

WATER PERMIT NO. 2615-2

Name of Applicant: **Fall River Water Users District**

Address: **PO Box 321, Oral SD 57766** Phone: **605 424-7648**

Amount of Water Claimed: **400 AF** Total Acres: **NA**

Source of Water Supply: **groundwater**

Water to be used for: **rural water system use** County: **Fall River and Custer Counties**

Type of Waste Disposal System:

Location: **6 miles northeast of Hot Springs**

PRIORITY Date Received: **4-12-07** Application/License Fee: **\$325**

Corrected Application Received: Period of Annual Use: **January 1 – December 31**

Remarks: **To construct and place to beneficial use water reserved by Future Use Permit No. 2560-2**

Diversion Point: **SW ¼ SW ¼ Sec 1 – T7S-R6E**

Land to be Irrigated: **NA**

Depth of Well: **2750 feet deep**

Well Driller:

Remarks:

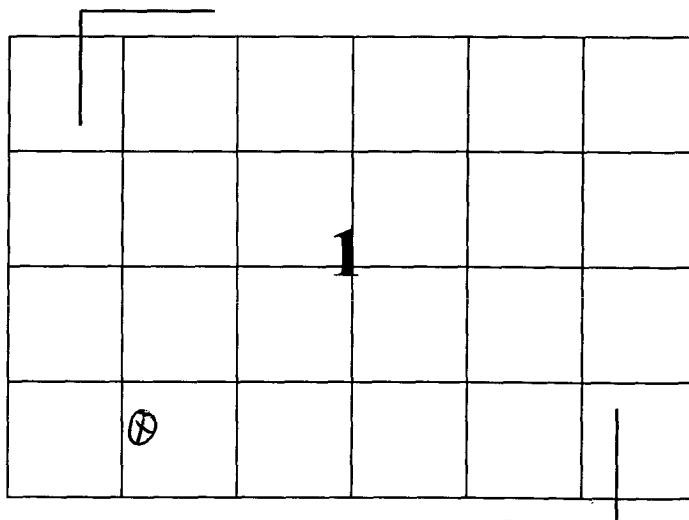
Type of Map: **aerial**

Prepared by: **Kory Barnt, NRCS**

Reviewed and the Number Assigned on: **4-16-07**

By: **Karen Schlaak**

Notice of Hearing - date to intervene: _____



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

Mail to: Water Rights Program Joe Foss Building 523 E. Capitol Pierre, SD 57501-3181 (605) 773-3352	No. <u>2615-2</u> (office use only) Hydrologic Unit <u>10/20109</u>
	Basin <u>Upper Cheyenne</u>
	Newspaper <u>Hot Springs Star</u>
	<u>Custer Co. Chronicle</u>

RECEIVED
APR 12 2007
WATER RIGHTS
PROGRAM

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

Check use(s) of water:

☐ Municipal	☐ Suburban Housing	☐ Recreational	☐ Institutional
☒ Rural Water System	☐ Commercial	☐ Fish & Wildlife	☐ Geothermal Heat
☐ Domestic (over 18 gpm)	☐ Industrial	☐ Other	

Type of Application: ☐ New ☒ Vested Right (Use predates Mar 2, 1955) ☐ Future Use Reservation

(check one) ☒ Place to Beneficial Use Water Reserved by Future Use Permit No. 2560-2
☐ Amendment/Correction to Permit No. _____

Description of amendment/correction: (i.e. change diversion point(s), add diversion point(s), change use, etc.) _____

1. Name of Applicant Fall River Water Users District Phone (605) 424-7648
(check one) ☐ Owner ☐ Tenant/lessee
Mailing Address PO Box 321 Oral State SD 57766
(Street, RR, or Box and City) (Zip Code)

2. Amount of water claimed .67 *CFS or 300 **GPM 400 ***AF
(*Cubic Feet per Second) (**Gallons per Minute) (***)Acre Feet - storage capacity of dam/dugout or annual use if applicable

3. Source of water supply 2750 Foot Deep Well to Madison Formation

4. Location of point of diversion (example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W) _____
SW1/4, SW1/4, Sec 1, T7S, R6E, Black Hills Meridian
County Fall River

5. County or counties where water will be used Fall River County, Custer County

6. Annual period during which water is to be used All Year

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

To construct and put together water reserved by Future Use Permit #2560-2 for domestic use and serve rural hook-ups and bulk use in Oelrichs, and potentially Buffalo Gap, SD

See Attached Reports from System Engineer

STATE OF SOUTH DAKOTA)
County of Fall River) SS

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

I, Craig A. DeBoer, the applicant, certify that I have read this application, have examined the attached map and that the matters stated are true and that I intend, and am able to complete the necessary construction.

Applicant's signature Craig A. DeBoer

Subscribed and sworn to before me this 11 day of April 20 07

Paula Peters
Notary Public signature

SOUTH DAKOTA
WATER PERMIT NO. 2615-2

Date of first receipt of application April 12, 2007.

The Water Management Board approved Water Permit No. 2615-2 on July 11, 2007 for Fall River Water Users District, c/o Craig A DeBoer, PO Box 321, Oral SD 57766 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. 2615-2 authorizing placing to beneficial use 0.67 cubic feet of water per second (400 acre-feet annually) from one well to be completed into the Madison Aquifer (approximately 2750 feet deep) located in SW 1/4 SW 1/4 Section 1-T7S-R6E. This water was appropriated and reserved by Future Use Permit No. 2560-2 and 2560A-2.
2. The water appropriated shall be used for the purpose of rural water system use by the district in Fall River and Custer Counties and may not exceed the amount of water needed for beneficial use.
3. The water is to be used during the following described annual period: January 1 – December 31.
4. The date from which applicant may claim right is May 16, 2005 (established by Permit No. 2560-2).
5. One-fifth of the construction is to be completed on or before January 11, 2010.
6. All construction is to be completed on or before July 11, 2012.
7. Water is to be put to beneficial use on or before July 11, 2016.
8. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

QUALIFICATIONS

1. In accordance with SDCL 46-1-14 and 46-2A-20, Permit No. 2615-2 is issued for a 20-year term. Pursuant to SDCL 46-2A-21, the 20-year term may be deleted at any time during the 20-year period or following its expiration. If the 20-year term is not deleted at the end of the term, the permit may either be cancelled or amended with a new term limitation of up to twenty years. Permit No. 2615-2 may also be cancelled for nonconstruction, forfeiture, abandonment, or three permit violations pursuant to SDCL 46-1-12, 46-5-37, 46-5-37.1 and ARSD 74:02:01:37.
2. The well approved under this Permit will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner under this Permit shall control his withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights. In constructing the well authorized by Permit No. 2615-2 particular attention is to be given to the flows of Beaver Creek Springs, Cascade Springs, and Hot Springs, so that those preexisting flows are not adversely impacted.

(continued)

3. The well authorized by Permit No. 2615-2 shall be constructed by a licensed well driller and construction of the well and installation of the pump shall comply with Water Management Board Well Construction Rules, Chapter 74:02:04 with the well casing pressure grouted (bottom to top) pursuant to Section 74:02:04:28.
4. Fall River Water Users District shall meter its water use and record its monthly water withdrawals from the well. The District shall transmit the water withdrawal values recorded each month to the DENR and the NPS by no later than March 1 of the following year. The copy of this report for the NPS should be sent to: Chief, Water Rights Branch, National Park Service, Water Resources Division, 1201 Oakridge Dr., Suite 250, Fort Collins, CO 80525.
5. Fall River Water Users District shall perform a flowing-well or constant-rate aquifer test on the production well that is of sufficient duration to define the transmissivity of the aquifer system, and to provide the test procedures and data collected during the test to the NPS. The data will include the static water level (or shut-in head) prior to pumping, the time pumping begins, the pumping rate, drawdown versus time in the pumping well during the pumping and recovery periods, and the time pumping stops. A copy of the well completion report and well log shall be transmitted to the NPS at the address provided in qualification No. 4.
6. Fall River Water Users District shall collect and analyze water samples from the well for the constituents listed in attached Appendix A. The U.S. Geological Survey or a certified laboratory to conduct public drinking water analysis will be contracted to analyze the samples. The results will be transmitted to the NPS at the address provided in qualification No. 4.

WATER MANAGEMENT BOARD

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

AUG 06 2007
date



Appendix A

The following analyses will be completed by staff of the U.S. Geological Survey or a laboratory certified by the State of South Dakota from water withdrawn from the well associated with Application 2615-2:

USGS Schedule 2165

Description: SD Metals, anions and nutrients

Analyte	Lab Code	Parameter Code	RL	Unit
Arsenic	3122	01000	0.12	ug/L
Calcium	659	00915	0.02	mg/L
Chloride	1571	00940	0.12	mg/L
fluoride	31	00950	0.10	mg/L
ICP Mass Spectrometry (ICPMS) setup	2181	L2181		unsp
Inductively coupled plasma (ICP) setup	2002	L2002		unsp
Magnesium	663	00925	0.014	mg/L
Manganese	648	01056	0.2	ug/L
nitrogen, nitrate + nitrite	1979	00631	0.016	mg/L
Potassium	2773	00935	0.04	mg/L
Residue, 180 degrees Celsius (TDS)	27	70300	10	mg/L
Silica	667	00955	0.018	mg/L
Sodium	675	00930	0.20	mg/L
specific conductance, laboratory	69	90095	2.6	uS/cm
Sulfate	1572	00945	0.18	mg/L

Lab Code 69 may only be deleted when the field conductivity value is provided.

Lab code: NWQL's code to identify the analyte and the analysis (a schedule comprises several lab codes)

Parameter code: This is often given in USGS reports to identify the analyte and associated RL, collection method, etc.

RL: Minimum reporting level

In addition to the above analyses, the following field parameters will be analyzed by personnel of the U.S. Geological Survey or a laboratory certified by the state of South Dakota in the field:

Alkalinity
Carbonate
Bicarbonate
Specific Conductance
Temperature
Dissolved Oxygen

Supplemental Information

(type or print in ink)

1. Well Information - Proposed Construction

- a) Drill Hole Diameter $17\frac{1}{2}, 12\frac{1}{4}, 8\frac{3}{4}$, ^{5 7/8} Depth 40', 1000', 1410', 300'
- b) Casing Type Steel Diameter 13 3/8, 9 5/8, 6 5/8 Thickness Standard
- c) Screen Type open hole Diameter 5 7/8 Thickness
- d) Gravel Pack Length of Gravel Pack
- e) Depth to Top of Water Bearing Material 2450 feet
- f) Depth to Water (ground surface to water level) Potentiometric surface 100' +/- below surface
- g) Distance to nearest existing domestic well:

On applicants property unknown

On property owned by others unknown

2. Wastewater Disposal System Information

- a) Type of System (i.e. septic tank, drain field)
- b) System Capacity (gallons) Year Constructed
- c) Connected to the City of Sanitary System

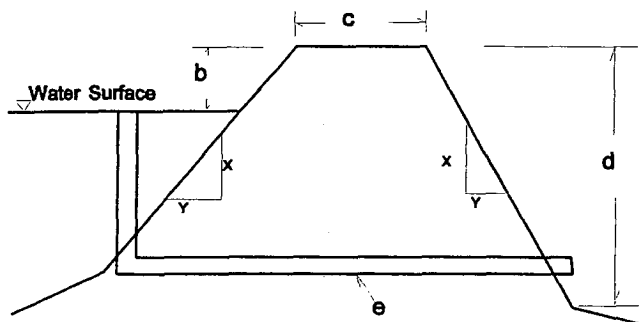
3. Dugout Information

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

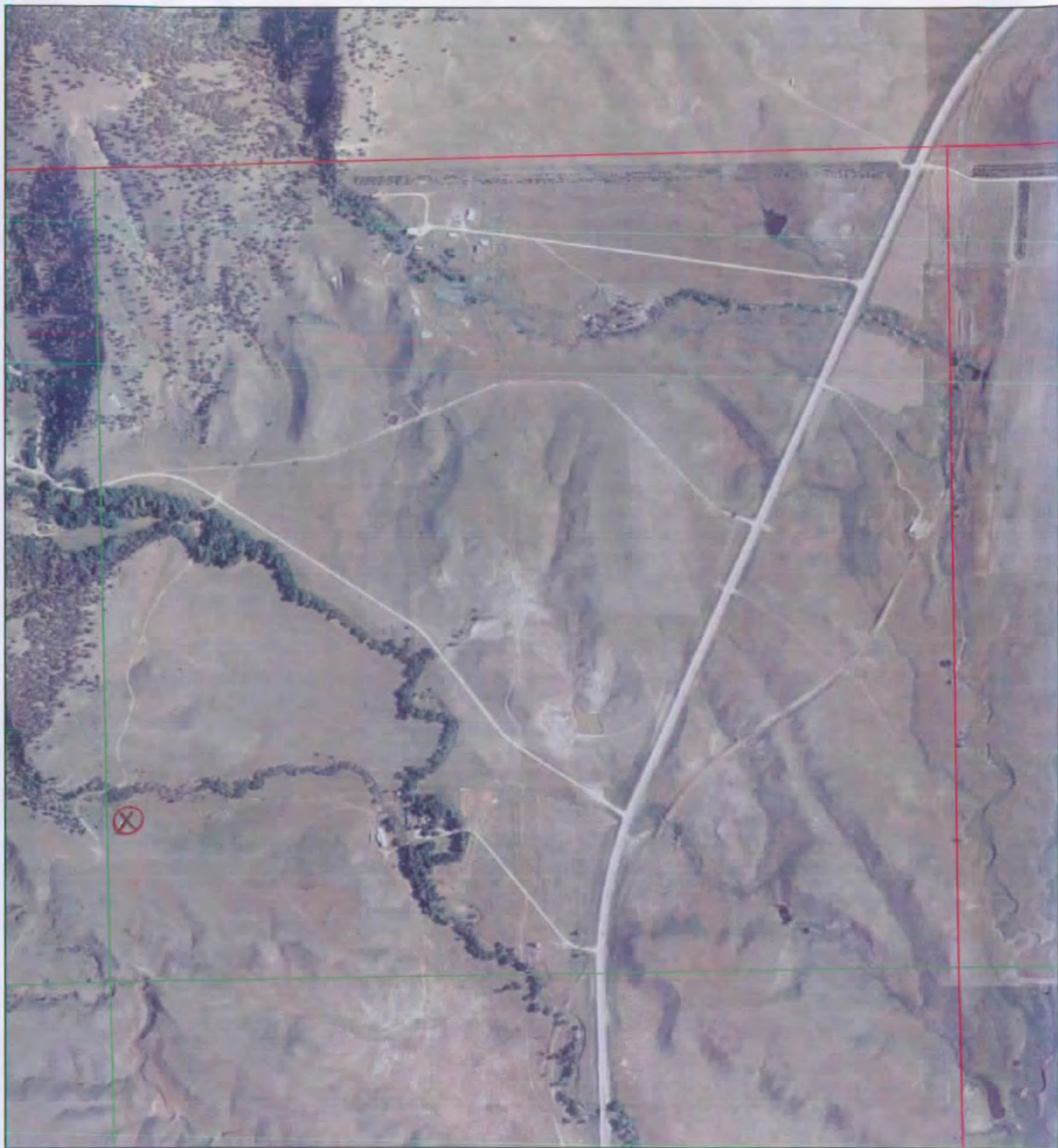
4. Water Storage Dams

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

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



- b) Freeboard
- c) Crest Width
Crest Length
- d) Height
- e) Primary Outlet Capacity
If pipe, diameter
- f) Secondary Spillway Capacity
Spillway Width
- g) X & Y Slope
Upstream
Downstream
- h) Surface Area of Impoundment
- i) Storage Acre Feet
- j) Drainage Area Above Dam Acres



1,000 500 0 1,000 2,000 Feet

Section 1
T7s R6e
Scale = 1:10,000



Map from Hot Springs Office
K. Bunt DC. 3/27/07

RECEIVED

APR 12 2007

WATER RIGHTS
PROGRAM

Preliminary Engineering Report Water Source Evaluation

FOR

Fall River Water Users District Fall River County, SD

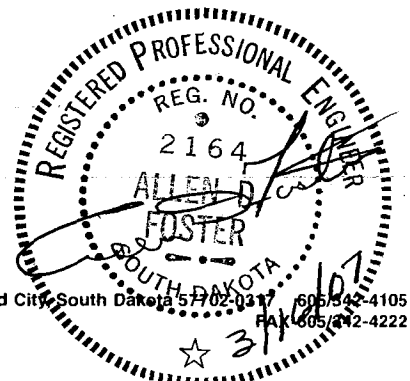
March 16, 2007

PREPARED FOR:
Board of Directors
Fall River Water Users District
PO Box 321
27600 W. Oral Road
Oral, SD 57766

PREPARED BY:
FMG Engineering, Inc.
3700 Sturgis Road
Rapid City, SD 57702



FMG, INC. 3700 Sturgis Road, Rapid City, South Dakota 57702-0317 605/342-4105
FAX 605/342-4222



**PRELIMINARY ENGINEERING REPORT
WATER SOURCE EVALUATION
FALL RIVER WATER USERS DISTRICT**

TABLE OF CONTENTS

	<u>Page</u>
HISTORY AND PURPOSE.....	1
PROJECT AREA	2
POPULATION	3
LIVESTOCK	3
OTHER WATER USE	5
WATER NEEDS	5
WATER SUPPLY	6
WELL SITE EVALUATION	8
North Well Site in SW ¼ of Section 1, T1S, R6E.....	9
Fall River Road Well Site in NE ¼ of Section 32, T1S, R6E	12
OPERATION AND MAINTENANCE COST.....	20
PROJECT FUNDING, FINANCING, OPERATING BUDGET AND REVENUE.....	20
FINDINGS.....	23
IMPLEMENTATION SCHEDULE	25

LIST OF TABLES

Table 1	Estimated Existing and Future Water Use in FRWUD	6
Table 2	Opinion of Probable Cost	
	North Area Expansion with North Well Site and Transmission Line to	
	Angostura Tank.....	13
Table 3	Opinion of Probable Cost	
	Water Supply Well - North Site.....	14
Table 4	Opinion of Probable Cost	
	Water Supply Well – Fall River Road Site.....	17
Table 5	Opinion of Probable Cost	
	Transmission Line-Fall River Road Well Site to Angostura Tank.....	18
Table 6	Opinion of Probable Cost	
	North Area Expansion	19

LIST OF FIGURES

Figure 1	Project Area	4
Figure 2	North Area Expansion	10
Figure 3	North Well with North Area Expansion	11
Figure 4	Fall River Road Well Site-New Main to Tank	15

APPENDICIES

Appendix A	Review of Proposed Sites for Development of a Madison Well for Fall River Water Users District
Appendix B	Preliminary Engineering Report, 2005 Update North Expansion Area
Appendix C	Preliminary Engineering Report Water System-2005 Update

**PRELIMINARY ENGINEERING REPORT
WATER SOURCE EVALUATION
FALL RIVER WATER USERS DISTRICT**

HISTORY AND PURPOSE

As a result of severe drought conditions and lack of water for domestic and livestock needs, area home owners and ranchers formed the Fall River Water Users Association in 1990 to start the planning process for development of a rural water system. During 1990, many home owners and ranchers were forced to haul water to sustain their domestic and livestock water needs.

The Fall River Water Users Association was disbanded and the Fall River Water Users District (FRWUD) was formed to continue project planning and search for funding. FMG Engineering, Inc. was retained in 1992 to serve as engineering consultant for the project. In 1999, the final funding packages were put in place and final design of the system started.

Construction on the Fall River Water Users District (FRWUD) started in August, 2000 and was completed in May, 2002. The final preliminary engineering report "Revised Supplemental Preliminary Engineering Report, Revised May 6, 1999" prepared by FMG, Inc. for system design and funding prepared anticipated a total of 161 meters for the total project. By the time construction had finished in May of 2002, a total of 196 meters had been installed. At present, there are about 285 meters which is 177% of the total number of hookups anticipated in 1999. Much of the growth has been single family residential structures in areas around Angostura Lake.

The original FRWUD construction included a water supply line from the City of Hot Springs to the District, three (3) water storage tanks, two (2) booster stations, six (6) pressure reducing stations and approximately 272 miles of water main ranging in size from 8" diameter to 1½" diameter.

The area continues to grow and developers have indicated the possibility of adding another 400 single family residential lots/ranchettes.

In the spring of 2001, a group of ranchers, business owners and other land owners petitioned the Board of Directors to annex a large area north of the existing District

Boundaries and provide water service to the area. The annexations procedure was started, but no commitments for service were made pending project funding. A preliminary engineering report for the North Expansion was prepared by FMG, Inc. and dated October 30, 2002. A report, "*Preliminary Engineering Report, 2205 Update, North Expansion Area*" dated May 25, 2005 that updated the 2002 report was prepared and is included as Appendix B. Supplemental information and new cost updates were provided by letter dated May 8, 2006. This supplemental information is included at the front of the report in Appendix B. The North Expansion area is not currently served by the FRWUD.

In 2005 - 2006 FMG, Inc. completed a study of the existing water system to evaluate the system and provide recommendation for improvements and upgrades needed to serve the expected system growth. Findings were reported in "*Preliminary Engineering Report, Water System-2005 Update*" dated January 23, 2006 and is included as Appendix C.

Information developed for and reported in the above reports indicated the need for additional water supply to support the growth and expansion of the existing water system. The purpose of this report was to evaluate the feasibility of developing a new well to supplement the existing water supply from the City of Hot Springs.

PROJECT AREA

The existing Fall River Water Users District lies in the foothills of the Black Hills and extends to the adjacent prairies on the east and south. The majority of the land is range land with some dryland farming and irrigated farmland. The irrigated farmland is located in the Oral area and is a part of the Angostura Irrigation project. Elevations range from over 3800 feet above sea level in the southwest corner of the District to about 2900 feet above sea level in the northeast corner of the District. The eastern portion of the project has some steep and rough terrain and is mostly Buffalo Gap National Grasslands.

Existing boundaries of the District are generally described as follows:

1. Bounded on the north by Angostura Reservoir, the Cheyenne River, a line about one mile west of Highway 79 to near Buffalo Gap, the Lame Johnny Creek Watershed divide and the Fall River/Custer County line east of its intersection with the Lame Johnny Creek Watershed divide.
2. Bounded on the east by the Fall River/Shannon County line.
3. Bounded on the south by the South Dakota/Nebraska State line.
4. Bounded on the west by the previously established Igloo-Provo Water Project District.

The project area and District Boundaries are shown on Figure 1.

POPULATION

Information in the "*Preliminary Engineering Report, Water System-2005 Update*" estimated a service population of 360 persons with a possible growth of 920 persons if the 400 single family residential lots/ranchettes are added. The service population will increase by an estimated 920 persons bringing the total future service population to about 1,300 persons.

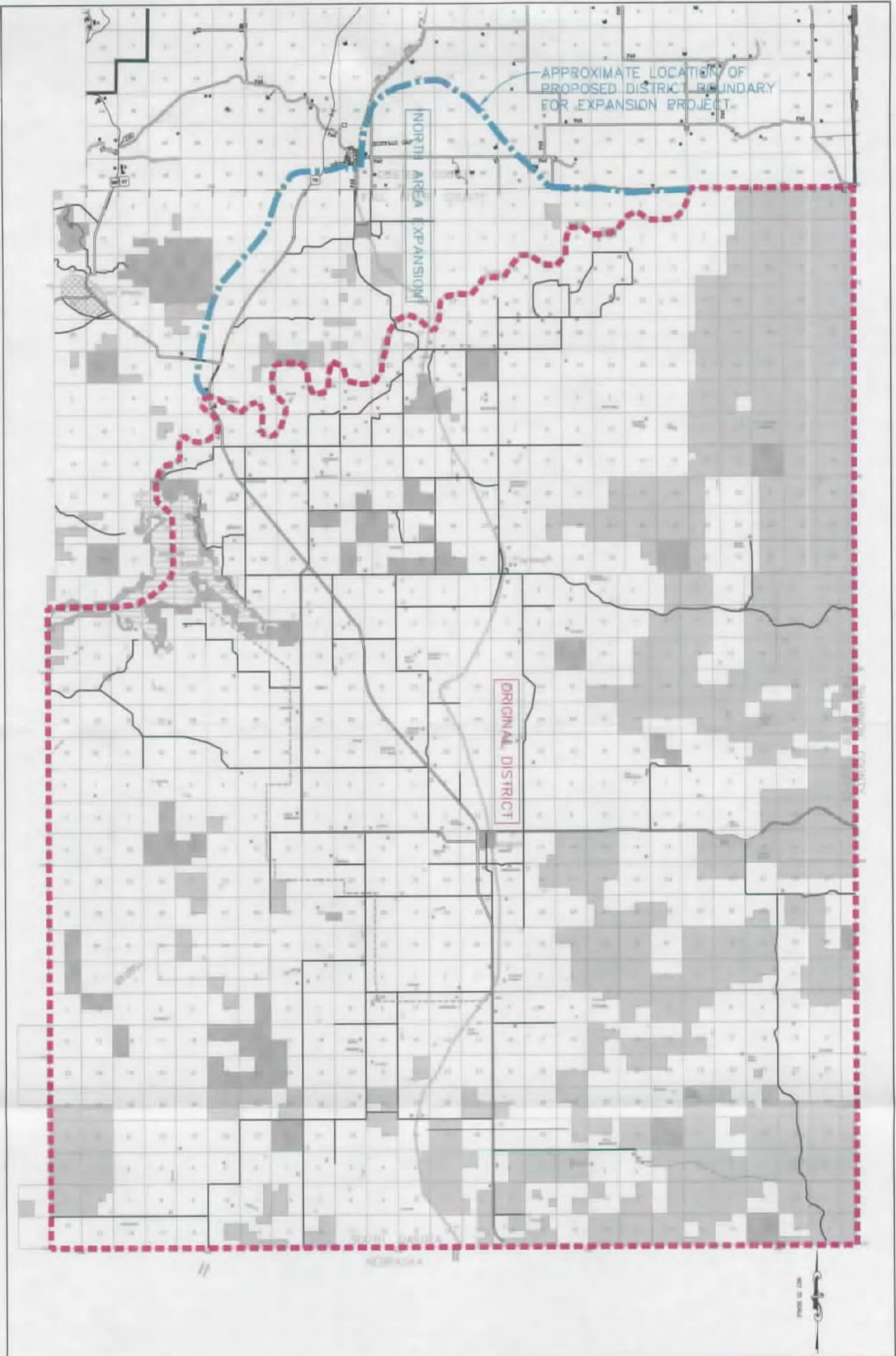
In the "*Preliminary Engineering Report, 2205 Update, North Expansion Area*" the service population was estimated at 113 persons not including the Town of Buffalo Gap.

The "*Engineering Planning Report for the Town of Buffalo Gap*" revised April 26, 2005 prepared by Anderson Engineers, Inc. included a design population of 200 persons. The report indicated that the 2000 census showed a population of 164 persons.

Additional information relative to the service populations can be found in the 2005 update reports included as Appendices B and C.

LIVESTOCK

The FRWUD water system was designed to serve both domestic and livestock needs. The area relies on farming and ranching for its livelihood and a large part of the water use in FRWUD is for livestock purposes.



Livestock numbers and water use are discussed in the 2005 update reports included as Appendices B and C.

OTHER WATER USE

Other water use within the FRWUD includes domestic water use for the Angostura State Recreation Area, the Town of Oelrichs, the Fall River Feed Lot, Hot Springs Airport, and restaurants/bars.

WATER NEEDS

Water use estimates within the District are needed for design purposes as well as revenue projections and feasibility analysis. To properly evaluate a water system, various water use rates, actual or estimated, must be known. Water use rates used in this study are defined below:

- A. Average daily water use is the total amount of water used for all purposes, domestic, livestock, commercial, industrial, lawn irrigation, recreation, etc. in any one year divided by 365 days.
- B. Average daily-peak month is the total amount of water used for all purposes during the maximum month divided by the number of days in the month.
- C. Peak daily use is the maximum amount of water used for all purposes during a 24-hour period of time. The water supply should be capable of producing this amount for short period of time.
- D. Peak 2-hour is the peak rate of water use during a two hour time period. The water distribution system must be capable of delivering this quantity of water to the users. The peak two hourly demands are satisfied by the water supply and storage reservoirs.

Estimated water use (existing and future) within the District is shown in Table 1.

TABLE 1
ESTIMATED EXISTING AND FUTURE WATER USE IN FRWUD

User	Number	Average day		mg/yr	Peak Day	
		gpcpd gpd/au	gpd		gpcpd gpd/au	gpd
Existing water Use			253,880	92.67		485,200
Additional Residential (400 Lots) 920	100	100	92,000	33.58	200	184,000
Additional Livestock AUs 2,000	2,000	15	30,000	10.95	20	40,000
<u>Sub-Total</u>			375,880	137.20		709,200
North Expansion Area			74,900	27.34		139,300
<u>Total</u>			450,780	164.54		848,500

Existing and projected water use within the existing system was obtained from the *"Preliminary Engineering Report, Water System-2005 Update"*, Appendix C.

The projected water use for the North Expansion Area was obtained from the *"Preliminary Engineering Report, 2005 Update, North Expansion Area"*, Appendix B. The projected water use for the North Area Expansion included water for the Town of Buffalo Gap (about 15,600 gpd for the average day and about 39,100 gpd for the peak day). The Buffalo Gap water use projections were from the *"Engineering Planning Report for the Town of Buffalo Gap"* prepared by Anderson Engineers, Inc.

