

WATER PERMIT NO. 7829-3

Name of Applicant: **East River Electric Power Coop, Inc.**

Address: **PO Box 227, Madison SD 57042** Phone: **605 256-4536**

Amount of Water Claimed: **0.133 cfs** Total Acres: **NA**

Source of Water Supply: **groundwater (4 wells)**

Water to be used for: **geothermal heat** County: **Lake**

Type of Waste Disposal System:

Location:

PRIORITY Date Received: **4-12-13** Application/License Fee: **\$ 700**

Corrected Application Received: Period of Annual Use: **Jan 1 – Dec 31**

Remarks:

Diversion Point: **SE 1/4 NE 1/4 Sec 7-T106N-**
R52W

Land to be Irrigated: **NA**

Depth of Well: **15 feet**

Well Driller:

Remarks:

Type of Map: **plat**

Prepared by:

				⊗	
			7		

Reviewed and the Number Assigned on: **4-25-13**

By: **Karen Schlaak**

Notice of Hearing - date to intervene: _____

SD EForm - 1585LD V4
FORM 2: Application for uses other than irrigation
(type or print)

Mail to: PMB 2020 DENR - Water Rights 523 E Capitol Ave Pierre, SD 57501-3182 ph. (605) 773-3352	No. <u>7829-3</u> (office use only) Hydrologic Unit <u>10170203</u>
	Basin <u>Sisoux River</u>
	Newspaper <u>Daily Leader Box 348</u>
	<u>Madison 57042-1005-256-4555</u>

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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: (check one)

☒ New ☐ Vested Right (Use predates Mar 2, 1955) ☐ Future Use Reservation

☐ Place to Beneficial Use Water Reserved by Future Use Permit No. _____

☐ Amendment/Correction to Permit No. _____

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

1. Name to Appear on Water Permit East River Electric Power Coop, Inc.

(check one) ☒ Owner ☐ Tenant/lessee ☐ Owner's Legal Agent

(name and complete address if different than above name)

Mailing Address PO Box 227 Madison SD 57042
(Address) (City) (State) (Zip Code)

Home Phone 605-256-4536 Cell _____ Email dfeistner@eastriver.coop

2. Amount of water claimed 0.133 *CFS or 60 **GPM ***AF
(*Cubic Feet per Second) (**Gallons per Minute) (**Acre Feet - storage capacity of dam/dugout or annual use if applicable)

3. Source of water supply Ground water (SE 1/4 NE 1/4) 4 wells

4. Location of point of diversion 208 S. Harth (NE 1/4 Sec 7-T106N-R52W) County Lake
(example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W)

If not a public water supply (e.g. municipal), will water be used outside of the area described above? ☐ Yes ☒ No

If "Yes," where will water be used? _____

(example - NW1/4 section 12-T104N-R53W)

5. County or counties where water will be used Lake

6. Annual period during which water is to be used Continuously Jan 1 - Dec 31

7. Give a description of the project. When available include any preliminary engineering report or other reports or information that will help explain the project. (Attach sheet if more space is needed)

See attached information sheet.

I, Dean Sistrup, the applicant, certify that I have read this application, have examined the attached map, and that the matters stated are true.

SOUTH DAKOTA
TEMPORARY USE WATER PERMIT NO. 7829-3

Date of first receipt of application April 12, 2013.

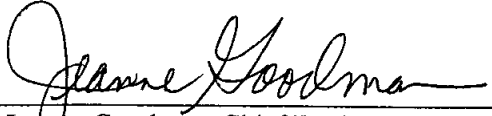
The Chief Engineer, on behalf of the Water Management Board, issues Temporary Use Water Permit No. 7829-3 to East River Electric Power Coop, Inc., PO Box 227, Madison SD 57042 authorizing the construction of the water use system and the placing of water to beneficial use subject to the following limitations, conditions and qualifications:

1. Temporary Use Water Permit No. 7829-3 appropriates 0.133 cubic feet of water per second from four wells to be completed into the Northern Skunk Creek Management Unit of the Big Sioux Aquifer (15 feet deep) located in the SE 1/4 NE 1/4 Section 7-T106N-R52W.
2. The water appropriated shall be used for the purpose of geothermal heat 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. 7829-3 is July 1, 2013.
5. The date from which applicant may claim right is April 12, 2013.
6. One-fifth of the construction is to be completed on or before January 1, 2016.
7. All construction is to be completed on or before July 1, 2018.
8. Water is to be put to beneficial use on or before July 1, 2022.
9. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

QUALIFICATIONS

1. The city of Madison, Kingbrook Rural Water System and Big Sioux Community Water have priority rights to this water under future use withdrawal permits. This permit is issued as a temporary use permit pursuant to SDCL 46-5-39 and is subject to these prior rights if or when the future use permit holders fully develop their reserve water supply. The permit may be subject to cancellation when the water reserved under these future use permits is put to beneficial use. The Chief Engineer must provide the permit holder six month notice prior to cancellation of this temporary use permit.
2. A variance to the well construction standards is granted to provisions of Administrative Rules of South Dakota Chapter 74:02:04:24 regarding well distance from a sewer line and distance from a permanent structure and provisions of Chapter 74:02:04:27 regarding the well casings terminated below the established ground surface.
3. Except as set forth in the variance granted by qualification No. 2, the wells authorized by Temporary Use Permit No. 7829-3 shall be constructed by a licensed well driller and construction of the well and installation of the pump shall comply with Water Management Board Well Construction Rules, Chapter 74:02:04.

WATER MANAGEMENT BOARD

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

AUG 30 2013

date



Supplemental Information

(type or print)

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

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

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

c) Well Depth 15ft Depth to Top of Water Bearing Material 5ft Depth to Water from Surface 13ft

d) Distance to nearest existing domestic well:

On applicant's property none On property owned by others _____

2. Wastewater Disposal System Information

a) Type of System (i.e. septic tank, drain field) existing City of Madison storm sewer

b) System Capacity (gallons) _____ Year Constructed _____

c) Connected to the City of _____ Sanitary System

3. Dugout Information

a) Surface Dimensions N/A 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:

