

WATER PERMIT NO. 1635-1

Name of Applicant: Black Hill National Cemetery

Address: PO Box 640, Sturgis SD 57785

Phone: 605 347-7299

Amount of Water Claimed: 0.20 additional

Total Acres: ^{11.3}
3 additional

Source of Water Supply: groundwater

Water to be used for: irrigation County: Meade

Type of Waste Disposal System: NA

Location: 3 miles southeast of Sturgis

PRIORITY Date Received: 11-20-95 Fee: \$150.00

Corrected Application Received: NA 12/8/95 Period of Annual Use: April 1 - September 30

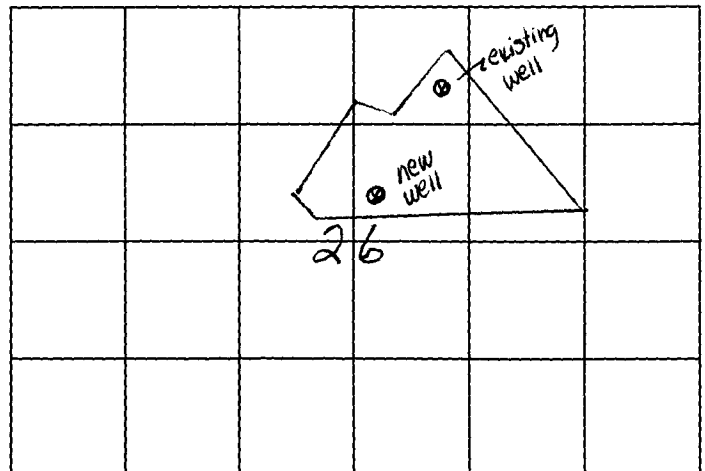
Remarks: changes diversion point, increases water appropriate and amends acreage

Diversion Point: SW 1/4 NE 1/4 Section 26-

T5N-R5E

Land to be Irrigated: NE 1/4, E 1/2 NW 1/4,

Section 26-T5N-R5E



Depth of Well: approximately 1755 feet deep

Well Driller:

Remarks: well not drilled yet

Type of Map: plat

Prepared by: Douglas Sperlich, PE

Reviewed and the Number Assigned on: 11-21-95

By: Karen Schlaak

Notice of Hearing - date to intervene: _____

SOUTH DAKOTA
WATER PERMIT NO. 1635-1

Date of first receipt of application November 20, 1995.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 1635-1 to Black Hills National Cemetery, PO Box 640, Sturgis SD 57785-0640 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. 1635-1 amends Water Permit No. 1483-1 and Water Right No. 1484-1 and appropriates an additional 0.20 cubic feet of water per second (cfs) to irrigate 11.3 additional acres. Water Permit No. 1483-1 and Water Right No. 1484-1, combined, appropriate a total of 0.57 cfs from one well located in the NW 1/4 NE 1/4 Section 26 to irrigate 43.2 acres located in the NE 1/4 Section 26; all in T5N-R5E. The well also supplies water for institutional purposes. This permit increases the water appropriation from 0.57 cfs to 0.77 cfs and includes one additional well approximately 1755 feet deep (Madison Aquifer) located in the SW 1/4 NE 1/4 Section 26 to irrigate 11.3 additional acres located in the S 1/2 NE 1/4, E 1/2 NW 1/4 Section 26; all in T5N-R5E. The well authorized by Water Permit No. 1483-1 and Water Right No. 1484-1 will continue to be used for institutional purposes.
2. The amount of the appropriation may not exceed 2 acre feet annually for each acre of land to which water is actually and beneficially applied for irrigation. The water is to be used during the following described annual period: April 1 - September 30.
3. The date from which applicant may claim right is November 20, 1995.
4. The date of approval of Permit No. 1635-1 is February 20, 1996.
5. One-fifth of the construction is to be completed on or before August 20, 1998.
6. All construction is to be completed on or before February 20, 2001.
7. Water is to be put to beneficial use on or before February 20, 2005.
8. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

QUALIFICATIONS

1. In accordance with SDCL 46-1-14 and 46-2A-20, Permit No. 1635-1 is issued for a twenty year term. Pursuant to SDCL 46-2A-21, the twenty year term may be deleted at any time during the twenty year period or following its expiration. If the twenty year term is not deleted at the end of the term, the permit may either be cancelled or amended with a new term limitation of up to twenty years. Permit No. 1635-1 may also be cancelled for nonconstruction, forfeiture, abandonment or three permit violations pursuant to SDCL 46-1-12, 46-5-37, 46-5-37.1, and Board Rule ARSD 74:02:01:37.

(continued)

2. 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.
3. This permit is approved subject to the irrigation water use questionnaire being submitted each year.

WATER MANAGEMENT BOARD

By: *John Hatch*
John Hatch, Chief Engineer
Water Rights Program
Department of Environment and Natural Resources

APR 3 1996
date



FORM 2: Application for irrigation in South Dakota

(type or print)

E88 5/10/95

Mail to:
Water Rights Division
Joe Foss Building
523 E Capitol
Pierre SD 57501-3181
605 773-3352

No. 1635-1 Hydrologic Unit 10120202
Basin Belle Fourche River
Newspaper Meade Co. Times-Tribune, Sturgis, SD
(office use only)



Application For Soil/Water Compatibility Permit And Permit To Appropriate Water

Type of Application: New Vested Right X Amendment/Correction to Permit No. 1483-1
(check one) (Use predates Mar 2, 1955) AND VESTED RIGHT 1484-1
Description of amendment/correction: (i.e. acreage change, change diversion point(s), add diversion point(s), etc.) CHANGE DIVERSION POINT TO NEW WELL, INCREASE WATER APPROPRIATION, AND AMEND ACREAGES.

- Name of Applicant BLACK HILLS NATIONAL CEMETERY Phone (605) 347-7299
(check one) X Owner Tenant/lessee
Mailing Address P.O. BOX 640, STURGIS State SD 57785
(Street, RR, or Box) (City) (Zip Code)
- Amount of water claimed .20 *CFS or **GPM ***AF Total Acreage ~~575~~ 11.30
(*Cubic Feet per Second) (**Gallons per Minute) (***)Acre Feet -- storage capacity of dam/dugout if applicable)
- Source of water supply NEW WELL
- Location of point of diversion (example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W) PROPOSED NEW WELL,
SW 1/4, NE 1/4, SECTION 26, T5N, R5E, BHM
- County MEADE
- County or counties where water will be used MEADE
- Annual period during which water is to be used April 1 to September 30
- List below each forty acre subdivision, or lot, or fraction thereof and show number of acres to be irrigated in each.
(Attach sheet if more space is needed)

Land Description	Acres	Land Description	Acres
SEE ATTACHMENT			

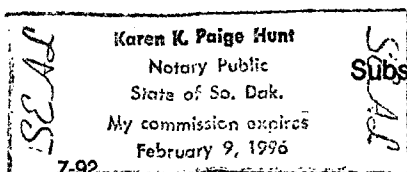
- Type of Irrigation: Gravity: Towline: Center Pivot: Gun: Other (Specify) UNDERGROUND
- Crops to be irrigated: TURF AND TREES SPRINKLERS
- Give a description of the project. (Attach sheet if more space is needed)
SEE ATTACHMENT

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

STATE OF SOUTH DAKOTA)

County of Meade)^{SS}

I, Douglas D. Miner, the applicant, certify that I have read this application and examined the attached maps, that the water sample, if needed, has been taken by the required procedures and has not been adulterated or tampered with and is representative of the water to be used, and that the matters stated in this application are true and correct.



Signed Douglas D. Miner
Subscribed and sworn to before me this 13th day of November 19 95
Karen K. Paige Hunt
Notary Public

Supplemental Information

(type or print in ink)

1. Well Information - Proposed Construction

SEE DRAWING AND SPECIFICATION ATTACHED.

- a) Drill Hole Diameter _____ Depth _____
- b) Casing Type _____ Diameter _____ Thickness _____
- c) Screen Type _____ Diameter _____ Thickness _____
- d) Gravel Pack Thickness _____ Length of Gravel Pack _____
- e) Depth to Top of Water Bearing Material _____
- f) Depth to Water (ground surface to water level) _____
- g) Distance to nearest existing domestic well:
On applicants property 1,500 FEET On property owned by others UNKNOWN

2. Wastewater Disposal System Information

- a) Type of System (i.e. septic tank, drain field) SEPTIC TANK/DRAIN FIELD
- b) System Capacity (gallons) 1,500 GALLONS c) Year Constructed 1996 (TO BE REPLACED UNDER SAME PROJECT)
- d) Connected to the City of _____ Sanitary System.

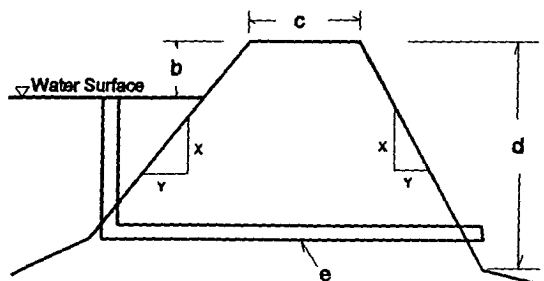
3. Dugout Information

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

4. Water Storage Dams

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

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



b) Freeboard _____

c) Crest Width _____

Crest Length _____

d) Height _____

e) Primary Outlet Capacity _____

If pipe, diameter _____

f) Secondary Spillway Capacity _____

Spillway Width _____

g) X & Y Slope

Upstream _____

Downstream _____

h) Surface Area of Impoundment _____

i) Storage _____ Acre Feet

j) Drainage Area Above Dam _____ Acres

RECEIPT

414672

Division of Water Rights

South Dakota Department of Environment and Natural Resources

Pierre, November 20, 19 95

RECEIVED OF Dept. of Veterans Affairs, Black Hills Nat'l Cemetery, PO Box 640, Sturgis
the following amount in fees for services rendered as provided for by law: SD 57785

Fee for Application for Permit No. <u>1635-1</u> to Appropriate Water, to construct and to put water to beneficial use _____	150	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 _____		
Fee for Filing Extension Request _____		
Fee for _____		

(Any Other Work Provided by Law)	Total	150.00

By John Hatcher
Chief Engineer

KS

NW 1/4

NE 1/4

BLACK HILLS NATIONAL CEMETERY

THE WELL WILL BE LOCATED
IN THE NE 1/4, SECTION 26,
T-5-N, R-5-E, B.H.M.,
MEADE COUNTY, SOUTH DAKOTA.

WELL

1/4 SECTION LINE

1/4 SECTION LINE

SECTION LINE

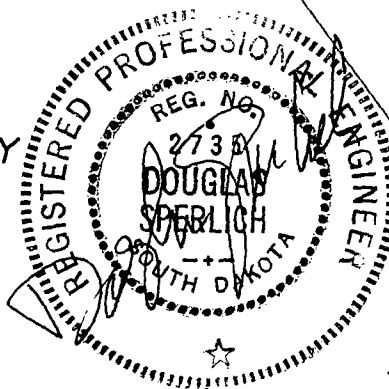
S 36°11'37" E 3794.59'

SE 1/4

WATER RIGHTS
APPLICATION MAP

BLACK HILLS NATIONAL CEMETERY

EXHIBIT "A"



SE CORNER
SECTION 26

35 36

SECTION LINE



Renner & Sperlich Engineering Co.

616 South Street, Rapid City, SD 57701

605/343-1191

1635-1



07-92

Date: X 10/25/96

JOHN PAUL GRIES

Consulting Geologist

238 ST. CHARLES STREET
RAPID CITY, SOUTH DAKOTA



Corps of Engineers, Fort Meade National Cemetery
SW 1/4 NE 1/4 Sec. 26, T. 5 N., R. 5 E., Meade Co., S.D.
Drilled May - July 1996 by Taylor Drilling Co., Rapid City, SD

Surface

0 - 15 Silty clay, some sand and Gravel

Spearfish formation

15 - 180 Redbeds, with traces of white gypsum

← 180 - 225 Minnchahta Limestone

Opeche formation

225 - 320

~~180 - 225~~ Redbeds (silty dark red clay)

Minnelusa formation

- 320 - 350 sandstone, white to orange, fine to very fine, weakly cemented
- 360 sandstone, fine to medium, orange, larger grains frosted
- 380 sandstone, fine to medium
- 390 sandstone, fine, white, friable
- 400 sandstone, same plus some large frosted orange grains
- 420 sandstone, fine, white
- 440 sandstone, same, with trace red to gray dolomite
- 460 sandstone, fine, white, drills free
- 480 sandstone, fine, subrounded, some large frosted grains, white
- 540 sandstone with traces gray dolomite
- 550 dolomite, very finely crystalline, light gray to lavender; trace red clay
- 560 dolomite, very finely crystalline, mostly lavender
- 590 sandstone, fine, white, friable
- 600 sandstone, traces red dolomite and red clay
- 610 sandstone, fine, red to white, 1/3; clay, red, 1/3; dolomite, lavender, 1/3
- 620 dolomite finely crystalline, gray to lavender, 1/3; sandstone, white, 2/3
- 630 sandstone, 1/3; dolomite, gray to lavender, 2/3
- 640 sandstone, same, dolomite, same, each 50%
- 650 sandstone, fine, white, friable
- 670 dolomite, finely crystalline to medium, slightly pink.
- 690 sandstone, as above, 80%; dolomite, 20%
- 700 dolomite, finely crystalline, nearly white to gray
- 720 dolomite, light gray, still some sand
- 730 dolomite, fine to very finely crystalline, some sandy, gray
- 750 dolomite, same, trace vuggy porosity
- 790 dolomite, very finely crystalline, gray to slightly lavender
- 815 dolomite, very finely crystalline, pale gray to white
- 820 dolomite same, plus some red shale
- 835 dolomite same and some pale green

- 835 - 85C dolomite, very finely crystalline, pale green to white
880 dolomite, very finely crystalline, light gray to white Madison?
950 dolomite, very finely crystalline, greenish gray to white;
980 Dolomite, finely crystalline, some very vuggy white to pink
1000 Dolomite fine to medium crystalline, white
1030 dolomite, same, with abundant chert layers
1040 dolomite, finely crystalline, white to faintly pink
1080 dolomite, very fine to medium crystalline, gray, white, pink
1100 dolomite, finely crystalline, light gray to white, some chert
1110 dolomite, fine to medium crystalline, white to light gray; chert
1130 dolomite, fine to medium crystalline, some vuggy, tan to white
1140 dolomite, finely crystalline, light brown to pink
1150 dolomite, fine to medium crystalline, gray to brown; pyrite on fracture surfaces
1160 dolomite, fine to medium crystalline, gray-brown to white
1180 dolomite, same; some intergranular porosity, gray to pink
1190 dolomite, fine to medium crystalline, spongy, medium gray to pink
1200 dolomite, fine to medium crystalline, dense, medium gray with pinkish cast

WELL CONSTRUCTION

PART 1 - GENERAL

1.1 Location

- A. The project is located in Section 26, T.5N., R.5E., of the Black Hills Meridian, and is within the limits of the Veterans Administration, Black Hills National Cemetery.