WATER SUPPLY

Water supply facilities must be able to satisfy the peak day demands. Water storage tanks are used to equalize flow during the day and provide water for emergency use.

FRWUD water supply is obtained from the City of Hot Springs through an 8-inch water main along Fall River Road and old Highway 79 from the City's system to the south side of the Cheyenne River. Recent changes in the water purchase agreement provide for the purchase of 600,000 gpd and up to 750,000 gpd to satisfy the peak demand. The agreement allows for the purchase of more than 750,000 gpd, but cost would increase to 150% of the City's rate.

Actual water delivery to the FRWUD system is limited to about 500,000 gpd (348 gpm) under existing conditions. If development and growth occurs as anticipated and water service is extended to the North Area Expansion, an additional 348,500 gpd or about 250 gpm will be needed to satisfy the projected future peak day water use shown in Table 1 for a total water supply capability of about 600 gpm.

By moving the existing pressure reducing valve located in the existing main meter vault about one mile below Hot Springs, water delivery to the FRWUD could be increased to about 640,000 gpd (440 gpm). The new location would be near the intersection of Old Highway 79 and US Highway 385.

Water delivery from Hot Springs to FRWUD could be further increased by constructing an additional 8" water main to supplement a portion of the existing 8" water main. Construction of an additional 8" water main from the Cheyenne River south to the Angostura water tank, in conjunction with the PRV relocation, would allow delivery of about 600 gpm or 860,000 gpd. An estimated 25,000 feet of pipe would be required.

The South Dakota Department of Transportation is anticipating reconstruction of a portion of US Highway 385 west of Maverick Junction and construction of a new 4-lane highway extending south of Maverick Junction. It may be possible to construct a new water main at the time the highways are reconstructed.

The existing contract for purchase of water from the City of Hot Springs was for a 20-year period with annual renewal options. There are about 15 years remaining on the current contract. Recent discussions with the City of Hot Springs concerning contract extensions and increasing the amount of water purchased have not been encouraging. Because of the uncertainty of future water purchase agreements with the City of Hot Springs coupled with the continued growth, the Board of Directors elected to evaluate the possibility of developing a well to provide additional water.

WELL SITE EVALUATION

It is expected that any new well development will be into the Madison Formation. After review of the existing water system and future expansion plans and information from the U.S. Geological Survey, several possible sites for development of a new well were identified. Those sites are listed below.

SE¼ of Section 36, T6S, R6E

E½ of Section 11, T7S, R6E

Section 13 or 14, T9S, R5E

Section 5 or 8, T8S, R5E

NE¼ of Section 32, T7S, R6E (existing future water right along Highway 385 between Maverick and Hot Springs)

SW¼ of Section 1, T7S, R6E

Under separate contract with the FRWUD, Arden Davis, P.E., Ph.D. of the South Dakota School of Mines and Technology reviewed the proposed sites and prepared a report "*Review of Proposed Sites for Development of New Madison Well*", dated March 16, 2007. A copy of this draft report is included as Appendix A.

During this process, the FRWUD General Manager and various Board Members had discussions with various land owners relative to site availability and willingness to work with the District on a well site.

Because of water quality and water temperature concerns, no further study and evaluation of possible well sites in Section 13 or 14, T9S, R5E (about 1 mile south of Angostura Reservoir near the Cheyenne River inlet) and Section 5 or 8, T8S, R5E (north of Cascade Springs), was completed.

The Owner of the land in SW¼ of Section 1, T7S, R6E indicated a willingness to work with the District. The Owner of the land in E½ of Section 11, T7S, R6E indicated some possibilities but no commitments have been made. The site in NE¼ of Section 32, T7S,

R6E is on a lot owned by the FRWUD and the FRWUD has an existing future water right at this location.

A system evaluation and cost estimates were prepared for the North well site in the SW¼ of Section 1, T7S, R6E and the site (Fall River Road site) of the existing water right in the NE¼ of Section 32, T7S, R6E.

North Well Site in SW ¼ of Section 1, T1S, R6E

This proposed well site is located just northwest of the northern extension of the proposed North Area Expansion Project. The North Area Expansion water system layout is shown on Figure 2. Facilities incorporating the new well with the North Area Expansion water system project are shown of Figure 3.

The proposed well site fits well with the North Area Expansion project. The proposed storage tank would be located near the well although construction project sequencing may require the tank to be constructed at another location. Segments of the proposed 6" and 3" mains along Highway 79 would be upgraded to 8" mains, a new main booster station would be constructed near the Maverick Area and a new 8" water main constructed to the south to connect to the existing Angostura water tank. Water would be pumped from the booster station to the Angostura tank.

Construction of this project as a whole also eliminates the need for the proposed small constant pressure booster station and eliminates the need to relocate the existing main line PRV to near the intersection of Old Highway 79 and US Highway 385 as discussed above to increase the water supply from the City of Hot Springs.

Construction of this project provides the District with a complete independent second water supply source. If the existing water main from Hot Springs experiences problems and has to be shut down, water would still available from the well.

Consideration was given to constructing the proposed storage tank at a slightly higher elevation and constructing a new 10" water main from the well/tank site all the way to the Angostura water tank. This construction would allow gravity flow from the well site to the Angostura tank and eliminate the need for the new booster station near Maverick. The 10" water main construction (approximately 70,000 feet) would cost substantially more than a booster station. Use of the booster station also provides better control of the flows and reduces the cost of telemetry slightly.

Estimated cost of this construction, new well in conjunction with the North Area Expansion is \$3,465,700 as shown on the Table 2. The estimated cost of the North Well development by itself is shown in Table 3.

The caveat of this project is that if the North Area Expansion project is constructed before the well, the cost of the North Area Expansion will increase from its current estimate. At a minimum, the water mains should be upgraded as shown to accommodate the future well; the storage tank may have to be moved to the proposed well site and additional water main installed to connect to the new tank. Additionally, it will probably be necessary to relocate the existing main line PRV as discussed above and construct a control valve with solenoid switch, electrically operated valve and telemetry to control the flow of water to the North Area Expansion.

Fall River Road Well Site in NE¼ of Section 32, T7S, R6E

This proposed well site is located along Fall River Road (Highway 385 & 18) on property owned by the District. Facilities incorporating the new well with the North Area Expansion project are shown of Figure 4.

Well development on this site requires construction of a new transmission line from the well site to the Angostura tank because of the increased flow. Total flow downstream of the well connection would be about 600 gpm (300 gpm from the well and 300 gpm from the City). As shown on Figure 4, a new 10" line is proposed from the well site to the

TABLE 2
Opinion of Probable Cost
North Area Expansion with North Area Well Site and Transmission Line to Angostura Tank
FALL RIVER WATER USERS DISTRICT
March, 2007

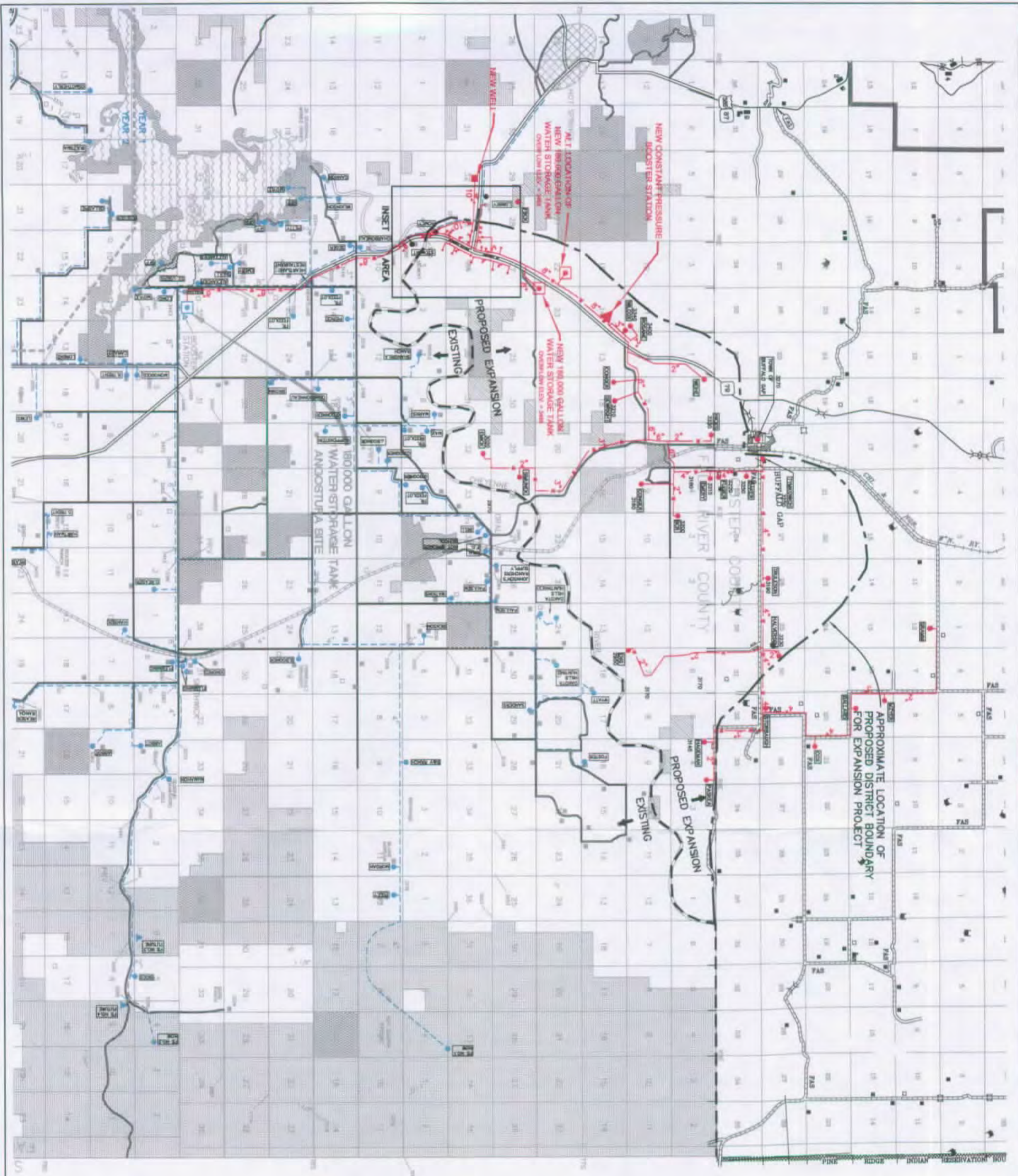
ITEM	QUANTITY	UNITS	UNIT COST	EXTENDED COST
8" PVC Water Main-Class 200	15,000	LF	\$ 9.20	\$138,000
8" PVC Water Main-Class 160	55,000	LF	\$ 8.20	\$451,000
6" PVC Water Main-Class 160	17,500	LF	\$ 6.80	\$119,000
4" PVC Water Main-Class 160	70,800	LF	\$ 4.00	\$283,200
3" PVC Water Main-Class 200	34,100	LF	\$ 3.10	\$105,710
2" PVC Water Main-Class 200	58,400	LF	\$ 2.40	\$140,160
1 1/2" PVC Water Main-Class 200	40,400	LF	\$ 2.30	\$92,920
12" Casing Pipe	200	LF	\$ 80.00	\$16,000
8" Casing Pipe	300	LF	\$ 60.00	\$18,000
8" Valves & Boxes	20	EA	\$ 980.00	\$19,600
6" Vaves & Boxes	6	EA	\$ 680.00	\$4,080
4" Valves & Boxes	15	EA	\$ 550.00	\$8,250
3" Valves & Boxes	7	EA	\$ 500.00	\$3,500
2" Valves & Boxes	14	EA	\$ 430.00	\$6,020
1 1/2" Valves & Boxes	67	EA	\$ 280.00	\$18,760
Standard Fire Hydrant	1	EA	\$ 2,800.00	\$2,800
Flushing Hydrants	25	EA	\$ 700.00	\$17,500
Manual Air Release	20	EA	\$ 530.00	\$10,600
1 1/2" Service Line Connection	67	EA	\$ 210.00	\$14,070
Pressure Reducing Station	1	EA	\$ 5,500.00	\$5,500
Meter Pits w/5/8" x 3/4" meter	64	EA	\$ 850.00	\$54,400
Meter Pits w/3/4" meter	3	EA	\$ 950.00	\$2,850
Cheyenne River Crossing	1	EA	\$ 22,000.00	\$22,000
River/Stream Crossing	6	EA	\$ 4,800.00	\$28,800
Road Crossings	12	EA	\$ 2,200.00	\$26,400
Rock Excavation	100	CY	\$ 45.00	\$4,500
Telemetry Systems	1	LS	\$ 60,000.00	\$60,000
New Booster Station Near Maverick	1	LS	\$ 110,000.00	\$110,000
180,000 Gallon Storage Tank	1	LS	\$ 210,000.00	\$210,000
Mobilization	1	LS	\$ 45,000.00	\$45,000
New Well at North Site	1	LS	\$ 413,000.00	\$543,000
Acid Treatment for Well if needed	1	LS	\$ 100,000.00	\$100,000
Sub-Total				\$2,681,620
Contingencies @ 15%				\$402,243
TOTAL ESTIMATED CONSTRUCTION COST				\$3,083,863

Other Project Costs				
Land & Rights-of-Way				\$50,000
Legal Services				\$8,000
Engineering, Surveying & Geotechnical	6.00%			\$185,032
Construction Layout & Inspections	3.00%			\$92,516
Testing Services	0.50%			\$15,419
Archelological Study	0.50%			\$15,419
Administrative/Clerical	0.50%			\$15,419
Sub-Total				\$381,806
Total Estimated Project Cost				\$3,465,669

TABLE 3
OPINION OF PROBABLE COST
WATER SUPPLY WELL-NORTH SITE
SW¼ of Section 1, T7S, R6E
FALL RIVER WATER USERS DISTRICT
March, 2007

ITEM	QUANTITY	UNITS	UNIT COST	EXTENDED COST
New Madison Well (2750' Deep)				
17 1/2" Bore Hole	40	LF	\$ 100.00	\$4,000
12 1/4" Bore Hole	1,000	LF	\$ 60.00	\$60,000
8 3/4" Bore Hole	1,410	LF	\$ 50.00	\$70,500
5 7/8" Bore Hole	300	LF	\$ 50.00	\$15,000
13 3/8" OD Casing	40	LF	\$ 40.00	\$1,600
9 5/8" OD Casing	1,000	LF	\$ 34.00	\$34,000
6 5/8" OD Casing	1,410	LF	\$ 22.00	\$31,020
Centralizers	35	EA	\$ 75.00	\$2,625
Grouting	1	LS	\$ 30,000.00	\$30,000
Pitless Adapter	1	LS	\$ 8,000.00	\$8,000
Well Logging	1	LS	\$ 7,500.00	\$7,500
Test Pumping	1	LS	\$ 3,500.00	\$3,500
Well House, Pump, Chlorination Facilities	1	LS	\$ 100,000.00	\$100,000
Access Road	1	LS	\$ 40,000.00	\$40,000
Telemetry System	1	LS	\$ 5,000.00	\$5,000
Mobilization	1	LS	\$ 40,000.00	\$40,000
Sub-Total -Well Development				\$452,745
Contingencies @ 20%				\$90,549
Acid Treatment if Needed				\$100,000
Estimated Total-Well Development				\$643,294

Other Project Costs				
Land & Rights-of-Way				\$50,000
Legal Services				\$8,000
Engineering & Surveying	6.00%			\$38,598
Construction Layout & Inspections	3.00%			\$19,299
Testing Services	1.50%			\$9,649
Archelological Study	0.50%			\$3,216
Administrative/Clerical	0.50%			\$3,216
Sub-Total				\$131,979
Total Estimated Project Cost - Water Supply				\$775,273



INSET AREA DETAIL
SCALE: 1"=2000'

- LEGEND**
- PROPOSED WATER LINE
 - EXISTING WATER LINE
 - WATER USER
 - STATE LAND
 - B.L.M. LAND
 - NATIONAL FOREST
 - LAND



Cheyenne River and a new 8" line from the 10" to the Angostura tank. The North Area Expansion project would be a complete separate project.

Estimated costs of these projects are shown in Tables 4, 5 and 6 and are summarized below.

<u>Project</u>	<u>Estimated Cost</u>
Fall River Road site Well Development	\$755,000
New Transmission Line-Well to Angostura tank	\$942,000
<u>North Area Expansion</u>	<u>\$2,110,800</u>
Total	\$3,807,800

Construction of this project does not provide an entirely independent water supply source in that both the supply from the well and from the City would flow through a common line from the well to the south side of the Cheyenne River.

Regionalization

The Southern Black Hills Water System (SBHWS) has been formed to develop a regional water system. A feasibility study has been completed. As noted in the "*Preliminary Engineering Report, Water System-2005 Update*" Appendix C, the feasibility study identified three possible projects: the Hermosa Branch; the Cascade Branch and the Custer Branch. There has been no specific proposal made to the FRWUD as far as timing of the construction and which project will be constructed first.

Because of the continuing growth and water use within the current FRWUD, there is an urgent need for additional supply. Therefore, the Board has elected to pursue development of a new water source.

TABLE 4
OPINION OF PROBABLE COST
WATER SUPPLY WELL-FALL RIVER ROAD SITE
NE¼ of Section 32, T7S, R6E
FALL RIVER WATER USERS DISTRICT
March, 2007

ITEM	QUANTITY	UNITS	UNIT COST	EXTENDED COST
New Madison Well (2450' Deep)				
17 1/2" Bore Hole	40	LF	\$ 100.00	\$4,000
12 1/4" Bore Hole	1,000	LF	\$ 60.00	\$60,000
8 3/4" Bore Hole	1,110	LF	\$ 50.00	\$55,500
5 7/8" Bore Hole	300	LF	\$ 50.00	\$15,000
13 3/8" OD Casing	40	LF	\$ 40.00	\$1,600
9 5/8" OD Casing	1,000	LF	\$ 34.00	\$34,000
6 5/8" OD Casing	1,110	LF	\$ 22.00	\$24,420
Centralizers	31	EA	\$ 75.00	\$2,325
Grouting	1	LS	\$ 28,000.00	\$28,000
Pitless Adapter	1	LS	\$ 8,000.00	\$8,000
Well Logging	1	LS	\$ 7,500.00	\$7,500
Test Pumping	1	LS	\$ 3,500.00	\$3,500
Well House, Pump, Chlorination Facilities	1	LS	\$ 100,000.00	\$100,000
Telemetry System	1	LS	\$ 55,000.00	\$55,000
Mobilization	1	LS	\$ 65,000.00	\$65,000
Sub-Total -Well Development				\$463,845
Contingencies @ 20%				\$92,769
Acid Treatment if Needed				\$100,000
Estimated Total-Well Development				\$656,614
Other Project Costs				
Land & Rights-of-Way				\$15,000
Legal Services				\$8,000
Engineering & Surveying	6.00%			\$39,397
Construction Layout & Inspections	3.00%			\$19,698
Testing Services	1.50%			\$9,849
Archeological Study	0.50%			\$3,283
Administrative/Clerical	0.50%			\$3,283
Sub-Total				\$98,511
Total Estimated Project Cost - Water Supply				\$755,125

TABLE 5
Opinion of Probable Cost
Transmission Line-Fall River Road Well Site to Angostura Tank
FALL RIVER WATER USERS DISTRICT
March, 2007

ITEM	QUANTITY	UNITS	UNIT COST	EXTENDED COST
10" PVC Water Main-Class 200	10,000	LF	\$ 33.00	\$330,000
8" PVC Water Main-Class 250	5,000	LF	\$ 13.00	\$65,000
8" PVC Water Main-Class 200	6,000	LF	\$ 9.20	\$55,200
8" PVC Water Main-Class 160	12,500	LF	\$ 8.20	\$102,500
10" Valves & Boxes	4	EA	\$ 1,500.00	\$6,000
8" Valves & Boxes	7	EA	\$ 980.00	\$6,860
Standard Fire Hydrant	1	EA	\$ 2,800.00	\$2,800
Flushing Hydrants	2	EA	\$ 700.00	\$1,400
Manual Air Release	5	EA	\$ 530.00	\$2,650
Cheyenne River Crossing	1	EA	\$ 22,000.00	\$22,000
Road Crossings	10	EA	\$ 2,200.00	\$22,000
Asphalt Pavement-Remove and Replace	1,500	SY	\$ 50.00	\$75,000
Mobilization	1	LS	\$ 35,000.00	\$35,000
Sub-Total				\$726,410
Contingencies @ 15%				\$108,962
TOTAL ESTIMATED CONSTRUCTION COST				\$835,372

Other Project Costs				
Land & Rights-of-Way				\$2,500
Legal Services				\$3,500
Engineering, Surveying & Geotechnical	7.00%			\$58,476
Construction Layout & Inspections	3.00%			\$25,061
Testing Services	1.00%			\$8,354
Archelological Study	0.50%			\$4,177
Administrative/Clerical	0.50%			\$4,177
Sub-Total				\$106,245
Total Estimated Project Cost				\$941,616

TABLE 6
OPINION OF PROBABLE COST
NORTH AREA EXPANSION
FALL RIVER WATER USERS DISTRICT
October, 2002, Revised May, 2005, Revised April, 2006, Revised March, 2007

ITEM	QUANTITY	UNITS	UNIT COST	EXTENDED COST
8" PVC Water Main-Class 200	5,000	LF	\$ 9.20	\$46,000
8" PVC Water Main-Class 160	11,800	LF	\$ 8.20	\$96,760
6" PVC Water Main-Class 160	32,500	LF	\$ 6.80	\$221,000
4" PVC Water Main-Class 160	70,800	LF	\$ 4.00	\$283,200
3" PVC Water Main-Class 200	35,600	LF	\$ 3.10	\$110,360
2" PVC Water Main-Class 200	68,400	LF	\$ 2.40	\$164,160
1 1/2" PVC Water Main-Class 200	35,400	LF	\$ 2.30	\$81,420
12" Casing Pipe	200	LF	\$ 80.00	\$16,000
8" Casing Pipe	300	LF	\$ 60.00	\$18,000
8" Valves & Boxes	5	EA	\$ 980.00	\$4,900
6" Vaves & Boxes	7	EA	\$ 680.00	\$4,760
4" Valves & Boxes	15	EA	\$ 550.00	\$8,250
3" Valves & Boxes	7	EA	\$ 500.00	\$3,500
2" Valves & Boxes	14	EA	\$ 430.00	\$6,020
1 1/2" Valves & Boxes	67	EA	\$ 280.00	\$18,760
Standard Fire Hydrant	1	EA	\$ 2,800.00	\$2,800
Flushing Hydrants	19	EA	\$ 700.00	\$13,300
Manual Air Release	16	EA	\$ 530.00	\$8,480
1 1/2" Service Line Connection	67	EA	\$ 210.00	\$14,070
Pressure Reducing Station	1	EA	\$ 5,500.00	\$5,500
Master Control Vault/Relocate Main PRV	1	EA	\$ 55,000.00	\$55,000
Meter Pits w/5/8" x 3/4" meter	64	EA	\$ 850.00	\$54,400
Meter Pits w/3/4" meter	3	EA	\$ 950.00	\$2,850
Fall River Crossing	1	EA	\$ 10,000.00	\$10,000
River/Stream Crossing	6	EA	\$ 4,800.00	\$28,800
Road Crossings	12	EA	\$ 2,200.00	\$26,400
Rock Excavation	100	CY	\$ 45.00	\$4,500
Telemetry Systems	1	LS	\$ 55,000.00	\$55,000
New Booster Station	1	LS	\$ 65,000.00	\$65,000
180,000 Gallon Storage Tank	1	LS	\$ 210,000.00	\$210,000
Mobilization	1	LS	\$ 60,000.00	\$60,000
Sub-Total				\$1,653,190
Contingencies @ 15%				\$247,979
TOTAL ESTIMATED CONSTRUCTION COST				\$1,901,169

Other Project Costs				
Land & Rights-of-Way				\$5,000
Legal Services				\$5,000
Engineering, Surveying & Geotechnical	6.00%			\$114,070
Construction Layout & Inspections	3.00%			\$57,035
Testing Services	0.50%			\$9,506
Archelological Study	0.50%			\$9,506
Administrative/Clerical	0.50%			\$9,506
Sub-Total				\$209,623
Total Estimated Project Cost				\$2,110,791

OPERATION AND MAINTENANCE COSTS

Estimated annual operation and maintenance costs included in "*Preliminary Engineering Report, 2005 Update, North Expansion Area*", Appendix B were \$9,000.

Estimated annual operation and maintenance costs for a new well are about \$44,000 summarized as tabulated below. O & M costs should be similar for either well site.

1. Annual power costs (assumed \$0.10/kw-hr)	\$20,000
2. Pump and Motor Replacement fund (10-year life)	\$4,000
3. Treatment	\$2,500
4. Testing	\$5,000
5. Labor (8 hrs/week)	\$6,300
6. <u>Vehicle Expense (120 miles/week)</u>	<u>\$6,200</u>
Total	\$44,000

Estimated annual operation and maintenance costs of the new booster station would be about \$10,000 summarized as tabulated below. Because of lower head conditions and smaller motor 7.5-10 hp versus 25 hp), power costs would probably be about half those and the Booster Station No. 1 (Angostura Booster) which are about \$8,000 per year.

1. Annual power costs	\$4,000
2. Pump and Motor Replacement fund (10-year life)	\$1,000
3. <u>Labor (4 hrs/week)</u>	<u>\$3,200</u>
Total	\$8,200

PROJECT FUNDING, FINANCING, OPERATING BUDGET AND REVENUE

For the purpose of this study it was assumed that loan funds would be financed from Rural Development at 4 3/8% interest for a period of 40 years. Operating budgets and revenue projects were developed for the two scenarios.

North Expansion with North Area Well Site and Transmission Line to Angostura Tank

The District has secured grants totaling \$915,000 (\$350,000 Consolidated Water Fund Grant and \$565,000 Community Development Block Grant). The Community Development Block Grant included \$15,000 for project administration by the Black Hills Council of Local Governments. The updated cost estimate for the North Expansion Area project is \$2,110,800 as shown in Table 6. Loan funds required for the North Area Expansion portion of the project would be \$1,210,800.

The total project cost was estimated at \$3,465,700 as shown in Table 2 which is \$1,354,900 more than the North Expansion project by itself. It was assumed that this cost would be financed entirely by RD loan funds.

The estimated **annual operating budget** (less depreciation) for this scenario is summarized below. These numbers represent the annual cash flow needs for the system. Purchased water from Hot Springs was based on the buying **one-half** of the estimated water use plus 10.0% loss in the system at a cost \$1.00/1,000 gallons (80% of the City's rate). Water for the Town of Buffalo Gap is included in the estimates.

North Expansion with North Area Well Site and Transmission Line to Angostura Tank

Annual Principal and Interest \$1,210,800 (North Area Expansion less Grant)	\$64,200
Annual Principal & Interest \$1,354,900 Additional Funds	71,900
10% Reserve	13,350
Additional Operation and Maintenance (North Area Expansion)	\$9,000
Additional Operation and Maintenance (New Well)	\$44,000
Additional Operation and Maintenance (New Booster Station)	8,200
<u>Purchase ½ of Water from Hot Springs (With Buffalo Gap)</u>	<u>\$12,600</u>
Estimated Total Annual Cash Needs	\$223,250

In the "*Preliminary Engineering Report, 2005 Update, North Expansion Area*", Appendix B, revenues from the North Area Expansion with the Town of Buffalo Gap project were estimated at \$93,700. The May 8, 2006 update information projected additional \$9,700 revenue from 12 additional users making the total projected revenue \$103,400.

Construction, financing and revenue from this scenario results in an annual deficit of about \$119,800.

From Table 1, estimated existing total water sales are about 93 MG per year and projected initial use in the North Area Expansion project is 27 MG per year for a total of 120 MG per year. To offset the projected deficit, water rates would have to be increased by about \$1.00 per 1,000 gallons.

If the District received a 40% grant for the additional funds (the \$1,354,900) leaving \$832,000 to be financed by a loan, annual P & I would be reduced by about \$27,800. Total estimated annual cash needs would then be about \$195,400. This would reduce the projected deficit to about \$92,000. A water rate increase of about \$0.77 per 1,000 gallons would be needed to offset the projected deficit.

North Expansion with Fall River Road Well Site and Transmission Line to Angostura Tank

As noted above, the District has received grants totaling \$915,000 (\$350,000 Consolidated Water Fund Grant and \$565,000 Community Development Block Grant). The Community Development Block Grant included \$15,000 for project administration by the Black Hills Council of Local Governments. The updated cost estimate for the North Expansion Area project is \$2,110,800 as shown in Table 6. Loan funds required for the North Area Expansion portion of the project would be \$1,210,800.

The total project cost was estimated at \$3,807,800 as shown earlier (sum of Tables 4, 5 and 6) which is \$1,697,000 more than the North Expansion project by itself. It was assumed that this cost would be financed entirely by RD loan funds.

The estimated **annual operating budget** (less depreciation) for this scenario is summarized below. These numbers represent the annual cash flow needs for the system. Purchased water from Hot Springs was based on the buying **one-half** of the estimated water use plus 10.0% loss in the system at a cost \$1.00/1,000 gallons (80% of the City's rate). Water for the Town of Buffalo Gap is included in the estimates.

