

WATER PERMIT NO. 1598-1

Phone: 642-8271

Name of Applicant: City of Spearfish

Post Office Address: 722 Main St, Spearfish SD 57783

Amount of Water Claimed: 3.1 Total Acres: _____

Source of Water Supply: Spearfish Creek

Water to be used for: irrigation County: Lawrence

About _____ miles _____ of _____

PRIORITY Date Received: 3-11-94 Fee: \$50.00 Remarks: _____

Corrected Application Received: 3-28-94 Period of Annual Use: May 15 - Oct 15

WATER QUALITY APPROVAL RECEIVED: _____ APPROVED/CONDITIONAL (Circle one)

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

Diversion Point: _____

Land to be Irrigated: _____

Well Log: Driller: _____ Licensed YES _____ NO _____

Depth of Well: _____ REMARKS: _____

Type of Map: plat PREPARED BY: Theodore J Vore Reviewed and the Number

Assigned on: 3-29-94 By: Karen Schlaak

FORM 2: Application for irrigation in South Dakota

(type or print)

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

No. 1598-1 Hydrologic Unit 10180203
Basin Belle Fourche River
Newspaper Black Hills Pioneer, Box 7, Spearfish
(office use only)



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

Type of Application: New X Vested Right Amendment/Correction to Permit No.

(check one)

(Use predates Mar 2, 1955)

Description of amendment/correction: (i.e. acreage change, change diversion point(s), add diversion point(s), etc.)
Change of water use from municipal to irrigation

- Name of Applicant City of Spearfish, South Dakota Phone 642-8271
(check one) X Owner Tenant/lessee
Mailing Address 722 Main St. Spearfish State SD 57783
(Street, RR, or Box) (City) (Zip Code)
- Amount of water claimed 3.1 *CFS or 1389 **GPM ***AF Total Acreage
(*Cubic Feet per Second) (**Gallons per Minute) (**Acre Feet - storage capacity of dam/dugout if applicable)
- Source of water supply Permits 141-1, 138-1, 148-1, diverted from Spearfish Creek
- Location of point of diversion (example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W) NW1/4 SE1/4 Sec. 33, T.6N., R.2E. BHM. (old City municipal water diversion structure)
 County Lawrence
- County or counties where water will be used Lawrence
- Annual period during which water is to be used May 15 - Oct. 15
- 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
Spearfish Canyon Country Club	130	Brady Park	2
Rose Hill Cemetery	30	Salem Park	1
City Campground	11	Lookout & Jorgensen Parks	12
Centennial Park	14	Evans Park	3

- Type of Irrigation: Gravity: Towline: Center Pivot: Gun: Other (Specify): Solid set
- Crops to be irrigated: Lawn grass underground sprinklers
- Give a description of the project. (Attach sheet if more space is needed)

The City of Spearfish was forced to either filter or abandon the above referenced water rights. The City has chosen to divert this water from the municipal system and utilize it for irrigation of the above referenced areas.

See attached sheet

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 LAWRENCE)^{SS}

I, THEODORE J. VORE, 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 Theodore J. Vore Public Works Adm.

Subscribed and sworn to before me this 9TH day of MARCH 19 94

Kloria J. Starr
Notary Public

SOUTH DAKOTA WATER PERMIT NO. 1598-1 FOR IRRIGATION

Date of first receipt of application March 11, 1994.

Date of return to applicant for corrections, amendments or changes March 14, 1994.

Date of receipt of corrected application March 28, 1994.

The Water Management Board approved Water Permit Application No. 1598-1 on June 28, 1994 for the City of Spearfish, 722 Main Street, Spearfish SD 57783 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. 1598-1 changes the use of 2.52 cubic feet of water per second (cfs), authorized by Water Right Nos. 138-1, 141-1 and 148-1 from municipal use to irrigation use. Water Right No. 138-1 appropriated 0.5 cfs from seven springs at the head of Robinson Gulch with a priority date of November 13, 1917. Water Right No. 141-1 appropriated 1.1 cfs from Spearfish Creek with a priority date of March 1, 1919. Water Right No. 148-1 appropriates 1.5 cfs from Spearfish Creek with a priority date of January 27, 1930. These water rights were issued for a common diversion point located in the NE 1/4 NE 1/4 Section 33-T6N-R2E.

This permit changes the use of 2.52 cfs from municipal use to irrigation use for irrigating 203 acres. The irrigated acres are located in the S 1/2 NW 1/4, SW 1/4 NE 1/4, SW 1/4, N 1/2 SE 1/4 Section 14, (Spearfish Canyon Country Club); N 1/2 SE 1/4 Section 15 (Rose Hill Cemetery); N 1/2 SE 1/4 Section 15 (City Campground); E 1/2 NW 1/4 Section 15 (Centennial Park); NE 1/4 NW 1/4 Section 15 (Brady Park); SW 1/4 NW 1/4 Section 10 (Salem Park); NW 1/4 NW 1/4 Section 10 (Lookout Park); SW 1/4 SW 1/4 Section 3 (Jorgenson Park); and SW 1/4 NW 1/4, NW 1/4 SW 1/4 Section 3 (Evans Park), all in T6N-R2E. This permit also corrects the location of the point of diversion of water developed for diverting from Spearfish Creek from the NE 1/4 NE 1/4 to the NW 1/4 SE 1/4 Section 33-T6N-R2E. Water is diverted from Spearfish Creek in Spearfish Canyon and transported via a 10 inch pipeline to a point located in the NW 1/4 SE 1/4 Section 15-T6N-R2E (just below Homestake Mining Company Hydroplant #1). Water is diverted directly from the pipeline for irrigation and is discharged into Spearfish Creek which is used to convey water to various points where water is diverted for each individual park. Diversions of water from the diversion structure in Spearfish Canyon during the non-irrigation season shall be limited to the minimum amount necessary to prevent the pipes from freezing.

The applicable portions of Water Right Nos. 138-1, 141-1 and 148-1 have been incorporated into Water Permit No. 1598-1 and the abandoned or forfeited portions of Nos. 138-1, 141-1 and 148-1 have been cancelled.

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: May 15 - October 15.
3. The dates from which applicant may claim right are:
 - 0.5 cfs - November 12, 1917
 - 1.10 cfs - March 1, 1919
 - 0.92 cfs - January 27, 1930

(continued)

4. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

QUALIFICATIONS

1. The combined diversion rate for irrigation of Spearfish Canyon Country Club from wells authorized by Right No. 728-1 (Minnelusa well), Right No. 1363-1 (Madison well) and Permit No. 1598-1 shall not exceed 1.0 cfs for each 70 acres irrigated.
2. This permit is approved subject to the irrigation water use questionnaire being submitted each year.
3. Diversions of water at the diversion structure in Spearfish Canyon during the non-irrigation season shall be limited to the minimum amount necessary to prevent the pipes from freezing.

WATER MANAGEMENT BOARD

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

NOV 14 1994
date

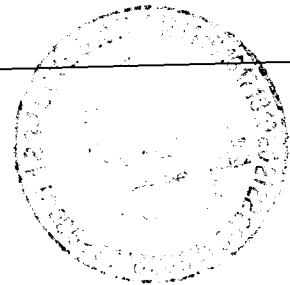
10. (Cont.)

The Spearfish Canyon Country Club, Rose Hill Cemetery, Spearfish City Campground, and Centennial Park will all receive water from the pipeline transporting water from the diversion dam to the City. This is the pipeline that has been severed from the municipal water system.

Excess water from this pipeline and diverted flows, when not irrigating the four just referenced areas, will be discharged into Spearfish Creek just downstream from the Hydro #1 discharge.

Brady Park, Salem Park, Lookout Park, Jorgensen Park and Evans Park are requested to be irrigated with water from Spearfish Creek diverted at specific locations adjacent to each of these areas. Spearfish Creek is to be used as a means of conveyance to these specific diversion points.

Diversion points on the map are identified as diversion No.'s 1 through 5. All diversions are within City limits and on City property.



Supplemental Information

(type or print in ink)

1. Well Information - Proposed Construction

- 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 _____ On property owned by others _____

2. Dugout Information

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

3. 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

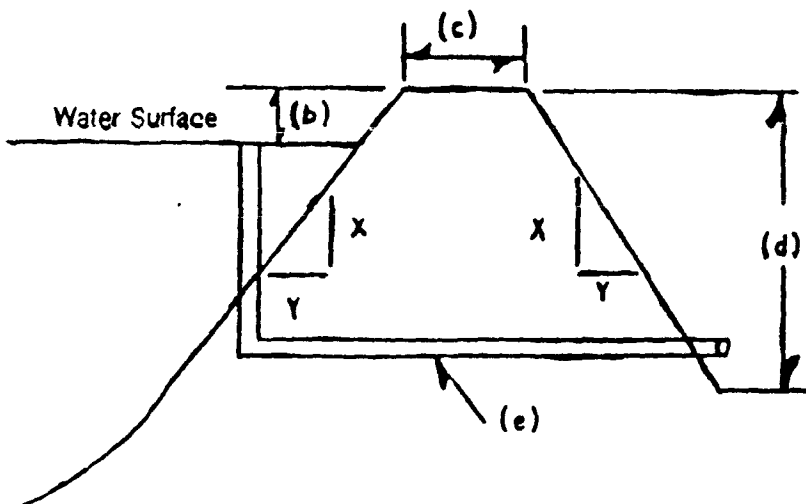
Upstream _____

Downstream _____

h) Surface Area of Impoundment _____

i) Storage _____ Acre Feet

j) Drainage Area Above Dam _____ Acres



RECEIPT

414112

Division of Water Rights

South Dakota Department of Environment and Natural Resources

Pierre, _____ March 28, 19 94

RECEIVED OF City of Spearfish, 722 Main, Spearfish, SD 57783

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

Fee for Application for Permit No. <u>1598-1</u> to Appropriate Water, to construct and to put water to beneficial use _____	50	00
Fee for Application for Permit No. _____ to Appropriate Water, for Future Use _____		
Fee to retain Future Use Permit No. _____ after period of seven years.		
Fee for Inspecting Constructed Works, confirming beneficial use and issuing Water License No. _____		
Fee for Filing Transfer Form _____		
Fee for Filing Extension Request _____		
Fee for _____		

(Any Other Work Provided by Law)	Total	50 00

By John Hitchcock
Chief Engineer

PHONE (605) 642-7775



VENDOR NO.

24

3-07-94

JOE FOSS BUILDING

523 EAST CAPITOL

Address 523 EAST CAPITOL
PIERRE, SD 57501-3181

Sign and submit this form, with your invoices, to: City Finance Office; 722 Main Street; Spearfish, South Dakota 57783.

[illegible]

If this purchase order is over \$500, it must be approved by the Mayor or the appropriate City Council member.

VERIFICATION

I declare and affirm under the penalties of perjury that this claim has been examined by me, and to the best of my knowledge and belief, is in all things true and correct.

Verification must be signed here. 

Dept. Head _____

Date _____

Mayor _____

Date _____

Finance Officer CD [Signature]

Date 3/17/94

City Council meets the first and third Monday evenings of each month. Proper claims may be filed with the City Finance Office for processing at any time. Only claims processed by the Finance Office on or before Wednesday prior to each Council meeting will be presented for Council approval.

VENDOR CLAIM FORM

PURCHASE ORDER — VOUCHER
of Spearfish, South Dakota
SPEARFISH, SOUTH DAKOTA 57783
PHONE (605) 642-7775

PHONE (605) 642-7775



VOUCHER NO. 129

CHECK NO. _____

P.O. NO. _____

DATE 3-21-94

VENDOR NO. 1710

Vendor DENR--WATER RIGHT DIVISION
JOE FOSS BUILDING
 Address 523 EAST CAPITOL
PIERRE, SD 57501-3181

Sign and submit this form, with your invoices, to: City Finance Office; 722 Main Street; Spearfish, South Dakota 57783.

[illegible]

If this purchase order is over \$500, it must be approved by the Mayor or the appropriate City Council member.

VERIFICATION

I declare and affirm under the penalties of perjury that this claim has been examined by me, and to the best of my knowledge and belief, is in all things true and correct.

Verification must be signed here.

Dept. Head _____ Date _____

Mayor _____ Date _____

Finance Officer _____ Date _____

City Council meets the first and third Monday evenings of each month. Proper claims may be filed with the City Finance Office for processing at any time. Only claims processed by the Finance Office on or before Wednesday prior to each Council meeting will be presented for Council approval.

VENDOR CLAIM FORM

**LEGAL DESCRIPTIONS OF PARKS, CEMETERY AND SPEARFISH CANYON COUNTRY
CLUB FOR APPLICATION NOS. 1598-1**

(all in T6N, R2E)

Spearfish Canyon Country Club - S $\frac{1}{2}$ NW $\frac{1}{4}$, SW $\frac{1}{4}$ NE $\frac{1}{4}$, SW $\frac{1}{4}$, N $\frac{1}{2}$ SE $\frac{1}{4}$ Section 14

