

WATER PERMIT NO. 7937-3

Name of Applicant: Moody County Dairy LP

Address: 3800 W Technology Circle, Sioux Falls SD 57106

Phone: 605 361-3352

Amount of Water Claimed: 0.22 Total Acres: NA

Source of Water Supply: groundwater (one well)

Water to be used for: commercial County: Minnehaha

Type of Waste Disposal System:

Location: 7 miles north of Garretson

PRIORITY Date Received: 12-26-13 Application/License Fee: \$ 950

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

Remarks: Based on inspection of existing permits by Lynn Beck

Diversion Point: NW 1/4 SE 1/4 Sec 9-T104N-
R47W

Land to be Irrigated:

			9		

Depth of Well: 150 feet deep

Well Driller: Joel Minett Well Drilling

Remarks:

Type of Map: aerial

Prepared by:

Reviewed and the Number Assigned on: 12-27-13

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>7937-3</u> (office use only) Hydrologic Unit <u>10170203</u>
	Basin <u>Sioux River</u>
	Newspaper <u>Argus Leader</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 Moody County Dairy LP(check one) ☐ Owner ☐ Tenant/lessee ☐ Owner's Legal Agent

(name and complete address if different than above name)

Mailing Address 3800 W. Technology Circle Sioux Falls SD 57106
(Address) (City) (State) (Zip Code)Home Phone 605-361-3352 Cell 605-351-9216 Email LDBOROWINE@gmail.com2. Amount of water claimed 0.22 *CFS or 100 **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 groundwater4. Location of point of diversion one well in the NW1/4 SE1/4 Section 9-T104N-R47W County Minnehaha

(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 Minnehaha6. Annual period during which water is to be used January 1 - December 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)

I, [Signature], the applicant, certify that I have read this application,
have examined the attached map, and that the matters stated are true.

2012-09

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

SOUTH DAKOTA
WATER PERMIT NO. 7937-3

Date of first receipt of application December 26, 2013.

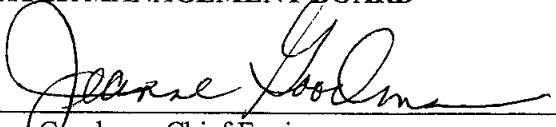
The Chief Engineer on behalf of the Water Management Board issues Water Permit No. 7937-3 on March 24, 2014 for Moody County Dairy LP, 3800 W Technology Circle, Sioux Falls SD 57106 authorizing the construction of the water use system and the placing of water to beneficial use subject to the following limitations, conditions and qualifications:

1. Water Permit No. 7937-3 appropriates 0.22 cubic feet of water per second from one well to be completed into the Pleistocene Series: Unknown Aquifer (150 feet deep) located in the NW 1/4 SE 1/4 Section 9-T104N-R47W.
2. The water appropriated shall be used for the purpose of commercial use in a dairy operation 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 from which applicant may claim right is December 26, 2013.
5. One-fifth of the construction is to be completed on or before September 24, 2016.
6. All construction is to be completed on or before March 24, 2019.
7. Water is to be put to beneficial use on or before March 24, 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

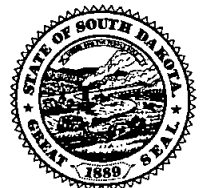
1. The well approved under this Permit will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner under this Permit shall control his withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
2. Permit No. 7937-3 is subject to compliance with requirements of the Department's Water Pollution Control Permit issued pursuant to SDCL 34A-2-36 or 34A-2-112 for concentrated animal feeding operations.
3. Permit No. 7937-3 is subject to compliance with all existing and applicable Water management Board Rules including but not limited to:
 - a) Chapter 74:54:01 Ground Water Quality Standards,
 - b) Chapter 74:54:02 Ground Water Discharge Permit,
 - c) Chapter 74:51:01 Surface Water Quality Standards,
 - d) Chapter 74:51:02 Uses Assigned to Lakes,
 - e) Chapter 74:51:03 Uses Assigned to Streams, and
 - f) Chapter 74:52:01 through 74:52:11 Surface Water Discharge Provisions

WATER MANAGEMENT BOARD

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

APR 24 2014

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 ____ Have test holes been drilled ☐ Yes ☐ No Drilled by _____
(if yes, please provide copies of logs)

b) If existing wells, how many 1 Provide copy of log(s), if available. Drilled by Joel Minett Well Drilling

c) Well Depth 150 Depth to Top of Water Bearing Material 142 Depth to Water from Surface 26

d) Distance to nearest existing domestic well:

On applicant's property _____ On property owned by others _____

2. Wastewater Disposal System Information

a) Type of System (i.e. septic tank, drain field) _____

b) System Capacity (gallons) _____ Year Constructed _____

c) Connected to the City of _____ Sanitary System

3. Dugout Information

a) Surface Dimensions _____ Depth _____

b) Depth to water (ground surface to water level) _____

4. Water Storage Dams

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

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

b) Freeboard _____

c) Crest Width _____

Crest Length _____

d) Height _____

e) Primary Outlet Capacity _____

If pipe, diameter _____

f) Secondary Spillway Capacity _____

Spillway Width _____

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

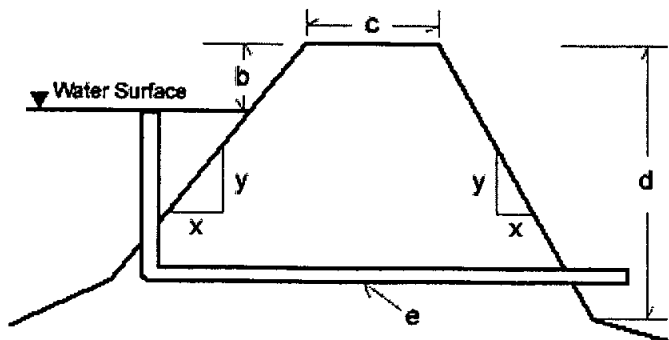
Upstream _____

Downstream _____

h) Surface Area of Impoundment _____

i) Storage _____ Acre Feet

j) Drainage Area Above Dam _____ Acres

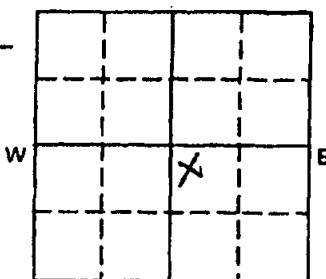


SOUTH DAKOTA WATER WELL COMPLETION REPORT

11-02

Location NW 1/4 SE 1/4 Sec 9 Twp 104 Rg 47County
Minnehaha

North

Please mark well
location with an "X"