North Expansion with Fall River Road Well and Transmission Line to Angostura Tank

Annual Principal and Interest \$1,210,800 (North Area Expansion less Grant)	\$64,200
Annual Principal & Interest \$1,697,000 Additional Funds	90,000
10% Reserve	15,400
Additional Operation and Maintenance (North Area Expansion)	\$9,000
Additional Operation and Maintenance (New Well)	\$44,000
<u>Purchase ½ of Water from Hot Springs (With Buffalo Gap)</u>	<u>\$12,600</u>
Estimated Total Annual Cash Needs	\$235,200

In the "*Preliminary Engineering Report, 2005 Update, North Expansion Area*", Appendix B, revenues from the North Area Expansion with the Town of Buffalo Gap project were estimated at \$93,700. The May 8, 2006 update information projected additional \$9,700 revenue from 12 additional users making the total projected revenue \$103,400.

Construction, financing and revenue from this scenario results in an annual deficit of about \$132,000.

From Table 1, estimated existing total water sales are about 93 MG per year and projected initial use in the North Area Expansion project is 27 MG per year for a total of 120 MG per year. To offset the projected deficit, water rates would have to be increased by about \$1.10 per 1,000 gallons.

If the District received a 40% grant for the additional funds (the \$1,697,000) leaving \$1,018,200 to be financed by a loan, annual P & I would be reduced by about \$36,000. Total estimated annual cash needs would then be about \$199,200. This would reduce the projected deficit to about \$95,800. A water rate increase of about \$0.80 per 1,000 gallons would be needed to offset the projected deficit.

FINDINGS

1. Continued growth and possible expansion results in the need for an increased water supply. To satisfy projected demands, and additional 250 to 300 gpm will be required. The District requested that development of a new well be evaluated to provide the additional water supply.

2. For well development, development of a new well at the "North Site" in conjunction with the North Area Project and a new transmission line from near Maverick to the Angostura tank is the most economical.
3. Construction of a new well at the "North Site" in conjunction with the North Area Project and a new transmission line from near Maverick to the Angostura tank provides a second independent water supply source for the District.
4. The water supply to the District could be increased by development of a new well at the Fall River Road site, construction of the new transmission line to the Angostura tank. The North Area Expansion could be constructed independently. Total estimated cost of the three separate projects is higher.
5. Development of the "North Site" projects now would allow for future development of the Fall River Road site well if the City of Hot Springs terminates the water purchase contract. If the purchase contract is terminated and the Fall River Road site well is developed, there would be no need to construct the supplemental water main from the well to the Angostura tank. The existing water main is capable of carrying the 300± gpm from the well.
6. The Board is cautioned that development of a new well is always risky. The quantity and quality of any water is not known until the well is drilled.
7. Additional improvements will be required to support anticipated growth within the District as noted in the *"Preliminary Engineering Report, Water System-2005 Update"* Appendix C.
8. Additional grant funds and/or water rate increases will be needed to support the growth and development.

The need for grant monies for construction of this type of project is not unusual and most similar projects require a significant grant contribution to make them feasible. Even though some future growth is anticipated, most federal and state agencies involved in funding such projects require that the cost analysis indicates a positive cash flow based on the current numbers of users.

The original Fall River Water Users District project construction was completed with over 80% cost share when both federal and state grants are considered.

IMPLEMENTATION SCHEDULE

If the Board decides to proceed with this improvement project, it is likely that water would be available to consumers in 1.0 to 3.5 years depending on the amount of time required for project funding. An estimated time frame follows:

Funding Requests/Approval	6-24 months
Project Design/Land and Easement Acquisition	6 months
Plan Approval/Bidding/Contract Award	3 months
Construction Period	6 months

APPENDIX A

Review of Proposed Sites for Development of a Madison Well for Fall River Water Users District

**Review of Proposed Sites for
Development of a Madison Well for the
Fall River Water Users District**

Prepared for

**FMG, Inc.
3700 Sturgis Road
Rapid City, South Dakota 57702**

Prepared by

**Arden D. Davis, P.E., Ph.D.
1014 Milwaukee Street
Rapid City, South Dakota 57701**

March 16, 2007

Introduction

The work described in this report was undertaken at the request of FMG, Inc., Rapid City, South Dakota. Mr. Allen Foster of FMG provided information about several possible sites for development of a new Madison well for the Fall River Water Users District. The Fall River board requested a review of possible Madison formation well sites and an opinion on the sites with regard to potential water availability and quantity, as well as potential impact, if any, on existing wells or springs. Mr. Randy Scott, General Manager of the Fall River Water Users District, confirmed this information in a phone conversation on December 12, 2006.

Background

The proposed sites for development of a new well in the Madison Limestone are:
SE ¼ Section 36, T. 6 S., R. 6 E.
SW ¼ Section 1, T. 7 S., R. 6 E.
Section 13 or 14, T. 9 S., R. 5 E.
Section 5 or 8, T. 8 S., R. 5 E.
NE ¼ Section 32, T. 7 S., R. 6 E. (existing water right)

The proposed site in section 36, T. 6 S., R. 6 E., is in Custer County, South Dakota. The other proposed sites are in Fall River County.

Available Information

Existing information from the U.S. Geological Survey and other sources was used in the review of the proposed sites. This included a report on the hydrology of the Black Hills area (Driscoll and others, 2002), the atlas of water resources in the Black Hills area (Carter and others, 2002), a map of the altitude of the top of the Madison Limestone (Carter and Redden, 1999), and a map of the potentiometric surface of the Madison aquifer (Strobel and others, 2000). Mr. Allen Foster of FMG also provided a map of the proposed sites and existing infrastructure.

Review of Proposed Well Sites

The five proposed sites are discussed in order below.

SE ¼ Section 36, T. 6 S., R. 6 E.

This proposed site is in Custer County, immediately north of the Fall River county line and west of South Dakota Highway 79 (Figure 1) near the town of Buffalo Gap. The site is near the Inyan Kara hogback ridge that trends north-northeasterly through section 36. The sedimentary rocks dip east-southeasterly at the site, which is near the southern edge of the Buffalo Gap monocline.

According to published information in U.S. Geological Survey Hydrologic Investigations Atlas HA-744-D (Carter and Redden, 1999), the top of the Madison Limestone varies from about 550 ft above sea level, at the southeastern corner of this proposed site, to about 1000 ft above sea level at the northwestern corner.

The U.S. Geological Survey's Buffalo Gap quadrangle topographic map (1:24,000 scale) shows that the land surface at this proposed site varies from about 3420 ft, near the southeastern corner of the area, to about 3600 ft at the northwestern corner. Thus, the drilling depth could vary from about 2600 to 2900 ft at the site. The shallowest drilling depths would be near the northwestern corner of the site, and the deeper drilling depths would be near the southeastern corner, because the rocks dip toward the east-southeast.

Potentiometric information published in U.S. Geological Survey Hydrologic Investigations Atlas HA-745-D (Strobel and others, 2000) shows that the potentiometric surface of the Madison aquifer is less than 3400 ft above sea level at this proposed site. Thus, a flowing artesian well could not be expected here.

Water temperature in the Madison aquifer in this area is expected to be about 20° C to 30° C (68° F to 86° F), according to the U.S. Geological Survey's Atlas of Water Resources in the Black Hills Area (Carter and others, 2002). Water quality of the Madison aquifer in the near vicinity of this proposed site is not known. Beaver Creek Spring, about 3 ¼ miles north-northwest of the site, has a total dissolved solids concentration of more than 2000 mg/L and a sulfate concentration of 1300 mg/L; the estimated spring source is mostly Madison with some dissolved minerals from the

Minnelusa aquifer (Naus and others, 2001). The State of South Dakota's recommended maximum contaminant level for sulfate is 250 mg/L. South Dakota's recommended maximum contaminant level for total dissolved solids is 500 mg/L. A Madison well at the Streeter Ranch, about 3 ¾ miles north-northwest of the proposed site, has a total dissolved solids content of about 280 mg/L and a temperature of about 42° C (Naus and others, 2001; Whalen, 1994; Busby and others, 1991).

It is difficult to predict the yield of a Madison well at the proposed site because no existing production wells are nearby. Because of the location near the downthrown limb of the Buffalo Gap monocline, it is possible that compressional features could limit the permeability of the Madison aquifer. In contrast, tensional features near the crest of a fold would be more likely to result in greater permeability and subsequent dissolution enlargement of fractures; however, this does not appear to be the case at this proposed site.

Impacts to existing wells or springs should be minimal. The distance to Beaver Creek Spring, as mentioned above, is about 3 ¼ miles north-northwest of the proposed site, and the Streeter well is about 3 ¾ miles from the site. In addition, Beaver Creek Spring and wells at the Streeter Ranch do not appear to be directly upgradient from the proposed site.

SW ¼ Section 1, T. 7 S., R. 6 E.

This proposed site is in Fall River County, less than one mile south of the Custer county line and west of South Dakota Highway 79 (Figure 2) near the town of Buffalo Gap. The site is near the Inyan Kara hogback ridge that trends north-northeasterly near the western edge of Section 1. The sedimentary rocks dip east-southeasterly at the site, which is near the southern edge of the Buffalo Gap monocline.

According to published information in U.S. Geological Survey Hydrologic Investigations Atlas HA-744-D (Carter and Redden, 1999), the top of the Madison Limestone varies from about 750 ft above sea level, at the southeastern corner of this proposed site, to about 1000 ft above sea level at the northwestern corner.

The U.S. Geological Survey's Buffalo Gap quadrangle topographic map (1:24,000 scale) shows that the land surface at this proposed site varies from about 3350

ft, near the southeastern corner of the area, to about 3500 ft at the northwestern corner. Thus, the drilling depth could vary from about 2500 to 2600 ft at the site. The shallowest drilling depths would be near the northwestern corner of the site, and the deeper drilling depths would be near the southeastern corner, because the rocks dip toward the east-southeast.

Potentiometric information published in U.S. Geological Survey Hydrologic Investigations Atlas HA-745-D (Strobel and others, 2000) shows that the potentiometric surface of the Madison aquifer is less than 3400 ft above sea level at this proposed site. Thus, a flowing artesian well is not likely here.

Water temperature in the Madison aquifer in this area is expected to be about 20° C to 30° C (68° F to 86° F), according to the U.S. Geological Survey's Atlas of Water Resources in the Black Hills Area (Carter and others, 2002). Water quality of the Madison aquifer in the near vicinity of this proposed site is not known. Beaver Creek Spring, about four miles north-northwest of the site, has a total dissolved solids concentration of more than 2000 mg/L and a sulfate concentration of 1300 mg/L; the estimated spring source is mostly Madison with some dissolved minerals from the Minnelusa aquifer (Naus and others, 2001). A Madison well at the Streeter Ranch, about 4 ½ miles north-northwest of the proposed site, has a total dissolved solids content of about 280 mg/L and a temperature of about 42° C (Naus and others, 2001; Whalen, 1994; Busby and others, 1991).

As with the previous site, it is difficult to predict the yield of a Madison well at the proposed site because no existing production wells are nearby. Because of the location near the downthrown limb of the Buffalo Gap monocline, it is possible that compressional features could limit the permeability of the Madison aquifer. Tensional features near the crest of a fold would be more likely to result in greater permeability and subsequent dissolution enlargement of fractures. As with the previous site, however, this does not appear to be the case at the proposed site.

Impacts to existing wells or springs should be minimal. The distance to Beaver Creek Spring, as mentioned above, is about four miles north-northwest of the proposed site, and the Streeter well is about 4 ½ miles from the site. In addition, Beaver Creek

Spring and wells at the Streeter Ranch do not appear to be directly upgradient from the proposed site.

Section 13 or 14, T. 9 S., R. 5 E.

This proposed site is about one mile south of Angostura Reservoir (Figure 3) near the inlet of the Cheyenne River. The site appears to be on a southeastward extension of the Cascade anticline.

According to published information in U.S. Geological Survey Hydrologic Investigations Atlas HA-744-D (Carter and Redden, 1999), the top of the Madison Limestone varies from about 800 ft above sea level, at the southeastern corner of section 13, to about 1400 ft above sea level near the northwestern corner of section 14.

The U.S. Geological Survey's Angostura Reservoir quadrangle topographic map (1:24,000 scale) shows that the land surface at this proposed site varies from about 3300 ft, in the eastern part of section 13, to about 3800 ft at the northwestern corner of section 14. Therefore, the drilling depth could vary from about 2400 to 2500 ft at the site.

Potentiometric information published by the U.S. Geological Survey (Driscoll and others, 2002) shows that the potentiometric surface of the Madison aquifer is less than 3400 ft above sea level at this proposed site. Thus, a flowing artesian well is not likely here.

Water temperature in the Madison aquifer in this area is expected to be greater than 50° C (122° F), according to the U.S. Geological Survey's Atlas of Water Resources in the Black Hills Area (Carter and others, 2002). A Madison well at Provo, South Dakota, about 18 miles west-southwest of the proposed site, has water that is 60° C (140° C) (Back and others, 1983). Water quality of the Madison aquifer in the near vicinity of this proposed site is not known. Water from Cascade Springs, about five miles north-northwest of the site, has a total dissolved solids of 2,280 mg/L and a sulfate concentration of 1,450 mg/L (Back and others, 1983); the estimated spring source is mostly Madison with some dissolved minerals from the Minnelusa aquifer (Naus and others, 2001). The Madison well at Provo, about 18 miles west-southwest of the site, has a total dissolved solids content of 1070 mg/L and a sulfate concentration of 319 mg/L (Back and others, 1983).

It is difficult to predict the yield of a Madison well at the proposed site because no existing production wells are nearby. Because of the location near the crest of the southeastward extension of the Cascade anticline, tensional features associated with this fold could result in greater permeability and subsequent dissolution enlargement of fractures.

Impacts to existing wells or springs should be minimal. The distance to Cascade Springs, as mentioned above, is about five miles north-northwest of the proposed site, and the Provo well is 18 miles from the site.

Section 5 or 8, T. 8 S., R. 5 E.

This proposed site (Figure 4) is about two miles north of Cascade Springs and four miles southwest of the City of Hot Springs. The site appears to be on the crest of the Cascade anticline.

According to published information in U.S. Geological Survey Hydrologic Investigations Atlas HA-744-D (Carter and Redden, 1999), the top of the Madison Limestone varies from about 2500 ft above sea level, at the southwestern corner of section 8, to more than 2900 ft above sea level near the northeastern corner of section 5.

The U.S. Geological Survey's Cascade Springs and Minnekahta NE quadrangle topographic maps (1:24,000 scale) show that the land surface at this proposed site varies from about 3600 ft, at Alabaugh Canyon in the southwestern part of Section 8, to about 4300 ft in the northern part of Section 5. Therefore, the drilling depth could vary from about 1100 to 1400 ft at the site.

Potentiometric information published by the U.S. Geological Survey (Strobel and others, 2000) shows that the potentiometric surface of the Madison aquifer varies from about 3550 ft to 3650 ft above sea level at this proposed site. Thus, a flowing artesian well is not likely here.

Water temperature in the Madison aquifer in this area is expected to be about 20° C to 30° C (68° F to 86° F), according to the U.S. Geological Survey's Atlas of Water Resources in the Black Hills Area (Carter and others, 2002). Cascade Springs, two miles south of the proposed site, has water that is 20° C (68° F) (Back and others, 1983). Water quality of the Madison aquifer in the near vicinity of this proposed site is not known.

Water from Cascade Springs has a total dissolved solids of 2,280 mg/L and a sulfate concentration of 1,450 mg/L (Back and others, 1983); the estimated spring source is mostly Madison with some dissolved minerals from the Minnelusa aquifer (Naus and others, 2001).

It is difficult to predict the yield of a Madison well at the proposed site because no existing production wells are nearby. Because of the location near the crest of the Cascade anticline, tensional features associated with this fold could result in greater permeability and subsequent dissolution enlargement of fractures.

Impacts to existing wells or springs should be considered carefully. The distance to Cascade Springs, as mentioned above, is about two miles south of the proposed site. The springs have a total discharge of about 18 ft³/sec (8100 gal/min) (Hayes, 1999).

NE ¼ Section 32, T. 7 S., R. 6 E. (Existing Water Right)

This proposed site (Figure 5) is about 2 ½ miles southeast of the City of Hot Springs. The site appears to be near the crest of the Dudley anticline.

According to published information in U.S. Geological Survey Hydrologic Investigations Atlas HA-744-D (Carter and Redden, 1999), the top of the Madison Limestone is about 1250 to 1300 ft above sea level at the proposed site.

The U.S. Geological Survey's Hot Springs quadrangle topographic map (1:24,000 scale) show that the land surface at this proposed site is about 3250 to 3300 feet. Therefore, the drilling depth could vary from about 2000 to 2100 ft at the site.

Potentiometric information published by the U.S. Geological Survey (Strobel and others, 2000) shows that the potentiometric surface of the Madison aquifer varies from about 3400 ft to 3500 ft above sea level at this proposed site. This is higher than the land-surface elevation of 3250 to 3300 feet, so a flowing artesian well is possible here.

Water temperature in the Madison aquifer in this area is expected to be about 30° C to 40° C (86° F to 104° F), according to the U.S. Geological Survey's Atlas of Water Resources in the Black Hills Area (Carter and others, 2002). The springs at Evans Plunge in Hot Springs, 3 ¾ miles northwest of the proposed site, have water that is 30.5° C (87° F) (Back and others, 1983). The temperatures of other springs in the Hot Springs area vary from 11° C (52° F) at Cold Brook Spring to 33.5° C (92° F) at Minnekahta

Spring; an artesian well at the Veteran's Administration Center has a water temperature of 31.5° F) (Alexander and others, 1988). Madison aquifer water at the proposed site is likely to be warmer than those temperatures because it is farther downgradient toward the area of hotter temperatures, according to a map by Carter and others (2002) of water temperatures in the Madison aquifer.

Water quality of the Madison aquifer in the near vicinity of this proposed site is not known. Water from Evans Plunge at Hot Springs has a total dissolved solids of 1,140 mg/L and a sulfate concentration of 545 mg/L (Back and others, 1983). The estimated spring source is mostly Madison water (Naus and others, 2001). As mentioned above, the State of South Dakota's recommended maximum contaminant level for sulfate is 250 mg/L, and the recommended maximum contaminant level for total dissolved solids is 500 mg/L.

It is difficult to predict the yield of a Madison well at the proposed site because no existing production wells are nearby. Because of the location near the crest of the Dudley anticline, tensional features associated with this fold could result in greater permeability and subsequent dissolution enlargement of fractures. A Madison well in Hot Springs at the Evans Pumping Station near Evans Plunge is capable of producing 2,000 gal/min (4.4 ft³/sec).

Impacts to existing wells or springs should be considered carefully. The distance to Evans Plunge at Hot Springs, as mentioned above, is about 3 ¾ miles to the northwest of the proposed site. The springs supply most of the water for the Fall River at Hot Springs, which has varied in annual discharge from a low of 20.9 ft³/sec (9380 gal/min) during 1981 (Burr and others, 2001) to a high of about 31.6 ft³/sec (14,200 gal/min) during 1941 (Peterlin, 1990). The proposed site is downgradient from the springs at Evans Plunge. Because of the distance of 3 ¾ miles, the impacts of proposed pumping, if any, on existing springs and wells should be small if pumping at the proposed site is in the range of 400 to 500 gal/min (about 1 ft³/sec).

Summary and Recommendations

The proposed site in the NE ¼ Section 32, T. 7 S., R. 6 E. (existing water right), appears to be favorable from the standpoint of potential water yield, based on a Madison well about 3 ¾ miles away in Hot Springs, and because of the proposed site's location near the crest of the Dudley anticline. A flowing artesian well is possible. The water temperature is predicted to be warm, in the range of 30° C to 40° C (86° F to 104° F). Water quality could be acceptable, although it might be marginal in terms of sulfate concentration and total dissolved solids. Impacts to existing springs and wells should be considered carefully but are believed to be small.

Other proposed sites appear to be less favorable for several reasons. The proposed sites in the SE ¼ Section 36, T. 6 S., R. 6 E., and the SW ¼ Section 1, T. 7 S., R. 6 E., have drilling depths that could vary from about 2500 to 2900 feet. Well yields in the immediate area are not known but are not likely to be large because of the location on the downthrown limb of a fold, where compressional features could limit permeability. A flowing artesian well is not likely at these two proposed sites. However, these two proposed sites should not be discounted, because they have the potential for high-quality water with low concentrations of sulfate and total dissolved solids. Water from the Streeter well, a Madison well about 3 ¾ miles north-northwest of the proposed site in Section 36, and about 4 ½ miles north-northwest of the proposed site in Section 1, had a total dissolved solids concentration of about 280 mg/L.

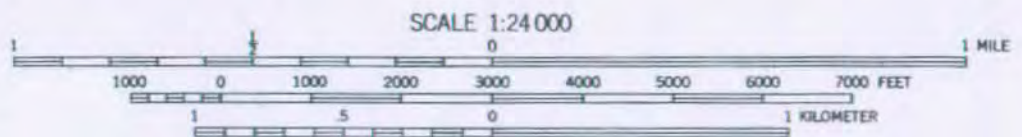
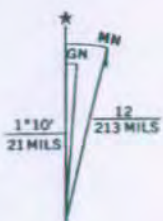
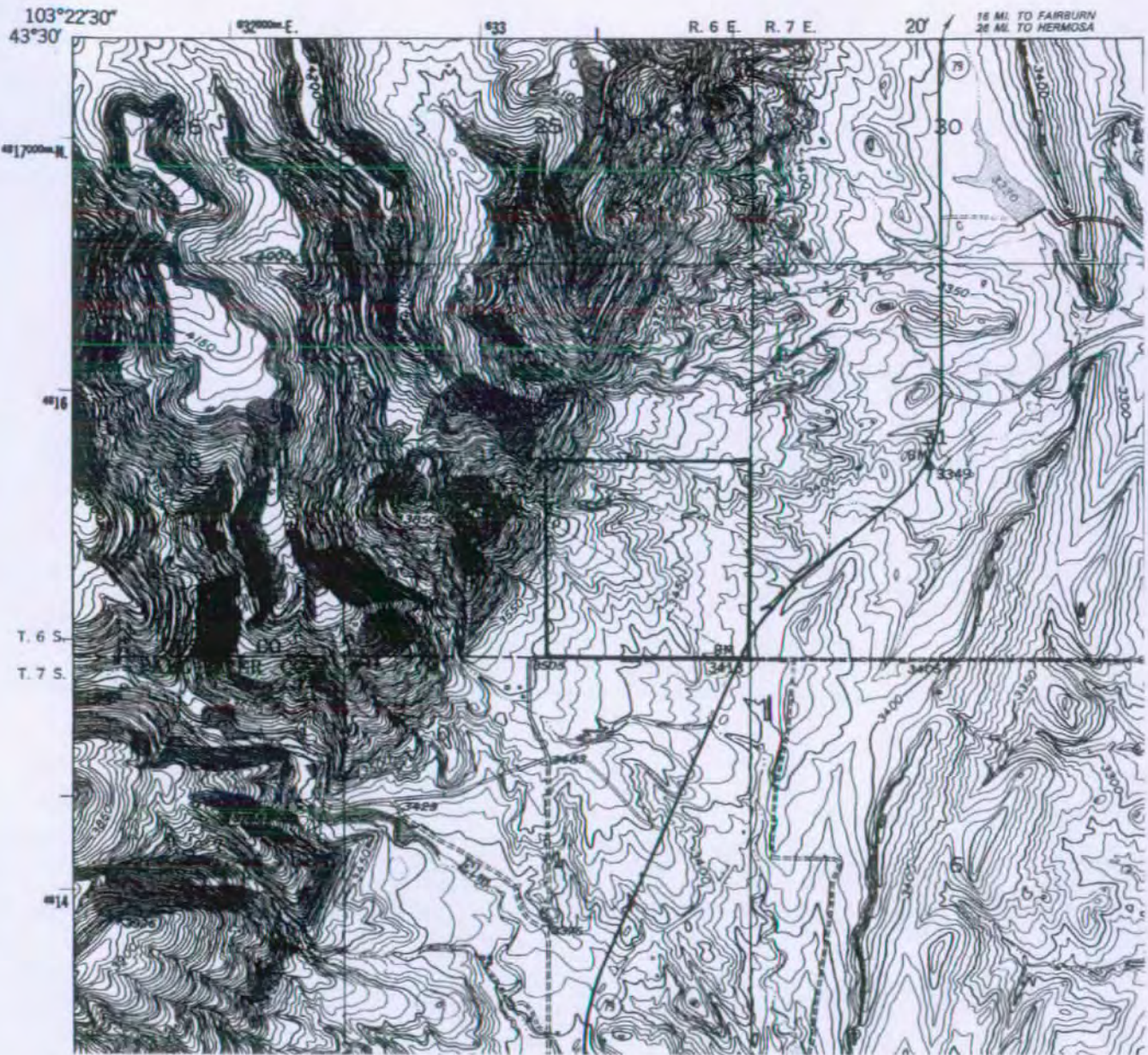
The proposed site south of Angostura Reservoir in Section 13 or 14, T. 9 S., R. 5 E., has drilling depths that could vary from about 2300 to 2500 feet. Water temperature is expected to be greater than 50° C (122° F). A flowing artesian well is not likely at this proposed site.

The proposed site north of Cascade Springs in Section 5 or 8, T. 8 S., R. 5 E., has drilling depths that could vary from about 1100 to 1400 feet. A flowing artesian well is not expected here. Impacts to existing springs or wells should be considered carefully. Cascade Springs is about two miles south of the site. This proposed site does not appear to be near existing infrastructure for the Fall River Water Users District.

References Cited

- Alexander, E.C., Davis, M.S., Alexander, S.C., and Lively, R.S., 1988, Thermal springs of the southern Black Hills, in Schilberg and Springhetti, eds., Caves and associated features of the Black Hills: Guidebook, 45th Annual Convention, National Speleological Society, p. 14-26.
- Back, W., Hanshaw, B.B., Plummer, L.N., Rahn, P.H., Rightmire, C.T., and Rubin, M., 1983, Process and rate of dedolomitization – mass transfer and ¹⁴C dating in a regional carbonate aquifer: Geological Society of America Bulletin, v. 94, no. 12, p. 1415-1429.
- Burr, M.J., Teller, R.W., and Neitzert, K.M., 2001, Water resources data, South Dakota, water year 2001: U.S. Geological Survey Water-Data Report SD-01-1, 476 p.
- Busby, J.F., Plummer, L.N., Lee, R.W., and Hanshaw, B.B., 1991, Geochemical evolution of water in the Madison aquifer in parts of Montana, South Dakota, and Wyoming: U.S. Geological Survey Professional Paper 1273-F, 89 p.
- Carter, J.M., Driscoll, D.G., and Williamson, J.E., 2002, Atlas of water resources in the Black Hills area, South Dakota: U.S. Geological Survey Hydrologic Investigations Atlas HA-747, 120 p.
- Carter, J.M., and Redden, J.A., 1999, Altitude of the top of the Madison Limestone in the Black Hills area, South Dakota: U.S. Geological Survey Hydrologic Investigations Atlas HA-744-D, 2 sheets, scale 1:100,000.
- Driscoll, D.G., Carter, J.M., Williamson, J.E., and Putnam, L.D., 2002, Hydrology of the Black Hills area, South Dakota: U.S. Geological Survey Water-Resources Investigations Report 01-4094, 150 p.
- Hayes, T.S., 1999, Episodic sediment-discharge events in Cascade Springs, southern Black Hills, South Dakota: U.S. Geological Survey Water-Resources Investigations Report 99-4168, 34 p.
- Naus, C.A., Driscoll, D.G., and Carter, J.M., 2001, Geochemistry of the Madison and Minnelusa aquifers in the Black Hills area, South Dakota: U.S. Geological Survey Water-Resources Investigations Report 01-4129, 118 p.
- Peterlin, J.D., 1990, Thermal springs and flow declines of the Fall River in the southern Black Hills of South Dakota: M.S. thesis, South Dakota School of Mines and Technology, 83 p.
- Strobel, M.L., Galloway, J.M., Hamade, G.R., and Jarrell, G.J., 2000, Potentiometric surface of the Madison aquifer in the Black Hills area, South Dakota: U.S. Geological Survey Hydrologic Investigations Atlas HA-745-D, 2 sheets, scale 1:100,000.

Whalen, P.J., 1994, Source aquifers for Cascade Springs, Hot Springs, and Beaver Creek Springs in the southern Black Hills of South Dakota: M.S. thesis, South Dakota School of Mines and Technology, 299 p.



CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

Figure 1. Proposed site in the SE 1/4 Section 36, T. 6 S., R. 6 E., Custer County, South Dakota. The town of Buffalo Gap is about 1 1/2 miles north-northeast of the site.

