

WATER PERMIT NO. 8231-3

Name of Applicant: **Jeffrey T Juffer**

Address: **PO Box 69, Wagner SD 57380** Phone: **605 491-1343**

Amount of Water Claimed: **1.78 cfs** Total Acres: **104 acres**

Source of Water Supply: **groundwater – 1 well**

Water to be used for: **irrigation** County: **Charles Mix**

Type of Waste Disposal System:

Location: **5 miles northeast of Wagner**

PRIORITY Date Received: **6-20-16** Application/License Fee: **\$ 950**

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

Remarks:

Diversion Point: **center of SW 1/4 Sec 17-T96N-R62W**

Land to be Irrigated: **Sw 1/4 Sec 17-T96N-R62W**

Depth of Well: **330 feet deep**

Well Driller: **Heine Electric & Irrigation**

Remarks:

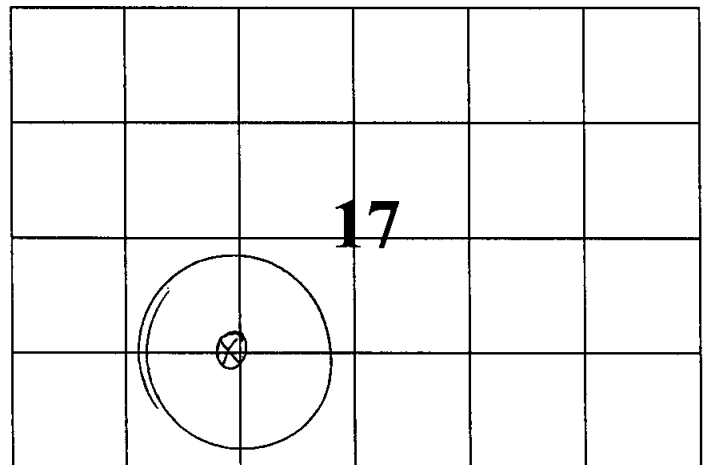
Type of Map: **aerial**

Prepared by:

Reviewed and the Number Assigned on: **6-20-16**

By: **Karen Schlaak**

Notice of Hearing - date to intervene: _____



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

Mail to: DENR - Water Rights 523 E Capitol Ave Pierre, SD 57501-3182 ph. (605) 773-3352	No. <u>8231-3</u> (office use only) Hydrologic Unit <u>10170101</u>
	Basin <u>Missouri River</u>
	Newspaper <u>Wagner Post 605-384-5616</u>
	<u>Daily Republic - Mitchell 605-996-5514</u>

RECEIVED
JUN 20 2016
WATER RIGHTS
PROGRAM

Application For Permit To Appropriate Water For Irrigation

Type of Application: ☒ New ☐ Vested Right ☐ Amendment/Correction to Permit No. _____
(Use predates Mar 2, 1955)

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

1. Name to Appear on Irrigation Permit Jeffrey T. Juffer

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

Mailing Address P.O. Box 69 (Address) Wagner (City) ☒ sd ☒ 57380 (State) (Zip Code)

Phone 605-384-5600 Mobile 605-491-1343 Email jjuffer@juffer.com

2. Amount of water claimed 1.28 *CFS or 800 **GPM ***AF Total Acreage 104
(*Cubic Feet per Second) (**Gallons per Minute) (**Acre Feet - storage capacity of dam/dugout or annual use if applicable)

3. Source of water supply 1 well completed in Choteau:west Aquifer

4. Location of point of diversion center, SW 1/4 of Section 17, T96n R 62w
(example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W)

County Charles Mix ☒

5. County or counties where water will be used Charles Mix

6. Annual period during which water is to be used may-september

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

Land Description	Acres	Land Description	Acres
nw1/4 of sw1/4 of T96nR62wSection17,	30		
sw1/4 of sw1/4 of T96nR62wSection17,	25		
ne1/4 of sw1/4 of T96nR62wSection17,	25		
se1/4 of sw1/4 of T96nR62wSection17,	24		

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

Center Pivot irrigation of the above described cropland. Diversion rate above statutory limit requested because of application method and anticipated crop rotation plans.

I, JEFF JUFFER [Signature] 6-16-14, the applicant, certify under
Name of Person Title (if applicable)

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

SOUTH DAKOTA
WATER PERMIT NO. 8231-3

Date of first receipt of application June 20, 2016.

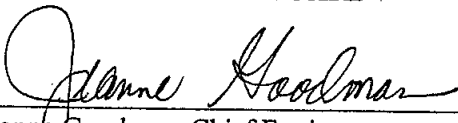
The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 8231-3 to Jeffrey T Juffer, PO Box 69, Wagner SD 57380 authorizing the construction of the water use system and the placing of water to beneficial use subject to the following limitations, conditions and qualifications:

1. Water Permit No. 8231-3 appropriates 1.78 cubic feet of water per second (cfs) from one well to be completed into the Choteau:West Aquifer (330 feet deep) located in the approximate center of the SW 1/4 Section 17 for irrigation of 104 acres located in the SW 1/4 Section 17; all in T96N-R62W.
2. The amount of the appropriation may not exceed 2 acre feet annually for each acre of land to which water is actually and beneficially applied for irrigation. The water is to be used during the following described annual period: May 1 – September 30.
3. The date from which applicant may claim right is June 20, 2016.
4. The date of approval of Permit No. 8231-3 is August 29, 2016.
5. One-fifth of the construction is to be completed on or before March 1, 2019.
6. All construction is to be completed on or before August 29, 2021.
7. Water is to be put to beneficial use on or before August 29, 2025.
8. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

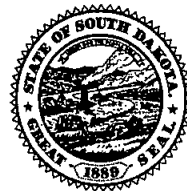
QUALIFICATIONS

1. The well approved under this Permit will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner under this Permit shall control his withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
2. The well authorized by Permit No. 8231-3 shall be constructed by a licensed well driller and construction of the well and installation of the pump shall comply with Water Management Board Well Construction Rules, Chapter 74:02:04 with the well casing pressure grouted (bottom to top) pursuant to Section 74:02:04:28.
3. Pursuant to SDCL 46-5-6 which allows a greater diversion rate if the method of irrigation, time constraints, or type of soils so requires, Permit No. 8231-3 authorizes a maximum diversion rate of 1.78 cfs for the irrigation of 104 acres with an annual volume not to exceed 2 acre feet of water per acre per year.
4. This Permit is approved subject to the irrigation water use questionnaire being submitted each year.

WATER MANAGEMENT BOARD

By: 
Jeanne Goodman, Chief Engineer
Water Rights Program
Department of Environment and Natural Resources

SEP 14 2016
date



Supplemental Information

(type or print)

1. Well Information (check one or both as applicable) ☒ Drilling new well(s) ☐ Using existing well(s)a) If new wells, how many 1 Have test holes been drilled ☒ Yes ☐ No Drilled by Heine Electric & Irrigation, Inc
(if yes, please provide copies of logs)b) If existing wells, how many Provide copy of log(s), if available. Drilled by

For either Existing or Proposed Wells:

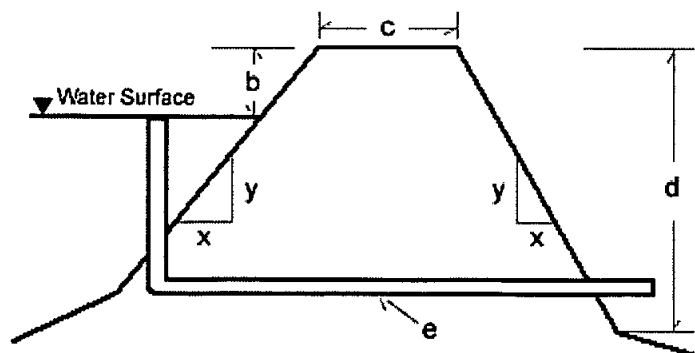
c) Well Depth (required) 330 Depth to Top of Water Bearing Material 250 Depth to Water from Surface 140d) Distance to nearest domestic well on applicant's property NA Property owned by others unknown**2. Wastewater Disposal System Information**a) Type of System (i.e. septic tank, drain field) b) System Capacity (gallons) Year Constructed c) Connected to the City of Sanitary System **3. Dugout Information**a) Surface Dimensions Depth b) Depth to water (ground surface to water level) **4. Water Storage Dams**