Rose Hill Cemetery - N $\frac{1}{2}$ SE $\frac{1}{4}$ Section 15

City Campground - N $\frac{1}{2}$ SE $\frac{1}{4}$ Section 15

Centennial Park - E $\frac{1}{2}$ NW $\frac{1}{4}$ Section 15

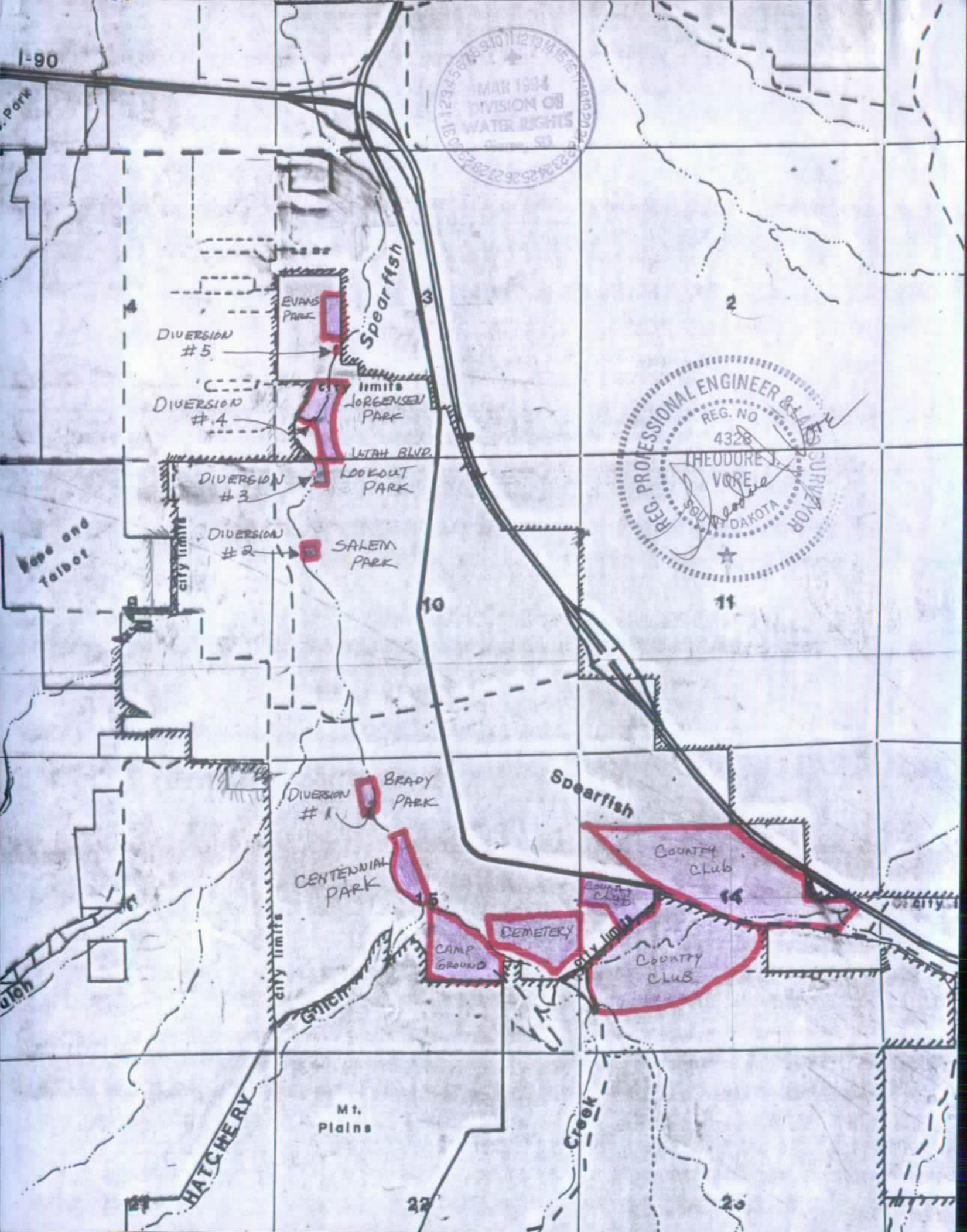
Brady Park - NE $\frac{1}{4}$ NW $\frac{1}{4}$ Section 15

Salem Park - SW $\frac{1}{4}$ NW $\frac{1}{4}$ Section 10

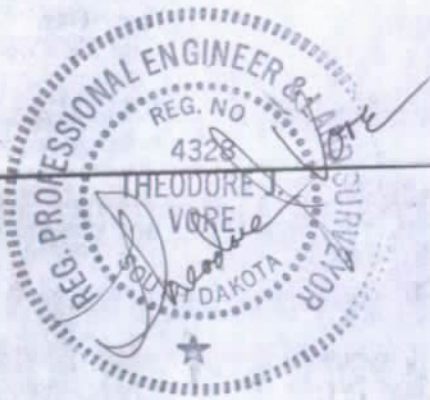
Lookout and Jorgensen Parks - NW $\frac{1}{4}$ NW $\frac{1}{4}$ Section 10 and SW $\frac{1}{4}$ SW $\frac{1}{4}$ Section 3

Evans Park - SW $\frac{1}{4}$ NW $\frac{1}{4}$, NW $\frac{1}{4}$ SW $\frac{1}{4}$ Section 3

*** Compiled by Eric Gronlund from the map submitted with application.**



I-90



DIVERSION #5

DIVERSION #4

DIVERSION #3

DIVERSION #2

DIVERSION #1

BRADY PARK

CENTENNIAL PARK

10

Spearfish

COUNTRY CLUB

CEMETERY

CAMP GROUND

COUNTRY CLUB

Mt. Plains

HATCHERY

Creek

22

20



SPEARFISH/MCKINLEY #4 (LOWER)

QUARTERLY

BENEFICIAL USES:

(1) DOMESTIC WATER SUPPLY

(2) COLDWATER PERMANENT FISHLIFE PROP

(7) IMMERSION

(8) LIMITED CONTACT RECREATION

(9) WILDLIFE PROP & STOCK WATER

(10) IRRIGATION

DATE		1/22/87	4/16/87	5/15/87	8/21/87	1/25/88	4/13/88	5/17/88	MAX	MIN	AVERAGE
PARAMETER	SW STANDARD	DM STANDARD									
pH (FIELD)	6.5/8.5	6.0/9.0	8.26	9.64	8.75				9.64	8.26	8.8833
pH (LAB)	6.5/8.5	6.0/9.0		8.42					8.53	8.42	8.4750
CONDUCT (uMHO/cm)	2500/4000	—	240	282	331	339	240	260	270	240	280.2857
TOTAL CN (mg/l)	0.02	—	<.01	<.01	<.01	<.01	<.01	<.01	<.01	0	0.0000
As (mg/l) TOTAL	—	0.05	<.005	0.0084	0.0514	<.005	<.005	<.005	0.011	0.0514	0.0101
As (mg/l) DISS	—	0.05	<.005	<.005		<.005	<.005	<.005	0.011	0.011	0.0018
AIR TEMP (°C)	—	—	-4	16	28	28	-2	7	26	28	-4 14.1429
WATER TEMP (°C)	18	—	1	8.4	15	15.5	1	7	11.5	15.5	1 8.4857
FLOW RATE (cfs)	—	—			26.03	18.67	18.49	18.8		26.03	18.49 20.4975
TDS (mg/l)	2500	1000									
TSS (mg/l)	30	—									



State of South Dakota
Department of
Water & Natural Resources

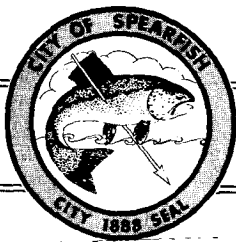
Thomas V. Durkin
Hydrologist

Exploration & Mining Program 773-4201

Joe Foss Building - 523 East Capitol Ave.
Pierre, S.D. 57501 (605) 773-4151 4201







CITY OF SPEARFISH

722 MAIN STREET, SPEARFISH, SOUTH DAKOTA 57783

November 19, 1991



John Hatch
Division of Water Rights
Dept. of Environment & Natural Resources
Foss Building
Pierre, SD 57501

Re: Water Right #'s 141-1 (1.1cfs); 149.1 (.44cfs); 138-1
(.5 cfs); 148-1 (1.5 cfs); 150-1 (1.0 cfs)

Dear Mr. Hatch:

Approximately a month ago I visited with you about a proposal dealing with the above referenced water rights.

It is our understanding that the above public water system must be filtered by a treatment technique by June 29, 1993. It has been estimated by engineers in our Water Facilities Plan Update that we could spend upwards to \$2.4 million for a Water Treatment Plant.

As per our discussion, I indicated a desire to continue the diversion as operating today and instead of accepting this water into our Municipal System let it flow back into Spearfish Creek near the Homestake Hydro Plant No. 1. In addition to this, we would like to withdraw approximately 2/3 of this water back out of the creek to irrigate some 84 acres of City Parks.

If we would abandon these water right's present diversion, the water disappears into the ground and never reaches the City. We feel the additional flow provided at the Hydro No. 1 would benefit in-stream flows as well as bolster existing agricultural rights down stream. We would only be withdrawing as the parks need water.

Possibly a solution would be to allow the City to discharge the full above referenced amount into Spearfish Creek near Homestake Hydro #1, allow the City approximately six new points of diversion to allow us to irrigate our parks, and cemetery, and to reserve a future use permit for the City in the event we should ever experience a failure of the Madison Aquifer.

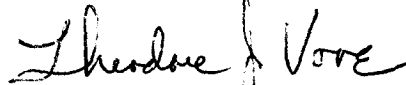


John Hatch
November 8, 1991
Page 2

The \$2.4 million plant is not out of the question, however, we are quite concerned about the potential threat to our water system paralleling a major scenic highway, and its proximity to existing cyanide treated gold extraction operations.

Please give this some sincere thought and advise us as to your thoughts and recommendations.

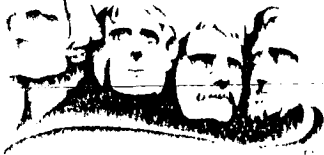
Respectfully Requested,

A handwritten signature in cursive script, reading "Theodore J. Vore".

Theodore J. Vore
Public Works Administrator
CITY OF SPEARFISH

TJV/bsk

South Dakota



GREAT FACES. GREAT PLACES.

**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

December 18, 1991

Theodore J Vore, Public Works Administrator
City of Spearfish
722 Main Street
Spearfish SD 57783

Dear Mr. Vore:

I am writing in response to your letter dated November 19, 1991, regarding the City's surface water rights. The city may apply for additional diversion points and to change the use from municipal to irrigation without loss of priority, if other water rights are not adversely affected.

One of the following options may assist the city in retaining the portion of the surface water rights not being used for irrigation:

- 1) The city may retain a permitted water source by maintaining diversion works for either fire protection or standby purposes, or both. ~~Water diversion works would need to be kept in working condition for immediate use upon demand;~~ however, no water may be diverted until a demand arises. Therefore, this may not be a viable alternative, since the city wants to continue using the diversion works to discharge the water near Hydro Plant No. 1.
- 2) The city may apply to change the water use to a primary and secondary water use. The primary use would be municipal and the secondary use could be a recreational instream flow. This application should stress that the instream flow use is secondary and is subject to the primary municipal use. This prioritizing of uses may prevent disputes in the future, if the secondary water use was reduced or stopped to allow the primary use to occur. Water could continue to be discharged near Hydro Plant No. 1 with the instream flow area located immediately downstream. Works to divert water for municipal purposes would need to be maintained in a standby condition.
- 3) Another option is for the city to lease the unused water to a second party. This type of application would need to be reviewed on a case by case basis to determine if approval could be recommended.

December 18, 1991

Theodore J Vore

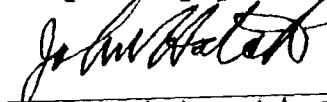
Page 2 of 2

I do not believe obtaining a future use permit is an option. There is no provision in statute allowing an existing water use to be placed into future use. Unappropriated water must be available for a future use permit to be approved and a new priority date is assigned.

The surface water rights will be subject to cancellation due to either forfeiture or abandonment, or both, unless the city takes action to retain the water rights. All, or any part of the water rights, would be subject to forfeiture after three years of nonuse, unless legal excuse exists for not using the water.

We will be glad to discuss the above options or any other ideas the city may have.

Very truly yours,



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

LAWRENCE COUNTY, SOUTH DAKOTA

Typically, the surface layer is brown silt loam in the upper 3 inches and brown very fine sandy loam in the lower 3 inches. The underlying material to a depth of 60 inches is light reddish brown, very friable loam. In places the underlying material is browner, and in some areas

Most areas of this soil are farmed. This soil has good potential for cultivated crops, rangeland, windbreaks and

are
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sea
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CBE—Citadel association, hilly. This map unit consists of deep, well drained soils in the Black Hills. It is on smooth upland divides and on the sides of mountain valleys and along drainageways. Slopes generally are long and smooth and range from 6 to 30 percent.

Individual areas of this map unit range from 80 to several thousand acres in size and are about 70 percent Citadel soil and about 30 percent minor soils. The minor soils are in areas that range to 40 acres in size. The uses of this unit, however, are such that separate mapping of the larger areas of the minor soils is not practical.

Typically, the Citadel soil has a surface layer of very dark gray loam about 1 inch thick that is covered by about 1 inch of forest litter. The subsurface layer is light brown, friable fine sandy loam about 5 inches thick. The subsoil, about 34 inches thick, is reddish brown, friable loam in the upper part; reddish brown, firm clay in the middle part; and red, friable, gravelly clay loam in the lower part. The underlying material to a depth of 60 inches is red, cobbly loam. In places, bedrock is less than 40 inches deep.

Included with this unit in mapping are areas of Maitland, Marshdale, and Vanocker soils. Maitland soil has more organic matter in the surface layer than Citadel soil, and Vanocker soil has more clay in the subsoil and more coarse fragments than Citadel soil. Maitland soil is on low side slopes below Citadel soil, and Vanocker soil is on the steeper side slopes. Marshdale soil is poorly drained and is along drainageways.

The Citadel soil is low in fertility and content of organic matter. Available water capacity is high, and permeability is moderately slow. Runoff is medium or rapid. This soil has high shrink-swell potential in the subsoil.

Most areas of this map unit are in ponderosa pine forest. Some of the minor soils in the mountain valleys and along major drainageways are in native grass or have been seeded to tame pasture plants and are used for hay or livestock grazing. The soils in this unit have good potential for timber production, woodland grazing, and woodland wildlife habitat. They have fair potential for tame pasture. They have poor potential for cultivated crops, rangeland, recreational uses, and most building sites and sanitary facilities.

This map unit is better suited to timber production, woodland grazing, and woodland wildlife habitat than to other uses. The natural plant community is dominantly ponderosa pine and a mixture of some hardwoods and an understory of shrubs and grasses. Management that maintains an adequate plant cover and ground mulch helps prevent excessive soil losses and improves the moisture supply for forest plants. Selective cutting and thinning reduces the competition for sunlight and moisture, makes the trees less susceptible to insects and diseases caused by overcrowding and decreased vigor, and promotes the growth of mature trees that can be harvested at shorter intervals. Selective cutting also pro-

motes the growth of understory plants for grazing by livestock and woodland wildlife. Proper grazing use of the understory by livestock helps maintain a desirable plant community that provides browse for woodland wildlife.

Seeding cleared areas of this map unit to suitable tame pasture plants is effective in controlling erosion. Proper stocking rate, rotation grazing, application of fertilizer, and control of weeds help keep the pasture in good condition after it is established.

Buildings can be constructed if the shrinking and swelling of this soil is overcome. If this soil is used for septic tank absorption fields, enlarging the absorption area helps to overcome the limitation of slow movement of effluent. Buildings and septic tank absorption fields need to be placed in the lower part of the landscape where slopes are less steep.

Local streets and roads need to be graded to shed water, and the base material needs to be strengthened to support vehicular traffic. Control of roadside erosion is needed in borrow and cut areas. This map unit is in Capability unit Vle-13. It is not placed in a range site.

Cc—Dumps, mine. This map unit consists of waste mine tailings which have been discarded from mines. The material is generally very finely ground, but some fragments may be as large as 1/4 inch in diameter. Individual areas of these dumps range from about 2 to 20 acres in size. These dumps were formed when the tailings were pushed over steep hillsides. They are barren of vegetation.

Some of the more coarsely ground material is being used in place of gravel on local roads and streets. This map unit is in Capability unit VIII-2. It is not placed in a range site.

EaD—Enning-Minnequa silty clay loams, 6 to 25 percent slopes. This map unit consists of shallow and moderately deep, well drained or somewhat excessively drained, moderately sloping to moderately steep soils on uplands. The irregularly shaped areas range from 10 to 90 acres in size and are about 70 to 80 percent Enning soil and 20 to 30 percent Minnequa soil. The Minnequa soil generally is in the lower part of the landscape. The two soils are so intermingled that it is not practical to separate them in mapping.