Well Completion Date

4-10-07

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

1000 ft. from septic tank (identify source)

PROPOSED USE:

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

METHOD OF DRILLING:

Air driven

CASING DATA:

☒ Steel ☐ Plastic ☐ Other
 If other describe _____

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
LB/FT	IN	FT	FT	IN
<u>19.6</u>	<u>6</u>	<u>0</u>	<u>146</u>	<u>6</u>

GROUTING DATA:

Grout Type	No. of Sacks	Grout Weight	From	To
		Lb/gal	FT	FT
<u>Bentonite</u>				

Describe grouting procedure

Driven through bentonite

SCREEN:

☐ Perforated pipe ☒ Manufactured
 Diameter 6 inches Length 5 Feet
 Material Stainless
 Slot Size 40 Set From 145 Feet to 150 Feet
 Other information K packer

WAS A PACKER OR SEAL USED?

☒ Yes ☐ NoIf so, what material? rubber

Describe packer(s) and location

DISINFECTION: Was well disinfected upon completion?

☒ Yes, How? Chlorination☐ No, Why Not?Lab sample sent to for
water quality analysis

Well Owner:

Scott Helmer

Business Name:

Helmers Dairy

Address:

48660 - 246 St

City, State, Zip:

Garretson S.D.

WELL LOG:

FORMATION	DEPTH	
	FROM	TO
<u>Black Dirt</u>	<u>0</u>	<u>3</u>
<u>Yellow Clay</u>	<u>3</u>	<u>21</u>
<u>Dry sand</u>	<u>21</u>	<u>24</u>
<u>Yellow Clay</u>	<u>24</u>	<u>42</u>
<u>Blue Clay</u>	<u>42</u>	<u>65</u>
<u>Sandy Gravel</u>	<u>65</u>	<u>76</u>
<u>Blue Clay</u>	<u>76</u>	<u>142</u>
<u>Sandy Gravel</u>	<u>142</u>	<u>150</u>

STATIC WATER LEVEL

26

FEET

If flowing: closed in pressure

PSI

GPM flow

through

Inch pipe

Controlled by

☐ Valve☐ Reducers☐ Other

Reduced flow rate

GPM

Can well be completely shut in?

WELL TEST DATA:

☒ Pumped Describe:☐ Bailed☐ Other

Pumping Level Below Land Surface

80

Ft. After

10

Hrs. pumped

50

GPM

Ft. After

Hrs. pumped

GPM

If pump installed, pump rate:

GPM

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This well was drilled under license #

632

And this report is true and accurate.

Drilling firm:

Joel Minett Well Drilling

Signature of License Representative:

Joel Minett

Signature of Well Owner or Equitable Property Holder:

Date:

RECEIPT

WATER RIGHTS PROGRAM

South Dakota Department of Environment and Natural Resources

Date 12/27, 20 13

RECEIVED OF Moody Co Dairy LP 3800 W Technology Cr # 201 Sioux Falls SD 57106

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

Fee for Application for Permit No. <u>7937-3</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>7937-3</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. **06568**

By James Goodman
Chief Engineer

November 27, 2013

Lynn Boadwine
Moody County Dairy LP
48772 246th Street
Garretson SD 57030

Dear Mr. Boadwine:

Enclosed is a partially completed application form and instruction sheet. You will not have to provide a map as stated in item 2.) on the instruction sheet. I have already prepared one. The enclosed copy is yours to keep or to make any corrections/additions and return with the application.

An inspection of Permit Nos. 6803-3 and 6894-3 found additional water use from a source not authorized by either permit. Permit No. 6803-3 authorizes 0.33 cubic feet of water per second (cfs) or 150 gallons per minute (gpm) from two wells into the Pipestone Creek aquifer. Two 70+ foot wells were constructed and one was abandoned and plugged due to excessive drawdown. Permit No. 6894-3 authorizes 0.33-cfs or 150-gpm from one well (360' deep) into the Split Rock Creek aquifer. Both permits are for commercial purposes. An additional well was developed next to the 360' well. This well is 150' deep and is completed into a different water source than what is authorized by the two existing permits. The well was test pumped at 50 gpm but during the inspection it was stated that the current use is 100 gpm. The additional water use and source requires a new application.

Please complete the application per the instruction sheet. Make any changes or additions to the partially filled out application form or you can go to:

<http://denr.sd.gov/des/wr/watrightsapps.aspx>

Scroll down and click on the form titled "Application for a Water Right Permit for Non-irrigation use". You can fill it out online or print the form and send it to the address on the instruction sheet.

If you have any questions, please feel free to contact me at (605)773-3352.

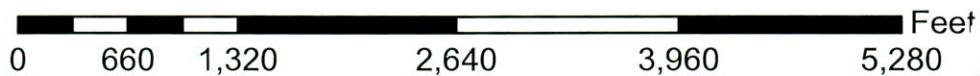
Sincerely,

Lynn Beck
Natural Resources Engineer III

WATER LICENSE NO. 7937-3
MOODY COUNTY DAIRY
NOVEMBER 27, 2013



SCALE



Lynn Beck
Lynn Beck
Natural Resources Engineer III
SD DENR - Water Rights Program



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

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

- 1) Type pvc 2) Size 4 inches 3) Length 9480 feet

C. Works used to apply water to beneficial use:

Use in a commercial dairy operation.

D. Compliance with Permit Requirements:

- 1) Permit qualifications being abided by YES
2) Exceptions to compliance are: NONE

The system is in good condition with the point of diversion located as follows: 2725' N and 160' E of the S¼ corner of Section 9-T104N-R47W (43.82666702, -96.48208032). The works are capable of diverting and conveying to the place of use 0.222 cu. ft. per second of water which is to be used for commercial purposes. Water has been put to beneficial use to the maximum extent as follows:

Animal washing and watering and other uses in a commercial dairy facility.

