

WATER PERMIT NO. 1830-1

Name of Applicant: **James F Wunder**

Address: **PO Box 217, Spearfish SD 57783**

Phone: **605 642-1634**

Amount of Water Claimed: **0.133 cfs**

Total Acres: **10**

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

Water to be used for: **irrigation**

County: **Lawrence**

Type of Waste Disposal System:

Location: **5 miles northwest of Spearfish**

PRIORITY

Date Received: **1-3-05**

Application/License Fee: **\$200**

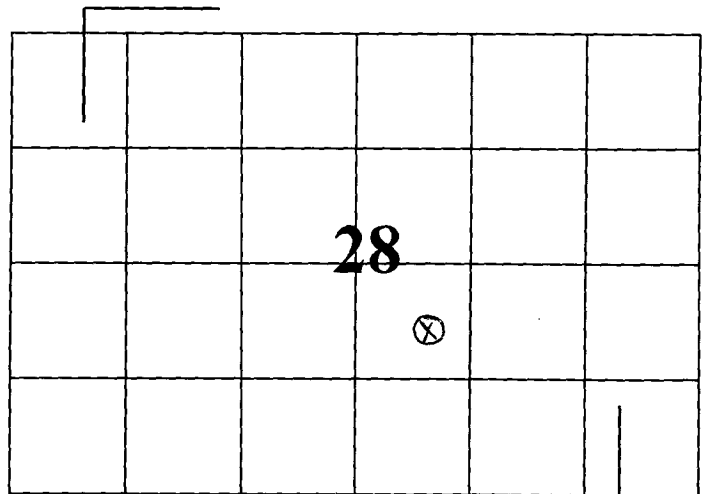
Corrected Application Received:

Period of Annual Use: **May 1 – October 31**

Remarks:

Diversion Point: **NW ¼ SE ¼ Sec 28-T7N-R1E**

Land to be Irrigated: **NW ¼ SE ¼ Sec 28-T7N-R1E**



Depth of Well: **520 feet deep**

Well Driller: **Cimarron Drilling**

Remarks:

Type of Map: **aerial**

Prepared by: **Bradley Ellis, PE**

Reviewed and the Number Assigned on: **1-3-05**

By: **Karen Schlaak**

Notice of Hearing - date to intervene: _____

Mail to: Water Rights Program Joe Foss Building 523 E. Capitol Pierre, SD 57501-3181 (605) 773-3352	No. <u>1830-1</u> (office use only)	Hydrologic Unit <u>10120203</u>	RECEIVED JAN - 3 2005 WATER RIGHTS PROGRAM
	Basin <u>Belle Fourche R</u>		
	Newspaper <u>Black Hills Pioneer, Spearfish</u>		

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.) _____

- Name of Applicant JAMES F. WUNDER Phone 605-642 1634
(check one) ☒ Owner ☐ Tenant/lessee
Mailing Address PO Box 217 19762 PRAIRIE RIDGE ROAD State S. DAK 57783
(Street, RR, or Box and City) SPEARFISH (Zip Code)
- Amount of water claimed 0.133 *CFS or 60 **GPM ***AF Total Acreage 10
(*Cubic Feet per Second) (**Gallons per Minute) (***Acre Feet - storage capacity of dam/dugout or annual use if applicable)
- Source of water supply PRIVATE well
- Location of point of diversion (example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W) 1 well in NW 1/4 SE 1/4
section 28 - T7N - R1E BHM County LAWRENCE
- County or counties where water will be used LAWRENCE county S. DAK.
- Annual period during which water is to be used MAY 1 thru Oct 31
- List below each forty acre division, or lot, or fraction thereof and show number of acres to be irrigated in each.
(Attach sheet if more space is needed)

Land Description	Acres	Land Description	Acres
NW 1/4 SE 1/4 section 28 - }			
T7N - R1E	10		

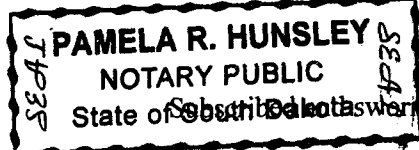
- Give a description of the project. (Attach sheet if more space is needed)
Appropriation of water to supply underground sprinkler system
for watering TREES and LAWN at Above described Land.

STATE OF SOUTH DAKOTA) SS

County of Walworth

Attachments: Attach Form 2A if diversion is from a well or dugout, or if storage of water is proposed. Attach map and any other technical information. (see instructions)

I, JAMES F. WUNDER, the applicant, certify that I have read this application, have examined the attached map and that the matters stated are true and that I intend, and am able to complete the necessary construction.



Applicant's signature James F. Wunder

to before me this 10th day of December 2004

My Commission Expires
August 25, 2005

Notary Public signature Pamela R. Hunsley

SOUTH DAKOTA
WATER PERMIT NO. 1830-1

Date of first receipt of application January 3, 2005.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 1830-1 to James F Wunder, PO Box 217, Spearfish SD 57783 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. 1830-1 appropriates 0.133 cubic feet of water per second from one well completed into the Minnelusa Formation (approximately 520 feet deep) located in the NW ¼ SE ¼ Section 28 to irrigate 10 acres located in the NW ¼ SE ¼ Section 28; all in T7N-R1E.
2. The amount of the appropriation may not exceed 2 acre feet annually for each acre of land to which water is actually and beneficially applied for irrigation. The water is to be used during the following described annual period: May 1 - October 31.
3. The date from which applicant may claim right is January 3, 2005.
4. The date of approval of Permit No. 1830-1 is March 28, 2005.
5. One-fifth of the construction is to be completed on or before September 28, 2007.
6. All construction is to be completed on or before March 28, 2010.
7. Water is to be put to beneficial use on or before March 28, 2014.
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. This Permit is approved subject to the irrigation water use questionnaire being submitted each year.

