

Considered: _____

WATER PERMIT NO. 2027-2 ²⁰

HAP No. same

Name of Applicant Custer State Park

Post Office Address HCR 83, Box 70, Custer SD 57730

Amount of Water Claimed 0.16 cfs Total Acres N/A

Source of Water Supply ground water up to 6 wells

Water to be used for commercial and recreational purposes County Custer

About 6 miles N of Custer.

PROOF OF PUBLICATION: Received _____ Not Received _____

APPLICATION: Approved _____ Subject to _____

F.F. & C.L. Adopted _____ Not Approved _____ Deferred _____

PRIORITY _____ Date Received July 9, 1987 Fee none Remarks no fee

required from state agency

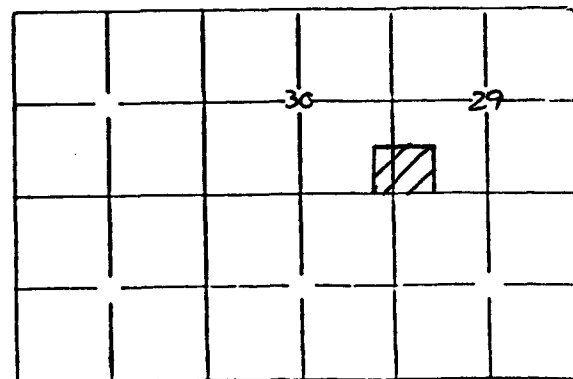
Corrected Application Received _____ Period of Annual Use _____

WATER QUALITY APPROVAL RECEIVED N/A APPROVED/CONDITIONAL (Circle one)

WI-1 Description same as Application YES _____ NO _____ REMARKS _____

Diversion Point well sites; SE $\frac{1}{4}$ SE $\frac{1}{4}$ section 30;
SW $\frac{1}{4}$ SW $\frac{1}{4}$ section 29; all in T2S - R5E

Land to be Irrigated N/A



Well Log: Driller not constructed Licensed YES _____ NO _____

Depth of Well $\approx$ 250 feet REMARKS _____

Type of Map topo. PREPARED BY Greg Goebel Reviewed and the Number

assigned on July 27, 1987 By Ron Duvall

FORM 2: Application for uses other than irrigation (type or print)

Mail to: Water Rights Div.
DWNR, Foss Bldg.
Pierre, SD 57501
(605) 773-3352
P.L. 6/3/87

No. 2027-2 Hydrologic Unit 10120109
Map No. same Basin Upper Cheyenne R.
Newspaper Custer County Chronicle, Box 551 (Wed)

Application For Permit To Appropriate Water Within The State Of South Dakota

Check use of water: Industrial ☐ Commercial ☒ Municipal ☐ Other Common Distribution System ☐
Rural Water System ☐ Suburban Housing ☐ Geothermal Heat ☐ Institutional ☐ Recreational ☒
Domestic ☐ (above 18gpm) Other ☐

Type of Application: Check one or more of the following

New ☒ Vested Right ☐ Future Use ☐ Change Use ☐

☐ Amend Permit No. _____ with old priority date retained

Change diversion point(s) ☐ Add diversion point(s) ☐ Other ☐

☐ Application to: Change diversion point(s) ☐ Add diversion point(s) ☐ on Permit No. _____

☐ Construction to use water reserved by Future Use Permit No. _____



1. Name of Applicant Custer State Park Phone No. 255-4515

Post Office Address HCR 83, Box 70, Custer State SD Zip Code 57730
(Street, RR or Box) (City)

2. Amount of water claimed (c.f.s) 0.16 cfs 70 gpm

3. Source of water supply Groundwater, up to 6 wells

4. Location of point of diversion Proposed well site #1 is located in the SE 1/4, SE 1/4, Sec. 30, T2S, R5E. Proposed well sites #2 and #3 are located in the SW 1/4, SW 1/4, Sec. 29, T2S, R5E. County Custer

5. Counties where water will be used Custer

6. Annual period during which water is to be used January 1 to December 31

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

The proposed wells are needed to supply additional water to the Sylvan Lake Area Facilities. Well sites 1, 2 and 3 would be drilled and developed in sequence until 70 gpm total additional water would be achieved. For additional information see attached preliminary engineering report.

Attachments: Attach Form 2A if diversion from a well or dugout, or if storage of water, is proposed. Attach map (see instruction)

STATE OF SOUTH DAKOTA)
County of Custer)^{ss}

I, Rollie Noem, Director, Custer State Park the applicant, certify that I have read this application, have examined the attached map and that the matters stated are true and that I intend, and am able to complete the necessary construction.

Signed

Rollie Noem

Subscribed and sworn to before me this 7 day of July 1987

James F. Hunter
Notary Public

WATER PERMIT

The Water Management Board hereby approves Water Permit Application No. 2027-2
Custer State Park HCR 83, Box 70
(Applicant) (Street, RR or Box)
Custer SD 57730 With the following qualifications.
(City) (State) (Zip Code)

1. The casing of the wells to be constructed under Permit No. 2027-2 shall be pressure grouted with cement (bottom to top) and the wells constructed in compliance with Water Management Board Well Construction Rules, Chapter 74:02:04
2. The wells approved under this Permit will be located near domestic wells and other wells which may obtain water from the same formation. The well owner, under this Permit, shall control his withdrawals so there is not a reduction of needed water supplies in domestic wells.

Date of first receipt of application July 9, 1987.

Date of return to applicant for correction, amendments or changes required _____, 19____.

Date of receipt of corrected application _____, 19____. Approved December 2, 1987.

The Water Management Board approved this Water Permit No. 2027-2 authorizing the construction of the water use system and the placing of water to beneficial use as stated in the Application and as qualified in the Water Permit approval, subject, however, to the following limitations and conditions:

1. The date from which applicant may claim right is July 9, 1987.
2. The equivalent of at least one-fifth of the specified work is to be completed on or before June 2, 1990.
3. The whole of said work is to be completed on or before December 2, 1992.
4. The limit of time for proof of beneficial use of water appropriated in accordance herewith is December 2, 1996.
5. The water appropriated shall be used for the purpose of commercial and recreational uses by the Sylvan Lake Area Facilities
6. The prior right of all persons who, by compliance with the laws of the State of South Dakota, have acquired a right to the use of water must not be unlawfully impaired by this appropriation.
7. The amount of the appropriation granted shall not exceed 0.16 cubic feet per second; neither shall it exceed the amount of water needed for the beneficial uses served and to which water is actually and beneficially applied for commercial and recreational uses on or before December 2, 1996. The water is to be used during the following described annual period: Jan 1 - Dec 31

WATER MANAGEMENT BOARD

By: John Hatch
Chief Engineer **JOHN HATCH**
 Division of Water Rights
 Dept. of Water and Natural Resources

FEB 9 1988

_____, 19____

Supplemental Information

(type or print in ink)

1. Well Information - Proposed construction

- a) Drill Hole Diameter 6 inches Depth 250 feet
- b) Casing Type Schedule 40 Black Steel Diameter 6 inches Thickness .280 inches
- c) Screen Type N/A Diameter N/A Thickness N/A
- d) Gravel Pack Thickness N/A Length of Gravel Pack N/A
- e) Depth to Top of Water Bearing Material unknown
- f) Depth to Water (ground surface to water level) unknown
- g) Distance to nearest existing domestic well:
- On applicants property 300 feet On property owned by others Not closer than 1.4 miles.

2. Dugout Information Estimates N/A

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

3. Water Storage Dams N/A

If the proposed water use system contains one or more storage dams, please furnish the information requested below. The locations of each dam should 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 _____

