

WATER PERMIT NO. 7387-3

Name of Applicant: **Tom Nuhsbaumer**

Address: **17781 370th Ave, Zell SD 57469**

Phone: **605 472-0410**

Amount of Water Claimed: **0.067 cfs**

Total Acres: **NA**

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

Water to be used for: **geothermal use**

County: **Hand**

Type of Waste Disposal System:

Location: **7 miles southwest of Zell**

PRIORITY

Date Received: **7-30-12**

Application/License Fee: **\$ 300**

Corrected Application Received:

Period of Annual Use: **January 1 – December 31**

Remarks:

Diversion Point: **SE ¼ SE ¼ Sec 32-T116N-R66W**

Land to be Irrigated: **NA**

Depth of Well: **990 feet deep**

Well Driller: **Pullman Drilling**

Remarks:

Type of Map: **aerial**

Prepared by: **Mary Johnson, Hand Co FSA**

Reviewed and the Number Assigned on: **7-31-12**

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. 7387-3 (office use only)
Hydrologic Unit 10160009
Basin James River
Newspaper Miller Press PO Box 194/57362 - 605-852-3575
Platte River PO Box 1278 Huron 57350 - 605-352-6401

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

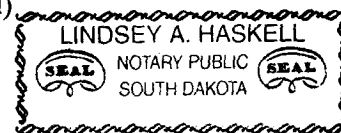
Check use(s) of water:

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

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

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

- Name of Applicant Tom Nuhsbaumer Phone 605 472 0410
(check one) ☒ Owner ☐ Tenant/lessee
Mailing Address 17781 370 Avenue Zell State South Dakota 57469
(Street, RR, or Box and City) (Zip Code)
- Amount of water claimed 0.067 *CFS or 30 **GPM ***AF
(*Cubic Feet per Second) (**Gallons per Minute) (***)Acre Feet - storage capacity of dam/dugout or annual use if applicable
- Source of water supply Deep well. Artesian.
- Location of point of diversion (example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W)
SE corner of SE 1/4 sec 32 11666 County Hand
- County or counties where water will be used Hand
- Annual period during which water is to be used year round. Jan 1 - Dec 31
- Give a description of the project. When available include any preliminary engineering report or other reports or information that will help explain the project. (Attach sheet if more space is needed)



STATE OF SOUTH DAKOTA)
County of Hand) SS

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, Tom Nuhsbaumer, 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 Tom Nuhsbaumer

Subscribed and sworn to before me this 25th day of June 2012

Lindsey A. Haskell

Notary Public signature
My Commission Expires 9-21-2012

see well completion report on file
Supplemental Information

(type or print in ink)

1. Well Information - Proposed Construction

- a) Drill Hole Diameter _____ Depth _____
- b) Casing Type _____ Diameter _____ Thickness _____
- c) Screen Type _____ Diameter _____ Thickness _____
- d) Gravel Pack _____ Length of Gravel Pack _____
- e) Depth to Top of Water Bearing Material _____
- f) Depth to Water (ground surface to water level) _____
- g) Distance to nearest existing domestic well:
- On applicants property _____ On property owned by others _____

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 _____

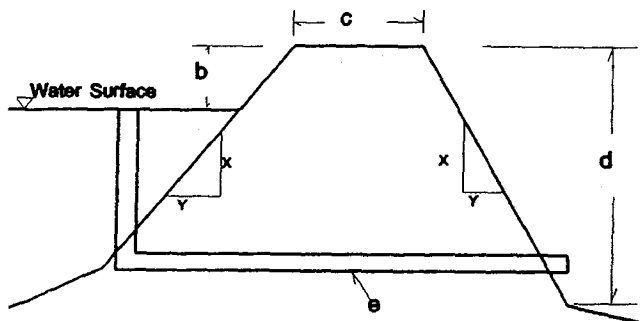
3. Dugout Information

- 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 _____
Upstream _____
Downstream _____
- h) Surface Area of Impoundment _____
- i) Storage _____ Acre Feet
- j) Drainage Area Above Dam _____ Acres

**SOUTH DAKOTA
WATER PERMIT NO. 7387-3**

Date of first receipt of application July 30, 2012.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 7387-3 to Tom Nuhsbaumer, 17781 370 Ave, Zell SD 57469 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. 7387-3 appropriates 30 gallons per minute (0.067 cubic feet of water per second) from one well completed into the Dakota Aquifer (990 feet deep) located in SE 1/4 SE 1/4 Section 32-T116N-R66W.
2. The water appropriated shall be used for the purpose of geothermal and domestic use and may not exceed the amount of water needed for beneficial use.
3. The water is to be used during the following described annual period: January 1 – December 31.
4. The date of approval of Permit No. 7387-3 is October 22, 2012.
5. The date from which applicant may claim right is July 30, 2012.
6. One-fifth of the construction is to be completed on or before April 22, 2015.
7. All construction is to be completed on or before October 22, 2017.
8. Water is to be put to beneficial use on or before October 22, 2021.
9. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

QUALIFICATION

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.