The license should be issued for 0.222cfs.

All structures, wells and lands on map YES

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

The well under Permit No. 7937-3 was inspected at the same time as Permit No. 6803-3.

Under Permit No. 6803-3 two wells were drilled into the Pipestone Creek aquifer, one 74' deep on 12-16-06 and the other 78' deep on 1-18-07. The deeper well experienced too much drawdown and consequently was abandoned and plugged. Another well was drilled on 4-10-07 at 140' deep. This puts the well into another aquifer or different water source thus requiring a new permit, Permit No. 7037-3. The 140' well produces 100-gpm or 0.222-cfs.

Moody County Dairy has two other permits, one for groundwater and another for storage and use of clean water runoff from the facility.



Lynn Beck
Natural Resources Engineer Specialist
DENR, Water Rights Program

Date report completed: November 27, 2013

STATE OF SOUTH DAKOTA

WATER LICENSE NO. 7937-3

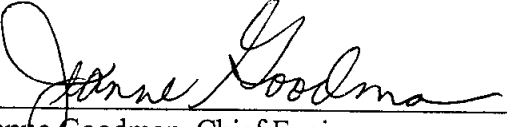
(1) Moody County Dairy LP, 3800 W Technology Circle, Sioux Falls SD 57106 made Application No. 7937-3, December 26, 2013 for a water permit to divert 0.22 cubic feet of water per second from groundwater (one well-Pleistocene Series-Unknown Aquifer), Minnehaha County, South Dakota for commercial purposes. Permit No. 7937-3, with a priority date of December 26, 2013 was approved March 24, 2014 and issued to the applicant for diversion of water with construction of the described water supply system and the application to beneficial use of water completed.

(2) The water supply system has been completed and water applied to beneficial use in accordance with South Dakota State Law. Pursuant to South Dakota Codified Law 46-5-30.1, the holder and/or owner of Water Right No. 7937-3 is issued a license, bearing a priority date of December 26, 2013 to appropriate 0.22 cubic feet of water per second from groundwater (one well) for commercial use purposes in a dairy operation.

The diversion point is located: 2,725 feet north and 160 feet east of the S 1/4 corner of Section 9-T104N-R47W (NW 1/4 SE 1/4).

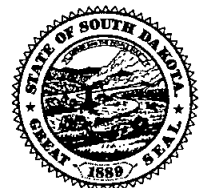
(3) This license is subject to South Dakota Water Law, any limitations or conditions listed in Water Permit No. 7937-3 including the following now applicable qualifications:

- The well approved under this Permit will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner under this Permit shall control his withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
- Permit No. 7937-3 is subject to compliance with requirements of the Department's Water Pollution Control Permit issued pursuant to SDCL 34A-2-36 or 34A-2-112 for concentrated animal feeding operations.
- Permit No. 7937-3 is subject to compliance with all existing and applicable Water management Board Rules including but not limited to:
 - a) Chapter 74:54:01 Ground Water Quality Standards,
 - b) Chapter 74:54:02 Ground Water Discharge Permit,
 - c) Chapter 74:51:01 Surface Water Quality Standards,
 - d) Chapter 74:51:02 Uses Assigned to Lakes,
 - e) Chapter 74:51:03 Uses Assigned to Streams, and
 - f) Chapter 74:52:01 through 74:52:11 Surface Water Discharge Provisions


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

APR 25 2014

date





**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. 7937-3, Moody County Dairy LP**

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. 7937-3, Moody County Dairy LP, c/o Lynn Boadwine, 3800 W Technology Circle, Sioux Falls SD 57106.

The Chief Engineer is recommending APPROVAL of Application No. 7937-3 because 1) there is reasonable probability that there is unappropriated water available for the applicant's proposed use, 2) the proposed diversion can be developed without unlawful impairment of existing rights, 3) the proposed use is a beneficial use, 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. Permit No. 7937-3 is subject to compliance with requirements of the Department's Water Pollution Control Permit issued pursuant to SDCL 34A-2-36 or 34A-2-112 for concentrated animal feeding operations.
3. Permit No. 7937-3 is subject to compliance with all existing and applicable Water management Board Rules including but not limited to:
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 - e) Chapter 74:51:03 Uses Assigned to Streams, and
 - f) Chapter 74:52:01 through 74:52:11 Surface Water Discharge Provisions

See report on application for additional information.

Jeanne Goodman, Chief Engineer
March 4, 2014

REPORT TO THE CHIEF ENGINEER
ON
WATER PERMIT APPLICATION NO. 7937-3
MOODY COUNTY DAIRY
C/O LYNN BOADWINE
MARCH 4, 2014

Water Permit Application No. 7937-3 proposes to appropriate water at a maximum diversion rate of 0.22 cubic feet of water per second (cfs) from an existing well completed into the Pleistocene Series: Unknown aquifer. The well is 150 feet deep and is located in the NW ¼ SE ¼ Section 9-T104N-R47W in Minnehaha County. The water is to be used for commercial purposes in a dairy operation.

AQUIFER: Pleistocene Series: Unknown (PS: U)

This application was submitted based on inspections of Water Permit Nos. 6803-3 and 6894-3. Water Right No. 6803-3 authorizes the withdrawal of water from Pipestone Creek aquifer and Water Right No. 6894-3 authorizes the withdrawal of water from Split Rock Creek aquifer. Two wells for Permit No. 6803-3 were developed into the Pipestone Creek aquifer, approximately 70 feet deep. However, due to excessive drawdown, one of the wells was plugged, and the well this application proposes to use was constructed to a depth of 150 feet and developed into a source lower than the Pipestone Creek aquifer. This well has been in use for commercial purposes at a dairy since it was drilled in 2007 (Boadwine, 2014).