WATER MANAGEMENT BOARD

By: Garland Erbele
Garland Erbele, Chief Engineer
Water Rights Program
Department of Environment and Natural Resources

APR 19 2005

date



Supplemental Information

(type or print in ink)

1. Well Information - Proposed Construction

- a) Drill Hole Diameter 8 3/4" 6 1/4" Depth 200' 520'
- b) Casing Type Steel Diameter 7 1/2" to 200' 4 1/2" to 510' Thickness 0.250 wall 0.250 wall
- c) Screen Type N/A Diameter _____ Thickness _____
- d) Gravel Pack N/A Length of Gravel Pack _____
- e) Depth to Top of Water Bearing Material 510'
- f) Depth to Water (ground surface to water level) 115'
- g) Distance to nearest existing domestic well:
On applicants property N/A On property owned by others 1/2 mile

2. Wastewater Disposal System Information

- a) Type of System (i.e. septic tank, drain field) Septic Tank & Drain Field
- b) System Capacity (gallons) 250 Year Constructed 1974
- c) Connected to the City of _____ Sanitary System _____

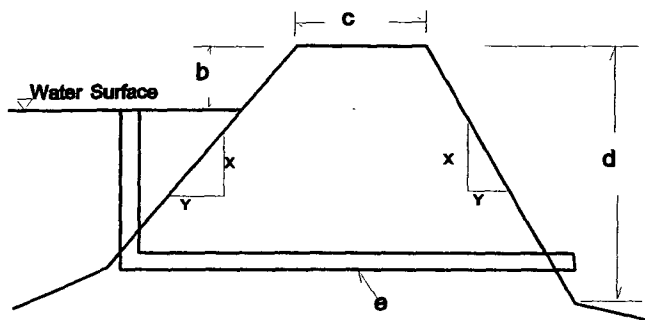
3. Dugout Information N/A

- a) Surface Dimensions _____ Depth _____
- b) Depth to water (ground surface to water level) _____

4. Water Storage Dams N/A

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:



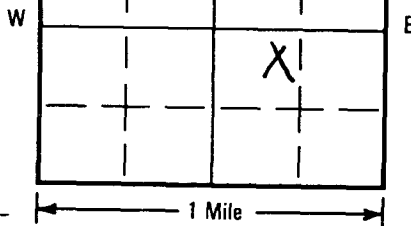
- b) Freeboard _____
- c) Crest Width _____
Crest Length _____
- d) Height _____
- e) Primary Outlet Capacity _____
If pipe, diameter _____
- f) Secondary Spillway Capacity _____
Spillway Width _____
- g) X & Y Slope _____
Upstream _____
Downstream _____
- h) Surface Area of Impoundment _____
- i) Storage _____ Acre Feet
- j) Drainage Area Above Dam _____ Acres

SOUTH DAKOTA WATER WELL COMPLETION REPORT

07-92

Location NW 1/4 SE 1/4 Sec 28 Twp 7-N Rg 1-E
 County TRACT U Reebe South Estates
Lawrence

Please mark well location with an "X"



Well Completion Date

12-15-04

LOCATION:

Distance from nearest potential pollution source (septic tank, abandoned well, feed lot, etc.)? 300 ft. from Septic (identify source).

PROPOSED USE:

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

METHOD OF DRILLING:

Rotary Air & Mud

CASING DATA:

☒ Steel ☐ Plastic ☐ Other

If other describe _____

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
<u>23</u> LB/FT	<u>7</u> IN	<u>0</u> FT	<u>200</u> FT	<u>8 3/4</u> IN
<u>14</u> LB/FT	<u>4 1/2</u> IN	<u>190</u> FT	<u>510</u> FT	<u>6 1/4</u> IN
_____ LB/FT	_____ IN	_____ FT	_____ FT	_____ IN

GROUTING DATA

Grout Type	No. of Sacks	Grout Weight	From	To
<u>Portland</u>	<u>27</u>	<u>9416</u> lb./gal	<u>0</u> ft.	<u>200</u> ft.
<u>Portland</u>	<u>25</u>	<u>9416</u> lb./gal	<u>190</u> ft.	<u>510</u> ft.

Describe grouting procedure Pressure Grout thru casing, displace w water by mud pump.

SCREEN: ☐ Perforated pipe ☐ Manufactured

Diameter _____ IN 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: chlorine☐ NO, Why Not? Bellettsowner tocomplete

Laboratory sent to for water quality analysis

Well Owner: Jim Wunder
 Business Name: _____
 Address: 19762 Prairie Ridge Rd. P.O. Box 217
Spearsfish, S.D. 57787

WELL LOG:

FORMATION	DEPTH	
	FROM	TO
<u>Sandy Red SHALE (Spearsfish)</u>	<u>0'</u>	<u>195'</u>
<u>Limestone (Mankato)</u>	<u>195'</u>	<u>230'</u>
<u>Red SHALE & S.S. (Opal)</u>	<u>230'</u>	<u>310'</u>
<u>Multicolored S.S. & L.S. (Mankato)</u>	<u>310'</u>	<u>470'</u>
<u>Solid Limestone</u>	<u>470'</u>	<u>510'</u>
<u>Fractured Limestone</u>	<u>510'</u>	<u>518'</u>
<u>Red & Green SHALE (Madison?)</u>	<u>518'</u>	<u>570'</u>

STATIC WATER LEVEL 115 Feet

If flowing: closed in pressure _____ PSI

GPM flow _____ through _____ inch pipe

Controlled by ☐ Valve ☐ Reducers ☐ Other _____

Reduced Flowrate _____ GPM

Can well be completely shut in? _____

WELL TEST DATA:

☐ Pumped Describe: Air developed☐ Bailed☒ Other

Pumping Level Below Land Surface

180 ft. After 3 Hrs. Blew 75 GPM

_____ ft. After _____ Hrs. pumped _____ GPM

If pump installed, pump rate 40 GPM

REMARKS

This well was drilled under license # 568

And this report is true and accurate.

Drilling firm Cimarron Drilling Inc.Signature of License Representative: Michael J. Denton

Signature of Well Owner or Equitable Property Holder: _____

Date: _____

RECEIVED

JAN 25 2005

WATER RIGHTS PROGRAM

RECEIPT

WATER RIGHTS PROGRAM

South Dakota Department of Environment and Natural Resources

Date January 3, 20 05

RECEIVED OF Wunder Image Ltd., 911 2nd Ave W., McBride SD 57601

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

Fee for Application for Permit No. <u>1830-1</u> to Appropriate Water, to construct and to put water to beneficial use	150	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>1830-1</u>	50	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	200.00

No.

