

WATER PERMIT NO. 7999-3

Name of Applicant: **Karl M Schenk**

Address: **44352 308th St, Mission Hill SD 57046**

Phone: **605 760-0363**

Amount of Water Claimed: **2.22 cfs**

Total Acres: **96 acres**

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

Water to be used for: **irrigation**

County: **Yankton**

Type of Waste Disposal System:

Location: **1 1/2 miles west of Mission Hill**

PRIORITY

Date Received: **4-11-14**

Application/License Fee: **\$ 950**

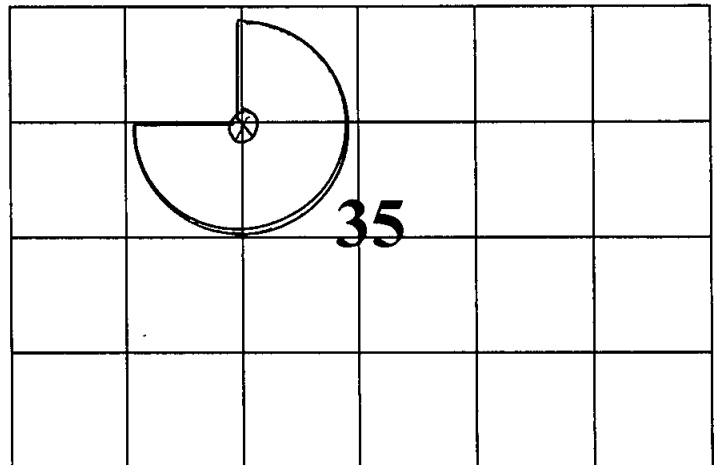
Corrected Application Received:

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

Remarks: **Requesting diversion rate greater than statutory limit**

Diversion Point: **center NW 1/4 Sec 35-T94N-R55W**

Land to be Irrigated: **S 1/2 NW 1/4, NE 1/4 NW 1/4 Sec 35-T94N-R55W**



Depth of Well: **180 feet deep**

Well Driller:

Remarks:

Type of Map: **aerial**

Prepared by:

Reviewed and the Number Assigned on: **4-14-14**

By: **Karen Schlaak**

Notice of Hearing - date to intervene: _____

Mail to:
PMB 2020
DENR - Water Rights
523 E Capitol Ave
Pierre, SD 57501-3182
ph. (605) 773-3352

No. 7999-3 (office use only)
Hydrologic Unit 10160011
Basin James River
Newspaper Press & Dakotan 319 Walnut
Yankton 57078-605-665-7811

APTS
#451
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Application For Permit To Appropriate Water For Irrigation

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

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

1. Name to Appear on Irrigation Permit Karl M. Schenk
(check one) ☒ Owner ☐ Tenant/lessee ☐ Owner's Legal Agent
(name and complete address if different than above name)
Mailing Address 44352 308th St. Mission Hill SD 57046
(Address) (City) (State) (Zip Code)
Home Phone _____ Cell 605-760-0363 Email KMSchenk@cabdiane.net
2. Amount of water claimed 2.22 *CFS or 1000 **GPM ***AF Total Acreage 96 ±
(*Cubic Feet per Second) (**Gallons per Minute) (***)Acre Feet - storage capacity of dam/dugout or annual use if applicable)
3. Source of water supply Lower James & Missouri aquifer
4. Location of point of diversion at the center of NW 1/4 section 35
(example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W)
94N-55W County Yankton
5. County or counties where water will be used Yankton
6. Annual period during which water is to be used April - October 31
7. List below each forty acre division, or lot, or fraction thereof and show number of acres to be irrigated in each.
(Attach sheet if more space is needed)

Land Description	Acres	Land Description	Acres
SW 1/4 NW 1/4	32		
SE 1/4 NW 1/4	32		
NE 1/4 NW 1/4	32		
Sec. 35 - T94N - R55W			

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

60^{hp} Electric motor well serving a 1280' Zimmatic
7 tower center pivot.
Requesting diversion rate greater than statutory limit

I, Karl M. Schenk, the applicant, certify that I have read this application, have examined the attached map, and that the matters stated are true.

Karl M. Schenk

**SOUTH DAKOTA
WATER PERMIT NO. 7999-3**

Date of first receipt of application April 11, 2014.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 7999-3 to Karl M Schenk, 44352 308th St, Mission Hill SD 57046 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. 7999-3 appropriates 1.78 cubic feet of water per second (cfs) from one well to be completed into the Lower James:Missouri Aquifer (180 feet deep) located in the center of the NW 1/4 Section 35 for irrigation of 96 acres located in the S 1/2 NW 1/4, NE 1/4 NW 1/4 Section 35; all in T94N-R55W.
2. The amount of the appropriation may not exceed 2 acre feet annually for each acre of land to which water is actually and beneficially applied for irrigation. The water is to be used during the following described annual period: April 1 – October 31.
3. The date from which applicant may claim right is April 11, 2014.
4. The date of approval of Permit No. 7999-3 is June 16, 2014.
5. One-fifth of the construction is to be completed on or before December 16, 2016.
6. All construction is to be completed on or before June 16, 2019.
7. Water is to be put to beneficial use on or before June 16, 2023.
8. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

QUALIFICATIONS

1. The well approved under this Permit will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner under this Permit shall control his withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
2. The well authorized by Permit No. 7999-3 shall be constructed by a licensed well driller and construction of the well and installation of the pump shall comply with Water Management Board Well Construction Rules, Chapter 74:02:04 with the well casing pressure grouted (bottom to top) pursuant to Section 74:02:04:28.
3. Pursuant to SDCL 46-5-6 which allows a greater diversion rate if the method of irrigation, time constraints, or type of soils so requires, Permit No. 7999-3 authorizes a maximum diversion rate of 1.78 cfs for the irrigation of 96 acres with an annual volume not to exceed 2 acre feet of water per acre per year.
4. This Permit is approved subject to the irrigation water use questionnaire being submitted each year.