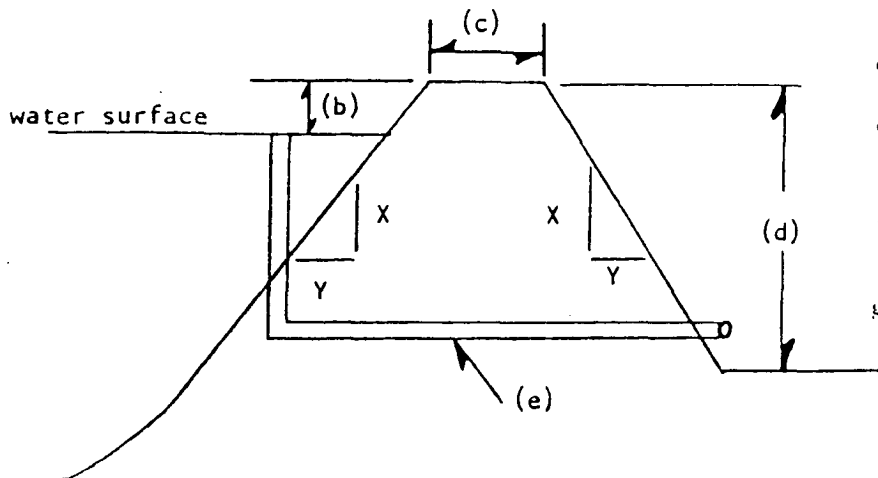
g) X & Y Slope
Upstream _____

Downstream _____

Surface Area of Impoundment _____

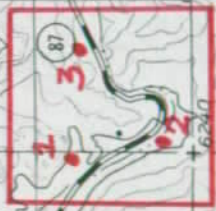
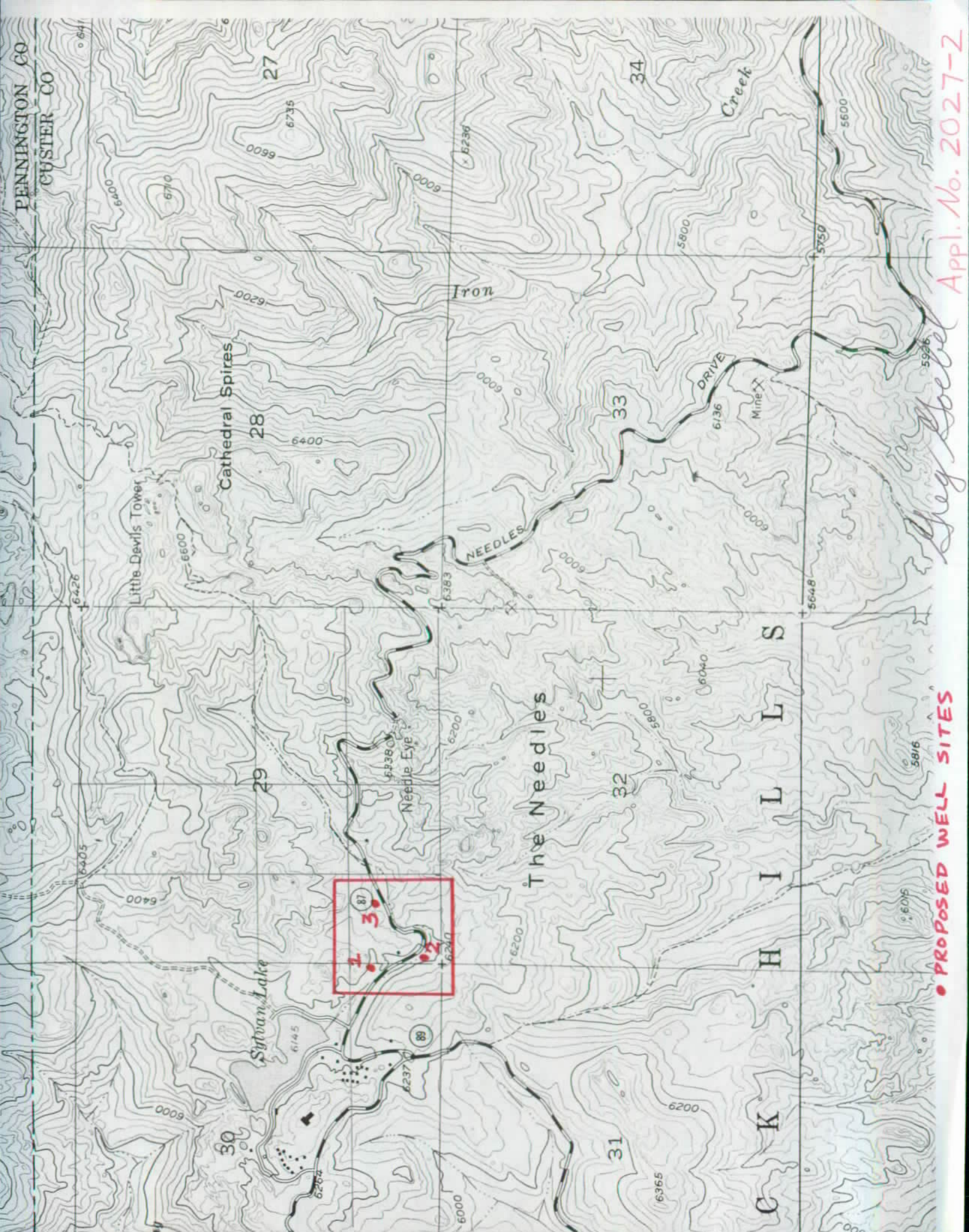
Storage _____ acre feet

Drainage area above dam _____



[Signature]

Signature of Applicant



• PROPOSED WELL SITES

They Belong

Appl No. 2027-2

WELL DRILLERS REPORT
SOUTH DAKOTA WATER RIGHTS COMMISSION

2027-2

ALEXANDER

4-78

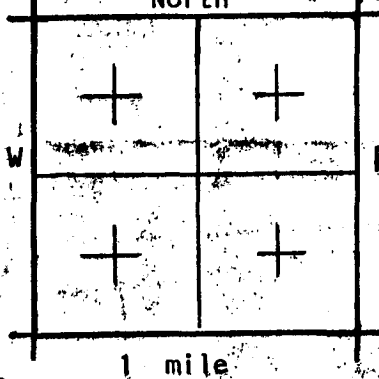
Well Owner: Name Custer State Park

Address Sylvan Lake Well
1-4-86: Serves Sylvan Lodge Area

Well Location: North Not Camp Ground

Mark location with an "X"

Sylvan Lake



County Custer
1 1 1 Sec. 1 Twp. 1 Rg. 1

Proposed Use:
☒ Domestic ☐ Municipal ☐ Test Holes
☐ Irrigation ☐ Industrial ☐ Stock

Method of Drilling:
☒ Forward Rotary ☐ Bored ☐ Jetted
☐ Reverse Rotary ☐ Cable ☐ Other
6" HAMMER DRILL

Well Construction:
 Diameter of Hole 6"
 Depth 932
 Casing ☐ Steel ☒ Concrete
☐ Plastic ☐ Other
 If other, specify _____

Was casing end left open _____
 Was a well screen installed _____
 Describe Well Screen
 Diameter _____ Material _____
 Slot size _____
 Was well gravel packed _____
 Was well grouted _____
 Was water sample taken _____

Remarks:

Deepened well. Water to 100' depleted in December.

Water Level Information:

Static water level _____ below land surface
 If flowing: closed in pressure _____ PSI
 rate of flow _____ GPM

Controlled by:
☐ Valve ☐ Reducers ☐ Other

If other; specify _____

Well Test Data:

☒ Pumped test pump 92 gpm.

☐ Bailed Describe: _____

☐ Other _____

Pumping Level Below Land Surface

ft. After	Hrs. pumped	GPM
_____	_____	_____
_____	_____	_____
_____	_____	_____

Well Log:

Formation	Depth	
	From	To
Schist BRN.	100	107
Granit dk grey	107	178
Granit BRN.	178	180
Granit Grey	180	187
water 6 gpm		
Granit grey "	187	192
Granit grey to	192	202
white 9 gpm water		
Granit w mica	202	218
water - 12 gpm		
Quartz	218	223
Quartz, Feldspar	223	232
Mica		
water w/air	3	490

(Use Back if Necessary)

Date Completed: Dec 1, 1975

Driller:

Driller's or Firm's Name _____ License _____

Address _____

Signed By _____

Date _____

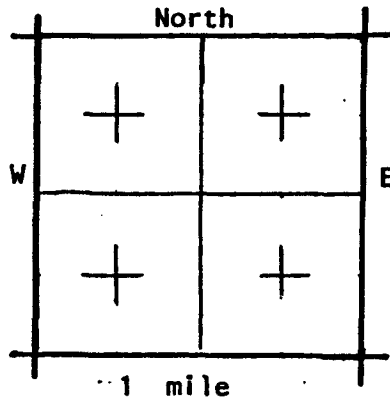
Well Owner:

Name Dept. Game Fish & Parks

Address Pierre, SD

Well Location:

Mark location
with an "X"



County Custer

1 1 1 Sec. 29 Twp. 25 Rg. 5E

Proposed Use: Campground

☐ Domestic ☐ Municipal ☐ Test Holes
☐ Irrigation ☐ Industrial ☐ Stock

Method of Drilling:

☒ Forward Rotary ☐ Bored ☐ Jetted
☐ Reverse Rotary ☐ Cable ☐ Other

Well Construction:

Diameter of Hole 6"
Depth 200'
Casing ☒ Steel ☐ Concrete
☐ Plastic ☐ Other
If other, specify _____

Was casing end left open Yes

Was a well screen installed No

Describe Well Screen

Diameter _____ Material _____

Slot size _____

Was well gravel packed NO

Was well grouted Yes

Was water sample taken _____

Remarks:

Water Level Information:

Static water level 23 below land surface

If flowing: closed in pressure _____ PSI

rate of low _____ GPM

Controlled by:

☐ Valve ☐ Reducers ☐ Other

If other; specify _____

Well Test Data:

☒ Pumped

☐ Bailed

☐ Other

FILE 1 1 1/2 hp. Submers

Describe: _____

Pumping Level Below Land Surface

50 ft. After	2 Hrs. pumped	20 GP
<u>56</u>	<u>4</u>	<u>20</u>
<u>56</u>	<u>6</u>	<u>20</u>

Well Log:

Formation	Depth	
	From	To
Top Soil	0	3
Gravel	3	13
Granite	13	80
Fractured	80	90
Granite	90	180
Fractured	180	187
Granite	187	200

(Use Back if Necessary)

Date Completed: _____

Driller:

Hamm Drilling 171
Driller's or Firm's Name License #

Box 127 Hill City, SD 57745
Address

Gene Hamm 5/28/81
Signed By Date

SYLVAN LAKE WATER SYSTEM

Description:

The existing water system at Sylvan Lake consists of infiltration galleries, with a storage reservoir, and shallow well, a drilled well, meter, chlorinator, concrete reservoir, pressure tank and piping. The concrete reservoir plans have a date of 1937 and most of the piping, pressure tank, infiltration galleries and shallow well are shown on a layout map dated 1940. Therefore, it is assumed that the system was mostly installed between 1937 and 1940. There was an infiltration gallery extending south from the shallow well, and a 2" galvanized main extending northerly from by the pump house to restrooms on the northerly side of Sylvan Lake shown on plans dated 1959. The pump house was remodeled with a new pump and automatic controls installed at the same time. According to park personnel there have been a few additions over the years but no plans are available for these, such as plastic lines to various places, and some of the main from the pump house toward the Store-Cafe was replaced. The most recent improvements would be the drilled well approx. 80' north of the pump house and the addition of a meter and chlorination equipment in the pump house. The camp grounds east of the pump house is not included in this study but has a separate well and water system.