200506

By

Darland Erbe

Chief Engineer

gm

EXIT 2

INTERSTATE 90

RED HILLS ROAD

REED RANCH ROAD

REED RANCH ROAD

REED RANCH ROAD

REED RANCH ROAD

REED RANCH ROAD

REED RANCH ROAD

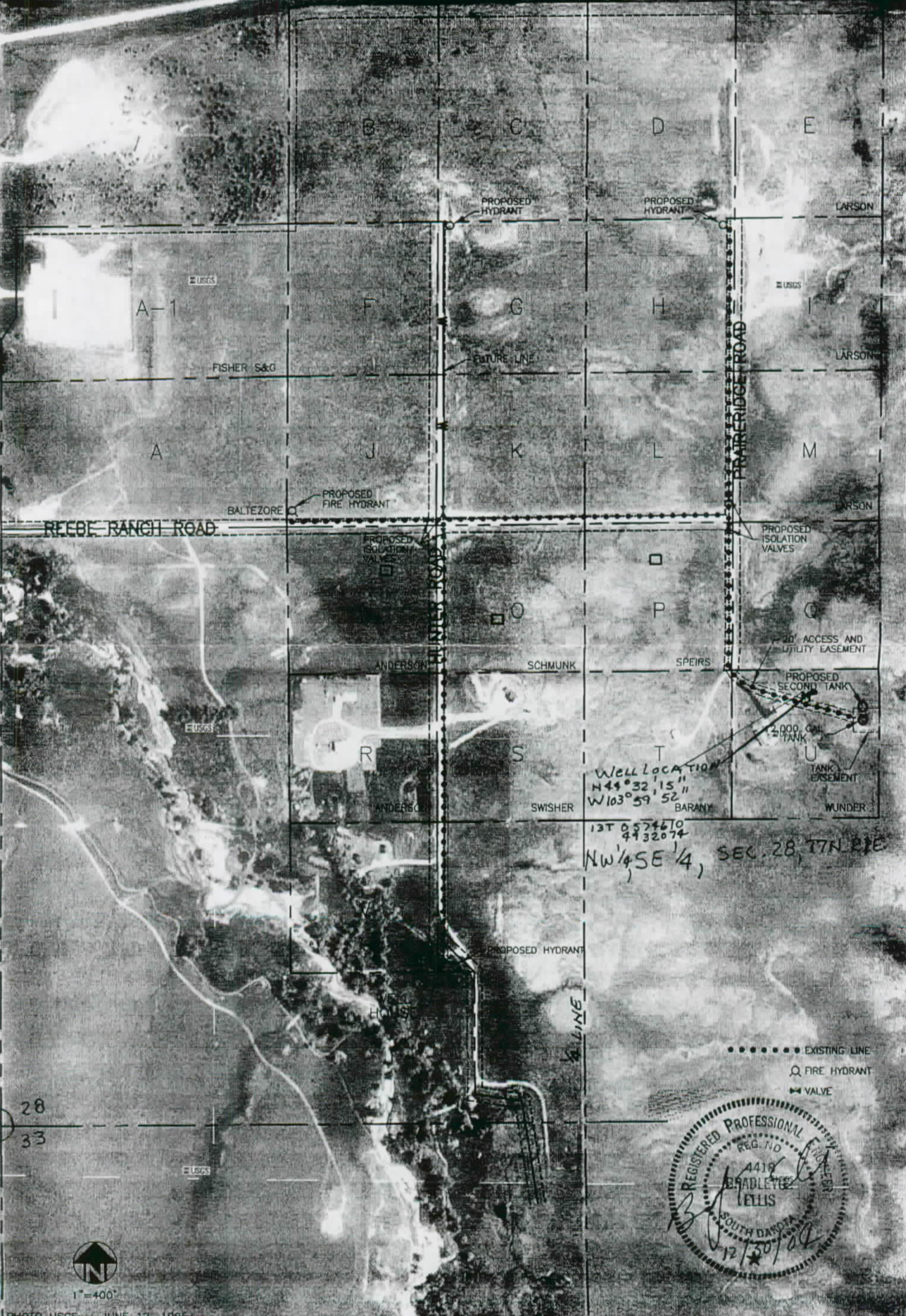


PHOTO USGS - JUNE 12, 1995

NO.	REVISIONS	BY	DATE	PROJECT	DATE	SCALE	ELLIS CONSULTANTS, INC. Engineering - Land Planning 1140 North Main, Suite 11 Spearfish, SD 57783 (605) 642-8301	REEBE RANCH ESTATES WATER SYSTEM	RECOMENDED IMPROVEMENTS	SHEET 1 OF 1
				04-027	06-02-04	1"=400'				
				04-027 work						
				OWNER						
				DESIGNER						
				DATE						
				BY						
				DATE						

1830-1



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

February 23, 2005

Jim Wunder
PO Box 217
Spearfish SD 57783

Dear Mr. Wunder

A well driller's report filed by Cimarron Drilling Inc. shows that they completed a new well for you. The report indicates the well water will be used for irrigation. Based on the information in the report, it appears you may need a water permit.

A water permit must be obtained for any water use except for reasonable, private domestic use. Reasonable domestic use is defined as use of less than 25,920 gallons per day with a maximum rate not to exceed 25 gallons per minute. Irrigation of more than one acre requires obtaining a water permit. Irrigation of a noncommercial family garden, trees, shrubbery, etc. greater than one acre in area requires obtaining a water permit.

1. Also, as a new well owner, you need to be aware of some of your responsibilities. Enclosed is a copy of "Well Owner Responsibilities". Please review these responsibilities to ensure you are complying with all of the requirements.
2. Enclosed are application forms and an instruction sheet to apply for a water permit for irrigation. The completed forms with the application fee and map can be returned to the "Water Rights Program, 523 E Capitol, Pierre SD 57501.

If you believe your water use does not require a water permit or that you have an existing permit, or if help is needed completing the application forms, please contact Eric Gronlund or me at (605) 773-3352. We will be happy to assist you in any way possible.

Sincerely,

Karen Schlaak
Karen Schlaak
Water Rights Program
karen.schlaak@state.sd.us

enclosures

WATER PERMIT APPLICATION NO. 1830-1
JAMES F. WUNDER
FEBRUARY 8, 2005

Water Permit Application No.1830-1 proposes to appropriate 0.133 cubic feet of water per second from one existing well completed into the Minnelusa Formation (520 feet deep), located in the NW¼ SE¼ Sec. 28, T7N-R1E, Lawrence County. The water is to be used to irrigate 10 acres located in the NW¼ SE¼ Sec. 28, T7N-R1E.