WATER MANAGEMENT BOARD

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

JUL 07 2014

date



Supplemental Information

(type or print in ink)

1. Well Information - Proposed Construction

- a) Drill Hole Diameter 24" Depth 180
- b) Casing Type PVC Diameter 16 Thickness 3/4"
- c) Screen Type PVC Diameter 16 Thickness 3/4"
- d) Gravel Pack 1/2 - 3/8 rock Length of Gravel Pack 70'
- e) Depth to Top of Water Bearing Material 130
- f) Depth to Water (ground surface to water level) 90
- g) Distance to nearest existing domestic well:
- On applicant's property 1700' On property owned by others unknown
could be as close as 700'

2. Wastewater Disposal System Information

- a) Type of System (i.e. septic tank, drain field) _____
- b) System Capacity (gallons) _____ Year Constructed _____
- c) Connected to the City of _____ Sanitary System

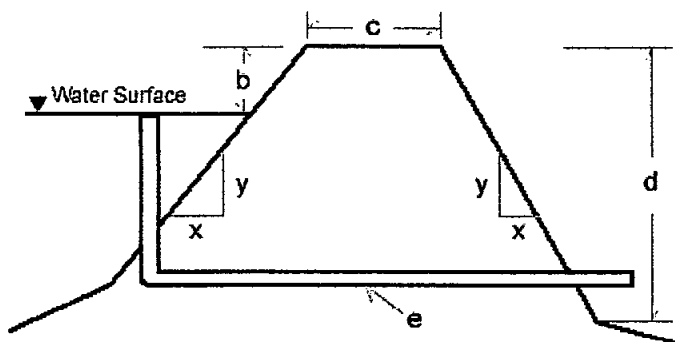
3. Dugout Information

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

4. Water Storage Dams

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

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



- b) Freeboard _____
- c) Crest Width _____
Crest Length _____
- d) Height _____
- e) Primary Outlet Capacity _____
If pipe, diameter _____
- f) Secondary Spillway Capacity _____
Spillway Width _____
- g) X & Y Slope (e.g. 3 to 1 is a typical slope)
Upstream _____
Downstream _____
- h) Surface Area of Impoundment _____
- i) Storage _____ Acre Feet
- j) Drainage Area Above Dam _____ Acres

"NORTH" MISSION HILL TWP.

