

WATER PERMIT NO. 8056-3

Name of Applicant: **Dakota Lakes / Wheat Growers**

Address: **38685 155th St, Mellette SD 57461** Phone: **605 252-8919**

Amount of Water Claimed: **0.20 cfs** Total Acres: **NA**

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

Water to be used for: **commercial** County: **Spink**

Type of Waste Disposal System:

Location: **1/2 mile south of Mellette**

PRIORITY Date Received: **10-3-14** Application/License Fee: **\$ 950**

Corrected Application Received: Period of Annual Use: **March 1 – Nov 30**

Remarks:

Diversion Point: **NE 1/4 NE 1/4 Sec 11-T119N-**
R64W

Land to be Irrigated: **NA**

Depth of Well: **850 feet deep**

Well Driller:

Remarks:

Type of Map: **aerial**

Prepared by:

Reviewed and the Number Assigned on: **10-6-14**

By: **Karen Schlaak**

Notice of Hearing - date to intervene: _____

				⊗	
			11		

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

No. 8056-3 (office use only)
Hydrologic Unit 10100006
Basin James River 605-472-0822
Newspaper Redfield Press, Box 440, 57469
605-225-4100
American News, Box 4430, Aberdeen 57402

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OCT 03 2014
WATER RIGHTS
PROGRAM

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 Dakota Lakes / Wheat Growers
(check one) ☒ Owner ☐ Tenant/Lessee ☐ Owner's Legal Agent

Mailing Address 38685 155th St Mellefte SD 57461
(Address) (City) (State) (Zip Code)

Home Phone _____ Cell 605-252-8919 Email Josh.Luneman@sdwg.com

2. Amount of water claimed 0.20 *CFS or 90 **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 Dakota

4. Location of point of diversion 1 well in NE 1/4 NE 1/4 S11-T119-R64 County Spink
(example - 3 wells in SW 1/4 NE 1/4 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? Used for sprayers
(example - NW 1/4 section 12-T104N-R53W)

5. County or counties where water will be used varies

6. Annual period during which water is to be used March-November 30

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)

5" Cemented To The Top of The Dakota
2" stainless Steel Screen Gravel Packed Through The
Dakota Formation

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

SOUTH DAKOTA
WATER PERMIT NO. 8056-3

Date of first receipt of application October 3, 2014.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 8056-3 to Dakota Lakes / Wheat Growers, 38685 155th St, Mellette SD 57461 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. 8056-3 appropriates 0.20 cubic feet of water per second from one well to be completed into the Dakota Aquifer (850 feet deep) located in the NE 1/4 NE 1/4 Section 11-T119N-R64W.
2. The water appropriated shall be used for the purpose of commercial use and may not exceed the amount of water needed for beneficial use.
3. The water is to be used during the following described annual period: March 1 – November 30.
4. The date of approval of Permit No. 8056-3 is December 29, 2014.
5. The date from which applicant may claim right is October 3, 2014.
6. One-fifth of the construction is to be completed on or before July 29, 2017.
7. All construction is to be completed on or before December 29, 2019.
8. Water is to be put to beneficial use on or before December 29, 2023.
9. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

QUALIFICATIONS

1. The 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. 8056-3 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. The Water Permit Holder shall report to the Chief Engineer annually the amount of water withdrawn from the Dakota aquifer.

WATER MANAGEMENT BOARD

By: *Jeanne Goodman*

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

JAN 12 2015

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 1 Have test holes been drilled ☐ Yes ☒ No Drilled by Stretch's Well Service
(if yes, please provide copies of logs)
- b) If existing wells, how many Provide copy of log(s), if available. Drilled by
- c) Well Depth 850 Depth to Top of Water Bearing Material 800 Depth to Water from Surface 2
- 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) Septic / Drain Field 230' from well
- b) System Capacity (gallons) 1,000 Year Constructed 2014
- c) Connected to the City of LA Sanitary System

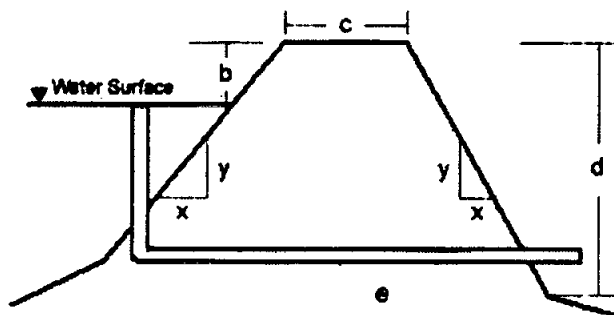
3. Dugout Information

- 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



FIGURE 1
VICINITY MAP
PROPOSED AGRONOMY CENTER
SOUTH DAKOTA WHEAT GROWERS
NEAR MELLETTE, SD

ACAD\GEO\14-828\14-828

PROJECT#: 14-828

DRAWN BY: JAM

CHECKED BY:

GEOTEK ENGINEERING &
TESTING SERVICES, INC.

Sec 28
T120N
R64W

Sec 27
T120N
R64W

Sec 26
T120N
R64W

Sec 25
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Sec 30
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R63W

Sec 33
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Sec 19
T119N
R63W

RECEIPT

WATER RIGHTS PROGRAM

South Dakota Department of Environment and Natural Resources

Date 10/6, 20 14

RECEIVED OF SD Wheat Growers Assn 908 Lamont St S Aberdeen SD 57401

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

Fee for Application for Permit No. <u>8056-3</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>8056-3</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. **06961**

By

James Holman
Chief Engineer



**GEOTEK ENGINEERING
& TESTING SERVICES, INC.**
909 East 50th Street North
Sioux Falls, South Dakota 57104
605-335-5512 Fax 605-335-0773

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OCT 03 2014

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PROGRAM

August 27, 2014

South Dakota Wheat Growers
908 Lamont Street S.
Aberdeen, South Dakota 57401

Attn: Josh Lunzman

Subj: Geotechnical Exploration
Proposed Agronomy Center
South Dakota Wheat Growers
Near Mellette, South Dakota
GeoTek #14-828

This correspondence presents our written report of the geotechnical exploration program for the referenced project. Our work was performed in accordance with your authorization. We are transmitting an electronic copy of our report for your use. An additional copy is also being sent as noted below.

We thank you for the opportunity of providing our services on this project and look forward to continued participation during the design and construction phases. If you have any questions regarding this report, please contact our office at (605) 335-5512.

Respectfully Submitted,
GeoTek Engineering & Testing Services, Inc.

Jared Haskins

Jared Haskins, PE
Geotechnical Manager

Cc: Clark Engineering Corporation, Attn: Donald J. Weigel, PE, CFM

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**GEOTECHNICAL EXPLORATION
PROPOSED AGRONOMY CENTER
SOUTH DAKOTA WHEAT GROWERS
NEAR MELLETTE, SOUTH DAKOTA
GEOTEK #14-828**

INTRODUCTION

Project Information

This report presents the results of the recent geotechnical exploration program for the proposed agronomy center for South Dakota Wheat Growers near Mellette, South Dakota.

Scope of Services

Our work was performed in accordance with the authorization of Josh Lunzman with South Dakota Wheat Growers. The scope of work as presented in this report is limited to the following:

1. To perform four (4) standard penetration test (SPT) borings to gather data on the subsurface conditions at the project site.
2. To perform laboratory tests that include moisture content, dry density, Atterberg limits (liquid and plastic limits), unconfined compressive strength and consolidation.
3. To prepare an engineering report that includes the results of the field and laboratory tests as well as our earthwork and foundation recommendations for design and construction.

The scope of our work was intended for geotechnical purposes only. This scope of work did not include determining the presence or extent of environmental contamination at the site or to characterize the site relative to wetlands status.

FIELD DATA

Site Location & Description

The project site is located just outside of Mellette, South Dakota, on the south side of 155th Street. The project site is currently being used as farmland. The topography of the area is flat.

Ground Surface Elevations & Test Boring Locations

The ground surface elevations at the test boring locations were furnished by Clark Engineering Corporation. The ground surface elevation at each of the test boring locations was 1,295.6 feet. A site map, showing the relative location of the test borings, is attached at the conclusion of this report.

Subsurface Conditions

Four (4) test borings were performed at the project site on July 23 and July 24, 2014. The subsurface conditions encountered at the test boring locations are illustrated by means of the boring logs included in Appendix A.

The subsurface conditions encountered at the test boring locations consisted of 2 feet to 3 feet of topsoil materials overlying lake deposit soils. The lake deposit soils extended to depths of 45 ½ feet and 49 ½ feet. Weather Pierre Shale was encountered beneath the lake deposit soils. A layer of mixed alluvium soils were encountered above the weathered Pierre Shale.

The topsoil materials consisted of lean clay soils. The lake deposit soils consisted of silt soils, fat clay soils and elastic silt soils. The mixed alluvium soils consisted of clayey sand soils. The weathered Pierre Shale consisted of fat clay soils.

The consistency/relative density of the soils is indicated by the standard penetration resistance ("N") values as shown on the boring logs. A description of the soil consistency/relative density based on the "N" values can be found on the attached Soil Boring Symbols and Descriptive Terminology data sheet.

We wish to point out that the subsurface conditions at other times and locations at the site may differ from those found at our test boring locations. If different conditions are encountered during construction, it is important that you contact us so that our recommendations can be reviewed.

Water Levels

A measurement to record the groundwater level was made at test boring 1. Groundwater measurements were not made at test borings 2, 3 or 4. The time and level of the groundwater reading is recorded on the boring log. Groundwater was measured at a depth of 3 ½ feet (elevation 1,292.1 feet) at test boring 1.

ENGINEERING REVIEW AND RECOMMENDATIONS

Project Design Data

We understand that the project will consist of constructing a new agronomy center for South Dakota Wheat Growers near Mellette, South Dakota. The proposed agronomy center will consist of the following: a building, ten (10) seed bins and a tank farm. The project will also include constructing new vehicle areas.

Building

The building will be a steel structure with an approximate footprint area of 28,000 square feet. The building will be comprised of an office area, a working area and a chemical dike pit. The office area will be two (2) stories. We assume that the building will have a loading dock area. We understand that the finished floor will be near elevation 1,300.0 feet. The floor slab of the chemical dike pit will rest near elevation 1,297.0 feet. We also assume that foundation support will be provided by perimeter foundations resting below frost depth and interior foundations resting at or slightly below the floor slab. We anticipate moderate foundation loads for the proposed building. The building will be heated by floor heat.

Seed Bins

The seed bins will be located along the south side of the building and will have a diameter of approximately 16 feet each. The seed bins will be supported by a reinforced concrete foundation that is expected to rest approximately 12 inches below the finished exterior grade. We anticipate light to moderate loads for the proposed seed bins.

Tank Farm

The tank farm will consist of eight (8) tanks. The tanks will have a diameter of approximately 13 feet and an approximate capacity of 30,000 gallons each. A dike will surround the tanks. The tanks will be supported by concrete foundations that rest approximately 6 inches below the finished exterior grade. We anticipate light to moderate loads for the proposed tanks.

Vehicle Areas

We anticipate that the vehicle traffic will consist of automobiles and large trucks. We also anticipate that grading within the vehicle areas will involve filling. The vehicle areas will be gravel surfaced.