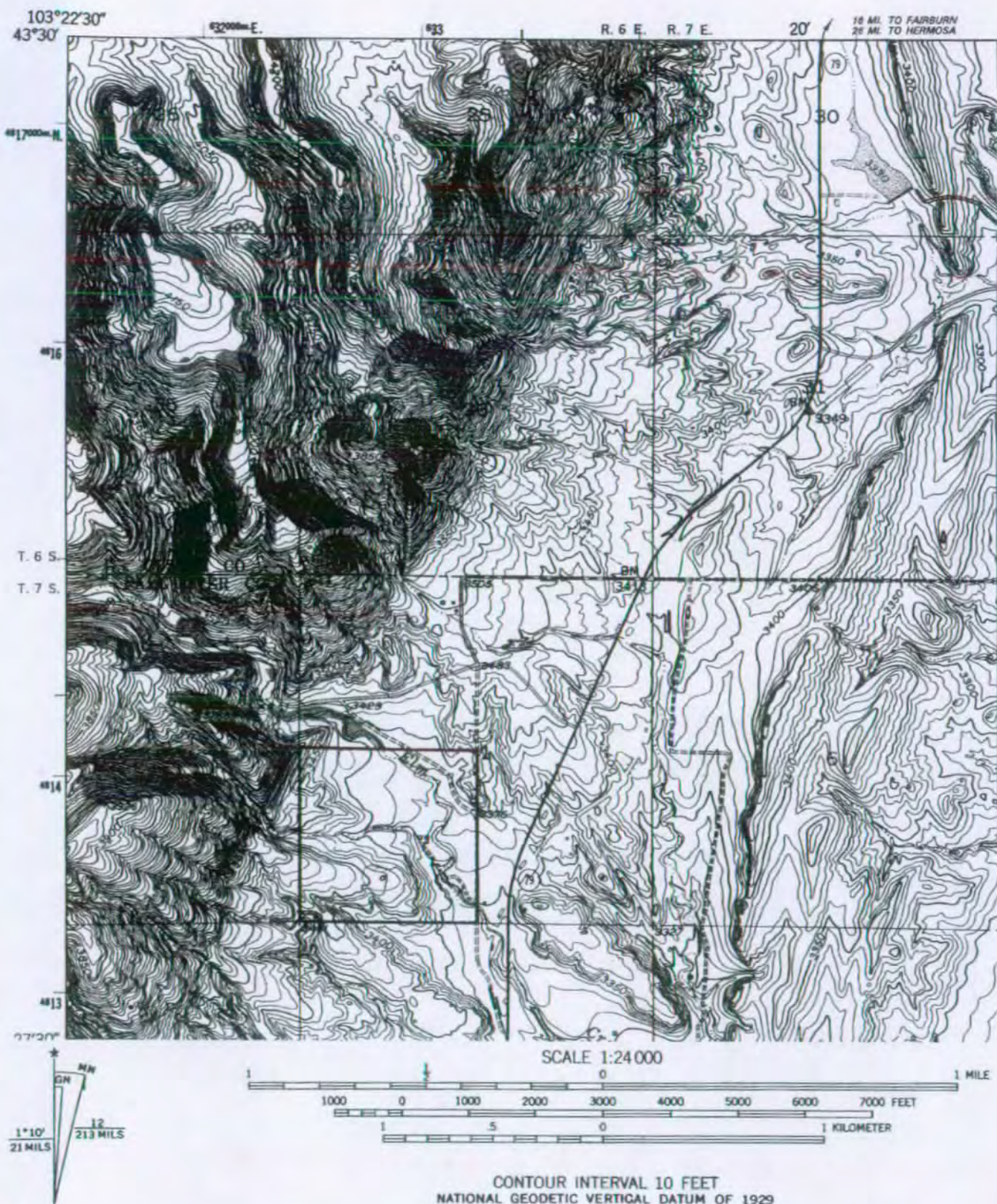


Figure 2. Proposed site in the SW $\frac{1}{4}$ Section 1, T. 7 S., R. 6 E., Fall River County, South Dakota. The town of Buffalo Gap is about 2 $\frac{1}{2}$ miles northeast of the site.

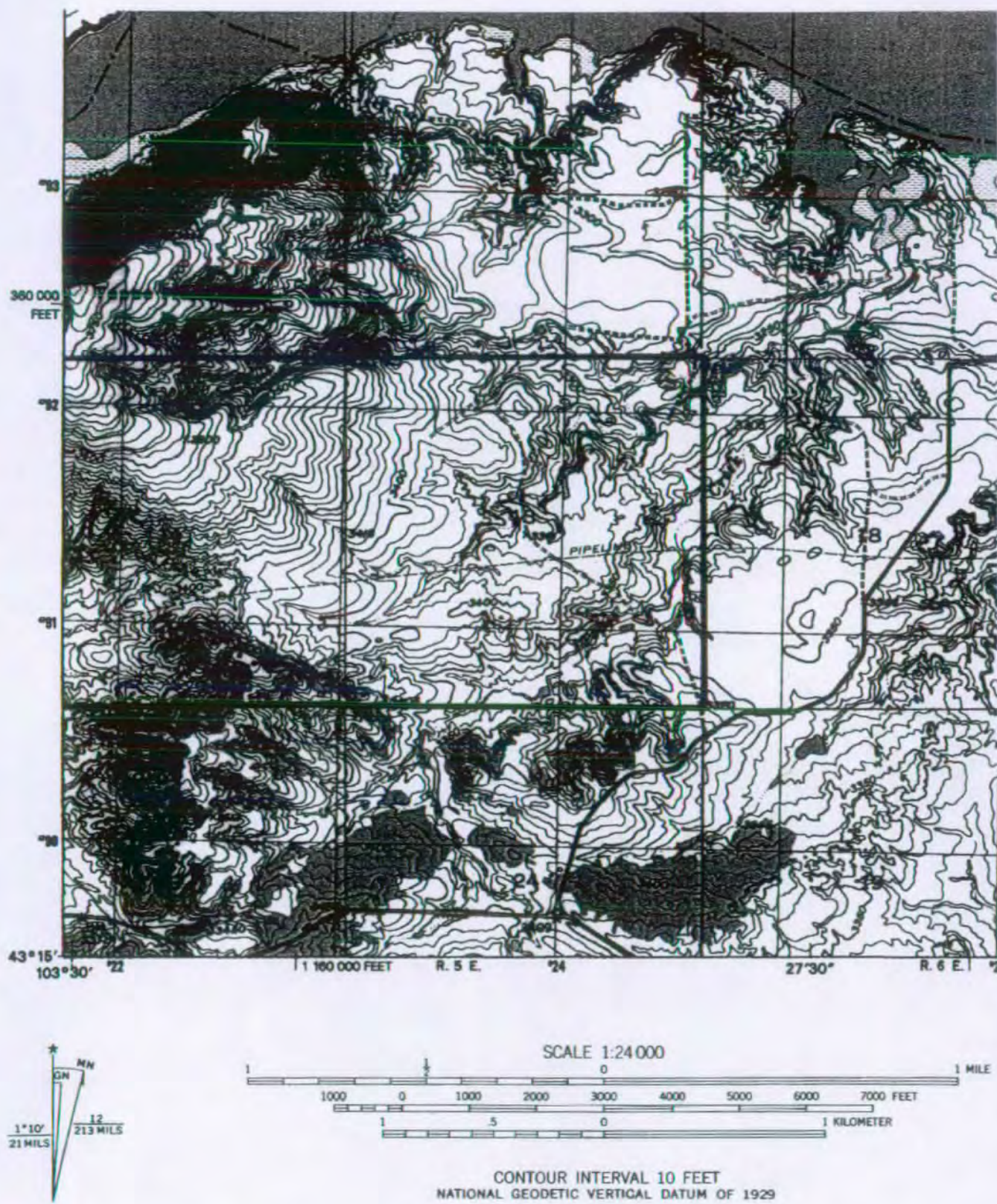
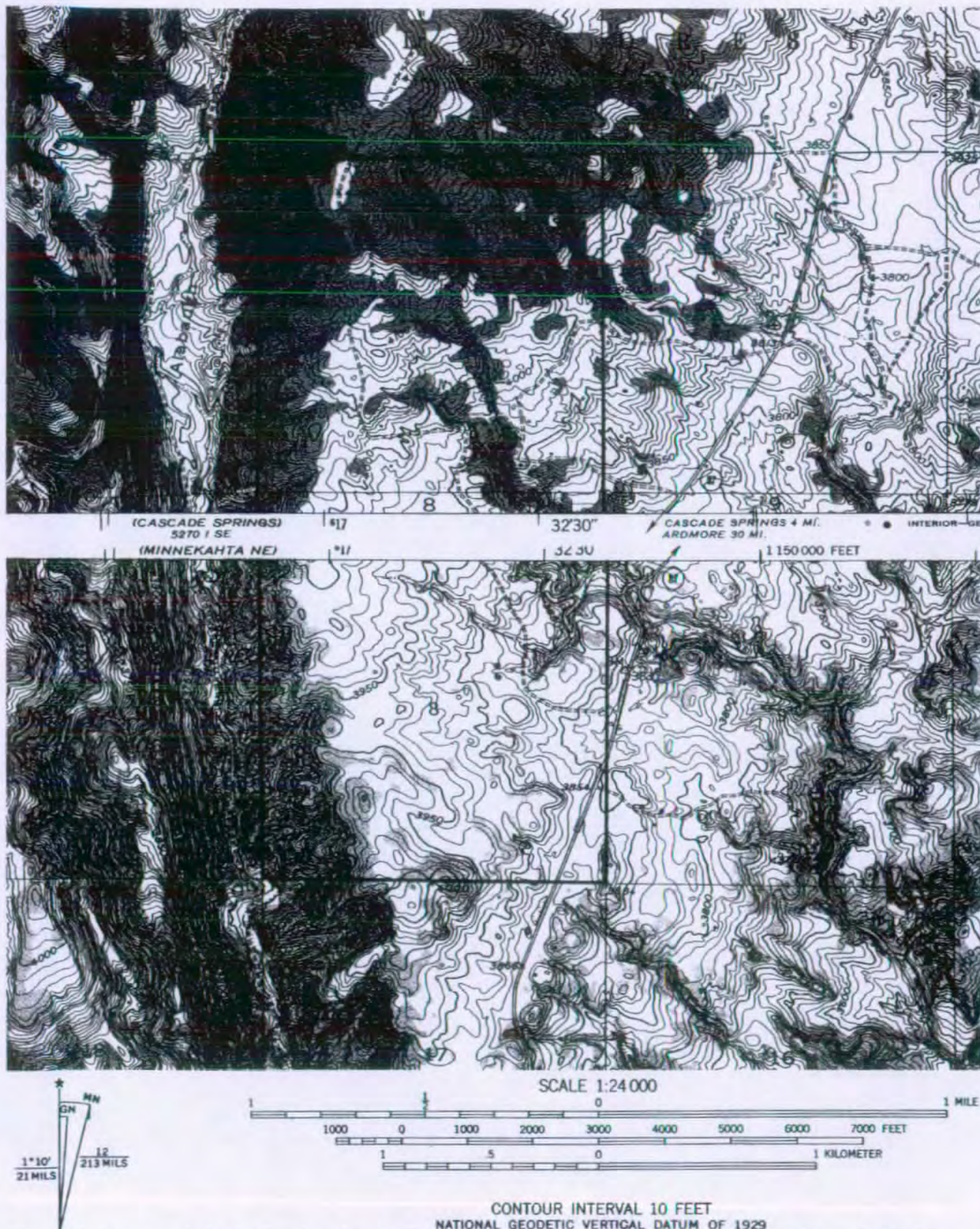
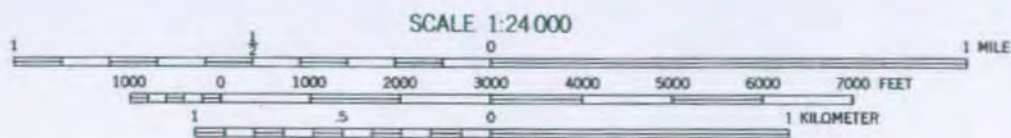
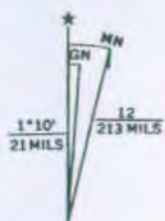


Figure 3. Proposed site at Section 13 or 14, T. 9 S., R. 5 E., south of Angostura Reservoir.





CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

Figure 5. Proposed site in the NE 1/4 Section 32, T. 7 S. R. 6 E. (existing water right), about 2 ½ miles southeast of the City of Hot Springs. Location supplied by Mr. Allen Foster of FMG, Inc.

Addendum

NE ¼ Section 11, T. 7 S., R. 6 E.

At the request of Mr. Allen Foster of FMG, Inc., an additional site was reviewed. This proposed site is in Fall River County, about one mile south of the Custer county line and west of South Dakota Highway 79 near the town of Buffalo Gap (Figure 6). The site is at the edge of the Inyan Kara hogback ridge that trends north-northeasterly through Section 11. The sedimentary rocks dip east-southeasterly at the site, which is near the southern edge of the Buffalo Gap monocline.

According to published information in U.S. Geological Survey Hydrologic Investigations Atlas HA-744-D (Carter and Redden, 1999), the top of the Madison Limestone varies from about 950 ft above sea level, at the southeastern corner of this proposed site, to about 1200 ft above sea level at the northwestern corner.

The U.S. Geological Survey's Buffalo Gap quadrangle topographic map (1:24,000 scale) shows that the land surface at this proposed site varies from about 3400 ft, in the southern and southeastern part of the area, to about 3700 ft at the northwestern corner. Thus, the drilling depth could vary from about 2300 to 2500 ft at the site. Some of the shallowest drilling depths should be in the southern and southeastern parts of the proposed site where the land-surface elevation is lowest.

Potentiometric information published in U.S. Geological Survey Hydrologic Investigations Atlas HA-745-D (Strobel and others, 2000) shows that the potentiometric surface of the Madison aquifer is less than 3400 ft above sea level at this proposed site. Thus, a flowing artesian well is not likely here.

Water temperature in the Madison aquifer in this area is expected to be about 20° C to 30° C (68° F to 86° F), according to the U.S. Geological Survey's Atlas of Water Resources in the Black Hills Area (Carter and others, 2002). Water quality of the Madison aquifer in the near vicinity of this proposed site is not known. Beaver Creek Spring, about five miles north-northwest of the site, has a total dissolved solids concentration of more than 2000 mg/L and a sulfate concentration of 1300 mg/L; the estimated spring source is mostly Madison with some dissolved minerals from the Minnelusa aquifer (Naus and others, 2001). A Madison well at the Streeter Ranch, more

than five miles north-northwest of the proposed site, has a total dissolved solids content of about 280 mg/L and a temperature of about 42° C (Naus and others, 2001; Whalen, 1994; Busby and others, 1991).

It is difficult to predict the yield of a Madison well at the proposed site because no existing production wells are nearby. Because of the location near the downthrown limb of the Buffalo Gap monocline, it is possible that compressional features could limit the permeability of the Madison aquifer. Tensional features near the crest of a fold would be more likely to result in greater permeability and subsequent dissolution enlargement of fractures. However, this does not appear to be the case at the proposed site.

Impacts to existing wells or springs should be minimal. The distance to Beaver Creek Spring, as mentioned above, is about five miles north-northwest of the proposed site, and the Streeter well is more than five miles from the site. Beaver Creek Spring and wells at the Streeter Ranch do not appear to be directly upgradient from the proposed site.

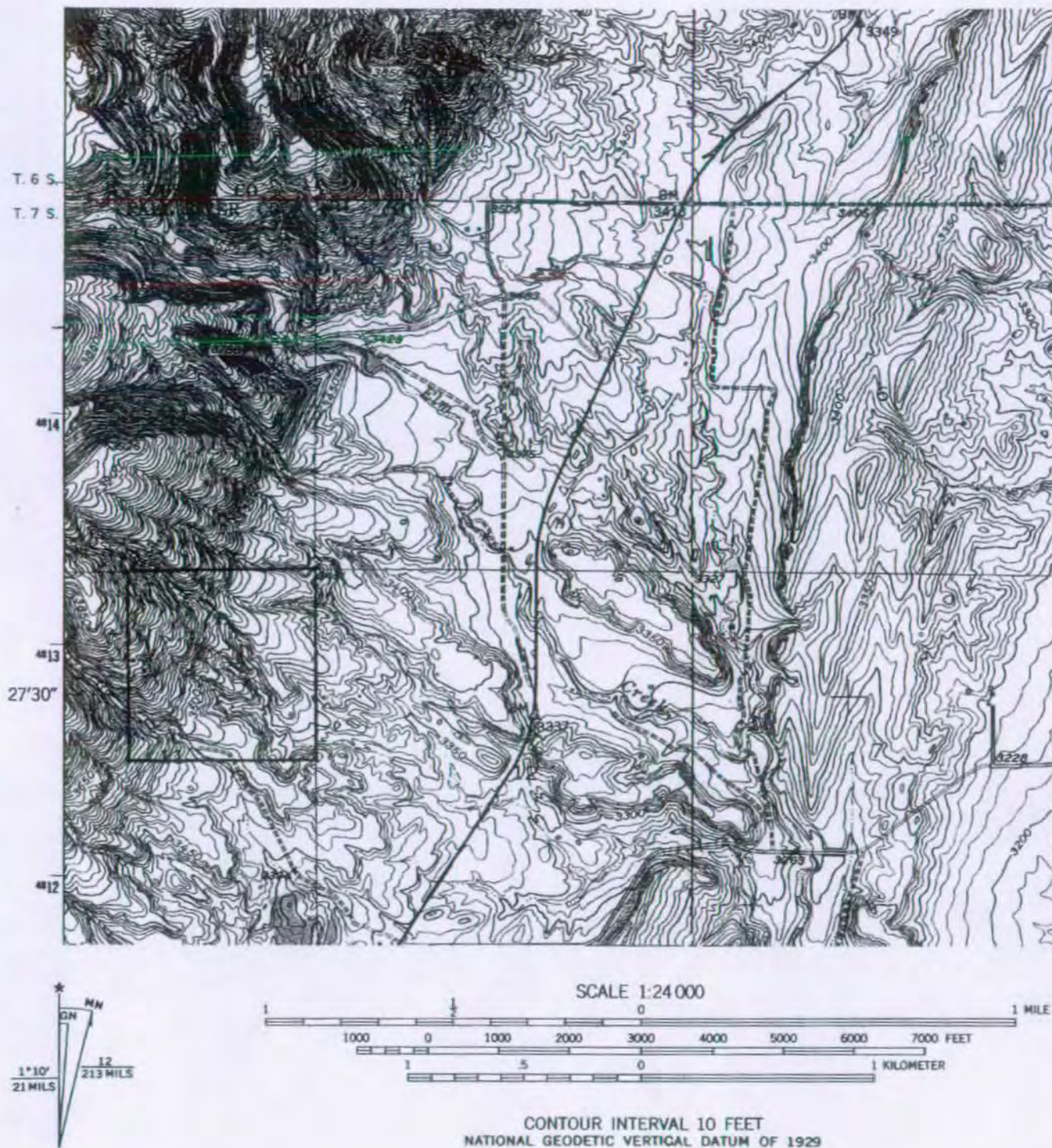


Figure 6. Proposed site in the NE $\frac{1}{4}$ Section 11, T. 7 S., R. 6 E., Fall River County, South Dakota. The town of Buffalo Gap is about three miles northeast of the site.

APPENDIX B

Preliminary Engineering Report 2005 Update North Area Expansion



FMG. INC. 3700 Sturgis Road, Rapid City, South Dakota 57702-0317 605/342-4105
FAX 605/342-4222

May 8, 2006

Randy Scott, Manager
Fall River Water Users District
1 Angostura Highlands
Hot Springs, SD 57747

**RE North Expansion Area Update Information
Fall River Water Users District
Fall River County, SD**

Dear Randy:

This letter is to provide additional information as requested by Rural Development in their letter dated April 3, 2006.

Based on information you provided, I updated the proposed system layout. There are now 67 new users rather than the 55 new users included in the Preliminary Engineering Report, 2005 Update, North Area Expansion dated May 25, 2005. To serve the additional sign-ups, we added about 8 miles of pipe to the proposed system, revised some of the sizing and eliminated the previously proposed 50,000 gallon storage tank. The revised layout is shown on the attached drawing.

A revised cost estimate is shown in the attached Table 2, Estimated Project Cost, north Area Expansion, with the latest revision date of April, 2006. The state engineer for Rural Development furnished a bid tabulation for a project bid in February, 2006. This bid tab was reviewed and unit costs in our project cost estimate adjusted accordingly. As you will note, the current cost estimate is about \$350,000 higher than the previous estimate.

Earlier, we had suggested a cost adjustment of about 10% which would increase the project cost estimate to about \$1,750,000. The remaining increase is due to an additional 8 miles of pipe, 12 new users and an adjustment in unit prices. If the cost of crude oil keeps going up, the current project cost should probably be increased again. The cost of PVC pipe as well as equipment operation is directly impacted by the cost of crude oil and fuel.

Revenue projections were included in the Preliminary Engineering Report, 2005 Update, North Area Expansion dated May 25, 2005. On page 10 of the report, the estimated revenue was \$93,700 per year with Buffalo Gap included in the project and \$78,275 per year without Buffalo Gap. Minimum monthly charges and water sales to the additional 12 new users will increase the estimated annual revenue by about \$9,700.

Item 4 of the Rural Development letter requested a discussion of including capacity to serve Buffalo Gap. As noted on Page 8 of Preliminary Engineering Report, 2005 Update, North Area Expansion dated May 25, 2005; the proposed system expansion was sized to provide service to Buffalo Gap. It was assumed that Buffalo Gap would continue to operate their own system and

only purchase water from Fall River (like the Town of Oelrichs in the original project); therefore, the proposed system was sized to deliver the estimated peak daily flow of 34,000 gallons or about 25 gpm. Since additional users have been added east and north of the Town of Buffalo Gap, service to Buffalo Gap will not have any impact on the proposed pipe sizing.

Item 5 of the Rural Development letter requested a discussion of the proposed 50,000 gallon reservoir on the west side of Highway 79. As noted in the report, we recommended a 50,000 gallon tank rather than a 20,000 gallon because of the small differential in cost. The 50,000 gallon tank would support additional growth within the higher service area. The revised layout of users now indicates that there will only be 2 users served by the booster and storage tank. We have eliminated the proposed 50,000 gallon storage tank from the proposal at this time and plan to use a constant pressure booster station only. Of course, during power outages, these two users will be without water.

In the Rural Development State Engineer's comments, it is noted that the condition and suitability of the existing system be addressed. It is suggested that a copy of the "Preliminary Engineering Report, Water System-2005 Update dated January 23, 2006 be furnished to Rural Development. This report reviews the existing water system and provides recommendations for future expansion.

If you have any questions or need additional information, please contact me.

Sincerely,

FMG, Inc.



Allen D. Foster, P.E.

Enclosures

c: File #8436.07

TABLE 2
ESTIMATED PROJECT COST
NORTH AREA EXPANSION
FALL RIVER WATER USERS DISTRICT
October, 2002, Revised May, 2005, Revised April, 2006

ITEM	QUANTITY	UNITS	UNIT COST	EXTENDED COST
8" PVC Water Main-Class 200	5,000	LF	\$ 8.50	\$42,500
8" PVC Water Main-Class 160	11,800	LF	\$ 7.50	\$88,500
6" PVC Water Main-Class 160	32,500	LF	\$ 5.30	\$172,250
4" PVC Water Main-Class 160	70,800	LF	\$ 3.60	\$254,880
3" PVC Water Main-Class 200	35,600	LF	\$ 2.80	\$99,680
2" PVC Water Main-Class 200	68,400	LF	\$ 2.20	\$150,480
1 1/2" PVC Water Main-Class 200	35,400	LF	\$ 2.10	\$74,340
12" Casing Pipe	400	LF	\$ 80.00	\$32,000
8" Casing Pipe	300	LF	\$ 60.00	\$18,000
8" Valves & Boxes	5	EA	\$ 980.00	\$4,900
6" Vaves & Boxes	7	EA	\$ 680.00	\$4,760
4" Valves & Boxes	15	EA	\$ 550.00	\$8,250
3" Valves & Boxes	7	EA	\$ 500.00	\$3,500
2" Valves & Boxes	14	EA	\$ 430.00	\$6,020
1 1/2" Valves & Boxes	67	EA	\$ 280.00	\$18,760
Standard Fire Hydrant	1	EA	\$ 2,800.00	\$2,800
Flushing Hydrants	19	EA	\$ 700.00	\$13,300
Manual Air Release	16	EA	\$ 530.00	\$8,480
1 1/2" Service Line Connection	67	EA	\$ 210.00	\$14,070
Pressure Reducing Station	1	EA	\$ 5,500.00	\$5,500
Master Control Vault/Relocate Main PRV	1	EA	\$ 55,000.00	\$55,000
Meter Pits w/5/8" x 3/4" meter	64	EA	\$ 850.00	\$54,400
Meter Pits w/3/4" meter	3	EA	\$ 950.00	\$2,850
Fall River Crossing	1	EA	\$ 9,000.00	\$9,000
River/Stream Crossing	6	EA	\$ 4,800.00	\$28,800
Road Crossings	12	EA	\$ 2,200.00	\$26,400
Rock Excavation	100	CY	\$ 45.00	\$4,500
Telemetry Systems	1	LS	\$ 55,000.00	\$55,000
New Booster Station	1	LS	\$ 65,000.00	\$65,000
180,000 Gallon Storage Tank	1	LS	\$ 200,000.00	\$200,000
Mobilization	1	LS	\$ 45,000.00	\$45,000
Sub-Total				\$1,526,420
Contingencies @ 15%				\$228,963
TOTAL ESTIMATED CONSTRUCTION COST				\$1,755,383

Other Project Costs				
Land & Rights-of-Way				\$5,000
Legal Services				\$5,000
Engineering, Surveying & Geotechnical	6.00%			\$105,323
Construction Layout & Inspections	3.00%			\$52,661
Testing Services	0.50%			\$8,777
Archelological Study	0.50%			\$8,777
Administrative/Clerical	0.50%			\$8,777
Sub-Total				\$194,315
Total Estimated Project Cost				\$1,949,698

Preliminary Engineering Report 2005 Update North Area Expansion

FOR

Fall River Water Users District Fall River County, SD

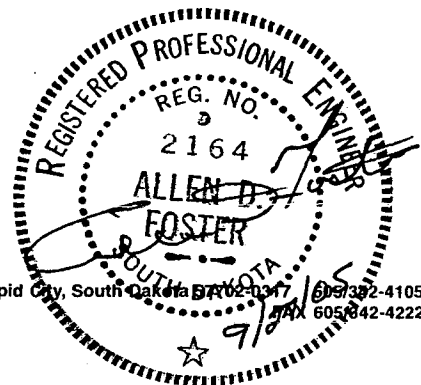
May 25, 2005

PREPARED FOR:
**Board of Directors
Fall River Water Users District
1 Angostura Highlands
Hot Springs, SD 57747**

PREPARED BY:
**FMG Engineering, Inc.
3700 Sturgis Road
Rapid City, SD 57702**



FMG, INC. 3700 Sturgis Road, Rapid City, South Dakota 57702-1047
Phone 605/342-4105 FAX 605/342-4222



**PRELIMINARY ENGINEERING REPORT
2005 UPDATE
NORTH AREA EXPANSION
FALL RIVER WATER USERS DISTRICT**

TABLE OF CONTENTS

	<u>Page</u>
HISTORY AND PURPOSE.....	1
PROJECT AREA	2
POTENTIAL WATER USERS-EXPANSION AREA.....	2
POPULATION	4
LIVESTOCK	4
WATER NEEDS	4
WATER SUPPLY	6
DISTRIBUTION SYSTEM AND STORAGE.....	7
PROJECT FUNDING, FINANCING, OPERATING BUDGET & REVENUE	10
FINDINGS AND CONCLUSIONS	11

LIST OF TABLES

Table 1	Estimated Initial Water Use in Expansion Area	5
Table 2	Estimated Project Cost-North Expansion Area	9
Table 3	Annual Cost vs Revenue Comparison	11

LIST OF FIGURES

Figure 1	North Area Expansion Area-Layout	Map Packet in Back of Report
Figure 2	Existing Water System.....	Map Packet in Back of Report

PRELIMINARY ENGINEERING REPORT
2005 UPDATE
NORTH AREA EXPANSION
FALL RIVER WATER USERS DISTRICT

HISTORY AND PURPOSE

As a result of severe drought conditions and lack of water for domestic and livestock needs, area home owners and ranchers formed the Fall River Water Users Association in 1990 to start the planning process for development of a rural water system. During 1990, many home owners and ranchers were forced to haul water to sustain their domestic and livestock water needs.

The Fall River Water Users Association was disbanded and the Fall River Water Users District (FRWUD) was formed to continue project planning and search for funding. FMG Engineering, Inc. was retained in 1992 to serve as engineering Consultant for the project. In 1999, the final funding packages were put in place and final design of the system started. For funding purposes, the original project was separated into two projects, the Year 1 Project and the Year 2 Project. The project was completed in May of 2002 and is delivering water to the users. The existing water system serving the FRWUD is shown on Figure 2 in the map packet at the end of this report.

In the spring of 2001, a group of ranchers, business owners and other land owners petitioned the Board of Directors to annex a large area north of the existing District Boundaries and provide water service to the area. The annexations procedure was started, but no commitments for service have been made until completion of a feasibility study.

A "Draft" Preliminary Engineering Report was prepared to present findings of a study to evaluate potential water service to the area and to provide estimated project cost and income data to determine feasibility of the requested expansion. During completion of this study, 58 potential users were identified. The "Draft" report indicated that a portion of the project would be feasible without grant funds but that grant funds would be required for construction of the entire project.