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

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

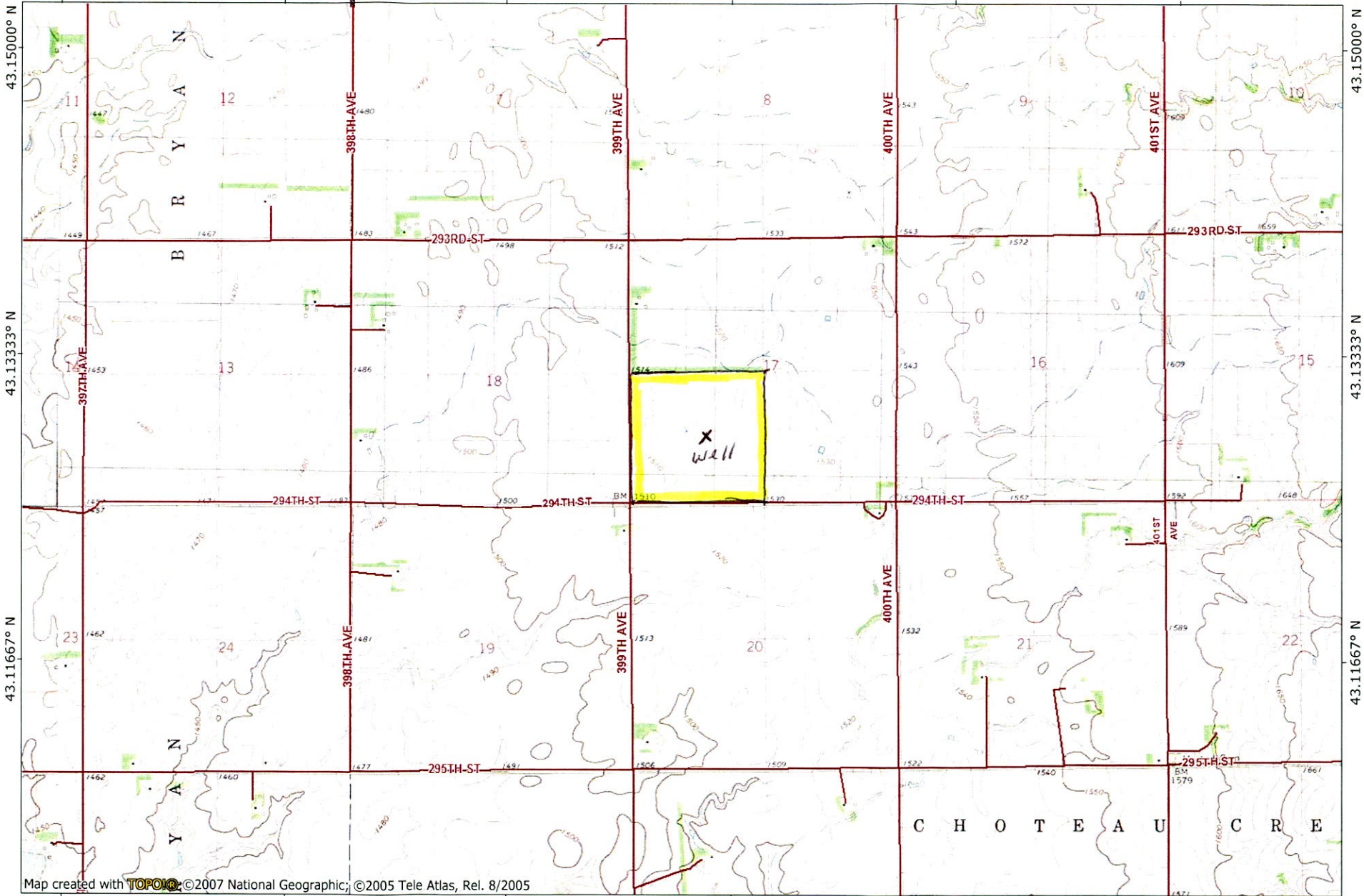
b) Freeboard c) Crest Width Crest Length d) Height e) Primary Outlet Capacity If pipe, diameter f) Secondary Spillway Capacity Spillway Width

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

Upstream Downstream h) Surface Area of Impoundment i) Storage Acre Feetj) Drainage Area Above Dam Acres

R63W R62W

98.25000° W 98.23333° W 98.21667° W 98.20000° W 98.18333° W WGS84 98.16667° W

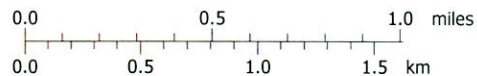


Map created with TOPO! ©2007 National Geographic; ©2005 Tele Atlas, Rel. 8/2005

98.25000° W 98.23333° W 98.21667° W 98.20000° W 98.18333° W WGS84 98.16667° W



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PROGRAM



PA Hammond

TN MN
4°
04/26/16



Prepared By: **Heine Electric and Irrigation, Inc.**

For: **Juffers, Jeff**

Questions or concerns? Please call us at 402-640-1999!

Pivot center at 43.129395, -98.203208

[N] Spray off at 340°, on at 20°.

[W] Spray off at 250°, on at 290°.

- 1 180 ft. Total: 180 ft.
Acreage: 2.34. Total: 2.34 acres.
- 2 180 ft. Total: 360 ft.
Acreage: 7.02. Total: 9.36 acres.
- 3 180 ft. Total: 540 ft.
Acreage: 11.7. Total: 21.06 acres.
- 4 160 ft. Total: 700 ft.
Acreage: 14.32. Total: 35.38 acres.
- 5 160 ft. Total: 860 ft.
Acreage: 18.02. Total: 53.41 acres.
- 6 160 ft. Total: 1020 ft.
Acreage: 21.72. Total: 75.14 acres.
- Overhang 85 ft. Total: 1105 ft.
Acreage: 13.04. Total: 88.18 acres.
- Spray 120 ft. Total: ~~1225 ft.~~
Acreage: 15.46. Total: 103.64 acres.

12

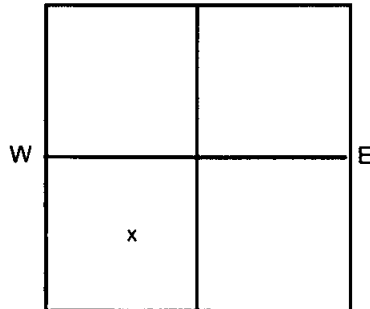


SOUTH DAKOTA WATER WELL COMPLETION REPORT

11-02

Location se 1/4 sw 1/4 Sec 17 Twp 96n Rg 62wCounty Charles Mix ☒

North

Please mark well
location with an "X"

Well Completion Date

4/25/16

1 Mile

Distance to nearest potential pollution source (septic tank, abandoned well, feed lot, etc.)?
> 3000 ft. from none known (identify source)

PROPOSED USE:

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

METHOD OF DRILLING:

Rotary

CASING DATA:

☐ Steel ☐ Plastic ☐ Other
If other describe none

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
LB/FT	IN	FT	FT	IN
LB/FT	IN	FT	FT	IN
LB/FT	IN	FT	FT	IN

GROUTING DATA:

Grout Type	No. of Sacks	Grout Weight	From	To
Bentonite	14	9.5 Lb/gal	0 Ft	337 Ft
		Lb/gal	Ft	Ft

Describe grouting procedure
tremie thru rods

SCREEN:

☐ Perforated pipe ☐ Manufactured
 Diameter _____ Inches Length _____ Feet
 Material _____
 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

DISINFECTION: Was well disinfected upon completion?