RECEIVED

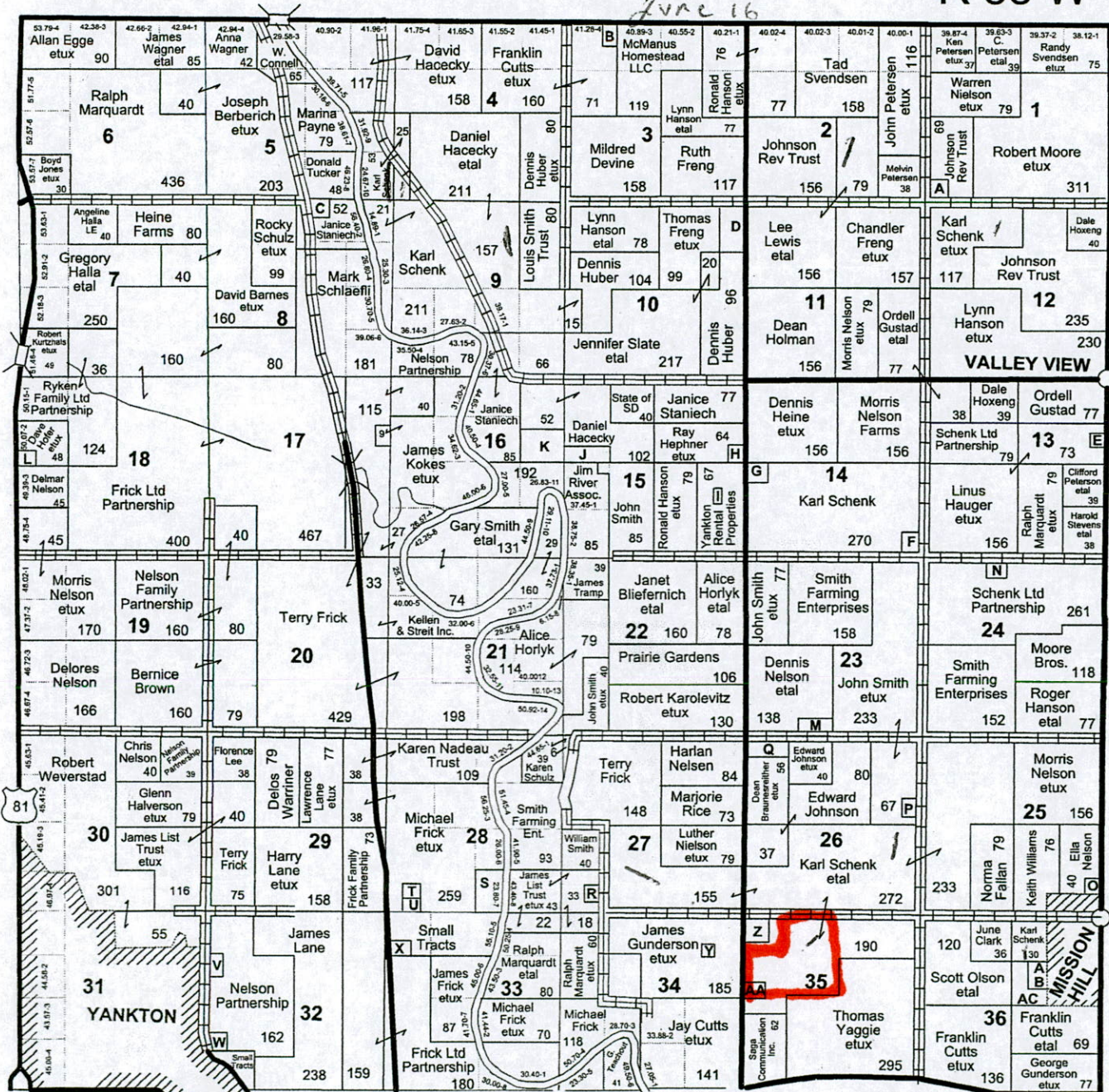
APR 11 2014

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PROGRAM

T 94 N

Land Owner

R 55 W

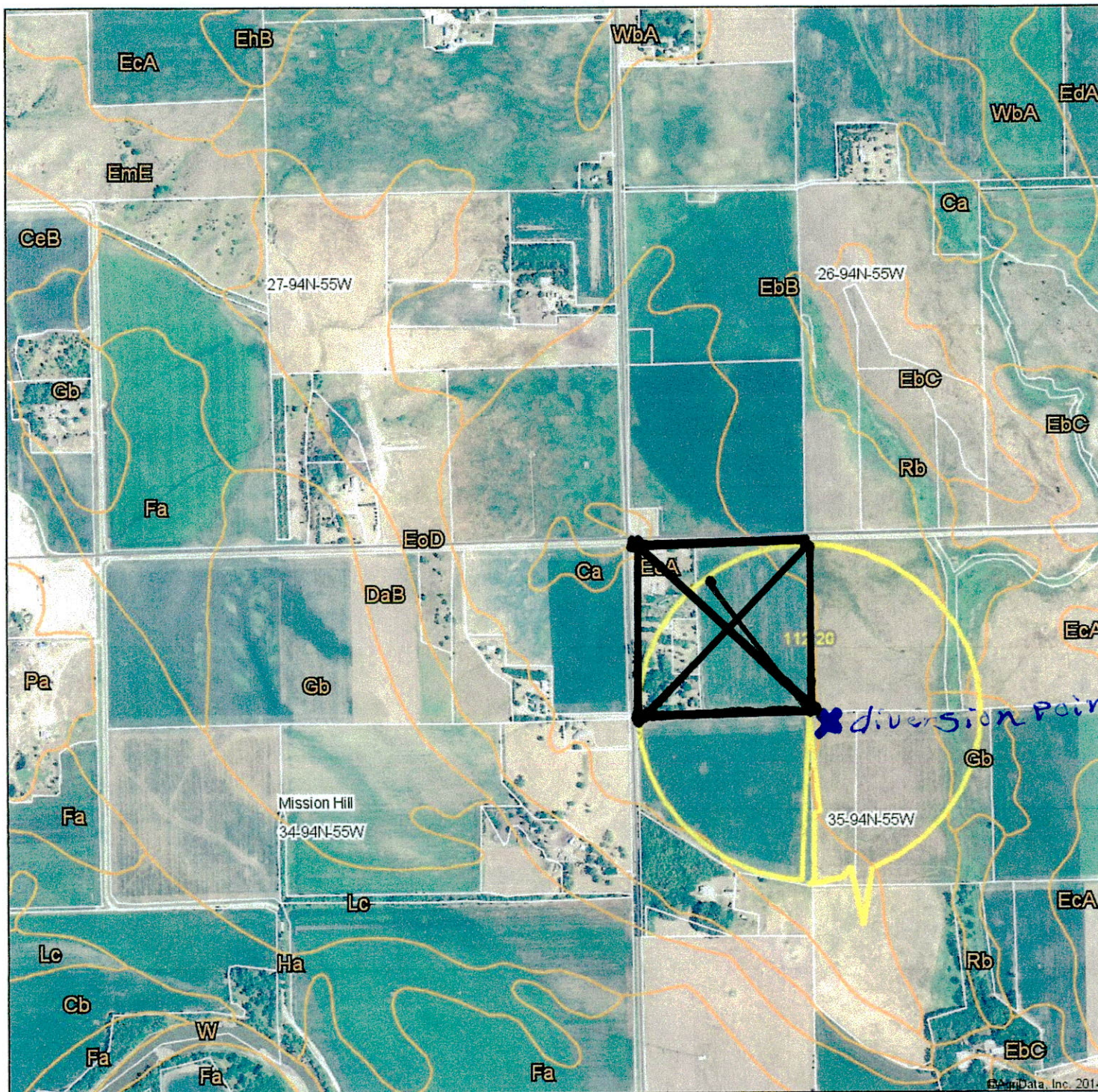


Section 1 A Myler Holmgren etux - 10
Section 3 B Dale Knodel etux - 8
Section 8 C Pamela Fritz etux - 18
Section 10 D Randy Freng etux - 19
Section 13 E Todd Quatier etux - 6
Section 14 F David Helgeson - 27
Section 15 H Elwyn Aase etux - 15
Section 16 K Michael Becvar etux - 17
Section 18 L Michael Andrews - 14
Section 23 M Dean Braunesreither etux - 18
Section 24 N Richard Adams etux - 9
Section 25 O Elmer Hasker - 12
Section 26 P Margaret Sarringer - 10
Section 27 R Gordon Olson etux - 6
Section 28 S Velma Lane etux - 24
Section 29 T Terry Stucky etux - 5
Section 30 U Pierre Montagne etux - 5
Section 31 V Timothy Shafer etux - 7
Section 32 W Myron Weinandt etux - 19
Section 33 X Joe Christensen etux - 7
Section 34 Y David Aune - 11
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Section 36 AB Karl Schenk - 8
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Aerial Map



X = diversion point at center of the NW 1/4 section 34-94N-55W

□ = not owned by the Applicant

Maps Provided By:



34-94N-55W
Yankton County
South Dakota

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map center: 42° 55' 24.06, 97° 19' 13.63

scale: 13354



4/1/2014

Field borders provided by Farm Service Agency as of 5/21/2008. Aerial photography provided by Aerial Photography Field Office.

RECEIPT

WATER RIGHTS PROGRAM

South Dakota Department of Environment and Natural Resources

Date 4/14, 20 14

RECEIVED OF Karl M Schenk 946 Wynstone Dr Jefferson SD 57038

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

Fee for Application for Permit No. <u>7999-3</u> to Appropriate Water, to construct and to put water to beneficial use	750	00
Fee for Application for Permit No. _____ to Appropriate Water for Future use		
Fee to retain Future Use Permit No. _____ after period of seven years.		
Fee for Inspecting Constructed Works, confirming beneficial use and issuing Water License No. <u>7999-3</u>	200	00
Fee for Filing Transfer Form _____		
Fee for _____		
Fee for Issuing New Well Driller's License No. _____ for C.Y. _____		
Fee for Renewal of Well Driller's License No. _____ for C.Y. _____		
Fee for Issuing Well Pump Installer's License No. _____ for C.Y. _____		
Fee for Renewal of Well Pump Installer's License No. _____ for C.Y. _____		
(Any Other Work Provided by Law)	TOTAL	950 00

No. **06827**

By Jeanne Goodman
Chief Engineer



**DEPARTMENT OF ENVIRONMENT
and NATURAL RESOURCES**

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



**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 7999-3, Karl M Schenk**

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. 7999-3, Karl M Schenk, 44352 308th Street, Mission Hill SD 57046.

The Chief Engineer is recommending APPROVAL of Application No. 7999-3 for 1.78 cfs because 1) there is reasonable probability that there is unappropriated water available for the applicant's proposed use, 2) the proposed diversion can be developed without unlawful impairment of existing rights, 3) the proposed use is a beneficial use and 4) it is in the public interest with the following qualifications:

1. The well approved under this Permit will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner under this Permit shall control his withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
2. The well authorized by Permit No. 7999-3 shall be constructed by a licensed well driller and construction of the well and installation of the pump shall comply with Water Management Board Well Construction Rules, Chapter 74:02:04 with the well casing pressure grouted (bottom to top) pursuant to Section 74:02:04:28.
3. Pursuant to SDCL 46-5-6 which allows a greater diversion rate if the method of irrigation, time constraints, or type of soils so requires, Permit No. 7999-3 authorizes a maximum diversion rate of 1.78 cfs for the irrigation of 96 acres with an annual volume not to exceed 2 acre feet of water per acre per year.
4. This Permit is approved subject to the irrigation water use questionnaire being submitted each year.

See report on application for additional information.

Jeanne Goodman, Chief Engineer
May 28, 2014

REPORT TO THE CHIEF ENGINEER

WATER PERMIT APPLICATION NO. 7999-3

Karl M Schenk

May 2, 2014

Water Permit Application No. 7999-3 proposes to appropriate groundwater at a maximum diversion rate of 2.22 cubic feet of water per second (cfs) from one well to be completed into the Lower James Missouri aquifer. The well is expected to be 180 feet deep and located in the center of the NW¼ of Section 35, T94N-R55W. Water will be used to irrigate 96 acres located in the S½ NW¼, NE¼ NW¼ of Section 35, T94N-R55W in Yankton County. The applicant is requesting a diversion rate greater than the statutory limit.