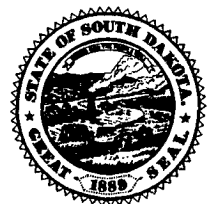
WATER MANAGEMENT BOARD

By: _____

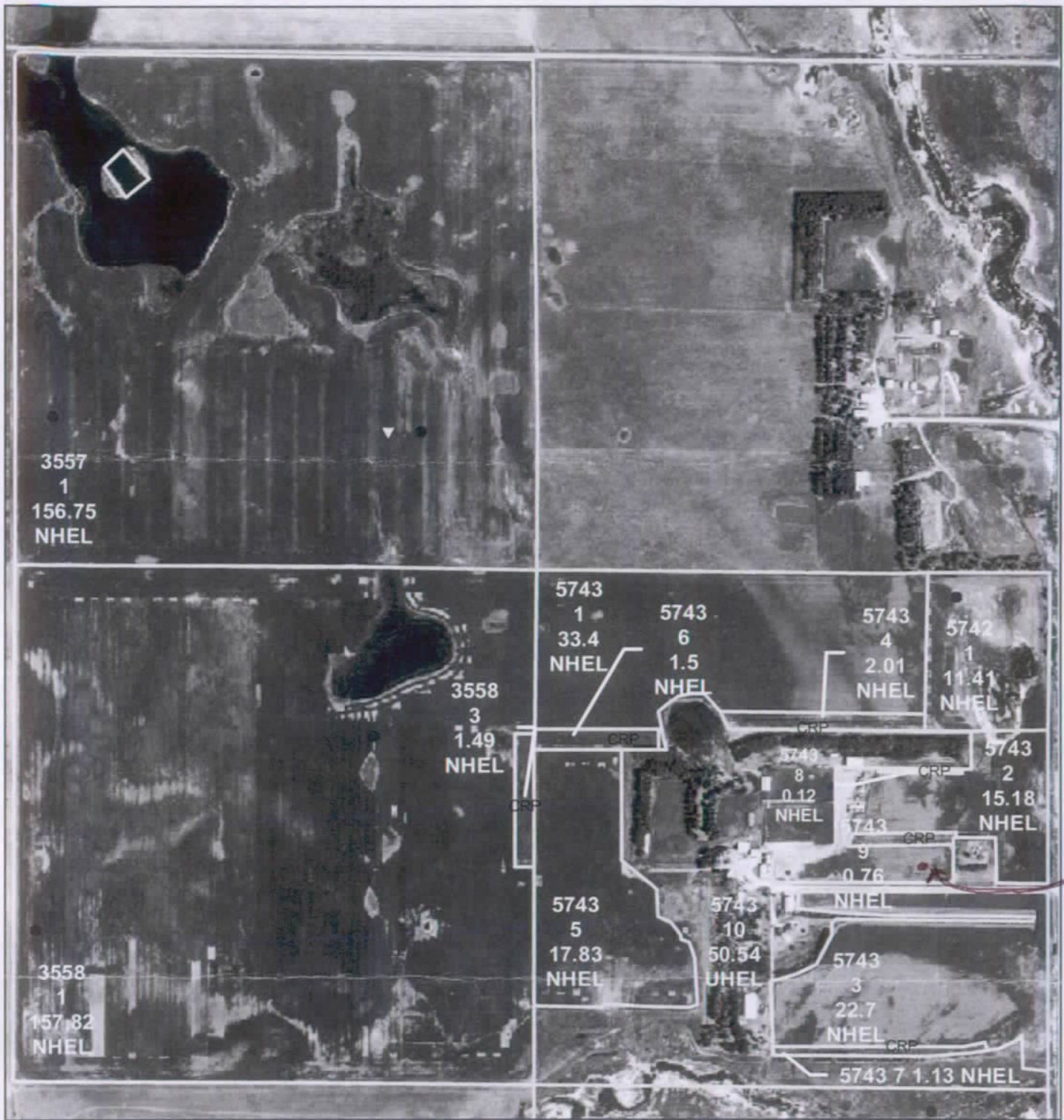
Garland Erbele
Garland Erbele, Chief Engineer
Water Rights Program
Department of Environment and Natural Resources

DEC 19 2012

date



Corral 4-26-12
140.0



United States Department of Agriculture
Farm Service Agency

PLSS: 32_116N_66W
Farm: 5343

Hand County, SD

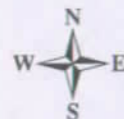
1:8,183

February 18, 2011

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Disclaimer: Wetland identifiers do not represent the size, shape or specific determination of the area.
Refer to your original determination (CPA-026 and attached maps) for exact wetland boundaries and determinations, or contact NRCS.

According to current FSA records, this diversion point is located on Tom Nuhsbaumer's home site. Mary Johnson, CED
7-11-12

SOUTH DAKOTA WATER WELL COMPLETION REPORT

11-02

Location SE $\frac{1}{4}$ SE $\frac{1}{4}$ Sec 32 Twp 116 Rg 66

County

Hand

North

Please mark well
location with an "X"

W

E

Well Completion Date

8/31/2011

1 Mile

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

? ft. from _____ (identify source)

PROPOSED USE:

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

METHOD OF DRILLING:

Forward

CASING DATA:

☐ Steel ☒ Plastic ☐ Other

If other describe _____

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
21.0 LB/FT	5.00 IN	0.0 FT	120.0 FT	8.75 IN
LB/FT	2.00 IN	120.0 FT	960.0 FT	4.50 IN
LB/FT	IN	FT	FT	IN

GROUTING DATA:

Grout Type	No. of Sacks	Grout Weight	From	To
		Lb/gal	Ft	Ft
		Lb/gal	Ft	Ft

Describe grouting procedure _____

SCREEN:

☐ Perforated pipe ☒ Manufactured
 Diameter 2.50 Inches Length 210.0 Feet
Material PVCSlot Size .016 Set From 960.0 Feet to 1,170.5 Feet

Other information _____

WAS A PACKER OR SEAL USED?

☒ Yes ☐ NoIf so, what material? Shale Cup

Describe packer(s) and location

at 960

DISINFECTION: Was well disinfected upon completion?