The size, configuration, and yield of the old infiltration galleries are not known. They are located approximately a quarter of a mile northerly from the pump house and collect water into a holding reservoir that park employees report has a capacity of approximately 40,000 gallons. The water flows by gravity from this reservoir through a three (3) inch pipe to the well pump house where the flow is controlled by a manually operated valve. The infiltration gallery on the 1959 plans is shown to be directly south of the well house and feeds directly into the well with no method of measuring yield.

The shallow well is pumped by a vertical turbin pump; Worthington, Size 55/8QFB05 with a 10 HP H.S. Electric Hollow Shaft Motor. Park personnel said this had produced 50 to 55 gpm for a short time, but the well will not sustain this rate for long periods.

The drilled well was completed in December 1975 and the well driller reported a production of 22 gpm. This well is equipped with a submersable Flint and Walling Pump. Model 021922 with a Franklin 3 HP motor. The pump is set at 89 feet and pumps at the rate of 18 gpm. By pumping at this rate, the well has never been pumped down to the pump setting.

Both of these pumps have the controls in the pump house and can be manually set for either pump to operate or both pumps to operate. They are automatically turned on and off by a signal sent over wires from float actuated switches at the reservoir.

The water from both wells is metered (Hersy Meter) and chlorinated before entering the three (3) inch main leading to the reservoir. A solution of liquid sodium hypochlorite is injected into the water, by a percision chemical meter pump (Model 6401-11F), whenever a well pump is operating.

The main from the pump house to the reservoir has several branches that serve as a distribution system to the store-cafe, restrooms, cabins and buildings on a lower level than the reservoir and located between the pump house and reservoir. The pressure on this system is by gravity from the elevation of the water in the reservoir that is located underground and close to the Lodge Building. This would include the restrooms on the northerly side of Sylvan Lake. None of this system is looped.

The reservoir is concrete and all underground except the entrance hatchway which is extended to above the ground surface. The reservoir will provide approximately 20,000 gallons of storage and is used as the supply for the gravity

system mentioned above, and a pressure system that provides water for the lodge and the remainder of the Sylvan Lake Facilities.

A small pressure pump house, close to the reservoir, contains the pressure controls and the pressure pump. A 4000 gallon hydropneumatic pressure tank is buried below the concrete floor of the building. A Burke Pump, catalog Number 76E - 25 SP, driven by a 5 HP Baldor Industrial Motor, draws water from the reservoir to supply and pressurize the tank.

The plans dated 1940 show a six (6) inch water main from the pressure tank to in front of the lodge approximately 280-290 feet. From which a 3 inch line serves the lodge and another 3 inch main extends westerly across the parking area to a valve pit. From this valve pit, smaller lines serve the cabins in this area and a residence further north. There is also a plastic line from the valve pit to the Annex. None of this system is looped.

(See pages 47 to 49 for layout as taken from available plans and a sketch furnished by park employees.)

Investigation:

Personnel of Scott Engineering Company made on site investigation, field measurements and obtained relative elevations at the site. They reviewed available plans and interviewed park employees that would have knowledge of the existing conditions. The park employees have made available to us copies of records, notes, and data that was available.

At the time of our visit to the site, there was considerable snow cover on the ground and some conditions could not be observed because of the snow. The condition and extent of the fencing around the infiltration galleries as well as the general conditions of the area is not known to us, but we should mention that proper

maintenance of these should be annual items. The surface above the galleries should be graded to drain with an upstream drainage ditch to keep surface water from the galleries and the area to above the drainage ditch should be fenced to keep out livestock and other animals and unauthorized people. It would be a constant maintenance task to be sure that the drainage is not blocked and the fence is intact.

The holding reservoir, by the north infiltration galleries, was recently inspected by park employees who reported that it is in quite good shape considering the age of the structure. The holding reservoir should hold approximately 40,000 gallons. Very little is known about the galleries or how much they yield. The pipe to the well is very old and it is not known if it is leaking or not. The reservoir water was almost depleted during period of high use last summer when the shallow well was pumped.

The infiltration gallery that is south of the shallow well extends to a place that is close to the sewer line from the east camp ground. If the sewer line were to develop a leak, the water in this gallery and thus the shallow well could become contaminated. It is reported that cracks are developing in the foundation of the pump house that is over the well which could be an entrance for surface water into the shallow well.

The well pump house, pumps and other equipment were in good condition and all operating satisfactorily. Park employee said that the electrical contacts in the controls had worn out and had been replaced but the controls worked now. The wiring from the controls to the reservoir is deteriorating and is reported to be showing above ground in places.

The condition of the pipes and type of pipe installed on most of the water mains could not be determined. The plans dated 1960 show two (2) inch galvanized pipe to the restrooms at the north side of the lake. Previous plans indicate some of the pipe size but not the pipe material. The park employees that have

worked on repairs report that the pipes are old galvanized or cast iron and are in poor condition. The sketch that they furnished show the approximate location of some additions. This shows that the plastic water line to the horse concession is above ground and that most of the plastic pipe to the Annex is not buried. The sketch indicates that the Annex may be removed and a new dormitory built along the road to the concessionaire house. The park employees report that many valves along the main do not work properly. The sketch indicates that a portion of the main, from the pump house towards the Cafe-Store, has been replaced. The records show that the number of breaks in the water mains are recently increasing quite rapidly. One in July, 1982 during construction. A broken pipe in Sept. 1983, a broken line by the Lodge in Dec. 1984, a broken main in the Lodge parking area in March 1985 and another break west of the Lodge in November 1985.

From the preliminary elevations taken and from a contour map showing building locations, the gravity portion of the system should have adequate pressure. We have been told that there has been no complaints about the water pressure on this system. There was one report of low pressure, at the Lodge, and this was attributed to the adjustment of a pressure valve on the pressure system. From elevations taken and the pressure at the hydropneumatic tank; there should be sufficient pressure at the Lodge. There have been no other reports of low water pressure.

The reservoir was drained, cleaned and inspected by park personnel in 1985. At that time, they made notes of the condition of the inside, made measurements and photographed the interior. These were made available to Scott Engineering Company who made some on site measurements and observations, but the reservoir was not entered because we were of the opinion that the information available would not justify the draining of the reservoir and disinfection before refilling.

From our observations and the notes and picture, it would seem that the reservoir is in quite good shape considering the apparent age of the structure.

No cracking or excessive spalling of the concrete were observed. The only leak noted was around the drain. The notes indicate some deterioration to about one (1) inch depth at the sides and close to the top of the reservoir. From the photographs, this appears to be where a construction joint was placed during construction and there was some separation of aggregate leaving exposed large aggregate at the joint which was not filled in with mortar. The photographs also show an intrusion of roots into the reservoir along this line which would indicate a crack or broken seal where the roots could get started.

The entrance to the reservoir is a manhole in the top of reservoir; that has a concrete hatchway constructed with the reservoir top extending to above ground level and surrounding the manhole. There is a plywood cover on the manhole and the hatchway has a wooden cover with a smaller manhole, with wood cover, constructed as part of it. We did not see a vent for the reservoir.

There is a concrete pit close to the reservoir that contains the valves, overflow pipe, and drain pipe. The reservoir can be drained into this pit and the overflow pipe extends through the wall of the pit so any overflow would drop into the pit. There is a drain pipe at the bottom of the pit to convey water to the ground surface on the hill side below. This was all snow covered and the conditions at the end of the drain could not be observed. The pit extends above ground level and is fitted with a wooden cover. Some of the walls in the pit appeared to be deteriorating.

The pressure pump house is close to the reservoir and contains the pressure pump and controls. The hydropneumatic tank is buried below the concrete floor of this building. There is a valve pit constructed in the floor beside the hydropneumatic tank that has the valves controlling water leaving the tank. The building appeared to be in good condition and the pump and controls were reported to be operating satisfactorily.