AQUIFER: Lower James Missouri aquifer (LJM)

HYDROGEOLOGY:

Aquifer materials in the area and depth of the proposed well site occur from approximately 80 to 120 feet below ground surface. Water levels in the aquifer in this area are expected to be approximately 70 to 80 feet below ground surface (Water Rights, 2014c).

The Lower James Missouri aquifer and the Missouri: Elk Point aquifer are a continuous groundwater bearing unit that has been separated into management units geographically at the bluff created by the Missouri River trench (Hedges and others, 1982). The Missouri: Elk Point aquifer, which is on the floodplain, is typically surficial and predominately under unconfined conditions. The Lower James Missouri aquifer, which is above the floodplain, is typically buried and predominately under confined conditions. Near the geographic boundary, as is the case of the proposed well site, the hydrogeologic conditions of the water bearing unit defines the aquifer. Because the aquifer at this location is expected to be buried by till and under predominately confined conditions, this well will be considered as completed into the Lower James Missouri aquifer (Water Rights, 2014c).

The Lower James Missouri aquifer is a glacial outwash consisting of fine sand to cobble gravel. The aquifer is hydraulically connected to the Choteau, Lower James Missouri: Scotland, Missouri: Elk Point, and Niobrara aquifers, and the James and Missouri Rivers. Water in the aquifer moves south and locally toward the James River (Bugliosi, 1986; Hansen, 1983; Lindgren and Hansen, 1990).

Hansen (1983) mapped a glacial aquifer in southern Hanson County and named it the Plum Creek aquifer. Bugliosi (1986) mapped a glacial aquifer in Yankton County and named the portion covered by till the Lower James Missouri aquifer. Lindgren and Hansen (1990) mapped a glacial aquifer in Hutchinson County and named it the Lower James Missouri aquifer. Based on elevations of the aquifer materials, the Plum Creek aquifer and the Lower James Missouri aquifer appear to be connected (SD Geological Survey, 2014). Water levels in these aquifers are at a similar elevation, further indicating a connection (Water Rights, 2014a). The chemical analyses of water in the Plum Creek aquifer and the Lower James Missouri aquifer document many constituents often at the similar concentrations, also indicating a connection (Hansen,

1983; Lindgren and Hansen, 1990). Furthermore, Lindgren and Hansen (1990) specifically state subsurface inflow to the Lower James Missouri aquifer occurs from Hanson County, implicating the Plum Creek aquifer is in hydraulic connection with the Lower James Missouri aquifer to an unknown degree.

Stonesifer (2013) constructed a composite map based on delineations of the Lower James Missouri aquifer produced from Bugliosi (1986), Lindgren and Hansen (1990), Hansen (1983), and Hedges and others (1982). Small portions of the aquifer were delineated in McCook and Clay Counties based on lithologic logs (SD Geological Survey, 2014). The Lower James Missouri aquifer underlies approximately 286,000 acres of Yankton, Hutchinson, Hanson, Clay, and McCook Counties. Applying an expected specific yield of 20 percent, the aquifer contains approximately 5.3 million acre feet (ac-ft) of water in storage.

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 from the aquifer and the potential for impairment of existing rights.

While the water bearing unit is continuous at this aquifer boundary, the proposed well is considered as completed into the Lower James Missouri aquifer due to hydrogeologic conditions. Therefore, water availability is only considered for the Lower James Missouri aquifer. Conversely, due to the continuous nature of the water bearing unit, existing rights in both the Lower James Missouri and Missouri: Elk Point aquifers must be considered.

WATER AVAILABILITY:

The probability of unappropriated water available from an aquifer can be evaluated by considering SDCL 46-6-3.1, which requires that 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. If the source of the groundwater is older or lower than the Greenhorn formation and will be used for a public water system, recharge and withdrawal does not need to be considered. Here, a public water system is not involved and the aquifer is above the Greenhorn formation. So, recharge and withdrawal must be considered.

Here, a public water system is not involved and the aquifer is above the Greenhorn formation. So, recharge and withdrawal must be considered. This will be considered by two methods: a hydrologic budget considering quantified values of recharge and withdrawal and an observation well analysis considering water levels.

Hydrologic Budget:

Recently, circuit courts have ruled that if average annual recharge is considered, average annual withdrawals should also be considered to determine if unappropriated water is available. Also, data must be presented to show that it is probable that the average annual recharge exceeds the

average annual discharge by at least the amount requested by the water permit application being considered (Memorandum Decision, April 29, 2005; Memorandum Decision, April 11, 2012).

Recharge:

Recharge to the Lower James Missouri aquifer occurs through infiltration of precipitation where the aquifer is at or near land surface in the James River flood plain, upward leakage from the bedrock aquifers, inflow from surface water, and inflow from the surrounding glacial aquifers (Bugliosi, 1986; Hansen, 1983; Lindgren and Hansen, 1990).

Hedges and others (1985) estimated recharge rate of the Lower James Missouri aquifer through regional flow-net analysis to be 1.5 inches per year (in/yr). In applying this total recharge rate estimate to the total area of the aquifer, recharge is estimated to be 35,800 ac-ft/yr.

The recharge rate to unconfined portions of the aquifer was estimated to be 3.9 inches per year (in/yr) from observation well analysis (Hedges and others, 1985). The unconfined portion of the aquifer was determined from lithologic logs, observation wells, and ArcMap 10.2 mapping software.

First, lithologic logs within the current delineation of the aquifer were analyzed to determine which recorded interval of aquifer materials is expected to be the top of the Lower James Missouri aquifer. Approximately 700 intervals of sand and/or gravel from approximately 220 well logs were analyzed (SD Geological Survey, 2014). While the Lower James Missouri aquifer is often expected to be greater than 20 feet thick and located 50 to 200 feet below ground surface, the unique characteristics of the outwash materials at each point required examining these logs individually. From 212 verified points, a 'raster' of the elevation of the top of the aquifer was created using ArcMap 10.2 mapping software.

Water levels from observation wells monitored by the Water Rights Program were used to determine the potentiometric surface of the Lower James Missouri aquifer. Water levels recorded nearest to October 1, 2013, were used (Water Rights, 2014a). From 34 water level points, a 'raster' of the elevation of the potentiometric surface of the aquifer was created using ArcMap 10.2.

Unconfined portions of the Lower James Missouri aquifer were determined by comparing the raster of the top of the aquifer to the raster of the potentiometric surface. Another 'raster' was created using ArcMap 10.2, mapping the unconfined and confined portions. The unconfined portion of the aquifer was determined to be 82,200 acres. Applying Hedges and others (1982) recharge rate, recharge is then estimated to be 26,700 ac-ft/yr to the aquifer.