The information/assumptions detailed in the project design data section are important factors in our review and recommendations. If there are any corrections or additions to the information detailed in this section, it is important that you contact us so that we can review our recommendations with regards to the revised plans.

Discussion

The test borings encountered 2 feet to 3 feet of topsoil materials overlying lake deposits soils. It is our opinion that the topsoil materials are not suitable for support of the proposed building, seed bins or tanks.

Regarding the lake deposit soils, the results of the field and laboratory tests indicate that the lake deposit soils have limited strength characteristics and are not suitable for direct support of the foundations of the building, seed bins or tanks, but could be used for indirect support.

Site Preparation

Foundation Areas of the Building, Seed Bins & Tanks

The site preparation in the foundation areas of the building, seed bins and tanks should consist of removing the topsoil materials in order to expose the lake deposit soils. Following the removals, we recommend placing a structural section. The structural section should consist of a geogrid material, a 12-inch layer of crushed rock and a layer of structural fill placed and compacted up to the design elevation. We recommend that the structural section have a minimum thickness of 2 feet. The geogrid material should consist of Mirafi BXG 120, Tensar BX 1200, Tensar TX 160 or approved alternative. Installation of the geogrid material shall be in accordance with the manufacturer's recommendations. Overlap shall be a minimum of 24 inches.

Where crushed rock and structural fill is needed below the foundations, the bottom of the excavation should be laterally oversized 1 foot beyond the edges of the foundations for each vertical foot of crushed rock or structural fill required below the foundations (1 horizontal : 1 vertical).

Floor Slab Area of the Building

The site preparation in the floor slab area of the building should consist of removing the upper 12 inches of the topsoil materials. Following the removals, we recommend placing and compacting structural fill up to the design elevation.

Excavation

Precautions will be required during earthwork activities in order to reduce the risk of soil disturbance. The subgrade should not be exposed to heavy construction traffic from rubber tire vehicles. The stripping and removals should be performed with a track-driven dozer or excavator (backhoe) having a smooth cutting edge on the bucket to minimize soil disturbance. All foundation excavations should be performed with a track-driven excavator (backhoe) having a smooth cutting edge.

Time Delay

In order to reach the finished floor elevation, the site will require approximately 5 feet of fill. A time delay would be advisable to allow the underlying soils to compress/settle under the weight of the newly placed fill. The site filling should extend up to the level of 1 foot below the bottom of the floor slab. We recommend waiting one (1) to two (2) weeks to allow the majority of the settlement to take place. Several settlement plates could be installed at the beginning stages of earthwork activities to monitor the rate of settlement after the fill has been in place.

Floor Slab of the Building

We recommend placing a layer of select granular fill directly beneath the floor slab of the building in order to provide a working surface for the placement of the concrete and to serve as a capillary barrier. The select granular fill should have a minimum thickness of 6 inches. It is our opinion that the floor slab can be designed using a soil modulus of subgrade reaction (k value) of 150 psi/inch.

Floor Slab of the Chemical Dike Pit Area

For the chemical dike pit area, we recommend placing a minimum of 12 inches of crushed rock beneath the floor slab. It is our opinion that the floor slab of the chemical dike pit area can be designed using a k value of 150 psi/inch. We recommend placing drainage pipes beneath the floor slab with a maximum spacing of 25 feet between pipes. The drainage pipes should also be placed along the exterior of the chemical dike pit area. The drainage pipes should be surrounded by a properly graded filter that is wrapped in a geotextile filter fabric to minimize clogging. The drainage pipes should be connected to a suitable means of discharge. We also recommend a sump pump be installed.

Foundation Loads & Settlement

If our recommendations are followed during site preparations, then it is our opinion that the foundations can be sized for a net allowable soil bearing pressure of up to 2,000 pounds per square foot (psf). We recommend limiting the column loads to 100 kips. Settlement is expected to be fairly uniform across the site. We estimate total settlement to be on the order to ¾ inch to 1

inch. Differential settlement is expected to be minimal. Unknown soil conditions at the site that are different from those depicted at the test boring locations could increase the amount of expected settlement. It is our opinion that the recommended bearing pressure should provide a minimum safety factor of 3.0 against shear or base failure.

Backfilling/Lateral Pressures – Loading Dock & Chemical Pit Walls

We recommend that the loading dock and chemical pit walls be designed to resist at-rest lateral earth pressures. The backfill materials placed against these walls exert lateral forces on the walls. In order to minimize these lateral forces and to optimize drainage, we recommend using free-draining sand for backfill. The zone of sand backfill should extend a minimum of 2 feet outside the bottom of the wall and then extend upward and outward at a slope no steeper than 1:1 (horizontal to vertical). A tabular listing of the equivalent fluid unit weight values for design of the below-grade and retaining walls is shown in Table 1. Lateral pressures will be significantly higher if the walls are backfilled with soils other than the free-draining sand or if they are not drained and become saturated.

Table 1. Equivalent Fluid Unit Weight Values

Soil Type	At-Rest, pcf		Passive, pcf	
	Drained	Submerged	Drained	Submerged
Clay	-	-	220	115
Free-Draining Sand (SP)	50	90	460	230

During backfill operations, bracing and/or shoring of the walls may be needed. Only hand-operated compaction equipment should be used directly adjacent to the walls.

Frost Protection

We recommend all foundations be placed at a sufficient depth for frost protection. The perimeter foundations for heated buildings should be placed such that the bottom of the foundation is a minimum of 4 feet below finished exterior grade. Interior foundations in heated buildings can be placed beneath the floor slab. Foundations for unheated areas and canopies, or foundations that are not protected from frost during freezing temperatures, should be placed at a minimum depth of 5 feet below the lowest adjacent grade.

With the seed bins and tanks, some frost movement should be expected. The seed bins and tanks should be designed to accommodate the potential frost movements. If it is desired to eliminate potential frost movements, we recommend placing 5 feet of non-frost susceptible drainage fill beneath the seed bins and tanks.

Vehicle Areas

Site Preparation

We recommend that the site preparation in the vehicle areas consist of removing the vegetation and highly organic soils, typically the upper 12 inches. Following the removals, we recommend placing and compacting subgrade fill up to the design subgrade elevations.

Gravel Section Thicknesses

The thickness of the gravel section should be based on the owner's expected performance. If the owner desires a section that will perform with limited problems, then we recommend at least 4 inches of gravel surfacing over 8 inches of aggregate base course. If the owner is willing to accept potentially unstable conditions during wet periods and the spring thaw, then the section could be reduced to a minimum of 4 inches of gravel surfacing over 4 inches of aggregate base course. During freeze/thaw cycles, the lake deposit soils are expected to provide low subgrade support. With that said, we recommend installing a geotextile fabric beneath the aggregate base course. The geotextile fabric should consist of Mirafi HP 370, Propex Geotex 3x3 HF, Huesker Comtrac P 45/45 or approved alternative.

Material Types and Compaction Levels

Structural Fill – The structural fill should consist of a pit-run or processed sand or gravel having a maximum particle size of 3 inches with less than 15 percent by weight passing the #200 sieve. The structural fill should be placed in lifts of up to 1 foot in thickness. If this material is not readily available in the area, the percent passing the #200 sieve could be increased to 25 percent; however, a cleaner material is preferred due to ease of placement and compaction, as well as it is more resistant to construction disturbance.

Select Granular Fill – The select granular fill should consist of a medium to coarse grained, free-draining sand or rock having a maximum particle size of 1 inch with less than 5 percent by weight passing the #200 sieve. The select granular fill should be placed in lifts of up to 1 foot in thickness.

Crushed Rock – The crushed rock should meet the gradation requirements shown in Table 2.

Table 2. Crushed Rock Specifications

Sieve Size	Percent Passing
1 inch	95-100
½ inch	25-60
#4	0-10
#8	0-5

Exterior Backfill / Slab-on-Grade Backfill – We recommend either clay or granular soils be used. Debris, organic material, or over-sized material should not be used as backfill. If granular soils are used in areas that will not have asphalt concrete or concrete surfacing, we recommend capping the granular soils with at least 1 foot to 2 feet of clay soils to minimize infiltration of surface water. The exterior backfill should be placed in lifts of up to 1 foot in thickness.

Free-Draining Sand – The free-draining sand should contain no more than 5 percent by weight passing the #200 sieve. The free-draining sand should be placed in lifts of up to 1 foot in thickness.

Non-Frost Susceptible Drainage Fill – The non-frost susceptible drainage fill should have less than 40 percent by weight passing the #40 sieve and less than 5 percent by weight passing the #200 sieve. The non-frost susceptible drainage fill should be placed in lifts of up to 1 foot in thickness.

Subgrade Fill – The subgrade fill should consist of either a granular or clay material. If granular materials are used, it should consist of a pit-run or processed sand or gravel having a maximum particle size of 3 inches. If a clay material is used, it should consist of a non-organic clay having a liquid limit less than 45 percent. Scrutiny on the clay material's moisture content should be made prior to the acceptance and use. The clay fill should be placed in lifts of up to 6 inches in thickness.

The majority of the on-site soils are suitable soil types for use as subgrade fill. The on-site topsoil materials should not be used as subgrade fill but could be placed in non-structural areas. We anticipate that significant drying will be needed with the on-site soils.

Aggregate Base Course Material – We recommend that the aggregate base course materials meet the South Dakota Department of the Transportation specifications as found in the Standard Specifications for Roads and Bridge Manual, 2004 (Section 882).

Gravel Surfacing Material – We recommend that the gravel surfacing materials meet the South Dakota Department of the Transportation specifications as found in the Standard Specifications for Roads and Bridge Manual, 2004 (Section 882).

Recommended Compaction Levels – The recommended compaction levels listed in Table 3 are based on a material's maximum dry density value, as determined by a standard Proctor (ASTM: D698) test.

Table 3. Recommended Compaction Levels

Placement Location	Compaction Specifications
Below Foundations	95%
Below Floor Slabs	95%
Exterior Foundation Wall Backfill (Slab-on-Grade)	95%
Behind Retaining Walls or Below-Grade Walls	95% - 98%
Subgrade Fill	95%
Base Course and Gravel Surfacing	97%
Non-Structural Areas	90%

Recommended Moisture Levels – The moisture contents of the clay backfill materials should be maintained within a range of 1 percent to 4 percent below the material's optimum moisture content, as determined by a standard Proctor (ASTM: D698) test.

The moisture content of the granular backfill materials should be maintained at a level that will be conducive for vibratory compaction.

Drainage

Proper drainage should be maintained during and after construction. The general site grading should direct surface run-off waters away from the excavations. Water which accumulates in the excavations should be removed in a timely manner.

Finished grades around the perimeter of the structures should be sloped such that positive drainage away from the structures is provided. Also, a system to collect and channel roof run-off waters away from the building is suggested.

CONSTRUCTION CONSIDERATIONS

Groundwater & Surface Water

Water may enter the excavations due to subsurface water, precipitation or surface run off. Any water that accumulates in the bottom of the excavations should be immediately removed and surface drainage away from the excavations should be provided during construction.

Disturbance of Soils

The soils encountered at the test boring locations are susceptible to disturbance and can experience strength loss caused by construction traffic and/or additional moisture. Precautions will be required during earthwork activities in order to reduce the risk of soil disturbance.