N/A

b) Freeboard _____

c) Crest Width _____

Crest Length _____

d) Height _____

e) Primary Outlet Capacity _____

If pipe, diameter _____

f) Secondary Spillway Capacity _____

Spillway Width _____

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

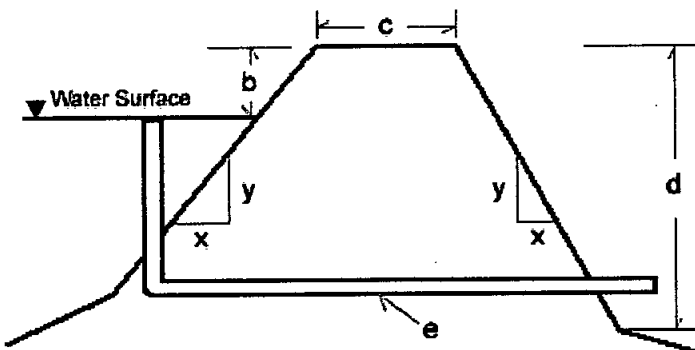
Upstream _____

Downstream _____

h) Surface Area of Impoundment _____

i) Storage _____ Acre Feet

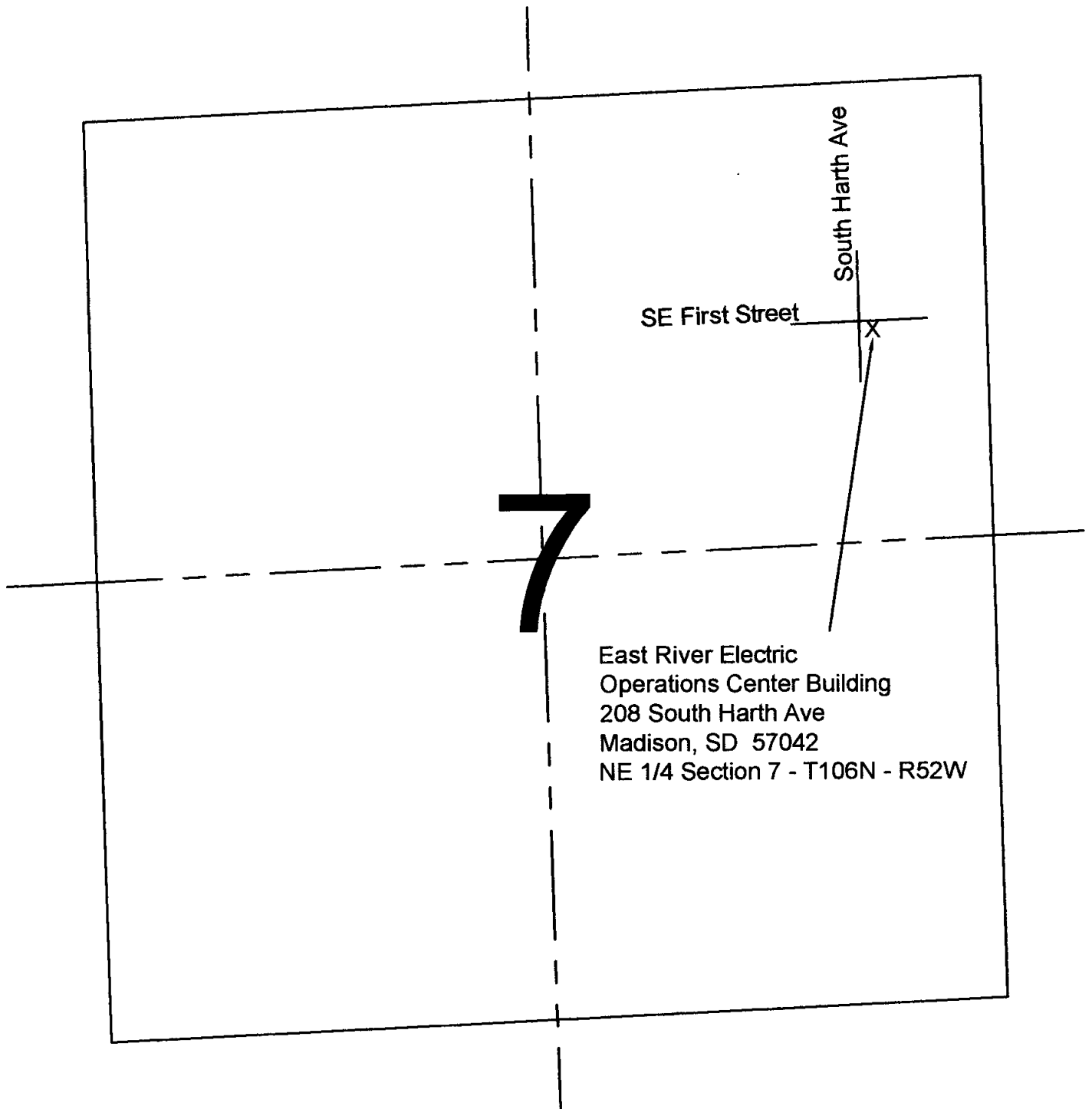
j) Drainage Area Above Dam _____ Acres



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Gillette, WY 865-888-7175 • Rapid City, SD 888-872-1225 • College Station, TX 888-698-2218

LABORATORY ANALYTICAL REPORT

Prepared by Rapid City, SD Branch

Client: East River Electric Power Coop Inc
Project: Operations Center Geothermal
Lab ID: R12080460-001
Client Sample ID: Op Center Geo

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Report Date: 09/13/12
Collection Date: 08/27/12 08:30
Date Received: 08/28/12
Matrix: Aqueous

Analyses	Result	Units	WATER RIGHTS PROGRAM		MCL/ QCL	Method	Analysis Date / By
			Qualifiers	RL			
PHYSICAL PARAMETERS							
Solids, Total Dissolved TDS @ 180 C	930	mg/L		10		A2540 C	08/31/12 15:44 / jmh
Alkalinity, Total as CaCO3	340	mg/L		5		A2320 B	09/10/12 08:27 / ch
Bicarbonate as HCO3	414	mg/L		5		A2320 B	09/10/12 08:27 / ch
TOTAL METALS ANALYSES							
Iron	ND	mg/L		0.03		E200.7	09/04/12 17:03 / eli-b
Manganese	0.57	mg/L		0.01		E200.7	09/04/12 17:03 / eli-b
DISSOLVED METALS ANALYSES							
Calcium	156	mg/L		1		E200.7	08/31/12 16:25 / eli-b
Magnesium	66	mg/L		1		E200.7	08/31/12 16:25 / eli-b
Potassium	9	mg/L		1		E200.7	08/31/12 16:25 / eli-b
Sodium	73	mg/L	D	2		E200.7	08/31/12 16:25 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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East River Electric currently has two sump pumps that pump water from the sump pit in the basement of our Operations Center buildings into a City of Madison storm sewer line. On August 29, 2012 the discharge rate of these two pumps was measured at 30 GPM. A planned geothermal HVAC project for this building would replace the conventional HVAC system with heat pumps. The water for the heat pumps would be supplied by four sand point wells placed inside the building at a depth of 15 ft. below the basement floor. The water that is now discharged by the sump pumps would be first run through the heat pumps before being discharged to the same existing storm sewer line. The geothermal HVAC system would use 60 GPM or less, depending on daily heat/cool needs. There would be no change made to the content of the water by the heat pumps other than to raise or lower the water temperature by 2 to 3 degrees. We had a sample of the water tested at Energy Laboratories, Inc. of Rapid City to verify the level of dissolved solids and metals that were present. A copy of this report has been included.

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WATER RIGHTS PROGRAM

South Dakota Department of Environment and Natural Resources

Date 4/12, 20 13

RECEIVED OF East River Electric PO Box 227 Madison SD 57042

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

Fee for Application for Permit No. <u>7829-3</u> to Appropriate Water, to construct and to put water to beneficial use	500	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>7829-3</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	700 00

No. 06301

By Jeanne Goodman
Chief Engineer

Gronlund, Eric

From: Gronlund, Eric
Sent: Wednesday, April 03, 2013 1:46 PM
To: 'Dean Feistner'
Cc: Spangler, Albert
Subject: RE: EAST RIVER ELECTRIC GEOTHERMAL

Dean

Item No. 4 should be an actual legal description of where the building is located based on the quarter-quarter section designation, section, township and range (example - NW ¼ NW ¼ Section 15, T98N, R53W).

A map needs to be included which marks the location of the wells/building that references a section corner. Commonly an aerial map obtained from Farm Service Agency or USGS quadrangle map of that section with a "X" marking the location.

If East River Electric contracts with someone to put in the sandpoint wells, they must be a licensed well driller. DENR realized sandpoints are a driven well but if East River contracts for the work, it must be licensed driller according to DENR rules.

Finally, separate from the water right permit application, the discharge to the city's storm sewer may require a surface water discharge permit. I encourage you to contact Al Spangler at (605) 773-3351.

Eric Gronlund
Water Rights Program, DENR
605 773-3352
eric.gronlund@state.sd.us

From: Dean Feistner [<mailto:DFeistner@eastriver.coop>]
Sent: Wednesday, April 03, 2013 11:48 AM
To: Gronlund, Eric
Cc: eastriver.coop, mhoffman
Subject: EAST RIVER ELECTRIC GEOTHERMAL

Eric,

I have prepared the DENR application for Nonirrigation Water use for a geothermal HVAC system for one of our buildings in downtown Madison. If you would please give this all a quick look over to see if there are any glaring errors or missed information that is needed to evaluate the application I would appreciate it. I understand that to formally submit the application I will need to sign it and enclose the \$700 fee.

Thank you,

Dean Feistner
Project Coordinator
East River Electric
Office 605-256-8036
Cell 605-480-1790



**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. 7829-3, East River Electric Power Coop, Inc**

Pursuant to SDCL 46-2A-2, the following is the recommendation of the Chief Engineer, Water Rights Program, Department of Environment and Natural Resources concerning Water Permit Application No. East River Electric Power Coop, Inc, c/o Dean Feistner, PO Box 227, Madison SD 57042.

The Chief Engineer is recommending APPROVAL of Application No. 7829-3 as a TEMPORARY USE PERMIT pursuant to SDCL 46-5-39 because 1) water is available to be appropriated as a temporary use permit until holders of future use permits fully develop water reserved from their future use permit, 2) the proposed diversion can be developed as a temporary use permit 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 city of Madison, Kingbrook Rural Water System and Big Sioux Community Water have priority right to this water under future use withdrawal permits. This permit is issued as a temporary use permit pursuant to SDCL 46-5-39 and is subject to these prior rights if or when the future use permit holders fully develop their reserve water supply. The permit may be subject to cancellation when the water reserved under these future use permits is put to beneficial use. The Chief Engineer must provide the permit holder six month notice prior to cancellation of this temporary use permit.
2. A variance to the well construction standards is granted to provisions of Administrative Rules of South Dakota Chapter 74:02:04:24 regarding well distance from a sewer line and distance from a permanent structure and provisions of Chapter 74:02:04:27 regarding the well casings terminated below the established ground surface.
3. Except as set forth in the variance granted by qualification No. 2, the wells authorized by Temporary Use Permit No. 7829-3 shall be constructed by a licensed well driller and construction of the well and installation of the pump shall comply with Water Management Board Well Construction Rules, Chapter 74:02:04.
- ~~4. This Permit is approved subject to the irrigation water use questionnaire being submitted each year.~~

See report on application for additional information.