Hedges and others (1985) suggest a recharge rate range of 0.15 to 0.60 in/yr to confined glacial aquifers in eastern South Dakota. If the entire area of the aquifer is assumed to be confined, recharge is then estimated to be 3,580 to 14,300 ac-ft/yr.

Discharge:

Discharge from the Lower James Missouri aquifer occurs through evapotranspiration in areas where the aquifer is at or near land surface, seepage to surface waters, and well withdrawals

(Bugliosi, 1986; Hansen, 1983; Lindgren and Hansen, 1990). Currently there are 133 water rights/permits appropriating water from the Lower James Missouri aquifer and three water rights/permits appropriating water from the Plum Creek aquifer. There are two pending water permit applications for the Lower James Missouri aquifer (Water Rights, 2014b).

While there are many domestic wells on file, many are no longer used as primary sources since rural water systems have been introduced in the area. Considering this, and the relatively small withdrawal of a domestic well, the annual quantity of water withdrawn due to domestic wells is not significant to the hydrologic budget of the aquifer (Water Rights, 2014c).

The amount of water that can be expected to be withdrawn by non-irrigation use water rights/permits at the current appropriation amount, which are all limited by diversion rate, can be estimated by assuming these water rights/permits pump at the maximum authorized diversion rate 60 percent of the time. This amounts to 1,323 ac-ft/yr. There are no non-irrigation water rights/permits authorized from the Plum Creek aquifer (Water Rights, 2014b).

The historic irrigation water use from water rights/permits authorized from the Lower James Missouri aquifer together with the Plum Creek aquifer is shown in Figure 1. The average irrigation pumpage over the period of record from Lower James Missouri aquifer water rights/permits is 2,528 ac-ft/yr. When also including water rights/permits from the Plum Creek aquifer, average irrigation pumpage is 2,616 ac-ft/yr. Since the beginning of 2013, 1,688 acres have been authorized and 424 acres are currently pending (Water Rights, 1980-2013). The expected use of irrigation water rights/permits is estimated to be the average pumpage reported over the entire period of record for water rights/permits authorized prior to 2013. Assuming an application rate of 10 inches per year, the recently permitted and pending applications are conservatively estimated to withdraw 1,760 ac-ft/yr.

Hydrologic Budget:

The average total withdrawal from the Lower James Missouri aquifer is estimated to be 5,699 ac-ft/yr. Hedges and others' (1982) flow net analysis determined a recharge estimate of 35,800 ac-ft/yr. Applying Hedges and others (1982) unconfined recharge rate to the determined unconfined area yields a recharge estimate of 26,700 ac-ft/yr. Applying Hedges and others' (1982) suggested confined recharge range and conservatively assuming the aquifer is fully confined yields a range from 3,580 to 14,300 ac-ft/yr. The actual recharge is expected to be much greater than the lowest end of this range. These recharge estimates are much greater than withdrawals. Therefore, there is a reasonable probability that unappropriated water is available from the Lower James Missouri aquifer to support the proposed appropriation.

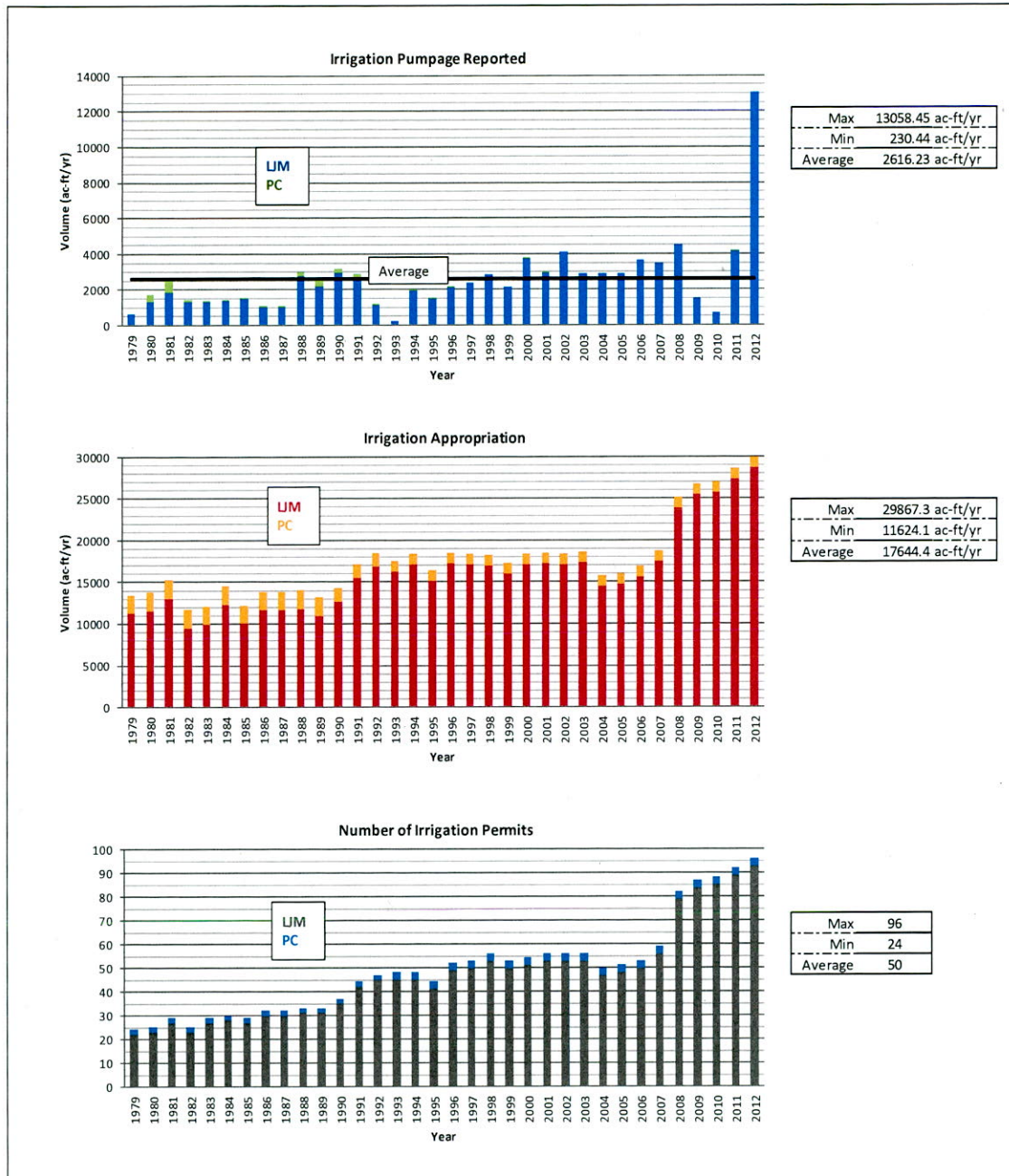


Figure 1: Historic irrigation water use from the Lower James Missouri aquifer including the Plum Creek aquifer (Water Rights, 1980-2013)

Observation Well Data:

Administrative Rule of South Dakota (ARSD) 74:02:05:07 states the Board will rely on the record of observation well measurements to determine that the annual withdrawals from the aquifer does not exceed the estimated average annual recharge.