Cold Weather Precautions

If site preparation and construction is anticipated during cold weather, we recommend all foundations, slabs and other improvements that may be affected by frost movements be insulated from frost penetration during freezing temperatures. If filling is performed during freezing temperatures, all frozen soils, snow and ice should be removed from the areas to be filled prior to placing the new fill. The new fill should not be allowed to freeze during transit, placement and compaction. Concrete should not be placed on frozen subgrades. Frost should not be allowed to penetrate below the foundations. If floor slab subgrades freeze, we recommend the frozen soils be removed and replaced, or completely thawed, prior to placement of the floor slab. The

subgrade soils will likely require reworking and recompacting due to the loss of density caused by the freeze/thaw process.

Excavation Sideslopes

The excavations must comply with the requirements of OSHA 29 CFR, Part 1926, Subpart P, "Excavations and Trenches". This document states that the excavation safety is the responsibility of the contractor. Reference to this OSHA requirement should be included in the project specifications.

Observations & Testing

This report was prepared using a limited amount of information for the project and a number of assumptions were necessary to help us develop our conclusions and recommendations. It is recommended that our firm be retained to review the geotechnical aspects of the final design plans and specifications to check that our recommendations have been properly incorporated into the design documents.

The recommendations submitted in this report have been made based on the subsurface conditions encountered at the test boring locations. It is possible that there are subsurface conditions at the site that are different from those represented by the test borings. As a result, on-site observation during construction is considered integral to the successful implementation of the recommendations. We believe that qualified field personnel need to be on-site at the following times to observe the site conditions and effectiveness of the construction.

Excavation

We recommend that a geotechnical engineer or geotechnical engineering technician working under the direct supervision of a geotechnical engineer observe all excavations for foundations, slabs and pavements. These observations are recommended to determine if the exposed soils are similar to those encountered at the test boring locations, if unsuitable soils have been adequately removed and if the exposed soils are suitable for support of the proposed construction. These observations should be performed prior to placement of fill or foundations.

Testing

After the subgrade is observed by a geotechnical engineer/technician and approved, we recommend a representative number of compaction tests be taken during the placement of the structural fill and backfill placed below foundations, slabs and pavements, beside foundation walls and behind retaining walls. The tests should be performed to determine if the required compaction has been achieved. As a general guideline, we recommend at least one (1) test be taken for every 2,000 square feet of structural fill placed in building and paved areas, at least one (1) test for every 75 feet to 100 feet in trench fill, and for every 2-foot thickness of fill or backfill placed. The actual number of tests should be left to the discretion of the geotechnical engineer. Samples of proposed fill and backfill materials should be submitted to our laboratory for testing to determine their compliance with our recommendations and project specifications.

SUBSURFACE EXPLORATION PROCEDURES

We performed four (4) SPT borings on July 23 and July 24, 2014 with a truck rig equipped with hollow-stem auger. Soil sampling was performed in accordance with the procedures described in ASTM:D1586. Using this procedure, a 2-inch O.D. split barrel sampler is driven into the soil by a 140-pound weight falling 30 inches. After an initial set of 6 inches, the number of blows required to drive the sampler an additional 12 inches is known as the penetration resistance, or "N" value. The "N" value is an index of the relative density of cohesionless soils and the consistency of cohesive soils. In addition, thin walled tube samples were obtained according to ASTM:D1587, where indicated by the appropriate symbol on the boring logs.

The test borings were backfilled with on-site materials and some settlement of these materials can be expected to occur. Final closure of the holes is the responsibility of the client or property owner.

The soil samples collected from the test boring locations will be retained in our office for a period of one (1) month after the date of this report and will then be discarded unless we are notified otherwise.

Soil Classification

As the samples were obtained in the field, they were visually and manually classified by the crew chief according to ASTM:D2488. Representative portions of all samples were then sealed and returned to the laboratory for further examination and for verification of the field classification. In addition, select samples were then submitted to a program of laboratory tests. Where laboratory classification tests (sieve analysis and Atterberg limits) have been performed, classifications according to ASTM:D2487 are possible. Logs of the test borings indicating the depth and identification of the various strata, the "N" value, the laboratory test data, water level information and pertinent information regarding the method of maintaining and advancing the drill holes are also attached in Appendix A. Charts illustrating the soil classification procedures, the descriptive terminology and the symbols used on the boring logs are also attached in Appendix A.

Water Level Measurements

Subsurface groundwater levels should be expected to fluctuate seasonally and yearly from the groundwater readings recorded at the test borings. Fluctuations occur due to varying seasonal and yearly rainfall amounts and snowmelt, as well as other factors. It is possible that the subsurface groundwater levels during or after construction could be significantly different than the time the test borings were performed.

Subsurface groundwater levels should be expected to fluctuate seasonally and yearly from the groundwater readings recorded at the test borings and observation wells. Fluctuations occur due to varying seasonal and yearly rainfall amounts and snowmelt, as well as other factors.

Laboratory Tests

Laboratory tests were performed on select samples to aid in determining the index and strength properties of the soils. The index tests consisted of moisture content, dry density and sieve analysis. The strength tests consisted of unconfined compressive strength and consolidation. The consolidation test yielded inconclusive data due to the sensitivity of the lake deposit soils. The laboratory tests were performed in accordance with the appropriate ASTM procedures. The

results of the laboratory tests are shown on the boring logs opposite the samples upon which the tests were performed.

LIMITATIONS

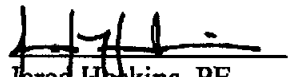
The recommendations and professional opinions submitted in this report were based upon the data obtained through the sampling and testing program at the test boring locations. We wish to point out that because no exploration program can totally reveal the exact subsurface conditions for the entire site, conditions between test borings and between samples and at other times may differ from those described in our report. Our exploration program identified subsurface conditions only at those points where samples were retrieved or where water was observed. It is not standard engineering practice to continuously retrieve samples for the full depth of the borings. Therefore, strata boundaries and thicknesses must be inferred to some extent. Additionally, some soils layers present in the ground may not be observed between sampling intervals. If the subsurface conditions encountered at the time of construction differ from those represented by our test borings, it is necessary to contact us so that our recommendations can be reviewed. The variations may result in altering our conclusions or recommendations regarding site preparation or construction procedures, thus, potentially affecting construction costs.

This report is for the exclusive use of the addressee and its representatives for use in design of the proposed project described herein and preparation of construction documents. Without written approval, we assume no responsibility to other parties regarding this report. Our conclusions, opinions and recommendations may not be appropriate for other parties or projects.

STANDARD OF CARE

The recommendations submitted in this report represent our professional opinions. Our services for your project were performed in a manner consistent with that level of care and skill ordinarily exercised by members of the engineering profession currently practicing at this time and area.

This report was prepared by:
GeoTek Engineering & Testing Services, Inc.


Jared Haskins, PE
Geotechnical Manager





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GEOTECHNICAL TEST BORING LOG

GEOTEK # **14-828**

BORING NO. **1 (1 of 1)**

PROJECT **Proposed Agronomy Center, South Dakota Wheat Growers, Near Melleto, SD**

DEPTH in FEET	DESCRIPTION OF MATERIAL	GEOLOGIC ORIGIN	N	WL	SAMPLE		LABORATORY TESTS				
					NO.	TYPE	WC	D	LL	PL	QU
	SURFACE ELEVATION 1295.6 ft										
2½	LEAN CLAY: black, dry, stiff, (CL)	TOPSOIL	9		1	X SPT					
	SILT: mottled brown and gray, moist, firm, (ML)	LAKE DEPOSIT	6		2	X SPT	38				
			7		3	X SPT	36		43	27	
					14	SH					
			5		4	X SPT	40				
			6		5	X SPT	40				
12	SILT: brown, moist, stiff, (ML)	LAKE DEPOSIT	13		6	X SPT	27				
			9		7	X SPT					
21½	FAT CLAY: brown, moist, firm, (CH)	LAKE DEPOSIT	6		15	SH					
					8	X SPT	45				
			7		9	X SPT					
29½	FAT CLAY: gray, moist, firm to stiff, (CH)	LAKE DEPOSIT	5		16	SH					
					10	X SPT					
			11		11	X SPT					
			5		12	X SPT					
45½	FAT CLAY: dark gray, moist, very stiff, (CH)	WEATHERED PIERRE SHALE	22		13	X SPT					
46	Bottom of borehole at 46 feet.										

WATER LEVEL MEASUREMENTS

START **7-23-14** COMPLETE **7-23-14 8:29 pm**

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	WATER LEVEL	METHOD
7-24-14	1:40 pm	46	44.5	--	3.5	3.25" ID Hollow Stem Auger
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--	--	--	--	--	--	
						CREW CHIEF Mike Wagner

GEOTECHNICAL TEST BORING 14-828.GPJ GEOTEKENG.GDT 8/18/14



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GEOTECHNICAL TEST BORING LOG

GEOTEK # <u>14-828</u>						BORING NO. <u>2 (1 of 1)</u>					
PROJECT <u>Proposed Agronomy Center, South Dakota Wheat Growers, Near Mallette, SD</u>											
DEPTH in FEET	DESCRIPTION OF MATERIAL	GEOLOGIC ORIGIN	N	WL	SAMPLE		LABORATORY TESTS				
					NO.	TYPE	WC	D	LL	PL	QU
	<u>SURFACE ELEVATION 1295.6 ft</u>										
2½	LEAN CLAY: black, dry, firm, (CL)	TOPSOIL	8		1	X SPT					
	SILT: mottled brown and gray, moist, firm to stiff, (ML)	LAKE DEPOSIT	5		2	X SPT	21				
			6		3	X SPT	37	87			
			9		4	X SPT					
			6		5	X SPT	40				
14½	SILT: brown, moist, firm, (ML)	LAKE DEPOSIT	6		6	X SPT	41		41	28	
			6		7	X SPT					
			6		8	X SPT	39				
29½	FAT CLAY: gray, moist, soft to firm, (CH)	LAKE DEPOSIT	4		9	X SPT					
			5		10	X SPT					
			6		11	X SPT					
44½	ELASTIC SILT: gray, moist, firm, (MH)	LAKE DEPOSIT	6		12	X SPT					
49½	FAT CLAY: dark gray, moist, very stiff, (CH)	WEATHERED PIERRE SHALE	24		13	X SPT					
51	Bottom of borehole at 51 feet.										
WATER LEVEL MEASUREMENTS						START <u>7-24-14</u> COMPLETE <u>7-24-14 1:28 pm</u>					
DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	WATER LEVEL	METHOD <u>Rotary Mud Drilling</u>					
--	--	--	--	--	--						
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--	--	--	--	--	--						
--	--	--	--	--	--	CREW CHIEF <u>Mike Wagner</u>					

GEOTECHNICAL TEST BORING 14-828.GPJ GEOTEKENG.GDT 8/18/14



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GEOTECHNICAL TEST BORING LOG

GEOTEK # **14-828**

BORING NO. **3 (1 of 1)**

PROJECT **Proposed Agronomy Center, South Dakota Wheat Growers, Near Mellee, SD**