AREA HYDROGEOLOGY:

Hydrologic investigations of the area identify two major aquifers in the vicinity of the well this permit application proposes to use, the Pipestone Creek aquifer and the Split Rock Creek aquifer (Hedges et. al, 1982; Lindgren and Niehus, 1992; Niehus and Lindgren, 1994). The Pipestone Creek aquifer underlies areas near Pipestone and West Pipestone Creeks and is found near the land surface. The top of the Pipestone Creek aquifer is generally less than 70 feet below land surface. Well completion reports for the two wells drilled for Water Right No. 6803-3 identify sand and gravel that is likely the Pipestone Creek aquifer from 50 to 74 feet below land surface datum (fblsd) and from 61 to 78 fblsd, respectively. Outwash, presumably the Pipestone Creek aquifer, was reported from 60 to 75 fblsd in the well completed for Water Right No. 6894-3. The completion report for the well that this application proposes to use identifies sand and gravel, likely the Pipestone Creek aquifer, from 65 to 76 fblsd.

The Split Rock Creek aquifer is part of the Cretaceous aged Split Rock Creek Formation that was deposited in valleys cut into the Sioux Quartzite. The well log submitted for the well completed for Water Right No. 6894-3 reports pink sandstone that was identified as Split Rock Creek aquifer (Goodman, 2007) from 292 to 360 fblsd.

The well completion report submitted with this application indicated the well was pumped at a rate of 50 gallons per minute for 10 hours and produced 54 feet of drawdown. The well completion report for this well indicates it was completed into a sand and gravel deposit logged from 142 to 150 feet below grade (1,408 to 1,400 feet mean sea level elevation (fmsl)). This

outwash deposit appears to be at least 70 feet below the Pipestone Creek aquifer and approximately 140 feet above the Split Rock Creek aquifer. The areal extent of this outwash has not been defined, and there are a limited number of borings in the area (18 borings in over 48 square miles) to allow for an accurate delineation of the areal extent of this deposit (see Figure 1) (SDGS, 2014; Water Rights, 2014c).

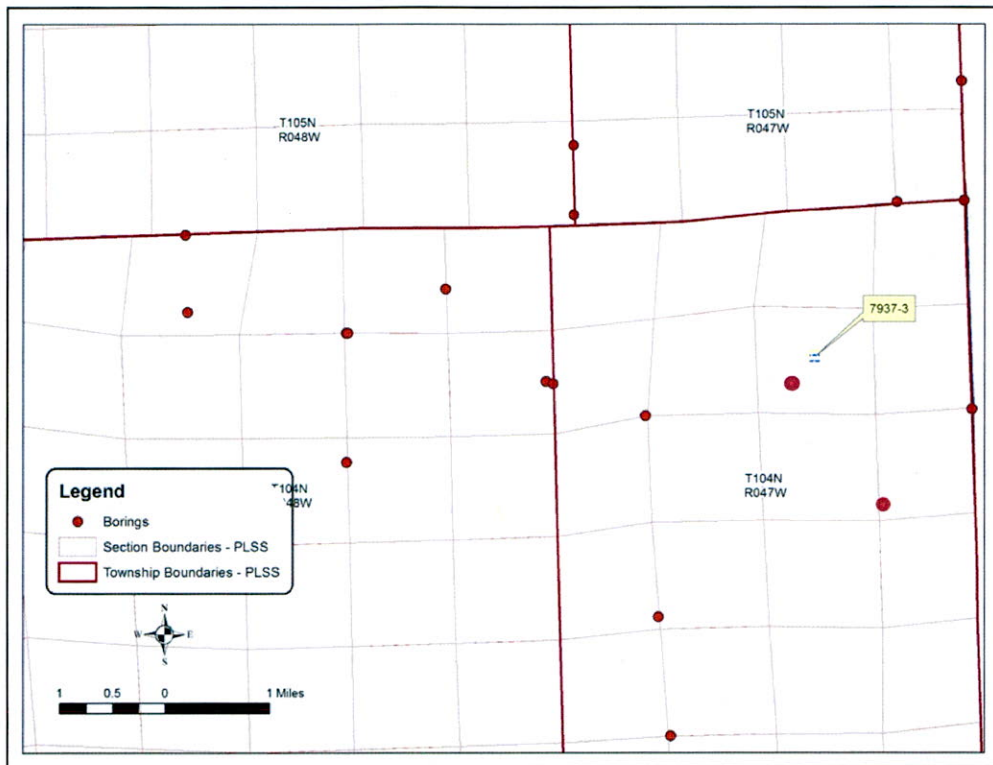


Figure 1- Location of the diversion point proposed by Application No. 7937-3 and borings in the area

The glacial history of this area is complex, with five distinct glacial advances recognized in Minnehaha County (Tomhave, 1994). Geologic cross sections constructed through this area (see Figures 2, 3, and 4) and a Precambrian topography map (Figure 5) were utilized to evaluate the outwash/aquifer this application proposes to appropriate from.

Two cross sections (see Figures 3 and 4), each located within one mile of the well site, fail to identify outwash that can be correlated to the sand and encountered in this well. An outwash was identified approximately three miles west of this well site (see outwash labeled Pleistocene: Unknown in Figure 3) that is at approximately the same elevation as the well this application proposes to use, and both are at the base of what Tomhave (1994) identified as pre-Illinoian 2 till (unoxidized). Review of lithologic logs in conjunction with the geophysical logs for area borings suggests a very thin outwash appears to occupy portions of the Trent Embayment (see Figure 5). The embayment is an indentation (i.e. small bay) of the ancient shoreline. Although the majority of the lithologic logs for the borings into the Trent Embayment did not report significant sand and/or gravel layers, examination of geophysical logs for the holes suggest thin sand/gravel layers do occur in a number of these holes.

This application proposes to appropriate water at a maximum diversion rate of 0.22 cfs. Assuming pumping 60 percent of the time (considered high), at a maximum the annual usage would be approximately 95 ac-ft/yr. Hedges and others (1985) concluded that for management and development programs a recharge rate to confined aquifers is estimated to be between 0.15 and 0.60 inches per year (in/yr). Therefore, this aquifer needs to be between 1,792 and 7,645 acres. The aquifer likely lies entirely within the Trent Embayment, and the Trent Embayment underlies several thousand acres of Minnehaha County (see Figure 5). Assuming the outwash is limited to below an approximate elevation of 1,220 fmsl, recharge using Hedges and others (1985) minimum rate (0.15 in/yr) exceeds withdrawal.