Design Criteria:

The criteria which was used to determine the adequacy of the existing facilities was to compare them with the Ten States Standards* and Criteria For Design of Public Water Supply Facilities in South Dakota, which is a supplement to the above mentioned standards published by Health Education Service, Albany, N.Y.. This is the criteria by which most water systems are designed and constructed in South Dakota. Since there was no anticipated growth to the system mentioned with the exception of enlarging the Cafe to 100 seat capacity, we have designated no design year but have included the additional seats in the Cafe at this time. No change in capacity was mentioned in closing of Annex and constructing a new dormitory.

Water Demand: See also letter of July 3, 1987. (attached).

To determine the design flows for each part of the Sylvan Lake water system, the park personnel provided Scott Engineering Company with a list of what is served by each part and the estimated number of persons using these facilities when the Sylvan Lake Area would be at full guest capacity. Table 2 shows a summary of the average annual demand per day of water for the different facilities as indicated in several publications. These are taken from the average for a year, and while winter time use is about 80 percent of the annual daily average, the summertime use is about 25 greater. Therefore, since the greatest usage of this area is summertime, the design average should be increased above the yearly average.

$$\begin{array}{rcl} \text{Design Average Daily Demand} & = & 53,800 \times 1.25 = 67,250 \text{ gpd} \\ & & 67,250 \quad \quad \quad = 46.7 \text{ gpm} \end{array}$$

In general, maximum daily use can be considered to be about 180 percent of the average daily use.

$$\begin{array}{rcl} \text{Maximum Daily Demand} & = & 53,800 \times 1.80 = 96,840 \text{ gpd} \\ & & 96,840 \quad \quad \quad = 67.3 \text{ gpm} \end{array}$$

* Recommend Standards For Water Works, Great Lakes - Upper Mississippi River Board of State Sanitary Engineers.

TABLE 2

Sylvan Lake Average Daily Demand
Pressure Tank

Lodge: Rooms 67 Persons X 60 gpd/person	4020
Lodge Restaurant: 120 seats X 150 gpd/seat	18000
Guest Cabins: 50 Persons X 50 gpd/person	2500
Concessionaire's Residence: 6 persons X 100 gpd/person	600
Dormitory: 30 Persons X 50 gpd/person	1500
Subtotal-Pressure	26620
Gravity Feed	
Cafe: 40 to be increased to 100 seats 100 seats X 150 gpd/seat	15000
Confort Stations: 275 visitors X 10 gpd/visitor	2750
Dormitory: 8 person X 50 gpd/persons	400
Housekeeping Cabins: 106 persons X 75 gpd/person	7950
Yard Hydrantin Day Use Area: 75 visitors X 10 gpd	750
Horse Concession: 6 employees X 25	300
30 horses X5	
Subtotal - Gravity	27150
Total	53770
Use	53800 gpd

The estimated seating capacity of Restaurant and Cafe and the number of persons using the facilities furnished by park personnel.

**SYLVAN LAKE WATER
Average Gallons/Day**

<u>YEAR</u>	<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	<u>MAY</u>	<u>JUN</u>	<u>JUL</u>	<u>AUG</u>	<u>SEP</u>	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>
1980	-	-	-	-	-	-	19,096	21,595	22,664	15,603	2,536	2,341
1981	2,401	2,349	2,356	3,703	12,761	21,909	25,238	24,332	22,059	2,835	1,907	6,403
1982	3,194	1,144	3,314	7,435	17,668	24,699	28,195	22,380	8,273	711	2,805	2,050
1983	2,027	1,952	1,900	1,945	14,766	18,782	20,592	18,117	12,372	4,249	5,281	4,802
1984	5,707	5,131	5,019	4,772	9,170	17,331	20,682	19,687	11,961	4,353	7,876	8,542
1985	6,134	12,140	5,887	6,321	10,637	24,130	27,833	25,799	13,090	3,546	6,590	5,977

The average daily demand of record is approximately 26,000 gpd and was taken from the records of June, July, and August of 1985, which would be the latest available. The maximum daily demand of records cannot be determined exactly because we do not have daily records of use. There was a period of several days around July 4, 1985 that average 36,000 gpd with the high of 36,600 gpd. (See Table 3 for record)

The average daily demand of record and the maximum daily demand of record are seen to be considerably lower than the Design Average Daily Demand and The Maximum Daily Demand For Design. We do not want to reduce the design demands because the records are showing an increase in recorded water use and we do not have records of how many people are actually using the facilities at this time. The increase in seating capacity for the Cafe is also included in the design and would not show on the recorded water use.

The Ten States Standards require that ground water source capacity equal or exceed the Design Maximum Daily Demand and equal or exceed the Design Average Daily Demand with the largest producing well out of service. By applying these standards, the water system should have a minimum of 67.3 gpm total well capacity and a minimum of 46.7 gpm without the use of the shallow well, which is the largest producer.

The drilled well is set to pump at 18 gpm and has never been pumped dry. The shallow well has been pumped at 50 gpm and for short times above this rate, but will not withstand constant pumping. This will satisfy the maximum demand, but the average demand without the shallow well would be short by approximately 29 gpm. (46.7 - 18) To meet the standards, another source with a capacity of approx. 30 gpm is needed.

} No,
see
page
41

Finished Water Storage:

The Ten States Standards require that the finished water storage capacity for systems without fire protection shall be equal to the average daily consumption. The Design Average Daily Demand is 67,000 + gpd and the existing reservoir and hydropneumatic tank will provide approximately 22,000 gallons of storage. To meet the standards, would require 45,000 gallons of additional storage. This would not provide for fire protection which was not considered because of the availability of water from the lake for fires and the shortage of "Finished Water."

Recommendations:

Scott Engineering Company would offer the following recommendations and options for consideration estimates of probable costs are presented in the next section

- 1.) Water Source: To meet the requirements of the standards, using design water demand, will require a source of water with a capacity of approximately 30 gpm. The present water supply has been able to support the demands until now, but it is reported that as the shallow well was pumped down and it received water from the infiltration reservoir to replenish it that the water in the reservoir was almost depleted. This would indicate the present system is strained to provide the maximum demand of record. The drilled well will not quite provide even the average daily demand of record. If the demand were increased, such as increased cafe seating, the present system may not provide maximum demand and would be short of average demand without the shallow well. We would suggest a new drilled well to produce 30 gpm be constructed. The shallow well and infiltration gallery are in danger of being contaminated and the pipe from the old galleries is old and may need replacement. We believe that consideration should be given to retiring the shallow well in the future and replacing it with another drilled well that would be a safer water supply.

Yes,
retire
shallow
well.

- 2.) Finished Water Storage: The existing concrete underground reservoir is thought to be about 45 or more years old and though it does not seem to be in bad shape, it is beginning to show its age. To be continued in service, it would require some repair work. A minimum required would be to repair the leaking around the drain, dig down and remove the intruding roots and provide a barrier to discourage further intrusion. The inside of the reservoir should be grouted along the line where the roots have grown; the reservoir should be vented, and better hatch covers with locks provided.

A total of 67,000 gallons of storage is required to meet the Standard. If the existing reservoir is repaired and used, (20,000 gal. capacity) an additional 45,000 gallons of storage should be constructed. This would still have one old reservoir and it may be worth the extra expense to construct a larger reservoir now, and not have to replace the existing reservoir in the future, as larger storage facilities can usually be built at a lower cost per gallon of storage capacity.

- 3.) Hydropneumatic Pressure Tank: The age of the hydropneumatic tank is not known but it is thought to be about the same as the existing reservoir. Since the tank is buried below the concrete floor of the building, it is impossible for us to inspect and the condition of the tank is not known. If this tank were to rupture, the Lodge and all the rest of the facilities that are on the pressure system would be without service for an extended time.

We would therefore suggest that a new hydropneumatic tank and controls be installed inside a building and above ground where it could be inspected periodically. We would suggest that the old tank remain in

place and ready for use in emergency or times when the new tank would be out of service for inspection or repair.

The very minimum that should be done would be to install a dual pump system on the present system to reduce vulnerability of pump breakdown.

- 4.) Distribution System: The older portion of the water mains are at least 45 years old (1940 Plans) and are reported to be galvanized pipe. They are reported to be in poor condition which is verified by the increase in recent line breaks. We suggest that this portion of the system has deteriorated to the point where it should all be replaced.

All of the old pipes and valves should be replaced, but some of the sections are having more breaks than others. It is often possible to get better contract prices with more work in one location at a time. Therefore, we are hoping that several parts of the breakdown listed below could be constructed at the same time. Plans to replace portions of the system would most likely not follow the break points listed below but we will give the priority we have assigned to general portions of the existing system.

Priority 1 The water mains and valves from the pressure tank to the valve pit by the guest cabins. This area has a history of having the most breaks in the line.

Priority 2 The water main from the reservoir to the newer portion of main from the well pump house. This has not shown many breaks, but would be essential to all the system.

Priority 3 Remaining old portions of main such as leading to the housekeeping cabin area.

Priority 4 - Replace water lines in housekeeping cabin area.

Priority 5 - Replace lines in guest cabin area.

Priority 6 - Replace line from by well pump house to the comfort station on north side of the lake.

5.) Miscellaneous Items: To be considered when plans are made. If a new dormitory is to be constructed, the location must be served with an adequate size water line. Some existing plastic pipes are above ground and should be buried.