AQUIFER: Minnelusa aquifer (MNLS)

GENERAL:

The Minnelusa Formation consists of alternating beds of sandstone and dolomitic limestone with lesser amounts of shale and chert, approximately 600 feet thick in this area (Carter and Redden, 1999a; Carter and Redden, 1999b). The Minnelusa Formation outcrops about two and one-half miles from this well site (Strobel and others, 1999) and the SD Water Well Completion Report for the existing well that is to be used for this project reports the top of the formation to be 310 feet below grade. The porous portions of the formation form the Minnelusa aquifer. Well sorted sand lenses have porosity's approaching 25%, but generally the sands have porosity's of 10%. The average porosity of the Minnelusa is estimated to be 10% and the effective porosity is assumed to be 5% (Rahn, 1979). The Minnelusa Formation underlies virtually all of western South Dakota and the Minnelusa aquifer contains over 755 million acre-feet of recoverable water in storage in the state (Allen and others, 1985). The Minnelusa aquifer underlies approximately 199,680 acres of Lawrence County and contains an estimated 5,591,040 acre-feet of recoverable water in storage in the county (Allen and others, 1985). Ground water movement in the aquifer is probably toward the north in this area (Strobel, and others, 2000). The water quality of the aquifer is generally good near the outcrop but deteriorates considerably with distance from the recharge area. Estimates from regional studies of the aquifer indicate the aquifer transmissivity may range from 0.86 to 12,000 ft²/d, and the storage coefficient ranges from 0.003 to 5.0 x10⁻⁹ (Driscoll, and others, 2002). There are a number of prolific wells in this vicinity, possibly because the area has undergone extensive tectonic activity. The completion report submitted for this well indicates the well had a static water level of 115 feet below grade and was capable of producing 75 gallons per minute when air developed.

WATER AVAILABILITY:

The availability of unappropriated water from an aquifer can be evaluated by considering SDCL 46-6-3.1. This statute requires that an application to appropriate groundwater can not 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 average estimated annual recharge.

There are reports of declines of the potentiometric surface of the Minnelusa aquifer in this area since the first wells were completed. Although Cox, (1962), alluded to poor well construction as one reason some wells were experiencing decreased flow and/or pressure, he

did report that “a serious overdraft” [withdrawals exceed recharge] of the Minnelusa aquifer exists in the Spearfish-Belle Fourche area.

Recharge to the Minnelusa aquifer is primarily from infiltration of precipitation on the outcrop and stream flow losses. Average annual recharge from 1931-1998 is estimated to be approximately 112,000 acre-feet per year (Carter and others, 2001a).

There are a total of 191 appropriations from the Minnelusa aquifer in South Dakota, including two Future Use Reservations (Water Rights, 2005c). The aquifer is used primarily for domestic, commercial, municipal, suburban housing and irrigation uses. There are 55 permits/rights appropriating water from the Minnelusa aquifer in Lawrence County (Water Rights, 2005c). In addition to appropriative rights, there are a number of domestic wells completed into the Minnelusa aquifer on file with the Water Rights Program (Water Rights, 2005a). Water permits and rights represent appropriations up to 11,085.04 acre-feet annually for irrigation use (Water Rights, 2004) and a combined diversion rate of 29.67 cfs for non-irrigation uses (Water Rights, 2005c). The Future Use Permits (No. 902-1 and 969-1) reserve 1,460 acre-feet annually. Maximum well withdrawals from the Minnelusa aquifer, assuming (1) that permits/rights with an annual withdrawal limitation (ac-ft/yr.) will use the maximum allowable; and (2) permits/rights that are limited by a diversion rate only, will use 60% of the maximum allowable (considered reasonable for water distribution systems); would be approximately 25,000 acre-feet per year. The actual amount of water used from the aquifer is considerably less than this estimate, for example the reported pumpage for irrigation use in 2003 was 2,310.83 ac-ft (Water Rights, 2004) compared with the 11,085.04 ac-ft/yr appropriation. Withdrawal from wells (domestic and appropriative) completed into the Minnelusa aquifer was estimated to be 8,108 acre-feet annually from 1987-1996 (Carter and others, 2001b).

Comparison of annual recharge estimates and estimated annual well withdrawals show that well withdrawals from the Minnelusa are only a fraction of estimated average annual recharge. Therefore, based on a simple water budget, it is clear that unappropriated water is available for this appropriation.

The best information available to evaluate development as it relates to recharge, is historical records and data from observation wells. The difference between withdrawal from an aquifer and recharge is reflected by the water level of the aquifer. If the water level of an aquifer continues to decline, it may suggest that withdrawals exceed recharge. The Water Rights Program monitors 23 observation wells completed into the Minnelusa aquifer in the Black Hills area (Water Rights, 2005b). Water Rights' Observation Well LA-87B is located approximately one and one-half miles south-southwest of this well. Water Rights' Observation Well LA-86A is located about four and one-half miles east-southeast of this well. The hydrographs for the wells (figure 1 and figure 2), are fairly typical for the Minnelusa aquifer. That is, the water levels reach their peak in the early summer each year and gradually decline until spring. The majority of the recharge to the system occurs between March and July.