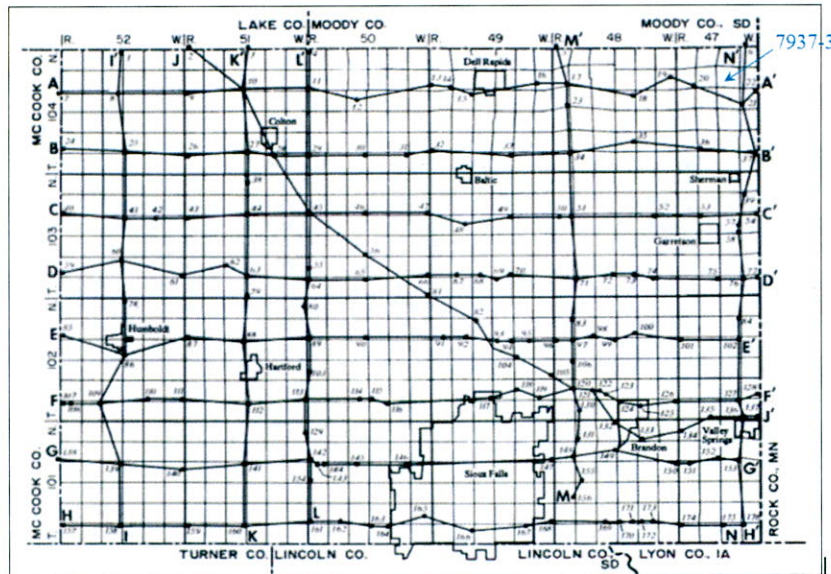


Figure 2- Location of Cross Sections (modified from Tomhave, 1994)

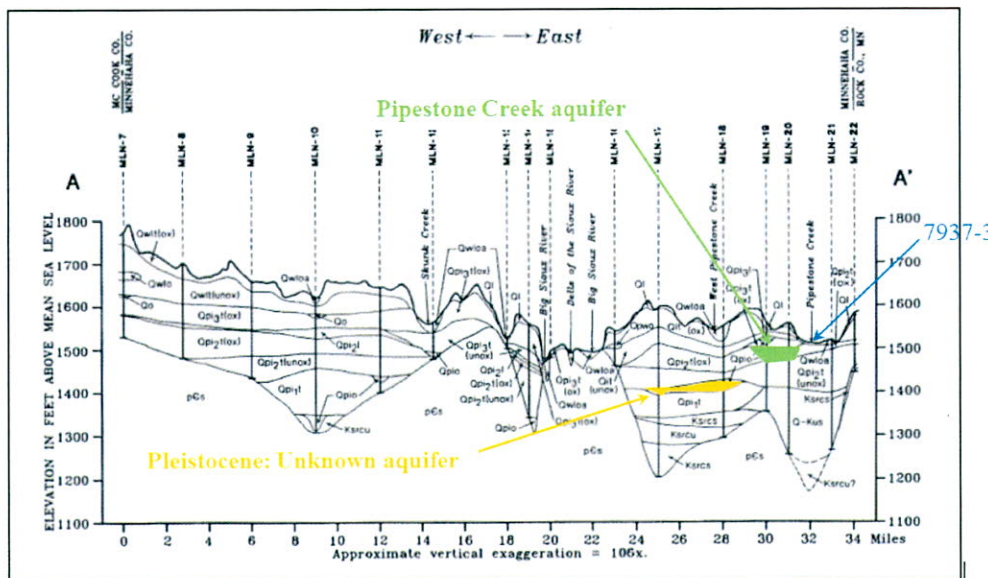


Figure 3- Geologic Cross Section A-A' (modified from Tomhave, 1994)

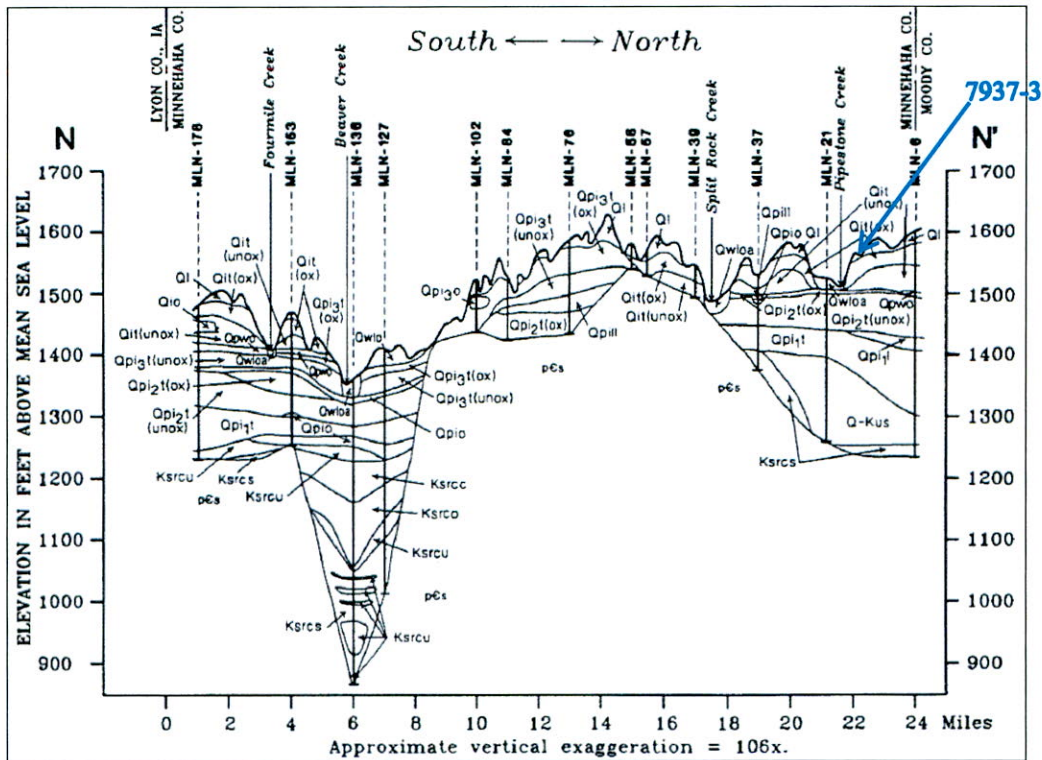


Figure 4- Geologic Cross Section N-N' (modified from Tomhave, 1994)