Jeanne Goodman, Chief Engineer
June 10, 2013

REPORT TO THE CHIEF ENGINEER
ON
WATER PERMIT APPLICATION NO. 7829-3
EAST RIVER ELECTRIC COOP INC.
C/O DEAN FEISTNER
JUNE 10, 2013

Water Permit Application No. 7829-3 proposes to appropriate water at a maximum diversion rate of 0.133 cubic feet of water per second (cfs) from four wells approximately 15 feet deep for geothermal heating purposes. The wells are to be located in the SE ¼ NE ¼ Section 7, T106N-R52W in the City of Madison in Lake County.

AQUIFER: Northern Skunk Creek management unit of the Big Sioux aquifer (BS:NSC)

GEOLOGY AND AQUIFER CHARACTERISTICS:

A test hole log was not submitted with this application as required by ARSD 74:02:01:08.01; however, information is available to evaluate the area of the proposed well site. Hansen (1986) identified the Northern Skunk Creek management unit of the Big Sioux aquifer as the North Skunk Creek aquifer. They are the same aquifer and will be called the Big Sioux: Northern Skunk Creek aquifer for the remainder of this report. The Big Sioux: Northern Skunk Creek aquifer is composed of poorly sorted sand and gravel northwest of Lake Madison and grades to a well sorted sand and gravel southeast of Lake Madison (Hansen, 1986). The aquifer is primarily under unconfined conditions, but may be under confined conditions near the edge of the aquifer and in the south-central part of T105N-R51W and underlies portions of Lake and Moody Counties (Hansen, 1986). The aquifer underlies approximately 25,400 acres and contains an estimated 72,400 acre-feet (ac-ft) of recoverable water in storage (Hedges et. al, 1982). Hansen (1986) estimated the area of the aquifer to be 48 square miles (30,720 acres). Generally, water flow in the aquifer is towards the southeast but may be different near Minnehaha County where there is a possible recharge source (Hansen, 1986). The aquifer is also hydraulically connected to Lakes Madison, Herman, and Brant (Hansen, 1986). In the area of the application, aquifer material is generally found at ground surface (Jensen, 2002). The static water level in the area of the application is generally between 10 and 20 feet below ground surface (Water Rights, 2013c).

SDCL 46-2A-9

Pursuant to SDCL 46-2A-9, a permit to appropriate water may be issued only if there is a reasonable probability that there is unappropriated water available for the applicant's proposed use, that the proposed diversion can be developed without unlawful impairment of existing rights and that the proposed use is a beneficial use and in the public interest. This report will address the availability of unappropriated water and existing rights from the aquifer that are pertinent to this application.

WATER AVAILABILITY:

This application proposes to appropriate water from the Big Sioux: Northern Skunk Creek aquifer. If this application is approved, water use will likely be less than 96.3 acre-feet per year (ac-ft/yr). The probability of unappropriated water available from an aquifer can be evaluated by considering SDCL 46-6-3.1, which requires "No application to appropriate groundwater may be

approved if, according to the best information reasonably available, it is probable the quantity of water withdrawn annually from a groundwater source will exceed the quantity of the average estimated annual recharge of water to the groundwater source.” If the source of the water is older or lower than the Greenhorn Formation and a public water system has applied for a permit, the Board need not consider the recharge/withdrawal issue. Here, a public water system is not involved and the aquifer is not older or lower than the Greenhorn Formation, therefore the withdrawal/recharge issue must be considered.

Hydrologic Budget:

Recharge:

Recharge to the Big Sioux: Northern Skunk Creek aquifer occurs primarily through infiltration of precipitation, and inflow from area lakes and streams during periods of high flow and stage (Hansen, 1986). Hedges and others (1985) estimated recharge to the aquifer using an observation well analysis to be 3.1 inches per year (in/yr). Buhler (2009) refined an estimate for recharge to approach 3.82 in/yr by using the observation well method as described by Hedges and others (1982). Using both values for recharge and area of the aquifer, recharge to the Big Sioux: Northern Skunk Creek aquifer is estimated to range from 6,562 to 9,779 ac-ft/yr.

Discharge:

Discharge from the Big Sioux: Northern Skunk Creek aquifer is by: (1) well withdrawals, (2) evapotranspiration, and (3) outflow to area lakes and streams during periods of low flow and stage (Hansen, 1986). Currently, there are 37 water rights/permits appropriating water and four future use permits reserving water from the aquifer (Water Rights, 2013b). The amount of water that can be expected to be withdrawn through water rights/permits authorizing water use for non-irrigation purposes at the current appropriation level can be estimated by assuming: 1) water rights/permits limited by an annual volume will pump the entire volume appropriated, 2) water rights/permits limited only by diversion rate will pump at the maximum permitted diversion rate 60 percent of the time, and 3) future use permits will be fully developed (Water Rights, 2013b).

The appropriation by all non-irrigation appropriations and the reported pumpage by the Chester Sanitary District, Big Sioux Community Water, Kingbrook Rural Water System and the City of Madison from the Big Sioux: Northern Skunk Creek aquifer are shown in Tables 1 and 2, respectively.

Permit No.	Name	Status	Use	Annual Appropriation
4943-3	Big Sioux Community Water	LC	RWS	0.44cfs (4943-3) 100% developed= 318.5 ac-ft/yr, plus 360 ac-ft/yr (6152-3), plus 600 ac-ft/yr (7117-3), plus 960 ac-ft/yr (total future use) APPROXIMATELY 2,238.5 ac-ft/yr
5689-3		FU	RWS	
6152-3		PE	RWS	
6834-3		FU	RWS	
7117-3**	David & Chrysella Daniel	PE	RWS	
6046-3	Chester Sanitary District	LC	MUN	0.786cfs (341.4 ac-ft/yr estimated)
5168-3*	Hilde Pipe & Gravel	LC	IND/DOM	480 ac-ft/yr*
4311A-3	Kingbrook RWS Inc	LC	RWS	3.0cfs (4367-3) (1303 ac-ft/yr estimated), plus 1,041 ac-ft/yr (5429-3, 5646-3, 4311A-3, 6531-3, 6730-3 combined), plus 425 ac-ft/yr (total future use) APPOXIMATELY 2,766 ac-ft/yr
4367-3		LC	RWS	
5643-3		FU	RWS	
5646-3		LC	RWS	
6531-3		LC	RWS	
6730-3		LC	RWS	
371-3	City of Madison	LC	MUN	2.7cfs (1079-3)+ 0.78cfs (1453-3)+ 0.31cfs (371-3)+ 0.26cfs (372-3)= 4.05 cfs (1,759 ac-ft/yr), plus 600 ac-ft/yr (6040-3), plus 339 ac-ft/yr (6510-3), plus 1,033 ac-ft/yr (total future use) APPROXIMATELY 3,731 ac-ft/yr
372-3		LC	MUN	
747-3		FU	MUN	
1079-3		LC	MUN	
1453-3		LC	MUN	
6040-3		LC	MUN	
6510-3		PE	MUN	
5688-3	Shipwreck Inn	LC	COM	0.022 cfs (9.5 ac-ft/yr estimated)

* May be subject to cancellation due to abandonment, ** Rural water system use by Big Sioux Community Water System

Table 1- Non-irrigation appropriations from the Big Sioux: Northern Skunk Creek aquifer (Water Rights, 2013b)

	Chester Sanitary District ^{1,2}	Big Sioux Comm. Water ^{2,3}	Kingbrook RWS ^{2,3}	City of Madison ^{2,3}	Total
	ac-ft	ac-ft	ac-ft	ac-ft	ac-ft
2012	36.55	752	677	630	2095.5
2011	29.69	694	662	684	2069.7
2010	30.76	728	621	766	2145.8
2009	30.60	699	606	601	1936.6
2008	41.71	690	647.1	614.03	1992.8
2007	49.15	741	695.95	622.92	2109.0
2006	51.18	777	663.7	713.59	2205.5
2005	66.1	748	653.58	595.96	2063.6
2004	56.47	711	640.08	672.88	2080.4
2003	62.52	746.9	648.45	624.87	2082.7
2002	60.83	597.58	609.78	744.5	2012.7
2001	64.8	117.01	601.49	885.82	1669.1
2000	52.01	0	654.83	848.96	1555.8
1999	n/a	0	591.4	845.35	1436.8
1998	n/a	0	592.39	882.47	1474.9
Min	29.7	0.0	591.4	596.0	1436.8
Max	66.1	777.0	696.0	885.8	2205.5
Avg	48.6	666.8	637.7	715.5	1928.7

¹ Carruthers, 2013; ² Buhler, 2009; ³ Water Rights, 2003-2013

Table 2- Water distribution system use from the BS: NSC aquifer

Note that Big Sioux Community Water System did not withdraw any water from the Northern Skunk Creek management unit in 1998, 1999, or 2000 due to nitrate issues (Buhler, 2009).