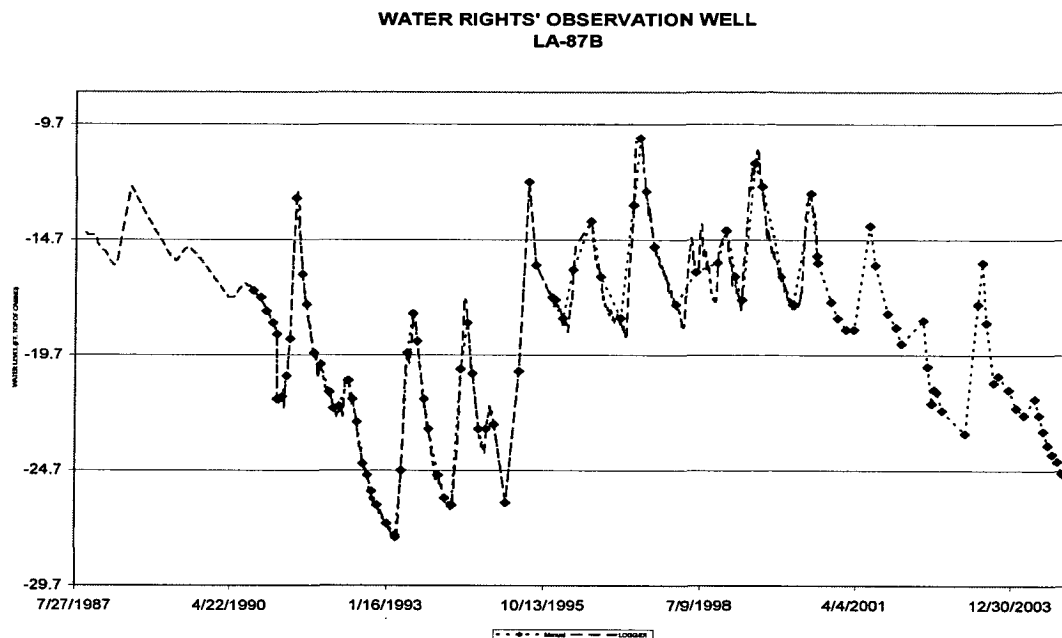


Figure 1. Hydrograph of Water Rights' Minnelusa aquifer Observation Well approximately one and one-half miles south-southwest of 1830-1.

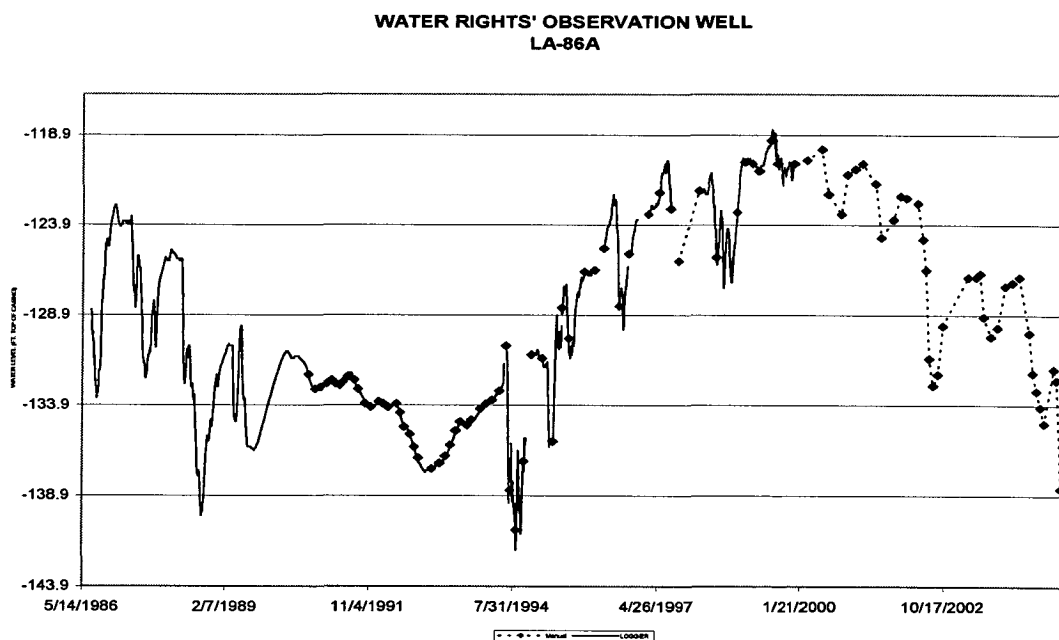


Figure 1. Hydrograph of Water Rights' Minnelusa aquifer Observation Well approximately four and one-half miles east-southeast of 1830-1.

The hydrographs also show the magnitude of fluctuation in the water levels in the area ($\cong 17'$ in LA-87B and $\cong 22'$ in LA-86A) with the lowest water levels of record occurring in the early 1990's and the highest occurring in the late 1990's. The significance of the recent

lower area water levels is not clear. This may be reflecting the extremely dry conditions that occurred in the area during 2004.

It is obvious from the hydrographs of Minnelusa observation wells, that withdrawals have not exceeded recharge for the period of record. The observation well data suggests that the aquifer is capable of sustaining additional withdrawals.

AFFECTS ON EXISTING RIGHTS:

There are twelve Water Rights/ Permits appropriating ground water within approximately two and one-half miles of this site, they are shown in table 1.

PERMIT NO	NAME	AQUIFER	USE	CFS	ACRES
1181-1A	KEITH/LELAND JOHNSON	MDSN	IND	0.16	
1197-1	DARRELL NICHOLAS	MNLS	IRR	0.56	125.00
1244-1	HAIAR ENTPS INC	MNKT	IRR	1.56	127.00
1254-1A	CARL L/MELVIN ANDERSON	MNLS	IRR	2.24	156.77
1582-1	PAUL M MILLER SR. TRUST	MNLS	FWP	1.60	
1584-1	RICHARD D. SLEEP	MNLS	IRR	0.90	63.00
1585-1	RICHARD D.SLEEP	MNLS	IRR	0.53	27.00
1772-1	FISHER SAND & GRAVEL	MNLS	COM	0.08	
341A-1	CRIS D/DIANNE K MILLER	MNLS	IRR	3.40	391.00
341B-1	PAUL M MILLER , SR TRUST	MNLS	IRR	1.19	83.50
749-1	DEPT OF GAME FISH & PARKS	SPRF	FWP	2.23	
752A-1	DEPT OF GAME FISH & PARKS	SPRF	FWP	3.23	

Table 1. Groundwater appropriations within two and one-half miles of 1830-1

The water levels of the Minnelusa aquifer are around 80 feet lower than those of the Madison and Minnekahata aquifers in this area, the water levels of the Spearfish Formation also appear to be similar to the Minnekahta aquifer, indicating a *potential* for leakage of water from both aquifers to the Minnelusa.

Although it has been argued that “it is likely that the water from the upper Minnelusa is hydraulically connected to the Minnekahta and Spearfish formation” (Goodman, 1993). There is no physical evidence (i.e. pump test data) supporting a hydraulic connection between the aquifers in the area. In fact, Naus and others, (2001) report that “Although some exchange of water must occur in locations where hydraulic head differences occur, conclusive geochemical evidence of extensive mixing resulting from general areal leakage between the aquifers is not apparent.” Therefore, the pumping of the Minnelusa aquifer well proposed by this application is not expected to have a measurable impact on wells supplied by other aquifers in this area.