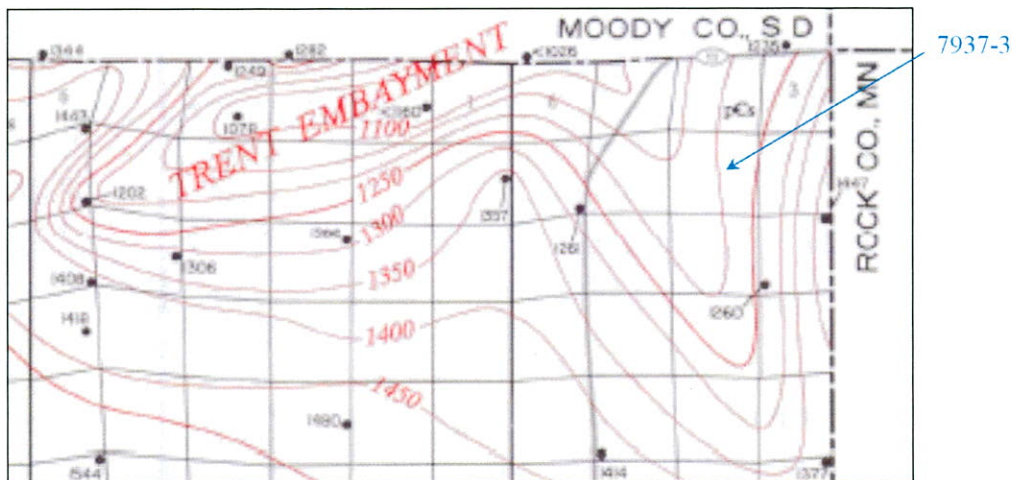


Figure 5- Contour map of Precambrian surface showing the Trent Embayment (modified from Tomhave, 1994)

South Dakota Codified Law (SDCL) 46-2A-9

Pursuant to SDCL 46-2A-9, a permit to appropriate water may be issued only if there is a reasonable probability that there is unappropriated water available for this 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 effects on existing rights from the aquifer that are pertinent to this application.

WATER AVAILABILITY:

This application proposes to appropriate water from the Pleistocene Series: Unknown aquifer. The probability of unappropriated water available from the aquifer can be evaluated by considering SDCL 46-6-3.1, which requires “No application to appropriate groundwater may be approved if, according to the best information reasonably available, it is probable that the quantity of water withdrawn annually from a groundwater source will exceed the quantity of the average estimated annual recharge of water to the groundwater source.” If the source of the water is older or lower than the Greenhorn Formation and a public water system has applied for a permit, the Board need not consider the recharge/withdrawal issue. In this case, the aquifer is not stratigraphically lower than the Greenhorn Formation and the applicant is not a public water system.

Hydrologic Budget:

Recharge:

Recharge to this outwash deposit is likely through groundwater inflow from adjacent till and outwash deposits and from contact areas with the bedrock. However, the recharge rate to this outwash deposit has not been quantified. As previously discussed, using Hedges and others (1985) range of recharge rates the aquifer needs to underlie approximately 1,792 to 7,645 acres for a recharge rate of 95 ac-ft/yr.

Discharge:

Discharge from this outwash likely occurs through domestic well pumping and outflow to adjacent till. There are no appropriative rights authorizing the withdrawal of water from this outwash deposit (Water Rights, 2014b). However, the applicant has been using this well since 2007. The application is requesting a diversion rate of 0.22 cfs. The estimated water use from the well this application proposes to use is expected to be less than 95 ac-ft/yr. During the latter half of 2013, the average water use from the wells authorized by Water Permit Nos. 6803-3 and 6894-3 and the well the application proposes to use was 216,000 gallons per day (242 ac-ft/yr) (Boadwine, 2014). The applicant stated that the number of animals and general water use across the latter half of 2013 was similar to how the dairy normally operates. Therefore, the annual estimate of water use is valid. Spread evenly amongst the three wells that is 80.7 ac-ft/yr from each well. The applicant also stated that most of the water is actually withdrawn from the well authorized by Water Permit No. 6894-3 completed into the Split Rock Creek aquifer (Boadwine, 2014). Therefore, it is likely the historical water withdrawal by the well this application proposes to use is less than 80.7 ac-ft/yr. There is a domestic well on file with the SD DENR-Water Rights Program completed to the same elevation (approximately 1,400 fmsl) approximately 2.8 miles southwest of the proposed well (Water Rights, 2014c).

Hydrologic Budget:

Using Hedges and others (1985) range of recharge rates to buried and confined aquifers, the aquifer needs to be at least 1,792 to 7,645 acres to have adequate recharge to support this proposed appropriation. That range is not unreasonable. While there are no authorized appropriative users, the well this application proposes to use has been in use since 2007. The wells authorized by Water Permit Nos. 6803-3 and 6894-3 and the well this application proposes to use have historically pumped 242 ac-ft/yr. There have been no complaints filed with the SD DENR-Water Rights Program regarding the well. The applicant has not had any significant

drawdown in the well since it was drilled in 2007. There is a reasonable probability that unappropriated water is available for this proposed appropriation.

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 DENR-Water Rights Program does not monitor any wells completed into this outwash deposit (Water Rights, 2014a).

EXISTING WATER RIGHTS:

There are no appropriative water rights/permits authorized to withdraw water from this outwash deposit (Water Rights, 2014b). There is one domestic well on file with the SD DENR-Water Rights Program that could be completed into the same outwash deposit as the well the application proposes to use (Water Rights, 2014c). The domestic well is approximately 2.8 miles southwest of the proposed well site.

Due to the limited thickness and confined conditions of this outwash deposit any pumping from this well is expected to be self-limiting. That is to say, as the well is pumped the water level will decline to such a level as to render the well unable to pump before causing significant effects to other wells completed into the same outwash deposit.