☐ Yes, How? _____☐ No, Why Not? _____Lab sample sent to for
water quality analysisWell Owner: Tom Nuhsbaumer

Business Name: _____

Address: 17781 370th AveCity, State, Zip: Redfield SD 57469

WELL LOG:

FORMATION	DEPTH	
	FROM	TO
Sand and Gravel	0	30
Blue Clay w/ Rocks	30	75
Shale	75	130
Grey Chalk	130	175
Shale	175	805
Shale w/ Sand Streaks	805	915
Shale	915	930
Shale w/ Small Sand Streaks	930	975
Good Sand w/ Small Shale Breaks	975	990

STATIC WATER LEVEL

FEET

If flowing: closed in pressure 10.00 PSIGPM flow 40.0 through _____ Inch pipeControlled by ☐ Valve ☐ Reducers ☐ Other _____

Reduced flow rate _____ GPM

Can well be completely shut in? yes

WELL TEST DATA:

☒ Pumped Describe: 100 GPM with Air☐ Bailed☐ Other

Pumping Level Below Land Surface

_____ Ft. After _____ Hrs. pumped _____ GPM

_____ Ft. After _____ Hrs. pumped _____ GPM

If pump installed, pump rate: _____ GPM

REMARKS

Shale w/ Fair Sand Streaks 990-1005 Good Sand 1005-1035
 Shale 1035-1050 Good Sand 1050-1125 Shale 1125-1155
 Fair Sand 1155-1160 Shale 1160-1170

This well was drilled under license #

440

And this report is true and accurate.

Drilling firm: Pullman Drilling Inc.

Signature of License Representative:

Kenn Pullman

Signature of Well Owner or Equitable Property Holder:

Date: _____

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FEB 16 2012

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JUL 30 2012

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PROGRAM

RECEIPT

WATER RIGHTS PROGRAM

South Dakota Department of Environment and Natural Resources

Date 7/31, 20 12

RECEIVED OF Nuhsbaumer Farms Inc 17781 370th Ave Zell SD 57469

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

Fee for Application for Permit No. <u>7387-3</u> to Appropriate Water, to construct and to put water to beneficial use	100	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>7387-3</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	300 00

No. **05507**

By Garland Orville
Chief Engineer



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
denr.sd.gov

**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 7387-3, Tom Nuhsbaumer**

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. 7387-3, Tom Nuhsbaumer, 17781 370th Avenue, Zell SD 57469.

The Chief Engineer is recommending APPROVAL of Application No. 7387-3 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 qualification:

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.

See report on application for additional information.

Garland Erbele, Chief Engineer
September 17, 2012

REPORT TO THE CHIEF ENGINEER
ON
WATER PERMIT APPLICATION NO.7387-3
TOM NUHSBAUMER
SEPTEMBER 2, 2012

Water Permit Application No. 7387-3 proposes to appropriate 0.067 cubic feet of water per second (30 gallons per minute) from an existing well, 1170 feet deep, located in the SE¼ SE¼ of Section 32, T116N-R66W. The water is to be used for geothermal heating and cooling purposes.

AQUIFER: Dakota aquifer (DKOT)

AQUIFER CHARACTERISTICS:

Considering the elevation that sand streaks were first encountered in this wellbore (i.e. 805-915 feet below grade (560-450 feet msl)); the estimated thickness of the Dakota aquifer for this area (i.e. 275 feet (Schoon, 1971) and 280+ feet (Hamilton and Howells, 1996)); and the static water level of this well (i.e. 10 psi or (1388 feet msl)) compared to the estimated potentiometric surface of the Dakota and Inyan Kara aquifers in this area (Koch, 1980); the well that this application proposes to use is likely completed into the Dakota aquifer.

“The Dakota sandstone is the most widely extended and serviceable water-bearing formation in South Dakota and it is the principal source of artesian flow in the many wells.” (Darton, 1909). The Dakota aquifer consists of the permeable beds of sand and sandstone contained in the Cretaceous aged Dakota Formation. The Dakota Formation underlies approximately 66,500 square miles of the 77,047 total square miles that constitute the state (Schoon, 1971). The total amount of recoverable water in storage in the Dakota Formation in eastern South Dakota is estimated to be 381,104,000 acre-feet of water (Hedges and others, 1982). The Dakota-Newcastle Formation contains another 308,442,000 acre-feet of recoverable water in storage in western South Dakota (Allen and others, 1985).

The lithology of the Dakota Formation is quite variable both laterally and vertically, consisting of interbedded sand, sandstone, and shale. It has been postulated that the explanation for this is that the Dakota was deposited in a fluvial environment. The porosity of the Dakota varies with the lithology but is assumed to average 15 % and the specific yield of the aquifer is assumed to be 0.075 (Hedges and others, 1982). The South Dakota Water Well Completion Report on file for this existing well indicates it is capable of producing 100 gallons per minute and free flows 40 gallons per minute.

DISCUSSION:

SDCL 46-2A-9 requires “A permit to appropriate water may be issued only if there is 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.”

Water Availability:

The probability of unappropriated water available from the Dakota aquifer for this appropriation 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."

Recharge versus Withdrawals:

Average annual recharge has not been quantified for the Dakota aquifer and estimates are not expected to be ascertained in the near future. 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. However, withdrawals from confined aquifers such as the Dakota affect water levels over a relatively large area. Water levels will continue to decline as the result of withdrawals until a dynamic equilibrium is established and water levels stabilize.

Since the early 1900's there has been concern regarding the declining artesian head pressure of the Dakota aquifer. Rothrock and Robinson, (1938) reported that "There has been a pronounced decline in the artesian head since the first wells were drilled in the area. The decline has not proceeded uniformly but has varied from place to place, depending upon the local draft..." This artesian pressure decline has been well documented, and in some parts of the state water levels have declined several hundred feet since the aquifer was first developed. Some have interpreted this declining pressure as an indicator that the Dakota is being "mined". As Schoon (1971) states: "The fact that withdrawal from the artesian system exceeds recharge is clearly demonstrated by declining pressures." (Schoon, 1971).