The nearest groundwater appropriation from this well is Water Right No. 1181-1A, Keith/Leland Johnson, located approximately 2000 feet west-southwest of 1830-1. The well was completed into the Madison aquifer but review of the history of the well lead to questions about the integrity of the casing seal intended to isolate the Madison aquifer from the Minnelusa aquifer,

The nearest Water Right appropriating water from the Minnelusa aquifer (Water Right No. 1772-1, Fisher Sand & Gravel) is supplied by a well located approximately three-fourths of a mile west of this well.

In addition to the wells supplying Water Permits/Rights, there are a number of domestic wells completed into the Minnelusa aquifer on file with the Water Rights Program (Water Rights, 2005a).

Although the impact of approving this application cannot be quantified precisely, it is still possible to address whether this appropriation can be made without adversely affecting water rights, including domestic wells. Water Management Board rules 74:02:04 and 74:02:05, which were promulgated pursuant to SDCL 46-6-6.1, provide protection to prior appropriators only to the degree necessary to maintain an adequate depth of water in wells that have the ability to produce water independent of artesian pressure. Simply put, the pump placement, or artesian flow, in a prior appropriator's well is not necessarily protected. In fact, in past action the Water Management Board has concluded that if increased cost or decreased production is considered an adverse impact, it could be in conflict with SDCL 46-1-4, which requires South Dakota's water resources to be put to beneficial use to the fullest extent of which they are capable.

Since the Minnelusa is under artesian conditions in this area and pumping may cause a decline in the potentiometric surface over a fairly widespread area. Considering the Board's past actions, any well interference this proposed use would have on area water rights/permits and domestic wells is not expected to be significant or adverse. It may be necessary to lower pumps in some wells to maintain water use at the present level.

Any interference this proposed use would have on these or other water rights/permits is not expected to be adverse due to the distance between wells, and the relatively low diversion rate requested by this application.

CONCLUSIONS:

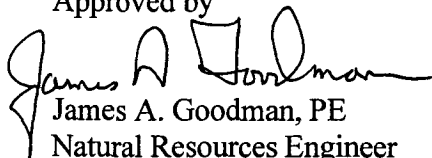
1. The Minnelusa Aquifer is a viable aquifer in this area, and water is available for this appropriation.
2. The Minnelusa is under artesian conditions and drawdown due to this diversion can be expected. This drawdown is not expected to adversely affect adequate wells in the area.

3. The Completion Report submitted with this application indicates the existing well has been constructed in compliance with the SD Well Construction Standards.



Ken Buhler
Natural Resources Engineer

Approved by



James A. Goodman, PE
Natural Resources Engineer

REFERENCES:

- Allen, J.C., Iles, D.L., and Petres, A.K., 1985, Analysis of Groundwater and Streamflow Data Western Dakotas Region of South Dakota, Task 3A.B.C. and 4A.B.: Groundwater Resource Inventory: South Dakota Department of Water and Natural Resources,
- Carter, J.M., and Redden J.A., 1999a, Altitude of the Top of the Minnelusa Formation in the Black Hills Area, South Dakota: U.S. Geological Survey Hydrologic Investigations Atlas HA-744-C, 2 sheets, scale 1:100,000
- Carter, J.M., and Redden J.A., 1999b, Altitude of the Top of the Madison Limestone in the Black Hills Area, South Dakota: U.S. Geological Survey: Hydrologic Investigations Atlas HA-744-D, 2 sheets, scale 1:100,000
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- Water Rights Program, 2005a, "Domestic Well Log Files": DENR-Water Rights Program,
- Water Rights Program, 2004, "2003 Irrigation Summary by Aquifer": DENR-Water Rights Program
- Water Rights Program, 2005c, "Observation Well Files": DENR-Water Rights Program
- Water Rights Program, 2005d, "Water Permit Files": DENR-Water Rights Program,



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**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 1830-1, James F. Wunder**

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. 1830-1, James F. Wunder, PO Box 217, Spearfish SD 57783.

The Chief Engineer is recommending APPROVAL of Application No. 1830-1 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. This Permit is approved subject to the irrigation water use questionnaire being submitted each year.

See report on application for additional information.

Garland Erbele, Chief Engineer
February 28, 2005

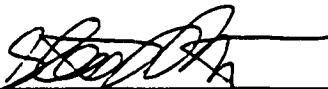
Affidavit of Publication

STATE OF SOUTH DAKOTA COUNTY OF LAWRENCE

Stewart Huntington of said County and State being first duly sworn, on his oath says: That the BLACK HILLS PIONEER is a legal daily newspaper of general circulation, printed and published in the City of Spearfish, in said County and State by Stewart Huntington, and has been such a newspaper during the times hereinafter mentioned; and that said newspaper has a bonafide circulation of at least 200 copies weekly, and has been published within said County in the English language for at least one year prior to the first publication of the notice herein mentioned, and is printed in whole or in part in an office maintained at the place of publication; and that I, Stewart Huntington, the undersigned, am the Publisher of said newspaper and have personal knowledge of all the facts stated in this affidavit; and that the advertisement headed:

Notice of Application
No. 1830-1

a printed copy of which is hereto attached, was printed and published in said newspaper for 2 successive and consecutive weeks, the first publication being made on the 9th day of March, 2005, and the last publication on the 16th day of March, 2005, that the full amount of fees charged for publishing same, to-wit: The sum of \$ 35.34, insures solely to the benefit of the publisher of the BLACK HILLS PIONEER, that no agreement or understanding for a division thereof has been made with any person and that no part thereof has been agreed to be paid to any other person whomsoever.

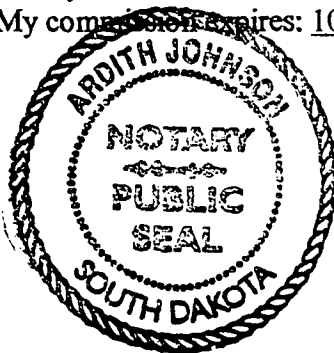


Subscribed and sworn to before me this 16th day of March, 2005:



Notary Public, Lawrence County, South Dakota

My commission expires: 10-24-2010



NOTICE OF APPLICATION NO. 1830-1

to Appropriate Water
Notice is given that James F Wunder, PO Box 217, Spearfish SD 57783 has filed an application for a water permit to appropriate 0.133 cubic feet of water per second from one well completed into the Minnelusa Formation (approximately 520 feet deep) located in the NW 1/4 SE 1/4 of Section 28 to irrigate 10 acres located in the NW 1/4 SE 1/4 Section 28; all in T7N-R1E.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 1830-1 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. In accordance with SDCL 46-2A-23, the Chief Engineer will act on the application, as recommended, unless a petition is filed opposing the application or the applicant files a petition contesting the Chief Engineer's recommendation. 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 the application. Notice of the hearing will be given to the applicant and any person filing a petition.