1.2 Description of Work

- A. The work consists of the Construction, Testing and Development of a water well for the Veterans Administration, Black Hills National Cemetery.
- B. General Description of the Well:

The Geologists anticipated formation log is shown below.

DEPTH (FT.)	FORMATION
0	_____
	SPEARFISH RED BEDS
560	_____
	MINNEKAHTA
610	_____
	OPECHE
775	_____
	MINNELUSA
1355	_____
	MADISON
1755	_____

NOTE: It is not anticipated that the well will be completed through the Madison formation. The Madison formation will be penetrated to a sufficient depth that the well shall be accepted as an "Adequate" well by the State of South Dakota (approximately 100 to 200 feet).

PART 2 - CONSTRUCTION

2.1 Drilling Log

During well construction, the CONTRACTOR shall retain the services of a CERTIFIED GEOLOGIST with experience in the drilling and completion of wells in the Madison formation in the Black Hills area. The CONTRACTOR'S GEOLOGIST shall prepare and deliver to the OWNER and the end of the project the following information:

- A. Depth, thickness, type, general characteristics, and drilling characteristics of each material encountered.
- B. Depth at which bit diameters change.
- C. Detailed "as-built" well completion information including hole and casing diameters, casing thickness and material, depths at which these diameters change, casing centralizers and their spacings, cemented intervals, etc.
- D. Well development performed, including method and duration.

2.2 Geologic Log

During well drilling the following data will be collected by the CONTRACTOR'S GEOLOGIST:

- A. Reference point for all depth measurements to remain undisturbed during the life of the PROJECT.
- B. Depth at which each change of formation occurs.

- C. Depth at which each stratum is encountered.
- D. Depth of each stratum.
- E. Description of the material composing each stratum.
- F. Depth at which water is first encountered.
- G. Depth to static water level (SWL) and changes in SWL with well depth.
- H. Total depth of completed well.
- I. Any and all other pertinent information for a complete and accurate log.
- J. Geophysical logging - at least the following well logs shall be performed;
 - a. Surface to top of Madison
 - 1) Spontaneous potential
 - 2) Resistivity
 - 3) Gamma Ray

PART 3 - SPECIFICATIONS

3.1 Well Construction

- A. All work shall be performed in accordance with the MANUAL OF WATER WELL CONSTRUCTION PRACTICE, EPA- 570/9-75-001, or latest revision.
- B. Drilling may be accomplished with an air rotary rig, mud rotary rig or reverse circulation rig at the CONTRACTOR'S option. The rig must have enough capacity to complete the project in the given time frame.
- C. Plumbness and alignment.
 - a. Deviation from vertical shall not exceed 1 degree per 200 feet from the surface to the top of the Madison formation. The Contractor shall furnish and employ a deviation indicator to measure hole deflection, and shall make measurements at intervals no greater than 100 feet. The results of these measurements shall be delivered to the OWNER. No additional payment shall be made for these tests.
 - b. Deviation from vertical in the Madison Formation shall not exceed 2 degrees per 200 feet.

3.2 Materials

- A. Casing pipe shall conform to ASTM A 53 latest revision, Grade B. 8-5/8 inch, 24# STC casing shall be used.
- B. Grout
 - a. The grouting for the 8" casing string shall be accomplished in the following manner: The lower 200 feet of the annulus shall be grouted with regular "G" with the remainder to be grouted with "Halliburton Lite" with 10 pounds of Gilsontite and 1/2 pound of Flocele per sac, volume to be adequate to grout the entire string from the Madison to surface. The CONTRACTOR may present an alternative grouting schedule for approval, at his option.
 - b. Grouting shall be done continuously and in such a manner that will insure that the entire filling of the annulus is accomplished in one operation. After successful grouting, no drilling operations will be performed for a minimum of 24 hours to ensure sufficient hardening of the grout mixture.
- C. Pitless Adaptor

The pitless adaptor shall meet the following requirements as a minimum;

 - a. The adaptor shall be of the same nominal diameter as the well casing.
 - b. The pitless adaptor shall extend a minimum of 18" above the finish grade.
 - c. The pitless adaptor shall have as a minimum;
 - screened vent cover;
 - contamination proof entrance;
 - connection for electric and control cables;
 - provision for water level measurement using an air line;
 - provision for disinfecting the well.
 - d. The pitless adaptor shall be MAASS-BASKI, BAKER MONITOR, or approved equal.

D. Pump, Wire and Drop Pipe

Installation of Pump

- A. The pumps shall be capable of pumping 200 gpm at the head of 500 feet. The exact pump to be sized after the well has been developed. The pump shall be a submersible with stainless steel impellers, cable guard, inlet screen, 3 phase motor and "male pipe thread" discharge. The pump shall include a check valve, torque arrestor, and safety rope.
- B. The electrical supply to the pump motor shall be submersible pump cable, 3 wire PVC flat jacketed UA approved, compatible with the pump motor.
- C. Drop pipe shall be new Black, Schedule 40 Line Pipe, threaded and coupled, and conform to ASTM A53, Grade B. One check valve shall be installed in each drop pipe string immediately above the pump unit.

PART 4 - SEQUENCE

4.1 Schedule

- A. Drill surface hole 50 feet deep, set 13 5/8 inch O.D. casing and grout.
- B. Drill ahead with 12 1/4" diameter hole to top of Madison Formation and drill 5 to 10 feet into the Madison. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR'S GEOLOGIST TO IDENTIFY THE TOP OF THE MADISON FORMATION DURING DRILLING OPERATIONS.
- C. Conduct open hole Geophysical logging operations.
- D. Run 8" casing from surface to T.D., placing centralizers at 90 foot intervals. Pressure grout casing string.
- E. Drill 7-7/8" open hole into the Madison Formation approximately 200 feet (depth to be determined by the Geologist based on his opinion of water availability). Drilling in Madison Formation shall be accomplished with clear water or air lift.
- F. Aquifer testing. Aquifer testing will be performed on the Madison Aquifer by the Contractor under the direction of the CONTRACTOR'S GEOLOGIST. The object of the aquifer testing is to establish the appropriate production pumping rate for the well to aid in the design of the pump and motor installation.
 - a. Testing of non-flowing wells. After completion and isolation of the Madison aquifer, the well shall be developed by surging or other methods to remove contaminants and foreign material. The aquifer will then be allowed to recover to 98% of its original SWL before any testing begins.
 1. Stepped rate test. A stepped rate test will be performed under the supervision of the CONTRACTOR'S GEOLOGIST. The discharge rate shall be set at 50%, 75%, 100%, and 125% of the estimated design discharge. Step testing will continue until a distinct increase in the rate of drawdown occurs. Monitoring of water level will be done during the test at logarithmic time intervals.

Estimated Design Discharge	200 gpm
Estimated pump setting	550 feet
Estimated maximum head	550 feet

Upon completion of step testing, the results shall be transmitted to the OWNER for use in selecting the proper pump, motor, drop pipe, controls and other items necessary for the completion of the well.
- G. Install the pitless adaptor.
- H. Clean up and restore site by grading and seeding as directed for all disturbed areas in the project.

PART 5 - MEASUREMENT AND PAYMENT

5.1 Method of Measurement

The pay items for this portion shall be measured as follows:

- A. Construct and Test one Madison Formation well shall be measured as one item for the following construction activities:
 - Drill for and install 50 feet of surface pipe,
 - Drill 12 1/4" diameter hole to top of Madison, up to a depth of 1,275 feet,
 - Furnish, set and grout 8 5/8" casing pipe, up to a depth of 1,375 feet,
 - Conduct open hole geophysical logging operations,
 - Drill 7 7/8" diameter hole into the Madison formation up to a distance of 200 feet into the formation,
 - Conduct aquifer testing,
 - Install pitless adaptor,
 - Clean up and move out.

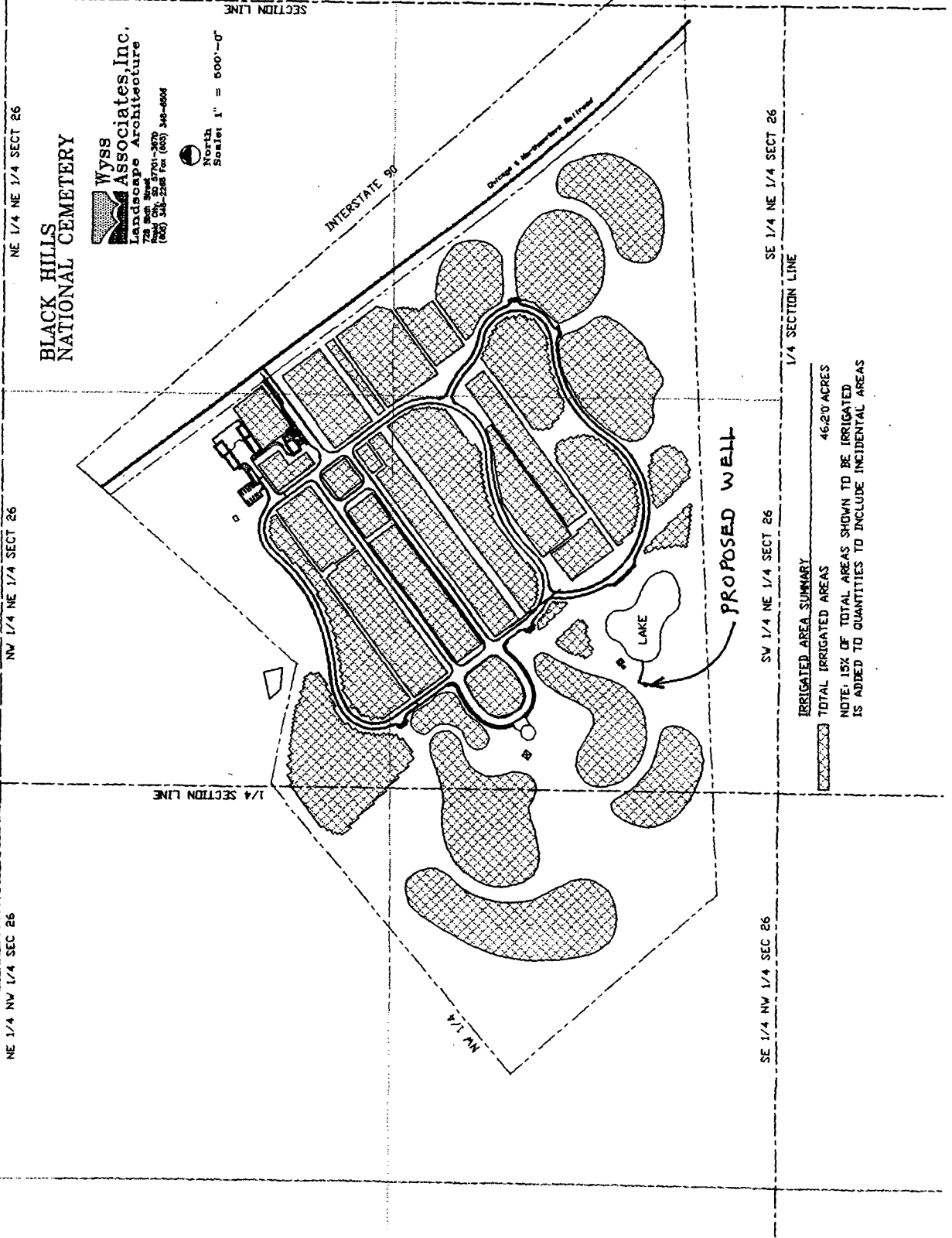
- B. Additional depth TO THE TOP OF THE MADISON FORMATION shall be measured per vertical lineal foot for a depth to the top of the Madison formation UP TO 200 ADDITIONAL FEET. This item shall only be paid should the depth to the top of the Madison exceed the Geologists estimate of 1,375 feet.
- C. Additional depth of penetration INTO THE MADISON FORMATION shall be measured per vertical lineal foot for penetration into the Madison formation which exceeds a distance of 200 feet. This item shall only be paid should the OWNER, OR OWNER'S REPRESENTATIVE determine that additional penetration into the Madison formation is required to produce the quantity of water required.