Typically, the Enning soil has a surface layer of grayish brown silty clay loam about 4 inches thick. The underlying material to a depth of 17 inches is very friable silty clay loam that is light brownish gray in the upper part and light gray in the lower part. Light gray shale is at a depth of 17 inches.

Typically, the Minnequa soil has a surface layer of grayish brown silty clay loam about 3 inches thick. A transitional layer, about 12 inches thick, is pale brown, friable silty clay loam. The underlying material to a depth of 26 inches is very pale brown, friable silty clay loam.

prevent excessive soil loss and improves soil moisture by reducing runoff. If the range is overgrazed, the taller, more desirable grasses lose vigor and are replaced by less productive grasses and weeds. Proper grazing use and deferred grazing help maintain or improve rangeland condition.

This map unit generally is not suited to cultivated crops, tame pasture, and windbreaks because of the very low available moisture capacity, severe hazard of erosion, and steep slopes. It is suited to wildlife habitat on selected sites; however, trees and shrubs need to be planted by hand and given special care.

This map unit generally is not suitable as a site for buildings, sanitary facilities, and local roads and streets because of shallow depth to bedrock, high shrink-swell potential, steep slopes, and Rock outcrop. The Grummit soil is in Capability unit VIIe-8 and Shallow range site. Rock outcrop is in Capability unit VIIIs-1. It is not placed in a range site.

GeD—Gypnevee-Rekop loams, 6 to 25 percent slopes. This map unit consists of deep and shallow, well drained and somewhat excessively drained, moderately sloping to moderately steep soils on uplands. The irregularly shaped areas range from 10 to 350 acres in size and are about 60 to 70 percent Gypnevee soil and 20 to 30 percent Rekop soil. The two soils are so intermingled that it is not practical to separate them in mapping.

Typically, the Gypnevee soil has a surface layer of reddish brown loam about 7 inches thick. The transitional layer is yellowish red, friable silt loam about 6 inches thick. The underlying material to a depth of about 60 inches is silt loam that is reddish yellow in the upper part and light red in the lower part. In places, the surface layer is darker than is typical of the Gypnevee soil.

Typically, the Rekop soil has a surface layer of reddish brown loam about 4 inches thick. The underlying material to a depth of 18 inches is loam that is light brown in the upper part and pink in the lower part. Pinkish white gypsum and alabaster bedrock are at a depth of 18 inches. In places, the bedrock and seams of gypsum are at a shallower depth than is typical for the Rekop soil.

Included with this unit in mapping are small areas of gypsum Rock outcrop on ridgetops. The Rock outcrop makes up about 10 percent of the map unit.

The Gypnevee soil is medium in fertility and low in content of organic matter. Available water capacity is high. The Rekop soil is low in fertility and content of organic matter. Available water capacity is very low. Permeability is moderate in both soils. Runoff is medium or rapid.

Most areas of this map unit are in rangeland. Gypnevee and Rekop soils have poor potential for crops, windbreaks and environmental plantings, and most building sites and sanitary facilities. They have fair potential for rangeland, rangeland wildlife habitat, and most recreational uses.

This map unit is better suited to rangeland than to other uses. The natural grass cover is a mixture of tall, mid, and short grasses. The main management concerns are inadequate moisture, steep slopes, and susceptibility of the soils to erosion. Management that maintains an adequate plant cover and ground mulch helps prevent excessive soil loss and improves soil moisture by reducing runoff. If the range is overgrazed, the more desirable taller grasses lose vigor and are replaced by less productive short grasses. Proper grazing use and deferred grazing help maintain or improve rangeland condition.

This map unit generally is not suited to cultivated crops, tame pasture, and windbreaks. It is suited to rangeland and wildlife habitat on selected sites; however, trees and shrubs need to be planted by hand and given special care.

This map unit generally is not suitable for building sites and sanitary facilities because of slope, shallow depth to bedrock, low strength, and the content of soluble gypsum in the soils. If sanitary facilities are constructed, they need to be placed on the less sloping areas of Gypnevee soils.

Local roads and streets need to be graded to shed water, and the base material needs to be strengthened to support vehicular traffic. Control of roadside erosion is needed in borrow areas. This map unit is in Capability unit VIe-3. Gypnevee soil is in Thin Upland range site, and Rekop soil is in Shallow range site.

Ha—Higgins silt loam. This deep, very poorly drained, nearly level soil is on alluvial fans and bottom lands. It is subject to common flooding for brief periods. The mapped areas are irregular in shape and range from 10 to 200 acres in size.

Typically, the surface layer is light gray silt loam about 3 inches thick. The underlying material to a depth of about 60 inches is white, very friable silt in the upper part and light gray silt in the lower part. In places, the water table is below a depth of 2 feet.

This soil is low in fertility and moderate in content of organic matter. Available water capacity is high, and permeability is moderate. Runoff is very slow or slow. A seasonal water table ranges from the surface to a depth of 2 feet.

Most areas of this soil are in rangeland. This soil has good potential for rangeland and windbreaks and environmental plantings. It has fair potential for wetland and rangeland wildlife habitat and poor potential for cultivated crops, recreational uses, building sites, and sanitary facilities.

This soil is well suited to rangeland. Wetness is the main management concern if this soil is used for grazing. The natural plant community is a mixture of tall, mid, and short grasses. If the range is overgrazed, the more desirable taller grasses lose vigor and are replaced by less productive short grasses. Proper grazing use and de-

content. Available water capacity is high, and permeability is moderate. Runoff is medium.

Most areas of this soil are farmed or in rangeland. This soil has fair potential for dryland and irrigated crops, rangeland, windbreaks and environmental plantings, rangeland wildlife habitat, recreational uses, most sanitary facilities, building sites, and local roads and streets. It has poor potential for openland wildlife habitat.

This soil is suited to corn, small grain, and grasses and legumes for hay. Controlling erosion and soil blowing and conserving moisture are the main concerns of management if this soil is used for cultivated crops. Stubble mulching, crop residue management, stripcropping, minimum tillage, terracing, and contour cultivation help control erosion and soil blowing and conserve moisture. Returning crop residue to the soil, green manure crops, and the regular addition of animal manure helps improve fertility and reduce susceptibility of the soil to blowing and erosion (fig. 6).

Seeding this soil to tame pasture is effective in controlling erosion and soil blowing. Proper stocking rate, rotation grazing, application of fertilizer, and control of weeds help keep the pasture in good condition.

This soil is well suited to rangeland. The natural plant community is a mixture of mid and short grasses. Maintaining a good grass cover and ground mulch helps prevent excessive soil losses and improves the moisture supply for range plants. If the range is overgrazed, the more desirable taller grasses lose vigor and are replaced by less productive short grasses. Proper grazing use and deferred grazing help maintain or improve rangeland condition.

Proper selection of climatically adapted trees and shrubs is needed to establish windbreaks and environmental plantings successfully; optimum survival, growth, and vigor, however, should not be expected.

Dustiness is a concern if this soil is used for recreational purposes.

Proper design of building foundations and footings helps prevent structural damage caused by the low strength of this soil. If the soil is used for septic tank absorption fields, enlarging the absorption area helps to overcome the limitations of slow movement of effluent and moderate depth to bedrock. Sealing the bottom and sides of sewage lagoons helps reduce seepage.

If this soil is used for local roads and streets, the base material needs to be strengthened to support vehicular traffic. Control of roadside erosion is needed in borrow areas. This map unit is in Capability unit IVe-2 and Thin Upland range site.

NaC—Nevee silt loam, 6 to 9 percent slopes. This deep, well drained moderately sloping soil is on terraces and uplands. The mapped areas are irregular in shape and range from 10 to 160 acres in size.

Typically, the surface layer is reddish brown silt loam about 6 inches thick. The underlying material to a depth

of 60 inches is very friable silt loam that is reddish yellow in the upper part, yellowish red in the middle part, and red in the lower part. In places, lime is leached to more than 10 inches deep.

Included with this soil in mapping are small areas of Spearfish, Tilford, and Vale soils. Spearfish soil has shale or siltstone at a depth of 10 to 20 inches and is in the upper part of the landscape. Tilford and Vale soils have a thicker dark surface layer than Nevee soil and have more clay than Nevee soil. They are on the lower part of the landscape. The included soils make up about 15 percent of the map unit.

This soil is low in fertility and content of organic matter. Available water capacity is high, and permeability is moderate. Runoff is medium.

Most areas of this soil are in rangeland. This soil has fair potential for rangeland, rangeland wildlife habitat, most recreational uses, most sanitary facilities, building sites, and local roads and streets. The soil has poor potential for cultivated crops, openland wildlife habitat, and windbreaks and environmental plantings.

This soil is suited to corn, small grain, and grasses and legumes for hay. Controlling erosion and soil blowing, conserving moisture, and maintaining or improving content of organic matter are the main concerns of management if this soil is used for cultivated crops. Stubble mulching, crop residue management, stripcropping, minimum tillage, terracing, and contour cultivation help conserve moisture and control erosion and soil blowing. Grassed waterways are effective in controlling erosion along drainageways. Returning crop residue to the soil, green manure crops, and the regular addition of animal manure help improve fertility, increase content of organic matter, and reduce susceptibility of the soil to blowing and erosion. Very careful water management is needed when this soil is irrigated because of the moderate slopes.

Seeding this soil to tame pasture is effective in controlling erosion and soil blowing. Proper stocking rates, rotation grazing, application of fertilizer, and control of weeds help keep the pasture in good condition.

This unit is better suited to rangeland than to other uses. The natural grass cover is a mixture of mid and short grasses. Management that maintains an adequate plant cover and ground mulch helps prevent excessive soil loss and improves soil moisture by reducing runoff. If the range is overgrazed, the more desirable taller grasses lose vigor and are replaced by less productive short grasses. Proper grazing use and deferred grazing help maintain or improve rangeland condition.

Plantings can be established if climatically adapted trees and shrubs are selected, but optimum survival, growth, and vigor should not be expected. Scalp planting helps reduce the severe hazard of erosion.

Dustiness is a concern if this soil is used for recreational purposes.

Proper design of building foundations and footings helps prevent structural damage caused by the low strength of this soil. If this soil is used for septic tank absorption fields, enlarging the absorption area helps to overcome the limitations of slow movement of effluent and moderate depth to bedrock. Sewage lagoons need to be placed on lower slopes and the bottom and sides sealed to reduce seepage.

Strengthening the base material helps overcome the low strength of this soil for supporting vehicular traffic. Control of roadside erosion is needed in borrow areas. This map unit is in Capability unit IVe-3 and Thin Upland range site.

LNbD—Nevee-Spearfish-Rock outcrop complex, 9 to 40 percent slopes. This map unit consists of deep and shallow, well drained and well drained to excessively drained, strongly sloping to steep soils and Rock outcrop on uplands. The irregularly shaped areas range from 20 to 250 acres in size and are about 35 percent Nevee soil, about 30 percent Spearfish soil, and about 20 percent Rock outcrop.

The Nevee soil is in the lower part of the landscape, the Spearfish soil is in the middle and upper parts of the landscape, and the Rock outcrop is on the tops and upper sides of ridges and on side slopes of deep gullies.

Typically, the Nevee soil has a surface layer of reddish brown silt loam about 6 inches thick. The underlying material to a depth of 60 inches is very friable silt loam that is reddish yellow in the upper part, yellowish red in the middle part, and red in the lower part. In places, lime is leached more than 10 inches deep.

Typically, the Spearfish soil has a surface layer of reddish brown silt loam about 2 inches thick. The transitional layer is reddish brown, very friable silt loam about 5 inches thick. The underlying material to a depth of about 12 inches is red, very friable silt loam. Red silty shale is at a depth of 12 inches.

Rock outcrop consists of massive exposures of red, silty fractured shale.

Included with this unit in mapping are small areas of Gypnevee and Nihill soils. The Gypnevee soil has more gypsum than Nevee and Spearfish soils. Nihill soil is underlain with sand and gravel and is on the upper part of the landscape above the Spearfish soil. The included soils make up about 15 percent of the map unit.

The Nevee and Spearfish soils are low in fertility and content of organic matter. Available water capacity is high in the Nevee soil and very low in the Spearfish soil. Permeability is moderate in both soils. Runoff is medium or rapid.

Most areas of this map unit are in rangeland. Nevee and Spearfish soils have fair potential for rangeland and rangeland wildlife habitat and poor potential for cultivated crops and windbreaks and environmental plantings. Nevee soil has fair potential for recreational uses, sanitary facilities, building sites, and local roads and streets;

Spearfish soil has poor potential for recreational uses, sanitary facilities, building sites, and local roads and streets.

This map unit is better suited to rangeland than to other uses. The natural grass cover is a mixture of tall, mid, and short grasses. Management that maintains an adequate plant cover and ground mulch helps prevent excessive soil loss and improves soil moisture by reducing runoff. If the range is overgrazed, the more desirable taller grasses lose vigor and are replaced by less productive short grasses. Proper grazing use and deferred grazing help maintain or improve rangeland condition.

If climatically adapted trees and shrubs are selected, scalp or specialized plantings can be established for wildlife habitat and for recreational or beautification purposes. Optimum survival, growth, and vigor, however, should not be expected.

Buildings sites and sanitary facilities need to be placed on the lower part of the slope in this map unit. If buildings are constructed, proper design of foundations and footings helps prevent structural damage caused by low strength of these soils. Septic tank absorption fields should be placed on the Nevee soil. If this soil is used for septic tank absorption fields, enlarging the absorption area helps to overcome the limitation of slow movement of effluent.

Local roads and streets need to be graded to shed water, and base material needs to be strengthened to support vehicular traffic. Control of roadside erosion is needed in borrow areas. Nevee and Spearfish soils are in Capability unit VIe-3; Nevee soil is in Thin Upland range site, and Spearfish soil is in Shallow range site. Rock outcrop is in Capability unit VIIIs-1. It is not placed in a range site.

NcD—Nihill gravelly loam, 6 to 25 percent slopes. This deep, excessively drained, moderately sloping to moderately steep soil is on upland terraces. The mapped areas are irregular in shape and typically are less than 25 acres in size but range from 5 to 80 acres.

Typically, the surface layer is brown, gravelly loam about 8 inches thick. The underlying material to a depth of 60 inches is very gravelly sandy loam that is light gray in the upper part and very pale brown in the lower part. In places, the soil is redder than is typical for the Nihill soil.

Included with this soil in mapping are small areas of Alice, Satanta, and Spearfish soils. Alice, Satanta, and the shallow Spearfish soils have less gravel than Nihill soil. Alice and Satanta soils are in the upper part of the landscape, generally above Nihill soil. Spearfish soil generally is below Nihill soil. The included soils make up about 15 percent of the map unit.

This soil is low in fertility and content of organic matter. Available water capacity is low, and permeability is moderately rapid. Runoff is medium to rapid.

application of fertilizer, and control of weeds help keep the pasture in good condition.