The Water Management Board has carefully considered the issue of declining head pressures in the Dakota aquifer. In its deliberation on and approval of Permit No. 5136-3, the Board adopted findings of fact and conclusions of law that basically stated that the quantity of the average estimated annual recharge to the Dakota is not likely to be quantified in the near future. The Board concluded that whether withdrawals exceed the average annual recharge cannot be determined based solely upon a decline in head pressure and in theory the Dakota aquifer head pressure is stabilizing relative to withdrawals and discharges. The Board found that the decline of head pressure is due to water being discharged without beneficial use through uncontrolled flowing wells and that water discharged from uncontrolled flowing wells does not constitute withdrawal (appropriation) pursuant to SDCL 46-6-3.1. The Board also found that withdrawals pursuant to SDCL 46-6-3.1 are appropriations for beneficial uses of water, including withdrawals through private domestic wells for domestic use.

There are currently 227 Water Rights or Permits appropriating water from the Dakota aquifer in South Dakota. The total diversion rate authorized through these appropriations is 84.763 cfs (Water Rights, 2012b). The annual withdrawal from Dakota aquifer appropriations is probably less than 30,000 ac-ft/yr. By way of comparison, in 1958, the flow from 46 uncontrolled wells in Bon Homme, Brule, Buffalo, Charles Mix, Gregory, Lyman, and Yankton counties was more than 16 mgd, and the flow from 3,054 Dakota aquifer wells in the James River valley was

estimated to be approximately 16 mgd (Davis, Dyer and Powell, 1961). Therefore, uncontrolled flowing wells amounted to over 35,900 ac-ft/yr. The number of wells tapping the Dakota has increased by many thousands of wells since 1958 and presumably so is the amount of water flowing to waste.

The DENR-Water Rights Program monitors 43 observation wells completed into the Dakota aquifer. Observation well HD-87A is located approximately 35 miles south and ED-85A is located approximately 42 miles north of the well Application No. 7387-3 proposes to use. Hydrographs for the wells are shown in Figures 1 and 2.

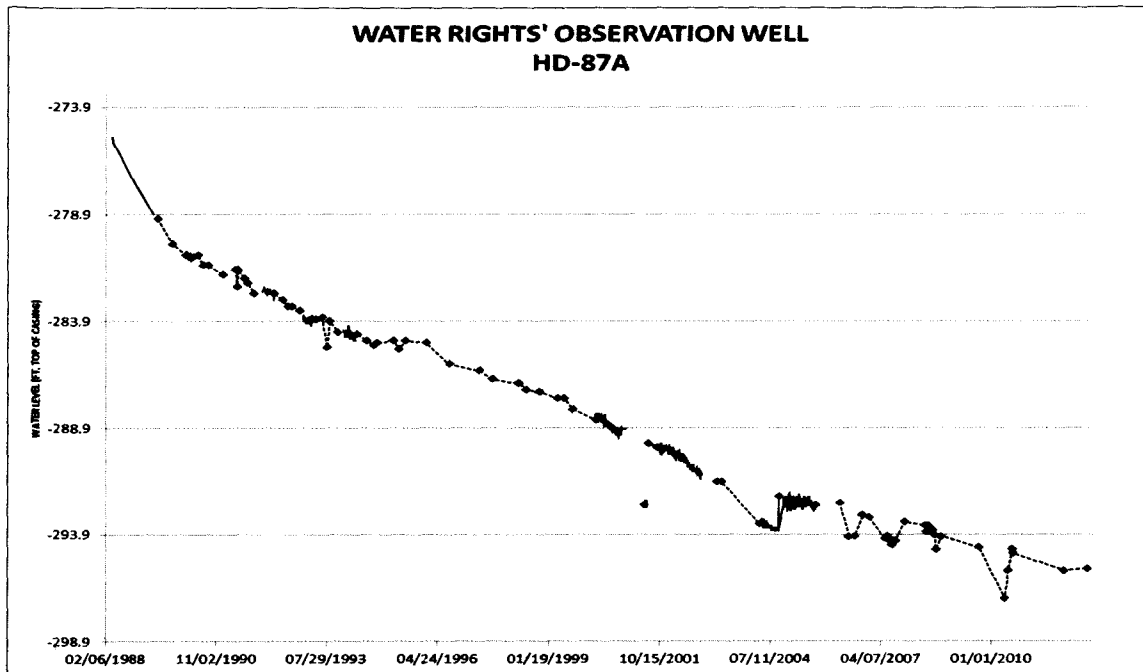


Figure 1. Hydrograph of DENR-Water Rights Program observation well HD-87A, located approximately 35 miles south of the well Application No. 7387-3 proposes to use.