5.2 - BASIS OF PAYMENT

- A. Construct and Test one Madison Formation well shall be paid on a Lump Sum Price Bid which price shall be full compensation for furnishing all materials, labor, equipment, testing and incidentals necessary to complete the well and testing as specified.
- B. Additional, depth to the top of the Madison formation shall be paid at the Unit Price Bid for each additional foot of distance from the ground surface UP TO 200 ADDITIONAL FEET, which price shall be full compensation for furnishing all materials, labor, equipment, testing and incidentals TO EXTEND THE GROUTED 8 5/8" CASING TO THE TOP OF THE MADISON FORMATION, as specified.
- C. Additional penetration into the Madison formation shall be paid at the Unit Price Bid for each additional foot of additional penetration required into the Madison formation which price shall be full compensation for furnishing all materials, labor, equipment, testing and incidentals necessary to complete the task as specified.

BID SCHEDULE FOR WELL

NO.	ITEM	UNIT	AMOUNT	UNIT PRICE	TOTAL PRICE
1)	CONSTRUCT AND TEST ONE MADISON FORMATION WELL	L.S.	1		
2)	ADDITIONAL DEPTH TO THE TOP OF THE MADISON FORMATION	V.L.F.	200		
3)	ADDITIONAL PENETRATION INTO THE MADISON FORMATION	V.L.F.	200		



**BLACK HILLS
NATIONAL CEMETERY**

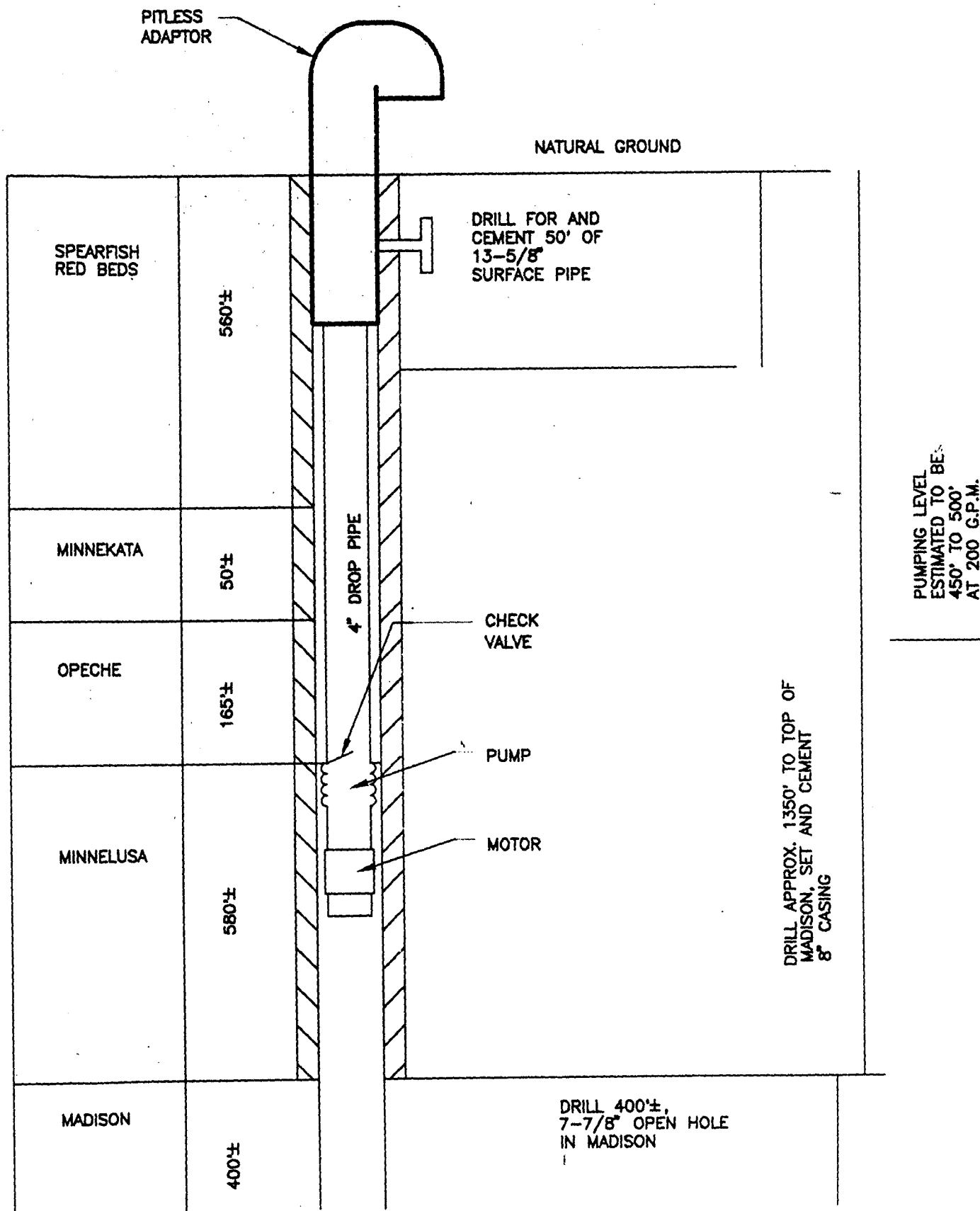
Wyss Associates, Inc.
Landscape Architecture
728 5th Street
Rapid City, SD 57701-3670
(605) 343-2288 Fax (605) 346-6866

North
Scale: 1" = 600'-0"

IRRIGATED AREA SUMMARY

TOTAL IRRIGATED AREAS 46.20 ACRES

NOTE: 15% OF TOTAL AREAS SHOWN TO BE IRRIGATED IS ADDED TO QUANTITIES TO INCLUDE INCIDENTAL AREAS



PROPOSED WELL CONSTRUCTION DETAIL

N.T.S.



Wyss
Associates, Inc.

Landscape Architecture
Golf Course Architecture
Parks & Recreation Design
Environmental Design
Land Planning
Historic Preservation
Urban Design
Irrigation Design
Resource Management

Sept. 25, 1995

Neil Hodges
Ft. Meade Medical Center
Engineering Division
Ft. Meade, SD 57741

RE: Black Hills National Cemetery- summary of irrigation CFS water demand.

Dear Neil,

The following are the calculations to determine the total daily CFS water demand to adequately irrigate the Black Hills National Cemetery site.

Summary of calculations:

- 46.2 acres (2,012,472 sf) is to be irrigated per week.
- 1 inch of water to be applied (.083 ft) per week.
- apply irrigation water over a period of 12 hours per day.
- water to be applied 5 days a week at equal increments.

$$2,012,472 \text{ sf} \times .083 \text{ ft} = 167,035 \text{ cf (water required to irrigate 46.2 acres per week)}$$

$$167,035 \text{ cf} \times .20 = 33,407 \text{ cf (amount of irrigation to be applied per day)}$$

$$\frac{33,407 \text{ cf}}{43,200 \text{ seconds/12 hours}} = .77 \text{ cfs}$$

A total water demand of .77 cfs will be required.

Sincerely,


Jim Hanson
Landscape Architect

EMERGENCY

PURCHASE ORDER FOR SUPPLIES OR SERVICES

ISSUING OFFICE:

Dept. of Veterans Affairs Natl.Cemetery Svc.
VA MEDICAL CENTER
FORT MEADE, SD 57741

REQUESTING SERVICE:

BHNC(BHNC)

DEL. TO: BHNC



VENDOR:

SOUTH DAKOTA DEPARTMENT
OF ENVIRONMENTAL AND NATURAL
RESOURCES (DENR)
ATTENTION ROB KITTA
523 E CAPITAL
PIERRE SD 57501-3181

605-773-4208

SHIP TO:

WAREHOUSE ID6006
V.A. Natl.Cemetery Svc.
%CHIEF, AMMS
BLDG. 46
FORT MEADE, SD 57741

DELIVERY HOURS:
7:30A-4PM

FOB POINT: DESTINATION

GOV'T BL #:

PURCHASE ORDER

DELIVER ON/BEFORE 11/24/95

DISCOUNT TERM: NET30

SHIP VIA:

PROPOSAL: N/A

CONTRACT:

MAIL INVOICE TO:

FMS

PO BOX 149971

AUSTIN, TX 78714

ITEM	DESCRIPTION	QTY	UNIT	UNIT COST	TOTAL COST
1	SOUTH DAKOTA STATUTES REQUIRE FILING FEES FOR APPLIATION FOR IRRIGATION	1	JB	150.00	150.00

THIS IS FOR THE CONSTRUCTION
PROJECT

\$150.00

Items per JB: 1

BOC: 2596 FMS LINE: 001

AMOUNT CLAIMED IS RECOMMENDED FOR PAYMENT IN ADVANCE UNDER THE
PROVISIONS OF 31 U.S.C. 3324(d)(2) AS AMENDED.

ITEMS CONTINUED ON NEXT PAGE

AUTHORITY FOR PURCHASE	P.O. NO.	PO DATE	TOTAL:	150.00
FAR 13	884-ID6006	11/14/95		
CONTRACTING OFFICER	DATE SIGNED	PHONE		
/ES/LOIS E TOWEY	11/14/95@14:49	605-347-7030		

FUND CERTIFICATION: The supplies/services listed on this request are properly
chargeable to the following allotments, the available balances of which are
sufficient to cover the cost thereof, and funds have been obligated.

APPROPRIATION: 3660129-625

COST CENTER: 570300

SOURCE CODE: SUPPLY-2 FISCAL-3

FCP/PRJ: 010070300

OBLIGATED BY: /ES/LADONNA K BEHNKE DATE: 11/16/95

BOC1: 2596 AMOUNT1: 150.00 FMS LINE: 001

90-2138-7-ADP, JAN 1984

RECEIVED

NOV 20 1995

WATER RIGHTS PROGRAM

ORDER FOR SUPPLIES OR SERVICES
(CONTINUATION)
ISSUING OFFICE: DEPT. OF VETERANS AFFAIRS

PAGE NO. 2 OF 2 PAGES
DATE: 11/14/95 PO # ID6006
VENDOR: SOUTH DAKOTA DEPARTMENT

ITEM	DESCRIPTION	QTY	UNIT	UNIT	TOTAL
				COST	COST

V.A. TRANSACTION NUMBERS:
884-96-1-625-0006

TOTALS CARRIED FORWARD TO FIRST SHEET: 0.00

1. The VA Black Hills National Cemetery currently holds two water permits for irrigation and institutional use. Vested Water Right Number 1484-1 allows .05 CFS from an existing well to irrigate 6.2 acres, plus 25,000 gallons per year for institutional purposes. Permit 1483-1 allows .52 CFS from the same well to irrigate 37 acres, plus an additional 100,000 gallons per year for institutional purposes. Copies of the permits are attached for your convenience.

2. The VA is planning expansions and modifications to Black Hills National Cemetery. Work will include development of additional burial areas and replacement of the existing irrigation system. A new well and reservoir are also planned. New reservoir will consist of a small, lined surface impoundment. The new well and reservoir would supply all irrigation needs for the entire cemetery. The existing well will then be used only for institutional purposes. The new total irrigated acreage is 46.2 acres. The new total irrigation demand is .77 CFS. Water usage for institutional purposes will not change.

3. In summary, this permit requests an additional appropriation of 0.20 CFS (0.77 CFS minus 0.57 CFS = 0.20 CFS). Additional acres irrigated will be 3.0 acres (46.2 acres minus 43.2 acres = 3.0 acres). A summary of irrigated acres for each 40 acre lot is as follows:

LOT DESCRIPTION	VESTED RIGHT 1484-1	PERMIT 1483-1	PRESENT TOTAL	NEW TOTAL	NET CHANGE
NW 1/4, NE 1/4	4	8	12	8.7	- 3.3
NE 1/4, NE 1/4	1	5	6	1.5	- 4.5
SW 1/4, NE 1/4	1.2	20	21.2	18.5	- 2.7
SE 1/4, NE 1/4	0	4	4	10.3	+ 6.3
NE 1/4, NW 1/4	0	0	0	0.6	+ 0.6
SE 1/4, NW 1/4	0	0	0	6.6	+ 6.6
TOTAL ACRES	6.2	37	43.2	46.2	+ 3.0

* ALL IN SECTION 26, T5N, R5E BHM

See:
Revision 12/6/95





PUMP SERVICE
PUMP SALES
WELL DRILLING
WELL REHABILITATION
WATER WELL SUPPLIES

16200 Hwy. 10 NW • Elk River, MN 55329-4825



Toll Free 1-800-644-3531
win Cities Metro 612-441-8481
Main Line 612-263-1800
Fax 612-263-1799

FAX MEMO

TO: Ken Buhler FROM: Steve Alberg

ORGANIZATION: DNR Water Rights NO. OF PAGES 13
(including Cover Sheet)