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 28, 2005.

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. Contact Eric Gronlund at the above Water Rights Program address to request copies of information pertaining to this application. Steven M. Pirner, Secretary, Department of Environment and Natural Resources.

#763
March 9, 16

RECEIVED
MAR 29 2005
WATER RIGHTS
PROGRAM



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

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

March 1, 2005

James F Wunder
PO Box 217
Spearfish SD 57783

Dear Mr. Wunder:

Water Permit Application No. 1830-1 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 Publisher of the Black Hills Pioneer printed at Spearfish, SD (Ph # 605-642-2761). You will need to contact the newspaper and authorize publication of this notice. For your information, a copy of the notice, the recommendation of the Chief Engineer and a 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 to authorize publication of your Notice and to arrange for payment. Early contact with the paper can eliminate delays. Upon receiving authorization, the publisher has been instructed to publish your notice once each week for two consecutive weeks. 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
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.



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

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www.state.sd.us/denr

March 1, 2005

Black Hills Pioneer
PO Box 7
Spearfish SD 57783-0007

ATTENTION: Legal Public Notice

Enclosed is a Notice on Application No. 1830-1 to Appropriate Water to be published twice. Please publish the first notice on March 9, 2005 with the second publication 7 days later. The text of the notice can be e-mailed to your paper by contacting Karen Schlaak at (605) 773-3352.

The applicant must verify to you that the notice is to be published, before you make the first publication. **Please BILL the APPLICANT for the cost of publication.** The APPLICANT is James F Wunder, PO Box 217, Spearfish SD (Ph # 605-642-1634).

Please send the Water Rights Program the first publication immediately. The publication is checked for accuracy so any corrections can be made in the second publication. You may use the form below or fax a copy of the first publication. Any fax should be sent to the attention of Karen Schlaak at (605) 773-4068. Publication errors can invalidate the public notice.

After the second publication, **please send us an affidavit or use the enclosed Proof of Publication form.** The applicant pays the cost of publication, but the Water Rights Program records require an affidavit or Proof of Publication. Delays in receiving the affidavit can be costly to the applicant.

Sincerely,


Eric Gronlund
Natural Resources Engineer
605 773-3352

enclosures

-----CUT HERE-----

No. 1830-1

TO: Eric Gronlund
Water Rights Program
Joe Foss Building
Pierre SD 57501-3181

Date _____

We are in receipt of your letter of March 1, 2005 enclosing Notice to Appropriate Water by Application No. 1830-1 which was first published in our issue of _____. **ENCLOSED IS A COPY OF THIS FIRST PUBLICATION.**

Name

Newspaper

Instruction to Newspaper - Publish first Notice on March 9, 2005 with the second publication 7 days later. The applicant is responsible for payment.

NOTICE OF APPLICATION NO. 1830-1 to Appropriate Water

Notice is given that James F Wunder, PO Box 217, Spearfish SD 57783 has filed an application for a water permit to appropriate 0.133 cubic feet of water per second from one well completed into the Minnelusa Formation (approximately 520 feet deep) located in the NW ¼ SE ¼ Section 28 to irrigate 10 acres located in the NW ¼ SE ¼ Section 28; all in T7N-R1E.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 1830-1 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. In accordance with SDCL 46-2A-23, the Chief Engineer will act on the application, as recommended, unless a petition is filed opposing the application or the applicant files a petition contesting the Chief Engineer's recommendation. 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 the application. Notice of the hearing will be given to the applicant and any person filing a petition.

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 28, 2005.

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. Contact Eric Gronlund at the above Water Rights Program address to request copies of information pertaining to this application. Steven M. Pirner, Secretary, Department of Environment and Natural Resources.



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APR 19 2005

James F Wunder
PO Box 217
Spearfish SD 57783

Dear Mr. Wunder:

Enclosed is Water Permit No. 1830-1 authorizing construction of your 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,

Garland Erbele, Chief Engineer
Water Rights Program
(605) 773-3352

enclosures

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

Date 12-1-2005

TO: Water Rights Program, DENR
523 E. Capitol
Pierre, SD 57501-3181

FROM: JAMES F. WUNDER
(name)
P.O. Box 217
(address)
Spearfish, SD. 57783
(city, state, zip)

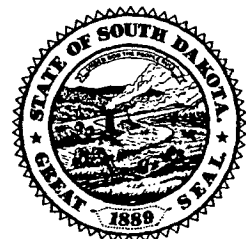
(phone)

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

RECEIVED**DEC - 6 2005**WATER RIGHTS
PROGRAMWater Permit No. 1830-1 states that the water use system is to be constructed byMARCH 28 2010, and water is to be put to beneficial use by MAR 28 2014.
(date) (date)The water use system was completed on 28 SEPT 2005.
(date)Applying the water to beneficial use was completed on 1 OCT 2005.
(date)

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

James F. Wunder
(signature)



Permit No. 1830-1
Belle Fourche River - Water District

Report of Examination of Works and/or Application of Water to Beneficial Use

TO: Chief Engineer, Water Rights Program, DENR, Foss Bldg., Pierre, SD 57501

I have this day, **07 September 2007**, made a thorough examination of the water use system constructed by **James Wunder** of **PO Box 217, Spearfish, SD. 57783** holder of Permit No. **1830-1**, bearing the priority of **03 January 2005** authorizing the diversion of **0.133** cu. ft. per second of the waters of **Madison Aquifer** for **irrigation** purposes, in **Lawrence** County. ~~Minnelusa~~

A. Works used to divert the water:

Well Information:

- 1) Well Drilling Firm **Cimarron Drilling**
- 2) No. of Wells **1**
- 3) Depth(s) **520** feet
- 4) Well log is available **Y**
- 5) Comment: System is an in-ground irrigation system used to irrigate residential property.