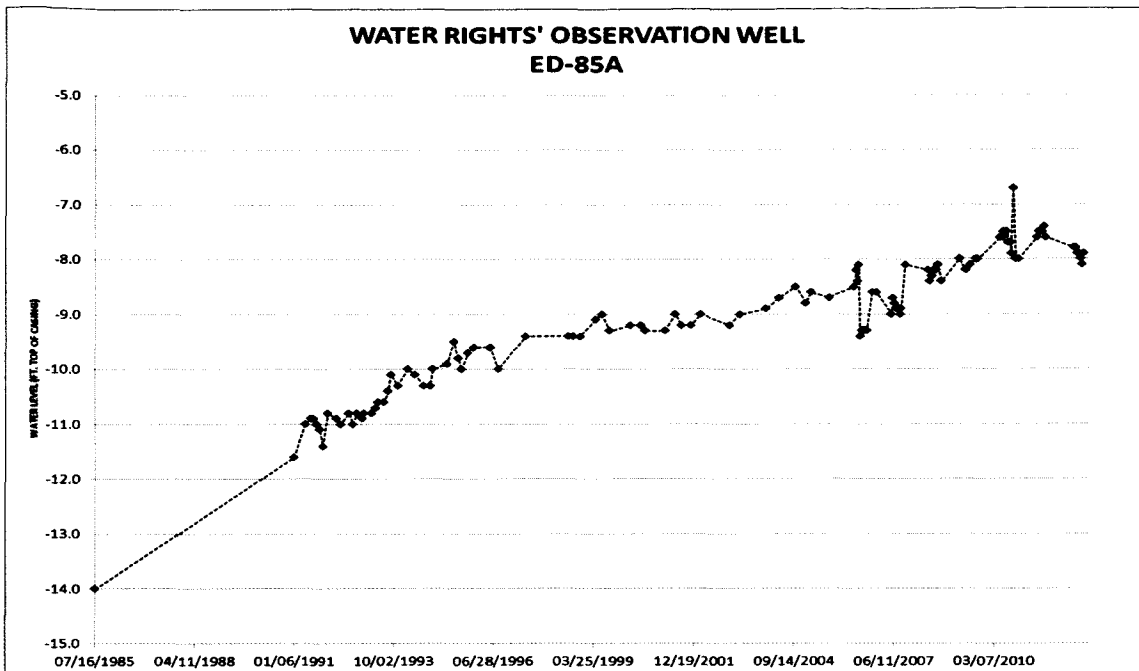


Figure 2. Hydrograph of DENR-Water Rights Program observation well ED-85A, located approximately 42 miles north of the well Application No. 7387-3 proposes to use.

The Dakota aquifer is confined and under artesian conditions in this area and drawdown resulting from pumping may extend a few miles from the production well. There are a number of domestic use wells on file with the DENR-Water Rights Program in this area (Water Rights, 2012c). The nearest water right/permit appropriating water from the Dakota aquifer is Water Right No. 4286-3, Town of Rockham, which is located approximately six and one-half miles northwest of the well that Application No. 7387-3 propose to use. Well interference due to the distance and low diversion rate proposed by this application will be minimal. Therefore, there is a reasonable probability that this appropriation would not result in the impairment of existing adequate wells.

Public Interest:

The quantity or volume of water in the Dakota Aquifer that is related to head pressure is only a small percentage of the total water in storage and the quantity of water represented by the decline in head pressure is a fraction of the small percentage of water related to head pressure. Denial of this application will not preserve the head pressure, because head pressure declines are primarily due to discharges from uncontrollable flowing wells and not due to beneficial use of Dakota Aquifer water. In fact, additional appropriations for beneficial use could serve to lessen wasteful discharges.

When considering Water Permit Application No. 5136-3, the Water Management Board adopted Findings of Fact and Conclusions of Law basically stating that the public interest is better served by allowing Dakota aquifer water to be utilized for a beneficial use than to allow the water to remain unused or to be discharged by uncontrollable flowing wells; and that it is not in the public interest to deny a water permit application when the effects of the withdrawal will not have a significant affect upon the decline or stabilization of head pressure in the Dakota Formation (Water Rights, 1987).

The Water Management Board's position remains to optimize development for beneficial use from the Dakota aquifer.

SD Well Construction Standard 74:02:04:35

The well that this application proposes to use was constructed using the alternative well construction described by South Dakota Well Construction Standard 74:02:04:35. The well construction method (slim hole technique) which does not require the well casing to be grouted into the wellbore, may only be used for private and reasonable domestic use wells and for noncommercial livestock watering wells. Wells constructed as commercial livestock watering wells must be completed according to SD Well Construction Standard 74:02:04:28, which requires the well casing to be pressure grouted from the top of the producing aquifer to the ground surface.

The DENR-Water Rights Program policy has been to consider the intent of the well at the time of construction. Wells that were originally intended to be used for private and reasonable domestic use, constructed using the "slim hole" technique, have been approved for uses in excess of reasonable domestic use.

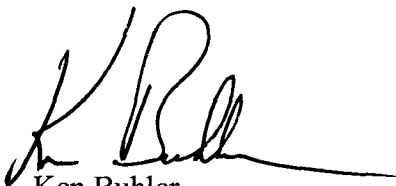
Discharge of water:

The use of this water for geothermal uses will result in a discharge which may require a surface water discharge issued by the DENR.

CONCLUSIONS:

1. The Dakota aquifer is a viable aquifer in this area.
2. The average annual recharge rates to the Dakota aquifer has not been quantified and is not expected to be ascertained in the near future. The best information available to determine the availability of unappropriated water is historical data and observation well records.
3. Water levels in the Dakota aquifer have declined in many parts of the state since the first wells were completed into the aquifer.
4. The Water Management Board has concluded that whether withdrawals exceed average annual recharge cannot be determined based solely upon a decline in head pressure.
5. In theory, the Dakota aquifer head pressure is stabilizing relative to withdrawals and recharge.
6. Each new diversion from the Dakota will theoretically cause an additional effect on the head pressure of the aquifer. The affects of the withdrawal proposed by this application upon the Dakota Aquifer head pressure will not have a significant affect upon the decline or stabilization of head pressure in the Dakota aquifer.
7. The Water Management Board is not required to protect artesian head pressure as a means of diversion. However, the Board must consider and balance the effect of a limitation or a loss of artesian head pressure as one of the factors under the public interest determination.
8. The principal reason for declines in the Dakota aquifer head pressure is due to water being discharged without beneficial use through uncontrolled flowing wells. Denial of this application will not preserve the head pressure. In fact, additional appropriations for beneficial use should serve to lessen wasteful discharges from the aquifer.

9. The Water Management Board has concluded that in reference to SDCL 46-6-3.1, "withdrawals" applies only to water placed to beneficial use via appropriations or domestic use.
10. Appropriative and domestic uses from the Dakota aquifer do not exceed the average annual recharge to the aquifer.
11. There is a reasonable probability unappropriated water is available for this proposed appropriation.
12. There is a reasonable probability that existing water rights/permits will not be adversely impacted if this application is approved.
13. The well that is to be used to supply this appropriation was constructed using the alternative well construction requirement described in SD Well Construction Standard 74:02:04:35.
14. Any discharge from this water use must be in compliance with the South Dakota's surface water discharge rules (ARSD Article 74:72).