DATE: 12-29-95 FAX #: _____

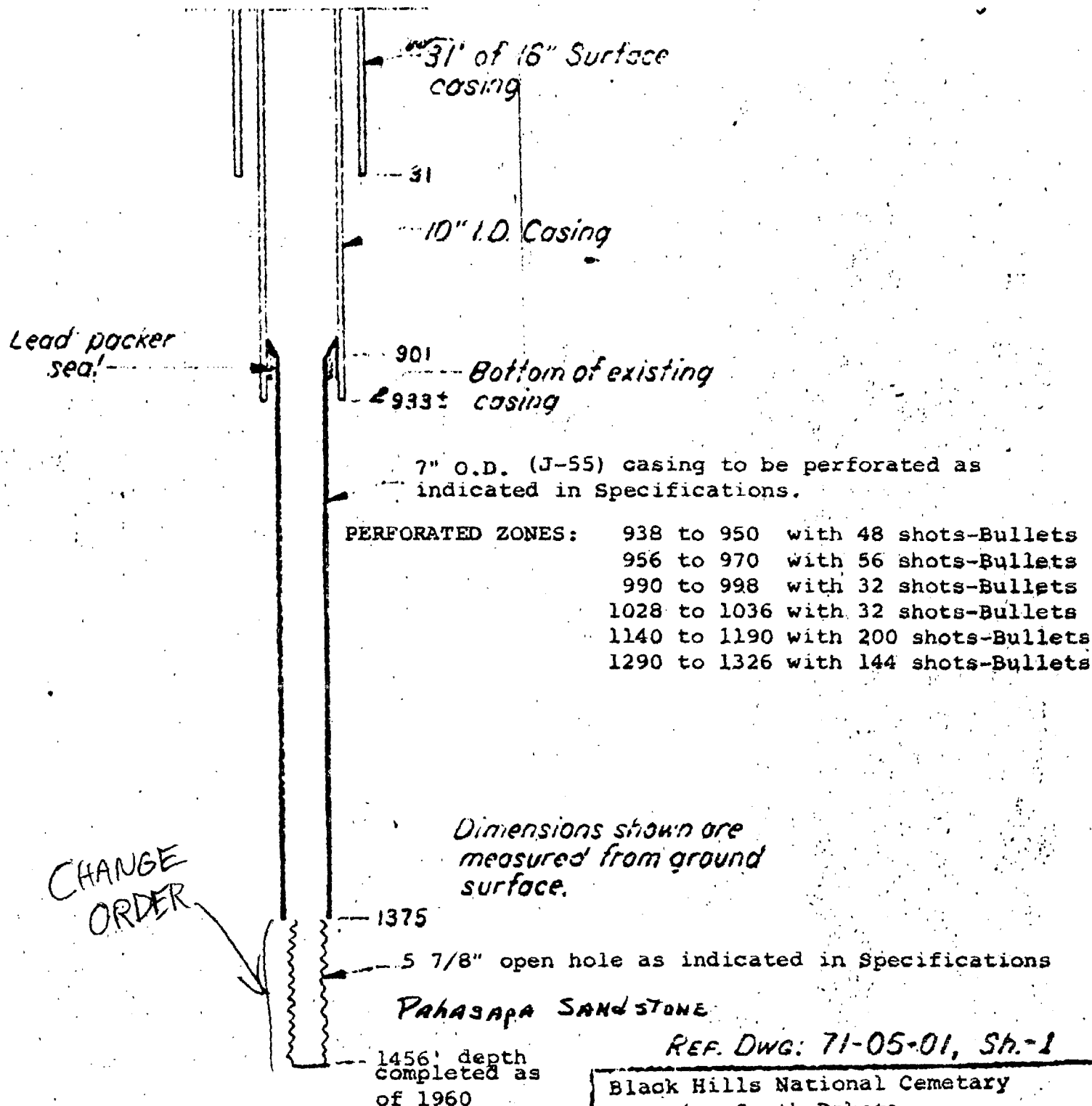
SUBJECT: Black Hills Nat'l Cemetery -

MESSAGE: I'm a bit frustrated with the absence of
our job file for the drilling operations in 1960.
We do have what appears to be a complete file
(we call it the well record) that contains a
lot of info. I don't have a record of
of any pumping tests prior to the change
order that extended the depth from
1375' to 1456'.

I can't really determine if the depth change
or the acidizing actually improved the
yield.

Please call if we can be of any more help.

Steve Alberg



Well to be treated as shown in paragraph 16-04.b. of the specifications.

REF. DWG: 71-05-01, Sh.-1

Black Hills National Cemetary Sturgis, South Dakota Revised 3/1/78	
Drawn by D.A.F.	IRRIGATION WATER SUPPLY FACILITIES DA-6325 Approved: <i>[Signature]</i> AM-1 E.E. Fack
Checked by T. [unclear]	
Scale as shown	
Proposed Change	
Drawing Number SKETCH-#1, MOD-#3	
Date 9-7-60	

LAYNE - MINNESOTA CO.

FIELD REPORT OF COMPLETED WELL

Name of Job Fort Meade Nat (ceiling) Date started ?
 Address Slivers; S.E. Date completed _____
 No. of days _____

LOG OF WELL

From	To	Material	From	To	Material
0	22	loose rock & clay	608	765	red shale
22	44	gypsum	765	796	limestone streaks
44	255	red shale			in shale
255	269	rocky red shale	796	828	limestone (hard)
269	559	soft red shale	828	851	limestone streaks in shale
559	608	limestone	851	912	red shale with white limestone streaks (over)

Kind of plug in well _____ Static water level _____

Depth of well - ground level to top of plug _____

MATERIAL LEFT IN WELL

	Opening	Length - feet	Diameter - inches	Material
Screen				
Inner casing		934	10"	Steel cemented in
Outer casing		21	16"	Steel - cemented in

Was outer casing cemented yes Amount 490 bags

Size of gravel used _____ in. to _____ in. Amount _____

TEST OF WELL

Hours Pumped		Yield gal. per min.	Water Level ft. below surface	Remarks
From	To			

Did well clear up _____ Time to clear _____

Date _____ Driller _____

BACK SIDE OF FIELD REPORT

912 - 922	soft white clay
923 - 965	limestone
965 - 975	soft sandy red shale
975 - 995	hard limestone
995 - 1002	red shale (hard)
1002 - 1093	loose lime & sandstone
1093 - 1123	soft red shale
1123 - 1226	limestone
1226 - 1240	limestone with thin shale streaks
1240 - 1267	red shale & limestone
1267 - 1294	limestone
1294 - 1375	hard limestone

CONTRACTOR'S COPY

CHANGE ORDER
(OR ADMINISTRATIVE CHANGE)

PAGE NO.

1

NO. OF PAGES

3

REQUISITION NO./PURCHASE AUTHORITY

CONTRACT (Order) NO.

MODIFICATION NO.

3

DA-25-066-ENG-6323

TO: (Contractor's name and address)

Layne-Minnesota Co.
3147 California Street N.E.
Minneapolis 18, Minnesota

ISSUED BY

District Engineer
U. S. Army Engineer District, Omaha
6012 U. S. Post Office and Court House
215 North 17th Street
Omaha 2, Nebraska

- ☒ PURSUANT TO THE "CHANGES" CLAUSE OF THE ABOVE-NUMBERED CONTRACT, THE FOLLOWING CHANGES ARE MADE THEREIN.
☐ THE ABOVE-NUMBERED CONTRACT IS MODIFIED TO REFLECT THE FOLLOWING ADMINISTRATIVE CHANGES.

Page 16-2 of the Contract Specifications, add subparagraph 16-04b as follows:

"b. ACIDIZING. The well shall be acidized with 15 percent hydrochloric acid solution and containing a nontoxic inhibitor. Work shall be performed by use of a full bore packer and a retrievable bridge plug, spaced so that the perforations can be acidized selectively. Acidizing shall be at intervals as follows:

(Continued on page 2)

Due to the changes hereinbefore described, the contract price is increased by the lump-sum amount of \$13,917.17 from funds under Allotment No. 210 1805 7-6038 FO862-10 S25-066 BHNC 59-NC-QM Line Item 1, designated for payment purposes as follows:

Mod. Item No.	Designation	Unit	Unit Price	Amount Increase
M-1	Provide for additional depth and acidizing of well	Job	L.S.	\$13,917.17

It is understood and agreed that on account of the foregoing modification of said contract thirty (30) calendar days additional time will be allowed.

Except as hereby modified, all terms and conditions of said contract as heretofore modified remain unchanged and in full force and effect.

DATE 14 September 1960

Funds: AVAILABLE
Reviewed
For W. M. Wilson
F&AO
1960
R. A. Bouckhuyt
Ch. Ins. & S. Unit

UNITED STATES OF AMERICA

BY

Edward W. Smith, Jr.
SIGNATURE OF CONTRACTING OFFICER
EDWARD W. SMITH, JR., Lt. Col., C. E.
Area Engineer, Rapid City, Authorized
Representative of the Contracting Officer
TYPED NAME OF CONTRACTING OFFICER

Modification No. 3
 Change Order to
 Contract No. DA-25-066-ENG-6323

<u>Perforated Intervals</u>	<u>Packers Upper</u>	<u>Seats Lower</u>	<u>Gallons of Acid</u>
1375 - 1456	1340		2,000
1290 - 1326	1280	1330	2,000
1140 - 1190	1135	1195	2,000
1062 - 1070	1055	1075	667
1028 - 1036	1022	1040	667
990 - 998	985	1002	666
938 - 950)			
956 - 970)	930	975	2,000

Contract Drawing 71-05-01, Sheet 1, Revise the NEW WELL detail on attached Sketch No. 1 as revised, dated 7 September 1950

The attached Sketch No. 1 is revised as follows:

- a. Change bottom depth from "1425" to "1456".
- b. Delete note "5" O.D. ... in Specs" and substitute "5 7/8" Open Hole", and delete 30' dimension and indication of 5" casing extending 30' inside bottom of 7" casing.

LAYNE - MINNESOTA CO.

2nd
TRY
CHANGE
ORDERWork over on well #5
FIELD REPORT OF COMPLETED WELL

Name of Job Black Hills National Cemetery Date started 7/18/60
 Address Sturgis, South Dakota Date completed 10/22/60
 No. of days _____

LOG OF WELL

From	To	Material	From	To	Material
1375	456	DATA SAPIT			

Kind of plug in well _____ Static water level 547
 Depth of well - ground level to top of plug 1456

MATERIAL LEFT IN WELL

	Opening	Length - feet	Diameter - inches	Material
Screen		Lead Pack		
Inner casing		475'	7"	
Outer casing		Flat Sheet	120	

Was outer casing cemented Yes Amount 200 bags Cement
 Size of gravel used _____ in. to _____ in. Amount _____

TEST OF WELL

Hours Pumped		Yield	Water Level	Remarks
From	To	gal. per min.	ft. below surface	
				Complete Record
				Sent in with
				this Report

Did well clear up Yes Time to clear _____
 Date 10/7-60 Driller Herb Zahner

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OCT 28 1960

LAYNE - MINNESOTA CO.

Well BHNO Well #15Sheet No. 1Location Sec 26 5N 5EDate 5 Oct 1960Pump Layne4 inch pipe 3 inch orificePump setting depth 271'Airline depth mine workingsPre-test static level 548Water hardness (field test) —

Time	Volume gpm	Gage reading	Depth to water	Draw down	Temp	Remarks
1500	—	—	548		54	Balance starting
1525	—	—	548		54	pump test started 1525
1545	—	—	607	59.0	54	pumping
1605	9 1/2	128	621	73.0	54	
1630	9 1/2	130	622	74.0	54	
1700	9	128	623	75.0	54	
1730	1	128	623	75.0	54	water company
1800	8 1/2	125	624	76.0	54	"
1830	8 1/2	125	625	77.0	54	"
1900	6	108	625.4	77.4	54	"
1930	7	115	625.7	77.7	54	"
2000	7 1/2	119	626.0	78.0	54	"
2030	7 1/2	119	626.2	78.2	54	"
2100	6	108	626.2	78.2	54	"
2130	7	115	626.2	78.2	54	"
2200	7 1/2	119	626.1	78.1	54	"
2230	7 1/2	119	625.2	77.2	54	"
2300	7 1/2	119	625	77.0	54	"
2330	7 1/2	119	625	77.0	54	"
Oct 16 - 1960						
2400	7 1/2	119	625.4	77.4	54	"
0030	8 1/2	125	625.4	77.4	54	"
0100	9	128	625.5	77.5	54	" clearing
0130	9	128	625.1	77.1	54	" cloudy

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OCT 29 1960
LAYNE - MORTIMER CO.

Well Black Hills National Cemetery #5 Sheet No. 2

Location Sec. 26 5A1 SE Date 6 Oct. 1960

Pump L A Y N E

Pump setting depth 221' Airline depth WIRE READINGS

Pre-test static level 546' Water hardness (field test) -

Time	Volume gpm	Gage reading	Depth to water	Draw down	Temp	Remarks
0200	9	128	625.3	70.3	54	Foamy, Cloudy
0230	9	128	624.9	74.9	54	" "
0300	9	128	624.7	76.7	54	" "
0330	9	128	624.6	76.6	54	" "
0400	9	128	624.5	76.5	54	" "
0430	9	128	624.3	76.3	54	Cloudy
0500	9	128	624.1	76.1	54	"
0530	9	128	624.1	76.1	54	Clear
0600	9	128	624.0	76.0	54	"
0630	9	128	623.9	75.9	54	"
0700	9	128	623.7	75.7	54	"
0730	9	128	623.6	75.6	54	"
0800	9	128	623.3	75.3	54	Pump is pulling out its maximum water is less foamy
0830	9	128	623.2	75.2	54	
0900	9	128	623.1	75.1	54	Clear
0930	9	128	623.1	75.1	54	"
1000	9	128	623.0	75.0	54	"
1030	9	128	623.0	75.0	54	"
1100	9	128	622.9	74.1	54	"
1130	9	128	622.9	74.9	54	"
1200	9	128	622.8	74.8	54	Shut down to start pump test
1300	—	—	547.0			Static water level

Well B H N C # 5Sheet No. 3Location Serv 24 BEN SE Date 6-00-196Pump Haynes turbinePump setting depth 771' Airline depth wire readingsPre-test static level 547' Water hardness (field test) _____

Time	Volume gpm	Gage reading	Depth to water	Draw down	Temp	Remarks
1400	15		547.0			unable to cut down to 1500 because
	4 inch pipe	2 1/2 inch	0251			01 high pressures
1445	30		559.2	12.2	54	200' on line
1500	7 1/2	68	581.5	34.5	54	168' on line
1515	7	66	579.3	32.3	54	170' on line
1530	6 1/2	64	579.1	32.1	54	170' on line
1545	6 1/2	64	579.3	32.3	54	" " "
1600	6 1/2	64	579.4	32.4	54	" " "
1615	6 1/2	64	579.4	32.4	54	" " "
1630	6 1/2	64	579.6	32.6	54	" " "
1645	6 1/2	64	579.6	32.6	54	" " "
1700	6 1/2	64	579.9	32.9	54	" " "
1715	6 1/2	64	580.0	33.0	54	" " "
1730	6 1/2	64	580.0	33.0	54	" " "
1745	6 1/2	64	580.1	33.1	54	" " "
1800	6 1/2	64	580.2	33.2	54	" " "
1815	6 1/2	64	580.2	33.2	54	" " "
1830	6 1/2	64	580.2	33.2	54	" " "
1845	6 1/2	64	580.2	33.2	54	" " "
1900	6 1/2	64	580.2	33.2	54	" " "
1915	9	75	586.1	39.1	54	160' on line
1930	9	75	586.0	39.0	54	" " "
1945	9	75	586.5	39.5	54	" " "
2000	9	75	586.4	39.4	54	" " "
2015	9	75	586.5	39.5	54	" " "

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OCT 20 1960
WATER SERVICE DIV.