DEPTH in FEET	DESCRIPTION OF MATERIAL	GEOLOGIC ORIGIN	N	WL	SAMPLE		LABORATORY TESTS					
					NO.	TYPE	WC	D	LL	PL	QU	
	SURFACE ELEVATION <u>1295.6 ft</u>											
3	LEAN CLAY: black, dry, soft to firm	TOPSOIL	7		1	X SPT						
			4		2	X SPT	19					
7	SILT: mottled brown and gray, moist, firm, (ML)	LAKE DEPOSIT	7		3	X SPT	32					
	SILT: mottled gray and brown, moist, firm to stiff, (ML)	LAKE DEPOSIT	9		4	X SPT						
			7		5	X SPT	37					
			5		6	X SPT	37					
			6		7	X SPT						
			6		8	X SPT						
29½	FAT CLAY: gray, moist, soft to firm, (CH)	LAKE DEPOSIT	4		9	X SPT	42	80			1800	
			8		10	X SPT						
39½	SILT: gray, moist, soft, (ML)	LAKE DEPOSIT	4		11	X SPT						
44½	CLAYEY SAND: fine to medium grained, gray, moist, dense, (SC)	MIXED ALLUVIUM	24		12	X SPT						
49½	FAT CLAY: dark gray, moist, very stiff, (CH)	WEATHERED PIERRE SHALE	26		13	X SPT						
51	Bottom of borehole at 51 feet.											
WATER LEVEL MEASUREMENTS						START	7-24-14	COMPLETE	7-24-14 10:58 am			
DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	WATER LEVEL	METHOD Rotary Mud Drilling						
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--	--	--	--	--	--	CREW CHIEF Mike Wagner						

GEOTECHNICAL TEST BORING 14-828 GPJ GEOTEKENG.GDT 8/18/14



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GEOTECHNICAL TEST BORING LOG

GEOTEK # 14-828

BORING NO. 4 (1 of 2)

PROJECT Proposed Agronomy Center, South Dakota Wheat Growers, Near Mellette, SD

DEPTH in FEET	DESCRIPTION OF MATERIAL ↓ SURFACE ELEVATION 1295.6 ft	GEOLOGIC ORIGIN	N	WL	SAMPLE		LABORATORY TESTS				
					NO.	TYPE	WC	D	LL	PL	QU
2	LEAN CLAY: black, dry, stiff, (CL)	TOPSOIL	13		1	X SPT					
	SILT: mottled brown and gray, moist, firm, (ML)	LAKE DEPOSIT	6		2	X SPT	37				
			6		3	X SPT	35		41	27	
			6		4	X SPT					
			6		5	X SPT	29				
14½	SILT: brown, moist, firm, (ML)	LAKE DEPOSIT	8		6	X SPT					
24½	FAT CLAY: gray, moist, soft to firm, (CH)	LAKE DEPOSIT	5		7	X SPT					
			5		8	X SPT	47	81			300
			4		9	X SPT					
			8		10	X SPT					
			4		11	X SPT					
44½	CLAYEY SAND: fine to medium grained, gray, moist, medium dense, (SC)	MIXED ALLUVIUM	13		12	X SPT					
49½	FAT CLAY: dark gray, moist, very stiff to hard, (CH)	WEATHERED PIERRE SHALES	22		13	X SPT					
WATER LEVEL MEASUREMENTS						START 7-23-14	COMPLETE 7-23-14 6:36 pm				
DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	WATER LEVEL	METHOD Rotary Mud Drilling					
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--	--	--	--	--	--						
--	--	--	--	--	--						
--	--	--	--	--	--	CREW CHIEF Mike Wagner					

GEOTECHNICAL TEST BORING 14-828 GPJ GEOTEKENG GDT 8/18/14



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GEOTECHNICAL TEST BORING LOG

GEOTEK # 14-828

BORING NO. 4 (2 of 2)

PROJECT Proposed Agronomy Center, South Dakota Wheat Growers, Near Mellette, SD

DEPTH In FEET	DESCRIPTION OF MATERIAL	GEOLOGIC ORIGIN	N	WL	SAMPLE		LABORATORY TESTS										
					NO.	TYPE	WC	D	LL	PL	QU						
	SURFACE ELEVATION <u>1295.6 ft</u>																
	FAT CLAY: dark gray, moist, very stiff to hard, (CH) (Continued from previous page)	WEATHERED PIERRE SHALE	31		14	☒ SPT											
			30/0.9'		15	☒ SPT											
			28		16	☒ SPT											
			26		17	☒ SPT											
			25		18	☒ SPT											
81	Bottom of borehole at 81 feet.		24		19	☒ SPT											
WATER LEVEL MEASUREMENTS						START <u>7-23-14</u>	COMPLETE <u>7-23-14 6:36 pm</u>										
DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	WATER LEVEL	METHOD Rotary Mud Drilling											
--	--	--	--	--	--												
--	--	--	--	--	--												
--	--	--	--	--	--												
--	--	--	--	--	--	CREW CHIEF Mike Wagner											

GEOTECHNICAL TEST BORING 14-828 GPJ GEOTEKENG.GDT 8/19/14

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		CLEAN SANDS (LITTLE OR NO FINES)		SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50			ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

BORING LOG SYMBOLS AND DESCRIPTIVE TERMINOLOGY

SYMBOLS FOR DRILLING AND SAMPLING

<u>Symbol</u>	<u>Definition</u>
Bag	Bag sample
CS	Continuous split-spoon sampling
DM	Drilling mud
FA	Flight auger; number indicates outside diameter in inches
HA	Hand auger; number indicates outside diameter in inches
HSA	Hollow stem auger; number indicates inside diameter in inches
LS	Liner sample; number indicates outside diameter of liner sample
N	Standard penetration resistance (N-value) in blows per foot
NMR	No water level measurement recorded, primarily due to presence of drilling fluid
NSR	No sample retrieved; classification is based on action of drilling equipment and/or material noted in drilling fluid or on sampling bit
SH	Shelby tube sample; 3-inch outside diameter
SPT	Standard penetration test (N-value) using standard split-spoon sampler
SS	Split-spoon sample; 2-inch outside diameter unless otherwise noted
WL	Water level directly measured in boring
▼	Water level symbol

SYMBOLS FOR LABORATORY TESTS

<u>Symbol</u>	<u>Definition</u>
WC	Water content, percent of dry weight; ASTM:D2216
D	Dry density, pounds per cubic foot
LL	Liquid limit; ASTM:D4318
PL	Plastic limit; ASTM:D4318
QU	Unconfined compressive strength, pounds per square foot; ASTM:D2166

DENSITY/CONSISTENCY TERMINOLOGY

<u>Density</u>		<u>Consistency</u>
<u>Term</u>	<u>N-Value</u>	<u>Term</u>
Very Loose	0-4	Soft
Loose	5-8	Firm
Medium Dense	9-15	Stiff
Dense	16-30	Very Stiff
Very Dense	Over 30	Hard

PARTICLE SIZES

<u>Term</u>	<u>Particle Size</u>
Boulder	Over 12"
Cobble	3" - 12"
Gravel	#4 - 3"
Coarse Sand	#10 - #4
Medium Sand	#40 - #10
Fine Sand	#200 - #40
Silt and Clay	passes #200 sieve

DESCRIPTIVE TERMINOLOGY

<u>Term</u>	<u>Definition</u>
Dry	Absence of moisture, powdery
Frozen	Frozen soil
Moist	Damp, below saturation
Waterbearing	Pervious soil below water
Wet	Saturated, above liquid limit
Lamination	Up to ½" thick stratum
Layer	½" to 6" thick stratum
Lens	½" to 6" discontinuous stratum

GRAVEL PERCENTAGES

<u>Term</u>	<u>Range</u>
A trace of gravel	2-4%
A little gravel	5-15%
With gravel	16-50%



**DEPARTMENT OF ENVIRONMENT
and NATURAL RESOURCES**

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**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 8056-3, Dakota Lakes / Wheat Growers**

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. 8056-3, Dakota Lakes / Wheat Growers, 38685 155th Street, Mellette SD 57461.

The Chief Engineer is recommending APPROVAL of Application No. 8056-3 because 1) there is reasonable probability that there is unappropriated water available for the applicant's proposed use, 2) the proposed diversion can be developed without unlawful impairment of existing rights, 3) the proposed use is a beneficial use and 4) it is in the public interest with the following 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. 8056-3 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. The Water Permit Holder shall report to the Chief Engineer annually the amount of water withdrawn from the Dakota aquifer.

See report on application for additional information.

Jeanne Goodman, Chief Engineer
December 5, 2014

NOTE: The water use proposed by Dakota Lakes/Wheat Growers is a commercial use of water. The South Dakota Well Construction Standards require casing of this proposed Dakota aquifer well must be pressure grouted from the top of the aquifer to the ground surface. The less expensive alternative well construction method that does not include pressure grouting the well casing from the top of the Dakota aquifer to the ground surface is reserved for domestic wells and cannot be used on this well.

Report to the Chief Engineer
Water Permit Application No. 8056-3
Dakota Lakes Wheat Growers
November 1, 2014

Water Permit Application No. 8056-3 proposes to appropriate groundwater at a maximum diversion rate of 0.20 cubic feet per second (cfs) from one well in the Dakota aquifer. The well is to be located in the NE ¼ NE ¼ Section 11-T119N-R64W in Spink County and is expected to be 850 feet deep. Water is to be used for commercial use from March 1st to November 30th.

AQUIFER: Dakota

Aquifer Characteristics and Hydrogeology:

The Dakota formation is a Cretaceous age formation that underlies approximately 66,500 square miles of the 77,047 square miles that make up of the state of South Dakota (Schoon, 1971). The Dakota formation is made up of yellowish, reddish, and sometimes whitish sandstone with local occurrences of shales and lignite beds (Schoon, 1971). Over much of the eastern part of the state the Dakota formation can be subdivided into three units: an upper layer of fine- to medium grained, light to reddish brown, quartz sandstone interbedded with minor gray to dark gray shale layers; a middle unit of a silty gray clay interbedded with minor sandstone layers; and a lower unit of medium to coarse grained quartz sandstone (Schoon, 1971).

The Dakota aquifer exists within the porous, permeable portions of the Dakota formation and is a bedrock aquifer under artesian conditions. Schoon (1971) estimated the volume of water stored in the South Dakota portion of the Dakota aquifer at 1.1 billion acre-feet. Three distinct water types have been identified in the Dakota aquifer: sodium chloride in Western SD, sodium sulfate in Northeastern SD, and calcium sulfate in Southeastern SD (Schoon, 1971). The chemical makeup of the water in the Dakota aquifer has been used to help identify the source of recharge to different areas of the aquifer (Schoon, 1971). The sodium sulfate type water of the Dakota originates in the Roundtop - Inyan Kara interval and is leaked to the Dakota where the Skull Creek formation is sporadically present (Schoon, 1971).

In Spink County the Dakota Formation underlies the Graneros Shale (Tomhave, 1971). In western Spink County the Dakota formation overlies the Skull Creek Shale, and in the eastern portion of the county the Dakota overlies Precambrian deposits (Tomhave, 1971). The Dakota aquifer underlies all of Spink County at depths ranging to 740 to approximately 1000 feet below grade (Hamilton and Howells, 1996). It ranges from 100 feet to over 200 feet thick (Tomhave, 1971). Hedges et al (1982) estimated the recoverable water (where recoverable water is water that can be withdrawn by pumping) in the portion of the Dakota in Spink County at 19,219,900 acre-feet, utilizing an estimated porosity of 15 percent and an estimated specific yield of 0.075.