In the summer of 2002, the FRWUD Board of Directors sent sign-up packages to about 127 landowners within the proposed expansion area. These packages were sent by Certified Mail and included copies of the District's rules and regulations. Interested

landowners were requested to respond and pay their sign up fees by October 1, 2002. Sign-up fees and commitments were received for 30 connections. The Town of Buffalo Gap did not make a commitment for service. Sign-up fees of approximately \$36,000 were paid to the District.

At present, there is renewed interest from owners of residential structures in the Ponderosa Subdivision in obtaining water from the expansion project. The Ponderosa Subdivision is located just northwest of the intersection of Highway 18/385 and Highway 79 (Maverick Junction). There are about 23 residential structures located in the subdivision. During preparation of the "Draft Report for the North Expansion Area", these units had expressed interest in the water, but did not make a commitment during the sign-up period and were not included in the final report. Existing water supplies serving the development apparently have arsenic concentrations higher than the allowable Maximum Contaminant Level.

Further, additional commercial development along the route has once again expressed interest in obtaining water from the expansion project.

The purpose of this Preliminary Engineering Report is to present updated findings of a study to evaluate potential water service to the area and to provide estimated project cost and income data to determine feasibility of the potential expansion project.

PROJECT AREA

The existing Fall River Water Users District lies in the foothills of the Black Hills and extends to the adjacent prairies on the east and south. The majority of the land is range land with some dryland farming and irrigated farmland. The irrigated farmland is located in the Oral area and is a part of the Angostura Irrigation project. Elevations range over 3800 feet above sea level in the southwest corner of the District to about 2900 feet above sea level in the northeast corner of the District. The eastern portion of the project has some steep and rough terrain and is mostly Buffalo Gap National Grasslands.

Existing boundaries of the District are generally described as follows:

1. Bounded on the north by Angostura Reservoir, the Cheyenne River, a line about one mile west of Highway 79 to near Buffalo Gap, the Lane Johnny

Creek Watershed divide and the Fall River/Custer County line east of its intersection with the Lame Johnny Creek Watershed divide.

2. Bounded on the east by the Fall River/Shannon County line.
3. Bounded on the south by the South Dakota/Nebraska State line.
4. Bounded on the west by the previously established Igloo-Provo Water Project District.

The North Expansion includes an area north of the Cheyenne River to the Lame Johnny Creek Watershed Divide, extending from just west of Highway 79 east to the Shannon County Line. The boundary of the North Expansion Area is shown on Figure 1 and Figure 2 in the map packet in the back of this report. The North Expansion area is not currently served by the FRWUD.

POTENTIAL WATER USERS-EXPANSION AREA

In the spring of 2001, a group of ranchers and landowners formed a loosely knit organization to identify potential users including number of livestock within the proposed expansion area. The group worked closely with staff of the USDA, Natural Resources Conservation Service (NRCS) office located in Hot Springs. A "Draft" Report was prepared for this study.

In the summer of 2002, the FRWUD Board of Directors sent sign-up packages to about 127 landowner within the proposed expansion area. Interested landowners were requested to respond and pay their sign up fees by October 1, 2002. Sign-up fees and commitments were received for 30 connections. The Town of Buffalo Gap did not make a commitment for service.

At present, there is renewed interest from owners of residential structures in the Ponderosa Subdivision in obtaining water from the expansion project. There are about 23 residential structures located in the subdivision. During preparation of the "Draft Report for the North Expansion Area", these units had expressed interest in the water, but did not make a commitment during the sign-up period and were not included in the final report.

Approximate locations of the water users that signed up for service are shown on Figure 1.

The potential users identified included the following:

<u>Type of User</u>	<u>Number of Meters</u>
Ranch Headquarters/Pasture Taps	26
Residential in Ponderosa Subdivision	23
Commercial/Business*	4
State Highway Shop	1
<u>Church</u>	<u>1</u>
Total	55

*Includes Maverick Junction Truck Stop and Big Bats Convenience Store, Car Wash and KOA Campground

The Town of Buffalo Gap has expressed some interest in obtaining water from the FRWUD if the expansion project is completed. Reportedly, the Town has 107 individual meters.

POPULATION

South Dakota census data for the year 2000 indicates that in Custer County, there were 2.35 persons per household and in Fall River County, there were 2.23 persons per household. For the purpose of this report, we will assume 2.30 persons per household. Rural population including the ranch headquarters and Ponderosa subdivision and excluding the Town of Buffalo Gap is estimated at 113 persons.

South Dakota census data also indicated that the population of Buffalo Gap was 164 persons in 2000.

LIVESTOCK

The FRWUD water system was designed to serve both domestic and livestock needs. Using information gathered by the NRCS coupled with the actual sign-ups, it is estimated that water service from this expansion project will include a total of 2,000 head of livestock.

WATER NEEDS

Water use estimates within the District and proposed expansion area are needed for design purposes as well as revenue projections and feasibility analysis. To properly evaluate a water system, various water use rates, actual or estimated, must be known. Water use rates used in this study are defined below:

- A. Average daily water use is the total amount of water used for all purposes, domestic, livestock, commercial, industrial, lawn irrigation, recreation, etc. in any one year divided by 365 days.
- B. Peak daily use is the maximum amount of water used for all purposes during a 24-hour period of time. The water supply should be capable of producing this amount for short period of time.

Water use in similar districts in South Dakota indicates an average daily use of about 100 gallons per capita per day (gpcpd) for rural household use. Peak daily rural household consumption is generally about double the average daily use or 200 gpcpd.

For this report, the average daily livestock water consumption has been estimated at 15 gallons per day per animal unit (gpd/au) while the peak daily livestock water consumption has been estimated at 20 gpd/au.

In the Engineering Planning Report for the Town of Buffalo Gap prepared by Anderson Engineers, Inc., the average daily water use in Buffalo Gap was noted as 13,600 gpd. Peak day water use was not included in the report. Based on our experience in other locations, it seems reasonable to assume a peak day at 250% of the average day, or 34,000 gpd.

Projected water use in the proposed expansion area is shown in Table 1.

TABLE 1
ESTIMATED INITIAL WATER USE IN EXPANSION AREA

User	Number	Average day		mg/yr	Peak Day	
		gpcpd gpd/au	gpd		gpcpd gpd/au	gpd
Rural Population	60	100	6,000	2.19	200	12,000
Ponderosa Residential	53	100	5,300	1.93	200	10,600
Livestock AUs	2,000	15	30,000	10.95	20	40,000
Maverick Junction	--	--	3,000	1.10	--	5,000
Big Bats Convenience Store	--	--	1,500	0.55	--	2,000
KOA Campground			3,500	0.42*		5,000
Misc (State, Church, Car Wash)	--	--	2,000	0.73	--	3,000
<u>Town of Buffalo Gap</u>			<u>13,600</u>	<u>4.96</u>		<u>34,000</u>
<u>Total</u>			<u>64,900</u>	<u>22.83</u>		<u>111,600</u>

*Assumes 120 day season at 3,500 gpd

From Table 2 of the "Revised Supplemental Preliminary Engineering Report for Fall River Water Users District, revised May 6, 1999", initial average daily water use in the District was estimated at 135,857 gpd or 56.58 million gallons per year (mg/yr). The peak daily water use was estimated at 340,240 gpd.

Since construction started, several additional users have signed up for water service. Currently, there are about 270 meters in the Year 1 and Year 2 projects compared to 161 meters anticipated in the 1999 study. The majority of the additional meters are for residential use. Water use data for 2004 indicates the average daily water use in the District was 251,900 gpd with the peak daily water use of 485,000 gpd.

During preparation of the 1999 study and report, some growth was anticipated within the District Boundaries. From Table 3 of the 1999 report, the future average daily water use in the District was estimated to increase to 232,300 gpd or 84.79 mg/yr. The future peak daily water use was estimated at 465,650 gpd. Growth within the District appears to have reached that projected in the 1999 report. The Board is still receiving requests for hook-ups to the system.

A summary of estimated water use for the entire system with the annexation complete is tabulated below. Future water use was projected assuming a 15% increase in the service area.

	Average day (gpd)	Peak Day (gpd)
<u>Existing water use</u>		
Existing water system	251,900	485,000
<u>Proposed North Area Expansion</u>	64,900	111,600
Total Existing plus Expansion	316,800	596,600

	Average day (gpd)	Peak Day (gpd)
<u>Future water use</u>		
Existing water system	289,700	557,800
<u>Proposed North Area Expansion</u>	74,600	139,300
Total Existing plus Expansion	364,300	697,100

WATER SUPPLY

Water supply facilities must be able to satisfy the peak day demands. Water storage tanks are used to equalize flow during the day and provide water for emergency use.

Scattered rural residences along the route are served by their own systems consisting of shallow wells and or hauling water. The Ponderosa Subdivision is served by a privately developed well. It was beyond the scope of this study to sample and evaluate water quality from the various wells being used.

FRWUD water supply is obtained from the City of Hot Springs through an 8-inch water main along Fall River Road and old Highway 79 from the City's system to the south side of the Cheyenne River. Recent changes in the water purchase agreement provide for the purchase of 600,000 gpd and up to 750,000 gpd to satisfy the peak demand. The agreement allows for the purchase of more than 750,000 gpd, but cost would increase to 150% of the City's rate.

A review of the above estimated water use indicates that there will be water available to serve the existing water use with expansion and the estimated future use with expansion.

The City of Hot Springs recently expanded one of their water sources by adding a new well with associated piping. The FRWUD participated in the cost of City well expansion. Such participation should ensure that FRWUD has a dependable supply for the future. However, if the District continues to grow, construction of a new well should be considered.

DISTRIBUTION SYSTEM & STORAGE

No Action Alternative

The "No Action" alternative was considered as the beginning point for development of alternates to serve the study area. With this option, no additional regional water facilities would be constructed. Ranchers, residential developments and Buffalo Gap would continue to operate as they do today. Improvements in water quality or quantity of water would be developed on an individual basis resulting in numerous smaller water improvement projects. Growth in the area may be stymied by lack of sufficient quantities of water and expansion of livestock herds could be hindered by lack of good quality and quantity of water.

Expansion to Town of Buffalo Gap Area

The preliminary water system layout to serve the proposed expansion area is shown on Figure 1 in the map packet in the back of this report. The water system layout includes water mains ranging in size from 1 1/2" to 8" in diameter. A dual line (both sides of the highway) is proposed in the area near the junction of Highway 18/385 and Highway 79.

The dual line construction is more economical than numerous highway crossings for the service lines.

Preliminary system design was completed to provide operating pressures generally ranging from 30 psi to 110 psi. Because of elevations, a new booster station and smaller storage tank will be required to serve four (4) users located west of Highway 79. A 50,000 gallon storage tank for this area was included since the cost of a 50,000 gallon tank is only slightly more than a 20,000 gallon tank. Further, the 50,000 gallon tank will support growth in this area. The location of this proposed booster station and storage tank is shown on Figure 1.

A 180,000 gallon water storage tank is proposed as shown on Figure 1. The tank was sized to act as equalizing tank during periods of peak demand and to provide limited water during emergency conditions. This tank will be at the same elevation as the existing Angostura tank, but to control the flow of water, a separate control valve and telemetry system will be required. Bypass valves could be opened to allow this tank to furnish water to the existing FRWUD low level system during emergencies.

The proposed system has not been designed to provide fire protection as normally defined. Because of sizing requirement, the cost of including fire protection in a rural water system is prohibitive. Fire hydrants, flushing hydrants or other loading facilities can be placed at strategic locations to allow filling of fire tanker trucks.

The proposed water system layout assumed that water would be furnished to the Town of Buffalo Gap. Water would be furnished to the Town through a single master meter, and the Town would continue to operate their water system. The existing water system serving the Town has water storage tanks for flow equalization during the day and fire protection. The new water connection/meter would replace the Town's well as the water supply. The Town of Oelrichs located in the original FRWUD Year 1 project was served in this manner.

The estimated project costs are shown in Table 2. The construction cost estimates are based on a review of the project bids for the FRWUD Year 1 and Year 2 projects with adjustments for cost increases since completion of the original project in 2002.

TABLE 2
ESTIMATED PROJECT COST
NORTH AREA EXPANSION
FALL RIVER WATER USERS DISTRICT
October, 2002, Revised May, 2005

ITEM	QUANTITY	UNITS	UNIT COST	EXTENDED COST
8" PVC Water Main-Class 200	5,000	LF	\$ 7.00	\$35,000
8" PVC Water Main-Class 160	10,800	LF	\$ 6.10	\$65,880
6" PVC Water Main-Class 160	35,800	LF	\$ 4.10	\$146,780
4" PVC Water Main-Class 160	42,600	LF	\$ 2.60	\$110,760
3" PVC Water Main-Class 200	46,500	LF	\$ 2.30	\$106,950
2" PVC Water Main-Class 200	50,900	LF	\$ 1.85	\$94,165
1 1/2" PVC Water Main-Class 200	27,100	LF	\$ 1.75	\$47,425
12" Casing Pipe	400	LF	\$ 60.00	\$24,000
8" Casing Pipe	300	LF	\$ 50.00	\$15,000
8" Valves & Boxes	5	EA	\$ 900.00	\$4,500
6" Vaves & Boxes	7	EA	\$ 680.00	\$4,760
4" Valves & Boxes	7	EA	\$ 550.00	\$3,850
3" Valves & Boxes	4	EA	\$ 500.00	\$2,000
2" Valves & Boxes	12	EA	\$ 430.00	\$5,160
1 1/2" Valves & Boxes	55	EA	\$ 195.00	\$10,725
Standard Fire Hydrant	1	EA	\$ 2,800.00	\$2,800
Flushing Hydrants	19	EA	\$ 600.00	\$11,400
Manual Air Release	16	EA	\$ 480.00	\$7,680
1 1/2" Service Line Connection	55	EA	\$ 180.00	\$9,900
Pressure Reducing Station	1	EA	\$ 5,500.00	\$5,500
Master Control Vault/Relocate Main PRV	1	EA	\$ 50,000.00	\$50,000
Meter Pits w/5/8" x 3/4" meter	52	LF	\$ 750.00	\$39,000
Meter Pits w/3/4" meter	3	EA	\$ 850.00	\$2,550
Fall River Crossing	1	EA	\$ 9,000.00	\$9,000
River/Stream Crossing	6	EA	\$ 4,800.00	\$28,800
Road Crossings	12	EA	\$ 1,800.00	\$21,600
Rock Excavation	100	CY	\$ 45.00	\$4,500
Telemetry Systems	1	LS	\$ 55,000.00	\$55,000
New Booster Station	1	LS	\$ 65,000.00	\$65,000
50,000 Gallon Storage Tank	1	LS	\$ 65,000.00	\$65,000
180,000 Gallon Storage Tank	1	LS	\$ 200,000.00	\$200,000
Mobilization	1	LS	\$ 25,000.00	\$25,000
Sub-Total				\$1,244,685
Contingencies @ 15%				\$186,703
TOTAL ESTIMATED CONSTRUCTION COST				\$1,431,388

Other Project Costs				
Land & Rights-of-Way				\$5,000
Legal Services				\$5,000
Engineering, Surveying & Geotechnical	6.00%			\$85,883
Construction Layout & Inspections	3.00%			\$42,942
Testing Services	0.50%			\$7,157
Archelological Study	0.50%			\$7,157
Administrative/Clerical	0.50%			\$7,157
Sub-Total				\$160,296
Total Estimated Project Cost				\$1,591,683

PROJECT FUNDING, FINANCING, OPERATING BUDGET AND REVENUE

For the purpose of this study it was assumed that the project would be financed from a loan from the Rural Development Loan at 4.75% interest for a period of 40 years.

It was estimated that the expansion project would increase the District's operation and maintenance costs by \$750 a month or \$9,000 per year. The estimated **annual operating budgets** (less depreciation) for the projects are summarized below. These numbers represent the annual cash flow needs for the system. Purchased water from Hot Springs was based on the buying projected water use plus 10.0% loss in the system at a cost \$1.00/1,000 gallons (80% of the City's rate).

North Expansion Area-Estimated Annual Costs With Buffalo Gap

Additional Operation and Maintenance	\$9,000
Estimated Annual Principal & Interest	88,960
10% Reserve	8,900
Purchase Water from Hot Springs (With Buffalo Gap)	<u>\$25,100</u>
Estimated Total Annual Cash Needs	\$131,900

North Expansion Area-Estimated Annual Costs Without Buffalo Gap

Additional Operation and Maintenance	\$9,000
Estimated Annual Principal & Interest	88,960
10% Reserve	8,900
Purchase Water from Hot Springs (Without Buffalo Gap)	<u>\$19,700</u>
Estimated Total Annual Cash Needs	\$126,560

Estimated **revenues** from the expansion project are tabulated below. The revenue projections are based on rates within the FRWUD.

North Expansion Area-Estimated Revenue With Buffalo Gap

5/8" Meters	53 @ \$50/month	\$31,800/yr
3/4" Meters	2 @ \$75/month	1,800/yr
1 1/2" Meters	1 @ \$250/month	3,000/yr
Water Sales	22.83 mg/yr @ \$2.50/1,000	<u>57,100/yr</u>
Total Estimated Revenue w/ Buffalo Gap		\$93,700/yr

North Expansion Area-Estimated Revenue Without Buffalo Gap

5/8" Meters	53 @ \$50/month	\$31,800/yr
3/4" Meters	2 @ \$75/month	1,800/yr
Water Sales	17.87 mg/yr @ \$2.50/1,000	<u>44,675/yr</u>
Total Estimated Revenue w/o Buffalo Gap		\$78,275/yr

A comparison of projected annual costs and annual revenue for the two alternatives are shown in Table 3.

TABLE 3
ANNUAL COST VS REVENUE COMPARISON

<u>Alternate</u>	<u>Estimated Annual Cost</u>	<u>Estimated Annual Revenue</u>	<u>Cost Minus Revenue</u>
North Expansion Area with Buffalo Gap	\$131,900	\$93,700	\$38,200
North Expansion Area without Buffalo Gap	\$126,560	\$78,275	\$48,285

FINDINGS AND CONCLUSIONS

The proposed north expansion area can be served by the Fall River Water Users District. The expansion project would require construction of water mains ranging in size from 8" to 1 1/2" two new water storage tanks and a small booster pumping station. With the recently renegotiated water purchase with the City of Hot Springs, water is available to serve the expansion area.

Based on the estimated costs and revenues above, the proposed expansion project **is not** feasible without some local contributions and grant monies.

In order for the project costs and revenues to balance, grant funding will be necessary to buy down the amount of the loan and reduce the annual payments. An estimated \$600,000 in grant funds will be necessary if the Town of Buffalo Gap participates in the project and estimated \$800,000 in grant funds will be necessary in the Town of Buffalo Gap does not participate in the project.

Based on the estimated costs and revenues above, proposed expansion projects **are not** feasible without some local contributions and grant monies. There is a potential for substantial development and growth in the Highway 79 corridor in the future. If such growth does occur, there will be a demand for water and future revenues will likely be greater than the annual costs.

The need for grant monies for construction of this type of project is not unusual and most similar projects require a significant grant contribution to make them feasible. Current cost estimates included in this report reflect the need for between 73% and 80% grant funding if current sign-ups are used as the basis to evaluate project feasibility. Even though some future growth is anticipated, most federal and state agencies involved in funding such projects require that the cost analysis indicates a positive cash flow based on current users.

The original Fall River Water Users District project construction was completed with over 80% cost share when both federal and state grants are considered.

IMPLEMENTATION SCHEDULE

If the Board decides to proceed with this expansion project, it is likely that water would be available to consumers in 1.5 to 3.5 years depending greatly on the amount of time required for project funding. An estimated time frame follows:

Funding Requests/Approval	6-24 months
Project Design/Land and Easement Acquisition	6 months
Plan Approval/Bidding/Contract Award	3 months
Construction Period	6 months

APPENDIX C

Preliminary Engineering Report Water System-2005 Update

Preliminary Engineering Report Water System-2005 Update

FOR

Fall River Water Users District Fall River County, SD

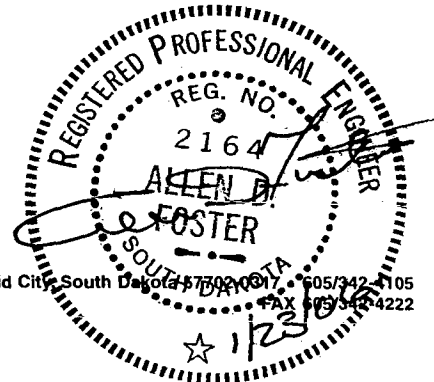
January 23, 2006

PREPARED FOR:
**Board of Directors
Fall River Water Users District
1 Angostura Highlands
Hot Springs, SD 57747**

PREPARED BY:
**FMG Engineering, Inc.
3700 Sturgis Road
Rapid City, SD 57702**



FMG, INC. 3700 Sturgis Road, Rapid City, South Dakota 57702-1105
Phone 605/342-4105 FAX 605/342-4222



**PRELIMINARY ENGINEERING REPORT
WATER SYSTEM-2005 UPDATE
FALL RIVER WATER USERS DISTRICT**

TABLE OF CONTENTS

	<u>Page</u>
HISTORY AND PURPOSE.....	1
PROJECT AREA	2
POPULATION	3
LIVESTOCK	5
OTHER WATER USE	6
WATER NEEDS	6
WATER SUPPLY	9
DISTRIBUTION SYSTEM AND STORAGE.....	11
FINDINGS AND CONCLUSIONS	14
IMPLEMENTATION SCHEDULE	17

LIST OF TABLES

Table 1	Water Use By Month, 2004	7
Table 2	Estimated Future Water Use in FRWUD	9
Table 3	Estimated Project Costs, Various Improvements	18

LIST OF FIGURES

Figure 1	Existing Water System.....	Map Packet in Back of Report
Figure 2	Angostura Area Enlargement.....	Map Packet in Back of Report
Figure 3	Proposed Expansion.....	4

**PRELIMINARY ENGINEERING REPORT
WATER SYSTEM-2005 UPDATE
FALL RIVER WATER USERS DISTRICT**

HISTORY AND PURPOSE

As a result of severe drought conditions and lack of water for domestic and livestock needs, area home owners and ranchers formed the Fall River Water Users Association in 1990 to start the planning process for development of a rural water system. During 1990, many home owners and ranchers were forced to haul water to sustain their domestic and livestock water needs.

The Fall River Water Users Association was disbanded and the Fall River Water Users District (FRWUD) was formed to continue project planning and search for funding. FMG Engineering, Inc. was retained in 1992 to serve as engineering consultant for the project. In 1999, the final funding packages were put in place and final design of the system started. For funding purposes, the original project was separated into two projects, the Year 1 Project and the Year 2 Project. The project was completed in May of 2002 and is delivering water to the users. The existing water system serving the FRWUD is shown on Figure 1 in the map packet at the end of this report. An enlargement of the Angostura service area shown on Figure 2 in the map packet at the end of this report.

The original FRWUD construction included a water supply line from the City of Hot Springs to the District, three (3) water storage tanks, two (2) booster stations, six (6) pressure reducing stations and approximately 272 miles of water main ranging in size from 8" diameter to 1½" diameter.

The final preliminary engineering report "Revised Supplemental Preliminary Engineering Report, Revised May 6, 1999" prepared by FMG, Inc. for system design and funding anticipated a total of 161 meters for the total project. By the time construction had finished in May of 2002, a total of 196 meters had been installed. At present, there are about 285 meters which is 177% of the total number of hookups anticipated in 1999. Much of the growth has been single family residential structures in areas around Angostura Reservoir.

The area continues to grow and developers have indicated the possibility of adding another 400 single family residential lots/ranchettes.

In the spring of 2001, a group of ranchers, business owners and other land owners petitioned the Board of Directors to annex a large area north of the existing District Boundaries and provide water service to the area. The annexations procedure was started, but no commitments for service were made pending project funding. A preliminary engineering report for the North Expansion was prepared by FMG, Inc. and dated October 30, 2002. A report dated May 25, 2005 updating the 2002 report has been prepared. The North Expansion area is not currently served by the FRWUD.

The purpose of this Preliminary Engineering Report is to present findings of a study to evaluate the existing water system, provide guidance in improving and expanding the system to serve future demands and to provide estimated project costs for recommended improvements.

PROJECT AREA

The existing Fall River Water Users District lies in the foothills of the Black Hills and extends to the adjacent prairies on the east and south. The majority of the land is range land with some dryland farming and irrigated farmland. The irrigated farmland is located in the Oral area and is a part of the Angostura Irrigation project. Elevations range from over 3800 feet above sea level in the southwest corner of the District to about 2900 feet above sea level in the northeast corner of the District. The eastern portion of the project has some steep and rough terrain and is mostly Buffalo Gap National Grasslands.

Existing boundaries of the District are generally described as follows:

1. Bounded on the north by Angostura Reservoir, the Cheyenne River, a line about one mile west of Highway 79 to near Buffalo Gap, the Lame Johnny Creek Watershed divide and the Fall River/Custer County line east of its intersection with the Lame Johnny Creek Watershed divide.
2. Bounded on the east by the Fall River/Shannon County line.
3. Bounded on the south by the South Dakota/Nebraska State line.
4. Bounded on the west by the previously established Igloo-Provo Water Project District.

POPULATION

South Dakota census data for the year 2000 indicates that there were 2.23 persons per household in Fall River County. For the purpose of this report, we will assume 2.30 persons per household.

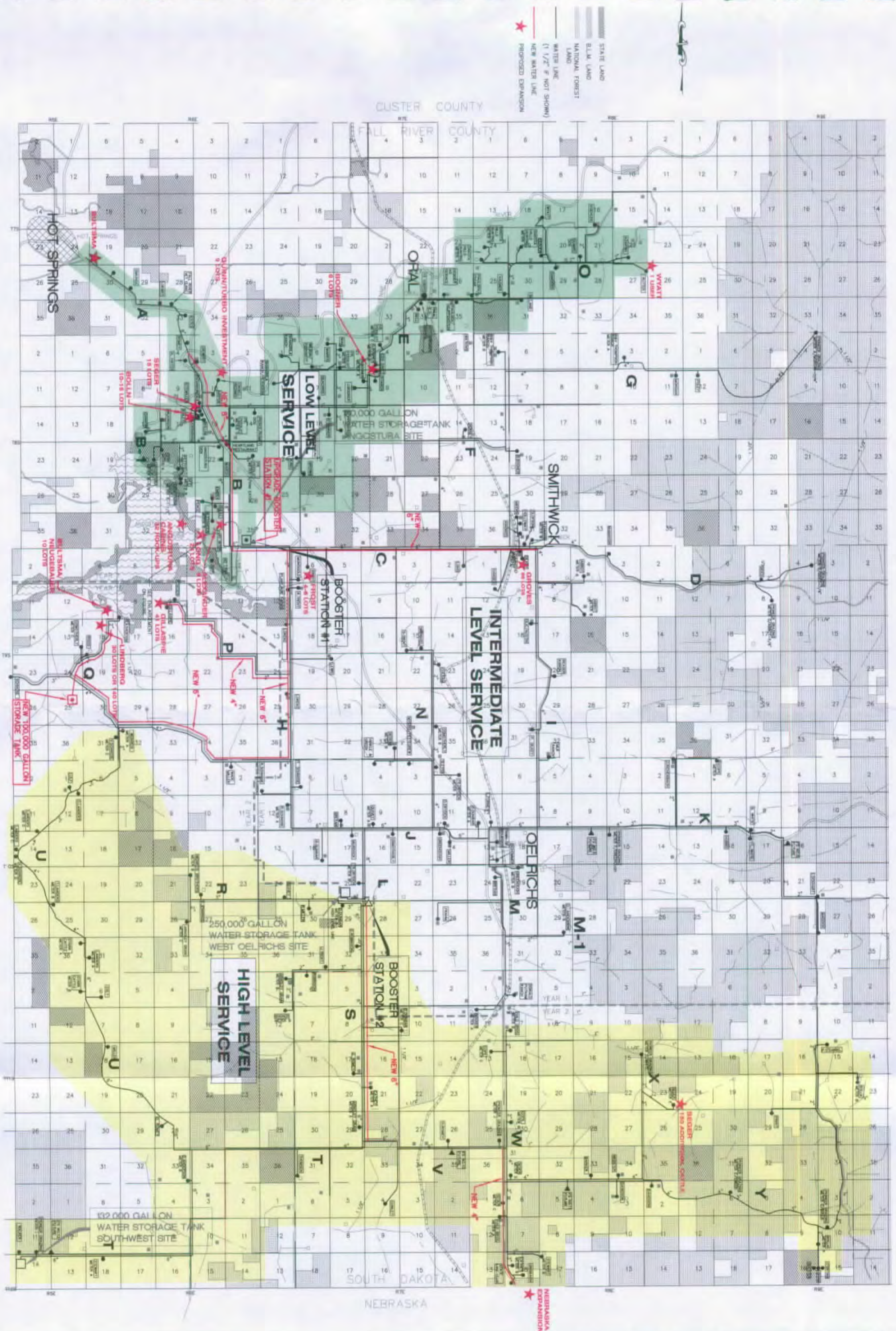
The final 1999 preliminary engineering report included an estimate of 664 persons, including the Town of Oelrichs, within the FRWUD. There were 61 meters for households signed up for service in the original design report. Estimated service population was 192 persons based on 3.15 persons/household.

Much of the growth within the service area has been in the area around Angostura Reservoir. There were 21 meters (hook-ups) shown on the final design plans in the Angostura area. A review of the current hook-ups indicate there are now 64 meters (hook-ups) in the Angostura area, an increase of 43 meters since the final plans were completed. Additional residential hook-ups have occurred in Oral, along Highway 385 and other scattered areas.