SECT #26 R5N

SE

6 OCT 60

Layne Turbine

771

Wire Reading

547

2030	9"	75	587.7	40.7	54	160 ON LINE
2045	9	75	587.7	40.7	54	" " "
2100	9"	75	587.7	40.7	54	" " "
2115	9"	75	587.7	40.7	54	" " "
2130	9"	75	587.2	40.2	54	" " "
2145	9	75	587.1	40.1	54	" " "
2200	9	75	587.1	40.1	54	" " "
2215	9	75	587.1	40.1	54	" " "
2230	9	75	587.0	40.0	54	" " "
2245	9	75	587.0	40.0	54	" " "
2300	9	75	587.0	40.0	54	" " "
2315	13	90	597.1	50.1	54	140 ON LINE
2330	13	90	597.3	50.3	54	" " "
2345	13	90	597.3	50.3	54	" " "
2400	13	90	597.2	50.2	54	" " "

7 OCT 1960

0015	13	90	597.2	50.2	54	" " "
0030	13	90	597.0	50.0	54	" " "
0045	13	90	597.0	50.0	54	" " "
0100	13	90	597.0	50.0	54	" " "
0115	13	90	597.0	50.0	54	" " "
0130	13	90	597.0	50.0	54	" " "
0145	13	90	597.0	50.0	54	" " "
0200	13	90	597.0	50.0	54	" " "
0215	13	90	597.0	50.0	54	" " "

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OCT 30 1960
LAWRENCE, MINNESOTA, MN.

BLACK HILLS NATIONAL CEMETERY # 5

4 SEC. 26 R 5 N 5 E

7 OCT. 1968

LAYNE

771'

547'

WIRE READING

0230	13	90	597.0	50.0	54	140	ON LINE
0245	13	90	597.0	50.0	54	"	"
0300	13	90	597.0	50.0	54	"	"
0315	18	105	608.0	61.0	54	120	"
0330	18	105	608.8	61.8	54	120	"
0345	18	105	608.8	61.8	54	120	"
0400	18	105	608.8	61.8	54	"	"
0415	18	105	609.0	62.0	54	"	"
0430	18	105	609.3	62.3	54	"	"
0445	18	105	609.4	62.4	54	"	"
0500	18	105	609.6	62.6	54	"	"
0515	18	105	609.8	62.8	54	"	"
0530	18	105	610.0	63.0	54	"	"
0545	18	105	610.0	63.0	54	"	"
0600	18	105	610.1	63.1	54	"	"
0615	18	105	610.1	63.1	54	"	"
0630	18	105	610.1	63.1	54	"	"
0645	18	105	610.1	63.1	54	"	"
0700	18	105	610.1	63.1	54	"	"
0715	23	120	610.0	70.0	54	95	"
0730	23	120	618.6	71.6	54	95	"
0745	23	120	619.0	72.0	54	95	"
0800	23	120	619.3	72.3	54	92	"
0815	23	120	619.6	72.6	54	92	"
0830	23	120	619.7	72.7	54	92	"
0845	23	120	619.7	72.7	54	92	"

RECEIVED
OCT 25 1968LAYNE WATER CO.
5:50 PM

wdi B H N C #5

sect 26 R 5 N 5 E

Date 7 Oct. 1960

Layne

771

547

wire reading

Inches

0900	23	120	619.8	72.8	540	92M	
0915	23	120	619.8	72.8	540	"	
0930	23	120	619.9	72.9	54	"	
0945	23	120	619.9	72.9	54	"	
1000	23	120	619.9	72.9	54	"	
1015	23	120	619.9	72.9	54	"	
1030	23	120	619.9	72.9	54	"	
1045	23	120	619.9	72.9	54	"	open valve
1046	34	148			54	0	wide open
1100	34	148	640	93	54		wide open
1115	34 1/2	148	640.9	92.4	54		

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OCT 28 1960
LAYNE MINNESOTA CO

Water Rights Division - DENR
Conversation File Documentation

NAME OF PERSON OR FILE: Water Permit Application No. 1635-1, Black Hills National Cemetery

ADDRESS: COUNTY: Meade

DATE: 11/21/95 TELEPHONE:

RE: Call to Neil Hodges (engineer - 347-7075)

COMMENTS:

I contacted Mr. Hodges, who is the engineer on this project, to discuss the diversion rate for the Cemetery's recent application. I explained that the application combined with Water Permit No. 1483-1 and Vested Water Right No. 1484-1 would appropriate 0.77 cfs for irrigation of 46.2 acres. This amount exceeds the statutory limit of 1 cfs per 70 acres. The statutory limit for 46.2 acres is 0.66 cfs. I further explained with the recent circuit court decision providing direction on the interpretation of 46-5-6 we did not have the flexibility to approve applications at a rate greater than 1 cfs per 70 acres. I explained how we previously qualified permits which diverted at a rate greater than 1 cfs per 70 acres by limiting the pumping time during a 24 hour period, however, we can not continue that practice at this time.

Mr. Hodges stated that he was going to re-evaluate the number of irrigated acres. It may be that more acres are going to be irrigated than listed. He will submit an amendment to the application.

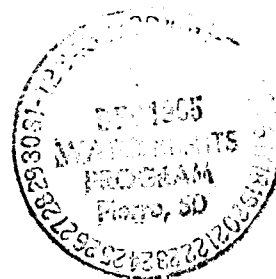
File in Permit or other file as necessary. Use to document conversations and what the other party was told; why action or decision was made.

NAME:

Eric Henderson



DEPARTMENT OF VETERANS AFFAIRS
Medical Center
Fort Meade SD 57741



December 6, 1996

In Reply Refer To:

WATER RIGHTS DIVISION
JOE FOSS BLDG
523 E CAPITOL
PIERRE SD 57501-3181

ATTN: Eric Gronlund

RE: Water Rights Application for Black Hills National Cemetery

1. Attached are revised attachments to the subject permit application reflecting adjustments to the acreages requested. Please replace the description of project, acreage map, and A/E calculations with new data.
2. If you have any questions, please contact me at 605 347-7075. Thank you.

Neil W. Hodges
NEIL W. HODGES, P.E.
Project Engineer

REVISED 12/6/95

DESCRIPTION OF PROJECT :

1. The VA Black Hills National Cemetery currently holds two water permits for irrigation and institutional use. Vested Water Right Number 1484-1 allows .05 CFS from an existing well to irrigate 6.2 acres, plus 25,000 gallons per year for institutional purposes. Permit 1483-1 allows .52 CFS from the same well to irrigate 37 acres, plus an additional 100,000 gallons per year for institutional purposes. Copies of the permits are attached for your convenience.

2. The VA is planning expansions and modifications to Black Hills National Cemetery. Work will include development of additional burial areas and replacement of the existing irrigation system. A new well and reservoir are also planned. New reservoir will consist of a small, lined surface impoundment. The new well and reservoir would supply all irrigation needs for the entire cemetery. The existing well will then be used only for institutional purposes. The new total irrigated acreage is 54.5 acres. The new total irrigation demand is .77 CFS. Water usage for institutional purposes will not change.

3. In summary, this permit requests an additional appropriation of 0.20 CFS (0.77 CFS minus 0.57 CFS = 0.20 CFS). Additional acres irrigated will be 11.3 acres (54.5 acres minus 43.2 acres = 11.3 acres). A summary of irrigated acres for each 40 acre lot is as follows:

LOT DESCRIPTION	VESTED RIGHT 1484-1	PERMIT 1483-1	PRESENT TOTAL	NEW TOTAL	NET CHANGE
NW 1/4, NE 1/4	4	8	12	8.84	-3.16
NE 1/4, NE 1/4	1	5	6	1.72	-4.28
SW 1/4, NE 1/4	1.2	20	21.2	24.53	+3.33
SE 1/4, NE 1/4	0	4	4	11.74	+7.74
NE 1/4, NW 1/4	0	0	0	0.87	+0.87
SE 1/4, NW 1/4	0	0	0	6.80	+6.80
TOTAL ACRES	6.2	37	43.2	54.50	+11.30

* ALL IN SECTION 26, T5N, R5E BHM

NE 1/4 NE 1/4 SECT 26

NW 1/4 NE 1/4 SECT 26

NE 1/4 NW 1/4 SEC 26

BLACK HILLS NATIONAL CEMETERY

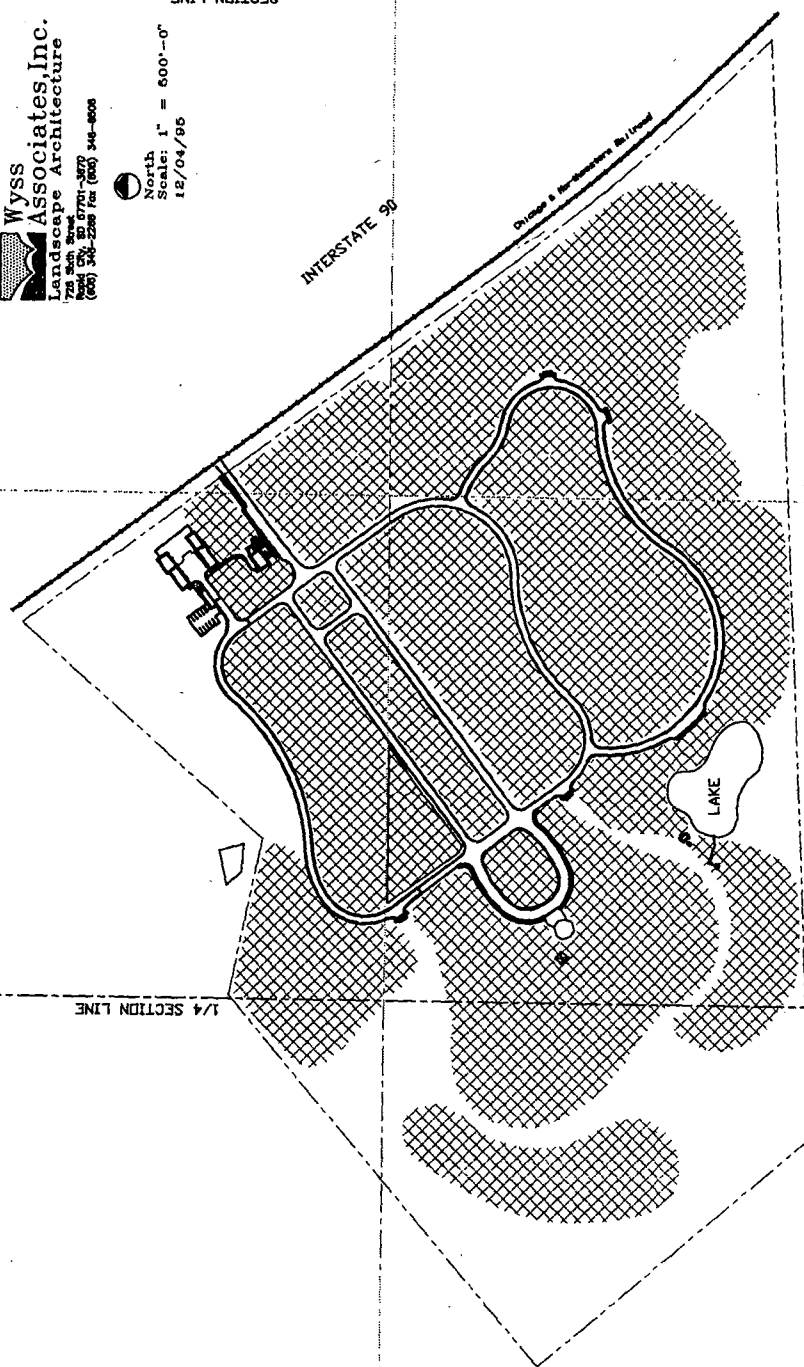
Wyss Associates, Inc.
Landscape Architecture
720 8th Ave.
Denver, CO 80202
(303) 534-2287 Fax (303) 346-8008

North
Scale: 1" = 600'-0"
12/04/96

SECTION LINE

INTERSTATE 90

Division 8 Engineering Bt (road)



SE 1/4 NE 1/4 SECT 26

SW 1/4 NE 1/4 SECT 26

SE 1/4 NW 1/4 SEC 26

1/4 SECTION LINE

IRRIGATED AREA SUMMARY:
[Cross-hatch pattern] TOTAL IRRIGATED AREAS - 5450 ACRES



Wyss
Associates, Inc.