A well log was not submitted with application no. 8056-3. Based on the area lithological data the top of the aquifer is at approximately 850 feet below grade (SDGS, 2014; Hamilton and

Howells, 1996; and Water Rights, 2014c). The water level is expected to be within plus/minus 35 feet of ground surface based on area data (SDGS, 2014; Hamilton and Howells, 1996; Water Rights, 2014a; and Water Rights, 2014c).

South Dakota Legal Considerations:

Water Permit Application No. 8056-3 proposes to appropriate water from the Dakota aquifer. Approval of this application is likely to result in a maximum annual use of 87 acre-feet per year. The probability of unappropriated water available from an aquifer can be evaluated by considering SDCL 46-6-3.1 which requires “No application to appropriate groundwater may be approved if, according to the best information reasonably available, it is probable 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. Here, a public water system is not involved, therefore the withdrawal/recharge issue must be considered.

In applying SDCL 46-6-3.1, the Sixth Judicial Circuit Court ruled in 2005 that if the Water Management Board uses average annual recharge, then it should also use average annual withdrawals to determine if unappropriated water is available from the aquifer (*Hines v. South Dakota Dept. of Environ. and Nat'l. Resources, Hughes County 04-37*) (Memorandum Decision, April 29, 2005).

A 2012 First Judicial Circuit Court’s rulings basically stated that data must be presented to show it is probable the average annual recharge exceeds the average annual discharge by at least the amount requested by the water permit application being considered (*Hanson County Dairy v. Robert Bender and Stace Nelson*) (Memorandum Decision, April 11, 2012).

Later in 2012, the First Judicial Circuit Court stated that in deciding whether or not it is probable that the quantity of water withdrawn will exceed the quantity of the average estimated annual recharge is to be based according to the best information reasonably available, and that nothing in South Dakota law requires a recharge study (*Longview Farms, LLP v. South Dakota Dept. of Environ. and Nat'l. Resources*) (Memorandum Decision, May 17, 2012).

Hydraulic Budget:

Recharge:

Data is not available to estimate the average annual recharge to the Dakota aquifer. In Hamilton and Howells (1996) an estimate for the subsurface inflow to the portion of the Dakota in Spink County is offered by the authors of 6,200 acre-feet per year. The authors subdivide this number into 4,600 acre-feet per year from the west, 1,500 acre-feet per year from the east, and the remainder from leakage to the Dakota from underlying aquifers (Hamilton and Howells, 1996). The subsurface inflow from the east is related to withdrawals from the aquifer in Spink County, and western inflow is linked to the western source of recharge to the Dakota (Hamilton

and Howells, 1996). The authors further note that changes in pumpage/withdrawals from the Dakota would cause some variability in the subsurface inflow to the portion of the Dakota in Spink County (Hamilton and Howells, 1996).

Withdrawal:

Data is not available to estimate average annual withdrawals for the entire Dakota aquifer; however recharge versus withdrawals for the portion of the Dakota aquifer in Spink County can be examined. Data is not available to estimate domestic use from the Dakota in Spink County, however it can be noted that this amount has likely decreased with the development of rural water in the area (Hamilton and Howells, 1996). It is worth noting the appeal of rural water over the Dakota in terms of water quality when comparing the two.

Wild and wasteful artesian wells in Spink County has been well documented (Pugsley and Cox, 1937). However the current status (flowing/not flowing) of these wells is unknown, since as artesian head pressure in the Dakota decreases these wells are expected to stop flowing. This has allowed artesian head pressure in the Dakota to stabilize, since these wild and wasteful wells are the primary cause of declining artesian head pressure in the Dakota (Schoon, 1971). Additionally and most importantly the Water Management Board has determined that water discharged from uncontrollable flowing wells does not constitute withdrawal pursuant to SDCL 46-6-3.1 when the water is not put to beneficial use (Water Rights, 1987).

Uses of the Dakota in Spink County include domestic, commercial, municipal, and institutional. Average annual use can be estimated by assuming that diversion will occur at the maximum diversion rate 60% of the time for rights/permits limited by rate only. For rights/permits limited to an annual volume 100% of use is used for estimation. The Spink County municipalities of Frankfort, Mellette, Brentford, Conde, Doland, Tulare, Northville, and Redfield have all connected to rural water but still maintain their Dakota wells for standby/fire protection (Water Rights, 2014b and Kittay, 2014). The municipality of Ashton is connected to rural water but still makes some use of their Dakota wells for the purposes of flushing the town sewer system, fire protection, and watering of the city park (Water Rights, 2014b). The addition of the rest of the Spink County Dakota users to the noted municipalities results in an estimated annual withdrawal of 1,209 acre-feet per year. When compared to the estimated subsurface inflow to the portion of the Dakota in Spink County by Hamilton and Howells (1996) of 6,200 acre-feet per year, there is a reasonable probability that there is unappropriated water available in the portion of the Dakota aquifer in Spink County.

Historical Data:

The decline of artesian head pressure in the Dakota aquifer has been a standing point of concern since the early 1900's. Dakota water levels have been examined several times over the last century, both statewide and regionally. The approximate water levels from these investigations for the area of application number 8056-3 are shown in Table 1. From the data in

Table 1 an approximate decline in head pressure of 390 feet can be seen over the 80 year time period covered in Table 1, with the greatest rate of decline occurring in the earlier portion of the time period.

Table 1: Potentiometric Head in the Area of Application Number 8056-3		
Time period	Source	Potentiometric head*
1909	Darton, 1909	1690'
1914-15	Schoon, 1971	1400'
1954	Erickson, 1955	1350'
1980-89	Hamilton and Howells, 1996	1300'

*datum is mean sea level

Some investigators of the Dakota have concluded that this decrease in artesian head pressure is an indication of withdrawals exceeding recharge in the Dakota; however in Water Rights (1987) the Water Management Board held that the issue of withdrawals exceeding recharge cannot be solely decided by a decline in head pressure. Additionally the head pressure in the Dakota aquifer is in theory still stabilizing to withdrawals and discharges (Water Rights, 1987). The lower rate of decline in the latter part of the time period in Table 1 would support the theory that the Dakota is stabilizing to withdrawals and discharges.

Observation Wells:

In determining the availability of unappropriated water for a permit application Administrative Rule 74:02:05:07 requires the Water Management Board to rely on the record of observation well measurements, in addition to other data, to determine that the quantity of water withdrawn annually from the aquifer does not exceed the estimated annual recharge. The Water Rights Program monitors 43 observation wells in the Dakota aquifer. Of these, only one is located in the northeastern part of the state. Observation well data offers a picture of conditions in the aquifer over the period of record. Observation well data is especially useful in examining local conditions in an aquifer, especially in aquifers with large areal extents like the Dakota.

Observation well ED-85A is located approximately 23 miles northwest of the proposed location for application number 8056-3. The hydrograph for ED-85A is shown in Figure 1. In examining Figure 1 an increase in water level can be observed over the period of record. This may support the theory that the artesian head pressure in the Dakota aquifer is stabilizing in relation to withdrawals and discharges.

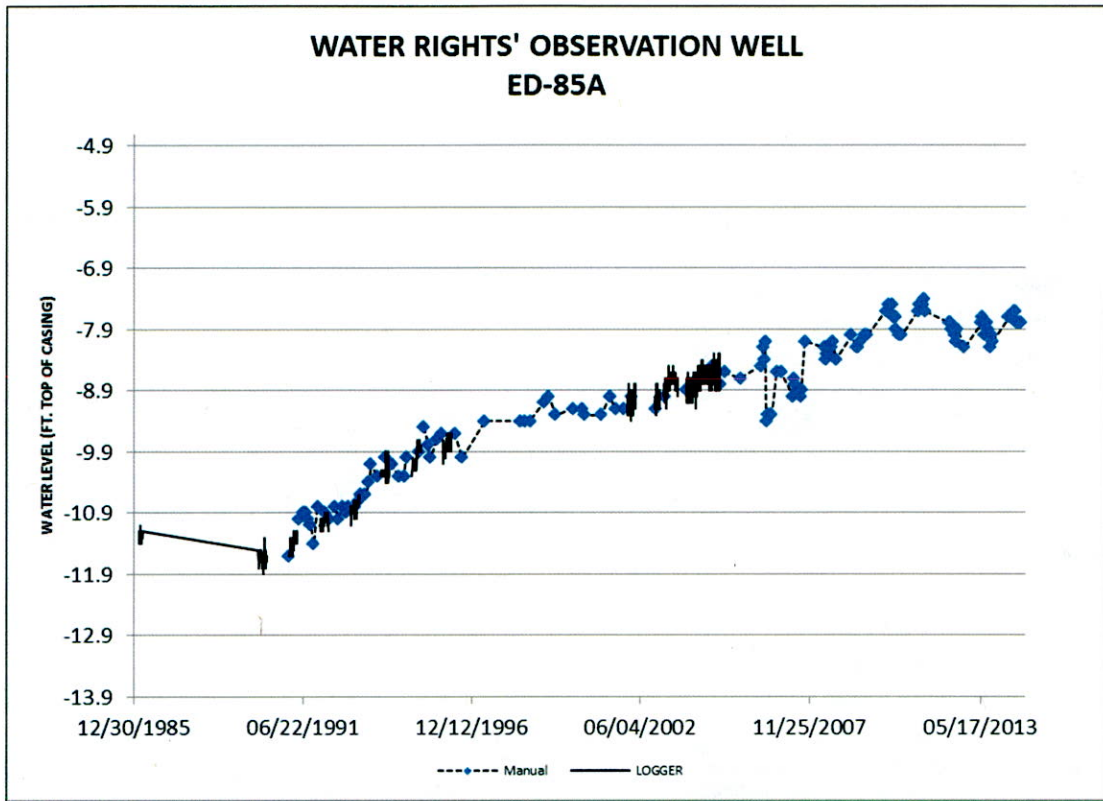


Figure 1: Observation Well Data for ED-85A (Water Rights, 2014a)

The second nearest observation well to the location of the well proposed by application number 8056-3 is located in the east central part of the state. Observation well HD-87A is located approximately 60 miles south southwest of application number 8056-3. The hydrograph for this well is shown in Figure 2.