Ken Buhler
SD DENR-Water Rights Program

REFERENCES:

- Allen, J.C., Iles, D.L., and Petres, A.K., 1985, Analysis of Groundwater and Streamflow Data Western Dakotas Region of South Dakota, Tasks #A.B.C. and 4A.B.: Groundwater Resource Inventory Final Report. Prepared for U.S. Army Corps of Engineers, contract DACW45-82-C-0151
- Darton, N.H., 1909, Geology and Underground Waters of South Dakota: U.S. Geological Survey Water-Supply Paper 227, 156 p.
- Davis, R.W., Dyer, C.F., and Powell, J.E., 1961, Progress Report on Wells Penetrating Artesian Aquifers in South Dakota: U.S. Geological Survey Water-Supply Paper 1534, 100 p.
- Hamilton, L.J., and Howells, L.W., 1996, Water Resources of Spink County, South Dakota: U.S. Geological Survey Water-resources Investigations Report 96-4056, 68 p.
- 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 [Sic.] and Distribution, Task 2: Extent of Aquifers, Task 3: Ground-Water Storage, Task 4: Computerized Data Base. Prepared for U.S. Army Corps of Engineers, contract DACW 45-80-C-0185
- Koch, N.C., 1980, Geology and Water Resources of Hand and Hyde Counties, South Dakota, Part II: Water Recourses: S. D. Geological Survey Bulletin 28, 46 p.

Rothrock, E.P, and Robinson, T.W. Jr., 1938, Artesian Conditions in Western Central South Dakota: S.D. Geologic Survey Report of Investigations No. 26, 93p

Schoon, R.A., 1971, Geology and Hydrology of the Dakota Formation in South Dakota: S.D. Geological Survey Report of Investigations 104, 61 p.

Water Rights, 1987, Water Right No. 5136-3: SD DENR-Water Rights Program 5136-3 file

Water Rights, 2012a, Observation Well Files, SD DENR-Water Rights Program, Joe Foss Bldg, Pierre, SD.

Water Rights, 2012b, Water Right/Permit Files, SD DENR-Water Rights Program, Joe Foss Bldg, Pierre, SD.

Water Rights, 2012c, Well Completion Report Files, SD DENR-Water Rights Program, Joe Foss Bldg, Pierre, SD.



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
denr.sd.gov

September 18, 2012

The Plainsman
PO Box 1278
Huron SD 57350

ATTENTION: Legal Public Notice

Enclosed is a Notice on Application No. 7387-3 to Appropriate Water. Please publish the notice once on September 26, 2012. 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 and arrange for payment. **Please BILL the APPLICANT for the cost of publication.** The APPLICANT is Tom Nuhsbaumer, 17781 370th Ave., Zell SD 57469 (Ph # 605-472-0410).

Please send the Water Rights Program an affidavit or the enclosed Proof of Publication form immediately.

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

Schlaak, Karen

From: Ruby Crandall <rnewman.plainsman@midconetwork.com>
Sent: Tuesday, September 18, 2012 2:29 PM
To: Schlaak, Karen
Subject: Re: Notice for No. 7395-3 & 7387-3

I have received your email.
Thank you.

Ruby Crandall
Creative Services Supervisor

Plainsman/Payday/Print Shop
49 3rd Street SE
Huron, SD 57350

605-353-7412

1-800-859-3045, ext. 412

fax: 605-353-7422

rnewman.plainsman@midconetwork.com

On Sep 18, 2012, at 1:51 PM, <Karen.Schlaak@state.sd.us> <Karen.Schlaak@state.sd.us> wrote:

Attached are Notice of Application No. 7395-3 for Huron Hutterian Brethren and Notice of Application No. 7387-3 Tom Nuhsbaumer. Both notices are to be published on September 26, 2012. Please send the affidavits ASAP after publication.

Thanks,

Karen Schlaak

Water Rights Program

Phone: 605 773-3352

Fax: 605 773-4068

<7395-3public.short.docx><7387-3public.short.docx><7395-3NEWS.docx><7387-3NEWS.docx>



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
denr.sd.gov

September 18, 2012

Miller Press
PO Box 196
Miller SD 57362

ATTENTION: Legal Public Notice

Enclosed is a Notice on Application No. 7387-3 to Appropriate Water. Please publish the notice once on September 26, 2012. 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 and arrange for payment. **Please BILL the APPLICANT for the cost of publication.** The APPLICANT is Tom Nuhsbaumer, 17781 370th Ave., Zell SD 57469 (Ph # 605-472-0410).

Please send the Water Rights Program an affidavit or the enclosed Proof of Publication form immediately.

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



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
denr.sd.gov

NOTE: TO BE SURE OF PUBLICATION ON
THE CORRECT DATE, CONTACT
THE NEWSPAPER(S) RIGHT AWAY.

September 18, 2012

Tom Nuhsbaumer
17781 370th Ave
Zell SD 57469

Dear Mr. Nuhsbaumer:

Water Permit Application No. 7387-3 for geothermal use has been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice has been sent to the Miller Press printed at Miller SD (Ph # 605-853-3575) and the Plainsman printed at Huron SD (Ph # 605-352-6401). 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
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.

Instruction to Newspaper - Publish the Notice on September 26, 2012. The applicant is responsible for payment. The text of the notice can be e-mailed to your paper by contacting Karen Schlaak at (605) 773-3352 or email: Karen.schlaak@state.sd.us.

NOTICE OF APPLICATION NO. 7387-3 to Appropriate Water

Notice is given that Tom Nuhsbaumer, 17781 370th Ave, Zell SD 57469 has filed an application for a water permit to appropriate 30 gallons per minute (0.067 cubic feet of water per second) from one well completed into the Dakota Aquifer (990 feet deep) located in SE ¼ SE ¼ Section 32-T116N-R66W for geothermal use and domestic purposes.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 7387-3 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 this 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 this 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 October 9, 2012.