Landscape Architecture
Golf Course Architecture
Parks & Recreation Design
Environmental Design
Land Planning
Historic Preservation
Urban Design
Irrigation Design
Resource Management

December 6, 1995

Neil Hodges

Ft. Meade Medical Center
Engineering Division
Ft. Meade, South Dakota 57741

Re: **Black Hills National Cemetery**
Summary of irrigation CFS water demand.

Dear Neil:

The following are the calculations to determine the total daily CFS water demand to adequately irrigate the Black Hills National Cemetery site.

Summary of calculations:

54.50 acres (2,374,020 sf) is to be irrigated per week.
1 inch of water to be applied (.083 ft) per week.
apply irrigation water over a period of 14.2 hours per day.
water to be applied 5 days a week at equal increments. (.20).

$2,374,020 \text{ sf} \times .083 \text{ ft} = 197,043 \text{ cf}$ (water required to irrigate 54.5 acres per week)

$197,043 \text{ cf} \times .20 = 39,408 \text{ cf}$ (amount of irrigation to be applied per day)

$\frac{39,408 \text{ cf}}{51,120 \text{ seconds/14.2 hours}} = .77 \text{ cfs}$

A total water demand of .77 cfs will be required.

Sincerely

Jim Hanson
Landscape Architect



Wyss
Associates, Inc.

Landscape Architecture
Golf Course Architecture
Parks & Recreation Design
Environmental Design
Land Planning
Historic Preservation
Urban Design
Irrigation Design
Resource Management

Memo:

To: Neil Hodges
Engineering Division - Ft. Meade Medical Center

From: Sandy Doran
Wyss Associates, Inc.

Re: Water Rights Application For Black Hills National Cemetery - Revised
Acreage

The following lists the revised acres to be irrigated per 1/4 section area for 1/4 sections of section 26:

-	NE1/4 NW1/4 SECTION 26, ETC. -	.87 ACRES
-	NW1/4 NE1/4 SECTION 26, ETC. -	8.84 ACRES
-	NE1/4 NE1/4 SECTION 26, ETC. -	1.72 ACRES
-	SE1/4 NE1/4 SECTION 26, ETC. -	11.74 ACRES
-	SW1/4 NE1/4 SECTION 26, ETC. -	24.53 ACRES
-	SE1/4 NW1/4 SECTION 26, ETC. -	6.80 ACRES

54.50 TOTAL ACRES

WATER PERMIT APPLICATION NO. 1635-1
BLACK HILLS NATIONAL CEMETERY
DECEMBER 29, 1995

Water Permit Application No. 1635-1 proposes to amend Water Permit No. 1483-1 and Water Right No. 1484-1 and to appropriate an additional 0.20 cubic feet of water per second (cfs) and irrigate 11.3 additional acres. Water Permit No. 1483-1 and Water Right No. 1484-1, combined, appropriate a total of 0.57 cfs from one well located in the NW $\frac{1}{4}$ NE $\frac{1}{4}$ Section 26 to irrigate 43.2 acres located in the NE $\frac{1}{4}$ Section 26; all in T5N-R5E. The well also supplies water for institutional purposes. This application proposes to increase the water appropriation from 0.57 cfs to 0.77 cfs from one additional well approximately 1755 feet deep (Madison Aquifer) located in the SW $\frac{1}{4}$ NE $\frac{1}{4}$ Section 26 to irrigate 11.3 additional acres located in the S $\frac{1}{2}$ NE $\frac{1}{4}$, E $\frac{1}{2}$ NW $\frac{1}{4}$ Section 26; all in T5N-R5E. The well authorized by Water Permit No. 1483-1 and Water Right No. 1484-1 will continue to be used for institutional purposes.

INTRODUCTION:

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

AQUIFER: Madison Aquifer (MDSN)

General Information:

The Madison Aquifer is a massive, carbonate (limestone and dolomite) aquifer which underlies most of western South Dakota. It is estimated that the aquifer contains at least 640 million acre-feet of recoverable water in storage in the State (Allen, 1984). The importance of the Madison as an aquifer is largely due to randomly distributed zones of secondary porosity and permeability formed by weathering of exposed surfaces, groundwater solution and fracturing. These zones also play an important role in determining the hydraulic behavior of the Madison aquifer system and the response of the system to stress. Recharge to the Madison aquifer occurs through streamflow losses and direct infiltration of precipitation at the outcrop area. Recharge for the entire Madison Aquifer in South Dakota has been estimated to range from 140,000 to 400,000 acre-feet per year (Woodward Clyde, 1981).

The Madison outcrop is located within one mile of this well site (Darton, 1925), but the top of the aquifer is expected to be approximately 1200-1400 feet below ground surface. The Madison is generally considered an excellent aquifer both in terms of quality and quantity, near the outcrop (recharge area). There is strong evidence that this area (from the Cemetery to Sturgis), may not be "typical" of areas near the outcrop. The potentiometric surface of the area appears to be significantly lower than would be predicted from regional information. There are at least two wells in the area (City of Sturgis well, and existing Cemetery well) that are completed into both the Minnelusa Formation and the Madison Aquifer. The reason the wells are completed into both aquifers is not totally clear but, it appears that the Madison Aquifer alone could not sustain the desired diversion rates. The proximity of the four main centers of intrusion of Tertiary igneous rock in the Black Hills (the Vanocker-Galena area) may have altered the Madison in this area.

The Water Rights Program monitors 21 observation wells completed into the Madison aquifer. A Madison observation well is located approximately 4.5 miles southeast of this site at Tilford and a Madison observation well is located approximately 4.5 miles northwest of this site at Sturgis. Records from the observation wells indicate the potentiometric surface of the aquifer fluctuates 30-40 feet per year near the recharge area, in response to seasonal and climatic variations. The limited period of record available from observation wells completed into the Madison Aquifer, (all but one of the wells have been installed since 1986), does not lend itself easily to interpretation. Water-level declines areas apparent from some of the hydrographs of this data can be attributed to dry climatic conditions in localized areas from the late 1980's that continued into the early 1990's. Observation well data suggest that at the existing level of development, natural influences dominate the water level of the aquifer and the effects of pumping as yet are not obvious.

The high cost of Madison wells, except very near the outcrop, and the availability of groundwater from shallower aquifers, has limited domestic development and generally restricted usage from the Madison to those uses which require water rights. There are a total of 117 permits/rights which appropriate water from the Madison aquifer in South Dakota. The majority of the water rights/permits from the aquifer are from Butte (14), Lawrence (23), Meade (13), Pennington (21) and Fall River (8) Counties. The Madison supplies water for irrigation, geothermal, industrial, and commercial use. However, by far the major use of the aquifer is for common distribution systems (suburban housing development and municipal use). The cities of Spearfish, Belle Fourche, Sturgis, Rapid City, Box Elder, and Edgemont all depend on water from the Madison Aquifer.

If the worst case assumptions are made that (1) permits/rights with an annual withdrawal limitation (ac-ft/yr) will use the maximum allowable; and (2) permits/rights that are limited by a diversion rate only, will use 60% of the maximum allowable (considered reasonable for water distribution systems); the total water use from the Madison would be less than 50,000 acre-feet per year. The actual amount of water used from the Madison is considerably less than this estimate. Comparison of the estimated annual recharge to the Madison with the water use estimated from the aquifer, indicates unappropriated water is available from the Madison aquifer.

AFFECTS ON EXISTING RIGHTS:

The major obstacle to potential development of the Madison Aquifer is consideration of the affects pumping may have on existing water rights. The drawdown caused by pumping an individual well could affect nearby wells (well interference), and the cumulative affect of numerous withdrawals from an area, may impact area water rights.

Well Interference:

Since the Madison is under artesian conditions in this area, pumping may cause a decline in the potentiometric surface over fairly widespread areas. The well proposed by this application is to be located near five Water Rights/Permits appropriating ground water. They include:

NO.	OWNER	LOCATION	USE	Aquifer	CFS
1018-1	Blucksberg Mt. Water Assoc	Sec.25,5N-5E	SHD	MNLS	0.90
1609-1	Blucksberg Mt. Water Assoc	Sec.25,5N-5E	SHD	MDSN	0.22
1188-1	BlucksbergMt .Water Assoc	Sec.25,5N-5E	SHD	MNLS	0.17
1277-1	Pleasant Valley	Sec.36,5N-5E	SHD	MDSN	0.04
1503-1	US BLM	Sec.26,5N-5E	DOM,REC	ALQ	0.20

Any influence this proposed use would have on these water rights/permits is not expected to be adverse, due to the distance between wells and the relatively low pumping rates of the wells involved.

CUMULATIVE AFFECT OF WITHDRAWALS:

The cumulative affect of numerous withdrawals from a concentrated area, may lower the water levels over a fairly large area. A significant lowering of the potentiometric surface of the Madison Aquifer could theoretically affect not only the Madison, but also other aquifers, spring flows and surface water flows. In recent years, a number of new wells have been completed into the Madison aquifer.

The relationship between the Madison Aquifer and the overlying Minnelusa Aquifer is not fully understood. A hydrologic connection may exist between these two aquifers. Measurements taken in the Water Rights Program's Observation Wells indicate the water level of the Madison is generally higher than the water level of the Minnelusa. The difference in heads between the aquifers suggests that there is a significant hydrologic separation exists between the two aquifers. However, there is the potential for the Madison to contribute recharge to the Minnelusa. If a hydraulic connection exists, lower water levels in the Madison Aquifer could eventually result in lower water levels in the Minnelusa Aquifer.

As stated previously, a major percentage of the recharge to the Madison occurs from streamflow losses. Streamflow losses to the aquifer are directly influenced by the gradient between the surface water and the groundwater. An increase in the gradient caused by a decline in water levels in the Madison aquifer may increase the streamflow losses.

Springs and seeps sustain the base flow of all major streams that drain the Black Hills. Many of these springs or seeps are points of natural discharge from the Madison Aquifer. Small fluctuations in the Madison water table may have large fluctuations in spring discharge. Seasonal fluctuations and climatic effects of spring discharge may be evident in discharge from some area springs. Most of the springs discharging from the Madison are at or near the outcrop where the aquifer is under unconfined conditions. Historic data of water table fluctuations in the unconfined portion of the Madison aquifer are not available, and the relationship between spring discharge and water level fluctuations is unknown.

If the cumulative affect of development from the Madison Aquifer requires the lowering of pumps in existing wells (either domestic wells or those wells with existing permits), or reduces flows of area streams, unlawful impairment of existing rights questions may need to be answered. SDCL 46-6-6.1 authorizes the Water Management Board to protect domestic water use by controlling large capacity wells without the necessity of requiring maintenance of artesian head pressure in a domestic use well. The statute also provides for the lowering of a water lift mechanism to a depth near the bottom of the groundwater supply or, in artesian aquifers to a substantial depth below the geological formation confining the ground water. Based on this statute, although water levels may be affected, the affect may not be unlawful impairment.

TERM LIMITATION:

SDCL 46-2A-20 requires that "... no water permit for construction of works to withdraw water from the Madison formation in Butte, Fall River, Custer, Lawrence, Meade and Pennington counties may be issued for a term of more than twenty years, unless the water management board determines, based upon the evidence presented at the hearing that:

- (1) Sufficient information is available to determine whether any significant adverse hydrologic effects on the supply of water in the Madison formation would result if the proposed withdrawal were approved; and
- (2) The information, whether provided by the applicant or by other means, show that there is a reasonable probability that issuance of the proposed permit would not have a significant adverse effect on nearby Madison formation wells and springs."

Evidence is not available to justify issuing this permit without a term limitation of 20 years.

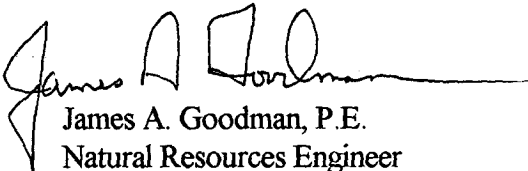
CONCLUSIONS:

1. The Madison Aquifer is a viable aquifer in this area, and water is available for this appropriation.
2. Well interference should not be a problem in this area.
3. Adverse impacts on area water levels, due to this increased appropriation from the Madison Aquifer are not expected.
4. Information is not available to justify issuing this permit without a term limitation of 20 years.



Ken Buhler
Natural Resources Engineer

approved by



James A. Goodman, P.E.
Natural Resources Engineer

REFERENCES:

- Allen, J.C., D.Iles, A.Petres, 1984, Analysis of Groundwater and Streamflow Data, Western Dakotas Region of South Dakota, Task 3 & 4: Groundwater Resources Inventory, US Army Corp of Engineers Contract DAWC 45-82-C-015, SD DENR-Division of Geological Survey, Vermillion SD
- Darton, N.H., Paige, S., 1925, Geologic Atlas of the United States, Central Black Hills Folio, USGS Folio No. 219.
- Water Rights Program, 1995, "Domestic Well Log Files, Observation Well Files, and Water Permit Files", DENR-Water Rights Program, Joe Foss Building, Pierre, SD 57501
- Woodward Clyde Consultants, 1981, Well Field Hydrology Technical Report, for the ETSI Coal Slurry Pipeline Project, U.S. Dept. of Interior, Bureau of Land Management

**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 1635-1, Black Hills National Cemetery**

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. 1635-1, Black Hills National Cemetery, %Douglas D. Miner, P.O. Box 640, Sturgis, SD 57785.