☐ Yes, How?
☐ No, Why Not?
 Lab to which water
 quality sample sent for analysis
Well Owner: Jeff Juffers

Business Name:

Address: 39135 SD Highway 46City, State, Zip: Wagner ☒ sd ☒ 57380

WELL LOG:

FORMATION	DEPTH	
	FROM	TO
topsoil	0	2
Gravel, sandy, coarse	2	8
Clay, brown, rocky (till)	8	28
Clay, gray, pebbly (till)	28	53
Sand, fine, pebbly	53	58
Clay, gray, pebbly, (till)	58	191
Clay, gray with green sand interbeds	191	260
Sand, green, medium to coarse	260	326
Chalk, gray	326	337

STATIC WATER LEVEL 140? FEET

If flowing: closed in pressure _____ PSI

GPM flow _____ through _____ Inch pipe

Controlled by ☐ Valve ☐ Reducers ☐ Other _____

Reduced flow rate _____ GPM

Can well be completely shut in?

WELL TEST DATA:

☐ Pumped Describe:
☐ Bailed
☐ Other

Pumping Level Below Land Surface

_____ Ft. After _____ Hrs. pumped _____ GPM

_____ Ft. After _____ Hrs. pumped _____ GPM

If pump installed, pump rate: _____ GPM

REMARKS

Irrigation test hole

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JUN 20 2016

WATER RIGHTS
PROGRAMThis well was drilled under license # 810 and this report is true and accurate.Drilling firm: Heine Electric & Irrigation, Inc

Signature of License Representative:

Signature of Well Owner or Equitable Property Holder:

Date: 6-16-16

RECEIPT

WATER RIGHTS PROGRAM

South Dakota Department of Environment and Natural Resources

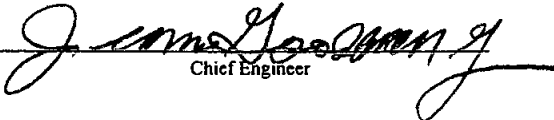
Date 6/20, 20 16

RECEIVED OF Juffer Family Farm PO Box 69 Wagner SD 57380

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

Fee for Application for Permit No. <u>8231-3</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>8231-3</u>	200	00
Fee for Filing Transfer Form _____		
Fee for _____		
Fee for Issuing New Well Driller's License No. _____ for C.Y. _____		
Fee for Renewal of Well Driller's License No. _____ for C.Y. _____		
Fee for Issuing Well Pump Installer's License No. _____ for C.Y. _____		
Fee for Renewal of Well Pump Installer's License No. _____ for C.Y. _____		
(Any Other Work Provided by Law) TOTAL	950	00

No. **07858**

By 
Chief Engineer



**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. 8231-3, Jeffrey T Juffer**

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. 8231-3, Jeffrey T Juffer, PO Box 69, Wagner SD 57380.

The Chief Engineer is recommending APPROVAL of Application No. 8231-3 because 1) there is reasonable probability that there is unappropriated water available for the applicant's proposed use, 2) the proposed diversion can be developed without unlawful impairment of existing rights, 3) the proposed use is a beneficial use and 4) it is in the public interest with the following qualifications:

1. The well approved under this Permit will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner under this Permit shall control his withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
2. The well authorized by Permit No. 8231-3 shall be constructed by a licensed well driller and construction of the well and installation of the pump shall comply with Water Management Board Well Construction Rules, Chapter 74:02:04 with the well casing pressure grouted (bottom to top) pursuant to Section 74:02:04:28.
3. Pursuant to SDCL 46-5-6 which allows a greater diversion rate if the method of irrigation, time constraints, or type of soils so requires, Permit No. 8231-3 authorizes a maximum diversion rate of 1.78 cfs for the irrigation of 104 acres with an annual volume not to exceed 2 acre feet of water per acre per year.
4. This Permit is approved subject to the irrigation water use questionnaire being submitted each year.

See report on application for additional information.

Jeanne Goodman, Chief Engineer
August 11, 2016

Report to the Chief Engineer
Water Permit Application No. 8231-3
Jefferey T. Juffer
August 1, 2016

Water Permit Application No. 8231-3 proposes to appropriate water at a maximum diversion rate of 1.78 cubic feet per second (cfs) for the irrigation of 104 acres located in the SW ¼ Section 14-T96N-R62W. The proposed diversion point is one well (about 330 feet deep) to be completed into the West management unit of the Choteau aquifer located in the approximate center of the SW ¼ Section 14-T96N-R62W in Charles Mix County. The applicant is requesting a diversion rate greater than the statutory limit of 1 cfs per 70 acres.

Aquifer: West management unit of the Choteau aquifer (CH: W)

Hydrogeology and Aquifer Characteristics

The West management unit of the Choteau aquifer is a basal aquifer that underlies portions of Charles Mix, Douglas, and Bon Homme Counties (Hedges et al., 1982). Figure 1 shows the location and approximate boundaries of the management unit. The management unit lies primarily within the Choteau bedrock valley and is made up of buried outwash and western stream deposits (Kume, 1977). The West management unit of the Choteau aquifer is primarily under confined conditions (Kume, 1977 and Water Rights, 2016b). Based on Hedges et al. (1982) the management unit has an area of approximately 218,400 acres and contains about 1,474,200 acre-feet of recoverable water. The saturated thickness in the management unit ranges from 5 to 89 feet and averages about 35 feet (Kume, 1977). Groundwater movement in the management unit is generally toward the south (Kume, 1977).

The test hole report submitted with this report indicated the top of the aquifer is about 260 feet below grade and about 66 feet thick. Well completion reports on file with the Water Rights Program (2016) indicate that the management unit is under confined conditions in the area of the proposed well site for this application.