New control wires are needed from the reservoir to the pump house and additional controls for new well and reservoir.

Consideration should be given to having a 6" main from the new reservoir with a fire hydrant. There is not enough water stored for fire protection but if the reservoir contents were available, it could make a big difference in case of a fire.

Estimated Costs Sylvan Lake

1. New Well For Sylvan Lake System - Eventually 2 wells needed.

Well (Est. depth 235')	10,600	
Pump, Piping and Controls	<u>4,500</u>	
	15,100	
Engineering & Contingencies	<u>3,020</u>	
TOTAL		18,120

2. Repair Existing Reservoir.

Repair leak at drain	600	
Grout crack area	500	
Excavate to sides & remove roots)		
Install a root barrier)	1,200	
New hatch cover	300	
Excavate and install vent	200	
Seal concrete surfaces	<u>2,912</u>	
SUB TOTAL	5,712	

New 45,000 gallon concrete reservoir

Concrete 101 Cu. Yds. @\$300	30,300	
Excavation, Backfill & Grading	3,200	
Piping, Overflow, Drain	<u>2,000</u>	
SUB TOTAL	35,500	
Engineering & Contingencies	<u>8,242</u>	
TOTAL		49,454

3. 67,000 Gallon Steel Tank Reservoir in Lieu of Item 2 Above.

Steel Tank	43,000	
Site preparation & grading	500	
Piping, Drain etc.	<u>2,000</u>	
	45,500	
Engineering & Contingencies	<u>9,100</u>	
TOTAL		54,600

4. New Hydropneumatic Pressure Tank

Pressure tank & controls	20,000	
Building	<u>15,000</u>	
	35,000	
Engineering & Contingencies	7,000	
TOTAL		42,000

5. New Buried Control Wires

1400 Buried Control Wire @3.00 L.F.	4,200	
Engineering & Contingencies	<u>840</u>	
TOTAL		5,040

6. Replace Old Water Pipes and Valves

6" Water Main	350 @ 7.00	2,450	
4" Water Main	2070 @ 6.00	12,420	
3" Water Main	100 @ 5.00	500	
2" Water Main	1500 @ 4.50	6,750	
1" Service Lines	2500 @ 4.50	11,250	
6" Gate Valve & Box	3 @ 500	1,500	
4" Gate Valve & Box	4 @ 400	1,600	
3" Gate Valve & Box	1 @ 300	300	
2" Gate Valve & Box	5 @ 225	1,125	
1" Curb Stop	36 @ 115	4,140	
6" Fire Hydrant	1 @ 800	<u>800</u>	
		42,835	
Engineering & Contingencies		8,567	
TOTAL			51,402

ION
IONS
PARK, CUSTER, SOUTH



Scott Engineering Company

Consulting Engineers

Post Office Box 1414
1904 Ninth Avenue Southeast
Watertown, South Dakota 57201-6414



AREA CODE 605
TELEPHONE 886-5725

July 3, 1987

Mr. Greg Goebel
Custer State Park Headquarters
Custer, South Dakota 57730

RE: FY 86 Construction & Repair
Information Request.

Dear Mr. Goebel:

In reply to your telephone request for the revised water demand at Sylvan Lake to include the proposed additions. So they can be included in a water use permit we submit the following:

See report dated January, 1986. Page 37 through 40.

	Calculated use in report	53,770
Add 35 rooms @ max 4 persons per room = 140 persons		
	140 X 60 gpd	8,400
Add laundry 8 washers		6,400
Swimming pool & hot tub-Estimated 50 persons @ 10 gal. =		<u>500</u>
		69,070
Factor for summer use 1.25 X 69,070	=	86,338 gpd.
Average daily demand 86,338	=	59.96 gpm.
Maximum daily demand ^{69,070} 86,338 X 1.80 = ^{124,326} 155,408 gpd.	=	^{86.34} 107.92 gpm.
Add 20 more rooms at same rate = 4800 gpd.	=	73,870
73,870 X 1.25	=	92,337 gpd.
Average daily demand 92,337 gpd.	=	64.12 gpm.
Maximum daily demand 92,337 X 1.80 = 166,207 gpd.	=	115.4 gpm.

Corrections
by Greg Goebel.
Gebhart notified
of corrections.

Respectfully submitted ,

SCOTT ENGINEERING COMPANY

Melvin J. Gebhart, P.E.

MJG/rer
CC. Mr. Frank Sherer

REPORT ON PERMIT APPLICATION NO. 2027-2
CUSTER STATE PARK
August 3, 1987

Water Permit Application No. 2027-2 proposes to appropriate 0.16 cubic feet of water per second from up to 6 wells, 250 feet deep, to be located in the SE 1/4 SE 1/4 Section 30; and the SW 1/4 SW 1/4 Section 29; all in T2S-R5E. The water is to be used for commercial and recreational purposes by the Sylvan Lake area facilities.

AQUIFER: Pre-Cambrian Rock

GEOLOGY AND AQUIFER CHARACTERISTICS

The Pre Cambrian Rock in this area consists primarily of the coarse-grained granite known as the Harney Peak Granite. The Harney Peak Granite is a cluster of a great many lesser intrusions, predominately large sills, which form a domal pattern. The principle minerals of the granite are Albite, Quartz, Perthitic Microcline, and Muscovite. The chief dark accessory minerals are Biotite, Tourmaline, and Garnet. The granite is so very coarse grained that it may be called Pegmatite (Redden, 1975). The crystalline granite is distinguished by low porosity, and transmits water to wells along joints, faults, and fractures. The total porosity is assumed to be 3%, and the effective porosity, containing the recoverable ground water primarily in cracks and joints, is assumed to be 1 % (Rahn, 1979).

Recharge to the Pre-Cambrian Rock is through infiltration of precipitation falling directly on the outcrop, and possibly streamflow and leakage from Sylvan Lake. Average annual recharge estimates are not available for the Pre-Cambrian Rock in this area.

REVIEW OF EXISTING WATER RIGHTS

There are no existing ground water permits within two miles of the proposed diversion point for application No. 2027-3. The Division of Water Rights has no record of any domestic wells in the area.

CONCLUSIONS

1. Application No. 2027-2 proposes to appropriate 0.16 cfs (70 gpm) from up to six wells completed into the Pre-Cambrian Granite.
2. The wells should be completed according to the State Well Construction Standards.
3. The Pre-Cambrian Granite is not known as a prolific aquifer since its water storage and transmission properties are dependent on the extent and orientation of joints and fractures. Because it is impossible to predict the yield that can be expected from a well in this area, it will be necessary to drill the wells and evaluate (i.e. 0.16 cfs may

- be obtained from one well or it may be necessary to drill 6 wells to obtain 0.16 cfs)
4. Average annual recharge has not been estimated for the Pre-Cambrian Granite in this area.
 5. There are no existing water rights in the area, therefore, no adverse effects are expected.



Kent Buhler
Natural Resources Engineer

References

- Redden, J.A., 1975, "Precambrian Geology of the Black Hills", Mineral and Water Resources of South Dakota, Committee on Interior and Insular Affairs United States Senate, U.S. Government Printing Office, Washington, D.C..
- Rahn, P.H., 1979, "Ground Water Resources of Western South Dakota", U.S. Army Corps of Engineers, SDSM&T Project #2533, Rapid City, SD.

RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 2027-2

Pursuant to SDCL 46-2A-2, the following is the recommendation of the Chief Engineer, Water Rights Division, Department of Water and Natural Resources concerning Water Permit Application No. 2027-2, Custer State Park, HCR 83, Box 70, Custer SD.

The Chief Engineer is recommending APPROVAL of Application No. 2027-3 because 1) there is reasonable probability that there is unappropriated water available for the applicant's proposed use, 2) the proposed diversion can be developed without unlawful impairment of existing rights, 3) the proposed use is a beneficial use and 4) in the public interest with the following qualifications:

1. The casing of the wells to be constructed under Permit No. 2027-2 shall be pressure grouted with cement (bottom to top) and the wells constructed in compliance with Water Managment Board Well Construction Rules, Chapter 74:02:04.
2. The wells approved under this Permit will be located near domestic wells and other wells which may obtain water from the same formation. The well owner, under this Permit, shall control his withdrawals so there is not a reduction of needed water supplies in domestic wells.

See the attached report for additional information.


JOHN HATCH, Chief Engineer
August 4, 1987



Department of Water & Natural Resources

Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

Water Rights Division
(605) 773-3352

August 5, 1987

NOTE:

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

Custer State Park
HCR 83, Box 70
Custer, South Dakota 57730

Dear Sir:

Your Application No. 2027-2 & /2028-2 for a permit to appropriate water for

commercial & recreational use, has been examined and found to
comply with the South Dakota Water Laws and applicable rules. A notice of
your intent to appropriate water has been sent to the Publisher of the

Custer County Chronicle printed at Custer

South Dakota. For your information, a copy of this notice, the recommendation
of the Chief Engineer and a report on the application are enclosed. Please
review this notice prior to publication and notify this office, if you have
any corrections or questions.