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.

Published once at the total approximate cost of _____.



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
denr.sd.gov

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

October 4, 2012

Tom Nuhsbaumer
17781 370th Ave
Zell SD 57469

Dear Mr. Nuhsbaumer:

The Notice of Application No. 7387-3 has again been sent to the Plainsman printed at Huron SD (Ph # 605-352-6401) to be published on October 10, 2012. It is your responsibility to contact the paper and authorize publication and make arrangements for payment.

We have contacted the Miller Press and they indicated the notice was published on September 26th. It will not be necessary to republish in the Miller Press.

Sincerely,

Eric Gronlund
Natural Resources Engineer
(605) 773-3352

enclosures

Instruction to Newspaper - Publish the Notice on October 10, 2012. The applicant is responsible for payment.

NOTICE OF APPLICATION NO. 7387-3 to Appropriate Water

Notice is given that Tom Nuhsbaumer, 17781 370th Ave, Zell SD 57469 has filed an application for a water permit to appropriate 30 gallons per minute (0.067 cubic feet of water per second) from one well completed into the Dakota Aquifer (990 feet deep) located in SE 1/4 SE 1/4 Section 32-T116N-R66W for geothermal use and domestic purposes.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 7387-3 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 this 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 this application. Notice of the hearing will be given to the applicant and any person filing a petition.

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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.

Published once at the total approximate cost of _____.

RECEIVED

PRINTER'S AFFIDAVIT

OCT 29 2012

STATE OF SOUTH DAKOTA,
COUNTY OF BEADLE: ss.

WATER RIGHTS
PROGRAM

I, TRISHA NELSON, being duly sworn on oath, say that THE PLAINSMAN is a daily paper published at Huron, Beadle County, South Dakota, and that said newspaper has a bona fide circulation of at least 250 copies daily; that said newspaper has been published within said county for fifty-two consecutive weeks immediately prior to this date, that said newspaper is printed in whole or in part, in an office maintained at said place of publication; that I am Legal Advertising Coordinator of said newspaper and know the facts herein state. The annexed notice headed:

**SD ENVIRONMENTAL & NATURAL – WATER
APPROPRIATION NOTICE - NUHSBAUMER**

was published for one day, in said newspaper, and not in any supplement of the said newspaper, the publication was of the 10TH day **OCT 2012** That the full **THIRTY-FOUR & 12/000** dollars insures to the benefit of the publisher of said newspaper; 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 whom so ever.

Trisha Nelson

Subscribed and sworn to before me this 25th day of OCT. 2012.

William K. Kuehnt
Notary Public, South Dakota

My term expires 10/25/17

Legal # 436

F.P. 10-10-12

**NOTICE OF
APPLICATION
NO. 7387-3**

to Appropriate Water

Notice is given that Tom Nuhsbaumer, 17781 370th Ave, Zell SD 57469 has filed an application for a water permit to appropriate 30 gallons per minute (0.067 cubic feet of water per second) from one well completed into the Dakota Aquifer (990 feet deep) located in SE 1/4 SE 1/4 Section 32-T116N-R66W for geothermal use and domestic purposes.

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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.
No. 436 (adv.)

Published once at the
total approximate cost of
\$32.48.

Length of line: 12 pica
Size of type: 8 pt.
Number of lines: _____
Line rate: _____

AFFIDAVIT OF
PUBLICATION
The Miller Press

STATE OF SOUTH DAKOTA

County of Hand

Michael G. Caviness of said county being first duly sworn, on oath, says that he is the publisher of *The Miller Press*, a weekly newspaper printed and published in Miller, said County of Hand by Hand County Publishing Co., Inc. and has full and personal knowledge of all the facts herein stated; that said newspaper is a legal newspaper and has a bona fide circulation of at least two hundred copies weekly, and has been published with in said County for fifty-two successive weeks next prior to the publication of the notice, herein mentioned, and was and is printed wholly or in part in an office maintained at said place of publication; that the

Notice of Application

No. 7387-3 to

Appropriate Water

a printed copy of which, taken from the paper in which the same was published, is attached to this sheet, and is made a part of this Affidavit, was published in said newspaper at least once each week for 1 successive week(s), on the day of each week on which said newspaper was regularly published, to wit:

9/26 2012; _____ 20

_____ 20; _____ 20

_____ 20; _____ 20

that the full amount of the fees for the publication of the annexed notice is

\$ 22.50

Michael G. Caviness
Michael G. Caviness, Publisher

Subscribed and sworn to before me

this 1 day of Oct 20 12

Janet L. Kittelson
Janet L. Kittelson, Notary Public
My Commission expires: 6-26-13

RECEIVED

OCT - 9 2012

WATER RIGHTS
PROGRAM

OK

Application for water permit

NOTICE OF APPLICATION NO. 7387-3 to Appropriate Water

Notice is given that Tom Nuhsbaumer, 17781 370th Ave, Zell SD 57469 has filed an application for a water permit to appropriate 30 gallons per minute (0.067 cubic feet of water per second) from one well completed into the Dakota Aquifer (990 feet deep) located in SE 1/4 SE 1/4 Section 32-T116N-R66W for geothermal use and domestic purposes.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 7387-3 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 this 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 this application. Notice of the hearing

will be given to the applicant and any person filing a petition.

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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. Published 9-26-2012 at the total approximate cost of \$22.50.