Because this outwash deposit is under confined conditions, drawdown may extend some distance from the pumped well. It is possible drawdown from this proposed diversion may be measurable in nearby domestic wells if they are constructed into the same aquifer and are close enough to be within the cone of influence of the pumping well. Due to the limited areal extent of the aquifer, pumping at the proposed diversion rate could dewater a portion of the aquifer. If this were to occur, it would be considered an adverse impact to any wells completed into this outwash in the dewatered area. However, the impact of drawdown cannot be adequately defined without aquifer testing.

SDCL 46-6-6.1 does not protect artesian head pressure as a means of delivery and the Water Management Board has consistently recognized that to place water to maximum beneficial use a certain amount of drawdown may occur. In order to balance interests between appropriative use and delivery of water by artesian pressure, the Water Management Board defined an “adversely impacted domestic well” in ARSD 74:02:04:20(7) as:

“a well in which the pump intake was set at least 20 feet below the top of the aquifer at the time of construction or, if the aquifer is less than 20 feet thick, is as near to the bottom of the aquifer as is practical and the water level of the aquifer has declined to a level that the pump will no longer deliver sufficient water for the well owner’s needs.”

Depending on the specific characteristics of this deposit of the Pleistocene Series: Unknown aquifer at the well site, some existing well owners may need to lower their pumps to accommodate for deeper water levels. The exact potential for adverse or unlawful impairment of

existing users due to the development of the proposed diversion cannot be determined because sufficient information is not currently available to accurately appraise the characteristics of this outwash deposit at the proposed well site. However, the well this application proposes to use has been in use since 2007, and no complaints regarding the well have been filed with the SD DENR-Water Rights Program.

While there is not enough information available to calculate drawdown from pumping, drawdown in the well will likely render the well unable to be pumped before adversely impacting other wells in the same formation due to the limited thickness of the aquifer, and no complaints regarding this well have been filed with the SD DENR-Water Rights Program since it has been in use. Therefore, there is a reasonable probability that the proposed diversion can be made without adversely impacting existing appropriative or domestic users.

PREVIOUS PETITIONS

Both Permit Application Nos. 6803-3 and 6894-3 had petitions filed with the DENR-Water Rights Program opposing approval of the permits. The petitions opposing Permit Application No. 6803-3 were primarily concerned with the availability of water and the potential changes in quality. There were also concerns about air quality, increased traffic on the road, loss of property value and quality of life, and manure storage and handling. The petition opposing Permit Application No. 6894-3 had concerns over the availability of water, no observation wells completed into that aquifer, and potentially drying up the streams that are habitat for the endangered Topeka Shiner.

The wells authorized by Water Permit Nos. 6803-3 and 6894-3 and the well this application proposes to use have been in use since 2007. Since then, no complaints have been filed with the DENR-Water Rights Program citing concern over a reduction of water or a change in water quality in wells in the area of this application. The issues of reduced air quality, increased traffic, loss of property value and quality of life, and manure storage and handling are public interest concerns. The Water Management Board has considered these concerns. Having an observation well completed into an aquifer for long-term monitoring of the water level is helpful in determining water availability. However in the past, the Water Management Board has approved permits to pump from an aquifer that has no observation wells completed into it.

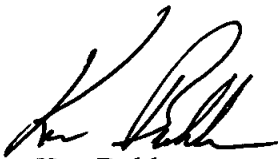
This aquifer potentially underlies portions of Pipestone Creek and West Pipestone Creek. Both creeks have been known to be a habitat for Topeka Shiners. However, due to the depth of the aquifer there is little concern that withdrawal from this aquifer will affect the water level in streams that are habitats for the Topeka Shiner.

CONCLUSIONS:

1. This application was filed based on an inspection of Water Permit Nos. 6803-3 and 6894-3. Water Right No. 6803-3 authorizes the withdrawal of water from Pipestone Creek aquifer, and Water Right No. 6894-3 authorizes the withdrawal of water from Split Rock Creek aquifer. The well this application proposes to use is completed into a formation that is approximately 70 feet below the Pipestone Creek aquifer and 140 feet above the Split Rock Creek aquifer at the well site.

2. Water Permit Application No. 7937-3 proposes to appropriate water at a maximum diversion rate of 0.22 cfs from a deposit of the Pleistocene Series: Unknown aquifer for commercial use in a dairy operation.
3. There is a reasonable probability that unappropriated water is available from this deposit of the Pleistocene Series: Unknown aquifer for this proposed appropriation.
4. There is not enough information available to calculate drawdown from pumping the well. However, drawdown in the well will likely render the well unable to be pumped before adversely impacting other wells in the same formation due to the limited thickness of the aquifer, and no complaints regarding this well have been filed with the SD DENR-Water Rights Program since it has been in use. Therefore, there is a reasonable probability that the proposed diversion can be made without adversely impacting existing appropriative or domestic users.


Adam Mathiowetz
SD DENR-Water Rights Program


Ken Buhler
SD DENR-Water Rights Program

REFERENCES:

- Boadwine, L. Personal Communication. February 5, 2014. Applicant and owner/operator of Moody County Dairy LP.
- Goodman, J.A. 2007. Report on Water Permit Application No. 6894-3 for Scott or Tammy Helmer. SD DENR-Water Rights Program Water Right file No. 6894-3. DENR-Water Rights Program, Pierre, South Dakota.
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- Hedges, L.S., Burch, S.L., Liles, D.L., Barari, R.A., and Schoon, R.A. 1982. Evaluation of Ground-Water Resources Eastern South Dakota and Upper Big Sioux River, South Dakota and Iowa, Task 1: Bedrock Topography and Distribution, Task 2: Extent of Aquifers, Task 3: Ground-Water Storage, Task 4: Computerized Data Base, Final Report. SD DENR-Geological Survey.
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- Water Rights. 2014a. Observation Well Files. SD DENR-Water Rights Program, Joe Foss Bldg., Pierre, SD.
- Water Rights. 2014b. Water Right/Permit Files. SD DENR-Water Rights Program, Joe Foss Bldg., Pierre, SD.
- Water Rights. 2014c. Well Completion Reports. SD DENR-Water Rights Program, Joe Foss Bldg., Pierre, SD.