Table 3 shows the historic irrigation water use from the aquifer. In addition to appropriative rights there are a number of domestic wells on file with the SD DENR- Water Rights Program. However, the domestic use is not significant to the hydrologic budget.

Year	No. of Permits	Appropriations (ac-ft/yr)	Reported Pumping (ac-ft/yr)
2011	19	5525	541.04
2010	19	5525	237.5
2009	17	5209	700.1
2008	16	5119	1361.49
2007	16	5119	1337.56
2006	15	5043	1037.47
2005	18	6184.4	825.56
2004	18	6132.4	284.4
2003	19	6364.4	1116.52
2002	19	6364.4	1461.85
2001	19	6364.4	1475.57
2000	19	6364.4	1007.05
1999	19	6364.4	964.04
1998	19	6364.4	429.46
1997	18	6184.4	574
1996	18	6260.4	1060.48
1995	18	7260.8	347.34
1994	18	7260.8	906.22
1993	18	7970.8	86
1992	17	8243	12
1991	18	8873	1198.7
1990	15	8897	565
1989	15	8133	1129
1988	15	8133	1908
1987	14	7912	870
1986	15	8345	723
1985	14	7945	941
1984	15	8185	912
1983	14	7913	763.59
1982	13	7513	432.18
1981	15	8041	941
1980	15	5818	233
1979	14	7753	393
Min	13	5043	12
Max	19	8897	1908
Avg	16.7	6929.8	811.4
1992 through 2008 appropriations adjusted (by -80 ac-ft/yr) to correct for clerical error involving Water Right No. 4133A-3 (it was issued for 2 ac-ft/acre but the irrigation questionnaire incorrectly reflected a 3 ac-ft/yr appropriation)			

Table 3- Historic irrigation water use from the BS: NSC aquifer (modified from Buhler, 2009)

Development Possible Under Current Permits:

The “probable maximum” amount of water that can be withdrawn at the current level of appropriation from the Northern Skunk Creek management unit can be estimated using appropriation and future use reservation values for Water Right No. 5688-3 for Shipwreck Inn, Big Sioux Community Water, Chester Sanitary District, City of Madison, and Kingbrook RWS from Table 1 ($9.5+2,238.5+341.4+2,769+3,731=9,089.4$ ac-ft/yr), plus the estimated average annual irrigation usage (811.37 ac-ft/yr).

A simple hydrologic budget shows that the probable maximum development of the current appropriation (9,900.8 ac-ft/yr) exceeds the maximum estimated annual recharge to the Big Sioux: Northern Skunk Creek aquifer (9,779 ac-ft/yr) by 121.8 ac-ft/yr.

Observation Well Data:

Administrative Rule of South Dakota Section 74:02:05:07 requires that “the Water Management Board shall rely upon the record of observation well measurements to determine that the quantity of water withdrawn annually from the aquifer does not exceed the estimated average annual recharge of the aquifer.”

The SD DENR-Water Rights Program monitors seven observation wells completed into the Northern Skunk Creek management unit of the Big Sioux aquifer (Water Rights, 2013a). The hydrographs for the observation wells are shown in figures 1 through 7.

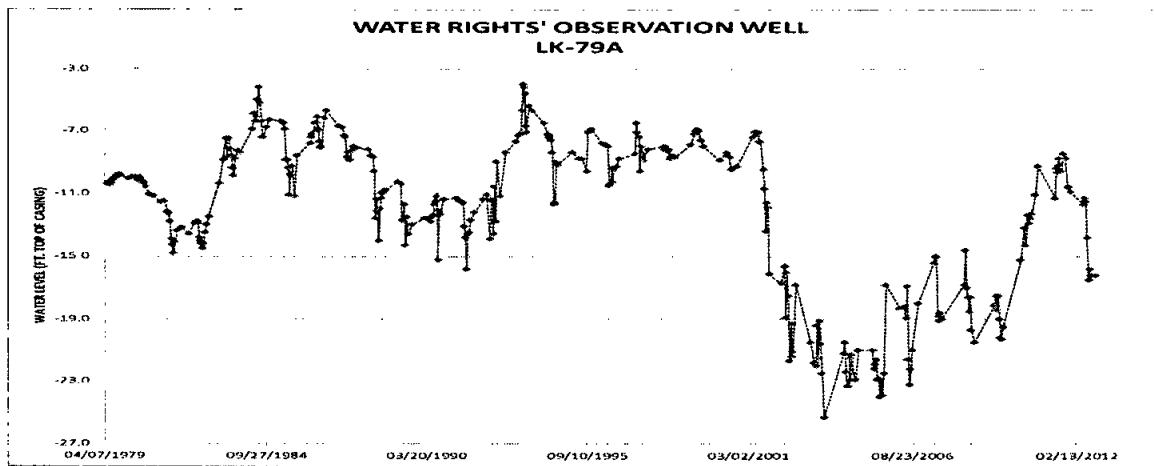


Figure 1- Hydrograph for observation well LK-79A, located in Sec. 9, T105N-R51W (Water Rights, 2013a)

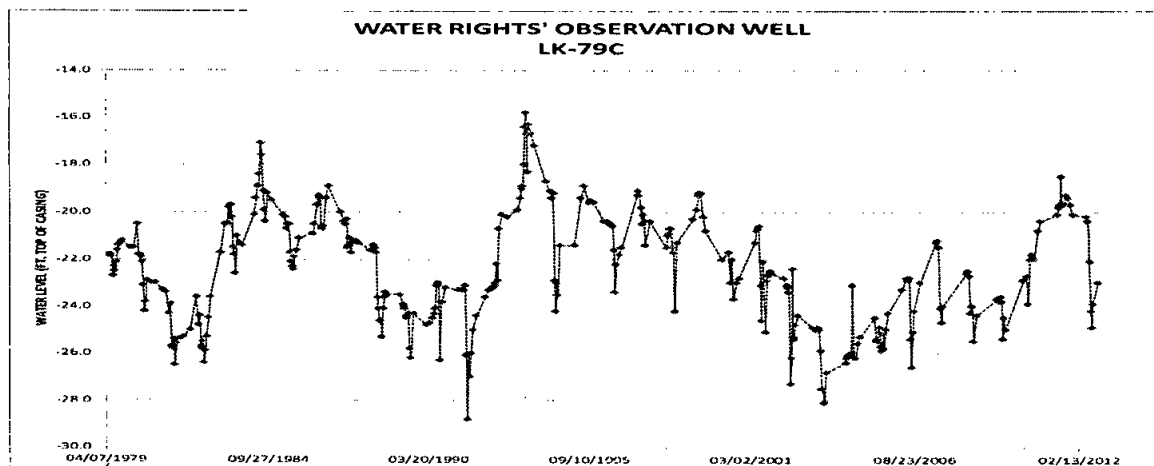


Figure 2- Hydrograph for observation well LK-79C, located in Sec. 16, T105N-R51W (Water Rights, 2013a)