BE SURE TO CONTACT THE ABOVE NEWSPAPER IMMEDIATELY TO AUTHORIZE PUBLICATION
OF YOUR NOTICE OF INTENT TO APPROPRIATE WATER 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 at least twenty days before the board
meeting. We must receive Proof of Publication before the application can be
considered by the Water Management Board.

Sincerely,

RON DUVALL
Natural Resources Engineer

enclosures



Department of Water & Natural Resources

Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

August 5, 1987

Custer County Chronicle
Box 551
Custer, South Dakota 57730

Dear Sir:

Enclosed is a Notice of Hearing to Application No. 2027-2 & 2028-2. Please publish this notice once each week for two consecutive weeks in your paper. The first publication should be on or before August 12, 1987.

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 Custer State Park, HCR 83, Box 70, Custer, South Dakota 57730.

A copy of BOTH publications must be SENT to the WATER RIGHTS DIVISION. 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 before 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. The permit application cannot be considered by the Water Management Board until proof of publication has been received.

Sincerely,

Ron Duvall
Natural Resources Engineer
605 773-3352

enclosures

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

FIRST TRANSMITTAL NOTICE
No. _____

TO: Water Rights Division
Joe Foss Building
Pierre SD 57501-3181

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

Instruction to Newspaper - Publish first publication of the following Notice on or before August 12, 1987 with 2nd publication 1 week later. The applicant is responsible for payment.

NOTICE OF HEARING on Application Nos. 2027-2 & 2028-2 to Appropriate Water

Notice is hereby given that Custer State Park whose mailing address is HCR 83, Box 70, Custer, South Dakota has filed Application No. 2027-2 for a permit to appropriate 0.16 cubic feet of water per second from up to 6 wells (Pre-Cambrian Rock) 250 feet deep to be located in the SE 1/4 SE 1/4 Section 30; SW 1/4 SW 1/4 Section 29; all in T2S, R5E. Water is to be used for commercial and recreational purposes by the Sylvan Lake Area Facilities.

Application No. 2028-2 is to appropriate 0.10 cubic feet of water per second from up to 5 wells (Pre-Cambrian Rock) 250 feet deep to be located in the SE 1/4 SW 1/4, SW 1/4 SE 1/4 Section 22; NE 1/4 NW 1/4, NW 1/4 NE 1/4 Section 27; all in T3S, R6E. Water is to be used for commercial and recreational purposes by the Game Lodge Area Facilities.

Pursuant to SDCL 46-2A-2 the Chief Engineer of the Water Rights Division recommends APPROVAL of Application Nos. 2027-2 & 2028-2 because 1) unappropriated water is available, 2) will be no unlawful impairment of existing rights, 3) it is a beneficial use of water and 4) it is in the public interest.

The application will be considered by the Water Management Board in Room 216, Joe Foss Bldg, Pierre SD, September 9, 1987 at 10:00 am.

The recommendation of the Chief Engineer is not final or binding upon the Board and the Board is authorized to 1) approve, 2) approve the with qualifications, 3) defer, or 4) deny these applications after it reaches a conclusion based upon facts presented at the public hearings. Any interested person who may be affected by a Board decision and who intends to participate in a hearing before the Board and present evidence or cross-examine witnesses according to SDCL 1-26, must file a written petition with BOTH the applicant and the Chief Engineer by August 28, 1987. The petition may be informal, but it must include a statement describing the petitioner's interest in an application, the reasons for the petitioner's opposition to or support of an application, and the signature and mailing address of the petitioner or his legal counsel if legal counsel is obtained. The applicant need not file a petition.

These applications are made pursuant to the provisions of SDCL 46-1-1 thru 46-1-9, 46-1-12 thru 46-1-15; 46-2-3.1, 46-2-9, 46-2-11, 46-2-13, 46-2-17; 46-2A-1 thru 46-2A-10, 46-2A-12, 46-2A-14, 46-2A-15, 46-5-1 thru 46-5-11, 46-5-13 thru 46-5-15, 46-5-24, 46-5-25, 46-5-30.2, 46-5-30.4, 46-5-31; 46-6-3, 46-6-3.1, 46-6-6.1, 46-6-10, 46-6-13, 46-6-14, 46-5-20.1, 46-5-8.1; and Board Rules ARSD 74:02:01:01 thru 74:02:01:15.

These hearings are adversary proceedings. The applicant or any person, after filing a petition, 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 State Supreme Court as provided by law.

Any person wishing a copy of the Chief Engineer's recommendation, further information on an application or to assure access to the hearing by the handicapped can contact the Water Rights Division, Joe Foss Bldg, Pierre SD (605 773-3352) for assistance prior to the hearing date. The time of a hearing will be automatically extended for at least twenty days upon written request of the applicant or person who has filed a petition to oppose or support an application. The request for extension must be filed with the Chief Engineer by August 28, 1987.

Form 8 - Proof of Publication - Notice of
Intent to Appropriate Water

Notice of
Hearing
on Application Nos.
2027-2 & 2028-2
to Appropriate Water

No. 2027-2 & 2028-2
Notice is hereby given that Custer State Park whose mailing address is HCR 83, Box 70, Custer, South Dakota has filed Application No. 2027-2 for a permit to appropriate 0.16 cubic feet of water per second from up to 6 wells (Pre-Cambrian Rock) 250 feet deep to be located in the SE1/4 SE1/4 Section 30; SW1/4 SW1/4 Section 29; all in T2S, R5E. Water is to be used for commercial and recreational purposes by the Sylvan Lake Area Facilities.

Application No. 2028-2 is to appropriate 0.10 cubic feet of water per second from up to 5 wells (Pre-Cambrian Rock) 250 feet deep to be located in the SE1/4 SW1/4, SW1/4 SE1/4 Section 22; NE 1/4 NW1/4, NW1/4 NE1/4 Section 27; all in T3S, R6E. Water is to be used for commercial and recreational purposes by the Game Lodge Area Facilities.

Pursuant to SDCL 46-2A-2 the Chief Engineer of the Water Rights Division recommends APPROVAL of Application Nos. 2027-2 & 2028-2 because 1) unappropriated water is available, 2) will be no substantial impairment of existing rights, 3) it is a beneficial use of water and 4) it is in the public interest.

The applications will be considered by the Water Management Board in Room 216, Joe Foss Bldg., Pierre, SD, September 9, 1987 at 10:00 a.m.

The recommendation of the Chief Engineer is not final or binding upon the Board and the Board is authorized to 1) approve, 2) approve the with qualifications, 3) defer, or 4) deny these applications after it reaches a conclusions based upon facts presented at the public hearings. Any interested person who may be affected by a Board decision and who intends to participate in a hearing before the Board and present evidence or cross-examine witnesses according to SDCL 1-26, must file a written petition with BOTH the applicant and the Chief Engineer by August 28, 1987. The petition may be informal, but it must include a statement describing the petitioner's interest in an application, the reasons for the petitioner's opposition to or support of an application, and the signature and mailing address of the petitioner or his legal counsel if legal counsel is obtained. The applicant need not file a petition.

These applications are made pursuant to the provisions of SDCL 46-1-1 thru 46-1-9, 46-1-12 thru 46-1-15; 46-2-3.1, 46-2-9, 46-2-11, 46-2-13, 46-2-17; 46-2A-1 thru 46-2A-10, 46-2A-12, 46-2A-14, 46-2A-15, 46-5-1 thru 46-5-11, 46-5-13 thru 46-5-15, 46-5-24, 46-5-25, 46-5-30.2, 46-5-30.4, 46-5-31; 46-6-3, 46-6-3.1, 46-6-6.1, 46-6-10, 46-6-13, 46-6-14, and Board Rules ARSD 74:02:01:01 thru 74:02:01:15.

These hearings are adversary proceedings. The applicant or any person after filing a petition, 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 State Supreme Court as provided by law.

Any person wishing a copy of the Chief Engineer's recommendation, further information on an application or to assure access to the hearing by the handicapped can contact the Water Rights Division, Joe Foss Bldg, Pierre SD (605 773-3352) for assistance prior to the hearing date. The time of a hearing will be automatically extended for at least twenty days upon written request of the applicant or person who has filed a petition to oppose or support an application. The request for extension must be filed with the Chief Engineer by August 28, 1987.

PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA)
) ss.
County Custer)

I, Randall O'Neill hereby

certify that the annexed printed copy of Notice of Intent to Appropriate

Water was taken from the Custer County Chronicle

A newspaper which during the whole time of publication of said notice herein after stated, has been and is printed and published in the _____

City _____ of Custer

County of Custer and State of South Dakota; that the said notice was published in said newspaper on the following two dates:

August 12, 1987

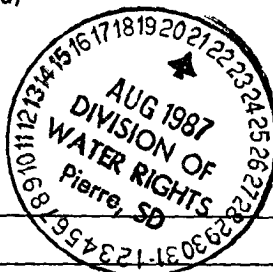
August 19, 1987

(Signature)

Publisher
(Title)

8/19/87

(Date Signed)



Cost of Printing: _____

August 12, 1987 - 27.06

August 19, 1987 - 21.65

Total - \$48.71

Thomas H. Callan
R.R. #3, Hires Trace
Morton, IL 61550-9803
H. (309) 266-9802
B. (309) 675-9433

August 22, 1987



Chief Engineer
Water Rights Division
Joe Foss Building
523 E. Capitol
Pierre, South Dakota 57501-3181

RE: Permit Application No. 2027-2
Permit Application No. 2028-2

Dear Sir:

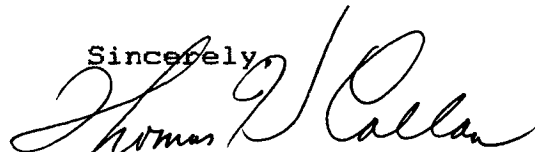
Please find enclosed an informal Petition to Intervene, to Contest, and to Oppose the above two Applications. Also enclosed, is a check for \$2.50 to cover the filing fee of the petition if one is required. If not, please return my check.