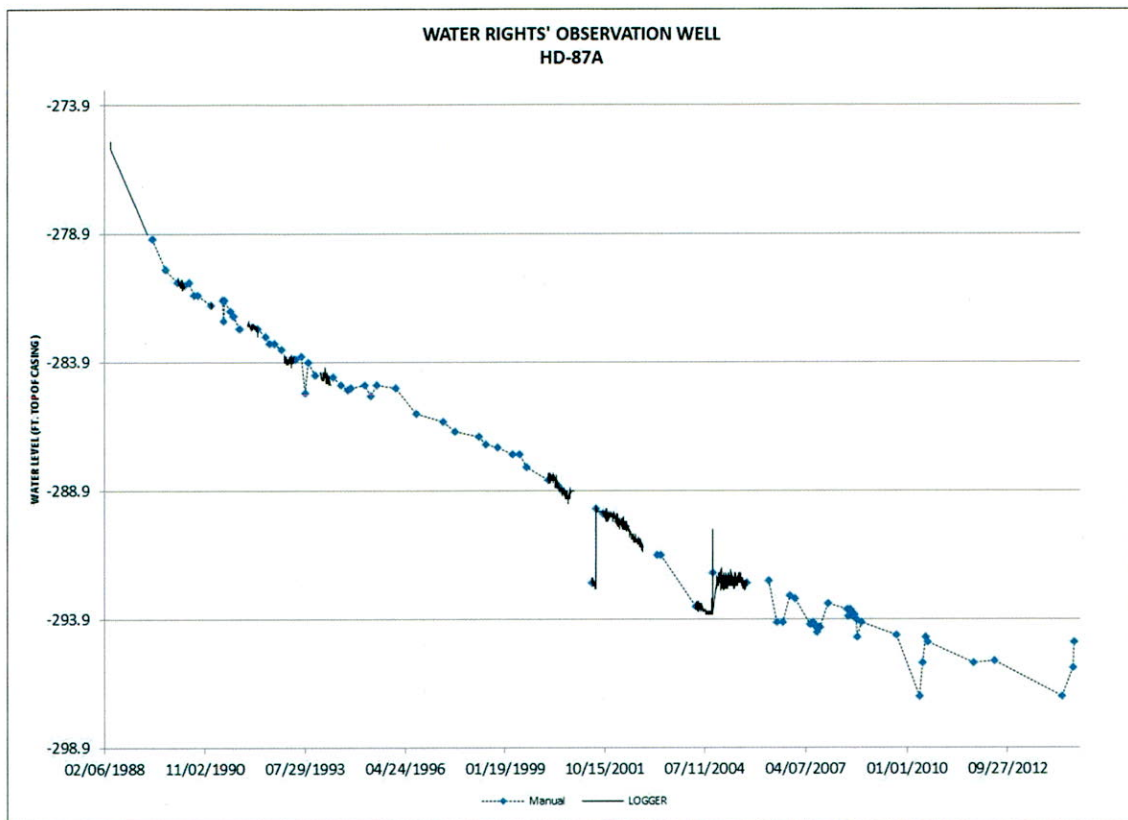


Figure 2: Observation Well Data for HD-87A (Water Rights, 2014a)

Over 15,000 wells have been completed into the Dakota Aquifer, many of which are or at some point were, flowing at the land surface. The water levels measured in the two observation wells merely reflect what is happening in the aquifer in the respective areas of these wells. That includes natural fluctuations, use, and misuse by non-controlled flowing wells in the areas of the observation wells.

Existing Water/Permits Rights:

A map of the area with nearby existing water rights/permits for the Dakota aquifer labeled is shown in Figure 3. There are eight existing water rights/permits for the Dakota aquifer within ten miles of the proposed well location shown in Table 2 (Water Rights, 2014b). The nearest water right/permit is for the municipality of Mellette, which currently receives their water from rural water but still maintains their wells for standby/fire protection purposes only (Water Rights, 2014b). Should the municipality of Mellette resume use of their wells, some measurable drawdown from permit number 8056-3 (if approved) is likely but not to the extent that it would adversely impact an adequate well. An adequate well as defined by South Dakota Law is “a well constructed or rehabilitated to allow various withdrawal methods to be used, to allow the inlet to the pump to be placed not less than 20 feet into the saturated aquifer or formation material when the well is constructed, or the allow the pump to be placed as near to the bottom of the aquifer as

is practical if the aquifer thickness is less than 20 feet.” In the past, the Water Management Board has recognized that to place water to maximum beneficial use, a certain amount of drawdown may occur. Additionally pursuant to SDCL 46-6-6.1 artesian head pressure is not protected.

Table 2: Existing Dakota Water Rights/Permits within Ten Miles (Water Rights, 2014b)				
Permit #	Name	County	Status	Use
499-3	City of Northville	SP	LC	MUN*
545-3	City of Northville	SP	LC	MUN*
1740-3	Mansfield Water Users	BN	LC	MUN
1772-3	Town of Mellette	SP	LC	MUN*
4064-3	Town of Brentford	SP	LC	MUN*
4321-3	City of Ashton	SP	LC	MUN
6525-3	Nilsson Farms	BN	PE	COM
6593-3	Leroy Braun	SP	PE	COM

*Indicates that wells are on standby

LC=license, PE=permit, MUN=municipal, COM=commercial, SP=Spink, BN=Brown

There are domestic wells on file with the Water Rights Program completed into the Dakota in the area surrounding the proposed location of application number 8056-3. However, with the development of rural water in the area and its draw of higher quality water than that provided by the Dakota, it is likely that some of these Dakota users have switched to rural water to meet their domestic water needs. If there are remaining domestic Dakota users close to the proposed location of application number 8056-3 some measureable drawdown is likely but not to the extent that it would adversely impact an adequate well. It should also be noted that domestic wells in this area qualify for the alternative well construction requirements for certain Dakota aquifer wells contained in SD Administrative Rule 74:02:04:35, however wells constructed in this manner do **not** meet the definition of an adequate well.

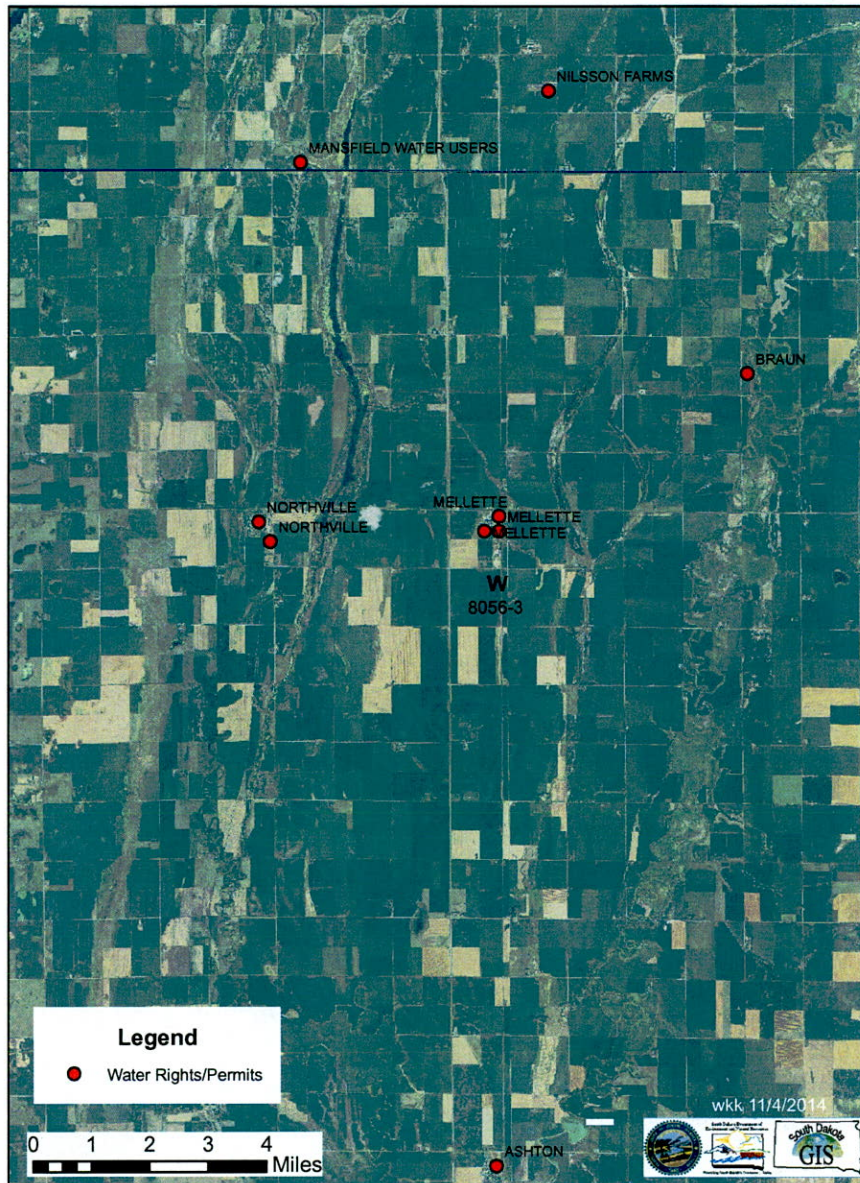


Figure 3: Map of Existing Water Rights/Permits Completed into the Dakota Aquifer in the Area of Application Number 8056-3 (water rights with a canceled status not shown) (Water Rights, 2014b)

Well Construction:

The well proposed by application number 8056-3 falls under the well construction standards pursuant to SD Administrative Rule 74:02:04:28. Although SD Administrative Rule 74:02:04:35 contains alternative well construction requirements for certain Dakota aquifer wells they only apply to “private and reasonable domestic use wells and for noncommercial livestock watering wells.” SD Administrative Rule 74:02:04:35 further states that “all other wells, including public water supply wells, shall be constructed as required by 74:02:04:28.” Since the well proposed by application number 8056-3 is for commercial use, it does **not** qualify for the

alternative construction requirements for certain Dakota wells contained in SD Administrative Rule 74:02:04:35.

Conclusions:

1. Water Permit Application No. 8056-3 proposes to appropriate groundwater at a maximum diversion rate of 0.20 cfs from one well to be completed into the Dakota aquifer for commercial use.
2. There is a reasonable probability that water is available.
3. The well proposed by application number 8056-3 is not expected to adversely impact adequate wells in the area.
4. Application number 8056-3 is not expected to impair existing rights/permits.
5. The well proposed by application number 8056-3 is for commercial use, therefore does **not** qualify for the alternative construction requirements for certain Dakota wells contained in SD Administrative Rule 74:02:04:35.



Whitney Kilts

SDDENR Water Rights Program

Approved by



Ken Buhler

SDDENR Water Rights Program

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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)
- In the Matter of Water Permit Application 7209-3, Longview Farms, LLP v. South Dakota Dept. of Environment and Natural Resources, South Dakota First Judicial Court Civ. No. 11-146 (Memorandum Decision, May 17, 2012)
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Water Rights. 2014b. Water Right/Permit Files. SD DENR-Water Rights Program, Joe Foss Bldg., Pierre, South Dakota.

Water Rights. 2014c. Well Completion Reports. SD DENR-Water Rights Program, Joe Foss Bldg., Pierre, South Dakota.

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Affidavit of Publication

STATE OF SOUTH DAKOTA,
County of Spink: ss.