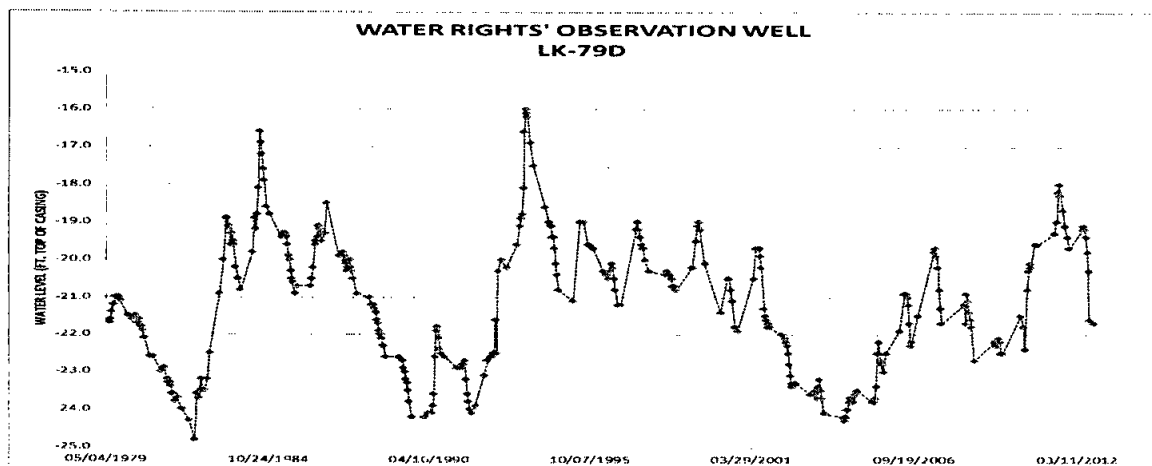


Figure 3- Hydrograph for observation well LK-79D, located in Sec. 16, T105N-R51W (Water Rights, 2013a)

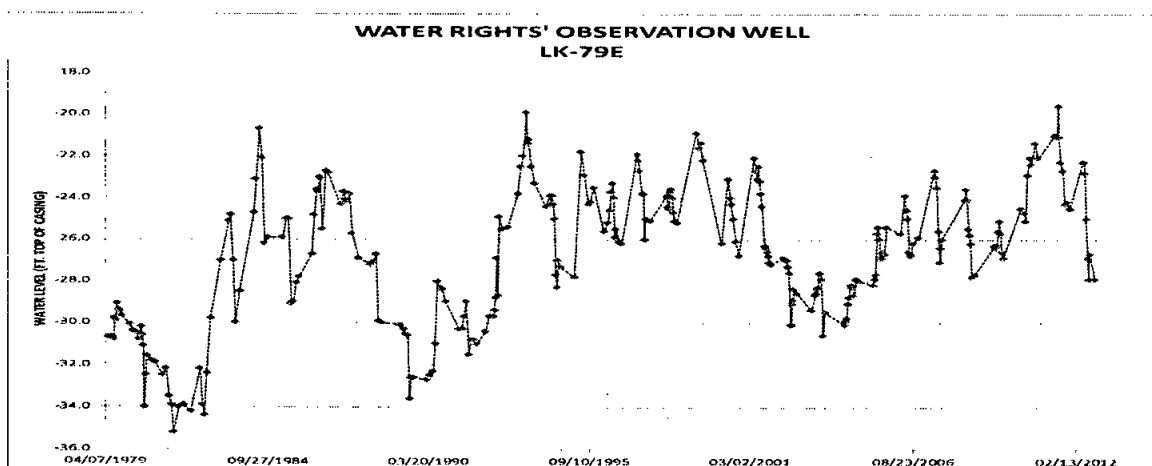


Figure 4- Hydrograph for observation well LK-79E, located in Sec. 19, T105N-R51W (Water Rights, 2013a)

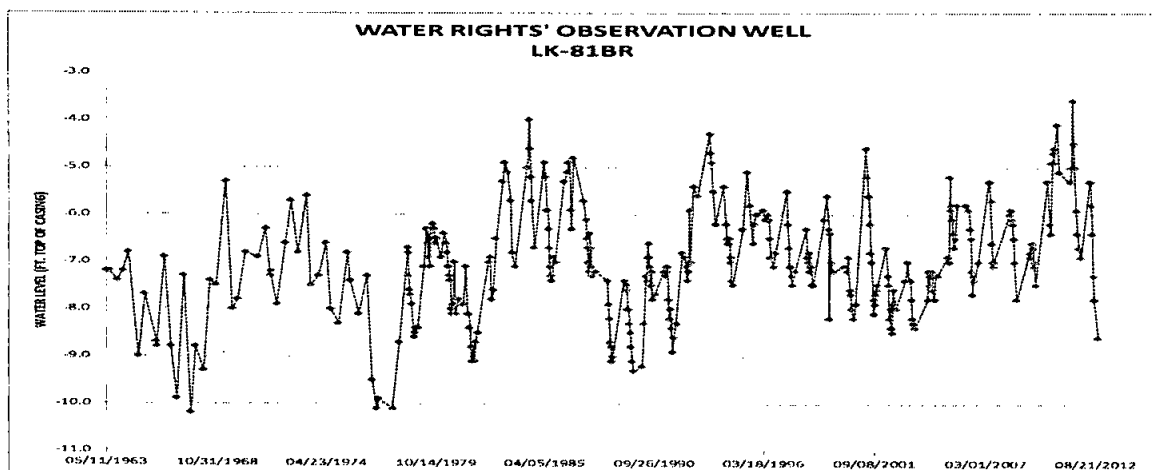


Figure 5- Hydrograph for observation well LK-81BR, located in Sec. 23, T105N-R51W (Water Rights, 2013a)

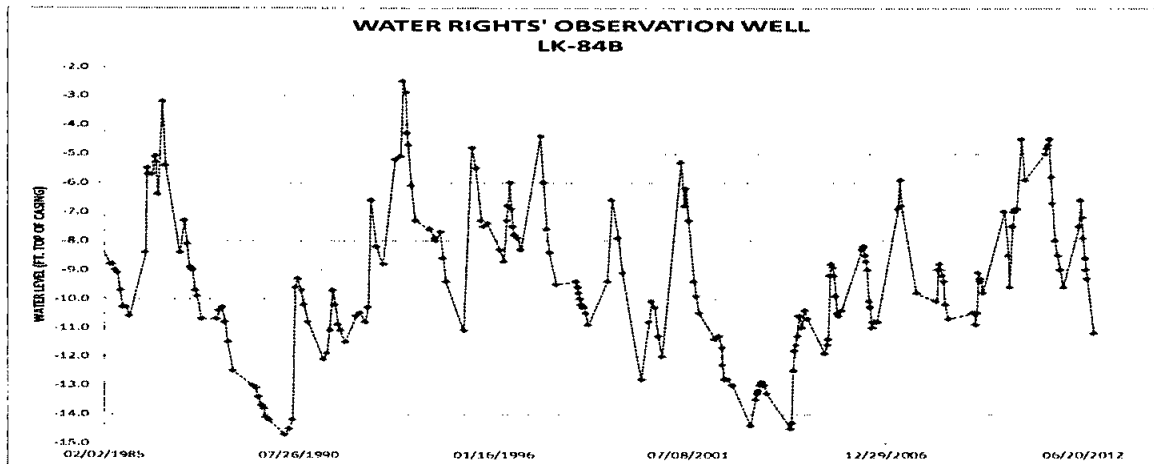


Figure 6- Hydrograph for observation well LK-84B, located in Sec. 8, T106N-R52W (Water Rights, 2013a)

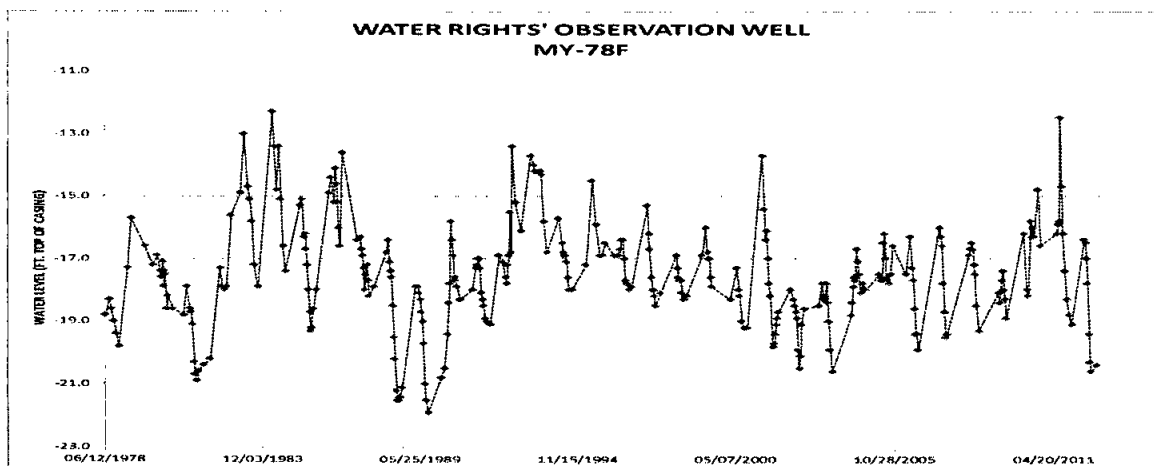


Figure 7- Hydrograph for observation well MY-78F, located in Sec. 29, T105N-R50W (Water Rights, 2013a)

The downward trending water levels shown in some of the hydrographs can be attributed to the observation wells' proximity to high capacity wells (i.e. well interference from nearby production wells for irrigation systems and rural water systems). In general, the water levels in the observation wells have held fairly stable over the period of record. The observation well data documents cyclic conditions of water levels, recharging during wet years and declining during dry years. Therefore at the current level of development, temporal well withdrawal is masked by climatic conditions, indicating that recharge to and natural discharge from the aquifer exceeds pumping. Recognizing that natural discharge can be captured for pumping, these hydrographs indicate that withdrawals from the aquifer do not exceed recharge to the aquifer.