As noted earlier, the total number of hook-ups has increased from 161 meters included on the final design plans to 196 meters by the end of construction to 285 meters today. During construction, most of the additional meters were for ranch headquarters/livestock operations. Since completion of the original project construction, it is estimated that 80% of the additional hook-ups were for new single family residential structures. On this basis, the service population has increased 164 persons bring the total estimated service population to about 360 persons.

The area continues to grow and developers have indicated the possibility of adding another 400 single family residential lots/ranchettes. Areas of proposed development are shown on Figure 3.

If in fact 400 single family residential lots/ranchettes are added, the population will increase by an estimated 920 persons bringing the total future service population to about 1,300 persons.



LIVESTOCK

The FRWUD water system was designed to serve both domestic and livestock needs. The area relies on farming and ranching for its livelihood and a large part of the water use in FRWUD is for livestock purposes.

For the final 1999 preliminary engineering report, the members of the Board of Directors contacted each individual and ranch that submitted a completed service agreement to verify the number of livestock to be served. Since the livestock are rotated in and out of various pastures (some of which were served by existing wells or other water sources) the ranchers were also asked to estimate the anticipated time frame for the water service. The survey data indicated the estimated livestock use during the initial period at 77,963 Animal Unit Months (AUMs) which represents about 6,500 animal units.

Data included on the water service agreements submitted to the Board indicate that those signing up for water service control approximately 170,000 acres of private land within the FRWUD.

As a part of the planning process for the PL 566 Watershed Project for the FRWUD, the Natural Resource Conservation Service (NRCS) sent a questionnaire to all those that indicated livestock water usage on their service agreement. Responses indicated a total of about 13,000 animal units owned by the those requesting water service. NRCS officials further estimated that the lands within the FRWUD will support approximately 20,000 animal units.

NRCS guidelines estimate the average daily livestock water consumption at 15 gallons per day per animal unit (gpd/au) and the peak daily livestock water consumption at 20 gpd/au.

Because of the drought conditions experienced from the time of project completion in 2002 to 2005, it is felt that those livestock operations within the district boundaries that want water service are now being served by the FRWUD. Water service has also been extended outside the boundaries in a few areas.

Future connections for livestock watering operations will probably be limited unless service is extended to additional areas outside the boundaries.

OTHER WATER USE

Other water use within the FRWUD includes domestic water use for the Angostura State Recreation Area, the Town of Oelrichs, the Fall River Feed Lot, Hot Springs Airport, and restaurants/bars.

WATER NEEDS

Water use estimates within the District are needed for design purposes as well as revenue projections and feasibility analysis. To properly evaluate a water system, various water use rates, actual or estimated, must be known. Water use rates used in this study are defined below:

- A. Average daily water use is the total amount of water used for all purposes, domestic, livestock, commercial, industrial, lawn irrigation, recreation, etc. in any one year divided by 365 days.
- B. Average daily-peak month is the total amount of water used for all purposes during the maximum month divided by the number of days in the month.
- C. Peak daily use is the maximum amount of water used for all purposes during a 24-hour period of time. The water supply should be capable of producing this amount for short period of time.
- D. Peak 2-hour is the peak rate of water use during a two hour time period. The water distribution system must be capable of delivering this quantity of water to the users. The peak two hourly demands are satisfied by the water supply and storage reservoirs.

District personnel have developed excellent records for water use and pumping within the District. Water use records for 2004 were furnished by the District. These records were analyzed to determine existing water use within the FRWUD. Water use within the District is shown in Table 1.

**TABLE 1 - WATER USE BY MONTH, 2004
FALL RIVER WATER USERS DISTRICT**

Fall River Water Use by Month, 2004- Water Bought

Month	Total Gallons	GPD	GPM/24hr
January	4780000	154194	107
February	4775000	164655	114
March	4775000	154032	107
April	5760000	192000	133
May	10640000	343226	238
June	11060000	368667	256
July	11790000	380323	264
August	11970000	386129	268
September	8730000	291000	202
October	7050000	227419	158
November	5520000	184000	128
December	6070000	195806	136
Total	92920000	253880	176

**Water Used In Low Level Service Area
Total minus BPS 1**

Month	Total Gallons	GPD	GPM/24hr
January	1517500	48952	34
February	818200	28214	20
March	1431700	46184	32
April	1766900	58897	41
May	2795000	90161	63
June	2058200	68607	48
July	3291400	106174	74
August	3073500	99145	69
September	1958600	65287	45
October	1434800	46284	32
November	1496700	49890	35
December	1931600	62310	43
Total	23574100	64410	45

Water Pumped-BPS 1(Angostura Booster Station)

Month	Total Gallons	GPD	GPM/24hr
January	3262500	105242	73
February	3956800	136441	95
March	3343300	107848	75
April	3993100	133103	92
May	7845000	253065	176
June	9001800	300060	208
July	8498600	274148	190
August	8896500	286984	199
September	6771400	225713	157
October	5615200	181135	126
November	4023300	134110	93
December	4138400	133497	93
Total	69345900	189470	132

**Water Used In Intermediate Level Service Area
Angostura Booster (BPS1) minus BPS 2**

Month	Total Gallons	GPD	GPM/24hr
January	1221400	39400	27
February	2324900	80169	56
March	1852200	59748	41
April	2039900	67997	47
May	5529700	178377	124
June	4438000	147933	103
July	4534600	146277	102
August	4453000	143645	100
September	3524218	117474	82
October	2550900	82287	57
November	1718900	57297	40
December	2027200	65394	45
Total	36214918	98948	69

**Water Used In High Level Service Area
Water Pumped-BPS 2(South Booster Station)**

Month	Total Gallons	GPD	GPM/24hr
January	2041100	65842	46
February	1631900	56272	39
March	1491100	48100	33
April	1953200	65107	45
May	2315300	74687	52
June	4563800	152127	106
July	3964000	127871	89
August	4443500	143339	100
September	3247182	108239	75
October	3064300	98848	69
November	2304400	76813	53
December	2111200	68103	47
Total	33130982	90522	63

Peak Day Use - 485,200 gallons on 7/12/04

Because of terrain, the FRWUD district has three distinct pressure zones, the low level, intermediate level and high level. Water use within each pressure zone is shown in Table 1. Approximate boundaries of each pressure zone are shown on Figure 3.

Existing (2004) water use within the FRWUD is summarized below:

Average daily demand	253,880 gpd
Average day-Peak Month	386,129 gpd
Peak Daily Demand	485,200 gpd

In 2004, the peak daily demand was about 190% of the average day and 126% of the average day during the peak month. These ratios are within the norm of other water systems.

Water use in similar districts in South Dakota indicates an average daily use of about 100 gallons per capita per day (gpcpd) for rural household use. Peak daily rural household consumption is generally about double the average daily use or 200 gpcpd. Water use projections in the 1999 final engineering report used these estimates for projecting water use within the district.

The May 25, 2005 update of the North Expansion Area preliminary engineering report included an estimated initial average day water use of 64,900 gpd and an initial peak day water use of 111,600 gpd. It was further estimated that future growth within the North Expansion area would increase the average day water use to 74,600 gpd and the peak day water use to 139,300.

Estimated future water use within the District is shown in Table 2.

TABLE 2
ESTIMATED FUTURE WATER USE IN FRWUD

User	Number	Average day		mg/yr	Peak Day	
		gpcpd gpd/au	gpd		gpcpd gpd/au	gpd
Existing water Use			253,880	92.67		485,200
Additional Residential (400 Lots) 920	100		92,000	33.58	200	184,000
Additional Livestock AUs 2,000	2,000	15	30,000	10.95	20	40,000
<u>Sub-Total</u>			375,880	137.20		709,200
North Expansion Area			74,900	27.34		139,300
<u>Total</u>			450,780	164.54		848,500

During preparation of the 1999 final design report, some growth was anticipated within the District Boundaries. From Table 3 of the 1999 report, the future average daily water use in the District was estimated to increase to 232,300 gpd or 84.79 mg/yr. The future peak daily water use was estimated at 465,650 gpd. Growth within the District appears to have reached that projected in the 1999 report and the Board is still receiving requests for hook-ups to the system.

WATER SUPPLY

Water supply facilities must be able to satisfy the peak day demands. Water storage tanks are used to equalize flow during the day and provide water for emergency use.

FRWUD water supply is obtained from the City of Hot Springs through an 8-inch water main along Highway 18/385 (Fall River Road) and old Highway 79 from the City's system to the south side of the Cheyenne River. Recent changes in the water purchase agreement provide for the purchase of 600,000 gpd and up to 750,000 gpd to satisfy the peak demand. The agreement allows for the purchase of more than 750,000 gpd, but cost would increase to 150% of the City's rate.

Actual water delivery to the FRWUD system is limited to about 500,000 gpd under existing conditions. If development occurs as anticipated and water service is extended to the North Area Expansion, an additional 348,500 gpd or about 250 gpm will be needed to satisfy the projected future peak day water use shown in Table 2.

By moving the existing pressure reducing valve located in the existing main meter vault about one mile below Hot Springs, water delivery to the FRWUD could be increased to about 640,000 gpd. The new location would be near the intersection of Old Highway 79 and US Highway 385.

Water delivery from Hot Springs to FRWUD could be further increased by constructing an additional 8" water main to supplement a portion of the existing 8" water main. Construction of an additional 8" water main from the Cheyenne River south to the Angostura water tank, in conjunction with the PRV relocation, would allow delivery of about 600 gpm or 860,000 gpd. An estimated 25,000 feet of pipe would be required.

The South Dakota Department of Transportation is anticipating reconstruction of a portion of US Highway 385 west of Maverick Junction and construction of a new 4-lane highway extending south of Maverick Junction. It may be possible to construct a new water main at the time the highways are reconstructed.

The City of Hot Springs recently expanded one of their water sources by adding a new well with associated piping. The FRWUD participated in the cost of City well expansion. Such participation should ensure that FRWUD has a dependable supply for the future. However, if the District continues to grow, construction of a new well should be considered.

The water supply could be increased by drilling and developing a new well and transmission line. It was beyond the scope of this study to identify a new well location, but discussions have centered around a new well in the Buffalo Gap area (would fit in with the North Expansion project) or the Cascades Springs area. Depending on actual location, a new well with associated transmission line in conjunction with the North Area Expansion project would probably cost about \$1,000,000. Development of a well in the Cascades Springs area would be more costly due to the additional length of transmission line required.

The Southern Black Hills Water System (SBHWS) has been formed to develop a regional water system. A feasibility study has been completed. The project engineer for the SBHWS project indicates that they are looking at development of three projects briefly described as follows:

Hermosa Branch

This project would extend from Hot Springs north along US Highway 385 to 7-11 Road, then east along 7-11 Road to Highway 79 to near Buffalo Gap, then north along Highway 79 to Hermosa. Water supply would be from the City of Hot Springs and/or a development of a Madison well (probably near an existing Madison well known as the Streeter Well) located in Section 15, T6S, R6E.

Depending on sizing and water availability, it appears as though FRWUD could obtain water from the SBHWS system. If the North Area Expansion project is constructed, only a meter vault and some length of water main would be required. If the North Area Expansion project is not constructed, a transmission line extending south from the SBHWS facilities to near the Cheyenne River would be required. Construction of this transmission line would make service available to users along Highway 79 and at the Maverick Junction area.

Cascade Branch

This project would extend from Hot Springs south along Highway 71 to the Cascade Springs area and eventually to the Provo and Edgemont areas. Water supply would be from the City of Hot Springs and/or a development of a well at a site to be determined.

Depending on sizing and water availability, it appears as though FRWUD could obtain water from the SBHWS system. A meter vault and transmission line extending along the existing "Q" line from the SBHWS facilities probably near the intersection of Highway 79 and County Road #6 to the Angostura water storage tank would be required. Depending on elevations and hydraulics of the SBHWS system, a booster pumping station may be required.

Custer Branch

This project would extend from Hot Springs north along Highway 385 to the Custer area. Water supply would be from the City of Hot Springs and/or a development of a site to be determined. This project would have no benefit for FRWUD.

DISTRIBUTION SYSTEM & STORAGE

The water distribution system serving the Fall River Water Users District was constructed in two phases: Year 1 Project and Year 2 Project. The original FRWUD construction included a water supply line from the City of Hot Springs to the District, three (3) water

storage tanks, two (2) booster stations, six (6) pressure reducing stations and approximately 272 miles of water main ranging in size from 8" diameter to 1½" diameter. Additional water lines have been constructed since completion of the original project to serve new users.

The water system is separated into three distinct but integrated water systems; the low level system, intermediate level system and high level system. General service areas of each system are shown on Figure 3.

Low Level System

The Low Level system generally serves as shown on Figure 3. There is a small strip of property along County Road 79 on the east side of Angostura Reservoir that is served by the Intermediate Level system.

Water supply is from the City of Hot Springs through the main meter vault located along Highway 18/385 (Fall River Road) about one mile downstream from the existing city limits. An 8" water main runs from the City of Hot Springs along Fall River Road and Old Highway 79 to south of the Cheyenne River and to the water storage tank on the east side of Angostura Reservoir. The low level system also serves as a source of water supply for the Intermediate Level system.

Water storage for the Low Level system is a 31' diameter by 33' high "Aquastore" water storage tank constructed at the Angostura Site as shown on Figure 3. This water storage tank has a nominal capacity of 183,000 gallons.

One pressure reducing station is located within the Low Level system.

Intermediate Level System

The Intermediate Level system generally serves the area as shown on Figure 3.

Water supply for the Intermediate Level system is Booster Station #1 located on the same site as the Low Level (Angostura Site) water storage tank. The booster station is equipped with two pumps of identical size and capacity. A review of operational data indicates that one pump running delivers 200-210 gpm from the Low Level system to the Intermediate Level system. When both pumps are running, 260-280 gpm are pumped to the Intermediate Level system.

Water storage for the Intermediate Level system is a 42' diameter by 24' high "Aquastore" water storage tank constructed at the West Oelrichs Site as shown on Figure 3. This water storage tank has a nominal capacity of 246,000 gallons.

Two pressure reducing stations are located within the Intermediate Level system.

High Level System

The High Level system generally serves the area as shown on Figure 3.

Water supply for the High Level system is Booster Station #2 located about one mile east of the Intermediate Level (West Oelrichs Site) water storage tank. The booster station is equipped with two pumps of identical size and capacity. A review of operational data indicates that one pump running delivers about 90 gpm from the Intermediate Level system to the High Level system. When both pumps are running, about 140 gpm are pumped to the High Level system.

Water storage for the High Level system is a 31' diameter by 24' high "Aquastore" water storage tank constructed at the Southwest Tank Site as shown on Figure 3. This water storage tank has a nominal capacity of 132,000 gallons.

Three pressure reducing stations are located within the Intermediate Level system.

Computer Model

The existing water system was analyzed by a computer model developed using WaterCAD software from Haestad Methods, Inc. The WaterCAD software provides a steady state flow and pressure analysis of the distribution system. The computer model provides balanced flow conditions, velocities and head loss in each pipe segment and pressures at given nodes.

Pipe Friction Factor: The pipe friction factor or Hazen-Williams "C" factor of a water pipe is an expression of the pipe's ability to carry water. Friction along the interior surface of a pipe tends to reduce the flow of water through the pipe; thus, a rougher surface requires more energy or power to push water through the pipe.

This formula has been used extensively for designing water supply systems in the United States.

The existing water system was constructed using PVC pipe. Manufacturers suggest the use of a Hazen Williams "C" factor of 150 be used for PVC pipe. For this study, a conservative "C" factor of 140 was assigned to all existing pipes in the system to allow for head loss at tees, crosses, bends and other fittings.

Model Layout: Existing water mains and proposed alternate locations for improvements were included in the model. Junction node elevations used in the model were obtained by interpolating from USGS quad maps.

Pump curves furnished by the pump manufacturers during the project construction were used for pumps in the model.

System Flows: District personnel provided monthly water use data broken down by distribution line designation; *i.e.* B-Line, C-Line, etc. This breakdown allowed us to estimate peak daily and peak hourly use within each distribution line area and assign a realistic demand at the various nodes in the computer model.

FINDINGS AND CONCLUSIONS

Results of the computer model indicated that the existing distribution system is generally adequate to meet existing demands.

The existing facilities are operating very near their design capacity. Existing water supply facilities will provide about 500,000 gpd while the existing peak day demand was estimated at 485,200 gpd. Any growth within the system will require additional water supply. Potential alternates to increase the water supply were discussed in the "Water Supply" section of this report.

The water supply for the Intermediate Level service area is the Angostura Booster Station (Booster Station No. 1). Estimated peak day demand within this service area is 260 gpm and the capacity of the pumps is 260-280 gpm with both pumps running.

The water supply for the High Level service area is Booster Station No. 2. Estimated peak day demand within this service area is about 130 gpm and the capacity of the pumps is about 140 gpm with both pumps running.

Of the proposed 400 single family residential lots/ranchettes discussed earlier about 320 units are projected to be within the Intermediate Level service area and about 80 units are projected to be within the Low Level service area.

For additional growth to occur within the existing service area, various improvements in the distribution system will be required.

The proposed "Lindberg" development south of Angostura Reservoir will require an additional 6" main parallel to the existing 6" water main from Booster Station #1 to the H-Line, an additional 6" main parallel to the H-Line to the Q-Line, a new 6" water main from the Q-Line (replaces an existing 2" main) to the development and a new 100,000 gallon storage tank south of the intersection of the new 6" line and the Q-Line. Because of system hydraulics, a telemetry system and electrically operated control valve will be needed on the Q-Line at its intersection with the H-Line. Construction of the parallel 6" main to the H-Line will result in a slight increase in pumping capacity since the Total Dynamic Head on the pumps will be reduced.

The proposed "Gillespie" development south of Angostura Reservoir will require replacement of the existing 2" P-Line with a new 4" water main.

The proposed "Groves" development near Smithwick will require an additional 6" main parallel to the existing 6" water main C-Line from the H-line to the I-Line.

Additional growth within the High-Level service area will require an additional 6" main parallel to the existing 6" water main S-Line from the Booster Station No. 2 to the T-Line. Construction of the parallel 6" main to the T-Line will result in a slight increase in pumping capacity since the Total Dynamic Head on the pumps will be reduced.

Expected growth within the Intermediate Level and High Level service areas will eventually require an upgrade of Booster Station No. 1.

The proposed "Nebraska Expansion" south of the state line will require construction of a new 4" water main parallel to the existing W-Line from the V-line south to the state line.

Service to other proposed developments shown on Figure 3 can be served by the existing system if water supply is increased.

It should be noted where parallel lines are discussed a single larger diameter pipe could be used. One 8" water main could be constructed in lieu of two 6" mains which would allow for abandonment of the existing 6" main. One 10" water main could be constructed in lieu of the two 8" parallel mains. Construction of the single larger diameter water main could reduce future maintenance costs but would have a higher capital cost at this time.

Expansion to serve the North Expansion area was analyzed in a preliminary engineering report for the North Expansion was prepared by FMG, Inc. and dated October 30, 2002. A report dated May 25, 2005 updating the 2002 report has been prepared. The North Expansion area is not currently served by the FRWUD.

No Action Alternative

The "No Action" alternative was considered as the beginning point for development of alternates to serve growth within the study area. With this option, no additional regional water facilities would be constructed. Ranchers and residential developments would continue to operate as they do today. Growth in the area would be stymied by lack of sufficient quantities of water and expansion of livestock herds could be hindered by lack of good quality and quantity of water.

Estimated costs for the various improvements are shown in Table 3 and summarized below.

<u>Project</u>	<u>Estimated Cost</u>
Improvements to serve Lindberg Service Area	\$612,530
Improvements to serve Gillespie Service Area	\$157,820
Improvements to serve Smithwick (Groves) Service Area	\$418,120
High-Level Service Area Improvements	\$300,520
Upgrade Booster Station Number 1	\$75,000
<u>Nebraska Expansion Improvements</u>	<u>\$128,840</u>
Total	\$1,692,830

The North Area Expansion project was estimated at about \$1,600,000.

The costs of increasing the water supply are not included. The cost of relocating the pressure reducing valve in the main meter vault to increase water delivery by about 100 gpm (140,000) gpd was included in the North Area Expansion project cost estimate. This cost, excluding land and/or easement acquisition was estimated at \$50,000.

IMPLEMENTATION SCHEDULE

If the Board decides to proceed with this improvement project, it is likely that water would be available to consumers in 1.0 to 3.5 years depending greatly on the amount of time required for project funding. An estimated time frame follows:

Funding Requests/Approval	6-24 months
Project Design/Land and Easement Acquisition	6 months
Plan Approval/Bidding/Contract Award	3 months
Construction Period	6 months

TABLE 3
ESTIMATED PROJECT COSTS
VARIOUS IMPROVEMENTS
FALL RIVER WATER USERS DISTRICT
January, 2006

LINBERG SERVICE AREA

ITEM	QUANTITY	UNITS	UNIT COST	EXTENDED COST
6" PVC Water Main-Class 160	52,500	LF	\$ 4.50	\$ 236,250.00
6" Vaves & Boxes	10	EA	\$ 700.00	\$ 7,000.00
Flushing Hydrants	4	EA	\$ 700.00	\$ 2,800.00
River/Stream Crossing	3	EA	\$ 5,000.00	\$ 15,000.00
Intermediate Ties-6" to 6"	5	EA	\$ 3,500.00	\$ 17,500.00
Road Crossings	3	EA	\$ 1,800.00	\$ 5,400.00
Control Valves/Telemetry Systems	1	EA	\$ 20,000.00	\$ 20,000.00
100,000 Gallon Storage Tank	1	LS	\$ 120,000.00	\$ 120,000.00
Mobilization	1	LS	\$ 10,000.00	\$ 10,000.00
Sub-Total				\$ 433,950.00
Contingencies @ 25%				\$ 108,487.50
Engineering Design/Testing-12%				\$ 65,092.50
Archeology				\$ 5,000.00
TOTAL ESTIMATED COST				\$ 612,530.00

GILLESPIE SERVICE AREA

ITEM	QUANTITY	UNITS	UNIT COST	EXTENDED COST
4" PVC Water Main-Class 160	29,000	LF	\$ 3.00	\$ 87,000.00
4" Vaves & Boxes	6	EA	\$ 600.00	\$ 3,600.00
Flushing Hydrants	2	EA	\$ 700.00	\$ 1,400.00
River/Stream Crossing	2	EA	\$ 5,000.00	\$ 10,000.00
Road Crossings	1	EA	\$ 1,800.00	\$ 1,800.00
Mobilization	1	LS	\$ 7,500.00	\$ 7,500.00
Sub-Total				\$ 111,300.00
Contingencies @ 25%				\$ 27,825.00
Engineering Design/Testing-12%				\$ 16,695.00
Archeology				\$ 2,000.00
TOTAL ESTIMATED COST				\$ 157,820.00

SMITHWICH (GROVES) SERVICE AREA

ITEM	QUANTITY	UNITS	UNIT COST	EXTENDED COST
6" PVC Water Main-Class 160	37,000	LF	\$ 4.50	\$ 166,500.00
6" Vaves & Boxes	7	EA	\$ 700.00	\$ 4,900.00
Flushing Hydrants	4	EA	\$ 700.00	\$ 2,800.00
River/Stream Crossing	2	EA	\$ 5,000.00	\$ 10,000.00
12" Casing Pipe-Highway & RR Crossing	400	LF	\$ 150.00	\$ 60,000.00
Road Crossings	7	EA	\$ 1,800.00	\$ 12,600.00
Intermediate Ties-6" to 6"	4	EA	\$ 3,500.00	\$ 14,000.00
Added Costs along Smithwick Road	1	LS	\$ 15,000.00	\$ 15,000.00
Mobilization	1	LS	\$ 10,000.00	\$ 10,000.00
Sub-Total				\$ 295,800.00
Contingencies @ 25%				\$ 73,950.00
Engineering Design/Testing-12%				\$ 44,370.00
Archeology				\$ 4,000.00
TOTAL ESTIMATED COST				\$ 418,120.00

TABLE 3 (Continued)
ESTIMATED PROJECT COSTS
VARIOUS IMPROVEMENTS
FALL RIVER WATER USERS DISTRICT
January, 2006

HIGH LEVEL SERVICE AREA

ITEM	QUANTITY	UNITS	UNIT COST	EXTENDED COST
6" PVC Water Main-Class 160	37,000	LF	\$ 4.50	\$ 166,500.00
6" Vaves & Boxes	7	EA	\$ 700.00	\$ 4,900.00
Flushing Hydrants	4	EA	\$ 700.00	\$ 2,800.00
River/Stream Crossing	2	EA	\$ 5,000.00	\$ 10,000.00
Road Crossings	2	EA	\$ 1,800.00	\$ 3,600.00
Intermediate Ties-6" to 6"	4	EA	\$ 3,500.00	\$ 14,000.00
Mobilization	1	LS	\$ 10,000.00	\$ 10,000.00
Sub-Total				\$ 211,800.00
Contingencies @ 25%				\$ 52,950.00
Engineering Design/Testing-12%				\$ 31,770.00
Archeology				\$ 4,000.00
TOTAL ESTIMATED COST				\$ 300,520.00

NEBRESKA EXPANSION

ITEM	QUANTITY	UNITS	UNIT COST	EXTENDED COST
4" PVC Water Main-Class 160	21,500	LF	\$ 3.00	\$ 64,500.00
4" Vaves & Boxes	6	EA	\$ 600.00	\$ 3,600.00
Flushing Hydrants	2	EA	\$ 700.00	\$ 1,400.00
River/Stream Crossing	2	EA	\$ 5,000.00	\$ 10,000.00
Road Crossings	2	EA	\$ 1,800.00	\$ 3,600.00
Mobilization	1	LS	\$ 7,500.00	\$ 7,500.00
Sub-Total				\$ 90,600.00
Contingencies @ 25%				\$ 22,650.00
Engineering Design/Testing-12%				\$ 13,590.00
Archeology				\$ 2,000.00
TOTAL ESTIMATED COST				\$ 128,840.00

Note: The above cost estimates do not include the cost of acquiring land or easements and do not include administrative costs

RECEIPT

WATER RIGHTS PROGRAM

South Dakota Department of Environment and Natural Resources

Date 4/13/0, 20 07

RECEIVED OF FALL RIVER USERS DIST 1 ANGOSTURA HIGHLANDS HOT SPRINGS SD 57747

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

Fee for Application for Permit No. <u>2615-2</u> to Appropriate Water, to construct and to put water to beneficial use	275	00
Fee for Application for Permit No. _____ to Appropriate Water for Future use		
Fee to retain Future Use Permit No. _____ after period of seven years.		
Fee for Inspecting Constructed Works, confirming beneficial use and issuing Water License No. <u>2615-2</u>	50	00
Fee for Filing Transfer Form _____		
Fee for _____		
Fee for Issuing New Well Driller's License No. _____ for C.Y. _____		
Fee for Renewal of Well Driller's License No. _____ for C.Y. _____		
Fee for Issuing Well Pump Installer's License No. _____ for C.Y. _____		
Fee for Renewal of Well Pump Installer's License No. _____ for C.Y. _____		
(Any Other Work Provided by Law)	TOTAL	325 00

No.

08031

By

Laurel Erbe
Chief Engineer

**Fall River Water Users District
PO Box 321
27600 W. Oral Road
Oral, SD 57766
Phone: 424-7648
Fax: 424-7748**

RECEIVED
APR 26 2007
WATER RIGHTS
PROGRAM

April 24, 2007

Department of Environment and Natural Resources
Eric Gronlund
Joe Foss Building
523 East Capitol
Pierre, SD 57501-3182

Dear Eric,

We have contacted all the water users that we are aware of, to explain our well permit and our plans for the water that we would use from the well. We are enclosing copies of letters of support of our application for a well permit that we have received from water users from the Beaver Creek Springs. In an attempt to address the directives of our future use permit, we have moved our prospective well site 1 mile further from the Beaver Creek Springs, and are only asking for 300 GPM and 400 acre feet of water. These actions coincide with the Black Hills Water Management Study to drill lower production wells spread uniformly over the area, to lessen the impact on the Madison Formation. FRWUD has always been concerned that our Water rights do not infringe on any previously held water right or have a negative impact on the surrounding area. Please include these letters with our application for Well Permit that we have previously submitted. Thank you for your consideration in this matter.

Sincerely,

Handwritten signature of Randy Scott in black ink.

Randy Scott,
General Manager
Fall River Water Users District

To: Water Management Board
RE: Fall River Water Users District Well Permit

RECEIVED
APR 26 2007
WATER RIGHTS
PROGRAM

Dear Water Management Board,

This letter is to inform you that we have been contacted by Fall River Water Users District and informed of their intentions to drill a well into the Madison Formation at SW ¼, Sec. 1, T7S, R6E, Black Hills Meridian. Fall River Water Users District has approached us to see if we have any concerns with their well permit. We do not have any concerns as we feel that the location of their well will not negatively impact a current water right that we hold. Fall River Water Users District has made every attempt to apply for a well permit in a location that will have not have a negative impact on current water permits. Fall River Water Users District has our support in their well permit.