This soil is well suited to rangeland. The natural plant community is a mixture of tall, mid, and short grasses. Maintaining a good grass cover and ground mulch helps prevent soil losses and improves the moisture supply for rangeland plants. If the range is overgrazed, the more desirable taller grasses lose vigor and are replaced by less productive short grasses. Proper grazing use and deferred grazing help maintain or improve rangeland condition.

This soil is well suited to windbreaks and other types of woody plantings. All climatically adapted trees and shrubs grow well on this soil. Planting trees on the contour helps reduce the hazard of erosion. Good survival can be expected if the soil is summer fallowed before planting and cultivation is continued after planting to control grasses and weeds and conserve moisture.

Proper design of building foundations and footings helps prevent structural damage caused by shrinking and swelling of the soil. Sewage lagoons need to be placed on the less sloping part of the landscape. Sealing the bottom and sides of lagoons helps reduce seepage.

This soil has low strength. Strengthening the base material helps overcome the low strength of this soil for supporting vehicular traffic. Control of roadside erosion is needed in borrow areas. Proper roadside drainage helps reduce the effects of shrinking and swelling of the soil. This map unit is in Capability unit IVe-1 and Silty range site.

SbA—Savo silt loam, 0 to 2 percent slopes. This deep, well drained, nearly level soil is on terraces and uplands. The mapped areas are irregular in shape and range from 20 to 100 acres in size.

Typically, the surface layer is dark gray silt loam about 7 inches thick. The subsoil, about 17 inches thick, is brown, firm silty clay loam in the upper part and pale brown, firm silty clay loam in the lower part. The underlying material to a depth of 32 inches is pale brown and very pale brown clay loam. Below this, to a depth of 60 inches, is brown, calcareous silty clay loam.

Included with this soil in mapping are small areas of Nunn, Tilford, and Vale soils. Nunn soil has more fine and coarse sand than Savo soil and is on the higher part of the landscape. Tilford and Vale soils have less clay than Savo soil and are redder than Savo soil. They are on the lower part of the landscape. The included soils make up about 10 percent of the map unit.

This soil is medium in fertility and moderate in content of organic matter. Available water capacity is high, and permeability is moderately slow. Shrink-swell potential is high. Runoff is slow.

Most areas of this soil are cropped. This soil has good potential for cultivated crops, rangeland, windbreaks and environmental plantings, and rangeland wildlife habitat; fair potential for openland wildlife habitat and recreation-

al uses; and poor potential for most building sites, most sanitary facilities, and local roads and streets.

This soil is suited to small grain, corn, and grasses and legumes for hay. Conserving moisture is the main concern of management if this soil is used for cultivated crops. Stubble mulching, crop residue management, minimum tillage, and field windbreaks help conserve moisture. Returning crop residue to the soil, green manure crops, and the regular addition of animal manure help improve fertility and maintain an adequate content of organic matter.

Seeding this soil to tame pasture is an alternative use of this soil. Proper stocking rate, rotation grazing, application of fertilizer, and control of weeds help keep the pasture in good condition.

This soil is well suited to rangeland. The natural plant community is a mixture of tall, mid, and short grasses. Maintaining a good grass cover and ground mulch helps improve the moisture supply for rangeland plants. If the range is overgrazed, the taller more desirable grasses lose vigor and are replaced by less productive short grasses. Proper grazing use and deferred grazing help maintain or improve rangeland condition.

This soil is well suited to windbreaks and other types of woody plantings. All climatically adapted trees and shrubs grow well on this soil. Good survival can be expected if the soil is summer fallowed before planting and cultivation is continued after planting to control grass and weeds and conserve moisture.

Proper design of building foundations and footings helps prevent structural damage caused by shrinking and swelling of the soil. If this soil is used for septic tank absorption fields, enlarging the absorption area helps to overcome the limitation of slow movement of effluent.

This soil has low strength. Strengthening the base material is needed to support vehicular traffic. Proper roadside drainage helps reduce the effects of shrinking and swelling of the soil. This map unit is in Capability unit IIc-1 and Silty range site.

SbB—Savo silt loam, 2 to 6 percent slopes. This deep, well drained, gently sloping soil is on terraces and uplands. The mapped areas are irregular in shape and range from 10 to 100 acres in size.

Typically, the surface layer is dark gray silt loam about 7 inches thick. The subsoil, about 17 inches thick, is brown, firm silty clay loam in the upper part and pale brown, firm silty clay loam in the lower part. The underlying material to a depth of 32 inches is pale brown and very pale brown clay loam. Below this, to a depth of 60 inches, is brown, calcareous silty clay loam.

Included with this soil in mapping are small areas of Nunn, Tilford, and Vale soils. Nunn soil has more fine and coarser sand than Savo soil and is on the higher part of the landscape. Tilford and Vale soils have less clay than Savo soil and are redder than Savo soil. They

soil is summer fallowed before planting and cultivation is continued after planting to control grass and weeds and conserve moisture.

This soil is not suitable for campgrounds because of flooding. It is suitable for picnic areas, playgrounds, and paths and trails when it is not flooded.

This soil generally is not suitable for building sites, local roads and streets, and sanitary facilities because of flooding. This map unit is in Capability unit IIIc-1 and Overflow range site.

Sk—Swint silt loam. This deep, well drained, nearly level soil is on terraces and alluvial fans. This soil is subject to occasional flooding for brief periods. The mapped areas are irregular in shape and range from 10 to 150 acres in size.

Typically, the surface layer is dark reddish gray silt loam about 8 inches thick. The subsurface layer is dark reddish gray, very friable silt loam about 6 inches thick. The underlying material to a depth of 44 inches is light reddish brown, very friable silt loam in the upper part and reddish brown silt loam in the lower part. Below this to a depth of 60 inches is light reddish brown, calcareous very fine sandy loam.

Included with this soil in mapping are small areas of Barnum and Vale soils. Barnum soil has less silt and clay and less organic matter in the surface layer than Swint soil. It is on the lower part of the landscape and nearer to streams than Swint soil. Vale soil has a stronger grade of structure than Swint soil and is on the upper part of the landscape. The included soils make up about 10 percent of the map unit.

This soil is high in natural fertility and moderate in content of organic matter. Available water capacity is high, and permeability is moderate. Runoff is slow.

Most areas of this soil are cropped. This soil has good potential for dryland and irrigated crops, rangeland, rangeland wildlife habitat, openland wildlife habitat, windbreaks and environmental plantings, and most recreational uses. It has poor potential for building sites, local roads and streets, and sanitary facilities.

This soil is well suited to small grain and grasses and legumes for hay. Conserving moisture is the main concern of management if this soil is used for cultivated crops. Stubble mulching, crop residue management, minimum tillage, and field windbreaks help conserve moisture. Returning crop residue to the soil, green manure crops, and the regular addition of animal manure helps improve and maintain fertility and content of organic matter. Planting and harvesting of crops may be delayed during wet periods.

Seeding this soil to tame pasture plants is an alternative use. Proper stocking rate, rotation grazing, application of fertilizers and control of weeds help keep the pasture in good condition.

This soil is well suited to rangeland. The natural plant community is a mixture of tall, mid, and short grasses.

Maintaining a good grass cover and ground mulch improves the moisture supply for rangeland plants. If the range is overgrazed, the more desirable taller grasses lose vigor and are replaced by less productive short grasses. Proper grazing use and deferred grazing help maintain or improve rangeland condition.

This soil is well suited to windbreaks and other types of woody plantings. Good survival can be expected if the soil is summer fallowed before planting and cultivation is continued after planting to control grass and weeds and conserve moisture.

This soil is suitable for picnic areas, playgrounds, and paths and trails. The hazard of flooding limits the use of this soil for camp areas.

This soil generally is not suitable for building sites, local roads and streets, and sanitary facilities because of occasional flooding. This map unit is in Capability unit IIc-2 and Silty range site.

TaA—Tilford silt loam, 0 to 2 percent slopes. This deep, well drained, nearly level soil is on terraces, uplands, and alluvial fans. The mapped areas are irregular in shape and range from 10 to 150 acres in size.

Typically, the surface layer is brown silt loam about 6 inches thick. The subsoil, about 24 inches thick, is friable, calcareous silt loam that is brown in the upper part and light brown in the lower part. The underlying material to a depth of 60 inches is pink, calcareous silt loam. In places, lime is leached more than 10 inches deep.

Included with this soil in mapping are small areas of Nevee and Vale soils. Nevee soil does not have the thick dark surface layer of Tilford soil and has less clay than Tilford soil. It is in the upper part of the landscape. Vale soil has more clay in the subsoil than Tilford soil. The included soils make up about 15 percent of the map unit.

This soil is medium in fertility and moderate in content of organic matter. Available water capacity is high, and permeability is moderate. Runoff is slow.

Most areas of this soil are cropped. This soil has good potential for dryland and irrigated crops, rangeland, windbreaks and environmental plantings, rangeland and openland wildlife habitat, building sites, and most sanitary facilities. It has fair potential for recreational uses and local roads and streets.

This soil is well suited to small grain, corn, and grasses and legumes for hay. Conserving moisture is the main concern of management if this soil is used for cultivated crops. Stubble mulching, crop residue management, minimum tillage, and field windbreaks help conserve moisture. Returning crop residue to the soil, green manure crops, and the regular addition of animal manure help improve fertility and maintain an adequate content of organic matter.

Seeding this soil to tame pasture is an alternative use. Proper stocking rate, rotation grazing, application of fer-

Typically, the surface layer is dark grayish brown loam about 7 inches thick. The subsoil, about 16 inches thick, is brown, friable silty clay loam. The underlying material to a depth of 60 inches is light brown, gravelly loamy sand.

Included with this soil in mapping are small areas of Satanta and Swint soils. Satanta and Swint soils do not have sand and gravel in the underlying material. Swint soil is in the lower part of the landscape. The included soils make up about 10 percent of the map unit.

This soil is medium in fertility and moderate in content of organic matter. Available water capacity is low or moderate. Permeability is moderate in the upper part of the soil and very rapid in the underlying material. Runoff is slow.

Most areas of this soil are cropped. This soil has good potential for rangeland and rangeland wildlife habitat. It has fair potential for cultivated crops, windbreaks and environmental plantings, and recreational uses.

This soil is suited to small grain and grasses and legumes for hay. Conserving moisture is the main concern of management if this soil is used for cultivated crops. Stubble mulching, crop residue management, and minimum tillage helps conserve moisture. Returning crop residue to the soil, green manure crops, and the regular addition of animal manure help improve fertility and maintain content of organic matter. Seeding this soil to tame pasture plants is an alternative use of this soil. Proper stocking rate, rotation grazing, application of fertilizer, and control of weeds help keep the pasture in good condition.

This soil is suited to rangeland. The natural plant community is a mixture of mid and short grasses. Maintaining a good grass cover and ground mulch help improve the moisture supply for rangeland plants. If the range is overgrazed, the more desirable taller grasses lose vigor and are replaced by less productive short grasses. Proper grazing use and deferred grazing help maintain or improve rangeland condition.

This soil is suited to windbreaks and other types of woody plantings, but optimum growth should not be expected. Droughtiness caused by moderate depth to sand and gravel may limit growth.

This soil is well suited to most recreational uses.

This soil is well suited to building sites and septic tank absorption fields. Septic tank absorption fields, however, are a potential source of pollution to shallow ground water. Sealing the bottom and sides of sewage lagoons helps reduce seepage.

When this soil is used for local roads and streets, strengthening the base material helps overcome low strength. This map unit is in Capability unit IVs-1 and Silty range site.

Wb—Winetti cobbly loam. This somewhat excessively drained, gently sloping soil is shallow to sand and gravel and is on bottom lands and terraces. Many scat-

tered cobbles 3 to 10 inches in size commonly are on the surface. This soil is subject to rare flooding for brief periods. The mapped areas are long and narrow in shape and range from 20 to 150 acres in size.

Typically, the surface layer is grayish brown, cobbly loam about 5 inches thick. The underlying material to a depth of 60 inches is pale brown, very friable, gravelly sandy loam.

This soil is low in fertility and content of organic matter. Available water capacity is low or moderate, and permeability is moderately rapid. Runoff is slow or medium.

Most areas of this soil are in rangeland. This soil has good potential for rangeland. It has fair potential for rangeland wildlife habitat and poor potential for cultivated crops, openland wildlife habitat, recreational uses, windbreaks and environmental plantings, most building sites and most sanitary facilities. It has fair potential for local roads and streets.

This soil is better suited to rangeland than to other uses. The natural plant community is a mixture of mid and short grasses and perennial forbs suitable for grazing. The main concerns of management are inadequate moisture, flooding, and erosion. Maintaining a good plant cover and ground mulch helps prevent erosion caused by flooding during peak rainfall periods and fast snowmelt. It also helps improve the moisture supply for rangeland plants during dry periods. If the range is overgrazed, the more desirable taller grasses lose vigor and are replaced by less productive short grasses and weeds.

This soil generally is not suited to cultivated crops, tame pasture, and windbreaks because of shallow depth to gravel and frequent flooding. Special plantings of trees and shrubs need to be given special care.

This soil is not suitable for building sites and sanitary facilities because of flooding and seepage.

If this soil is used for local roads and streets, safeguards need to be taken against flooding and frost action. This map unit is in Capability unit VIw-3 and Shallow to gravel range site.

Use and management of the soils

The soil survey is a detailed inventory and evaluation of the most basic resource of the survey area—the soil. It is useful in adjusting land use, including urbanization, to the limitations and potentials of natural resources and the environment. Also, it can help avoid soil-related failures in uses of the land.

While a soil survey is in progress, soil scientists, conservationists, engineers, and others keep extensive notes about the nature of the soils and about unique aspects of behavior of the soils. These notes include data on erosion, drought damage to specific crops, yield estimates, flooding, the functioning of septic tank disposal systems, and other factors affecting the productivity,

Huntingdon

Consulting Engineers Environmental Scientists

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JOB #: 6110-93-06

DATE: 3/3/93

EPA ID #: 0311

NAME: City of Spearfish - Mike Kyte
ADDRESS: 722 Main
CITY-STATE: Spearfish, SD 57783



TCT LABORATORY NO: 3978

SOURCE(S): 01, Spearfish Canyon

TYPE OF SAMPLE: RAW _____ TREATED X COMPOSITED BY LAB N/A

TREATMENT PROCESS: Chlorine, fluoride

DATE COLLECTED: 2/18/93

COLLECTED BY: Mike Kyte

RECEIVED BY LABORATORY: 2/18/93 TCT and Energy

Enclosed please find the results of your water analysis that Huntingdon Twin City Testing had subcontracted at Energy Laboratories for VOC's analysis. If you should have any questions regarding this analysis please contact us at Huntingdon Twin City Testing, 341-7284.

A copy of this report has been forwarded to SD DENR for you.

Sincerely,

Lab Comments: The sample did not contain a reducing agent for residual chlorine.