My mother and I would further request that the time for the hearing be extended for at least twenty days to enable us time to secure and review copies of the applications, secure legal counsel, and adequately prepare for the hearing.

Our main reasons in requesting this continuance are (1) the potential significant environmental impact of a total of eleven new wells in the Pre-Cambrian formation, (2) the need for time to study the applications as well as your recommendation to determine if this appropriation is beneficial use of water and whether it is indeed in the public interest, (3) the need to assess the impact of the applications on ranching operations in the area, and (4) my need to arrange my schedule to have enough time to prepare for and attend the hearing if we deem it necessary.

I would appreciate it if you would place me on your mailing list for copies of any future documents supplied by anyone to the file in this matter. By this, I am formally requesting that as parties to this matter, we receive copies of anything filed by either the state or the applicants.

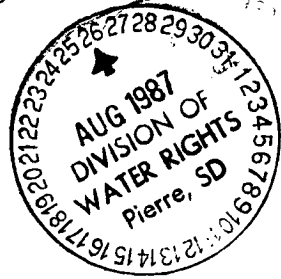
Thank you for your attention.

Sincerely,

Thomas H. Callan

cc: Helen M. Callan
Chris Molitor
Custer State Park

Thomas H. Callan
R.R. #3, Hires Trace
Morton, IL 61550-9803
H. (309) 266-9802
B. (309) 675-9433

August 22, 1987



Chief Engineer
Water Rights Division
Joe Foss Building
523 E. Capitol
Pierre, South Dakota 57501-3181

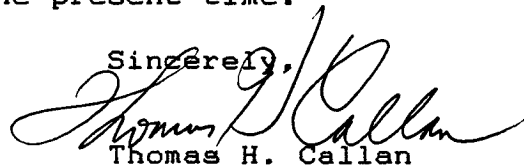
RE: Permit Application No. 2027-2
Permit Application No. 2028-2

Dear Sir:

This is a request on behalf of my mother, Helen M. Callan, my sister, Chris Molitor, and myself, Thomas H. Callan, in regard to the above permits that any action upon them be extended for at least twenty days for the following reasons:

1. We will need the time to secure and review a copy of your recommendation and Custer State Park's applications prior to the hearing date.
2. If, after studying the application and your recommendation, we determine this use of the water would conflict with the ranching operations in the area and would not be in the public interest, we will need the time to secure legal counsel and organize other ranchers that will be affected.
3. From the official notice that appeared in the Custer Chronicle, the potential environmental impact of this application is significant. I am somewhat confused as to the total water appropriation that would result. (That is, would the 0.16 F3/S from permit 2027-2 be a total from all six wells or would it be per well? I have the same question about permit 2028-2.) In any case, a total of eleven new wells up to 250 feet deep in the Pre-Cambrian formations is significant in itself and warrants further study as to environmental impact.
4. In addition, from a personal standpoint, I will need to get time off and make travel arrangements to prepare for and attend the hearing.

For the above reasons, we would appreciate it if you could postpone consideration of these applications at the present time.

Sincerely,

Thomas H. Callan

cc: Helen M. Callan
Chris Molitor

BEFORE THE WATER MANAGEMENT BOARD

STATE OF SOUTH DAKOTA

IN THE MATTER OF APPLICATION NOS. 2027-2 AND 2028-2)
OF CUSTER STATE PARK TO APPROPRIATE WATER FOR)
COMMERCIAL AND RECREATIONAL PURPOSES FOR THE)
SYLVAN LAKE AND GAME LODGE FACILITIES)

PETITION TO INTERVENE, TO CONTEST, AND TO OPPOSE APPLICATIONS

NATURE OF FILING AND DISCLAIMER

Let it be known that the nature of this filing is informal--that I am not an attorney and make no claims to knowledge of required legal format for filings before your board.

I am filing this petition in compliance with the terms posted in the notice of the above two applications appearing the Custer Chronicle on August 12, 1987: "The petition may be informal but it must include a statement describing the petitioner's interest in an application, the reasons for the petitioner's opposition to or support of an application, and the signature and mailing address of the petitioner ..."

STATEMENT OF PETITIONER'S INTEREST

I am filing this petition on behalf of my mother (Helen M. Callan), my sister (Chris Molitor), and myself (Thomas H. Callan). My mother is owner of the 88 ranch--an operation which could be materially affected by the drilling of eleven additional wells and the resulting water appropriation listed in the two applications above.

My sister and I have an interest because of our legal status as heirs to the ranching operation.

STATEMENT OF OPPOSITION TO APPLICATIONS

Our opposition to the above applications is based on a concern that the appropriation of water could materially affect ranching operations in the area which depend on the existence of an adequate water supply.

Many ranchers have wells in Pre-Cambrian formation and depend on that water for both business and personal use. Eleven new wells in the Pre-Cambrian formation and the resulting appropriation of water could have a definite impact on the level of the water table.

We are also not convinced by the notice that the appropriation is beneficial use of water or is in the public interest. Without reviewing the applications, we have no information as to how the water will be used.

Our concern is also based on a previous filing before the board by Custer State Park. This filing (Water Right Application No. 996-2) was denied by the board at their September 3, 1969 meeting. This filing was different in nature from the current filings. It was a proposed diversion of water (0.46 F³/S) from Grace Coolidge Creek. The proposed use of the water at that time was for irrigation of a 55 acre golf course.

It is for these reasons (and perhaps other reasons that will be determined after reviewing the applications and Chief Engineer's recommendation) that we oppose both of the applications noted above.

MAILING ADDRESSES

The mailing addresses of the petitioners are:

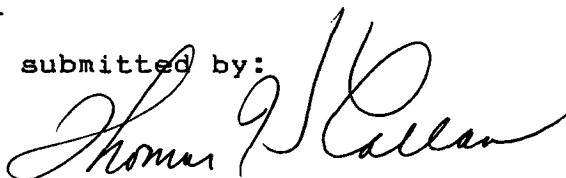
Thomas H. Callan
R.R. #3, Hires Trace
Morton, IL 61550-9803

Helen M. Callan
R.R. #1, Box 41
Hermosa, SD 57744

Chris Molitor
Box 74
Smithwick, SD 57782

SIGNATURE OF PETITIONER

This petition is hereby submitted by:



Thomas H. Callan
R.R. #3, Hires Trace
Morton, IL 61550-9803

CERTIFICATE OF SERVICE BY MAIL

I, Thomas H. Callan, as representative for the above named petitioners do hereby certify that on this 24th day of August, 1987, served the above petition upon the Applicant and filed the above Petition with the Chief Engineer by depositing same with the United States Post Office, first-class postage prepaid, in Peoria, Illinois, addressed as posted in the public notice (Custer Chronicle, August 12, 1987):

Custer State Park
HCR 83, Box 70
Custer, SD 57730

Chief Engineer
Water Rights Division
Joe Foss Building
523 E. Capitol
Pierre, SD 57501-3181



Department of Water & Natural Resources

Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

August 27, 1987

Thomas H Callan
RR 3, Hires Trace
Morton IL 61550-9803

Dear Mr. Callan:

I am writing to answer your questions raised in the attached letter dated August 22, 1987 regarding the water appropriations for Application Nos. 2027-2 and 2028-2.

The proposed water appropriation of 0.16 cfs (72 gpm) and 0.10 cfs (45 gpm) for Application Nos. 2027-2 and 2028-2, respectively, are total appropriations for each application and not an appropriation for each well. Several wells have been specified on each application for the following reasons:

1. The amount of water that a well may produce from the Pre-Cambrian Rock is unpredictable and several wells may be needed to obtain 72 and 45 gpm.
2. The applicant for a water permit can not construct any wells in addition to the number specified on the permit application. Therefore, if the amount of water appropriated can not be obtained from the number of wells specified on an approved permit then the applicant must make an application to amend the permit to increase the number of wells. This is a time-consuming process which can be avoided with proper planning.
3. A standby well may also be constructed for use in event problems develop with the production well or wells.

This is the basis for the wording "up to 6 wells" and "up to 5 wells" used in the notice of hearing for the permit applications. The applicant (Custer State Park) then has the latitude to construct the number of wells needed to pump 72 gpm and 45 gpm (Application Nos. 2027-2 and 2028-2) with possible standby wells.

Please contact us if you have any questions. No filing fee is required with the petitions. Enclosed is your check for \$2.50.

Sincerely,

A handwritten signature in cursive script that reads "Ron Duval".