Sincerely,




RECEIVED

APR 26 2007

WATER RIGHTS
PROGRAM

Lyda Bowker Trust
13344 Bunny Drive
Hot Springs, SD
April 12, 2007

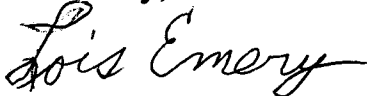
Dear Water Management Board:

This letter is to inform you that we have been contacted by Fall River Water Users District and informed of their intentions to drill a well into the Madison Formation at SW1/4, Sec. 1, T7S, R6E, Black Hills Meridian. Fall River Water Users District has approached us to see if we have any concerns with their well permit.

We appreciate the efforts of the Fall River Water District to seek a location more favorable to the long standing water rights on Beaver Creek than what they had previously considered. It appears that this site would be more favorable than one closer to the Beaver Creek Springs. We are hopeful that a well in this area will meet the present needs.

In the event this is not the case, our priority would be the long standing rights providing water for irrigation of property in the Beaver Valley area.

Sincerely,

A handwritten signature in cursive script that reads "Lois Emery".

Lyda Bowker Trust,
Lois Emery, Trustee

RECEIVED

APR 26 2007

WATER RIGHTS
PROGRAM

To: Water Management Board
RE: Fall River Water Users District Well Permit

Dear Water Management Board,

This letter is to inform you that we have been contacted by Fall River Water Users District and informed of their intentions to drill a well into the Madison Formation at SW ¼, Sec. 1, T7S, R6E, Black Hills Meridian. Fall River Water Users District has approached us to see if we have any concerns with their well permit. Although we have concerns, we are willing to live with the potential effects to Beaver Creek Spring because the water will be used in this local area. Fall River Water Users has our support in their well permit.

In addition, the Water Management Board should know when they make their decisions, that Fall River Water Users has been most accommodating and the Southern Black Hills Water System has never even talked to us about our concerns with their potential Streeter Well site.

Sincerely,

A handwritten signature in cursive script that reads "Steve Simpson".

STEVE SIMPSON
Trout Haven Ranch

7-11 Ranch, Inc.

*13616 711 Rd
Buffalo Gap SD 57722
Phone (605) 833-6391*

RECEIVED

APR 26 2007

WATER RIGHTS
PROGRAM

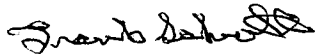
April 9, 2007

To: Water Management Board

Re: Fall River Water Users District Well permit

This letter is to inform you that we have been contacted by Fall River Water Users District & informed of their intentions to drill a well into the Madison formation in the SW¼, Sec. 1, T7S, R6E, Black Hills Meridian. We do not have any objections to this.

Sincerely,



Frank Schroth

To: Water Management Board
RE: Fall River Water Users District Well Permit

RECEIVED

APR 26 2007

WATER RIGHTS
PROGRAM

Dear Water Management Board,

This letter is to inform you that we have been contacted by Fall River Water Users District and informed of their intentions to drill a well into the Madison Formation at SW ¼, Sec. 1, T7S, R6E, Black Hills Meridian. Fall River Water Users District has approached us to see if we have any concerns with their well permit. We do not have any concerns as we feel that the location of their well will not negatively impact a current water right that we hold. Fall River Water Users District has made every attempt to apply for a well permit in a location that will have not have a negative impact on current water permits. Fall River Water Users District has our support in their well permit.

Sincerely,



RECEIVED

APR 26 2007

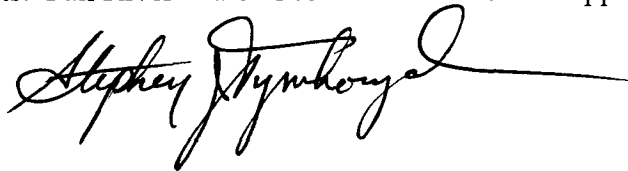
WATER RIGHTS
PROGRAM

To: Water Management Board
RE: Fall River Water Users District Well Permit

Dear Water Management Board,

This letter is to inform you that we have been contacted by Fall River Water Users District and informed of their intentions to drill a well into the Madison Formation at SW $\frac{1}{4}$, Sec. 1, T7S, R6E, Black Hills Meridian. Fall River Water Users District has approached us to see if we have any concerns with their well permit. We do not have any concerns as we feel that the location of their well will not negatively impact a current water right that we hold. Fall River Water Users District has made every attempt to apply for a well permit in a location that will not have a negative impact on current water permits. Fall River Water Users District has our support in their well permit.

Sincerely,

A handwritten signature in dark ink, appearing to read "Stephen J. Symington", with a long horizontal flourish extending to the right.

RECEIVED

APR 26 2007

WATER RIGHTS
PROGRAM

To: Water Management Board
RE: Fall River Water Users District Well Permit

Dear Water Management Board,

This letter is to inform you that we have been contacted by Fall River Water Users District and informed of their intentions to drill a well into the Madison Formation at SW $\frac{1}{4}$, Sec. 1, T7S, R6E, Black Hills Meridian. Fall River Water Users District has approached us to see if we have any concerns with their well permit. We do not have any concerns as we feel that the location of their well will not negatively impact a current water right that we hold. Fall River Water Users District has made every attempt to apply for a well permit in a location that will not have a negative impact on current water permits. Fall River Water Users District has our support in their well permit.

Sincerely,

A handwritten signature in cursive script, appearing to read "Clarence Foss". The signature is written in dark ink and is positioned below the word "Sincerely,".

RECEIVED
APR 26 2007
WATER RIGHTS
PROGRAM

Dear Water Management Board,

I have been contacted by Fall River Water Users District (FRWUD) concerning them drilling a well near Buffalo Gap, Future Use Permit # 2560-2, for 750 acre feet/year.

FRWUD has approached the irrigators on Beaver Creek, and have done their best to be good neighbors and address our concerns.

They willingly moved the proposed well site south ~~two~~ more miles, further from Beaver Creek Spring. This will hopefully avoid any impact on the Spring.

The Water Management Board considered the possible loss of Spring discharge because of this well, and made a qualification statement to Future Use Permit #2560-2. This qualification would require particular attention be given to the flows of Beaver Creek Spring, Hot Spring, and Cascade.

Because of this qualification statement and FRWUD's cooperation in moving the well site, I feel more comfortable that Beaver Creek Spring and our Water Rights will be protected, and do not object to the drilling of this well, at this current site.

I do, however, strongly object to Southern Black Hills Water System's proposed well, one and one half mile, from Beaver Creek Spring, Permit # 2585-2, for 1600 acre feet/yr. This is a very large well and is extremely close to Beaver Creek Spring, and I believe it will have a devastating impact on this Spring and the irrigators on Beaver Creek.

Sincerely,

Shawn Fugier
4-20-2007

be affected. Since SD Water Law does not protect artesian head pressure as a means of diversion, well interference resulting in decreased discharge from these "artesian" springs probably could not be considered an adverse impact. However, the Water Management Board considered the potential of spring discharge decreasing as the result of well interference a "public interest" concern while considering Future Use Permit No. 2560-2. The future use permit was approved with the qualification stating:

"At such time as definite plans are made to construct works and put the water reserved by this permit to beneficial use, specific application for all or any part of the reserved water must be submitted and approved prior to construction of facilities pursuant to SDCL 46-5-38.1 with particular attention given to the flows of Beaver Spring, Cascade Springs and Hot Springs."

Since the aquifer characteristics have not been determined for the Madison aquifer in this area, it is not possible to estimate the drawdown at Beaver Creek Springs and/or decrease in flow of Beaver Creek that may result from this proposed diversion. Therefore it may not be possible to meet the "public interest" criteria that are established in SDCL 46-2A-9.

Future Use Permit No. 2560-2

Future Use Permit No. 2560-2 held by Fall River Water User District (FRWUD) reserves for future use, 750 acre-feet/year from the Madison aquifer, from three areas. The well site proposed by this application is located approximately two and one third miles northwest of one of these areas. The actual extent of interference between a well in the FRWUD area and the well proposed by this application will depend on location of the wells and the on-site aquifer characteristics. Water Permits are required before water reserved by the future use permits can be placed to beneficial use. Permits putting reserved water to beneficial use retain the priority date of the future use permits (May 16, 2005).

Pursuant to SDCL 46-2A-9, a permit to appropriate water can only be issued if there is reasonable probability that the proposed diversion can be developed without unlawful impairment of existing rights. If Application No. 2585-2 is approved, approval of a subsequent permit that would authorize FRWUD to construct a well in an area reserved by Future Use Permit No. 2560-2 could involve considering impacts to an *existing well* constructed to supply this permit, even though Permit No. 2560-2 has the senior priority date. However, once completed, any well constructed to use water that had been reserved by Future Use Permit No. 2560-2 would be senior to the well proposed by this application. A well constructed to supply this application may need to control its withdrawals to protect the senior water right.

SDCL 46-2A-9 also requires that a permit to appropriate water can only be issued if the appropriation is in the public interest. If the Water Management Board determines that it is not in the public interest to allow withdrawals from the Madison aquifer to decrease the flows of Beaver Creek, the number of high capacity wells in the proximity of Beaver Creek Springs could be limited in the future to prevent decreased spring discharge resulting from a cumulative impact of wells. In theory, if the well proposed by this

**Fall River Water Users District
PO Box 321
27600 W. Oral Road
Oral, SD 57766
Phone: 424-7648
Fax: 424-7748**

**RECEIVED
MAY - 4 2007
WATER RIGHTS
PROGRAM**

May 3, 2007

Department of Environment and Natural Resources
Eric Gronlund
Joe Foss Building
523 East Capitol
Pierre, SD 57501-3182

Dear Eric,

We are sending you the update to Al Foster's Report on our Well Study. Please include this with the copy of the report that we have already sent you. Thank you.

Sincerely,



Marla Peters
Executive Assistant
Fall River Water Users District

RECEIVED

MAY - 4 2007

WATER RIGHTS
PROGRAM

April 28, 2007

Randy Scott, Manager
Fall River Water Users District
PO Box 321
27600 W. Oral Road
Oral, SD 5776

**RE: ADDENDUM TO REPORT DATED MARCH 16, 2007
NEW WATER SOURCE EVALUATION
FALL RIVER WATER USERS DISTRICT**

Dear Randy:

This letter will serve as an Addendum to provide clarification and additional information for the report on *Water Source Evaluation* dated March 16, 2007

Information on Page 21 of the report indicates that the estimated annual cash needs for construction of the North Expansion with North Area Well and Transmission line to Angostura Tank was \$223,250. This estimate included \$12,600 for purchase of additional water from Hot Springs. If the development of a new well is successful, the \$12,600 would be deleted from the annual cash needs, resulting in estimated cash needs of \$210,650.

If this project is constructed and development of a new well is successful, a substantial part of the District's water use could be satisfied by the new well and drastically reduce the quantity of water purchased from the City of Hot Springs. As noted in the report, existing water use in the District is about 97 MG per year and projected water use in the North Expansion project was estimated at 27 MG per year for a total projected water use of 120 MG per year.

If we assume that the new well supplies 75% of the water (90 MG per year), water purchases from the City of Hot Springs would be 30 MG per year. At a purchase price of \$1.16/1,000 gallons, the annual cost of purchased water would be reduced by \$104,400.

The estimated annual cash needs as shown on Page 21 of the report included \$44,000 for operation and maintenance of the new well. The \$44,000 annual O & M cost was estimated as shown on Page 20 of the report. If the well supplies the 90 MG per year, cost of water production from the well would be about \$0.50/1,000 gallons. The actual cost of water production from the well may vary considerably from the estimate depending on the cost of electricity, water quality and need for treatment and testing. However, the estimates compare favorably with the research you completed with other Districts throughout the state.

As noted on Page 21 of the report, financing and revenue as discussed results in an annual deficit of about \$119,800. This estimate would be reduced to \$107,000 by deducting the \$12,600 for purchased water as discussed about.

Successful development of the well and the projected savings from reduce water purchase from the City (\$104,400) would essentially offset the projected deficit.

Further, the District has increased the water rates from \$2.50/1,000 gal to \$3.00/1,000 gal. If water use continues as estimated, increased revenue from water sales is estimated at \$60,000/year which can be used to support additional upgrades to the system.

The estimated annual cash needs to support the proposed North Expansion, north well and transmission line to Angostura tank and information above is summarized as follows:

<u>North Expansion with North Area Well Site and Transmission Line to Angostura Tank</u>	
Annual Principal and Interest \$1,210,800 (North Area Expansion less Grant)	\$64,200
Annual Principal & Interest \$1,354,900 Additional Funds	71,900
10% Reserve	13,350
Additional Operation and Maintenance (North Area Expansion)	\$9,000
Additional Operation and Maintenance (New Well)	\$44,000
<u>Additional Operation and Maintenance (New Booster Station)</u>	<u>8,200</u>
Estimated Total Annual Increased Cash Needs	\$210,650
Estimated Revenue from North Expansion (see page 21 of report)	\$103,400
Reduced cost of water purchase from City of Hot Springs	\$104,400
Revenue increase from increased water sales (120 MG at \$0.50/1,000)	\$60,000

It must be remembered that these are estimates only, and actual costs and revenues may vary.

Similar adjustment and estimates would apply to the North Expansion with Fall River Road and Transmission Line to Angostura Tank project as shown of Page 23 of the report.

If you have any questions or need additional information please let us know.

Sincerely,

FMG, INC.

Allen D. Foster, P.E.
c: File #8436.09



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

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

June 8, 2007

Southern Black Hills Water System
PO Box 124
Hermosa SD 57744

Ken Royse
Bartlett & West
3456 E. Century Avenue
Bismarck ND 58503-0737

Gentleman:

Please find enclosed a copy of the reports, recommendations and public notice for two applications filed by Fall River Water User District. The notice is set to be published in the Hot Springs Star and Custer County Chronicle the week of June 11 and June 18, 2007 scheduling a July 11, 2007 hearing before the Water Management Board in Milbank SD.

This information is being sent to keep you informed of water permitting issues in the southern hills area.

Sincerely,


Eric Gronlund
Water Rights Program, DENR
605 773-3352
eric.gronlund@state.sd.us

enclosures

June 12, 2007

Mr. Randy Scott
Fall River Water Users District
1 Angostura Highlands
Hot Springs, South Dakota 57747

Dear Mr. Scott:

This letter is written in response to your request for my opinion of likely effects on Beaver Creek Springs or existing wells, in regard to the planned application by the Fall River Water Users District for a well permit in the area of Section 1, T. 7 S., R. 6 E., Fall River County, South Dakota. I have reviewed this proposed site during work with Mr. Allen Foster of FMG, Inc.

It is my opinion that impacts to existing wells or springs in the area should be minimal, if any. The distance to Beaver Creek Spring is about four miles north-northwest of the proposed well site in Section 1. The Streeter well is about 4 ½ miles from the proposed site. Beaver Creek Spring and wells at the Streeter Ranch do not appear to be directly upgradient from the proposed site, and instead appear to be on a different ground-water flow path, based on a potentiometric map published by the U.S. Geological Survey. The reference for the potentiometric map is:

Strobel, M.L., Galloway, J.M., Hamade, G.R., and Jarrell, G.J., 2000, Potentiometric surface of the Madison aquifer in the Black Hills area, South Dakota: U.S. Geological Survey Hydrologic Investigations Atlas HA-745-D.

Respectfully submitted,

Arden D. Davis, P.E., Ph.D.
1014 Milwaukee Street
Rapid City, South Dakota 57701



United States Department of the Interior

NATIONAL PARK SERVICE
Water Resources Division
1201 Oakridge Drive, Suite 250
Fort Collins, Colorado 80525-5596



IN REPLY REFER TO:

June 29, 2007

L54 (2380)
WICA/Water Rights

Mr. Garland Erbele, Chief Engineer
Water Rights Program
Foss Building
523 E. Capitol
Pierre, SD 57501

RECEIVED

JUL - 5 2007

**WATER RIGHTS
PROGRAM**

Fall River Water Users District
C/o Mr. Craig DeBoer
P.O. Box 321
Oral, SD 57766

Re: Petition to Intervene in the Matter of Applications 2615-2 filed by the Fall River Water Users District

Dear Mr. Erbele and Mr. DeBoer:

The National Park Service (NPS) hereby files this Petition to Intervene in the matter of Water Permit Application No. 2615-2, filed by the Fall River Water Users District (Fall River WUD).

Application No. 2615-2 requests to withdraw 400 acre-feet per year (afy) of ground water from the Madison aquifer at an instantaneous rate of 0.67 cubic feet per second. This is a portion of water previously reserved by the Applicant under Future Use Permit 2560-2. The Application states the water is to be used for domestic purposes and serve rural hookups and bulk use in Oelrichs, and potentially Buffalo Gap, SD. The proposed well will be approximately 2750 feet deep and located in the SW $\frac{1}{4}$ SW $\frac{1}{4}$ Section 1, T7S, R6E, Black Hills Meridian. The Chief Engineer recommends approval of Application 2615-2.

The NPS is concerned about the potential adverse impacts that may result from withdrawals proposed by this application on the water rights and water-related resources of Wind Cave National Park. Appendix A provides a summary of Wind Cave NP water-dependent resources and water rights.

A preliminary analysis using the Theis method, similar to that submitted with the Petitions to Intervene in the matter of Applications 2580-2 and 2585-2 by the Southern Black Hills Water System, shows a potential for the drawdown associated with the pumping to deplete ground water levels within Wind Cave NP. Aquifer properties were estimated from available literature. This analysis assumes that the amount of water

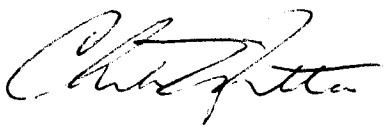
discharging from the aquifer at Beaver Creek Spring and Cascade Springs is not reduced by the pumping.

The NPS was contacted earlier this spring by the Fall River WUD and informed of the pending water right application. Since that time, the NPS and Fall River WUD have conducted discussions to allow the proposed ground water withdrawals while protecting park water-dependent resources and water rights.

If the NPS and Fall River WUD reach an agreement that is acceptable to both parties and the South Dakota Department of Environment and Natural Resources agrees to include the agreed upon conditions into the permit for 2615-2, the NPS will withdraw its Petition to Intervene. If an agreement can not be reached, the NPS will oppose the granting of Application 2615-2 and request that the scheduled hearing in this matter be delayed.

If you have any questions or concerns related to this matter, please contact me at (970) 225-3505 or Jeff Hughes of my staff at (970) 225-3527.

Sincerely,

A handwritten signature in black ink, appearing to read 'Charles W. Pettee', written in a cursive style.

Charles W. Pettee
Chief, Water Rights Branch

Attachment

cc: Diane Best (Counsel for the Chief Engineer)
Michael Hickey (Counsel for Fall River Water Users District)
SOL (Denver) – Peter Fahmy

APPENDIX A

Wind Cave NP Water-Dependent Resources

Wind Cave NP was established on January 9, 1903, (32 Stat. 765) and enlarged several times in the ensuing years. It was the seventh National Park and the first one designated for the protection of cave features. The main park feature is Wind Cave, located in the Madison Limestone near the park Visitor Center. There are over 121 miles of the Cave discovered to date with many more miles likely to be explored in the future. Artesian ground-water flow has been and continues to be the dominant force in cave formation.

Wind Cave was formed within the Madison Limestone of the Black Hills, probably during Paleocene-Eocene times (40-50 million years ago). The cave developed along gypsum deposits and paleokarst zones and is one of the oldest caves in the world. The cave intersects one of the world's best examples of paleofill, ancient sediment that filled caves and sinkholes that existed before Wind Cave formed. The cave has two natural entrances, one of which is modified, and the cave is associated with numerous natural blowholes. More than 121 miles of passages have been explored and mapped making Wind Cave one of the longest caves in the world. Studies of the airflow for which the cave is named suggest that only a tiny fraction of the cave's potential extent has been discovered. Wind Cave is the world's best known example of a complex rectilinear maze cave. At any given point, from three to five interconnecting levels can occur within 250-vertical feet of rock, creating one of the world's premier maze caves.

Wind Cave's length and passage density are enough to put it into the ranks of world-class caves, but the cave is significant for many other reasons. The best known of these is boxwork. Boxwork is rarely found in other caves but is found in Wind Cave in quantities and qualities that are unparalleled in all of the world's known caves. On-going survey projects continually make new discoveries of unusual features in the cave. The cave is known for its rare and unusual variety of minerals and speleothems. These include unusual helictite bushes, quartz formations, large clusters of frostwork, and fragile growths of gypsum. The cave has a simple, but highly specialized ecosystem that operates independently of photosynthesis. The microbial diversity in the cave is significant, with 12 divisions and subdivisions of bacteria found at Rainbow falls, including *Proteobacteria* and *Acidobacteria* and 2 divisions of microbes from the kingdom of *Archaea* (Euryarchaea and Crenarchaea).

There are currently several lakes and pools in the lower reaches of Wind Cave that likely define the ground-water table in this region of the aquifer. Other water resources of high value at Wind Cave NP include three perennial streams (Cold Springs, Beaver, and Highland Creeks), many intermittent and ephemeral stream courses, and over 95 seeps and springs (Figure 1). These water sources are not only important for the flora and fauna that live within or adjacent to the water, but also to the bison, elk, deer and pronghorn that require watering. The distribution of water sources throughout the park allows the large animals to move from place to place and not overgraze any particular area.

Wind Cave NP Water Rights

Wind Cave NP has three state appropriative water rights that are senior to those sought by the applicant.

Number	Name	Point of Diversion	Rate of Diversion	Purpose	Priority date
US 33-2	Cold Springs Creek	Sec. 32 & 28, T5S, R5E	0.2 cfs	Domestic, recreation, wildlife, fire protection	August 23, 1937
US 508-2	Cold Springs Lake	SW ¼ SE ¼ Sec. 26, T5S, R5E	222.08 afy	Stockwater, recreational	November 4, 1939
419-2	Headquarters well	SE ¼ SE ¼ Sec 6, T6S, R6E	0.44 cfs	Park operations	December 29, 1955

These rights are vital to the continued operation and functioning of the park.

Management and Legislation

The mission of the NPS is stated in the NPS Organic Act and provides the overall objectives for managing NPS units which "...is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." (16 U.S.C. 1).

The NPS Statement for Management for Wind Cave NP (National Park Service, 1994) conveys the purpose and legislative intent for the establishment for Wind Cave NP as:

- To preserve and protect the surface and subsurface resources.
- To provide services and facilities necessary and appropriate for public enjoyment and appreciation of the park's resources.

The Statement for Management also lists statements of significance that are provided to capture the essence of Wind Cave NP. This list includes:

- Wind Cave is among the world's longest, oldest, and most three-dimensionally complex cave systems.
- Wind Cave contains the world's largest concentration of boxwork, a cave formation.

- Wind Cave provides a valuable opportunity to observe, study, and interpret the entire hydrologic cycle, especially the hidden part that is the water en route to the aquifer.
- Wind Cave provides a valuable opportunity for visitors to view a mixture of equally significant cave resources and prairie ecosystems and to appreciate the connections between surface and subsurface resources.
- Wind Cave is one of the earliest park areas to be designated a game preserve for the reestablishment of native American bison.
- Wind Cave was one of the earliest national parks and the first to be established to protect a cave.
- Wind Cave is an important part of the region's tourism.

Notable legislation affecting Wind Cave NP includes the National Game Preserve Act (37 Stat. 293) in 1912 which provided for "for the establishment of...the Wind Cave National Game Preserve, upon land embraced within the boundaries of the Wind Cave National Park." This Act created a permanent range for bison to be presented to the American Bison Society. The bison rely on the water sources throughout Wind Cave NP for their survival.

In 1931, the NPS purchased 101 acres in Section 32, T5S, R5E BHB&M to secure a water supply for the park. In 1937, the United States received a State water right permit for use of water originating on this property (U.S. Water Right 33-2).

Public Law 708 expanded the boundaries of Wind Cave NP again in 1946. In addition to creating an area large enough to maintain viable populations of large game animals, the legislation provided that the State allow a minimum of 10,000 gallons per day of water to pass from Custer State Park to Wind Cave NP.

References Cited

National Park Service, 1994. Statement for Management, Wind Cave National Park. Technical Information Center, Denver Service Center, National Park Service. 50 pp.

BANGSMcCULLEN
— LAW FIRM —

Reply to Rapid City Office

Writer's e-mail address: mhickey@bangsmccullen.com

RECEIVED

JUL - 6 2007

WATER RIGHTS
PROGRAM

July 5, 2007

Sent via fax and regular mail

Mr. Garland Erbele, Chief Engineer
Department of Environment and National Resources
Water Rights Program
Joe Foss Building
523 East Capitol
Pierre, SD 57501-3182

Re: *In the Matter of the Applications of Fall River Water Users
District No. 2615-2*

Dear Mr. Erbele:

In accordance with my phone conversation with Diane Best, please find enclosed the Stipulation For Withdrawal of Opposition, which has been signed by the Fall River Water Users District and the United States Department of Interior, National Park Service.

Pursuant to the terms of this Agreement, the National Park Service has agreed to withdraw their opposition to the application of Fall River, and Fall River has agreed to conduct certain tests and supply those test results and other data to the Parks Service. In view of this Stipulation and Agreement, the District believes that the Water Board can go ahead and issue its permit to Fall River Water Users District at its meeting on July 11, 2007. Is this belief correct from the standpoint of the Department?

Please review the Stipulation and let me know if it is satisfactory for your purposes. Also, please let me know the exact wording of any conditions that are placed on the District's permit.

Mr. Garland Eberle

July 5, 2007

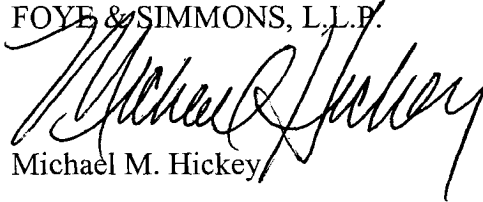
Page 2 of 2

Finally, would you please let me know if you think it is advisable or necessary for me or someone else from the District to be present at the time of the Board's hearing on the July 11, 2007.

Thank you for your assistance and cooperation. If you have any questions or comments, please advise.

Sincerely,

BANG, McCULLEN, BUTLER,
FOYE & SIMMONS, L.L.P.

A handwritten signature in black ink, appearing to read "Michael M. Hickey", is written over the printed name and firm name.

Michael M. Hickey

MMH:sbh

Enclosures

cc/encl:

Mr. Peter A. Fahmy

Ms. Diane Best

Mr. Randy Scott

RECEIVED

JUL - 6 2007

WATER RIGHTS
PROGRAM

STIPULATION FOR WITHDRAWAL OF OPPOSITION

This Stipulation is made and entered into between the Fall River Water Users District ("District"), and the United States Department of the Interior, National Park Service ("NPS"), collectively referred to as the "Parties."

RECITALS

- A. The District has a need to improve the viability and delivery capacity of its existing water system by constructing its own well. Fall River Water Users District services most of the east half of Fall River County. Due to increased demand that has been placed on the system by existing water users and increased requests for service from potential users brought on by drought conditions in the county FRWUD has become a primary source of water for many ranchers when it was intended as a supplemental source of water at the time the project was designed. The proposed project needs to be constructed in the immediate future.
- B. On April 12, 2007, the South Dakota Department of Environment, Water Rights Program (DENR) received permit application 2615-2 ("Application") from the District to place to Beneficial Use Water Reserved under Future Use Permit No. 2560-2. The Application requests 400 acre-feet per year (afy) from the original reservation of 750 afy to be withdrawn at a rate of up to 0.67 cfs in the SW¹/₄ SW¹/₄ Sec. 1, T7S, R6E, Black Hills Meridian. The description of the project from the application states: "To construct and put together water reserved by Future Use Permit #2560-2 for domestic use and serve rural hook-ups and bulk use in Oelrichs, and potentially Buffalo Gap, SD."
- C. Public Notice for the Application was published in the Hot Springs Star and Custer County Chronicle in June, 2007.

- D. On June ___, 2007, the NPS filed a timely and complete Petition to Intervene in opposition of the granting of the permit Application on the grounds that the ground-water withdrawal proposed by the Application may injure the water rights and water-dependent resources of the nationally important Wind Cave National Park.
- E. The NPS has three state appropriative water rights for operations at Wind Cave National Park, including License 419-2, which allows the withdrawal of 0.44 cfs of ground water from the Madison Aquifer in Section 6, T6S, R6E, Black Hills Meridian. Wind Cave National Park is also entitled to an inchoate federal reserved water right for stream flows spring flows and water levels in underground lakes (32 Stat. 765). The NPS is obligated to protect these water-dependent resources as mandated by the National Park Service Organic Act (16 U.S.C. 1-3).
- F. The Parties expressly acknowledge that the DENR has, pursuant to both statutory and case law, broad authority to administer the water resources of the State of South Dakota and, furthermore, that nothing contained in this Stipulation shall be construed as waiving or in any manner diminishing such authority.
- G. Upon signing, the Parties will submit a copy of this Stipulation to the DENR. If the Stipulation is acceptable to the DENR, the DENR will include conditions in the permit consistent with this Stipulated Agreement.
- H. If the conditions requested in this Stipulated Agreement are approved by the DENR and incorporated into the approved permit, the NPS will withdraw their opposition to the Application.
- I. The Parties desire to resolve the issues raised by the Petition to Intervene according to the terms and conditions contained herein.