KAREN COOPER
Laboratory Manager

KC/ljb
Encl:



Site	Depth	Lab No.	Methodology	Analysis	Results	Units	Analyzed
3978 (02-18-93)		93-2518					AS:02-19-93
<u>Volatile Organic Constituent</u>		<u>µg/L</u>	<u>Volatile Organic Constituent</u>		<u>µg/L</u>		
<u>Phase I Regulated VOC's</u>							
Trichloroethene		<0.5	1,4-Dichlorobenzene		<0.5		
Carbon Tetrachloride		<0.5	1,1-Dichloroethene		<0.5		
Vinyl Chloride		<0.5	1,1,1-Trichloroethane		<0.5		
1,2-Dichloroethane		<0.5	Benzene		<0.5		
<u>Trihalomethanes</u>							
Bromodichloromethane		1.9	Chlorodibromomethane		<0.5		
Bromoform		<0.5	Chloroform		6.1		
<u>Unregulated VOC's - EPA List 1</u>							
Bromobenzene		<0.5	1,2-Dichloropropane		<0.5		
Bromomethane		<0.5	1,3-Dichloropropane		<0.5		
Chlorobenzene		<0.5	cis-1,3-Dichloropropene		<0.5		
Chloroethane		<0.5	trans-1,3-Dichloropropene		<0.5		
Chloromethane		<0.5	2,2-Dichloropropane		<0.5		
o-Chlorotoluene		<0.5	Ethylbenzene		<0.5		
p-Chlorotoluene		<0.5	Styrene		<0.5		
Dibromomethane		<0.5	1,1,2-Trichloroethane		<0.5		
1,3-Dichlorobenzene		<0.5	1,1,1,2-Tetrachloroethane		<0.5		
1,2-Dichlorobenzene		<0.5	1,1,2,2-Tetrachloroethane		<0.5		
trans-1,2-Dichloroethene		<0.5	Tetrachloroethene		<0.5		
cis-1,2-Dichloroethene		<0.5	1,2,3-Trichloropropane		<0.5		
Methylene Chloride		<0.5	Toluene		<0.5		
1,1-Dichloroethane		<0.5	M and P Xylenes		<0.5		
1,1-Dichloropropene		<0.5	O Xylene		<0.5		
<u>Unregulated VOC's - List 2</u>							
1,2-Dibromo-3-Chloropropane		<0.5	1,2-Dibromoethane		<0.5		
<u>Unregulated VOC's - List 3</u>							
Bromochloromethane		<0.5	p-Isopropyltoluene		<0.5		
n-Butylbenzene		<0.5	Napthalene		<0.5		
sec-Butylbenzene		<0.5	n-Propylbenzene		<0.5		
tert-Butylbenzene		<0.5	1,2,3-Trichlorobenzene		<0.5		
Dichlorodifluoromethane		<0.5	1,2,4-Trichlorobenzene		<0.5		
Fluorotrichloromethane		<0.5	1,2,4-Trimethylbenzene		<0.5		
Hexachlorobutadiene		<0.5	1,3,5-Trimethylbenzene		<0.5		
Isopropylbenzene		<0.5					
Surrogate Recoveries	1,2-dichloroethane-d4	100	% Recovery				
	Toluene-d8	103					
	4-bromofluorobenzene	94					
	Acceptable Limits	80-120					

Remarks: Samples was analyzed in accordance with USEPA method 524.2.

Kurt R. Slentz

Branch Manager

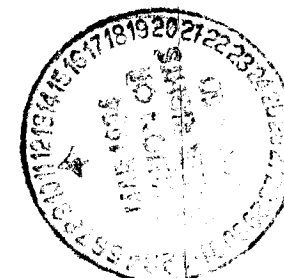
JUL 25 1990 AT 0922

NWIS 90.1 PROGRAM QWCARDSIN

TRANSACTION NO.: 1

United States Department of the Interior
U.S. Geological Survey
Water Resources Division
National Laboratory
Arvada, Colorado

RECORD NO.: 99000318
SITE ID: 06430950 LAB ID NO.: 1650217 PROJECT: 464609200
STATION NAME: SPEARFISH CR BL ROBISON GULCH NR SPEARFISH STATE: 46
BEGIN DATE: 06-12-1990 AT 1400 END DATE: - AT COUNTY: 081
GEOLOGIC UNIT: DATA TYPES:
STATUS: H SOURCE: 9 HYD. CONDITION: 9 TYPE: 9 HYD. EVENT: 9
MEDIUM: 9 REMARKS TO LAB: LAWRENCE COUNTY-BRADFORD
SAMPLE COST: \$160.95 REMARKS FROM LAB: RR SPC;VALUE DUP'D
SCHEDULES USED: 804
NO. PARAMETERS: 33 PROCESSING STATUS: R



CODE	PARAMETER NAME	UNITS	VALUE	R E M	M A T	S E I G
00010	WATER TEMPERATURE	(DEGREES)	15.5			1
00020	AIR TEMPERATURE	DEGREES	25.0			1
00025	AIR PRESSURE	(MM OF HG)	650			3
00027	COLLECTING AGENCY	(CODE NUMBER)	1028			5
00028	ANALYZING AGENCY	(CODE NUMBER)	80020			5
00061	DISCHARGE, INST.	CFS	3.6			3
00095	SPECIFIC CONDUCTANCE	US/CM @ 25C	354			1
00300	OXYGEN DISSOLVED	(MG/L)	10.0			1
00400	PH	(STANDARD UNITS)	8.79			2
NEW--> 00403	PH LABORATORY	(UNITS)	8.60		H A	3
00608	NITROGEN AMMONIA D.	(MG/L AS N)	0.010	1	H B	3
00613	NITROGEN, NITRITE D.	(MG/L AS N)	0.010	1	H B	3
00631	NO2 + NO3 DISSOLVED	(MG/L AS N)	0.100	1	H B	3
00671	PHOSPHOROUS ORTHO D.	(MG/L AS P)	0.010	1	H B	3
NEW--> 00720	CYANIDE TOTAL	(MG/L AS CN)	0.010	1	H A	3
NEW--> 00723	CYANIDE DISSOLVED	(MG/L AS CN)	0.01	1	H A	2
COMPUTED 00900	HARDNESS TOTAL	(MG/L AS CA03)	190			
NEW--> 00915	CALCIUM DISSOLVED	(MG/L AS CA)	40		H D	2
NEW--> 00925	MAGNESIUM DISSOLVED	(MG/L AS MG)	21		H C	2
NEW--> 00930	SODIUM DISSOLVED	(MG/L AS NA)	3.0		H C	2
COMPUTED 00931	SODIUM ADSORPTION R.	(RATIO)	0			
COMPUTED 00932	SODIUM, PERCENT	PERCENT	4			
NEW--> 00935	POTASSIUM DISSOLVED	(MG/L AS K)	0.70		H B	2
NEW--> 00940	CHLORIDE DISSOLVED	(MG/L AS CL)	4.6		H J	2
NEW--> 00945	SULFATE DISSOLVED	(MG/L AS SO4)	9.1		H G	2
NEW--> 00950	FLUORIDE DISSOLVED	(MG/L AS F)	0.30		H E	2
NEW--> 00955	SILICA DISSOLVED	(MG/L AS SiO2)	11		H C	2
NEW--> 01000	ARSENIC DISSOLVED	(UG/L AS AS)	3		H B	1
NEW--> 01045	IRON TOTAL	(UG/L AS FE)	90		H B	1
NEW--> 01055	MANGANESE TOTAL	(UG/L AS MN)	10		H A	2
31625	COLIFORM FECAL 0.7	COLS./100 ML	2		I	3
31673	FECAL STRPT KF AGAR	COLS./100 ML	4		I	3
32730	PHENOLS, TOTAL	UG/L	3		H A	1



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

March 14, 1994

Theodore J. Vore, Public Works Adm.
City of Spearfish
722 Main St.
Spearfish SD 57783

Dear Mr. Vore:

We received the City's Water Permit Application on March 11, 1994. Enclosed is the \$225.00 check which was submitted with the application. The fee for this application will be \$50.00.

Please submit all the City's historical surface water use records. The records will need to be reviewed in order to process the application. If you have any questions regarding the submittal of the water use records, please contact Rassool Ahadi with this office.

Upon receipt of the water use records and the \$50.00 application fee, further processing of the application will continue.

Sincerely,

Karen Schlaak

Karen Schlaak
Environmental Scientist
Water Rights Division
605 773-3352

enclosure

Water Production Records
CITY OF SPEARASH

MONTHLY PRODUCTION

CANYON SUPPLY

MONTH	80	81	82	83	84	85	86	87	88	89	90
JAN	41022500	38197800	32078900	40826600	41422700	41247500	40826000	42718000	37608000	46515000	36778000
FEB	38130100	34192100	23706100	36991200	38912500	21412000	37509000	38584000	36082000	41598000	33455000
MAR	41748900	39623100	33847400	29304500	42615000	41026000	46909000	42718000	38698000	21083000	31155000
APRIL	27338200	37727600	34827400	23322300	31523300	40351000	11279000	8268000	26937000	29868000	1720000
MAY	34513800	27865400	8726400	0	3424200	41292000	31480000	20670000	20501000	9545000	8385000
JUNE	35043900	32183500	18525200	34980300	15437900	37018500	26182000	39962000	37919000	26365000	36962000
JULY	41968200	30456500	22167500	38878200	40501600	40752000	35961000	48909000	43360000	41133000	39975000
AUG	36235700	37323600	33215400	39363500	39351500	39235000	40192000	40324000	43906000	41967000	36681000
SEPT	38110100	30655800	39154000	41213500	41760000	37701000	37666000	47183000	33388000	32114000	34412000
OCT	36136200	30739700	23206500	40509600	42708000	44223000	38987000	48140000	32074000	28819000	22123000
NOV	36101300	41107900	34517600	40782900	39313000	43730000	39962000	48945000	45080000	21818000	1275000
DEC	37616100	32395200	40286400	29895300	42148500	41429000	42718000	38436000	32072000	27107000	37135000
	443,965,000	412,468,200	344,258,800	396,067,900	419,118,200	469,417,000	429,671,000	464,857,000	427,625,000	367,932,000	320,056,000



MONTHLY WATER PRODUCTION

MONTH	91	CANYON SUPPLY		93	94	AVERAGE MONTHLY	AVERAGE DAILY
		92					
JAN	38852000	35092120	35092120			45689770	1473864
FEB	30204000	34465476	34465476			39975579	1289535
MAR	31931000	17728830	17728830			39676380	1279883
APRIL	7830000	24021390	24021390			27419548	884502
MAY	0	26919620	26919620			21686837	699575
JUNE	19950000	18929900	10970800			32535833	1049543
JULY	41235000	17284950				40215163	1297263
AUG	40839000	33421060				41837897	1349610
SEPT	32085000	34387140				39985795	1289864
OCT	34318000	35509880				38124490	1229822
NOV	31332250	33838830				38150315	1230655
DEC	38351990	38851990				39870207	1286136
	346,928,240	350,451,186	149,198,236			0 445,167,814	1196688



Report on Water Permit Application No. 1598-1
City of Spearfish
April 25, 1994

Background

Water Permit Application No. 1598-1 requests to change the use of 3.1 cubic feet of water per second (cfs), authorized by Water Right Nos. 138-1, 141-1, and 148-1, from municipal use to irrigation. Water will be used to irrigate 203 acres located in the S1/2 NW1/4, SW1/4 NE1/4, SW1/4, N1/2 SE1/4, Section 14 (Spearfish Canyon Country Club); N1/2 SE1/4 Section 15 (Rose Hill Cemetery); N1/2 SE1/4 Section 15 (City Campground); E1/2 NW1/4 Section 15 (Centennial Park); NE1/4 NW1/4 Section 15 (Brady Park); SW1/4 NW1/4 Section 10 (Salem Park); NW1/4 NW1/4 Section 10 (Lookout Park) SW1/4 SW1/4 Section 3 (Jorgensen Park); and SW1/4 NW1/4, NW1/4 SW1/4 Section 3 (Evans Park), all in T6N-R2E. Water is diverted from Spearfish Creek, in the NW1/4 SE1/4 Section 33, T6N-R2E, in Lawrence County. This application is also to correct the location of the diversion point from the NE1/4 NE1/4 Section 33 to the NW1/4 SE1/4 Section 33, all in T6N-R2E.

Discussion

The City of Spearfish has constructed a 10 inch pipeline to transport water from its existing diversion structure in Spearfish Canyon to a point just below the Homestake Mining Company Hydroplant #1, in the NW1/4 SE1/4 Section 15, T6N-R2E. Prior to water entering Spearfish Creek, ~~a portion of the water is diverted~~ to irrigate the Country Club, the City Cemetery, the City Campground and the Main City Park. The City also intends to use Spearfish Creek as a conveyance means to transport water to various parks along the creek. Water discharged into Spearfish Creek is then withdrawn at various points, wherever the creek flows by the parks, listed in the application.

Water Permit Application No. 1598-1 is filed based on three water rights for the City of Spearfish: Water Right No. 138-1, is authorized to use 0.5 cfs from seven springs located at the head waters of Robinson Gulch with a priority date of November 13, 1917; Water Right No. 141-1, is authorized to divert 1.10 cfs from Spearfish Creek, with a priority date of March 1, 1919; and Water Right No. 148-1, is authorized to divert 1.5 cfs from Spearfish Creek, with a priority date of January 27, 1930. Water for all three water rights is diverted in the NW1/4 SE1/4 Section 33, T6N-R2E.

The City was required by the Safe Drinking Water Act (SDWA) to either filter and treat surface water or change the water source to groundwater. Due to prohibitive costs of treating surface water, the City decided to limit its municipal water use to groundwater and use untreated surface water for irrigation. The deadline to comply with the SDWA and change to groundwater or filter and further treat surface water was June 29, 1993.

The acreage to be irrigated includes the 130 acres for Spearfish Canyon Country Club. Currently, the Country Club has two water rights using water from groundwater to irrigate the area. Water Right No. 728-1, is authorized to divert 0.66 cfs from a Minnelusa well and Water Right No. 1363-1, is authorized to divert 0.90 cfs from a Madison well.

The City of Spearfish requests to change the use of the entire 3.1 cfs, authorized by Water Right Nos. 138-1, 141-1, and 148-1. Based on 1.0 cfs for irrigation of each 70 acres, a diversion rate of 2.9 cfs could be authorized. Water use records, received from the City show that a maximum diversion rate of 2.52 cfs was used in November 1987. Ted Vore, Public Works Administrator, with the City of Spearfish agreed that the 2.52 cfs will meet its needs. He indicated that the whole area will not be irrigated at the same time. Spearfish Canyon Country Club is also authorized to divert 1.56 cfs from groundwater, which reduces its demands from surface water.

The diversion point for Water Right Nos. 138-1, 141-1, and 148-1 was originally listed as being NE1/4 NE1/4 Section 33, T6N-R2E. Since Spearfish Creek water flows into sinkholes located upstream from the original diversion point that supply water to the Madison aquifer, it was moved to the NW1/4 SE1/4 Section 33, T6N-R2E, upstream of the sinkholes.