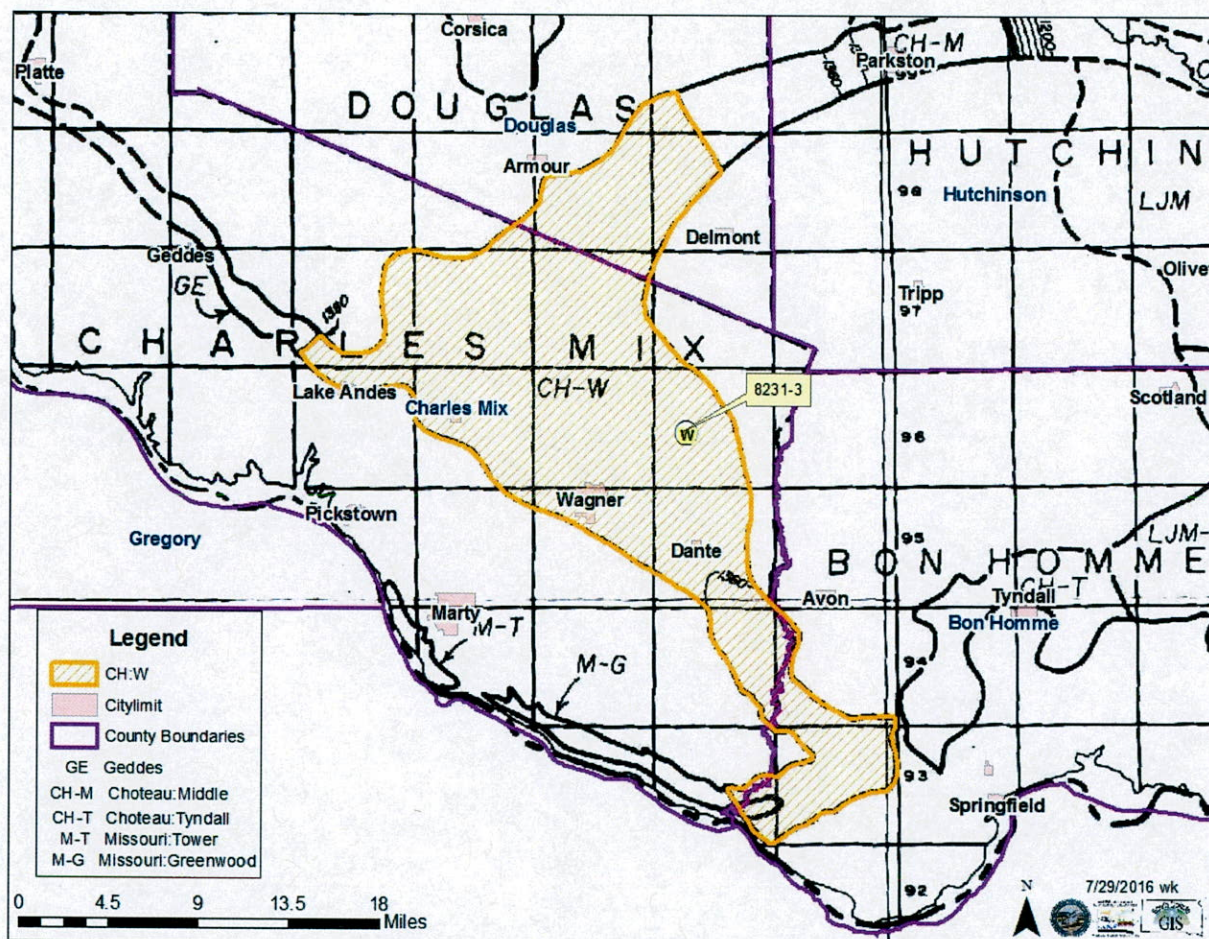


Figure 1: Location and Approximate Boundaries of the West management unit of the Choteau aquifer (CH:W) (modified from Hedges et al., 1982)

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 proposed diversion 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 existing rights from the aquifer that are pertinent to this application.

Water Availability

Water Permit Application No. 8231-3 proposes to appropriate water from West management unit of the Choteau aquifer for irrigation use. The probability of unappropriated water being available from an 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.” If the source of the water is older or lower than the Greenhorn Formation and the application is for a water distribution system defined pursuant to SDCL 46-1-6 (17), the Board need not consider the recharge/withdrawal issue. Here, a water distribution system is not involved and the West management unit of the Choteau aquifer is not older or lower than the Greenhorn Formation, therefore the withdrawal/recharge issue must be considered.

Observation Wells

In determining the availability of unappropriated water for a permit application Administrative Rule 74:02:05:07 requires the Water Management Board to rely on 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 annual recharge.

The Water Rights Program monitors 25 observation wells completed into the West management unit of the Choteau aquifer. The nearest of these is observation well CM-72C located about 2.3 miles west of the proposed well location for this application. Observation well CM-78D is located about 2.8 miles north of the proposed well location and observation well CM-68F is located about 3.2 miles southwest. The hydrographs of these observation wells are shown in Figure 3, 4, and 5. These hydrographs are fairly representative of the hydrographs for observation wells completed into this management unit located in Charles Mix and Douglas County. The three observation wells completed into this management unit located in Bon Homme County generally show less seasonal water level variation when compared to the other observation wells in the management unit.

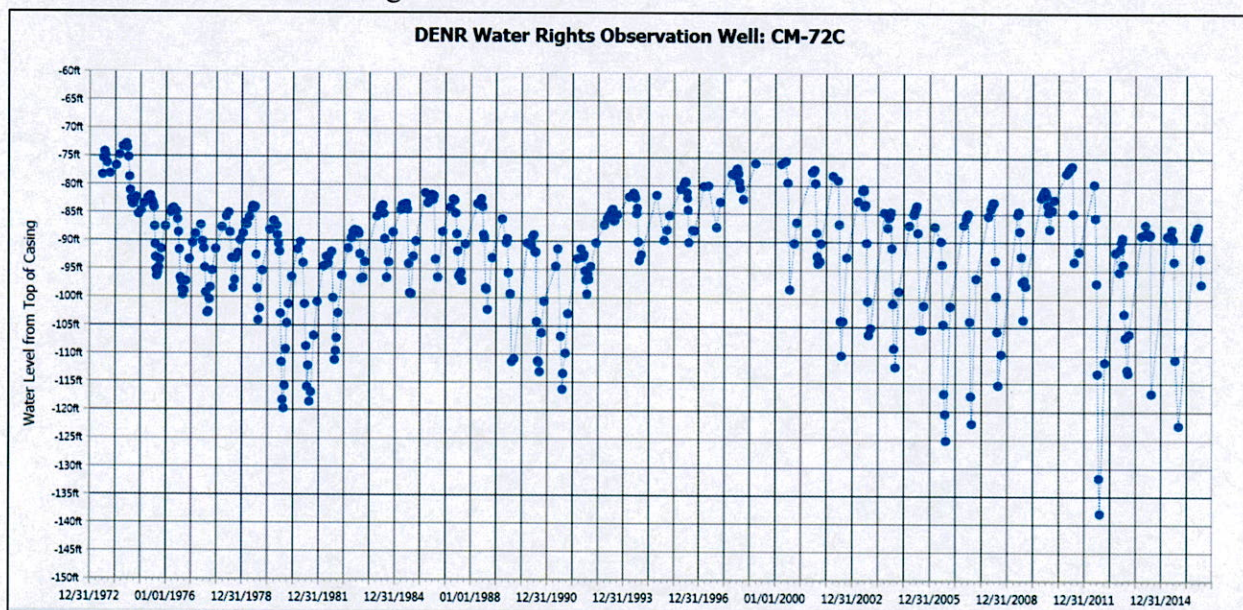


Figure 3: Hydrograph of observation well CM-72C (Water Rights, 2016b)

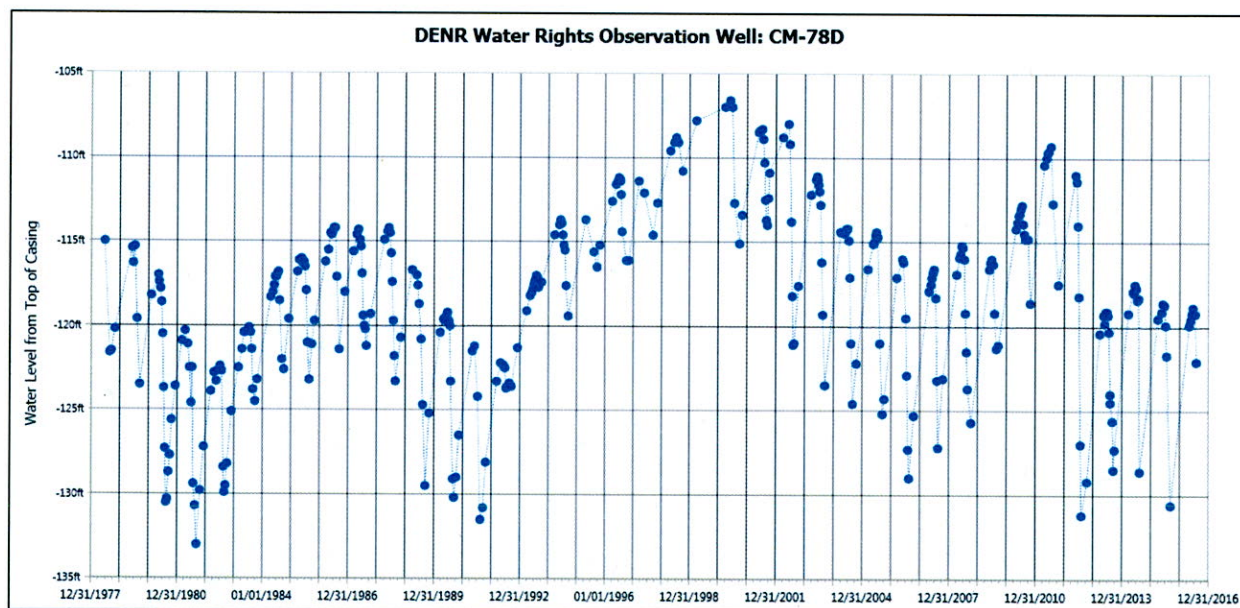


Figure 4: Hydrograph of observation well CM-78D (Water Rights, 2016b)