RECEIVED
DEC 23 2014
WATER RIGHTS
PROGRAM

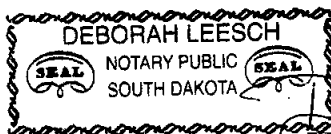
I, Mark E. Davis, of said County & State, being first duly sworn on oath, say that THE REDFIELD PRESS is a legal weekly newspaper as defined in Sec. 65.0508 South Dakota Code 1939, as amended by Chapter 298 of the Session of Laws of 1939, printed and published in the English language in the City of Redfield, in said County and State, by THE REDFIELD PRESS, and has been such newspaper during the time hereinafter mentioned, and that I Mark E. Davis, the undersigned, am Publisher of said newspaper in charge of the advertising department thereof, and have personal knowledge of all the facts stated in this affidavit, and that the legal or official notice entitled:

#1158 NOTICE

A printed copy of which is hereto attached, was printed and published in said newspaper in 1 issue, to wit: The first publication being made on December 17th, 2014, that Twenty-two and .75/100 Dollars, insures to the benefit of the publisher of THE REDFIELD PRESS, that no agreement or understanding for the division thereof has been made with any other person, and that no part thereof has been agreed to be paid to any person whomsoever.



Subscribed and sworn to before me this 17th day of December, 2014.




Notary Public, South Dakota

My commission expires 10/09/2019

Notice

#1158

NOTICE OF APPLICATION

NO. 8056-3 to Appropriate Water

Notice is given that Dakota Lakes / Wheat Growers, 38685 155th St, Mellette SD 57461 has filed an application for a water permit to appropriate 0.20 cubic feet of water per second from one well to be completed into the Dakota Aquifer (850 feet deep) located in the NE 1/4 NE 1/4 Section 11-T119N-R64W for commercial use.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 8056-3 because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest. In accordance with SDCL 46-2A-23, the Chief Engineer will act on this application, as recommended, unless a petition is filed opposing the application or the applicant files a petition contesting the Chief Engineer's recommendation. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled and the Water Management Board will consider this application. Notice of the hearing will be given to the applicant and any person filing a petition.

Any person interested in opposing or supporting this application or recommendation must file a written petition with BOTH the applicant and Chief Engineer. The applicant must file a petition if contesting the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by December 29, 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. Information concerning this application is available

at <http://denr.sd.gov/public>. 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 \$22.75. (Dec. 17)

RECEIVED

DEC 17 2014

WATER RIGHTS
PROGRAM

AFFIDAVIT OF PUBLICATION

STATE OF SOUTH DAKOTA}

§

COUNTY OF BROWN}

Mary Bester being duly sworn, on his/her oath says: That the AMERICAN NEWS is a daily newspaper of general circulation, printed and published in Aberdeen, Brown County, South Dakota, by the Aberdeen News Company, a corporation, and has been such a newspaper during the times hereinafter mentioned; That affiant is an employee and principal clerk of said publisher and has personal knowledge of all facts stated in this affidavit; That the advertisement headed:

Legal H 1887200

a printed copy of which is hereunto attached, was printed and published in the regular and entire issue of said newspaper, and not in a supplement thereof, once each

Dg for 1 successive Dg
The first publication being made on the 12 day of Dec, 2014
The second publication being made on the _____ day of _____, 2014
The third publication being made on the _____ day of _____, 2014
The fourth publication being made on the _____ day of _____, 2014
The fifth publication being made on the _____ day of _____, 2014
The sixth publication being made on the _____ day of _____, 2014

That said newspaper is a legal newspaper published five days or more each week; with a bona fide circulation of more than two hundred copies daily; published in the English language within the said county of Brown for more than one year prior to the first publication of said notice; and printed in whole in an office maintained at the place of publication of said newspaper; That the whole amount of the fee paid for the publication of the annexed notice is \$ 43.75, which insures solely to the benefit of said publisher; That no agreement or understanding for a division thereof had been made with any other person; and That no part thereof has been agreed to be paid to any person whomsoever.

Mary Bester

Subscribed and sworn to before me this 12 day of Dec, 2014

Daily Circulation 13,500

Michael

Notary Public, Brown County, SD.

My commission expires March 20, 2019

(No. 1887200)

(December 12, 2014 - 1T)

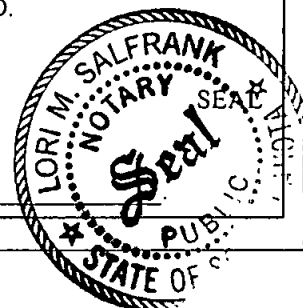
NOTICE OF APPLICATION NO. 8056-3 to Appropriate Water

Notice is given that Dakota Lakes / Wheat Growers, 38685 155th St, Mellette SD 57461 has filed an application for a water permit to appropriate 0.20 cubic feet of water per second from one well to be completed into the Dakota Aquifer (880 feet deep) located in the NE 1/4 NE 1/4 Section 11-T119N-R64W for commercial use.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 8056-3 because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest. In accordance with SDCL 46-2A-23, the Chief Engineer will act on this application, as recommended, unless a petition is filed opposing the application or the applicant files a petition contesting the Chief Engineer's recommendation. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled and the Water Management Board will consider this application. Notice of the hearing will be given to the applicant and any person filing a petition.

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The petition may be informal, but must include a statement describing the petitioner's interest in the application, the petitioner's reasons for opposing or supporting the application, and the signature and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained. Information concerning this application is available at <http://denr.sd.gov/public>. 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 43.75.





DEPARTMENT OF ENVIRONMENT
and NATURAL RESOURCES

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



December 5, 2014

Redfield Press
PO Box 440
Redfield SD 57469

ATTENTION: Legal Public Notice

Enclosed is a Notice on Application No. 8056-3 to Appropriate Water. Please publish the notice once on December 17, 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 Dakota Lakes/Wheat Growers, 38685 155th St, Mellette SD 57461 (Ph # 605-252-8919).

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



December 5, 2014

American News
PO Box 4430
Aberdeen SD 57402

ATTENTION: Legal Public Notice

Enclosed is a Notice on Application No. 8056-3 to Appropriate Water. Please publish the notice once on December 17, 2014. The text of the notice can be e-mailed to your paper by contacting Karen Schlaak at (605) 773-3352.

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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.**

December 5, 2014

Dakota Lakes/Wheat Growers
38685 155th St
Mellette SD 57461

Dear Sir:

Water Permit Application No. 8056-3 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 Redfield Press printed at Redfield SD (Ph # 605-472-0822) and the American News printed at Aberdeen SD (Ph # 605-225-4100). 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 December 17, 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. 8056-3 to Appropriate Water

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Published once at the total approximate cost of _____.



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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JAN 12 2015

Dakota Lakes/Wheat Growers
38685 155th St
Mellette SD 57461

Dear Sir:

Enclosed is Water Permit No. 8056-3 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

RECEIVED

MAR 23 2015

WATER RIGHTS
PROGRAMNOTICE OF COMPLETION OF WORKS AND
APPLICATION OF WATER TO BENEFICIAL USEDate 3-19-15TO: Water Rights Program, DENR
523 E. Capitol
Pierre, SD 57501-3181FROM: Dakota Lakes / Wheat Growers(name)
38685 155th St(address)
Mellette, SD 57461

(city, state, zip)

605-290-9367
(phone)

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

Water Permit No. 8056-3 states that the water use system is to be constructed by 12-29-19, and water is to be put to beneficial use by 12-29-23.

(date)

(date)

The water use system was completed on 3-18-15.

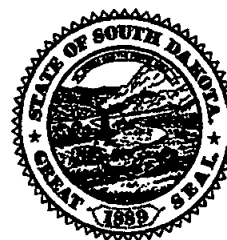
(date)

Applying the water to beneficial use was completed on 3-18-15.

(date)

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

[Signature]
(signature)





DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

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

March 24, 2015

8056-3

Josh Lunzman
Dakota Lakes/Wheat Growers
38685 155th St
Mellette SD 57461

Dear Mr. Lunzman:

I am writing to acknowledge receipt of the "Notice of Completion of Works" form that you sent in to let us know that you are completed with the water use system authorized under Water Permit No. 8056-3.

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

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

Sincerely,

A handwritten signature in cursive script that reads 'Genny McMath'.

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

SOUTH DAKOTA WATER WELL COMPLETION REPORT

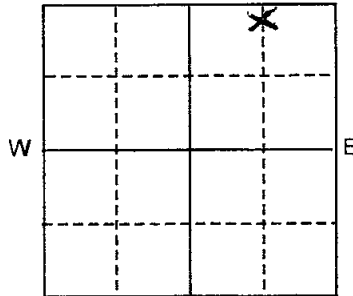
11-02

Location NE 1/4 1/4 Sec 11 Twp 119 Rg 64

County Spink

North

Please mark well location with an "X"



Well Completion Date

2/15/15

1 Mile

Distance to nearest potential pollution source (septic tank, abandoned well, feed lot, etc.)?
1000 ft. from Building (identify source)

PROPOSED USE:

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

METHOD OF DRILLING:

Mud Rotary

CASING DATA:

☐ Steel ☒ Plastic ☒ Other

If other describe Stainless Steel

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
250 LB/FT	5 IN	0 FT	850 FT	7 7/8 IN
Sch 80 LB/FT	2 IN	660 FT	860 FT	4 1/2 IN
SS LB/FT	2 IN	860 FT	920 FT	4 1/2 IN

GROUTING DATA:

Grout Type	No. of Sacks	Grout Weight	From	To
Portland	125	15 Lb/gal	0 Ft	850 Ft
		Lb/gal	Ft	Ft

Describe grouting procedure
Pumped through 5"

SCREEN:

☐ Perforated pipe ☒ Manufactured

Diameter 2 Inches Length 60 Feet

Material Stainless Steel

Slot Size .025 Set From 860 Feet to 920 Feet

Other information

WAS A PACKER OR SEAL USED?

☐ Yes ☐ No

If so, what material? Pipe Cemented to 850

Describe packer(s) and location

DISINFECTION: Was well disinfected upon completion?

☒ Yes, How? Chlorinated

☐ No, Why Not?

Lab to which water quality sample sent for analysis

Well Owner:

Business Name: SD Wheat Growers

Address: 908 Lamont St.

City, State, Zip: Aberdeen SD 57401

WELL LOG:

FORMATION	DEPTH	
	FROM	TO
Top Soil	0	5
Yellow Clay	5	25
Blue Clay	25	75
Shale	75	860
Dakota	860	920

STATIC WATER LEVEL

FEET

If flowing: closed in pressure 5 PSI

GPM flow 25 through 2 Inch pipe

Controlled by ☒ Valve ☐ Reducers ☐ Other

Reduced flow rate 0 GPM

Can well be completely shut in? Yes

WELL TEST DATA:

☒ Pumped Describe: Air

☐ Bailed

☐ Other

Pumping Level Below Land Surface

Ft. After 4 Hrs. pumped 50 GPM

Ft. After Hrs. pumped GPM

If pump installed, pump rate: GPM

REMARKS

RECEIVED

APR - 2 2015

WATER RIGHTS PROGRAM

This well was drilled under license # 722 and this report is true and accurate.

Drilling firm: Stretch's Well Service Inc.

Signature of License Representative:

Tom Grady

Signature of Well Owner or Equitable Property Holder:

Frank N. [Signature]

Date:

4-7-15

Report of Examination of Works and/or Application of Water to Beneficial Use For Permit No. 8056-3

I have this day, November 16, 2016, made a thorough examination of the water use system constructed by Wheat Growers of 38685 155th St, Mellette SD 57461 (mailing: P.O. Box 107 Mellette SD) Permit No. 8056-3, bearing the priority of October 3, 2014 authorizing the diversion of 0.20 cu. ft. per second of the waters of Dakota aquifer for commercial purposes, in Spink County.