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182

denr.sd.gov

DEC 19 2012

Tom Nuhsbaumer
17781 370th Ave
Zell SD 57469

Dear Mr. Nuhsbaumer:

Enclosed is Water Permit No. 7387-3 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

12/21/12

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

FROM:

Tom Nuhshaumer

(name)

17791 370 Avenue

(address)

Zell South Dakota 57469

(city, state, zip)

605 460 0634

(phone)

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

Water Permit No. 7387-3 states that the water use system is to be constructed by

October 22, 2017

(date)

, and water is to be put to beneficial use by October 22, 2021

(date)

The water use system was completed on

July 30, 2012

(date)

Applying the water to beneficial use was completed on

August 25, 2012

(date)

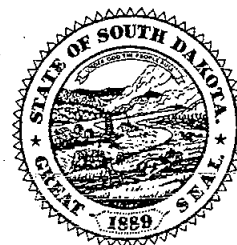
You may schedule an investigation so that the water license may be issued.

Tom Nuhshaumer

(signature)

RECEIVED

DEC 26 2012

WATER RIGHTS
PROGRAM



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
PMB 2020
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3182
<http://denr.sd.gov>

December 26, 2012

7387-3

Tom Nuhsbaumer
17781 370th Ave
Zell SD 57469

Dear Sir:

I am writing to acknowledge receipt of the "Notice of Completion of Works" form that you sent in to let us know that you are completed with the water use project authorized under Water Permit No. 7387-3.

The system is now ready for inspection. Inspections are done on a county-by-county basis as staff time permits. You have done everything you need to do and the intervening time between the completion of your project and the staff inspection has no bearing on your water permit.

Someone from our office will contact you prior to the inspection to set up a time that is convenient for you. If you have any questions, please contact me.

Sincerely,

A handwritten signature in black ink that reads "Genny McMath". The signature is written in a cursive, flowing style.

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

Water Permit No. 7387-3
James 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, **September 3, 2015**, made a thorough examination of the water use system constructed by **Tom Nuhsbaumer** of **17781 370th Ave., Zell, SD 57469** holder of Permit No. **7387-3**, bearing the priority of **July 30, 2012** authorizing the diversion of **0.067** cu. ft. per second of water from the **Dakota Aquifer** for **Geothermal and Domestic** purposes, in **Hand** County.

Inspection contact & relationship to permit holder, if applicable: **Tom Nuhsbaumer (460-0634)**

A. Works used to divert the water:

Well Information:

- 1) Well Drilling Firm: **Pullman Drilling Inc.**
- 2) No. of Wells **1**
- 3) Depth(s) **1,170** feet
- 4) Well log is available **Y**
- 5) Comment:

Casing:

- 1) Diameter **5 and 2** inches
- 2) Length **960** feet
- 3) Type **Plastic**

Screen:

- 1) Type **PVC**
- 2) Length **210** feet
- 3) Static water level **Flowing**

Pump:

- 1) Make **Climate Master**
- 2) Capacity **30** GPM

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

- 1) Type **Buried Pipe**

C. 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 NA
- 3) Exceptions to compliance are: None

The point(s) of diversion located as follows:

Well: Approximately 1,120 feet north and 650 feet west of the SE corner of Section 32-T116N-R66W (N 44.81190, W -98.78953) (SE ¼ SE ¼)

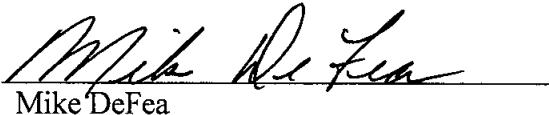
The works are capable of diverting and conveying to the place of use 0.067 cu. ft. per second of water which is to be used for Geothermal and Domestic Use.

The license should be issued for 0.067 cfs.

All structures, wells and lands on map Y

Comments or other permit(s) associated with the project:

Water from the well is used for geothermal use for a storage/maintenance building and domestic use for cattle. The well is a free-flowing well; however, a pump is needed to deliver water to the geothermal system and supplying water to the cattle. The well is valved and can be completely shut in.



Mike DeFea
Natural Resources Engineer II
DENR, Water Rights Program

Date report completed: September 8, 2015

Tom Nuhsbaumer
Water Permit No. 7387-3



Mike DeFea
Mike DeFea
Natural Resources Engineer
DENR, Water Rights Program
March 4, 2016



South Dakota
Department of Environment
& Natural Resources
Protecting SD's Tomorrow... Today



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

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

denr.sd.gov

MAR 22 2016

7387-3

Tom Nuhsbaumer
17781 370th Ave
Zell SD 57469

Dear Mr. Nuhsbaumer:

Enclosed is Water License No. 7387-3. 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 investigation.

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,

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

enclosures

STATE OF SOUTH DAKOTA

WATER LICENSE NO. 7387-3

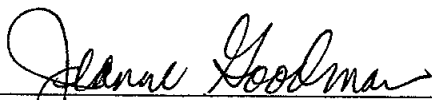
(1) Tom Nuhsbaumer, 17781 370th Ave, Zell SD 57469 made Application No. 7387-3, July 30, 2012 for a water permit to divert 0.067 cubic feet of water per second from one well – Dakota Aquifer, Hand County, South Dakota for geothermal use and domestic purposes. Permit No. 7387-3, with a priority date of July 30, 2012 was approved October 22, 2012 and issued to the applicant for diversion of water with construction of the described water supply system to be completed on or before October 22, 2017 and for the application to beneficial use of water on or before October 22, 2021.

(2) The water supply system has been completed and water applied to beneficial use in accordance with South Dakota State Law. Pursuant to South Dakota Codified Law 46-5-30.1, the holder and/or owner of Water Right No. 7387-3 is issued a license, bearing a priority date of July 30, 2012 to appropriate 0.067 cubic feet of water per second from one well – Dakota Aquifer for geothermal use and domestic purposes.

The diversion point is located: Approximately 1,120 feet north and 650 feet west of the SE corner of Section 32-T116N-R66W (SE 1/4 SE 1/4).

(3) This license is subject to South Dakota Water Law, any limitations or conditions listed in Water Permit No. 7387-3 including the following qualification:

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.



Jeanne Goodman, Chief Engineer

Water Rights Program

Department of Environment and Natural Resources

MAR 22 2016

date