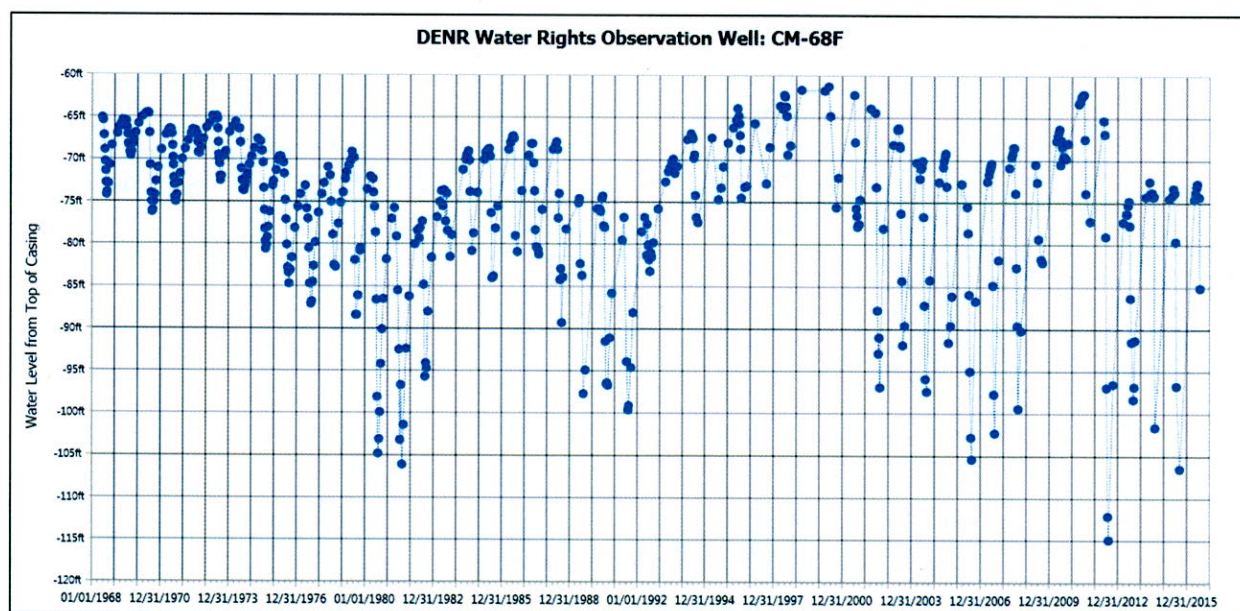


Figure 5: Hydrograph of observation well CM-68F (Water Rights, 2016b)

The observation well hydrographs show cyclic periods of water level fluctuation based on the effect of climatic conditions on the management unit. Increases in water levels occur during wetter periods (when recharge exceeds discharge), and decreases in water levels occur during drier periods (when discharge exceeds withdrawals). Water levels are dominated by climatic conditions rather than the temporal effects of pumping. Some seasonal impact on artesian head pressure as the result of irrigation pumping can be noted. However, artesian head pressure in the management unit recovers after pumping has ceased. This indicates that recharge exceeds

withdrawals. Therefore, there is a reasonable probability that unappropriated water is available for the appropriation proposed by this application.

Hydraulic Budget

Recharge

Some recharge for the management unit is from the adjacent till (Kume, 1977). In the areas where the management unit is in contact with the Niobrara Marl, the potential exists for some recharge to the management unit from the Niobrara Marl (Kume, 1977). Mathiowetz (2016) notes that the most likely area for recharge from the Niobrara to occur is in T98N-R63W and potential other areas along the northwest side of the management unit. In Bon Homme County some recharge is received via seepage from Dry Choteau Creek and Choteau Creek (Jorgensen, 1971). Utilizing the recharge rates recommended by Hedges et al. (1985) for use by management and development programs for confined aquifers of 0.15 to 0.60 inches per year and an area of 218,400 acres, the estimated annual recharge to the management unit is 2,730 to 10,920 acre-feet per year.

Withdrawals

Withdrawals from the management unit consist of natural losses to springs (in the southern part of the management unit), seepage to surrounding bedrock or drift, and pumping from wells (Kume, 1977). Mathiowetz (2016) notes that based on observation well data along the eastern edge of the management unit there is potential for water to move into the Niobrara aquifer where it is in contact with the management unit. Withdrawals due to wells can be split into irrigation and non-irrigation uses. The majority of water rights/permits for this management unit are for irrigation use.

There are six water rights/permits for non-irrigation uses currently authorized to appropriate water from the West management unit of the Choteau aquifer. Withdrawals from domestic wells are not considered a significant portion of the hydraulic budget for the management unit due to their relatively low diversion rates and the development of rural water systems in the area. The municipal water rights for the management unit belong to the City of Wagner (Water Rights, 2016a). The City of Wagner is connected to a rural water system and maintains their wells for standby/emergency purposes (i.e. fire protection) (Mathiowetz, 2016). Historically, average water use by non-irrigation appropriations limited by instantaneous diversion rate has been less than 60% of full time pumping at the permitted diversion rate. Based on this the average annual non-irrigation withdrawals from the management unit can be estimated at approximately 352 acre-feet per year.

There are 46 water rights/permits and one pending application for irrigation use authorized to appropriate water from the West management unit of the Choteau aquifer. The Water Rights Program collects and maintains irrigation water use information from across the state. The reported irrigation pumpage and appropriations for the West management unit of the Choteau aquifer are shown on an annual basis for the period of record in Figure 2. In considering

Figure 2, it can be observed that irrigation appropriations in the management unit have fluctuated over the period of record and has been increasing since 2012. Average reported irrigation pumpage over the period of record is 2,605 acre-feet and reported pumpage ranges from 334 acre-feet in 1993 to 6,043 acre-feet in 2012. Aquifers in the eastern portion of the state, for which the application rate per irrigated acre has been quantified, have yielded application rates of less than ten inches per acre per year. Using this rate average annual water use from the pending application can be estimated at 113 acre-feet. This results in an estimated average annual irrigation use of 2,718 acre-feet per year.