The City of Spearfish has continuously diverted water from Spearfish Creek (Spearfish Canyon) for municipal purposes all year. ~~According to the applicant, water will be used for irrigation from May 15 through October 15. Water will be diverted the remainder of the year to prevent the pipes from freezing.~~

The Belle Fourche Irrigation District (BFID) stores water from Spearfish Creek in Orman Dam, authorized by US Withdrawal Nos. 0376-1 and 0377-1, with an August 5, 1904 priority date.

Conclusions

1. The City of Spearfish has continuously used water from Spearfish Creek since these water rights were issued.
2. Water may be diverted from Spearfish Creek (Spearfish Canyon) all year.
3. If the application is approved, the City of Spearfish will be entitled to divert water as long as it is used for irrigation of the acreage listed in the application. Any unused portion of the water left in the creek will be used by other water users on the creek based on priority.
4. The combined diversion rate for Spearfish Canyon Country Club from surface and groundwater should not exceed 1.00 cfs for irrigation of each 70 acres.

5. Water consumption records submitted by the City of Spearfish show that the maximum diversion rate during the last 13 years was 2.52 cfs.
6. The City of Spearfish may divert a minimum amount of water during the non-irrigation season. This diversion is only to prevent pipes from freezing and should be kept to a minimum.
7. If Water Permit Application No. 1598-1 is approved, it should be approved for a diversion rate of 0.5 cfs with a priority date of November 12, 1917; 1.10 cfs with a priority date of March 1, 1919; and 0.92 cfs with a priority date of January 27, 1930, for a total diversion rate of 2.52 cfs, with the irrigation questionnaire qualification.
8. If Water Permit Application No. 1598-1 is approved, the applicable portions of Water Right Nos. 138-1, 141-1, and 148-1 should be incorporated into 1598-1 and the abandoned or forfeited portions of Nos. 138-1, 141-1, and 148-1 should be canceled.

M. Rassool Ahadi 

M. Rassool Ahadi
Natural Resources Engineer III

Approved By:


Delvin D. Brosz, P.E.
Natural Resources Engineer IV

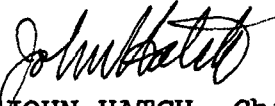
RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 1598-1, City of Spearfish

Pursuant to SDCL 46-2A-2, the following is the recommendation of the Chief Engineer, Water Rights Division, Department of Environment and Natural Resources concerning Water Permit Application No. 1598-1, City of Spearfish, c/o Theodore J. Vore, Public Works Administrator, City of Spearfish, 722 Main Street, Spearfish, SD 57783.

The Chief Engineer is recommending APPROVAL of Application No. 1598-1 for 2.52 cfs (0.5 cfs - November 12, 1917; 1.1 cfs - March 1, 1919; and 0.92 cfs - January 27, 1930) and that applicable portions of Water Right Nos. 138-1, 141-1 and 148-1 be incorporated into 1598-1 and the abandoned or forfeited portions of Nos. 138-1, 141-1 and 148-1 be cancelled because 1) the proposed diversion can be developed without unlawful impairment of existing rights, 2) the proposed use is a beneficial use and 3) in the public interest with the following qualifications:

1. The combined diversion rate for irrigation of Spearfish Canyon Country Club from wells authorized by Right No. 728-1 (Minnelusa well), Right No. 1363-1 (Madison well) and Permit No. 1598-1 shall not exceed 1.0 cfs for each 70 acres irrigated.
2. This Permit is approved subject to the irrigation water use ~~questionnaire being submitted each year.~~
3. Diversions of water at the diversion structure in Spearfish Canyon during the non-irrigation season shall be limited to the minimum amount necessary to prevent the pipes from freezing.

See report on application for additional information.


JOHN HATCH, Chief Engineer
May 18, 1994



**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.**

May 20, 1994

Theodore J. Vore, Public Works Administrator
City of Spearfish
722 Main Street
Spearfish, SD 57783

Dear Mr. Vore:

Water Permit Application No. 1598-1 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 Black Hills Pioneer printed at Spearfish, SD (Ph # 642-2761). 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
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.



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

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

May 20, 1994

Black Hills Pioneer
Box 7
Spearfish, SD 57783-0007

ATTENTION: Legal Department

Enclosed is a Notice of Hearing on Application No. 1598-1 to be published twice. Please publish the first notice on June 1, 1994, with the second publication 7 days later.

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 the City of Spearfish, 722 Main Street, Spearfish, SD 57783 (Ph # 642-8271).

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 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
Natural Resources Engineer
605 773-3352

enclosures

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

FIRST TRANSMITTAL NOTICE

TO: Eric Gronlund
Water Rights Division
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 _____

Instruction to Newspaper - Publish first Notice on June 1, 1994, with the second publication 7 days later. The applicant is responsible for payment.

NOTICE OF HEARING on Application No. 1598-1 to
Amend Water Right Nos. 138-1, 141-1 and 148-1

Notice is given that the City of Spearfish, 722 Main Street, Spearfish, SD 57783 has filed an application for a water permit to correct the location of the diversion point and to change the use of 3.1 cubic feet of water per second (cfs), authorized by Water Right Nos. 138-1, 141-1, and 148-1, from municipal use to irrigation use. Water Right No. 138-1 appropriates 0.5 cfs from seven springs at the hear of Robinson Gulch with a priority date of November 13, 1917. Water Right No. 141-1 appropriates 1.1 cfs from Spearfish Creek with a priority date of March 1, 1919. Water Right No. 148-1 appropriates 1.5 cfs from Spearfish Creek with a priority date of January 27, 1930. These water rights were issued for a common diversion point located in the NE $\frac{1}{4}$ NE $\frac{1}{4}$ Section 33, T6N, R2E.

This application proposes to change the use of 3.1 cfs from municipal use to irrigation use for irrigating 203 acres. The irrigated acres are located in the S $\frac{1}{2}$ NW $\frac{1}{4}$, SW $\frac{1}{4}$ NE $\frac{1}{4}$, SW $\frac{1}{4}$, N $\frac{1}{2}$ SE $\frac{1}{4}$ Section 14, (Spearfish Canyon Country Club); N $\frac{1}{2}$ SE $\frac{1}{4}$ Section 15 (Rose Hill Cemetery); N $\frac{1}{2}$ SE $\frac{1}{4}$ Section 15 (City Campground); E $\frac{1}{2}$ NW $\frac{1}{4}$ Section 15 (Centennial Park); NE $\frac{1}{4}$ NW $\frac{1}{4}$ Section 15 (Brady Park); SW $\frac{1}{4}$ NW $\frac{1}{4}$ Section 10 (Salem Park); NW $\frac{1}{4}$ NW $\frac{1}{4}$ Section 10 (Lookout Park); SW $\frac{1}{4}$ SW $\frac{1}{4}$ Section 3 (Jorgensen Park); and SW $\frac{1}{4}$ NW $\frac{1}{4}$, NW $\frac{1}{4}$ SW $\frac{1}{4}$ Section 3 (Evans Park), all in T6N, R2E. This application also corrects the location of the point of diversion of water developed for diverting from Spearfish Creek from the NE $\frac{1}{4}$ NE $\frac{1}{4}$ to the NW $\frac{1}{4}$ SE $\frac{1}{4}$ Section 33, T6N, R2E. Water is diverted from Spearfish Creek in Spearfish Canyon and transported via a 10 inch pipeline to a point located in the NW $\frac{1}{4}$ SE $\frac{1}{4}$ Section 15, T6N, R2E (just below Homestake Mining Company Hydroplant #1). Water is diverted directly from the pipeline for irrigation and is discharged into Spearfish Creek which is used to convey water to various points where water is diverted for each individual park. Diversions of water from the diversion structure in Spearfish Canyon during the non-irrigation season may be limited to the minimum amount necessary to prevent the pipes from freezing.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 1598-1 with qualifications, for 2.52 cfs (0.5 cfs - November 12, 1917; 1.1 cfs - March 1, 1919; 0.92 cfs - January 27, 1930) and that applicable portions of Water Right Nos. 138-1, 141-1 and 148-1 be incorporated into 1598-1 and the abandoned or forfeited portions of Nos. 138-1, 141-1 and 148-1 be cancelled because 1) existing rights will not be unlawfully impaired, 2) it is a beneficial use of water, and 3) it is in the public interest.

Any person interested in opposing or supporting this application must file a written petition with BOTH the applicant and Chief Engineer. The applicant must also file a petition if opposed to the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Division, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by June 20, 1994. 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.

The Water Management Board will consider this application at 1:15 p.m., June 28, 1994, Gallery D, Ramkota Inn Best Western, 920 West Sioux, Pierre, SD. The Chief Engineer's recommendation is not final or binding upon the Board. The Board is authorized to 1) approve, 2) approve with qualifications, 3) defer, or 4) deny this application based on the facts presented at the public hearing. The June 28, 1994, hearing date will be automatically delayed for at least 20 days upon written request to the Chief Engineer from the applicant or any interested person opposing the application. The request for an automatic delay must be filed by June 20, 1994.

Any hearing will be an adversary proceeding. Any person filing a petition and/or the applicant have the right to be represented by a lawyer and may present evidence or cross-examine witnesses according to SDCL 1-26. These and other due process rights will be forfeited if not exercised. Decisions of the Board may be appealed to the Circuit Court and State Supreme Court as provided by law. Contact Eric Gronlund by June 20, 1994, at the above Water Rights Division address to request copies of information pertaining to this application, to assure access to the hearing by the handicapped or to obtain an interpreter for the hearing impaired.

This application is made pursuant to SDCL 46-1-1 thru 46-1-9, 46-1-12 thru 46-1-16; 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, 46-2A-20, 46-2A-21; 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; and Board Rules ARSD 74:02:01:01 thru 74:02:01:15. Russell L. Stone, Acting Secretary, Department of Environment and Natural Resources.

NOTICE OF HEARING
on Application No. 1598-1 to
Amend Water Right Nos. 138-1, 141-1 and 148-1

Notice is given that the City of Spearfish, 722 Main Street, Spearfish, SD 57783 has filed an application for a water permit to correct the location of the diversion point and to change the use of 3.1 cubic feet of water per second (cfs), authorized by Water Right Nos. 138-1, 141-1, and 148-1, from municipal use to irrigation use. Water Right No. 138-1 appropriates 0.5 cfs from seven springs at the head of Robinson Gulch with a priority date of November 13, 1917. Water Right No. 141-1 appropriates 1.1 cfs from Spearfish Creek with a priority date of March 1, 1919. Water Right No. 148-1 appropriates 1.5 cfs from Spearfish Creek with a priority date of January 27, 1930. These water rights were issued for a common diversion point located in the NE1/4 NE1/4 Section 33, T6N, R2E.

This application proposes to change the use of 3.1 cfs from municipal use to irrigation use for irrigating 203 acres. The irrigated acres are located in the S1/2 NW1/4, SW1/4 NE1/4, SW1/4, N1/2 SE1/4 Section 14, (Spearfish Canyon Country Club); N1/2 SE1/4 Section 15 (Rose Hill Cemetery); N1/2 SE1/4 Section 15 (City Campground); E1/2 NW1/4 Section 15 (Centennial Park); NE1/4 NW1/4 Section 15 (Brady Park); SW1/4 NW1/4 Section 10 (Salem Park); NW1/4 NW1/4 Section 10 (Lookout Park); SW1/4 SW1/4 Section 3 (Jorgenson Park); and SW1/4 NW1/4, NW1/4 SW1/4 Section 3 (Evans Park), all in T6N, R2E. This application also corrects the location of the point of diversion of water developed for diverting from Spearfish Creek from the NE1/4 NE1/4 to the NW1/4 SE1/4 Section 33, T6N, R2E. Water is diverted from Spearfish Creek in Spearfish Canyon and transported via a 10 inch pipeline to a point located in the NW1/4 SE1/4 Section 15, T6N, R2E (just below Homestake Mining Company Hydroplant #1). Water is diverted directly from the pipeline for irrigation and is discharged into Spearfish Creek which is used to convey water to various points where water is diverted for each individual park. Diversions of water from the diversion structure in Spearfish Canyon during the non-irrigation season may be limited to the minimum amount necessary to prevent the pipes from freezing.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 1598-1 with qualifications, for 2.52 cfs (0.5 cfs - November 12, 1917; 1.1 cfs - March 1, 1919; 0.92 cfs - January 27, 1930) and that applicable portions of Water Right Nos. 138-1, 141-1 and 148-1 be incorporated into 1598-1 and the abandoned or forfeited portions of Nos. 138-1, 141-1 and 148-1 be canceled because 1) existing rights will not be unlawfully impaired, 2) it is a beneficial use of water, and 3) it is in the public interest.

Any person interested in opposing or supporting this application must file a written petition with BOTH the applicant and Chief Engineer. The applicant must also file a petition if opposed to the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Division, Foss Building, 523 E. Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by June 20, 1994. 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.

The Water Management Board will consider this application at 1:15 p.m., June 28, 1994, Gallery D, Ramkota Inn Best Western, 920 West Sioux, Pierre, SD. The Chief Engineer's recommendation is not final or binding upon the Board. The Board is authorized to 1) approve, 2) approve with qualifications, 3) defer, or 4) deny this application based on the facts presented at the public hearing. The June 28, 1994, hearing date will be automatically delayed for at least 20 days upon written request to the Chief Engineer from the applicant or any interested person opposing the application. The request for an automatic delay must be filed by June 20, 1994.

Any hearing will be an adversary proceeding. Any person filing a petition and/or the applicant have the right to be represented by a lawyer and may present evidence or cross-examine witnesses according to SDCL 1-26. These and other due process rights will be forfeited if not exercised. Decisions of the Board may be appealed to the Circuit Court and State Supreme Court as provided by law. Contact Eric Gronlund by June 20, 1994, at the above Water Rights Division address to request copies of information pertaining to this application, to assure access to the hearing by the handicapped or to obtain an interpreter for the hearing impaired.

This application is made pursuant to SDCL 46-1-1 thru 46-1-9, 46-1-12 thru 46-1-16; 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, 46-2A-20, 46-2A-21, 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; and Board Rules ARSD 74:02:01:01 thru 74:02:01:15. Russell L. Stone, Acting Secretary, Department of Environment and Natural Resources.

Affidavit of Publication

STATE OF SOUTH DAKOTA)
COUNTY OF LAWRENCE) SS.