The Water Rights Program monitors 31 observation wells completed into the Lower James Missouri aquifer. Currently hydrographs for 13 of the observation wells have a declining

trendline across the period of record. These decreasing trendlines can be explained in one of two ways.

Observation wells with decreasing trendlines in the northern portion of the aquifer have had recent development nearby, and the water level has yet to equilibrate. Also, the temporal effects of pumping are skewing the trendline downward. Observation wells HT-81D and HT-82C are examples of this situation. These wells are approximately three miles apart. Observation well HT-81D has a decreasing trendline, and HT-82C has an increasing trendline, as shown in Figure 2. There are seven water rights/permits within one mile of HT-81D. The nearest water rights/permits to HT-82C are more than two miles away. Overlays of the hydrographs of these wells shows that the only difference in water levels is from the effects of local pumping at HT-81D, as shown in Figure 3. And so, the decreasing trendline of these observation wells is attributed to the localized pumping and does not indicate overall annual water levels in the aquifer are decreasing.

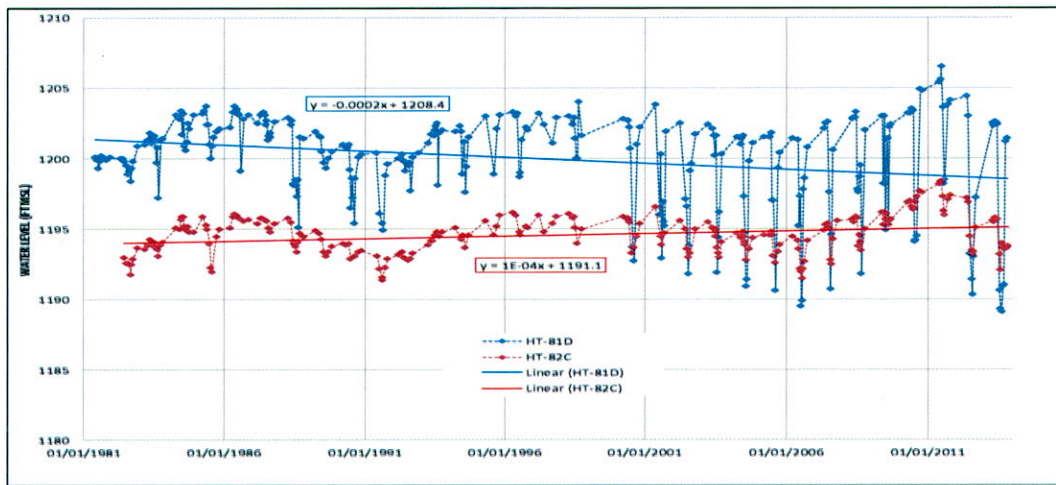


Figure 2: Hydrographs for observation wells HT-81D and HT-82C (Water Rights, 2014a)

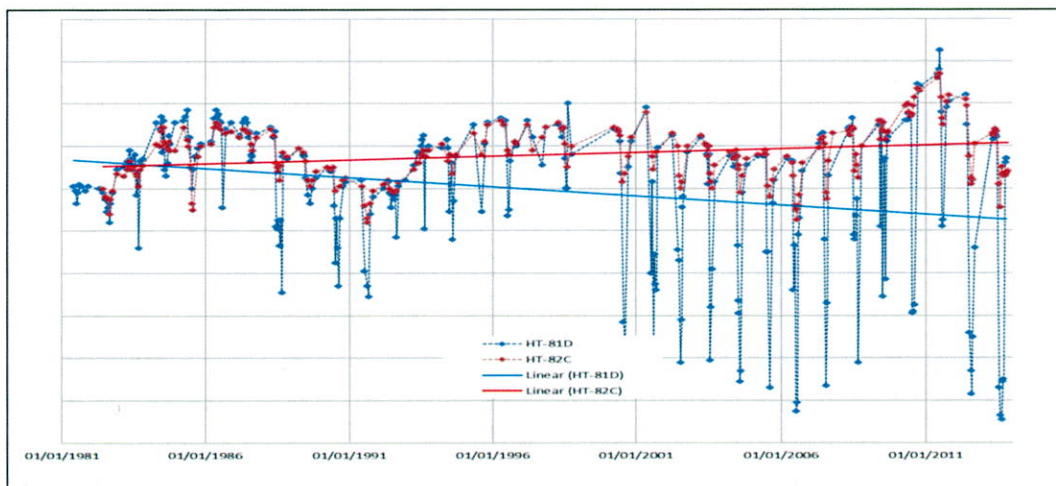


Figure 3: Overlay of observation wells HT-81D and HT-82C (Water Rights, 2014a)

Observation wells with decreasing trendlines in the southern portion of the aquifer have a significant hydraulic connection to the Missouri: Elk Point aquifer, which has a significant hydraulic connection to the Missouri River. Since the Gavins Point Dam was closed off, the Missouri River has entrenched approximately 10 feet (Cowman, 2014). As the Missouri River has entrenched, the water levels in the hydraulically connected aquifers have declined (Water Rights, 2014a). And so, the declining water levels in these observation wells is attributed to the entrenchment of the Missouri River and does not indicate overall annual water levels in the aquifer are decreasing.

The nearest observation well completed into the Lower James Missouri aquifer, YA-78I, is located approximately two miles southeast of the well site. The hydrograph for this observation well is shown in Figure 4. This hydrograph is typical of many observation wells recording water levels in the Lower James Missouri aquifer. Observation well data documents cyclic yet somewhat linear water levels. Temporal well withdrawal is evident but generally masked by climatic conditions, indicating that water is available for capture. Most Lower James Missouri aquifer observation wells record increasing trending water levels, indicating that withdrawals have not exceeded recharge. Observation wells with declining water level trendlines have been explained. Therefore, unappropriated water is available from the Lower James Missouri aquifer for the proposed appropriation.