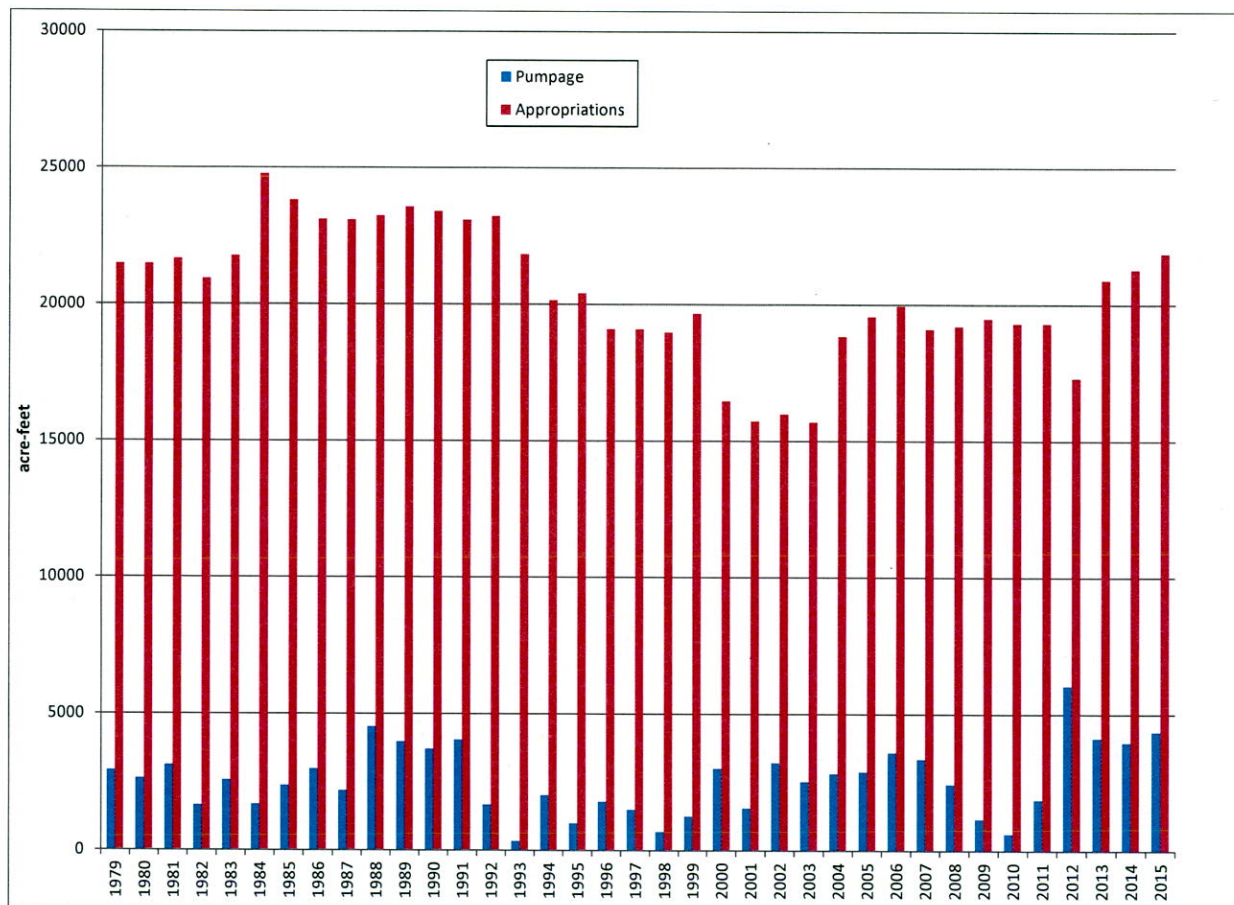


Figure 2: Reported Irrigation Pumpage and Appropriations from the West Management Unit of the Choteau Aquifer (Water Rights, 1980-2016)

Balance

The estimated annual recharge to the management unit is 2,730 to 10,920 acre-feet per year. Estimated average annual withdrawal is about 3,070 acre-feet per year. This number is toward the low end of the estimated recharge rate for the management unit; however, the observation well data indicates that unappropriated water is available. Additionally the presence of spring discharge and leakage to the Niobrara indicates that there is natural discharge that is

available for capture. Average annual water use associated with this application, if approved, are estimated to be less than 87 acre-feet per year.

Existing Water Rights

Water rights/permits that are currently authorized to appropriate water from the West management unit of the Choteau aquifer on the area of the proposed well site are shown in Figure 6 and summarized in Table 1. The nearest of these to the proposed wellsite for this application is Water Permit No. 7343-3 located about one mile to the west of the proposed well site for this application. The Water Rights Program has several well completion reports on file within two miles of this application, some of which are likely completed into this management unit (Water Rights Program, 2016).

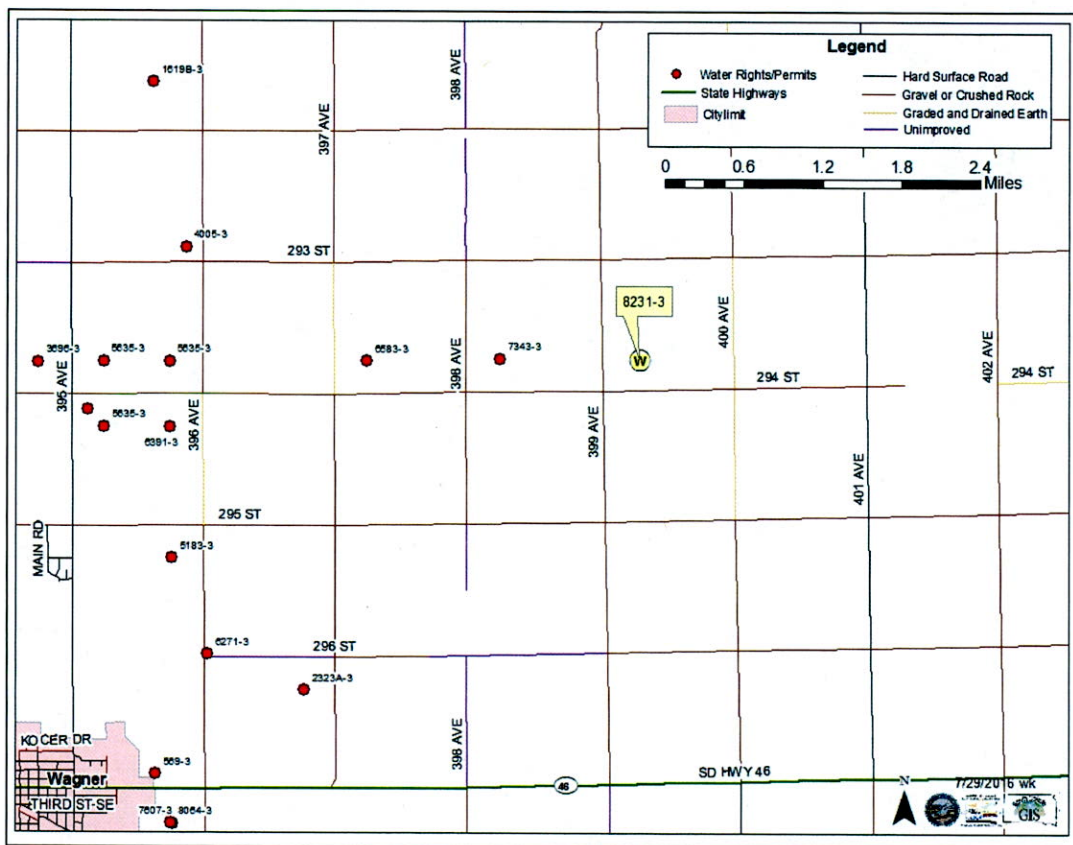


Figure 6: Water Rights/Permits Currently Authorized to Appropriate Water from the West Management Unit of the Choteau Aquifer in the Area for the Proposed Wellsite for this Application (Water Rights, 2016a)

Table 1: Summary of Water Rights/Permit Shown in Figure 6 (Water Rights, 2016)

Permit No.	Name	Status	Use	Rate (cfs)	Acres
1619B-3	GARY HOLZBAUER	LC	IRR	4.08	364.6
2323A-3	SAMUEL D & ANGELA M FOUSEK	LC	IRR	2.44	204.44
3696-3	EUGENE J & BARBARA J SLABA	LC	IRR	1.78	136
4005-3	RICHARD/JULIE JONGEWAARD	LC	IRR	1.94	136
5183-3	ARLO MILLER	LC	IRR	3.55	311
5635-3	ROGER W & MAUREEN A EVANS	LC	IRR	9.23	646
569-3	CITY OF WAGNER	LC	MUN	1.1	n/a
6271-3	SANDRA EITEMILLER	LC	IRR	1.78	132
6391-3	ROGER W & MAUREEN A EVANS	LC	IRR	1.78	266
6583-3	GARY HOLZBAUER	LC	IRR	2	264
6599A-3	CIRCLE H ENTERPRISE	PE	IRR	0.57	40
7343-3	STANLEY PETERS	PE	IRR	2	248
7607-3	KEN SWATEK	PE	IRR	1.78	111
8064-3	KEN SWATEK	PE	IRR	0	25

LC-Water Right, PE-Water Permit, IRR-irrigation, MUN-municipal

The exact amount of drawdown as a result of the diversion requested by this application cannot be quantified without aquifer testing. However, the Theis equation can be used to estimate drawdown from a pumping well. Utilizing a transmissivity of 12,700 ft²/d (Kume, 1977), a storativity of 0.00005 (Duffield, 2015), and a time of 60 days the calculated drawdown estimate at a distance of one mile is 6.85 feet (Utah, 2010). The time of 60 days would allow for the application of two feet of water per acre (the statutory limit) at a continuous pumping rate of 1.78 cfs. Given that aquifers in the eastern portion of the state, for which the application rate per irrigated acre has been quantified, have yielded application rates of less than ten inches per acre per year, this scenario is a worst case scenario and is not very realistic. In considering this calculated drawdown estimate in relation to the observation wells shown in Figure 3, 4, and 5 are all located within a mile of one or more irrigation wells. In examining the water level lows that occurred during 2012 (a year of dry conditions combined with historical high irrigation), water levels in these observation wells were still approximately 48 to 80 feet above the top of the aquifer (Water Rights, 2016b).