EXISTING WATER RIGHTS:

The well sites proposed by this application are within one mile of eight wells for the City of Madison (Water Rights, 2013b). The two nearest of the city's wells are approximately 0.3 miles east and the rest are more than 0.5 miles away from the well sites proposed by this application. There is only one domestic well on file with the SD DENR-Water Rights Program within one

mile from the proposed well sites (Water Rights, 2013c). That domestic well is approximately 0.4 miles southwest of the proposed well sites and is likely no longer in use because it is located within the city limits of Madison.

The close proximity of the municipal wells and the fact that the aquifer can be fairly thin could lead to a situation where the cumulative impact of pumping several wells causes water level declines that cannot be attributed to any one single well. Even if the withdrawals from the aquifer do not exceed recharge to the aquifer, the cumulative impact of development in this concentrated area could reduce the amount of water available for existing users. If the water levels in existing wells decline to the extent that they can no longer pump at their “historically established” diversion rates, “shut-off” orders may be necessary on a priority basis.

As previously discussed, the hydrographs for observation wells completed into the Big Sioux: Northern Skunk Creek aquifer document the effects of pumping, however, these are minimal relative to climatic conditions. Observation well LK-79A is located near several water rights/permits for rural water system use and the associated hydrograph, shown in figure 1, documents temporal effects due to pumping; however, these are minimal compared to climatic conditions (Water Rights, 2013a). The large decline in 2001 is from the startup of a well belonging to Big Sioux Community Water that is less than 0.2 miles from the observation well. This amount of fluctuation is a worst case scenario for this aquifer. Therefore, there is a reasonable probability that any well interference from the proposed appropriation will not cause a significant impact and will also not adversely or unlawfully impair existing appropriative or domestic users.

SDCL 46-5-39

SDCL 46-5-39 allows the Water Management Board to authorize a temporary appropriation of the water from the unused portion of a future use permit; however, SD 46-5-40 states that the temporary use permit would be effective only until such time as the future use holder wants to use the water covered by the temporary permit. The temporary permit holder would then be given six months notice and the permit would be canceled at the end of six months.

Temporary use permits are intended to place water that is reserved by future use permits to beneficial use until the future use permit holder develops. There are two temporary use permits (Nos. 7131-3 and 7275-3) that have been approved from the Northern Skunk Creek management unit of the Big Sioux aquifer pursuant to SDCL 46-5-39. Temporary Use Permit No. 7131-3 authorizes the irrigation of 68 acres at a maximum diversion rate of 1.0 cfs and Temporary Use Permit No. 7275-3 authorizes the irrigation of 60 acres using wells and diversion authority granted under Water Right No. 3072-3. The maximum allowed water use by these two permits is 256 ac-ft/yr. There are four future use permits appropriating water from the Big Sioux: Northern Skunk Creek. These future use permits are shown in table 4. There is significantly more water reserved in future use than what is currently appropriated by the temporary use permits. Therefore, until the future use permits are developed water is available for this proposed appropriation as a temporary use permit.

Permit No.	Name	Use	AC-FT
747-3	City of Madison	MUN	1,033
5643-3	Kingbrook RWS	RWS	425
5689-3	Big Sioux Community Water	RWS	360
6834-3	Big Sioux Community Water	RWS	600
Total =			2,418
MUN= municipal, RWS= Rural Water System			

Table 4- Future use reservation from the BS: NSC (Water Rights, 2013b)

SPECIAL CONSIDERATIONS:

A note submitted with this application indicated the applicant currently uses two sump pumps to pump water from the sump pit in the basement of one of their buildings at a rate of 30 gallons per minute (gpm) and into the City of Madison storm sewer line. A planned HVAC project for that building would replace the sumps with four sandpoint type wells in the basement of the building and would withdraw water to be used for geothermal heating at a rate of 60 gpm. The water would be run through heat pumps and then be discharged into the city sewer system. These four wells would be in non-compliance with parts 1 and 4 of ARSD 74:02:04:24, and ARSD 74:02:04:27.

ARSD 74:02:04:24 :

ARSD 74:02:04:24 is the rule in the South Dakota Well Construction Standards that governs the location of a well. Part 1 states:

“Wells supplied by aquifers whose top is less than 100 feet deep may be located no closer than 150 feet horizontally from a pollution source, 75 feet horizontally from wastewater system components, or 30 feet horizontally from sewer lines, as defined by subdivision 74:02:04:20(46)”

The proposed wells may be within 30 feet horizontally of sewer lines. Part 4 of ARSD 74:02:04:24 states:

“All wells shall be located a minimum of 10 feet horizontally from permanent structures and overhead projections of the structure and 10 feet horizontally from overhead powerlines.

Spacing for wells for which water permits are required may be determined individually by the water management board.

Small removable structures or pump houses with roof access may be built over a well.”

Placing a well in a permanent structure would be in non-compliance with ARSD 74:02:04:24(4).

ARSD 74:02:04:27 :

ARSD 74:02:04:27 states:

“The top of the well casing may not terminate in a pit, room, or space that is located below the established ground surface. The top of the well casing or pitless adapter barrel, excluding the well cap or the pitless unit or pitless adapter cap, shall terminate at least 12 inches above the ground surface or pumphouse floor

and at least 24 inches above the high-water level where flooding occurs. A pitless unit or pitless adapter with an underground discharge may be used. Positive surface drainage in all directions away from the well shall be provided with a slope of at least one-fourth inch per foot for a distance of at least 10 feet. The well shall be located at least 10 feet from a pit, room, and other below-ground surface space used to locate a pressure tank, pump, and well control equipment. When existing wells located in pits are rehabilitated, the pit shall be eliminated.”

Installing several wells in a basement of a permanent structure would mean that the well casings terminate below the established ground surface and would be in non-compliance with the rule. Therefore, the Chief Engineer would need to issue a variance for ARSD 74:02:04:24(1) and (4), and ARSD 74:02:04:27 to the applicant for construction of the wells proposed by this application. If a variance is issued for ARSD 74:02:04:24 and ARSD 74:02:04:27 the wells would still need to be constructed according to the rest of the rules as laid forth in the South Dakota Well Constructions Standards.

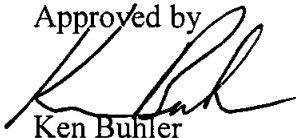
CONCLUSIONS:

1. The application proposes to appropriate water at a maximum diversion rate of 0.133 cfs for geothermal heating purposes with a discharge to the City of Madison sewer system.
2. The maximum estimated annual recharge to the Big Sioux: Northern Skunk Creek aquifer is 9,779 ac-ft/yr.
3. The average annual probable maximum withdrawal from the Big Sioux: Northern Skunk Creek aquifer if existing rights/permits are not abandoned and existing future use permits are fully developed is 9,900.8 ac-ft/yr.
4. There is not a reasonable probability that unappropriated water is available from the Big Sioux: Northern Skunk Creek aquifer to satisfy this proposed appropriation.
5. There is a reasonable probability that this proposed diversion will not adversely or unlawfully impair existing appropriative or domestic users.
6. SDCL 46-6-39 allows for the approval of a temporary use permit to allow water reserved by future use permits to be put to beneficial use until the future use holders develop from the reserved water.
7. There is a reasonable probability that water is temporarily available from the future use reservations for this proposed appropriation.
8. The Chief Engineer would need to issue a variance for non-compliance with ARSD 74:02:04:24 and ARSD 74:02:04:27 to the applicant for construction of the wells proposed by this application. However, if the variance was issued the well would still need to be constructed to the remainder of the South Dakota Well Construction Standards.