RON DUVAL
Natural Resources Engineer
605 773-3352

cc: Helen M Callan
Chris Molitor
Rollie Noem, Director of Custer State Park



Department of Water & Natural Resources

Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

August 27, 1987

NOTICE

TO: Parties of Record (see attached list)

FROM: John Hatch, Chief Engineer *John Hatch*
Water Rights Division
605 773-3352

SUBJECT: Automatic Continuance of Hearing on Water Permit
Application No. 2027-2 and 2028-2, Custer State Park

A petition in opposition to Water Permit Application No. 2027-2 and 2028-2 and request for an automatic continuance of hearing (see attached letter) has been received from Thomas H Callan, Helen M Callan and Chris Molitor. Pursuant to SDCL 46-2A-4 and 46-2A-5, the hearing on Application Nos. 2027-2 and 2028-2 is automatically continued and will NOT be held at the September 9, 1987 Board meeting. The hearing on Application Nos. 2072-1 and 2027-2 will now be held December 2, 1987 at 10:15 am at the Howard Johnson Motel, Roosevelt and Jefferson Room, 2211 LaCrosse St, Rapid City SD. The agenda time is an estimate. The actual time of hearing may be later than 10:15 am due to previous agenda items.

cc: Harold Deering, Assistant Attorney General
Water Management Board

August 26, 1987
(date)

page 1 of

Parties of Record before Water Management Board regarding
Water Permit Application Nos 2027-2 and 2028-2,
Custer State Park

FOR:

1. Rollie Noem, Director
Custer State Park
HCR 83, Box 70
Custer SD 57730

AGAINST:

Thomas H. Callan
RR #3, Hires Trace
Morton, IL 61550-9803

2.

Helen M. Callan
RR #1, Box 41
Hermosa SD 57744

3.

Chris Molitor
Box 74
Smithwick, SD 57782

4.

5.

CERTIFICATION

I hereby certify that on August 27, 1987, I have personally deposited with the U.S. Mail, postage prepaid envelopes containing Notice of Automatic Continuance of Hearing on Water Permit Application No. 2027-2 and 2028-2, Custer State Park addressed as stated on the Parties of Record sheet.

Haren Schlaak

KAREN SCHLAAK
Senior Secretary

STATE OF SOUTH DAKOTA)
) SS
COUNTY OF HUGHES)

Sworn to, before me, this 28th day of August, 1987.



John H. Adams

Notary Public

**South Dakota
Department of
Game, Fish and Parks**

Custer State Park
HCR 83, Box 70
Custer, South Dakota 57730
605-255-4515

November 20, 1987

Re: Water Permit Application No. 2028-2 (Game Lodge-45gpm)
Water Permit Application No. 2027-2 (Sylvan Lake-70gpm)

Ron Duvall
Water Rights Division
DWNR-Joe Foss Building
Pierre, SD 57501



Dear Mr. Duvall:

On August 17, 1987 a well was drilled in the Game Lodge area. The well produces 285 gpm which is extraordinary. The high flow rate of water from this well would be useful in the case of a structure fire or forest fire. However, only 45 gpm is requested in the permit application so we will be amending the application to a higher rate of flow.

The water permit application is scheduled for hearing on December 2, 1987. However, because we will be amending the application we request that the hearing is deferred on water permit application no 2028-2 until the next DWNR Board meeting.

On November 5, 1987 a well was drilled in the Sylvan Lake area. The well produces approximately 60 gpm. A representative of the Department of Game, Fish and Parks will be present at the DWNR Board meeting on December 2, 1987 for the hearing on water permit application no 2027-2 (Sylvan Lake).

Sincerely

Greg Goebel
Natural Resource Analyst
Custer State Park

GG:dd

cc Rollie Noem
Dennis Williams
Ron Koth



Department of Water & Natural Resources

Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

November 25, 1987

NOTICE

TO: Rollie Noem, Director
Custer State Park
HCR 83, Box 70
Custer SD 57730
and Parties of Record (see attached list)

FROM: John Hatch, Chief Engineer
Water Rights Division
605 773-3352 *John Hatch*

SUBJECT: Continuance of Hearing on Water Permit Application No.
2028-2, Custer State Park

The Water Management Board will NOT consider Water Permit Application No. 2028-2 at the December 2-4, 1987 Board meeting. A written request has been received from Greg Goebel, Natural Resource Analyst, (copy attached) on November 23, 1987 to delay consideration of Application No. 2028-2. The proposed amendment to increase the diversion rate will require that Application No. 2028-2 be readvertised to give public notice of the amendment. Parties of Record will be given personal notice of the new hearing time and location. Water Permit Application No. 2027-2 will be considered by the Board at the December 2-4, 1987 meeting as previously scheduled in the notice dated August 27, 1987.

cc: Harold Deering, Assistant Attorney General
John Guhin, Assistant Attorney General

August 26, 1987
(date)

page 1 of

Parties of Record before Water Management Board regarding
Water Permit Application Nos 2028-2 and 2027-2,
Custer State Park

FOR:

1. Rollie Noem, Director
Custer State Park
HCR 83, Box 70
Custer, SD 57730

AGAINST:

Thomas H. Callan
RR#3, Hires Trace
Morton, IL 61550-9803

2.

Helen M. Callan
RR#1, Box 41
Hermosa, SD 57744

3.

Chris Molitor
Box 74
Smithwick, SD 57782

4.

5.

SOUTH DAKOTA
Department of
Water & Natural Resources

Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

December 8, 1987

NOTICE

TO: Rollie Noem, Director
Custer State Park
HCR 83, Box 70
Custer SD 57730
and Parties of Record (see attached list)

FROM: John Hatch, Chief Engineer *John Hatch*
Water Rights Division
605 773-3352

SUBJECT: Approval of Water Permit Application No. 2027-2, Custer State
Park

The Water Management Board approved Water Permit Application No. 2027-2 with qualifications at the December 2 and 3, 1987 Board meeting in Rapid City. The water permit will be issued to Custer State Park pursuant to the action taken by the Board.

cc: Harold Deering, Assistant Attorney General
John Guhin, Assistant Attorney General

CERTIFICATION

I hereby certify that on December 9, 1987 I have personally deposited with the U.S. Mail, postage prepaid envelopes containing Notice of Approval of Water Permit Application No. 2027-2 Custer State Park addressed as shown on the parties of record sheet.

Karen Schlaak
KAREN SCHLAACK
Senior Secretary

STATE OF SOUTH DAKOTA)
) SS
COUNTY OF HUGHES)

Sworn to, before me, this 11th day of December, 1987.



John Hatch
Notary Public



2027-2

Department of Water & Natural Resources

Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501

Water Rights Division
605 773-3352

FEB 9 1988

Custer State Park
HCR 83, Box 70
Custer, South Dakota 57730

Dear Sir:

Enclosed herewith is your Water Permit No. 2027-2 as approved by the Water Management Board authorizing you to construct your water diversion system and the water to beneficial use, not exceeding the limits as specified in said Water Permit No. 2027-2.

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 your Water License may be issued to you, thus completing your acquisition of a Water Right.

Very truly yours,

A handwritten signature in black ink that reads "John Hatch". The signature is written in a cursive style.

JOHN HATCH, Chief Engineer
Water Rights Division

JH:ms

enclosure

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 will 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.

WNR-809-5/83

STATE OF SOUTH DAKOTA

WATER LICENSE NO. 2562-2

(1) Custer State Park, HCR 83 Box 70, Custer SD 57730 made Application No. 2562-2, July 8, 2005 for a water permit to divert an additional 0.12 cubic feet of water per second (cfs) from groundwater (three wells), Custer County, South Dakota for commercial and recreational purposes. Permit No. 2562-2, with a priority date of July 8, 2005 was approved September 12, 2005 and issued to the applicant for diversion of water with construction of the described water supply system completed and the application to beneficial use of water completed.

Water Permit No. 2027-2, with a priority date of July 9, 1987 authorized 0.16 cfs from 3 wells. The applicable portions of No. 2027-2 are incorporated into No. 2562-2.

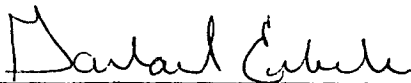
(2) The water supply system has been completed and water applied to beneficial use in accordance with South Dakota State Law. Pursuant to South Dakota Codified Law 46-5-30.1, the holder and/or owner of Incorporated Water Right No. 2562-2 is issued a license, bearing priority dates of July 9, 1987 (0.16 cfs) and July 8, 2005 (0.12 cfs) to appropriate 0.28 cfs from groundwater (three wells) for commercial and recreational use through the water distribution system at the Sylvan Lake area facilities.

The diversion points are located:

Well #1 – 4,594 feet east and 1,531 feet north of the southwest corner Section 30 (SE ¼ SE ¼);
Well #2 – 5,227 feet east and 1,003 feet north of the southwest corner Section 30 (SE ¼ SE ¼);
Well #3 – 53 feet east and 634 feet north of the southwest corner of Section 29 (SW ¼ SW ¼);
all T2S-R5E

(3) This license is subject to South Dakota Water Law, any limitations or conditions listed in Incorporated Water Permit No. 2562-2 including the following now applicable qualification:

The wells 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.



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

SEP 30 2005

date