The Water Management Board has promulgated rules that allow water to be placed to maximum beneficial use without the necessity of maintaining artesian head pressure for domestic use. The board has defined an adversely impacted domestic well 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.” In the case of Water Permit Application No. 2313-2 for the Coca-Cola Bottling Company of the Black Hills the Water Management Board adopted findings that noted that if the increased costs or decreased production as a result of the impacts of legitimate users on artesian head pressure could be considered an adverse impact it would

conflict with SDCL 46-1-4 (Water Rights, 1995). SDCL 46-1-4 requires the water resources of the state be put to beneficial use to the maximum extent of which they are capable (Water Rights, 1995). Taking this into consideration while some well owners may need to lower their pumps to accommodate seasonal fluctuations in artesian head pressure and additional appropriations, diversions under this permit, if approved, would not be expected to adversely impact adequate domestic wells.

Historical Concerns

In the 1950's in this area there was some concern over the impact of irrigation development on artesian head pressure. This concern was part of a study reported on in Walker (1961). Walker (1961) concluded that irrigation pumping had caused some domestic wells to stop flowing or the need for pumps to be lowered as a result of the sensitivity of the artesian head pressure to irrigation pumping. The concerns have since been dealt with, and there have been no further issues in the area for several years. Concerns such as these are now addressed in SDCL 46-6-6.1 in which artesian head pressure is not protected as a means of groundwater delivery.

SDCL 46-5-6

Pursuant to SDCL 46-5-6, the diversion rate for an irrigation appropriation cannot be in excess of one cfs for every 70 acres, or "the equivalent thereof." The statute does provide that: "The Water Management Board may allow a greater diversion, in volume or rate or both, if the method of irrigation, any time constraints on diversion of water, or the type of soil so requires. However, no annual volume may be greater than three acre-feet per acre delivered to the land". Water Permit Application No. 8231-3 proposes to divert a maximum of 1.78 cfs for the irrigation of 104 acres, or the equivalent of 1.20 cfs per 70 acres. The application indicated the reason for requesting a diversion rate in excess of the statutory limit is due to the method of irrigation and anticipated crop rotation plans.

Conclusions

1. Water Permit Application No. 8231-3 proposes to appropriate water at a maximum diversion rate of 1.78 cfs from one well to be completed into the West management unit of the Choteau aquifer for the irrigation of 104 acres located in the SW ¼ Section 14-T96N-R62W.
2. The applicant is requesting a diversion rate greater than the statutory limit of 1 cfs per 70 acres.
3. There is a reasonable probability that unappropriated water is available to meet the needs of this application.

4. There is a reasonable probability that diversions by this application will not adversely impact existing water rights/permits of domestic users with adequate wells.

Whitney Kilts
Whitney Kilts

SDDENR-Water Rights Program

Approved by

Ken Buhler

Ken Buhler

SDDENR-Water Rights Program

References

- Duffield, G. 2015. Representative Values of Hydraulic Properties. Retrieved Aug 2016.
http://www.aqtesolv.com/aquifer-tests/aquifer_properties.htm
- Hedges, L.S., Burch, S. L., Iles, D. L., Barari, R. A., and Schoon, R. A. 1982. Evaluation of Ground-Water Resources Eastern South Dakota and Upper Big Sioux River, South Dakota, and Iowa. Task 1: Bedrock Topography and Distribution, Task 2: Extent of Aquifers, Task 3: Ground-Water Storage, Task 4: Computerized Data Base, Final Report. U.S. Army Corps of Engineers Contract DACW 45-80-C-0185.
- Hedges, L.S., Allen, J. and Holly, D.E. 1985. Evaluation of Ground-Water Resources Eastern South Dakota and Upper Big Sioux River, South Dakota, and Iowa. Task 7: Ground-Water Recharge. U.S. Army Corps of Engineers Contract DACW 45-80-C-0185.
- Jorgensen, D. G. 1971. Geology and Water Resources of Bon Homme County, South Dakota. Part II: Water Resources. South Dakota Geological Survey Bulletin 21. Vermillion, SD.
- Kume, J. 1977. Geology and Water Resources of Charles Mix and Douglas Counties, South Dakota. Part II: Water Resources. South Dakota Geological Survey Bulletin 22. Vermillion, SD.
- Mathiowetz, A. 2016. Report to the Chief Engineer on Water Permit Application No. 8224-3 Buhler Farms LLC. SD DENR-Water Rights Program, Joe Foss Bldg., Pierre, South Dakota.

- Utah Division of Water Rights. 2010. Theis Equation Calculation for Aquifer Testing and Well Drawdown. Accessed Aug 8, 2016.
http://waterrights.utah.gov/wellinfo/theis/theis_input.asp
- Walker, I. R. 1961. Shallow Ground Water Resources in the Wagner Area, Charles Mix and Douglas Counties, South Dakota. South Dakota Geologic Survey Report of Investigations 90. Vermillion, SD.
- Water Rights. 1980-2016. "1979-2015 Irrigation Summaries by Aquifer": SD DENR-Water Rights Program, Joe Foss Bldg., Pierre, South Dakota.
- Water Rights. 1995. Water Rights File No. 2313-2 Coca-Cola Bottling Company of the Black Hills. SD DENR-Water Rights Program, Joe Foss Bldg., Pierre, South Dakota.
- Water Rights. 2016a. Water Right/Permit Files. SD DENR-Water Rights Program, Joe Foss Bldg., Pierre, South Dakota.
- Water Rights. 2016b. Water Rights Program Observation Well Files. SD DENR-Water Rights Program, Joe Foss Bldg., Pierre, South Dakota.
- Water Rights Program. 2016. Well Completion Reports Database South Dakota Department of Environment and Natural Resources.
<http://arcgis.sd.gov/server/denr/wellLogs/default.aspx>. Retrieved Aug. 2016.

Affidavit of Publication

STATE OF SOUTH DAKOTA)

)SS

COUNTY OF CHARLES MIX)

Danielle Weisser, 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 Danielle Weisser, and has been such newspaper during the time herein mentioned; and that I, Danielle Weisser, 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 17 day of August, 2016
2nd publication made on _____ day of _____, 2016
3rd publication made on _____ day of _____, 2016
4th publication made on _____ day of _____, 2016
5th publication made on _____ day of _____, 2016

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

\$ 27.12

Danielle Weisser

Subscribed and sworn before me this 18th day of August, 2016.

[Signature]

Notary Public

My commission expires 10/22/16

RECEIVED

AUG 29 2016

WATER RIGHTS
PROGRAM

Notice of Application to Appropriate Water

NOTICE OF APPLICATION NO. 8231-3 TO APPROPRIATE WATER

Notice is given that Jeffrey T Juffer, PO Box 69, Wagner SD 57380 has filed an application for a water permit to appropriate 1.78 cubic feet of water per second (cfs) from one well to be completed into the Choteau West Aquifer (330 feet deep) located in the approximate center of the SW 1/4 Section 17 for irrigation of 104 acres located in the SW 1/4 Section 17; all in T96N-R62W. The applicant is requesting a diversion rate greater than the statutory limit of 1 cfs per 70 acres.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 8231-3 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 Eric Gronlund for this information, or other information, at the Water Rights Program address provided below.

Any person interested in opposing or supporting this application or recommendation must file a written petition with BOTH the applicant and Chief Engineer. The applicant must file a petition if contesting the Chief Engineer's recommendation.

The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501 (605-773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by August 29, 2016.

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.

Steven M. Firner, Secretary, Department of Environment and Natural Resources.

Published once at the total approximate cost of \$27.12.