RECEIVED
MAR 14 2014
WATER RIGHTS
PROGRAM

CUSTOMER NUMBER:	121935	Argus Leader P.O. Box 677349, Dallas, TX 75267-7349	
AD ORDER NUMBER:	1437195		
	3/13, 2014		\$63.02PD

Moody County Dairy LP
% Lynn Boadwine
3800 W Technology Cir
Sioux Falls, SD 57106

DETACH THIS STUB AND RETURN WITH PAYMENT

PAYMENT DUE UPON RECEIPT

AFFIDAVIT OF PUBLICATION-

Customer Number: 121935

Invoice Number: 1437195

NOTICE OF APPLICATION

NO. 7937-3 to Appropriate

Water

Notice is given that Moody County Dairy LP, c/o Lynn Boadwine, 3800 W Technology Circle, Sioux Falls SD 57106 has filed an application for a water permit to appropriate 0.22 cubic feet of water per second from one well to be completed into the Pleistocene Series: Unknown Aquifer (150 feet deep) located in the NW 1/4 SE 1/4 Section 9-T104N-R47W for commercial use in a dairy operation.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 7937-3 because 1) unappropriated water is available, 2) existing rights will not

be unreasonably 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 March 24, 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 \$63.02.
1437195 Mar. 13, 2014

Argus Leader
AFFIDAVIT OF PUBLICATION

STATE OF SOUTH DAKOTA

COUNTY OF MINNEHAHA } ss

Linda Schulte being duly sworn, says: That The Argus Leader is, and during all the times hereinafter mentioned was, a daily legal newspaper as defined by SDCL 17-2-21, as amended published at Sioux Falls, Minnehaha County, South Dakota; that affiant is and during all of said times, was an employee of the publisher of such newspaper and has personal knowledge of the facts stated in this affidavit; that the notice, order or advertisement, a printed copy of which is hereto attached, was published in said newspaper upon

Thursday the 13 day of March 2014 ,
the day of 2014 ,
the day of 2014 ,
the day of 2014 ,
the day of 2014 ,
the day of 2014 ,
the day of 2014 ,
the day of 2014 ,

and that \$63.02PD was charged for publishing the same

Subscribed and sworn to before me

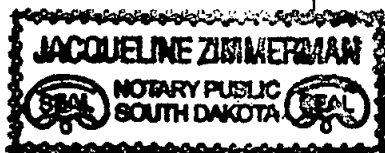
3/13/2014

Linda Schulte

J. Zimmerman

Notary Public, South Dakota

My Commission expires December 22, 2015





DEPARTMENT OF ENVIRONMENT
and NATURAL RESOURCES

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



March 4, 2014

Argus Leader
PO Box 5034
Sioux Falls SD 57117

ATTENTION: Legal Public Notice

Enclosed is a Notice on Application No. 7937-3 to Appropriate Water. Please publish the notice once on March 13, 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 Moody County Dairy LP, c/o Lynn Boadwine, 3800 W Technology Circle, Sioux Falls SD 57106 (Ph # 605-361-3352).

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

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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.**

March 4, 2014

Moody County Dairy LP
Lynn Boadwine
3800 W Technology Circle
Sioux Falls SD 57106

Dear Mr. Boadwine:

Water Permit Application No. 7937-3 for commercial use has been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice has been sent to the Argus Leader printed at Sioux Falls SD (Ph # 605-331-2200). 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 March 13, 2014. 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. 7937-3 to Appropriate Water

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Published once at the total approximate cost of _____.



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6894-3 & 7937-3

APR 25 2014

Moody County Dairy LP
c/o Lynn Boadwine
3800 W Technology Circle
Sioux Falls SD 57106

Dear Mr. Boadwine:

Enclosed are Water Permit No. 7937-3, Water License No. 7937-3 and Water License No. 6894-3. These are the final water right documents completing your process of obtaining a Water Right. Also, included with your licenses is a map prepared by the Lynn Beck, staff engineer who conducted the investigations.

For your information SDCL 46-6-27 requires that if the owner of an existing well, such as the well authorized by Water Right Nos. 6894-3 and 7937-3, constructs a replacement well and does not plan to use the old well, the old well is considered abandoned and must be plugged. Also, any well that is being used or is not considered abandoned must be valved and controlled, if flowing, or sealed and capped so that no leaking occurs either underground or at the surface.

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

Sincerely,

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

enclosures

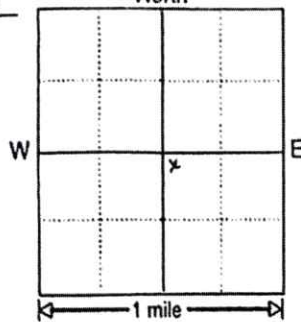
7937-3

SD EForm - 1622LD V1

SOUTH DAKOTA WELL AND TEST HOLE PLUGGING REPORT 11-02

Location NW 1/4 SE 1/4 Sec 9 Twp 104 Rg 47Well Owner: Dairy Majors LLCCounty Minnehaha

North

Please mark well
location with an "X"Name: Moody County Dairy LPAddress: 4009 W 44th Street, Suite 308City, State, Zip: Sioux Falls SD 57106

Comments:

Plugging Completion Date 8-23-23

CHECK APPROPRIATE BOX

EXISTING WELL ☒	TEST HOLE ☐
Well depth <u>140</u>	Hole depth _____
Casing material <u>Steel</u>	Hole size _____
Casing size(s) <u>6"</u>	
Casing condition <u>Good</u>	

Describe plugging procedure:

1" Tremie Pipe Ran down to bottom @ 140', 9 Bags Bentonite

Describe grout or plugging material:

Bengal - Bentonite

RECEIVED

SEP 22 2023

OFFICE OF
WATER

Type of non-slip plug: _____

This well or test hole was plugged under license # 844 and this report is true and accurateDrilling firm: SPARTZ & Sons Well Co.Signature of Licensed Representative: Tan SmithSignature of Well Owner: Robert Barber mgr/mgrDate: 9/7/2023