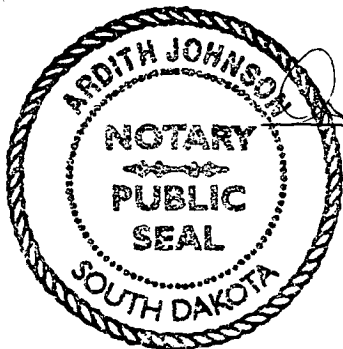


Billy T. Masterson, Jr. of said County and State being first duly sworn, on his oath says: That the BLACK HILLS PIONEER is a legal daily newspaper of general circulation, printed and published in the City of Spearfish, in said County and State by Billy T. Masterson, and has been such a newspaper during the times hereinafter mentioned; and that said newspaper has a bonafide circulation of at least 200 copies weekly, and has been published within said County in the English language for at least one year prior to the first publication of the notice herein mentioned, and is printed in whole or in part in an office maintained at the place of publication; and That I, Billy T. Masterson, Jr., the undersigned, am the Publisher of said newspaper and have personal knowledge of all the facts stated in this affidavit; and that the advertisement headed:

NOTICE OF HEARING

a printed copy of which is hereto attached, was printed and published in said newspaper for 2 successive and consecutive weeks, the first publication being made on the 1 day of June 1994, and the last publication on the 3 day of June 1994, that the full amount of fees charged for publishing same, to-wit: The sum of \$ 321.30 insures soley to the benefit of the publisher of the BLACK HILLS PIONEER, that no agreement or understanding for a division thereof has been made with any person and that no part thereof has been agreed to be paid to any other person whomsoever.

[Signature]
Subscribed and sworn to before me this 3 day of June 1994.



Ardith Johnson
Notary Public, Lawrence County, South Dakota
My commission expires: 10-24-96

(over)



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

NOV 14 1994

Theodore Vore, PWA
City of Spearfish
722 Main Street
Spearfish, SD 57783

Dear Mr. Vore:

Enclosed is Water Permit No. 1598-1 authorizing construction of your water diversion system and beneficial use of the water, not exceeding the limits as specified in the Water Permit.

We will schedule an inspection so that the Water License may be issued to you, thus completing your acquisition of a Water Right.

Very truly yours,

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

enclosures

1598-1

**Water Rights Division -DENR
Conversation or File Documentation**

NAME OF PERSON OR FILE: Ted Vore, Public Works Director

ADDRESS: City of Spearfish, 722 Main, Spearfish

COUNTY: Lawrence

DATE: January 26, 1995

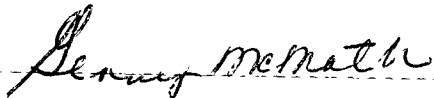
TELEPHONE: 642-8271

RE: irrigation questionnaire for 1994

COMMENTS:

I contacted Mr. Vore to obtain a pump rate for the 30 acres irrigated during 1994. Mr. Vore said the system was only partially completed. The 30 acres irrigated were at the Rose Hill Cemetery using a gravity fed system.

He did say that all of their system will be metered and by next year they would be able to provide meter readings for water diverted at each of the various parks, the cemetery and the country club.



Genny McMath
Environmental Scientist



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181
www.state.sd.us/denr

October 23, 1998

1598-1

Ted Vore, Public Works Director
City of Spearfish
625 5th St
Spearfish, SD 57783

Dear Mr. Vore:

Enclosed is a "Notice" dated October 16, 1998 concerning the 1998 irrigation questionnaire. The notice was originally mailed to 722 Main St, Spearfish, SD. The post office notified us that your address has changed and I will update our records accordingly.

If you have any questions, please contact me.

Sincerely,

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

enclosures



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181
www.state.sd.us/denr

November 2, 1999

1598-1

Theodore Vore, PWA
City of Spearfish
625 5th Street
Spearfish, SD 57783

Dear Mr. Vore:

The investigation of your water use system was conducted on September 9, 1998, by Ken Buhler, staff engineer. The investigation included the extent of application of water to beneficial use, as developed under Water Permit No. 1598-1. Your final water right document, the Water License, can now be issued.

Statutes require 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 begin processing your Water License.

**Please remit fee to:
Department of Environment & Natural Resources
Water Rights Program
523 E. Capitol
Pierre, SD 57501-3181**

Sincerely,

Cheryl F. Frost
Secretary
Water Rights Program
(605) 773-3352

NOTE: On check or money order, please specify your permit number. This will insure proper handling of the fee.

RECEIPT

Water Rights Program

South Dakota Department of Environment and Natural Resources

№ 416270

Pierre, November 22, 1999

RECEIVED OF City of Spearfish, 625 Fifth St., Spearfish, SD 57783
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 _____		
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>1598-1</u>	50	00
Fee for Filing Transfer Form _____		
Fee for Filing Extension Request _____		
Fee for _____		

(Any Other Work Provided by Law)	Total	50 00

By John Halca
Chief Engineer

Permit No. 1598-1
Belle Forche 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, **September 9, 1998**, made a thorough examination of the water use system constructed by **City of Spearfish** of **625 Fifth Street, Spearfish, SD 57783** holder of Permit No. **1598-1**, bearing the priority of **November 12, 1917; March 1, 1919; and January 27, 1930** authorizing the diversion of **0.5, 1.10, and 0.92** cu. ft. per second **respectively** of the waters of **Spearfish Creek** for **irrigation** purposes, in **Lawrence** County.

I have to report on the conditions of the same as follows:

A. Works used to divert the water and transport water to place of use:

Gravity is used to divert water from Spearfish Creek and transport it through 20,800 feet of 10-inch diameter and 4,100 feet of 4-inch diameter pipeline.

B. Works used to apply water to beneficial use:

Water is applied to beneficial use through underground sprinkler systems located at the Rose Hill Cemetery, Spearfish City Campground and the Spearfish City Park

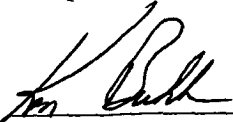
The system is in the following condition **good**. The point of diversion is located **approximately 1350' west and 2320' north of the south east corner of Sec.33, T6N-R2E, (NE¼ NE¼ NW¼ SE¼ Sec. 33, T6N-R2E)**. The works are capable of diverting and conveying to the place of use **2.52** cu. ft. per second of water which is to be used for **irrigation**. Water has been put to beneficial use to the maximum extent as follows:

<u>NE¼ NW¼ Sec.15, T6N-R2E</u>	<u>2 acres</u>
<u>SE¼ NW¼ Sec.15, T6N-R2E</u>	<u>12 acres</u>
<u>NW¼ SE¼ Sec.15, T6N-R2E</u>	<u>17 acres</u>
<u>NE¼ SE¼ Sec.15, T6N-R2E</u>	<u>11 acres</u>
<u>SE¼ NE¼ Sec.15, T6N-R2E</u>	<u>0.5 acres</u>
<u>NW¼ SW¼ Sec.14, T6N-R2E</u>	<u>4.5 acres</u>

comprising a total of **47** acres of land and the license should be issued for **0.67** cfs.

Applicable permit qualifications have been complied with: **yes**

Exceptions to compliance are: **na**



Ken Buhler
 Natural Resources Engineer
 DENR, Water Rights Program

10/26/99

Date

REPORT ON INSPECTION OF PERMIT NO. 1598-1

Other permit(s) associated with the project: 728-1 and 1363-1Spearfish Canyon Country Club

NAME & ADDRESS OF INSPECTION CONTACT: Keith Hepper

City of Spearfish

625 Fifth Street

Spearfish, SD 57783

RELATIONSHIP TO PERMIT HOLDER, IF APPLICABLE: Parks, Recreation, Forestry,

Superintendent

NAME & ADDRESS OF PERMIT HOLDER: City of Spearfish

625 Fifth Street

Spearfish, SD 57783

DATE OF INSPECTION: September 9, 1998

DIVERSION POINT LEGAL LOCATION: approximately 1350' west and 2320' north of the south
east corner of Sec.33, T6N-R2E, (NE $\frac{1}{4}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$
Sec. 33, T6N-R2E)

DISTRIBUTION LINES OR CANALS:

A. 1) Type PVC 2) Size 10 inches 3) Length 20,800 feet

B. 1) Type PVC 2) Size 4 inches 3) Length 4,100 feet

SYSTEM INFORMATION:

Water from Spearfish Creek is diverted via gravity, from an intake in Spearfish Canyon (NE $\frac{1}{4}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$ Sec.33, T6N-R2E) through a buried 10-inch diameter PVC pipe to a point in the Spearfish City Campground (approximately 1700 feet north and 1400 feet west of the SE corner of Sec. 15, T6N-R2E) where water can be returned to the creek to prevent freezing of the line. A buried 4-inch diameter PVC pipe tees off from the 10-inch pipeline at a point approximately 800 feet north and 470 feet west of the SE corner of Sec. 15, T6N-R2E and extends to the Spearfish Canyon Country Club where water is

used for irrigation in conjunction with Water Right Nos. 1363-1 and 728-1. A buried 4-inch diameter PVC pipe tees off from the "Country Club line" at a point approximately 1485 feet north and 115 feet east of the SW corner of Sec. 14, T6N-R2E and extends to the Rose Hill Cemetery where water is used to irrigate 16 acres. A buried 4-inch diameter PVC pipe tees off from the 10-inch pipeline at a point approximately 1500 feet north and 1500 feet west of the SE corner of Sec. 15, T6N-R2E and extends through the City Campground and City Park and is used to irrigate 17 acres at the campground and 13 acres at the park.

PERMIT QUALIFICATIONS AND REGULATIONS:

- 1) Special qualifications to permit being abided by yes
- 2) All structures, wells and lands on map yes

Licensing of Acreage Outside of Permitted Area

NAME: City of Spearfish

ADDRESS: 625 Fifth Street, Spearfish, SD 57783

DATE: October 26, 1999 **COUNTY:** Lawrence **TELEPHONE:**

AUTHORITY

Pursuant to SDCL 46-5-30.5, acreage developed for irrigation outside of the area described on the permit may be licensed provided the following conditions are met:

NO INCREASE IN PERMITTED ACREAGE OR WATER APPROPRIATED:

The acreage developed for irrigation is 47 acres as compared to 203 acres authorized by the permit. Licensing of the permit will result in a reduction in the amount of water appropriated.

UNPERMITTED ACREAGE:

- **Contiguous to Permitted Acreage**

The underpermitted acreage (0.5 acre in the SE¼ NE¼ Sec. 15, T6N-R2E) is contiguous to acreage advertised by Permit No. 1598-1.

- **Owned by Same Property Owner**

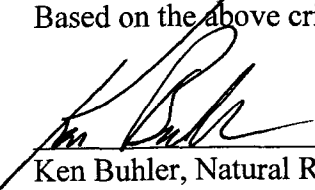
The acreage is all owned by The City of Spearfish.

- **Developed Prior to Expiration of Construction Period**

The acreage was developed at the time of the application.

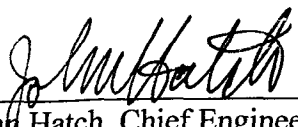
RECOMMENDED ACTION

Based on the above criteria, it is recommended that the xx acre area be included in the water license.


Ken Buhler, Natural Resources Engineer
Water Rights Program

The Chief Engineer makes a finding pursuant to SDCL 46-5-30.5 that:

This acreage change does not impair existing water rights and the overall project, as developed, is consistent with the original application. Licensing of the unpermitted acreage may occur without application or publication pursuant to SDCL 46-2A-4.

 10-27-99
John Hatch, Chief Engineer
Water Rights Program

Water Right Map 1598-1



3000 0 3000 6000 Feet

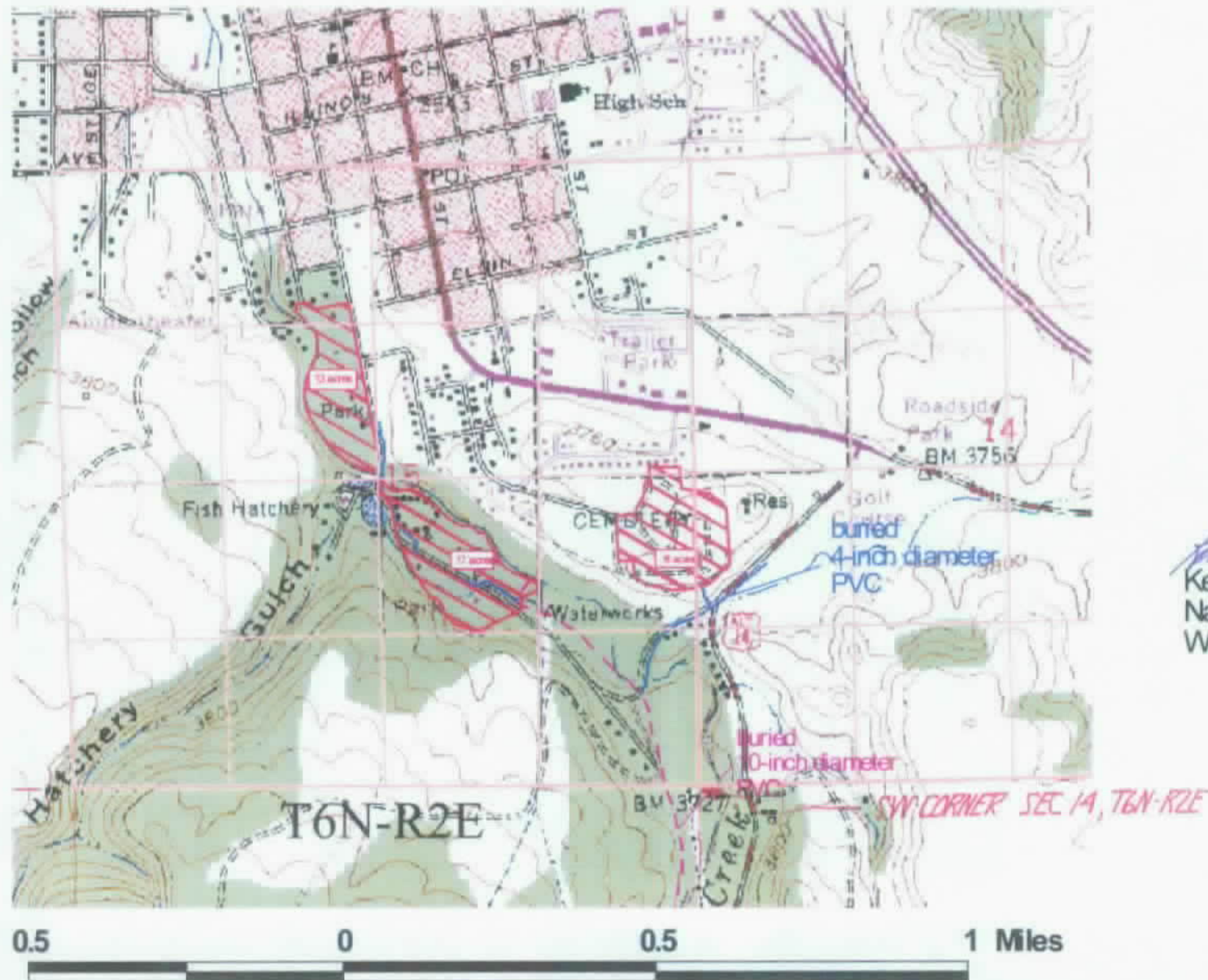


1000 0 1000 2000 F



Ken Buhler
Natural Resources Engineer
Water Rights Program

Water Right Map 1598-1



Ken Buhler
Ken Buhler
Natural Resources Engineer
Water Rights Program



STATE OF SOUTH DAKOTA

WATER LICENSE NO. 1598-1

(1) City of Spearfish, 625 5th St, Spearfish SD 57783 made Application No. 1598-1, March 11, 1994 for a water permit to divert 2.52 cubic feet of water per second (cfs) from Spearfish Creek, Lawrence County, South Dakota for irrigation purposes. Permit No. 1598-1, with priority dates of November 12, 1917 (0.5 cfs), March 1, 1919 (1.10 cfs), January 27, 1930 (0.92 cfs) was approved June 28, 1994 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 said water completed.