The Chief Engineer is recommending APPROVAL of Application No. 1635-1 for a 20 year term pursuant to SDCL 46-1-14 and 46-2A-20 because 1) although evidence is not available to justify issuing this permit without a 20 year term limitation, 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. In accordance with SDCL 46-1-14 and 46-2A-20, Permit No. 1635-1 is issued for a twenty year term. Pursuant to SDCL 46-2A-21, the twenty year term may be deleted at any time during the twenty year period or following its expiration. If the twenty year term is not deleted at the end of the term, the permit may either be cancelled or amended with a new term limitation of up to twenty years. Permit No. 1635-1 may also be cancelled for nonconstruction, forfeiture, abandonment or three permit violations pursuant to SDCL 46-1-12, 46-5-37, 46-5-37.1, and ARSD 74:02:01:37.
2. 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.
3. This permit is approved subject to the irrigation water use questionnaire being submitted each year.

See report on application for additional information.



JOHN HATCH, Chief Engineer
January 18, 1996



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181

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

January 23, 1996

Black Hills National Cemetery
%Douglas D. Miner
P.O. Box 640
Sturgis, SD 57785

Dear Mr. Miner:

Water Permit Application No. 1635-1 for irrigation use has been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice of hearing has been sent to the Publisher of the Meade Co. Times-Tribune printed at Sturgis, SD (Ph # (605) 347-2503). For your information, a copy of the notice, the recommendation of the Chief Engineer and a 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 to authorize publication of your Notice of Hearing and to arrange for payment. Early contact with the paper can eliminate delays. The publisher has been instructed to publish your notice once each week for two consecutive weeks with the last publication to occur twenty days before the board meeting. The newspaper has 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.

c: Neil Hodges, Project Engineer



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181

January 23, 1996

Meade Co. Times-Tribune
Box 69
Sturgis, SD 57785-0069

ATTENTION: Legal Department

Enclosed is a Notice of Hearing on Application No. 1635-1 to be published twice. Please publish the first notice on February 1, 1996, with the second publication 7 days later.

Jan. 31, 1996

The APPLICANT MUST VERIFY TO YOU THAT THE NOTICE IS TO BE PUBLISHED, before you make the first publication. Please BILL the APPLICANT for the cost of publication. The APPLICANT is Black Hills National Cemetery, %Douglas D. Miner, P.O. Box 640, Sturgis, SD 57785 (Ph # (605) 347-7299).

A copy of BOTH publications must be SENT to the WATER RIGHTS PROGRAM. IMMEDIATELY return the FIRST publication with the FIRST Transmittal form on the bottom of this page. The first copy is needed to check the publication for errors so any corrections can be made in the second publication. Publication errors can invalidate the public notice and cause the applicant costly delays.

Please be sure the SECOND publication is returned IMMEDIATELY with the enclosed Proof of Publication form. DO NOT WAIT until the end of the month or the billing cycle. No action may be taken on the permit application until proof of publication has been received.

Sincerely,

Eric Gronlund
Eric Gronlund
Natural Resources Engineer
605 773-3352

enclosures

-----CUT HERE-----

FIRST TRANSMITTAL NOTICE

TO: Eric Gronlund
Water Rights Program
Joe Foss Building
Pierre SD 57501-3181

No. _____

Date _____

We are in receipt of your letter of _____ enclosing Notice of Hearing to Appropriate Water by Application No. _____ which was first published in our issue of _____. ENCLOSED IS A COPY OF THIS FIRST PUBLICATION.

Name

Newspaper

PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA)
) SS
 County of Meade)

Faye D. Pate

I, _____
 certify that the attached printed Notice was

taken from the _____

Meade County Times-Tribune

printed and published in Sturgis

County of Meade and State of

South Dakota. The notice was published in
 the newspaper on the following two dates:

January 31, 1996

February 7, 1996

Cost of Printing: 48.08

Faye D. Pate
 (Signature)

Accountant

(Title)

(Date Signed)

Water rights

NOTICE OF APPLICATION NO. 1635-1
 to Appropriate Water and to Amend
 Water Permit No. 1483-1 and Water
 Right No. 1484-1

Notice is given that the Black Hills National Cemetery, P.O. Box 640, Sturgis, SD 57785 has filed an application for a water permit to amend Water Permit No. 1483-1 and Water Right No. 1484-1 and to appropriate an additional 0.20 cubic feet of water per second (cfs) and irrigate 11.3 additional acres. Water Permit No. 1483-1 and Water Right No. 1484-1, combined, appropriate a total of .57 cfs from one well located in the NW 1/4 NE 1/4 Section 26 to irrigate 43.2 acres located in the NE 1/4 Section 26; all in T5N-R5E. The well also supplies water for institutional purposes. This application proposes to increase the water appropriation from 0.57 cfs to 0.77 cfs and include one additional well approximately 1755 feet deep (Madison Aquifer) located in the SW 1/4 NE 1/4 Section 26 to irrigate 11.3 additional acres located in the S 1/2 NE 1/4, E 1/2 NW 1/4 Section 26; all in T5N-R5E. The well authorized by Water Permit No. 1483-1 and Water Right No. 1484-1 will continue to be used for institutional purposes.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 1635-1 for a 20 year term pursuant to SDCL 46-1-14 and 46-2A-20 because 1) although evidence is not available to justify issuing this permit without a 20 year term limitation, 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 the public interest. In accordance with SDCL 46-2A-23, the chief engineer will act on the 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 the 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 February 20, 1996.

The petition may be informal, but must include a statement describing the petitioner's interest in the application, the petitioner's reasons for opposing or supporting the application, and the signature and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained. Contact Eric Gronlund at the above Water Rights Program address to request copies of information pertaining to this application. Nettie H. Myers, Secretary, Department of Environment and Natural Resources.

Publ Jan. 31 and Feb. 7, 1996
 Meade County Times-Tribune

Instruction to Newspaper - Publish first Notice on February 1, 1996, with the second publication 7 days later. The applicant is responsible for payment.

NOTICE OF APPLICATION NO. 1635-1 to Appropriate Water
and to Amend Water Permit No. 1483-1 and Water Right No. 1484-1

Notice is given that the Black Hills National Cemetery, P.O. Box 640, Sturgis, SD 57785 has filed an application for a water permit to amend Water Permit No. 1483-1 and Water Right No. 1484-1 and to appropriate an additional 0.20 cubic feet of water per second (cfs) and irrigate 11.3 additional acres. Water Permit No. 1483-1 and Water Right No. 1484-1, combined, appropriate a total of 0.57 cfs from one well located in the NW 1/4 NE 1/4 Section 26 to irrigate 43.2 acres located in the NE 1/4 Section 26; all in T5N-R5E. The well also supplies water for institutional purposes. This application proposes to increase the water appropriation from 0.57 cfs to 0.77 cfs and include one additional well approximately 1755 feet deep (Madison Aquifer) located in the SW 1/4 NE 1/4 Section 26 to irrigate 11.3 additional acres located in the S 1/2 NE 1/4, E 1/2 NW 1/4 Section 26; all in T5N-R5E. The well authorized by Water Permit No. 1483-1 and Water Right No. 1484-1 will continue to be used for institutional purposes.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 1635-1 for a 20 year term pursuant to SDCL 46-1-14 and 46-2A-20 because 1) although evidence is not available to justify issuing this permit without a 20 year term limitation, 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. In accordance with SDCL 46-2A-23, the chief engineer will act on the 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 the application. Notice of the hearing will be given to the applicant and any person filing a petition.

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**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181

APR 3 1996

Black Hills National Cemetery
%Douglas D. Miner
P.O. Box 640
Sturgis, SD 57785-0640

Dear Mr. Miner:

Enclosed is Water Permit No. 1635-1 authorizing construction of your water diversion system and beneficial use of the water, not exceeding the limits as specified in the Water Permit.

Also enclosed is Form 10, Notice of Completion of Works and Application of Water to Beneficial Use, which you are to complete and submit to the Chief Engineer when you have completed the system and/or have put the water to beneficial use. An inspection can then be scheduled so that the Water License may be issued, thus completing your acquisition of a Water Right.

Very truly yours,

JOHN HATCH, Chief Engineer
Water Rights Program
605 773-3352

enclosures

PLEASE NOTE: Certain changes can be made in your permit within the five year construction period, usually without affecting the priority date provided an application to amend your permit is made within the five year period - i.e. changes in location or number of diversion points (wells) or location of land to be irrigated. Well locations for wells into the same aquifer can be moved up to 660 feet without application.

Applications to amend a permit after the five year construction period may be assigned a new priority date. Applications to change water sources, to add lands or increase original diversion rates, if approved will usually receive the date of the new application as a priority date regardless of the five year construction period.



DEPARTMENT OF VETERANS AFFAIRS
Medical Center
Fort Meade SD 57741



November 25, 1997

In Reply Refer To: 568/FAC

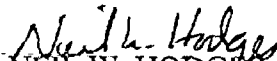
- Water Rights Program, DENR
523 E. Capitol
Pierre, SD 57501-3181

ATTN: Eric Gronlund

SUBJ: Project 884-008, Develop Burial Areas, BHNC (Permit 1635-1)

1. Forwarded with this letter is a completed copy of Form 10, Notice of Completion of Works and Beneficial Use for our recent expansion. We have more testing to do in the spring, but essentially the irrigation system is complete. It is now shut down for the winter, of course, so any inspection visit by your office should probably be scheduled for next May or June.

2. If you have any questions in regard to this letter, please contact me at 605-347-7075, or by fax at 605-347-7007.


NEIL W. HODGES

CC: Black Hills National Cemetery

NOV-25-97 TUE 10:20

FAX NO. 216++

P. 02

05/13/96 11:38

6067734068

SD/DENR

006

Form 10

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



Date 11/25/97

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

FROM: Black Hills Nat'l. Cemetery P.O. Box 640
(name) (address)
Sturgis, SD 57785 605-347-7299
(city) (state) (zip) (phone)

I have completed the construction of the water diversion system and I have put the water to beneficial use to the maximum extent it is going to be used. I have not exceeded the amounts specified in Water Permit No. 1635-1.

Water Permit No. 1635-1 states that the diversion system is to be constructed by February 20, 2001, and that the water is put to beneficial use by
(date)

February 20, 2005
(date)

The diversion system was completed on September 30, 1997.
(date)

Applying the water to beneficial use was completed on September 30, 1997.
(date)

You may schedule an inspection so that the Water License may be issued.

Nail Hodge, Project Engineer
(signature)



1635-1
DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

January 14, 2004

NOTICE

TO: BLACK HILLS NAT'L CEMETARY, ROBERT E POE, DIRECTOR, 20901 PLEASANT VALLEY DR, STURGIS, SD 57785 8947

FROM: Ron Duvall, Natural Resources Engineer
for Garland Erbele, Chief Engineer
Water Rights Program

SUBJECT: Reporting Requirement for 2003 Irrigation Questionnaire(s)

Our records indicate that the 2003 Irrigation Questionnaire(s) has not been submitted for Permit No(s) 1483-1, 1484-1 & 1635-1. The request for the Questionnaire was dated October 17, 2003. The Water Management Board has directed that owners of water permits who have not submitted the 2003 Irrigation Questionnaire(s) be given notice of permit violation and a hearing to be held by the Board. The hearing is to determine what action is to be taken for violation of Water Permit No(s) 1483-1, 1484-1 & 1635-1 qualification:

"This permit is approved subject to the Irrigation Water Use Questionnaire being submitted each year."

The hearing will be held at 8:30 am, March 3, 2004 in the Floyd Matthew Training Center, Joe Foss Building, 523 E Capitol Avenue, Pierre, SD and will be conducted pursuant to SDCL 46-1-12, 46-1-14, 46-2-9, 46-2-11 and 46-2-17. These are contested case hearings pursuant to Chapter 1-26. According to SDCL 46-1-12, the Board may suspend a permit for a period of up to one year for the first violation of a permit qualification or up to three years for a second violation, or cancel a permit for a third violation. Following the hearing, the Water Management Board can:

1. Suspend or cancel Permit No(s) 1483-1, 1484-1 & 1635-1 in accordance with applicable provisions of SDCL 46-1-12;
2. Postpone any action; or
3. Take no action.

The hearing is an adversary proceeding. The permit owner has the right to be present or to be represented by a lawyer. These and other due process rights will be forfeited if they are not exercised. Decisions of the Board may be appealed to the Circuit Court and the State Supreme Court as provided by law.

If the questionnaire(s) is(are) received in this office on/or before **February 27, 2004**, you will no longer be in violation of your permit and your name will be deleted from the Board agenda. If you have questions or need assistance in completion of the irrigation questionnaire(s), please contact Genny McMath at (605) 773-3352.

NOTE: Please contact the Water Rights Program, Joe Foss Building, 523 E Capitol, Pierre, SD (605-773-3352) to assure access to the meeting room for the handicapped or to obtain an interpreter for the hearing impaired.



1635-1

Track & Confirm

Current Status

You entered 2301 3460 0000 8515 7605

Your item was delivered at 12:31 pm on January 15, 2004 in STURGIS, SD 57785. The item was signed for by L DOVORAK.