Inspection contact & relationship to permit holder, if applicable: **Robbie Guether (site manager) & Josh Lunzman (Wheat Growers)**

A. Works used to divert the water:

Well Information:

- 1) Well Drilling Firm: Stretch's Well Service
- 2) No. of Wells 1
- 3) Depth 920 feet
- 4) Well log is available Yes

Casing:

- 1) Diameter 5 inches drops to 2 inches at 850
- 2) Length 860 feet
- 3) Type stainless steel

Screen:

- 1) Type stainless steel
- 2) Length 60 feet
- 3) Static water level 5 psi

Pump:

- 1) Make submersible
- 2) Model _____
- 3) Size _____
- 4) Capacity 90 GPM*

*based on information from the site staff

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

- 1) Type underground pipe
- 2) Size 2 & 3 inches
- 3) Length ≈956 feet

Comments: **2 inch line runs ≈337 feet to the offices and the 3 inch line runs ≈619 feet to the liquid fertilizer area (distances & diameters based on site plan submitted with application site staff indicated plan was consisted to actual construction)**

D. Compliance with Permit Requirements:

- 1) Permit qualifications being abided by Yes

If no, describe: **none**

- 2) Exceptions to compliance are: none

E. Condition and Location:

1. The system is in excellent condition with the point of diversion located as follows: NE ¼ NE ¼ Sec. 11-T113N-R64W (latitude: 45.14331 and longitude: -98.49814) and approximately 1,294 feet west and 55 feet south of the NE corner of Sec. 11-T113N-R64W

9

2. The works are capable of diverting and conveying to the place of use 0.20 cu. ft. per second of water which is to be used for commercial. Water has been put to beneficial use to the maximum extent as follows:

Water for commercial use at a Wheat Growers facility in Mellette, SD

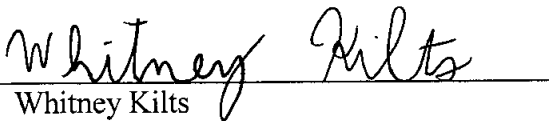
the license should be issued for 0.20 cfs.

3. All structures, wells and lands on map No

If no, describe: **facility is recently constructed and does not appear on available imagery**

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

Wheat Growers bought out Dakota Lakes.



Whitney Kilts
Natural Resources Engineer
DENR, Water Rights Program

Date report completed: 12/14/2016



Completed by: *Whitney Kilts*
Whitney Kilts, Natural Resources Engineer
SD DENR, Water Rights Program

Diversion point located using Garmin eTrex 10 GPS
Date: December 5, 2016

Water Right No. 8056-3



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

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

January 30, 2017

8056-3

Josh Lunzman
Wheat Growers
38685 155th St
Mellette SD 57461

Dear Sir:

Enclosed is Water License No. 8056-3. This is the final water right document completing your process of obtaining a Water Right. Included with your license is a map prepared by the staff engineer who conducted the field investigation.

For your information SDCL 46-6-27 requires that if the owner of an existing well, such as the well authorized by Water Right No. 8056-3, 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 License, the State Water Laws provide that you have a continuing right to use the water. If you have any questions, please contact our office.

Sincerely,

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

enclosures

STATE OF SOUTH DAKOTA

WATER LICENSE NO. 8056-3

(1) Wheat Growers, 38685 155th St, Mellette SD 57461 made Application No. 8056-3, October 3, 2014 for a water permit to divert 0.20 cubic feet of water per second from one well – Dakota Aquifer, Spink County, South Dakota for commercial use purposes. Permit No. 8056-3, with a priority date of October 3, 2014 was approved December 29, 2014 and issued to the applicant for diversion of water with construction of the described water supply system to be completed on or before December 29, 2019 and for the application to beneficial use of water on or before December 29, 2023.

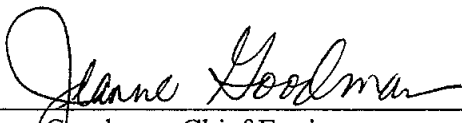
The permit holder submitted a *Notice of Completion of Works and Application of Water to Beneficial Use* on March 23, 2015. The *Notice* stated the diversion system was completed on March 18, 2015 and the water placed to beneficial use on March 18, 2015.

(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. 8056-3 is issued a license, bearing a priority date of October 3, 2014 to appropriate 0.20 cubic feet of water per second from one well – Dakota Aquifer for commercial use.

The diversion point is located: 1,294 feet west and 55 feet south of the NE corner of Section 11-T119N-R64W (NE 1/4 NE 1/4).

(3) This license is subject to South Dakota Water Law, any limitations or conditions listed in Water Permit No. 8056-3 including the following qualifications:

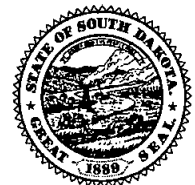
- The well approved under this Permit will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner under this Permit shall control his withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
- The well authorized by Permit No. 8056-3 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.
- The Water Permit Holder shall report to the Chief Engineer annually the amount of water withdrawn from the Dakota aquifer. *Water use reports are submitted annually and on file with the Water Rights Program.*



Jeanne Goodman, Chief Engineer
Water Rights Program

Department of Environment and Natural Resources

JAN 30 2017
date



NOTICE OF TRANSFER OF OWNERSHIP

PAID

FEB 21 2019

Ck# 75505349

To: Chief Engineer
Water Rights Program, DENR
523 E. Capitol
Pierre, SD 57501-3181

RECEIVED

FEB 21 2019

WATER RIGHTS
PROGRAM

No. 8056-3

Date: 2-5-19

I/We request that Water Right/Permit No. 8056-3

formerly owned by: Wheat Growers

be transferred to: (name & address) Agtegra Cooperative

PO Box 107, Melleette SD 57461

Telephone No. 605-887-3572

Title to the following described land(s)/property has been transferred as described above:

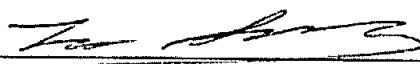
1 well - located in the NE 1/4 NE 1/4 Section 11-T119N-R64W

I/We understand that the validity of Water Right/Permit No. 8056-3 has not been determined by this transfer action. If I/We have any questions on validity, I/We understand that only the Water Management Board has the authority to determine if a water permit/right is valid (see note).

You are requested to file this "Notice of Transfer" in the appropriate file with the Water Rights Program, as evidence of the change of ownership.

A fee of Fifty Dollars (\$50.00) is required to cover the filing fees as required under SDCL 46-2-13. This form must be signed by the new owner.

I/We Lee Sanderson, the new owner, certify that the above information is true and correct.


(Signed by new owner)

NOTE: Water permits may be cancelled for nonconstruction after the five year construction period has expired. Once a water permit is developed and the water used, the permit becomes a right. A water right may be lost for three reasons:

1. Abandonment - no intent to use water and use is abandoned.
2. Forfeiture - no use of water for three year period without legal excuse.
3. For a third violation of a condition of a water permit/right.

RECEIPT

WATER RIGHTS PROGRAM

South Dakota Department of Environment and Natural Resources

Date **February 21**, 20**19**

RECEIVED OF **Agtegra Cooperative 908 Lamont Street south Aberdeen SD 57401**

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

Fee for Application for Permit No. _____ to Appropriate Water, to construct and to put water to beneficial use	50	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. _____		
Fee for Filing Transfer Form 8056-3		
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. _____	50	00
Fee for Renewal of Well Pump Installer's License No. _____ for C.Y. _____		
(Any Other Work Provided by Law)	TOTAL	

No. **09049**

By *Jeanne Goodman*
Chief Engineer *Jm*

8056-3

Schlaak, Karen

From: Lee Sanderson <Lee.Sanderson@agtegra.com>
Sent: Thursday, February 21, 2019 10:02 AM
To: Schlaak, Karen
Subject: RE: [EXT] Water use from Dakota Aquifer

The Mellette address please.
Thank you.

Lee Sanderson
Mellette Area Manager



15467 387th Ave, PO Box 107 / Mellette, SD 57461
Office: (605) 887-3572 / Cell: (605) 860-6050

From: Schlaak, Karen <Karen.Schlaak@state.sd.us>
Sent: Thursday, February 21, 2019 9:32 AM
To: Lee Sanderson <Lee.Sanderson@agtegra.com>
Subject: FW: Water use from Dakota Aquifer

We received the Notice of Transfer of Ownership form today. The form did not list a mailing address. Do you want future correspondence to go to: 908 Lamont St South, Aberdeen SD 57401 or PO Box 107, Mellette SD 57461?

Karen

From: Schlaak, Karen
Sent: Tuesday, February 05, 2019 10:18 AM
To: 'Lee Sanderson'
Subject: RE: [EXT] Water use from Dakota Aquifer

Attached is a partially completed Notice of Transfer of Ownership form. This is the form used for a name change also. Please complete the form, sign and mail it back with the required fee of \$50.00. Let me know if you have questions.

From: Lee Sanderson [mailto:Lee.Sanderson@agtegra.com]
Sent: Tuesday, February 05, 2019 10:00 AM
To: Schlaak, Karen
Subject: RE: [EXT] Water use from Dakota Aquifer

It is a name change. Wheat Growers went through a merger last February and changed the name to Agtegra Cooperative.

Lee Sanderson
Mellette Area Manager



15467 387th Ave, PO Box 107 / Mellette, SD 57461
Office: (605) 887-3572 / Cell: (605) 860-6050

From: Schlaak, Karen <Karen.Schlaak@state.sd.us>
Sent: Tuesday, February 5, 2019 9:55 AM
To: Lee Sanderson <Lee.Sanderson@agtegra.com>
Subject: RE: Water use from Dakota Aquifer

Good Morning,

I am working on compiling the all the water usage records for 2018. I note that you reported for Water Right No. 8056-3. Our records indicate this water right is listed in the name of Wheat Growers. You submitted the information as Agtegra Cooperative with a different mailing address. Should this water right be transferred to different ownership or name change? Let me know and I will forward you the necessary forms .

Karen Schlaak

SD DENR, Water Rights Program
(605) 773-3352



From: Lee Sanderson [<mailto:Lee.Sanderson@agtegra.com>]
Sent: Tuesday, January 08, 2019 3:23 PM
To: Schlaak, Karen
Subject: [EXT] Water use from Dakota Aquifer

Karen Schlaak,

The water use for Agtegra Cooperative in Mellette, SD from the Dakota Aquifer during 2018 was 525,000 gallons.
If you have any other questions, please let me know.
Thank you,

Lee Sanderson
Mellette Area Manager



15467 387th Ave, PO Box 107 / Mellette, SD 57461
Office: (605) 887-3572 / Cell: (605) 860-6050



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

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

February 25, 2019

8056-3

Lee Sanderson
Agtegra Cooperative
PO Box 107
Mellette SD 57461-0107

Dear Mr. Sanderson:

I am writing to acknowledge receipt of the transfer form and filing fee submitted for changing the name on Water Right No. 8056-3.

The ownership change has been completed. Water Right No. 8056-3 is now listed in the name of Agtegra Cooperative.

Enclosed for your records is Receipt No. 09049 in the amount of \$50. If you have any questions, please contact me.

Sincerely,

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

enclosure