposes to appropriate 0.1 cfs with an annual volume of 35 af; Well #2 is completed into the Codell Aquifer (400 feet deep) and proposes to appropriate 0.1 cfs with an annual volume of 16 af; both wells are located in the NW 1/4 SW 1/4 Section 18; and Well #3 is completed into the Choteau West Aquifer (248 feet deep) and proposes to appropriate 0.1 cfs with an annual volume of 1.5 af located in the SW 1/4 NE 1/4 Section 18; all in T97N-R64W. The three wells supply water for either commercial use in animal confinement operations or domestic use purposes, or both. This site is located approximately 5 miles northeast of Lake Andes SD.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 8464-3 with qualifications because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest. The Chief Engineer's recommendation with qualifications, the application, and staff report are available at <http://denr.sd.gov/public> or contact Ron Duvall for this information, or other information, at the Water Rights Program address provided below.

Any person interested in opposing or supporting this application or recommendation must file a written petition with BOTH the applicant and Chief Engineer. The applicant must file a petition if contesting the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by March 8, 2021.

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

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Published once at the total approximate cost of_

Schlaak, Karen

From: Schlaak, Karen
Sent: Tuesday, February 16, 2021 11:35 AM
To: Wagner Post (announcer@hcinet.net)
Subject: 8464-3, Lakeview Hutterian Brethren Inc.
Attachments: 8464-3public.short.docx; FORM8.FRM.doc

Attached is a notice to be published on February 24, 2021.

Lakeview Hutterian Brethren Inc., c/o Tim Hofer, 28748 386th Ave, Lake Andes SD 57356 (605 491-1112) has been notified to contact you to authorize publication and arrange for payment.

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

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

Karen Schlaak
Water Rights Program
(605) 773-3352



Schlaak, Karen

From: Schlaak, Karen
Sent: Tuesday, February 16, 2021 11:36 AM
To: Jackie Lammers (jackie.lammers@yankton.net)
Subject: 8464-3, Lakeview Hutterian Brethren Inc.
Attachments: 8464-3public.short.docx; FORM8.FRM.doc

Attached is a notice to be published on February 24, 2021.

Lakeview Hutterian Brethren Inc., c/o Tim Hofer, 28748 386th Ave, Lake Andes SD 57356 (605 491-1112) has been notified to contact you to authorize publication and arrange for payment.

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

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

Karen Schlaak
Water Rights Program
(605) 773-3352



DENR
SOUTH DAKOTA

April 19, 2021

PAYMENT REQUEST FORM

PAYEE: Lakeview Hutterian Brethen Inc.
c/o Tim Hofer
28748 386th Ave
Lake Andes SD 57356

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

DESCRIPTION OF SERVICE, PRODUCE OR TRANSFER

Refund-Over Payment of Application/License Fee

AMOUNT: \$250.00

FUNDING SOURCE:

GENERAL: X

FEDERAL:

OTHER:

COMMENTS:

AUTHORIZATION: *Ew Hunkeler 4/19/2021*

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

APR 19 2021

Lakeview Hutterian Brethren Inc.
c/o Tim Hofer
28748 386th Ave
Lake Andes SD 57356

Dear Mr. Hofer:

Enclosed is Water Permit No. 8464-3 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 \$950.00 was submitted with the application. Based on the amount of water claimed, the fee for this permit should be \$700.00. \$250.00 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