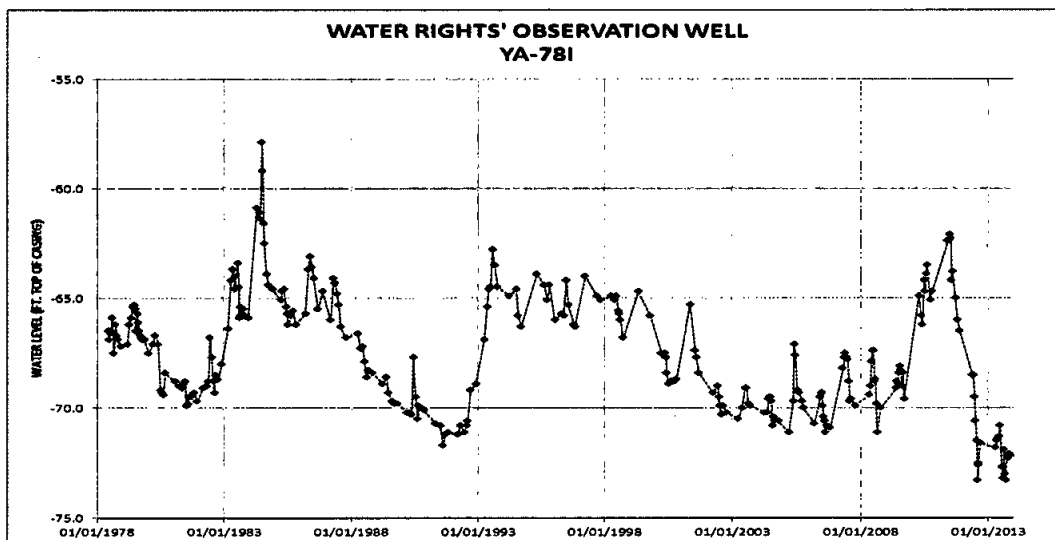


Figure 4: Hydrograph of observation well YA-78I (Water Rights, 2014a)

EXISTING WATER RIGHTS:

Due to the continuous nature of the water bearing unit, existing water rights in both the Lower James Missouri and Missouri: Elk Point aquifers must be considered. There are several wells completed into the water bearing unit in the area of the proposed well site. Within one mile, there are three water rights/permits, all of which are appropriating water from the Lower James Missouri aquifer. These are all authorized to the applicant. Also within one mile, there are four domestic wells on file. One well appears to be completed into the Lower James Missouri aquifer and the other three appear to be completed into the Missouri: Elk Point aquifer. One domestic well is in the name of the applicant. The nearest well on file is authorized by Water Permit No. 6917-3, Karl Schenk. This is located approximately 2,700 feet north. The nearest well on file not

in the name of the applicant is a domestic well under the name Guy Chaney. This well is located approximately 4,000 feet south (Water Rights, 2014b; Water Rights, 2014c).

The predominate confined conditions of the aquifer at the well site dictate that some drawdown due to pumping is expected (Water Rights, 2014a). The Water Management Board has consistently recognized that to place water to maximum beneficial use a certain amount of drawdown may occur. SDCL 46-6-6.1 does not require protection of artesian head pressure as a means of groundwater delivery. Therefore, nearby adequate wells defined by ARSD 74:02:20(7) are not expected to be adversely or unlawfully impaired due to the proposed diversion.

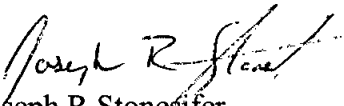
SDCL 46-5-6

Pursuant to SDCL 46-5-6, the diversion rate for an irrigation appropriation cannot be in excess of one cubic foot of water per second for every seventy acres, or "the equivalent thereof." The statute provides that the Water Management Board may allow a greater diversion if the method of irrigation so requires.

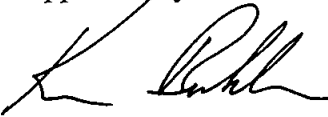
This water permit application proposes to divert at a rate of 2.22 cfs per 96 acres, equating to 1.62 cfs per 70 acres. No justification was provided, but it could be an operational requirement of an irrigation pivot system.

CONCLUSIONS:

1. Water Permit Application No. 7999-3 proposes to appropriate groundwater at a maximum diversion rate of 2.22 cfs from one well to be completed into the Lower James Missouri aquifer for the irrigation of 96 acres.
2. There is a reasonable probability that unappropriated water is available from the Lower James Missouri aquifer to supply the proposed appropriation.
3. The proposed diversion is not expected to adversely impact existing nearby adequate wells.
4. The application has requested an addition diversion rate in excess of one cfs per 70 acres.


Joseph R Stonesifer
SD DENR-Water Rights Program

Approved by


Ken Buhler
SD DENR-Water Rights Program

REFERENCES:

Bugliosi, E.F. 1986. Water Resources of Yankton County, South Dakota. Water Resources Investigations Report 84-4241. U.S. Geological Survey, Huron, South Dakota.

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- In the Matter of Water Permit Application No. 6431-3, by Phillip W. Hines v. SD Department of Environment and Natural Resources, South Dakota Sixth Judicial Court Civ. No. HU04-37 (Memorandum Decision, April 29, 2005)
- In the Matter of Water Permit Application No. 7239-3, by Hanson County Dairy v. Robert Bender and Stace Nelson, South Dakota First Judicial Court Civ. No. 11-54 (Memorandum Decision, April 11, 2012)
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RECEIVED

JUN 11 2014

WATER RIGHTS
PROGRAM

AFFIDAVIT OF PUBLICATION

YANKTON DAILY PRESS AND DAKOTAN

Department of Environment and Natural Resources
Joe Foss Building
523 East Capitol
Pierre, SD 57501-3182

STATE OF SOUTH DAKOTA
COUNTY OF YANKTON

KELLY HERTZ BEING FIRST DULY SWORN ON OATH DEPOSES
AND SAYS THAT HE IS THE MANAGING EDITOR OF, YANKTON
MEDIA INC, A CORPORATION, THE PRINTER AND THE PUBLISHER OF THE
YANKTON DAILY PRESS AND DAKOTAN, A LEGAL DAILY NEWSPAPER
PUBLISHED AND CIRCULATED IN THE CITY OF YANKTON, SAID COUNTY
AND STATE, AND ONE OF THE OFFICIAL NEWSPAPERS OF THE SAID
COUNTY OF FACTS STATED IN THIS AFFIDAVIT; THAT THE ANNEXED
Notice of Application No. 7999-3

TAKEN FROM THE PAPER, IN WHICH IT WAS LAST PUBLISHED IN THE
NEWSPAPER ON THE 6th DAY OF June 2014
THAT THE FULL AMOUNT OF THE FEE CHARGED FOR THE PUBLICATION
OF SAID **NOTICE** TO WIT \$26.81 ENSURES TO THE
BENEFITS OF THE PUBLISHER OF SAID NEWSPAPER AND THAT NO
AGREEMENT AND UNDERSTANDING FOR THE DIVISION THEREOF HAS
BEEN MADE WITH ANY OTHER PERSON, AND THAT NO PART THEREOF
HAS BEEN AGREED TO BE PAID TO ANY PERSON WHOMSOEVER.