Adam Mathiowetz
SD DENR-Water Rights Program

Approved by



Ken Buhler
SD DENR-Water Rights Program

REFERENCES:

- Buhler, K.A. 2009. Report on Future Use Permit Application No. 7136-3. SD DENR-Water Rights Program. Joe Foss Bldg., Pierre, South Dakota.
- Carruthers, J. 2013. Personal Communication. Chester Sanitary District Contact Person. May 08, 2013.
- Hansen, D.S. 1986. Water Resources of Lake and Moody Counties, South Dakota: U.S. Geological Survey Water-Resources Investigations Report 84-4209.
- Hedges, L.S., Allen, J., and Holly, D.E. 1985. Evaluation of Ground-Water Resources Eastern South Dakota and Upper Big Sioux River, South Dakota and Iowa. Task 7: Ground Water Recharge. South Dakota DENR-Geological Survey, Vermillion, SD.
- Hedges, L.S., S.L. Burch, D.L. Iles, R.A. Barari, and R.A. Schoon. 1982. Evaluation of Ground-water Resources in Eastern South Dakota and Upper Big Sioux River, South Dakota and Iowa. Task 1: Bedrock Topography and Distribution, Task 2: Extent of Aquifers, Task 3: Ground-Water Storage, Task 4: Computerized Data Base, Final Report; U.S. Army Corps of Engineers Contract DACW 45-80-C-0185.
- Jensen, A.R. 2002. First Occurrence of Aquifer Materials in Lake County, South Dakota. SD DENR-Geological Survey Aquifer Materials Map 11. Vermillion, South Dakota.
- Water Rights. 2003-2013. "Non-irrigation Yearly Reports". SD DENR-Water Rights Program, Joe Foss Bldg., Pierre, South Dakota.
- Water Rights. 2013a. Observation Well Files, SD DENR-Water Rights Program, Joe Foss Bldg., Pierre, South Dakota.
- Water Rights. 2013b. Water Right/Permit Files, SD DENR-Water Rights Program, Joe Foss Bldg., Pierre, South Dakota.
- Water Rights. 2013c. Water Well Completion Reports, SD DENR-Water Rights Program, Joe Foss Bldg., Pierre, South Dakota.

AFFIDAVIT OF PUBLICATION

AFFIDAVIT OF PUBLICATION

RECEIVED

JUN 24 2013

WATER RIGHTS PROGRAM

STATE OF SOUTH DAKOTA }
County of Lake } ss.

Sue Anne Artko

..... of the City of Madison, County of Lake, State of South Dakota, being first duly sworn on oath, deposes and says:

The Madison Daily Leader is a daily legal newspaper of general circulation, printed and published in the City of Madison, in said County of Lake, by Hunter Publishing, Inc., Jon M. Hunter, publisher, and has been such legal newspaper during the times hereinafter mentioned; that the said Madison Daily Leader has been in existence as such legal newspaper for more than one year prior to the publication of the notice hereunto attached, and has during all of said time had, and how has, more than 200 bona fide subscribers; that the undersigned, the affiant, is the Secretary of the said newspaper, in charge of the advertising department thereof and has personal knowledge of all the facts stated in this affidavit and the advertisement headed

East River Electric Cooperative

Hearing to Review Future Use Water Permit #7829-3

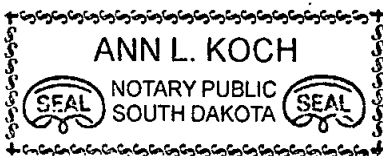
printed copy of which hereunto attached, was printed and published in the said newspaper for One successive weeks, once each week and on the same day of the week, on the following dates, to-wit:

On Wednesday , the 19th day of June , 20..... 13 ;
On , the day of , 20..... ;
On , the day of , 20..... ;
On , the day of , 20..... ;
On , the day of , 20..... ;
On , the day of , 20..... ;
On , the day of , 20..... ;
On , the day of , 20..... ;

That \$ 27.29 being the full amount of the fees for publication of the attached notice inures solely for the benefit of the publisher of the said newspaper; that no arrangement or understanding for a division thereof has been made with any other person and that no part thereof has been agreed to be paid to any other person whomsoever.

Sue Anne Artko

Subscribed and sworn to before me this 20th day of June , 20..... 13



Ann L. Koch
Notary Public, Lake County, South Dakota

NOTICE OF APPLICATION NO.

7829-3

Leader 1M

TO APPROPRIATE WATER

Notice is given that East River Electric Power Coop, Inc., c/o Dean Feistner, PO Box 227, Madison SD 57042 has filed an application for a water permit to appropriate 0.133 cubic feet of water per second from four wells to be completed into the Northern Skunk Creek Management Unit of the Big Sioux Aquifer (15 feet deep) located in the SE 1/4 NE 1/4 Section 7-T106N-R52W for geothermal heat use.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 7829-3 as a TEMPORARY USE PERMIT pursuant to SDCL 46-5-39 because 1) water is available to be appropriated as a temporary use permit until holders of future use permits fully develop water reserved from their future use permit, 2) the proposed diversion can be developed as a temporary use permit without unlawful impairment of existing rights, 3) the proposed use is a beneficial use 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 July 1, 2013.

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
Department of Environment and Natural Resources
Published once at the total approximate cost of \$27.29



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

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

denr.sd.gov

June 11, 2013

Daily Leader
PO Box 348
Madison SD 57042

ATTENTION: Legal Public Notice

Enclosed is a Notice on Application No. 7829-3 to Appropriate Water. Please publish the notice once on June 19, 2013. 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 East River Electric Power Coop, Inc, c/o Dean Feistner, PO Box 227, Madison SD 57042 (Ph # 605-256-4536).

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 DATES, CONTACT
THE NEWSPAPER RIGHT AWAY.**

June 11, 2013

East River Electric Power Coop Inc
Dean Feistner
PO Box 227
Madison SD 57042

Dear Mr. Feistner:

Water Permit Application No. 7829-3 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 Daily Leader printed at Madison SD (Ph # 605-256-4555). 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 June 19, 2013. 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. 7829-3 to Appropriate Water

Notice is given that East River Electric Power Coop, Inc., c/o Dean Feistner, PO Box 227, Madison SD 57042 has filed an application for a water permit to appropriate 0.133 cubic feet of water per second from four wells to be completed into the Northern Skunk Creek Management Unit of the Big Sioux Aquifer (15 feet deep) located in the SE 1/4 NE 1/4 Section 7-T106N-R52W for geothermal heat use.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 7829-3 as a TEMPORARY USE PERMIT pursuant to SDCL 46-5-39 because 1) water is available to be appropriated as a temporary use permit until holders of future use permits fully develop water reserved from their future use permit, 2) the proposed diversion can be developed as a temporary use permit without unlawful impairment of existing rights, 3) the proposed use is a beneficial use 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 July 1, 2013.

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

AUG 30 2013

East River Electric Power Coop Inc
Dean Feistner
PO Box 227
Madison SD 57042

Dear Mr. Feistner:

Enclosed is Water Permit No. 7829-3 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,

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

enclosures

7829-3

RECEIVED

JAN 17 2014

WATER RIGHTS
PROGRAM

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

Date January 15, 2014

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

FROM: East River Electric Power Cooperative, Inc.

(name)
PO Box 227, 211 South Harth Ave

(address)
Madison, SD 57042

(city, state, zip)

(605) 256-4536

(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. 7829-3 states that the water use system is to be constructed by July 1, 2018, and water is to be put to beneficial use by July 1, 2022
(date) (date)

The water use system was completed on January 14, 2014
(date)

Applying the water to beneficial use was completed on January 14, 2014
(date)

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

Dean Faistner, Project Coordinator
(signature)





**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

January 17, 2014

7829-3

Dean Feistner
East River Electric Power Cooperative Inc
PO Box 227
Madison SD 57042

Dear Mr. Feistner:

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 system authorized under Temporary Use Water Permit No. 7829-3.

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 completion of the project and the staff inspection has no bearing on the 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



**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

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

MAR 14 2022

7829-3

Dean Feistner
Facilities Coordinator
East River Electric Coop, Inc
PO Box 227
Madison SD 57042-0227

Dear Mr. Feistner:

Enclosed is Reissued Temporary Use Water Permit No. 7829-3. The temporary use water permit was reissued to reflect the system as developed. The reissued permit is based on a field investigation done by a staff engineer with our program. A copy of his map is also included.

For your information SDCL 46-6-27 requires that if in the future, the owner of an existing well, constructs a replacement well and does not plan to use the old well, the old well is considered abandoned and must be plugged.

The Reissued Temporary Use Water Permit is subject to the qualifications listed in the permit. If you have any questions, please contact our office.