Casing:

- 1) Diameter **7/4.5** inches
- 2) Length **200/320** feet
- 3) Type **Steel**

Screen:

- 1) Type **none**

Pump:

- 1) Make **Grundfos**
- 2) Model **Submersible**
- 3) Capacity **40** GPM

Motor:

- 1) Make **unknown**

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

- 1) Type **PVC pipe**
- 2) Size **3** inches
- 3) Length **100** feet

- 1) Type PVC pipe 2) Size 2 inches 3) Length 350 feet
1) Type PVC pipe 2) Size 1.5 inches 3) Length 2000 feet

C. Works used to apply water to beneficial use:

Buried irrigation system: Buried PVC pipe delivers water to pop-up irrigation heads.

Chemigation Equipment:

- 1) Does chemigate N

D. Compliance with Permit Requirements:

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

The system is in good condition with the point of diversion located as follows: NW ¼ SE ¼ Sec 28-T7N-R1E, approximately 1,950 feet north and 1,636 feet west of the southeast corner of Sec 28-T7N-R1E, N 44.53756 Latitude W -103.99794 Longitude. The works are capable of diverting and conveying to the place of use 0.089 cu. ft. per second of water which is to be used for irrigation. Water has been put to beneficial use to the maximum extent as follows:

NW ¼ SE ¼ Sec 28-T7N-R1E

10 acres

comprising a total of 10 acres of land and the license should be issued for 0.089 cfs.

All structures, wells and lands on map Y

Comments or other permit(s) associated with the project: none



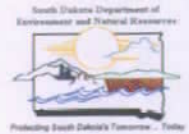
Mark Costello
Natural Resources Engineer
DENR, Water Rights Program

Date report completed: 10 September 2007



1830-1

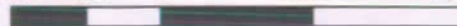
James Wunder
PO Box 217
Spearfish, SD. 57783



Mark Costello

Mark Costello
Natural Resources Engineer
DENR, Water Rights

1,000 500 0 1,000 2,000 Feet



STATE OF SOUTH DAKOTA

WATER LICENSE NO. 1830-1

(1) James F Wunder, PO Box 217, Spearfish SD 57783 made Application No. 1830-1, January 3, 2005 for a water permit to divert 0.133 cubic feet of water per second from ground water (one well - Minnelusa Formation), Lawrence County, South Dakota for irrigation purposes. Permit No. 1830-1, with a priority date of January 3, 2005 was approved March 28, 2005 and issued to the applicant for diversion of water with construction of the described water supply system to be completed on or before March 28, 2010 and for the application to beneficial use of said water on or before March 28, 2014.

The Permit holder submitted a "*Notice of Completion of Works and Application of Water to Beneficial Use*" on December 6, 2005. The "*Notice*" stated the water use system was completed on September 28, 2005 and the water placed to beneficial use on October 1, 2005.

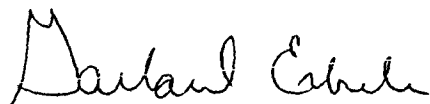
(2) It is certified that the permit holder has complied with the provisions of South Dakota State Law relating to completion of the construction of the water supply system and is entitled to divert 0.089 cubic feet of water per second for beneficial use. The location of the diversion point is 1,950 feet north and 1,636 feet west of the SE corner of Section 28, T7N, R1E (NW ¼ SE ¼).

(3) The permit holder has complied with the provisions of South Dakota State Law relating to the application of water to beneficial use to irrigate the following land: 10 acres in the NW ¼ SE ¼ Section 28, T7N, R1E.

(4) Pursuant to South Dakota Water Law 46-5-30.1 James F Wunder, PO Box 217, Spearfish SD 57783 the holder and/or owner of Water Right No. 1830-1 is issued a license to appropriate water, the right to use 0.089 cubic feet of water per second from ground water (one well – Minnelusa Formation) with a priority date of January 3, 2005 from the location specified in (2) of this license. The water is to be conducted to and upon lands specified in (3) of this license for the purpose of irrigation.

This license is subject to South Dakota Water Law, any limitations or conditions listed in Water Right No. 1830-1 and subject to the following qualifications:

- 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.
- This Permit is approved subject to the irrigation water use questionnaire being submitted each year.



Garland Erbele, Chief Engineer
Water Rights Program
Department of Environment and Natural Resources

OCT 19 2007

date





**DEPARTMENT of ENVIRONMENT
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OCT 19 2007

1830-1

James F Wunder
PO Box 217
Spearfish SD 57783-0217

Dear Mr. Wunder:

Enclosed is Water License No. 1830-1. This is the final water right document completing your process of obtaining a Water Right. Also included with your license is a map prepared by the staff engineer who conducted the field investigation.

For your information SDCL 46-6-27 requires that if the owner of an existing well, such as the well authorized by Water Right No. 1830-1, constructs a replacement well and does not plan to use the old well, the old well is considered abandoned and must be plugged. Also, any well that is being used or is not considered abandoned must be valved and controlled, if flowing, or sealed and capped so that no leaking occurs either underground or at the surface.

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

Sincerely,

Garland Erbele, Chief Engineer
Water Rights Program
(605) 773-3352

enclosures



**DEPARTMENT of ENVIRONMENT
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PIERRE SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

October 29, 2010

1830-1

James F Wunder
PO Box 217
Spearfish SD 57783-0217

Dear Mr. Wunder:

Thank you for the prompt return of your 2010 irrigation questionnaire.

I am returning the form to you for completion. Please fill in the last column with the average hours per day the sprinklers were running.

Please return the form to us in the enclosed envelope by December 3rd. Thank you in advance for your help.

Sincerely,

A handwritten signature in black ink that reads "Genny McMath".

Genny McMath
Environmental Scientist
Water Rights Program
(605) 773-3352
email: genny.mcmath@state.sd.us

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**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3182
<http://denr.sd.gov>

October 31, 2016

1830-1

James Wunder
PO Box 1133
Spearfish SD 57783

Dear Mr. Wunder:

Enclosed is a "Notice" dated October 21, 2016 concerning the 2016 irrigation questionnaire.

The notice was originally mailed to PO Box 217, Spearfish SD. The post office notified us that your address has changed and I will update our records accordingly.

If you have any questions, please contact me.

Sincerely,

Genny McMath
Water Rights Program
(605) 773-3352
email: genny.mcmath@state.sd.us

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