PUBLISHED ON: 6/6/2014

FILED ON: 6/6/2014

SUBSCRIBED AND SWORN TO BEFORE ME THIS 6th DAY OF June 2014

NOTARY PUBLIC, SOUTH DAKOTA
MY COMMISSION EXPIRES 8/19/2015

Notice is given that Karl M Schenk, 44352 308th St, Mission Hill SD 57046 has filed an application for a water permit to appropriate 2.22 cubic feet of water per second (cfs) from one well to be completed into the Lower James:Missouri Aquifer (180 feet deep) located in the center of the NW 1/4 Section 35 for irrigation of 96 acres located in the S 1/2 NW 1/4, NE 1/4 NW 1/4 Section 35; all in T94N-R55W. The applicant is requesting a diversion rate greater than the statutory limit.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 7999-3 for 1.78 cfs 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 June 16, 2014.

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 \$26.81.



DEPARTMENT OF ENVIRONMENT
and NATURAL RESOURCES

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



May 28, 2014

Press & Dakotan
319 Walnut
Yankton SD 57078

ATTENTION: Legal Public Notice

Enclosed is a Notice on Application No. 7999-3 to Appropriate Water. Please publish the notice once on June 6, 2014. 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 Karl M Schenk, 44352 308th St, Mission Hill SD 57046 (Ph # 605-760-0363).

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

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



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

May 28, 2014

Karl M Schenk
44352 308th St
Mission Hill SD 57046

Dear Mr. Schenk:

Water Permit Application No. 7999-3 for irrigation use has been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice has been sent to the Press & Dakotan printed at Yankton SD (Ph # 605-665-7811). 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.

NOTICE OF APPLICATION NO. 7999-3 to Appropriate Water

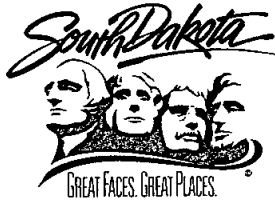
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Published once at the total approximate cost of _____.



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JUL 07 2014

Karl M Schenk
44352 308th St
Mission Hill SD 57046

Dear Mr. Schenk:

Enclosed is Water Permit No. 7999-3 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

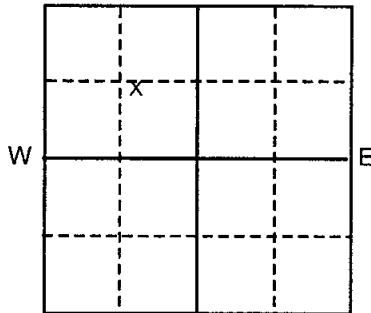
enclosures

SOUTH DAKOTA WATER WELL COMPLETION REPORT

11-02

Location SE ¼ NW ¼ Sec 35 Twp 94N Rg 55WCounty Yankton

North

Please mark well
location with an "X"

Well Completion Date

4-10-2015

1 Mile

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

1,000.0 ft. from septic tank (identify source)

PROPOSED USE:

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

METHOD OF DRILLING:

Reverse Rotary

CASING DATA:

☐ Steel ☒ Plastic ☐ Other

If other describe

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
160.0 LB/FT	16.00 IN	0.0 FT	100.0 FT	28.00 IN
LB/FT	IN	FT	FT	IN
LB/FT	IN	FT	FT	IN

GROUTING DATA:

Grout Type	No. of Sacks	Grout Weight	From	To
Bentonite	77	9.4 Lb/gal	0.0 Ft	77.0 Ft
		Lb/gal	Ft	Ft

Describe grouting procedure

Tremie Pipe & Grout Pump

SCREEN:

☒ Perforated pipe ☐ Manufactured
Diameter 16.00 Inches Length 40.0 FeetMaterial PVCSlot Size 80 Set From 100.0 Feet to 140.0 Feet

Other information

WAS A PACKER OR SEAL USED?

☐ Yes ☒ No

If so, what material?

Describe packer(s) and location

DISINFECTION: Was well disinfected upon completion?

☒ Yes, How? Chlorine Tablets
☐ No, Why Not?
Lab to which water
quality sample sent for analysisWell Owner: Karl Schenk

Business Name:

Address: 44352 308th St.City, State, Zip: Mission Hill SD 57046

WELL LOG:

FORMATION	DEPTH	
	FROM	TO
Top Soil	0	3
Clay	3	90
Sand some Coal	90	105
Gravel	105	170
Clay	170	176

STATIC WATER LEVEL 72.0 FEET

If flowing: closed in pressure _____ PSI

GPM flow _____ through _____ Inch pipe

Controlled by ☐ Valve ☐ Reducers ☐ Other _____

Reduced flow rate _____ GPM

Can well be completely shut in?

WELL TEST DATA:

☒ Pumped Describe: Turbine Pump and Motor
☐ Bailed

☐ Other

Pumping Level Below Land Surface

74.0 Ft. After 3.0 Hrs. pumped 1,300.0 GPM

_____ Ft. After _____ Hrs. pumped _____ GPM

If pump installed, pump rate: _____ GPM

REMARKS

This well was drilled under license # 805 and this report is true and accurate.Drilling firm: Sam Heine Well Company, LLC

Signature of License Representative:

Signature of Well Owner or Equitable Property Holder:

RECEIVED

JUN 12 2015

Date: 4-10-15WATER RIGHTS
PROGRAM



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

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

7999-3

June 13, 2017

Karl M Schenk
44352 308th St
Mission Hill SD 57046

Dear Mr. Schenk:

The Department of Environment and Natural Resources (DENR) has received information alleging the irrigation system located in the NW 1/4 Section 35-T94N-R55W had direct water spraying on to neighboring property. This irrigation system is covered by Water Permit No. 7999-3.

It is common for center pivots to have stops which can be engaged to shut off the operation of the end gun when the pivot nears a road. Please take steps to insure end gun stops are functioning properly so there is not direct overspray on to the road.

A water right holder is not allowed to waste water or operate an irrigation system in violation of state water law, which includes end gun overspray upon lands, including roadways, not authorized by the water right. Application of water to a roadway or unauthorized lands is a waste and unreasonable use of water pursuant to SDCL 46-1-4.

If you don't believe this irrigation system is causing the overspray, or if you have any questions, please contact me at (605) 773-3352 or by email at eric.gronlund@state.sd.us.

Thank you for your cooperation,

A handwritten signature in black ink that reads "Eric Gronlund".

Eric Gronlund
Water Rights Program, DENR
605 773-3352

Gronlund, Eric

From: McMath, Genny
Sent: Wednesday, July 12, 2017 10:25 AM
To: Gronlund, Eric
Cc: Goodman, Jeanne
Subject: Complaint call

Caller: **Travis Wishon; phone # 660-4335**

Travis called and wants to talk to someone about what could be considered pivot overspray. Area is in Mission Hill Township in Yankton County.

He said one of Karl Schenk's pivots has been spraying 60 feet onto his (Travis's) property. It is ruining his trees. He said Karl has been encroaching on his property for a long time.

Mr. Wishon says he has video showing the pivot spraying his property..

Please call Mr. Wishon – he was told you were in a meeting but would be calling him back.

7999.3 Karl Schenk
direct spraying on to neighboring property