Pub: August 17, 2016

CALL US TO RENEW YOUR

RECEIVED

AUG 19 2016

WATER RIGHTS
PROGRAM

AFFIDAVIT OF PUBLICATION

STATE OF SOUTH DAKOTA)
) SS
COUNTY OF DAVISON)

NOTICE OF
APPLICATION
NO. 8231-3 to
Appropriate Water

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Steven M. Pirner,
Secretary,
Department of
Environment and
Natural Resources.
Published once at the total approximate cost of \$66.71

Penny Hohbach of said county, being, first duly sworn, on oath, says; that he/she is the publisher or an employee of the publisher of The Daily Republic, a daily newspaper, published in the City of Mitchell, in said County of Davison, and State of South Dakota; that he/she has full and personal knowledge of the facts herein stated; that said newspaper is a legal newspaper as defined in SDCL 17-2-2.1 through 17-2-2.4 inclusive; that said newspaper has been published within the said County of Davison and State of South Dakota, for at least one year next prior to the first publication of the attached public notice, and that the notice, order or advertisement, a printed copy of which, taken from the paper in which the same was published, and which is hereto attached and made a part of this affidavit, was published in said newspaper for 1 issue(s), to wit:

Wednesday, August 17, 2016

That the full amount of the fee charged for the publication of the attached public notice insures to the sole benefit of the publisher or publishers; that no agreement or 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, that the fees charged for the publication thereof are: \$66.71

Signed: Penny Hohbach

Subscribed and sworn to before me this 17th day of August, 2016.

Deb Townsend

Notary Public
County of Davison

My Commission Expires: 09-21-18

Prepared by: The Daily Republic, P.O. Box 1288, Mitchell S.D. 57301 605-996-5515

DEB TOWNSEND
Notary Public
SEAL
South Dakota

Schlaak, Karen

From: Schlaak, Karen
Sent: Friday, August 12, 2016 9:07 AM
To: Wagner (announcer@hcinet.net)
Subject: 8231-3, Jeffrey T Juffer
Attachments: 8231-3publicnov2015.short1.docx; FORM8.FRM.doc

Attached is a notice to be published on August 17, 2016.

Jeffrey T Juffer, PO Box 69, Wagner SD 57380 (605 384-5600 or c 605 491-1343) 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.

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

Karen Schlaak

Water Rights Program
523 E Capitol Ave
Pierre SD 57501
Phone: 605 773-3352

Schlaak, Karen

From: Schlaak, Karen
Sent: Friday, August 12, 2016 9:08 AM
To: 'phohbach@mitchellrepublic.com'
Subject: FW: 8231-3, Jeffrey T Juffer
Attachments: 8231-3publicnov2015.short1.docx; FORM8.FRM.doc

Attached is a notice to be published on August 17, 2016.

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Karen Schlaak
Water Rights Program
523 E Capitol Ave
Pierre SD 57501
Phone: 605 773-3352



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 NEWSPAPER(S) RIGHT AWAY.**

August 11, 2016

Jeffrey T Juffer
PO Box 69
Wagner SD 57380

Dear Mr. Juffer:

Water Permit Application No. 8231-3 for irrigation 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 Republic printed at Mitchell SD (Ph # 605-996-5514). You will need to contact the newspaper(s) 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 newspaper(s) to authorize publication of your Notice and to arrange for payment. Early contact with the paper(s) can eliminate delays. Upon receiving authorization from you, the publisher has been instructed to publish your notice. The newspaper has 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,

Eric Gronlund
Eric Gronlund
Natural Resources Engineer
(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. 8231-3 to Appropriate Water

Notice is given that Jeffrey T Juffer, PO Box 69, Wagner SD 57380 has filed an application for a water permit to appropriate 1.78 cubic feet of water per second (cfs) from one well to be completed into the Choteau: West Aquifer (330 feet deep) located in the approximate center of the SW 1/4 Section 17 for irrigation of 104 acres located in the SW 1/4 Section 17; all in T96N-R62W. The applicant is requesting a diversion rate greater than the statutory limit of 1 cfs per 70 acres.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 8231-3 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 Eric Gronlund for this information, or other information, at the Water Rights Program address provided below.

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Steven M. Pirner, Secretary, Department of Environment and Natural Resources. Published once at the total approximate cost of _____.



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182

denr.sd.gov

SEP 14 2016

Jeffrey T Juffer
PO Box 69
Wagner SD 57380

Dear Mr. Juffer:

Enclosed is Water Permit No. 8231-3 authorizing construction of the water diversion system and beneficial use of the water, not exceeding the limits as specified in the Water Permit.

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

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

Sincerely,

Jeanne Goodman, Chief Engineer
Water Rights Program
(605) 773-3352

enclosures

8231-3

SD EForm - 1621LD V1

SOUTH DAKOTA WATER WELL COMPLETION REPORT

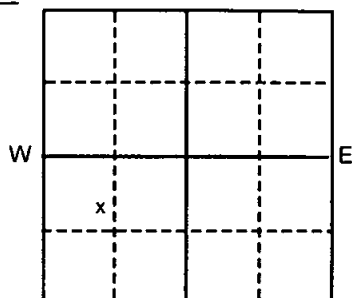
11-02

Location NW ¼ SW ¼ Sec 17 Twp 96 Rg 62WWell Owner: Jeff Juffers

Business Name: _____

Address: 39135 SD HWY 49City, State, Zip: Wagner SD 57380County Charles Mix

North

Please mark well
location with an "X"

Well Completion Date

17 May 2017

1 Mile

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

2,600.0 ft. from Feed lot (identify source)

PROPOSED USE:

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

METHOD OF DRILLING:

Reverse rotary

CASING DATA:

☐ Steel ☒ Plastic ☐ Other

If other describe _____

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
LB/FT	<u>16.00</u> IN	<u>0.0</u> FT	<u>266.0</u> FT	<u>22.00</u> IN
LB/FT	IN	FT	FT	IN
LB/FT	IN	FT	FT	IN

GROUTING DATA:

Grout Type	No. of Sacks	Grout Weight	From	To
<u>Bentonite</u>	<u>90</u>	<u>9.5</u> Lb/gal	<u>0.0</u> Ft	<u>260.0</u> Ft
		Lb/gal	Ft	Ft

Describe grouting procedure
Tremie Method

SCREEN:

☐ Perforated pipe ☐ Manufactured
 Diameter 16.00 Inches Length 60.0 Feet
Material Slotted PVCSlot Size .050 Set From 266.0 Feet to 326.0 Feet

Other information _____

WAS A PACKER OR SEAL USED? ☐ Yes ☒ No

If so, what material? _____

Describe packer(s) and location _____

DISINFECTION: Was well disinfected upon completion?

☒ Yes, How? HTH tablets☐ No, Why Not? _____Lab to which water
quality sample sent for analysis _____

WELL LOG:

FORMATION	DEPTH	
	FROM	TO
Top soil	0	2
Sandy gravel	2	8
Brown clay 8-28; Blue clay 28-53	8	53
Fine sand and gravel	53	58
Blue clay	58	165
Gray chalk	165	191
Gravel	191	202
Blue clay with green sand layers	202	260
Medium to coarse sand	260	326

STATIC WATER LEVEL 146.2 FEET

If flowing: closed in pressure _____ PSI

GPM flow _____ through _____ Inch pipe

Controlled by ☐ Valve ☐ Reducers ☐ Other _____

Reduced flow rate _____ GPM

Can well be completely shut in? _____

WELL TEST DATA:

☒ Pumped Describe:☐ Bailed☐ Other

Pumping Level Below Land Surface

213.0 Ft. After 0.5 Hrs. pumped 800.0 GPM

_____ Ft. After _____ Hrs. pumped _____ GPM

If pump installed, pump rate: _____ GPM

REMARKS

Elevation: 1523' asl43° 7'46.15"N98°12'12.52"WChoteau: West W72This well was drilled under license # 810 and this report is true and accurate.Drilling firm: Heine Electric & Irrigation

Signature of License Representative: _____

Signature of Well Owner or Equitable Property Holder:

Signature of Well Owner or Equitable Property Holder: _____

RECEIVED

NOV 02 2017

WATER RIGHTS
PROGRAMDate: 10-27-17