Sincerely,

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

enclosures

**REISSUED SOUTH DAKOTA
TEMPORARY USE WATER PERMIT NO. 7829-3
AS DEVELOPED**

On July 1, 2013, on behalf of the Water Management Board, Temporary Use Water Permit No. 7829-3 was approved and issued to East River Electric Power Coop, Inc., PO Box 227, Madison SD 57042 authorizing construction of the water use system and placement of water to beneficial use.

1. On October 29, 2021, an investigation was conducted of the water use system described in Temporary Use Water Permit No 7829-3. The investigation found the system was developed as follows: Four sand point wells, 15 feet deep into the Big Sioux: Northern Skunk Creek Aquifer located approximately 710' W and 1,415' S of the NE corner of Section 7, T106N, R52W (SE ¼ NE ¼ Sec 7) Latitude 44.00374, Longitude -97.11219. The wells are located in the basement of the Operations Unit Building.

The temporary use permit holder is authorized to divert the developed diversion rate of 0.13 cubic feet of water per second (60 gpm) from the wells described above for geothermal heat use.

2. The water is used during the following described annual period: January 1 – December 31.
3. The date from which applicant may claim right is April 12, 2013.
4. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

QUALIFICATIONS

- The city of Madison, Kingbrook Rural Water System and Big Sioux Community Water have priority right to this water under future use withdrawal permits. This permit is issued as a temporary use permit pursuant to SDCL 46-5-39 and is subject to these prior rights if or when the future use permit holders fully develop the reserve water supply. The temporary use permit may be subject to cancellation when the water reserved under these future use permits is put to beneficial use. The Chief Engineer must provide the permit holder a six month notice prior to cancellation of this temporary use permit.
- A variance to the well construction standards is granted to provisions of Administrative Rules of South Dakota Chapter 74:02:04:24 regarding well distance from a sewer line and distance from a permanent structure and provisions of Chapter 74:02:04:27 regarding the well casings terminated below the established ground surface.

continued

Reissued Temporary Use Water Permit No. 7829-3

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- Except as set forth in the variance granted by qualification No. 2, the wells authorized by Temporary Use Permit No. 7829-3 shall be constructed by a licensed well driller and construction of the wells and installation of the pumps shall comply with Water Management Board Well Construction Rules, Chapter 74:02:04.

WATER MANAGEMENT BOARD

Eric Gronlund

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

MAR 14 2022

date



Report of Examination of Works and/or Application of Water to Beneficial Use For Temporary Use Water Permit No. 7829-3

I have this day, October 29, 2021, made a thorough examination of the water use system constructed by East River Electric Power Coop, Inc; PO Box 227, Madison, SD 57042 of Permit No. 7829-3, bearing the priority of April 12, 2013 authorizing the diversion of 0.133 cu. ft. per second of the waters of the Northern Skunk Creek Management Unit of the Big Sioux Aquifer for geothermal heat purposes, in Lake County.

Inspection contact & relationship **Dean Feistner, Facilities Coordinator**

A. Works used to divert the water:

Well Information:

- 1) Well Drilling Firm: Dave Putzke Well Drilling
- 2) No. of Wells 4
- 3) Depths 15 feet
- 4) Well logs available? No If no, explain in comments

Comments: **four shallow sand point wells placed in the basement of the permit holder's facility**

Casing:

- 1) Diameter 2 inches
- 2) Length 10 feet
- 3) Type steel

Screen:

- 1) Type slotted stainless steel
- 2) Length 5 feet
- 3) Static water level 5 feet

Pump: 4 Pumps

- 1) Capacity 15 gpm each

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

C. Compliance with Permit Requirements:

- 1) Permit qualifications being abided by Y
- 2) Exceptions to compliance are: **No well logs available for these sand point wells, pumps were installed by the project electrician Barger Electric**

D. Condition and Location:

1. The system is in good condition with the point(s) of diversion located as follows: the building where the four sandpoint wells are located from the NE corner of Section 7 T106N-52W, 710 feet west and 1415 feet south in the SE ¼ NE ¼, lat 44.00374, long -97.11219.
2. The works are capable of diverting and conveying to the place of use 0.13 cu. ft. per second of water which is to be used for geothermal heat use. Water has been put to beneficial use and the permit should be reissued for 0.13 cfs.

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

There are four (4) pumps for four (4) wells in the basement of the Operations Unit Building. The maximum amount of water for geothermal heat is 60 gpm. Some water is discharged into the sewer and some water is recycled depending on heating demand.

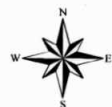
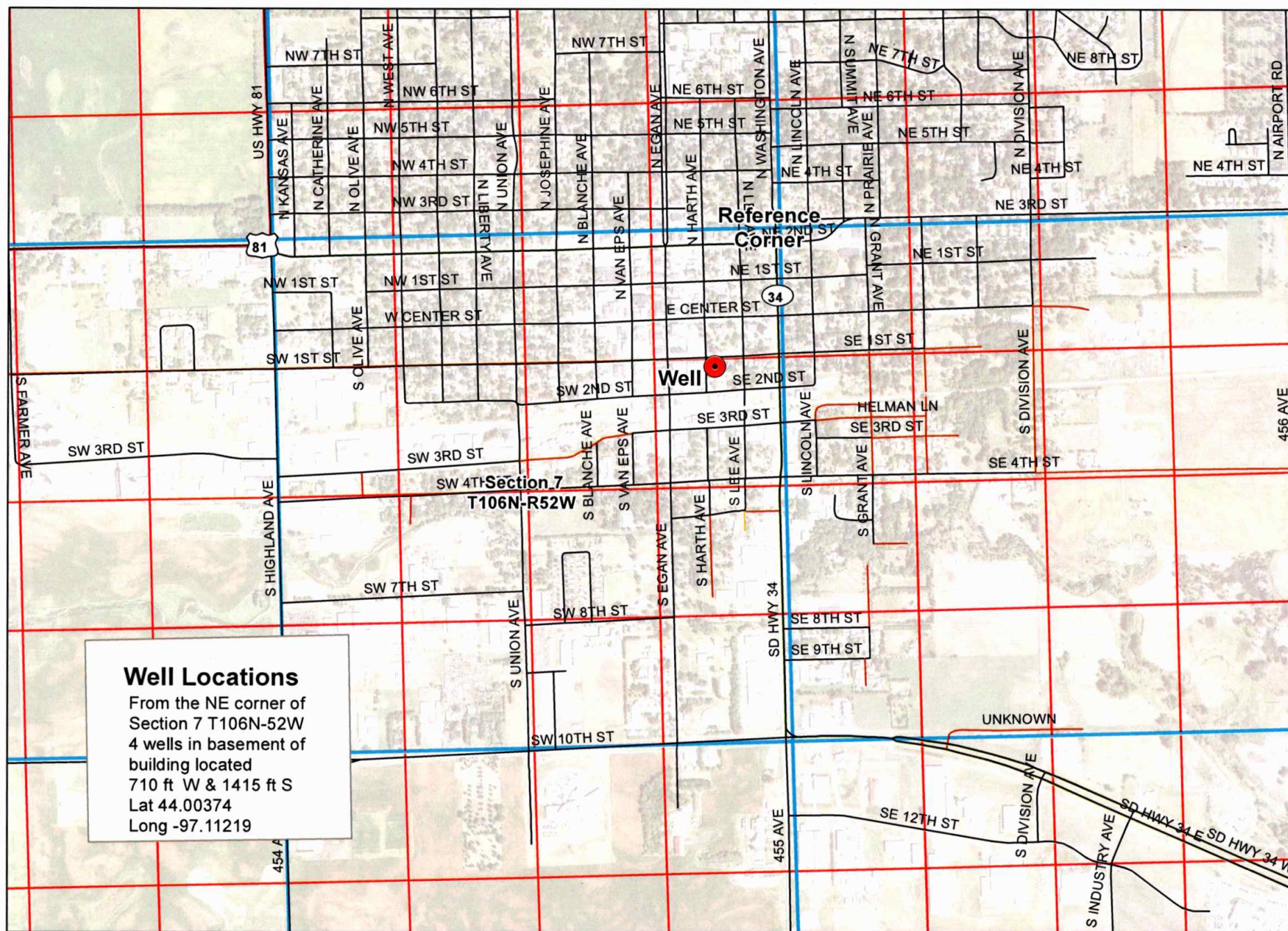


Darrell W DeBoer
Water Rights Inspector
DANR, Water Rights Program

Date report completed: October 30, 2021

Note: Water Permit No. 7829-3 was issued as a “Temporary Use Water Permit” and can not be licensed. The permit will be reissued to reflect the system as developed.

Genny



0 1,000 2,000 4,000 6,000 8,000 Feet