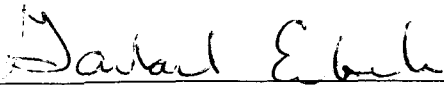
An investigation conducted for licensing purposes found acreage developed for irrigation outside of the area described on the permit. Pursuant to SDCL 46-5-30.5, the Chief Engineer makes a finding that existing water rights will not be impaired and the overall project, as developed, is consistent with the original application.

(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 0.67 cubic feet of water per second for beneficial use. The location of the diversion point is approximately 1,350 feet west and 2,320 feet north of the southeast corner of Section 33-T6N-R2E (NW ¼ SE ¼).

(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 15-T6N-R2E	NE ¼ NW ¼	2 acres
	SE ¼ NW ¼	12 acres
	NW ¼ SE ¼	17 acres
	NE ¼ SE ¼	11 acres
	SE ¼ NE ¼	0.5 acres
Section 14-T6N-R2E	NW ¼ SW ¼	4.5 acres
Total 47 acres		

(4) Pursuant to South Dakota Water Law 46-5-30.1 City of Spearfish, 625 5th St, Spearfish SD 57783 the holder and/or owner of Water Right No. 1598-1 is issued a license to appropriate water, the right to use 0.67 cubic feet of water per second from Spearfish Creek with priority dates of November 12, 1917 (0.5 cfs), March 1, 1919 (0.17 cfs) from the location specified in (2) of this license. The water to be conducted to and upon lands specified in (3) of this license for the purpose of irrigation. This license is subject to any limitations or qualifications listed in Water Right No. 1598-1 and subject to South Dakota State Law.


GARLAND ERBELE, Chief Engineer
Water Rights Program
Department of Environment and Natural Resources

MAR 01 2000

date





**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181
www.state.sd.us/denr

MAR 01 2000

1598-1

Theodore Vore, PWA
City of Spearfish
625 5th St.
Spearfish, SD 57783

Dear Mr. Vore:

Enclosed is Water License No. 1598-1 and Receipt No. 416270 for \$50.00 which was assessed for an investigation and issuance of the license. Water License No. 1598-1 is the final document which completes the process of obtaining a water right.

As long as you use the water beneficially, as stated in the Water License, State Water Laws provide that you have a continuing right to use the water.

Sincerely,

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

ks
enclosures



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

November 1, 2000

1598-1

Thomas Fuller, Public Works Director
City of Spearfish
625 5th St
Spearfish, SD 57783

Dear Mr. Fuller:

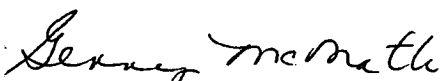
Thank you for the prompt return of your 2000-irrigation questionnaire.

You indicated on the questionnaire that 150 acres were irrigated in 2000. In order for us to calculate how much water was used from your particular source of water, we need to have you complete the backside of the form.

Please complete the form and return it to us by December 1st. I am enclosing a postage paid envelope for your convenience.

Thank you in advance for your help. If you have any questions, please do not hesitate to call me.

Sincerely,


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

enclosures

Permit No. 1598-1
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, 11/07/2007, made a thorough examination of the water use system constructed by City of Spearfish, 625 5th Street, Spearfish SD 57783 holder of Permit No. 1598-1, bearing the priority dates of November 12, 1917 (0.50 cfs), March 1, 1919 (1.10 cfs), January 27, 1930 (0.92 cfs) authorizing the total diversion of 2.52 cfs of the waters of Spearfish Creek for irrigation purposes, in Lawrence County.

Inspection contact and relationship to
 permit holder, if applicable:

**Cheryl Johnson, Public Works Director,
 City of Spearfish**

(The following information was taken from the original inspection report dated September 9, 1998)

A. Works used to divert the water and transport water to place of use:

Gravity is used to divert water from Spearfish Creek and transport it through 20,800 feet of 10-inch diameter and 4,100 feet of 4-inch diameter pipeline.

B. Works used to apply water to beneficial use:

Water is applied to beneficial use through underground sprinkler systems located at the Rose Hill Cemetery, Spearfish City Campground and the Spearfish City Park

The system is in the following condition **good**. The point of diversion is located **approximately 1350' west and 2320' north of the south east corner of Sec.33, T6N-R2E, (NE¼ NE¼ NW¼ SE¼ Sec. 33, T6N-R2E)**. The ~~works are capable of diverting and conveying to the place of use 2.52 cu. ft. per second of water which is to be used for irrigation.~~ Water has been put to beneficial use to the maximum extent as follows:

Section 14, T6N-R2E
 SW¼ NW¼ - 15.7 acres
 SE¼ NW¼ - 20.9 acres
 SW¼ NE¼ - 20.8 acres
 SE¼ NE¼ - 0.9 acres
 NW¼ SW¼ - 22.1 acres
 NE¼ SW¼ - 33.9 acres
 NW¼ SE¼ - 18.0 acres
 NE¼ SE¼ - 9.0 acres

Section 15, T6N-R2E
 NE¼ NW¼ - 2.0 acres
 SE¼ NW¼ - 12.0 acres
 SE¼ NE¼ - 0.5 acres
 NW¼ SE¼ - 17.0 acres
 NE¼ SE¼ - 11.0 acres

comprising a total of 183.8 acres of land and the license should be issued for 2.52 cfs.

All structures, wells and lands on map Y

Comments: **The acreage to be irrigated includes 136.8 acres for the Spearfish Canyon Country Club. Currently, the Country Club has two water rights using water from groundwater sources to irrigate the same 136.8 acres. Water Right No. 728-1 is authorized to divert 0.66 cfs from a Minnelusa well and Water Right No. 1363-1 is authorized to divert 0.90 cfs from a Madison well.**

Aaron A. Tieman

Aaron Tieman
 Natural Resources Project Engineer
 DENR, Water Rights Program

Date report completed: 06/12/2008



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

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

JUN 16 2008

1598-1

Cheryl Johnson, PWD
City of Spearfish
625 5th St
Spearfish SD 57783

Dear Ms. Johnson:

Enclosed is Reissued Water License No. 1598-1 which includes a map prepared by the staff engineer who conducted the investigation.

The 1998 investigation of this permit for licensing purposes failed to account for the Spearfish Canyon Country Club diversion from the pipeline. The diversion authority of 0.67 cubic feet of water per second only accounted for the statutory limit for irrigation of Rose Hill Cemetery, Spearfish Canyon Campground and the Spearfish City Park. A staff engineer from our regional office conducted another investigation of the water use system on November 7, 2007. Based on that examination, the water license has been reissued to reflect the water system. This replaces the water license issued in March, 2000.

As long as you use the water beneficially, as stated in the Water License, State Water Laws provide that you have a continuing right to use the water.

Sincerely,

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

enclosures

STATE OF SOUTH DAKOTA

REISSUED WATER LICENSE NO. 1598-1

(1) The City of Spearfish, 625 5th St, Spearfish SD 57783 was issued Water License No. 1598-1, March 1, 2000 for a water right to divert 0.67 cubic feet of water per second (cfs) from Spearfish Creek, Lawrence County, South Dakota for irrigation purposes. Water License No. 1598-1 was issued to the permit holder for diversion of water with construction of the described water supply system and application of water to beneficial use completed.

The original permit authorized a change in use of 2.52 cfs from municipal to irrigation use which included irrigation of Spearfish Canyon Country Club, Rose Hill Cemetery, the City campground, Centennial Park, Brady Park, Salem Park, Lookout Park, Jorgenson Park and Evans Park.

The 1998 investigation of the water use system did not take into account the water being diverted for irrigation of the Spearfish Canyon Country Club. The original license only accounted for 0.67 cfs which is the statutory limit for irrigation of the 47 acres at Rose Hill Cemetery, Spearfish Canyon Campground and the Spearfish City Park. The water license is being reissued to correct the omission of the country club component of the permit. The reissued license will authorize 2.52 cfs of water from Spearfish Creek for irrigation purposes. The works are developed and diverting this amount of water.

(2) It is certified that the water right 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 2.52 cubic feet of water per second for beneficial use.

The location of the diversion point is approximately 1,350 feet west and 2,320 feet north of the SE corner of Section 33, T6N, R2E (NW ¼ SE ¼).

(3) The water right 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 14, T6N, R2E				Section 15, T6N, R2E	
SW ¼ NW ¼	15.7 acres	NW ¼ SW ¼	22.1 acres	NE ¼ NW ¼	2.0 acres
SE ¼ NW ¼	20.9 acres	NE ¼ SW ¼	33.9 acres	SE ¼ NW ¼	12.0 acres
SW ¼ NE ¼	20.8 acres	NW ¼ SE ¼	18.0 acres	SE ¼ NE ¼	0.5 acres
SE ¼ NE ¼	0.9 acres	NE ¼ SE ¼	9.0 acres	NW ¼ SE ¼	17.0 acres
				NE ¼ SE ¼	11.0 acres
Total 183.8 acres					

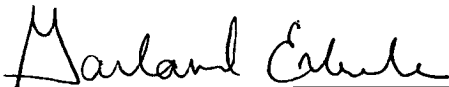
(4) Pursuant to South Dakota Water Law 46-5-30.1 the City of Spearfish, 625 5th St, Spearfish SD 57783 the holder and owner of Water Right No. 1598-1 is issued a license to appropriate water, the right to use 2.52 cubic feet of water per second from Spearfish Creek with priority dates of November 12, 1917 (0.50 cfs), March 1, 1919 (1.10 cfs) and January 27, 1930 (0.92 cfs) from the location specified in (2) of this license for irrigation purposes.

continued

Reissued Water License No. 1598-1
City of Spearfish
Page 2

This license is subject to South Dakota Water Law, any limitations or conditions listed in Water Right No. 1598-1 and subject to the following qualifications:

- The combined diversion rate for irrigation of Spearfish Canyon Country Club from wells authorized by Water Right No. 728-1 (Minnelusa Well), Water Right No. 1363-1 (Madison Well) and this Water Right No. 1598-1 shall not exceed 1.0 cfs for each 70 acres irrigated.
- This water right is subject to the irrigation water use questionnaire being submitted each year.
- Diversions of water at the diversion structure in Spearfish Canyon during the non-irrigation season shall be limited to the minimum amount necessary to prevent the pipes from freezing.

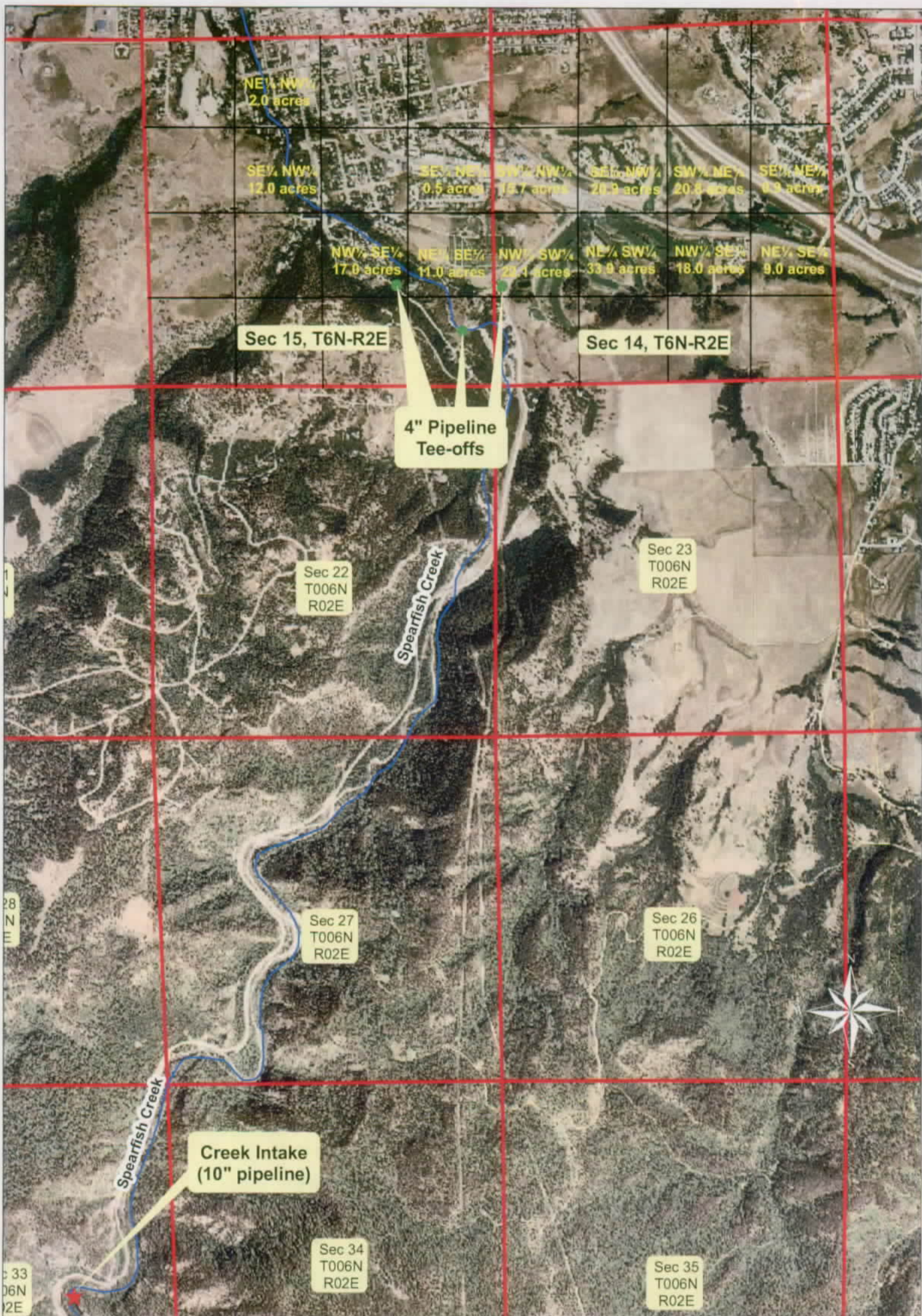


Garland Erbele, Chief Engineer
Water Rights Program
Department of Environment and Natural Resources

JUN 16 2008

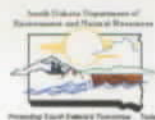
date





Aaron R. Tieman

Aaron Tieman
 Natural Resources Project Engineer
 DENR Water Rights Program
 06/12/2008



0 0.125 0.25 0.5 0.75 1 Miles