[Shipment Details >](#)

Notification Options

▶ Track & Confirm by email

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Enter label number:

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SIGNATURE CONFIRMATION NUMBER:
2301 3460 0000 8515 7605

BLACK HILLS NAT'L CEMETARY
ROBERT E POE, DIRECTOR
20901 PLEASANT VALLEY DR
STURGIS SD 57785 8947

Waiver of Signature ☐ YES ☐ NO

Postmark
Here

POSTAL CUSTOMER:

Keep this receipt. For Inquiries:
Access internet web site at
www.usps.com
or call 1-800-222-1811

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1635-1
**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

January 27, 2004

1483-1
1484-1
1635-1

Doug Voorhees
Black Hills National Cemetery
20901 Pleasant Valley Dr
Sturgis SD 57785

Dear Mr. Voorhees:

I am writing to acknowledge receipt of your 2003 irrigation questionnaires. You may disregard the January 14, 2004, "Notice" concerning reporting requirements for Water Permit or Right Nos. 1483-1, 1484-1 and 1635-1.

The information was received in our office prior to the Water Management Board meeting and your name has been deleted from the agenda.

If you have any questions, please contact me.

Sincerely,

Genny McMath
Environmental Scientist
Water Rights Program
(605) 773-3352

Permit No. 1635-1
Belle Fourche River - Water District

Report of Examination of Works and/or Application of Water to Beneficial Use

TO: Chief Engineer, Water Rights Program, DENR, Foss Bldg., Pierre, SD 57501

I have this day, 17 September 2007, made a thorough examination of the water use system constructed by Black Hills National Cemetery of PO Box 640, Sturgis, SD. 57785 holder of Permit No. 1635-1, bearing the priority of 20 November 2005 authorizing the diversion of 0.77 cu. ft. per second of the waters of the Madison Aquifer for irrigation and institutional purposes, in Meade County.

Inspection contact & relationship to permit holder, if applicable: **Terry Perkins**
Grounds Maintenance Manager
605-347-3830

A. Works used to divert the water:

Well Information:

- 1) Well Drilling Firm: Taylor Drilling
- 2) No. of Wells 2
- 3) Depth(s) 1292/ 1496 feet
- 4) Well log is available Y
- 5) Comment: 1635-1 adds acreage and increases diversion to 1483-1 and 1484-1

Casing:

- 1) Diameter (8 5/8 / 13 3/8) / 7 inches
- 2) Length (900 / 50) / 475 feet
- 3) Type (steel / steel) / unknown

Screen:

- 1) Type none / lead packer
- 2) Static water level 635 / unknown feet

Pump:

- 1) Make Grundfos / unknown
- 2) Model 150s500-28 / unknown
- 3) Capacity (175 - 350) / 20 GPM

Motor:

- 1) Make CentriPro / unknown

- 2) Model No. 86M504 / unknown
- 3) Horsepower rating 50 / 50 hp

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

- 1) Type PVC

C. Works used to apply water to beneficial use:**Chemigation Equipment:**

- 1) Does chemigate N

D. Compliance with Permit Requirements:

- 1) Permit qualifications being abided by Y
- 2) Irrigation Questionnaires checked to determine if permit owner started irrigation by the end of construction period Y
- 3) Exceptions to compliance are: none

The system is in good condition with the point(s) of diversion located as follows: 1) SW ¼ NE ¼ Sec 26-T5N-R5E, approximately 2286 feet west and 2141 feet south of the north east corner of section 26, N 44.36712 Latitude and W -103.47796 Longitude 2) NW ¼ NE ¼ Sec 26-T5N-R5E, approximately 762 feet south and 1740 feet west of the north east corner of section 26, N 44.37091 Latitude and W -103.47585 Longitude. The works are capable of diverting and conveying to the place of use 0.77 cu. ft. per second of which is to be used for irrigation. Water has been put to beneficial use to the maximum extent as follows:

NE ¼ NW ¼	0.87 acres
NW ¼ NE ¼	8.84 acres
NE ¼ NE ¼	1.72 acres
SE ¼ NE ¼	11.74 acres
SW ¼ NE ¼	24.53 acres
SE ¼ NW ¼	6.80 acres

comprising a total of 54.50 acres of land and the license should be issued for 0.77 cfs

All structures, wells and lands on map Y

Comments or other permit(s) associated with the project: 1483-1, 1484-1



Mark Costello
Natural Resources Engineer
DENR, Water Rights Program

Date report completed: 17 January 2008



South Dakota

Permit No.1635-1

Black Hills National Cemetery
PO Box 640
Sturgis, SD. 57785

South Dakota Department of
Environment and Natural Resources



Protecting South Dakota's Tomorrow... Today



Mark Costello

Mark Costello
Natural Resources Engineer
DENR, Water Rights Program
17 January 2008

0 500 1,000 2,000
Feet



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

April 7, 2008

1635-1

Black Hills National Cemetery
Terry Perkins, Grounds Maintenance Manager
20901 Pleasant Valley Dr.
Sturgis SD 57785

Dear Mr. Perkins:

On September 17, 2007 the investigation of this water use system, including the extent of application of water to beneficial use, as developed under Water Permit Nos. 1483-1 and 1635-1, was completed by Mark Costello, a staff engineer with our program. The final water right document, the water license, can now be issued.

State law requires that we charge a \$50.00 fee for the investigation and issuance of the water license. Upon receipt of the \$50.00 fee from you, we will complete processing the water license. The check or money order for the fee should be made payable to the "Water Rights Program".

A licensed water right will be similar to a property right that can not be lost as long as the water use continues and you abide by the permit requirements.

If you have any questions regarding the water permit, investigation of the water use system or payment of the fee, please contact Genny McMath with our program at (605) 773-3352.

Sincerely,

Karen Schlaak

Karen Schlaak
Water Rights Program
(605) 773-3352

**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

April 7, 2008

1635-1

Black Hills National Cemetery
Terry Perkins, Grounds Maintenance Manager
20901 Pleasant Valley Dr.
Sturgis SD 57785

*Terry Corkins*Dear Mr. Perkins: *Corkins*

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Sincerely,

Karen Schlaak

Karen Schlaak
Water Rights Program
(605) 773-3352

*one time
50.00
Water Rights*

ISSUING OFFICE:

Dept. of Veterans Affairs Natl.Cemetery Svc.
VA MEDICAL CENTER
FORT MEADE, SD 57741

REQUESTING SERVICE:

BHNC(BHNC)
DEL. TO: BHNC

RECEIVED

MAY - 2 2008

WATER RIGHTS
PROGRAM.

VENDOR:	SHIP TO:
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES (DENR) WATER RIGHTS PROGRAM PMB 2020 JOE FOSS BLDG 523 EAST CAPITOL PIERRE SD 57501-3182 605-773-3352 FMS Vendor Code: 460191834	WAREHOUSE ID8019 V.A. Natl.Cemetery Svc. %CHIEF, AMMS BLDG. 46 FORT MEADE, SD 57741 DELIVERY HOURS: 7:30A-4PM

FOB POINT: DESTINATION GOV'T BL #: PURCHASE ORDER DELIVER ON/BEFORE 5/11/2008 DISCOUNT TERM: NET30 SHIP VIA:	PROPOSAL: MAIL CONTRACT:	MAIL INVOICE TO: CHIEF, FISCAL 04 BLDG. 53 FORT MEADE, SD 57741
---	---------------------------------	--

ITEM	DESCRIPTION	QTY	UNIT	UNIT COST	TOTAL COST
1	ONE-TIME FEE FOR THE INVESTIATION AND ISSUANCE OF THE WATER LICENSE BOC: 2580 FMS LINE: 001 CHECK 8872	1	EA	50.00	50.00

V.A. TRANSACTION NUMBERS:

884-08-3-625-0072

AUTHORITY FOR PURCHASE FAR 13	P.O. NO. 884-ID8019	PO DATE 5/1/2008	TOTAL:	50.00
CONTRACTING OFFICER /ES/TOM SITZLER	DATE SIGNED 5/1/2008@09:38	PHONE 605.720.7028	FAX 605.720.7029	

FUND CERTIFICATION: The supplies/services listed on this request are properly chargeable to the following allotments, the available balances of which are sufficient to cover the cost thereof, and funds have been obligated.

APPROPRIATION: 3680129-625 OBLIGATED BY:
COST CENTER: 570300 BOC1: 2580 AMOUNT1: 50.00 FMS LINE: 001
SOURCE CODE: SUPPLY-2 FISCAL-3
FCP/PRJ: 010070300

90-2138-7-ADP, JAN 1984

RECEIPT

WATER RIGHTS PROGRAM

South Dakota Department of Environment and Natural Resources

Date May 2, 20 08

RECEIVED OF Dept. of Veteran Affairs, Nat'l Cemetery Svc., VA Medical Center, Sturgis SD

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. <u>1635-1</u>		
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	50.00

No.

03005

By

Harland Erbule

Chief Engineer

(KS)



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

JOE FOSS BUILDING
PMB 2020
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

JAN 13 2010

1483-1
1484-1
1635-1

Terry Corkins,
Black Hills National Cemetery
20901 Pleasant Valley Rd
Sturgis SD 57785

Dear Mr. Corkins:

Enclosed is Water License No. 1635-1. This is the final water right document completing your process of obtaining a Water Right. The applicable portions of Vested Water Right No. 1484-1 and Water Permit No. 1483-1 were incorporated into the water license. A map prepared by the staff engineer who conducted the field investigation and your Receipt No. 03655 in the amount of \$50.00 are also enclosed.

For your information SDCL 46-6-27 requires that if the owner of an existing well, such as the wells authorized by Water Right No. 1635-1, 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,

Garland Erbele, Chief Engineer
Water Rights Program
(605) 773-3352

enclosures

STATE OF SOUTH DAKOTA

WATER LICENSE NO. 1635-1

(1) Black Hills National Cemetery, 20901 Pleasant Valley Rd, Sturgis SD 57785 made Application No. 1635-1, November 20, 1995 for a water permit to amend Water Permit No. 1483-1 and Vested Water Right No. 1484-1 by appropriating an additional 0.20 cubic feet of water per second (cfs) from an existing well and one new well (Madison aquifer), Meade County, South Dakota for irrigation purposes. Permit No. 1635-1, with a priority date of November 20, 1995 was approved February 20, 1996 and issued to the applicant for diversion of water with construction of the described water supply system to be completed on or before February 20, 2001 and for the application to beneficial use of said water on or before February 20, 2005.

Vested Water Right No. 1484-1, with a priority date of June 29, 1949 authorizes diversion of 0.05 cfs from one well in the NW ¼ NE ¼ Section 26, T5N, R5E for irrigation of 6.2 acres and includes up to 25,000 gallons of water per year for institutional purposes.

Water Permit No. 1483-1, with a priority date of April 2, 1990 authorizes 0.52 cfs from the existing well (described above) to irrigate 37 acres and includes up to 100,000 gallons of water per year for institutional purposes. Water Permit No. 1635-1 authorized an additional 11.3 acres, increased the water appropriation for irrigation and added one well. The applicable portions of Water Permit No. 1483-1 and Vested Water Rights No. 1484-1 are incorporated into Water License No. 1635-1.

(2) It is certified that the permit holder has complied with the provisions of South Dakota State Law relating to completion of the construction of the water supply system and is entitled to divert 0.82 cubic feet of water per second for beneficial use. The location of the diversion points are:

- new well: 2,286 feet west and 2,141 feet south of the NE corner of Section 26, T5N, R5E (SW ¼ NE ¼) (capable of up to 350 gallons per minute [0.77 cfs] and used for irrigation purposes);
- old well: 762 feet south and 1,740 feet west of the NE corner of Section 26, T5N, R5E (NW ¼ NE ¼) (capable of 20 gallons per minute [0.05 cfs] and used for institutional purposes).

(3) The permit holder has complied with the provisions of South Dakota State Law relating to the application of water to beneficial use to irrigate the following land:

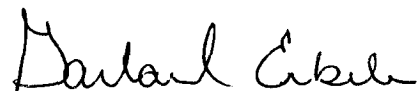
Section 26, T5N, R5E			
NW ¼ NE ¼	8.84 acres	NE ¼ NW ¼	0.87 acres
NE ¼ NE ¼	1.72 acres	SE ¼ NW ¼	6.80 acres
SE ¼ NE ¼	11.74 acres		
SW ¼ NE ¼	24.53 acres		
Total 54.5 acres			

Incorporated Water License No. 1635-1

(4) Pursuant to South Dakota Water Law 46-5-30.1 Black Hills National Cemetery, 20901 Pleasant Valley Rd, Sturgis SD 57785 the holder and/or owner of Incorporated Water Right No. 1635-1 is issued a license to appropriate water, the right to use 0.82 cubic feet of water per second from ground water (two wells) with priority dates of June 29, 1949 (0.05), April 2, 1990 (0.52 cfs) and November 20, 1995 (0.20 cfs) from the locations specified in (2) of this license. The water is to be conducted to and upon lands specified in (3) of this license for the purpose of irrigation with water from the old well also used for institutional purposes.

This license is subject to South Dakota Water Law, any limitations or conditions listed in Incorporated Water Right No. 1635-1 and subject to the following qualifications:

- In accordance with SDCL 46-1-14 and 46-2A-20, Permit No. 1635-1 is issued for a 20-year term. Pursuant to SDCL 46-2A-21, the 20-year term may be deleted at any time during the 20-year period or following its expiration. If the 20-year term is not deleted at the end of the term, the permit may either be cancelled or amended with a new term limitation of up to twenty years. Permit No. 1635-1 may also be cancelled for nonconstruction, forfeiture, abandonment, or three permit violations pursuant to SDCL 46-1-12, 46-5-37, 46-5-37.1 and ARSD 74:02:01:37.
- The wells authorized under this Water Right 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.
- This water right is approved subject to the irrigation water use questionnaire being submitted each year.


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

JAN 13 2010
date