NOW, THEREFORE, in consideration of the mutual promises and covenants contained herein, the Parties do agree as follows:

1. The NPS hereby expressly agrees to conditionally withdraw its opposition to the Application pending acceptance of DENR to the modified Application as described below:
 - a) The District agrees to meter its water use and record its monthly water withdrawals from the well. The District will transmit the water withdrawal values recorded each month to the DENR and the NPS by no later than March 1 of the following year. The copy of this report for the NPS should be sent to: Chief, Water Rights Branch, National Park Service, Water Resources Division, 1201 Oakridge Dr., Suite 250, Fort Collins, CO 80525.
 - b) The District agrees to perform a flowing-well or constant-rate aquifer test on the production well that is of sufficient duration to define the transmissivity of the aquifer system, and to provide the test procedures and data collected during the test to the NPS. The data will include the static water level (or shut-in head) prior to pumping, the time pumping begins, the pumping rate, drawdown versus time in the pumping well during the pumping and recovery periods, and the time pumping stops. A copy of the well completion report and well log will also be transmitted to the NPS at the address provided in 1.a. above.
 - c) The District agrees to collect and analyze water samples from the well for the constituents listed in Appendix A. The U.S. Geological Survey will be contracted to collect and analyze the samples. The results will be transmitted to the NPS at the address provided in 1.a. above.

2. The District may transfer or assign its interest in the water rights here involved. Any and all transferees and assignees shall be bound by the terms and conditions of this Stipulation. A condition of any such transfer or assignment shall be that the transferee and/or assignee shall be bound by all of the terms and conditions of this Stipulation.
3. This Stipulation shall be governed in accordance with the laws of the State of South Dakota to the extent not inconsistent with federal law.
4. By entering into this Stipulation, the NPS does not become a party to any proceeding other than the protest proceeding referenced above or waive their immunity from suit or consent to or acknowledge the jurisdiction of any court or tribunal. Nothing in the Stipulation shall affect any state permitted or federal reserved water rights of the United States or the United States on behalf of any Indian Tribe or individual Indian and the NPS by entering into this Stipulation does not waive or prejudice any such rights. The District and NPS reserve all legal rights, of any kind, they possess pursuant to or derived from Executive Orders, Acts of Congress, judicial decisions, or regulations promulgated pursuant thereto. No party waives its rights to seek relief in any appropriate forum of its choice not expressly prohibited by this Stipulation.
5. This Stipulation may be amended by mutual agreement of the Parties.
6. The parties agree to cooperate and execute such additional documents as may be necessary in furtherance of this stipulation and agreement.
7. This Stipulation sets forth the entire agreement of the Parties and supersedes all prior discussions, negotiations, understandings or agreements. No alteration or variation of this Stipulation shall be valid or binding unless contained in an amendment in accordance with paragraph 5.

8. The terms and conditions of this Stipulation shall be binding upon and inure to the benefit of the Parties hereto and their respective personal representatives, successors, transferees and assigns.
9. Other entities may become Parties to this Stipulation by mutual assent of the Parties.
10. The Parties may execute this Stipulation in two or more counterparts, which shall in the aggregate be signed by all Parties; each counterpart shall be deemed an original as against any Party who has signed it.

IN WITNESS WHEREOF, the Parties hereto have executed this Agreement as of the date(s) written below.

Date: _____ UNITED STATES DEPARTMENT OF THE INTERIOR

National Park Service

By _____

Title: _____

Date: _____ FALL RIVER WATER USERS DISTRICT

By Craig A. DeBoe

Title: Chairman

ATTEST:

Date: 7/3/07 UNITED STATES DEPARTMENT OF THE INTERIOR

National Park Service

By 
Rick Mossman
Acting Superintendent

Appendix A

The following analyses will be completed by U.S. Geological Survey staff from water withdrawn from the well associated with Application 2615-2:

USGS Schedule 2165

Description: SD Metals, anions and nutrients

Analyte	Lab Code	Parameter Code	RL	Unit
Arsenic	3122	01000	0.12	ug/L
Calcium	659	00915	0.02	mg/L
Chloride	1571	00940	0.12	mg/L
fluoride	31	00950	0.10	mg/L
ICP Mass Spectrometry (ICPMS) setup	2181	L2181		unsp
Inductively coupled plasma (ICP) setup	2002	L2002		unsp
Magnesium	663	00925	0.014	mg/L
Manganese	648	01056	0.2	ug/L
nitrogen, nitrate + nitrite	1979	00631	0.016	mg/L
Potassium	2773	00935	0.04	mg/L
Residue, 180 degrees Celsius (TDS)	27	70300	10	mg/L
Silica	667	00955	0.018	mg/L
Sodium	675	00930	0.20	mg/L
specific conductance, laboratory	69	90095	2.6	uS/cm
Sulfate	1572	00945	0.18	mg/L

Lab Code 69 may only be deleted when the field conductivity value is provided.

Lab code: NWQL's code to identify the analyte and the analysis (a schedule comprises several lab codes)
Parameter code: This is often given in USGS reports to identify the analyte and associated RL, collection method, etc.
RL: Minimum reporting level

In addition to the above analyses, the following field parameters will be analyzed by U.S. Geological Survey personnel in the field:

Alkalinity
Carbonate
Bicarbonate
Specific Conductance
Temperature
Dissolved Oxygen

BANGSMcCULLEN
— LAW FIRM —

Reply to Rapid City Office

Writer's e-mail address: mhickey@bangsmccullen.com

RECEIVED

JUL - 9 2007

WATER RIGHTS
PROGRAM

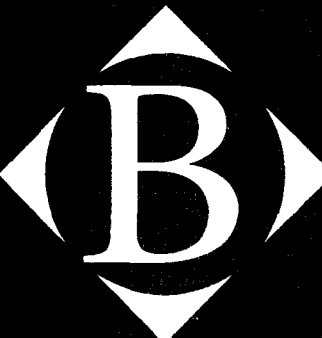
July 6, 2007

Sent via fax and regular mail

Mr. Garland Erbele, Chief Engineer
Department of Environment and National Resources
Water Rights Program
Joe Foss Building
523 East Capitol
Pierre, SD 57501-3182

Re: *In the Matter of the Applications of Fall River Water Users
District No. 2615-2*

Dear Mr. Erbele:



After my discussions with Diane Best, I was contacted by Eric Gronlund who provided me with a copy of the Revised Recommendation of the Chief Engineer for Water Permit Application No. 2615-2. He requested that I review the revised recommendation and confirm that Fall River Water Users District accepts and consents to the revised recommendation. Accordingly, the purpose of this letter is to confirm that Fall River Water Users District accepts the revised recommendations of the Chief Engineer, and agrees that those conditions be attached to the permit.

Secondly, based upon the recommendation of the Chief Engineer, the District and the National Parks Service have revised the Stipulation For Withdrawal of Opposition to incorporate the provision wherein the water samples collected by the District will be analyzed by the U.S. Geological Survey or a laboratory certified by the State of South Dakota. We have merely substituted the new pages for the pages contained in the earlier Stipulation, which was faxed to you yesterday, and will use the original signature pages. This stipulation is intended to replace the earlier stipulation.

Mr. Garland Erbele

July 6, 2007

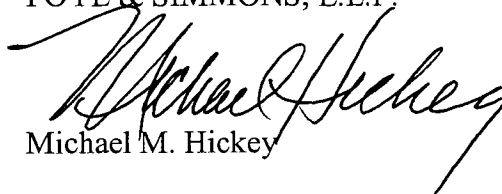
Page 2 of 2

In view of the District's acceptance of the revised recommendations of the Chief Engineer, it is my understanding that the Water Board will issue Water Permit No. 2615-2 to the District. I further understand that this will occur at the Board meeting to be held on July 11, 2007, and that it is not necessary that I be in attendance at that meeting. Are these understandings correct from the standpoint of the Department?

Thank you very much for your assistance and cooperation on this file. If you have any questions or comments, please advise.

Sincerely,

BANG, McCULLEN, BUTLER,
FOYE & SIMMONS, L.L.P.



Michael M. Hickey

MMH:bah:sbh

Enclosure

cc/encl:

Mr. Peter A. Fahmy

Ms. Diane Best

Mr. Randy Scott

STIPULATION FOR WITHDRAWAL OF OPPOSITION

This Stipulation is made and entered into between the Fall River Water Users District ("District"), and the United States Department of the Interior, National Park Service ("NPS"), collectively referred to as the "Parties."

RECITALS

- A. The District has a need to improve the viability and delivery capacity of its existing water system by constructing its own well. Fall River Water Users District services most of the east half of Fall River County. Due to increased demand that has been placed on the system by existing water users and increased requests for service from potential users brought on by drought conditions in the county FRWUD has become a primary source of water for many ranchers when it was intended as a supplemental source of water at the time the project was designed. The proposed project needs to be constructed in the immediate future.
- B. On April 12, 2007, the South Dakota Department of Environment, Water Rights Program (DENR) received permit application 2615-2 ("Application") from the District to place to Beneficial Use Water Reserved under Future Use Permit No. 2560-2. The Application requests 400 acre-feet per year (afy) from the original reservation of 750 afy to be withdrawn at a rate of up to 0.67 cfs in the SW $\frac{1}{4}$ SW $\frac{1}{4}$ Sec. 1, T7S, R6E, Black Hills Meridian. The description of the project from the application states: "To construct and put together water reserved by Future Use Permit #2560-2 for domestic use and serve rural hook-ups and bulk use in Oelrichs, and potentially Buffalo Gap, SD."
- C. Public Notice for the Application was published in the Hot Springs Star and Custer County Chronicle in June, 2007.

- D. On June 29, 2007, the NPS filed a timely and complete Petition to Intervene in opposition of the granting of the permit Application on the grounds that the ground-water withdrawal proposed by the Application may injure the water rights and water-dependent resources of the nationally important Wind Cave National Park.
- E. The NPS has three state appropriative water rights for operations at Wind Cave National Park, including License 419-2, which allows the withdrawal of 0.44 cfs of ground water from the Madison Aquifer in Section 6, T6S, R6E, Black Hills Meridian. Wind Cave National Park is also entitled to an inchoate federal reserved water right for stream flows spring flows and water levels in underground lakes (32 Stat. 765). The NPS is obligated to protect these water-dependent resources as mandated by the National Park Service Organic Act (16 U.S.C. 1-3).
- F. The Parties expressly acknowledge that the DENR has, pursuant to both statutory and case law, broad authority to administer the water resources of the State of South Dakota and, furthermore, that nothing contained in this Stipulation shall be construed as waiving or in any manner diminishing such authority.
- G. The Parties desire to resolve the issues raised by the Petition to Intervene according to the terms and conditions contained herein.

NOW, THEREFORE, in consideration of the mutual promises and covenants contained herein, the Parties do agree as follows:

1. The NPS hereby expressly agrees to conditionally withdraw its opposition to the Application pending acceptance of DENR to the modified Application as described below:

- a) The District agrees to meter its water use and record its monthly water withdrawals from the well. The District will transmit the water withdrawal values recorded each month to the DENR and the NPS by no later than March 1 of the following year. The copy of this report for the NPS should be sent to: Chief, Water Rights Branch, National Park Service, Water Resources Division, 1201 Oakridge Dr., Suite 250, Fort Collins, CO 80525.
- b) The District agrees to perform a flowing-well or constant-rate aquifer test on the production well that is of sufficient duration to define the transmissivity of the aquifer system, and to provide the test procedures and data collected during the test to the NPS. The data will include the static water level (or shut-in head) prior to pumping, the time pumping begins, the pumping rate, drawdown versus time in the pumping well during the pumping and recovery periods, and the time pumping stops. A copy of the well completion report and well log will also be transmitted to the NPS at the address provided in 1.a. above.
- c) The District agrees to collect and analyze water samples from the well for the constituents listed in Appendix A. The U.S. Geological Survey or a laboratory certified by the state of South Dakota will be contracted to collect and analyze the samples. The results will be transmitted to the NPS at the address provided in 1.a. above.

2. The District may transfer or assign its interest in the water rights here involved. Any and all transferees and assignees shall be bound by the terms and conditions of this Stipulation. A condition of any such transfer or assignment shall be that the transferee and/or assignee shall be bound by all of the terms and conditions of this Stipulation.

3. This Stipulation shall be governed in accordance with the laws of the State of South Dakota to the extent not inconsistent with federal law.
4. By entering into this Stipulation, the NPS does not become a party to any proceeding other than the protest proceeding referenced above or waive their immunity from suit or consent to or acknowledge the jurisdiction of any court or tribunal. Nothing in the Stipulation shall affect any state permitted or federal reserved water rights of the United States or the United States on behalf of any Indian Tribe or individual Indian and the NPS by entering into this Stipulation does not waive or prejudice any such rights. The District and NPS reserve all legal rights, of any kind, they possess pursuant to or derived from Executive Orders, Acts of Congress, judicial decisions, or regulations promulgated pursuant thereto. No party waives its rights to seek relief in any appropriate forum of its choice not expressly prohibited by this Stipulation.
5. This Stipulation may be amended by mutual agreement of the Parties.
6. Upon signing, the Parties will submit a copy of this Stipulation to the DENR. If the Stipulation is acceptable to the DENR, the DENR will include conditions in the permit consistent with this Stipulated Agreement.
7. If the conditions requested in this Stipulated Agreement are approved by the DENR and incorporated into the approved permit, the NPS will withdraw their opposition to the Application.
8. The Parties agree to cooperate and execute such additional documents as may be necessary in furtherance of this Stipulation.
9. This Stipulation sets forth the entire agreement of the Parties and supersedes all prior discussions, negotiations, understandings or agreements. No alteration or variation of

this Stipulation shall be valid or binding unless contained in an amendment in accordance with paragraph 5.

10. The terms and conditions of this Stipulation shall be binding upon and inure to the benefit of the Parties hereto and their respective personal representatives, successors, transferees and assigns.
11. Other entities may become Parties to this Stipulation by mutual assent of the Parties.
12. The Parties may execute this Stipulation in two or more counterparts, which shall in the aggregate be signed by all Parties; each counterpart shall be deemed an original as against any Party who has signed it.

IN WITNESS WHEREOF, the Parties hereto have executed this Agreement as of the date(s) written below.

Date: _____ UNITED STATES DEPARTMENT OF THE INTERIOR

National Park Service

By _____

Title: _____

Date: _____ FALL RIVER WATER USERS DISTRICT

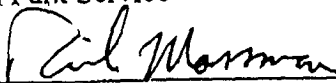
By Craig A. DuBois

Title: Chairman

ATTEST:

Date: 7/3/07 UNITED STATES DEPARTMENT OF THE INTERIOR

National Park Service

By 

Rick Mossman

Acting Superintendent

Appendix A

The following analyses will be completed by staff of the U.S. Geological Survey or a laboratory certified by the State of South Dakota from water withdrawn from the well associated with Application 2615-2:

USGS Schedule 2165

Description: SD Metals, anions and nutrients

Analyte	Lab Code	Parameter Code	RL	Unit
Arsenic	3122	01000	0.12	ug/L
Calcium	659	00915	0.02	mg/L
Chloride	1571	00940	0.12	mg/L
fluoride	31	00950	0.10	mg/L
ICP Mass Spectrometry (ICPMS) setup	2181	L2181		unsp
Inductively coupled plasma (ICP) setup	2002	L2002		unsp
Magnesium	663	00925	0.014	mg/L
Manganese	648	01056	0.2	ug/L
nitrogen, nitrate + nitrite	1979	00631	0.016	mg/L
Potassium	2773	00935	0.04	mg/L
Residue, 180 degrees Celsius (TDS)	27	70300	10	mg/L
Silica	667	00955	0.018	mg/L
Sodium	675	00930	0.20	mg/L
specific conductance, laboratory	69	90095	2.6	uS/cm
Sulfate	1572	00945	0.18	mg/L

Lab Code 69 may only be deleted when the field conductivity value is provided.

Lab code: NWQL's code to identify the analyte and the analysis (a schedule comprises several lab codes)

Parameter code: This is often given in USGS reports to identify the analyte and associated RL, collection method, etc.

RL: Minimum reporting level

In addition to the above analyses, the following field parameters will be analyzed by personnel of the U.S. Geological Survey or a laboratory certified by the state of South Dakota in the field:

Alkalinity
Carbonate
Bicarbonate
Specific Conductance
Temperature
Dissolved Oxygen



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 2615-2, Fall River Water Users District**

Pursuant to SDCL 46-2A-2, the following is the recommendation of the Chief Engineer, Water Rights Program, Department of Environment and Natural Resources concerning Water Permit Application No. 2615-2, Fall River Water Users District, c/o Craig A DeBoer, PO Box 321, Oral SD 57766.

The Chief Engineer is recommending APPROVAL of Application No. 2615-2 for a 20 year term because 1) the proposed diversion can be developed without unlawful impairment of existing rights, 2) the proposed use is a beneficial use and 3) it is in the public interest with the following qualifications:

1. In accordance with SDCL 46-1-14 and 46-2A-20, Permit No. 2615-2 is issued for a 20-year term. Pursuant to SDCL 46-2A-21, the 20-year term may be deleted at any time during the 20-year period or following its expiration. If the 20-year term is not deleted at the end of the term, the permit may either be cancelled or amended with a new term limitation of up to twenty years. Permit No. 2615-2 may also be cancelled for nonconstruction, forfeiture, abandonment, or three permit violations pursuant to SDCL 46-1-12, 46-5-37, 46-5-37.1 and ARSD 74:02:01:37.
2. The well approved under this Permit will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner under this Permit shall control his withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
3. The well authorized by Permit No. 2615-2 shall be constructed by a licensed well driller and construction of the well and installation of the pump shall comply with Water Management Board Well Construction Rules, Chapter 74:02:04 with the well casing pressure grouted (bottom to top) pursuant to Section 74:02:04:28.
4. Fall River Water Users District shall report to the Chief Engineer annually the amount of water withdrawn from the Madison Aquifer.

See report on application for additional information.

Garland Erbele, Chief Engineer
June 7, 2007



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

**REVISED RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 2615-2, Fall River Water Users District**

Pursuant to SDCL 46-2A-2, the following is the revised recommendation of the Chief Engineer, Water Rights Program, Department of Environment and Natural Resources concerning Water Permit Application No. 2615-2, Fall River Water Users District, c/o Craig A DeBoer, PO Box 321, Oral SD 57766.

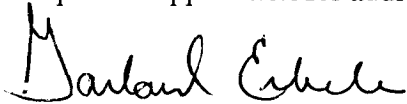
The Chief Engineer is recommending APPROVAL of Application No. 2615-2 for a 20 year term because 1) the proposed diversion can be developed without unlawful impairment of existing rights, 2) the proposed use is a beneficial use and 3) it is in the public interest with the following qualifications:

1. In accordance with SDCL 46-1-14 and 46-2A-20, Permit No. 2615-2 is issued for a 20-year term. Pursuant to SDCL 46-2A-21, the 20-year term may be deleted at any time during the 20-year period or following its expiration. If the 20-year term is not deleted at the end of the term, the permit may either be cancelled or amended with a new term limitation of up to twenty years. Permit No. 2615-2 may also be cancelled for nonconstruction, forfeiture, abandonment, or three permit violations pursuant to SDCL 46-1-12, 46-5-37, 46-5-37.1 and ARSD 74:02:01:37.
2. The well approved under this Permit will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner under this Permit shall control his withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
3. The well authorized by Permit No. 2615-2 shall be constructed by a licensed well driller and construction of the well and installation of the pump shall comply with Water Management Board Well Construction Rules, Chapter 74:02:04 with the well casing pressure grouted (bottom to top) pursuant to Section 74:02:04:28.
4. Fall River Water Users District shall meter its water use and record its monthly water withdrawals from the well. The District shall transmit the water withdrawal values recorded each month to the DENR and the NPS by no later than March 1 of the following year. The copy of this report for the NPS should be sent to: Chief, Water Rights Branch, National Park Service, Water Resources Division, 1201 Oakridge Dr., Suite 250, Fort Collins, CO 80525.

(continued)

5. Fall River Water Users District shall perform a flowing-well or constant-rate aquifer test on the production well that is of sufficient duration to define the transmissivity of the aquifer system, and to provide the test procedures and data collected during the test to the NPS. The data will include the static water level (or shut-in head) prior to pumping, the time pumping begins, the pumping rate, drawdown versus time in the pumping well during the pumping and recovery periods, and the time pumping stops. A copy of the well completion report and well log shall be transmitted to the NPS at the address provided in qualification No. 4.
6. Fall River Water User District shall collect and analyze water samples from the well for the constituents listed in attached Appendix A. The U.S. Geological Survey or a certified laboratory to conduct public drinking water analysis will be contracted to analyze the samples. The results will be transmitted to the NPS at the address provided in qualification No. 4.

See report on application for additional information.

A handwritten signature in black ink, appearing to read "Garland Erbele". The signature is fluid and cursive, with a large initial "G" and "E".

Garland Erbele, Chief Engineer
July 5, 2007

WATER PERMIT APPLICATION NO. 2615-2
FALL RIVER WATER USER DISTRICT
MAY 30, 2007

Water Permit Application No. 2615-2 proposes to complete a well into the Madison aquifer, and place 400 acre-feet of water to beneficial use annually at a maximum diversion rate of 0.67 cubic feet of water per second. The well is to be located in the SW¼ SW¼ Section 1, T7S-R6E and will be approximately 2,750 feet deep. The water was reserved for future use and appropriated by Future Use Permit No. 2560-2 and pending application No. 2560A-2.

AQUIFER: MADISON (MDSN)

The top of the Madison aquifer is expected to be approximately 2,450 feet below grade at the well site proposed by this application (Carter and Redden, 1999). In this area the Madison is expected to be between 225 feet thick (Allen and others, 1985) and 300 feet thick (Carter and Redden, 1999a) and (Carter and Redden 1999b). The potentiometric surface of the Madison aquifer is estimated to be about 3,200 feet above sea level (250 feet below grade) at this well site (Strobel and others, 2000).

DISCUSSION:

SDCL 46-5-38.1 requires that before the holder of a future use permit initiates construction of the works to put reserved water to beneficial use, a water permit application must be approved. Pursuant to SDCL 46-2A-9, a permit to appropriate water may be issued only if unappropriated water is available for the proposed use, the proposed use will not unlawfully impair existing rights and the proposed use is a beneficial use and in the public interest.

Availability of Unappropriated Water:

This application proposes to place to beneficial use water that has been reserved by a future use permit. The availability of unappropriated water from the Madison aquifer for this proposed appropriation was addressed in approval of Future Use Permit No. 2560-2 (Water Rights 2005), and is therefore not an issue.

Review of Existing Rights:

There is only one groundwater appropriation within four miles of the well site proposed by this application, it is Water Right No. 794-2, Town of Buffalo Gap (Water Rights, 2007a). Water Right No. 794-2 is supplied by a well completed into the Inyan Kara aquifer. The nearest appropriations from the Madison aquifer are Water Right No. 2302-2, Ebon Streeter and Water Permit No. 2546-2, Ebon W. Streeter. The well that supplies the Streeter right and permit is located approximately 4.75 miles north-northwest of the well site proposed by this application.

In addition to existing appropriations, Water Permit Application No. 2585-2, Southern Black Hills Water System proposes to appropriate 1,600 acre-feet of water annually, at a maximum rate of 2.67 cfs, from a well completed into the Madison aquifer in the W ½ NE¼ Section 15, T6S-R6E (approximately 4.75 miles north-northwest of the well site proposed by this application.) The well site proposed by Application No. 2585-2 is located approximately three-fourths of a mile from Beaver Creek Springs. Because of the proximity

to the springs and the relatively large diversion rate requested, the Water Management Board deferred the application until the public interest issues regarding the potential impact to Beaver Creek and the cave pools of Wind Cave National Park can be addressed through additional testing and study of the Madison aquifer in the area of the proposed well site.

It is unlikely that well interference caused by development of a well at the site proposed by Application No. 2615-2 would adversely impact existing wells supplying appropriations from the Madison aquifer, due to the distance between wells and the relatively small diversion rate requested (maximum rate of 300 gpm, average rate of 250 gpm). The distance between this proposed well site and the site proposed by Application No. 2585-2 is sufficient to minimize potential impacts, therefore approval of Water Permit Application No. 2615-2 should not influence the consideration of Application No. 2585-2.

Beneficial Use:

The Water Management Board has determined in the past that a rural water system use of water is a beneficial use.

Public Interest issues:

A potential obstacle to development of the Madison aquifer concerns the possibility of affecting discharge from springs that may originate from the Madison aquifer. The water at a number of springs in the southern Black Hills area contains geochemical and isotopic characteristics of the Madison aquifer (Whalen, 1994). These springs are classified as Type 2 springs by Rahn and Gries (1973), meaning "The springs do not dry up and serve as points of permanent discharge from the carbonate aquifer" (Rahn and Gries, 1973). A decline of the potentiometric surface in the vicinity of the springs could decrease spring discharge.

While deliberating on Future Use Permit No. 2560-2, the Water Management Board accounted for the premise that SD Water Law does not protect artesian head pressure as a means of diversion by considered that well interference resulting in decreased discharge from these "artesian" springs probably could not be considered an adverse impact. The Board recognized the "public interest" issues of decreased base flows in area streams that could result from well interference. Approval of Future Use Permit No. 2560-2, which reserves the water that is to be put to beneficial use by this water permit, included the following qualification:

"At such time as definite plans are made to construct works and put the water reserved by this permit to beneficial use, specific application for all or any part of the reserved water must be submitted and approved prior to construction of facilities pursuant to SDCL 46-5-38.1 with particular attention given to the flows of Beaver Spring, [sic] Cascade Springs and Hot Springs."

Subsequently, when considering the deferral of Water Permit Application No. 2585-2, Southern Black Hills Water System, the Water Management Board adopted a conclusion of law (No. 11) which states in part "The only protection South Dakota law provides when considering an application for an underground water permit for flow from an artesian spring is under the public interest criteria." (Water Rights, 2007(permit No. 2585-2)).

The well site proposed by this application is located approximately four miles from Beaver Creek Springs, approximately six miles from Hot Springs and approximately 13 miles from Cascade Springs. Given the distances involved and the relatively low diversion rate proposed by this application, (300 gpm maximum and 250 gpm average), it is unlikely that drawdown from this well would be measurable on the spring discharge.

Term Limitation:

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

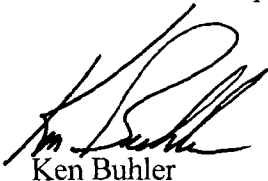
(1) Sufficient information is available to determine whether any significant adverse hydrologic effects on the supply of water in the Madison formation would result if the proposed withdrawal were approved; and

(2) The information, whether provided by the applicant or by other means, show that there is a reasonable probability that issuance of the proposed permit would not have a significant adverse effect on nearby Madison formation wells and springs."

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

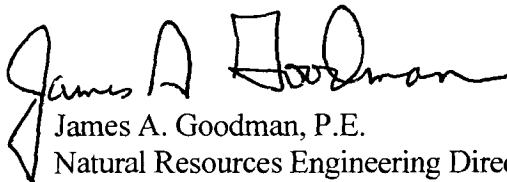
Conclusions:

1. Water Permit Application No. 2615-2 does not propose any additional appropriation from the Madison aquifer.
2. Well interference is not expected to be adverse due to the distance between appropriations and the relatively low diversion rate proposed.
3. The discharge of area springs is not expected to be affected due to the distance between appropriations and the relatively low diversion rate proposed.



Ken Buhler

Natural Resources Engineering Specialist



James A. Goodman, P.E.

Natural Resources Engineering Director

References:

- Allen, J.C., Iles, D.L., and Petres, A.K., 1985, Analysis of Groundwater and Streamflow Data Western Dakotas Region of South Dakota, Tasks 3A.B.C. and 4A.B.: Groundwater Resource Inventory: South Dakota Department of Water and Natural Resources
- Carter, J.M., and Redden, J.A., 1999a, Altitude of the Top of the Madison Limestone in the Black Hills Area, South Dakota: U.S. Geological Survey Hydrologic Investigations Atlas HA-744-D, 2 sheets, scale 1:100,000
- Carter, J.M., and Redden, J.A., 1999b, Altitude of the Top of the Deadwood Formation in the Black Hills Area, South Dakota: U.S. Geological Survey Hydrologic Investigations Atlas HA-744-E, 2 sheets, scale 1:100,000
- Rahn, P.H., Gries, J.P., 1973, Large Springs in the Black Hills, South Dakota and Wyoming: SD Geological Survey Report of Investigations No. 107, 46 p.
- Strobel, M.L., Galloway, J.M., Hamade, G.R., and Jarrell, G.J., 2000, Potentiometric Surface of the Madison Aquifer in the Black Hills Area, South Dakota: U.S. Geological Survey Hydrologic Investigations Atlas HA-745D, 2 sheets, scale 1:100,000
- Water Rights Program, 2005, Future Use Permit No. 2560-2: South Dakota DENR-Water Rights Program, Joe Foss Bldg, Pierre, SD
- Water Rights Program, 2007, "Water Permit/Right Files", South Dakota DENR-Water Rights Program, Joe Foss Building, Pierre, SD
- Whalen, P.J., 1994, Source Aquifers for Cascade Springs, Hot Springs and Beaver Creek Springs in the Southern Black Hills of South Dakota: South Dakota School of Mines and Technology Master of Science Thesis, Rapid City, SD, 299 p.

RECEIVED

JUN 29 2007

WATER RIGHTS
PROGRAM

Affidavit of Publication

State of South Dakota)

)ss.

County of Custer)

Charles W. Najacht of said county, being duly sworn, on oath says that he is publisher of the Custer County Chronicle, a weekly newspaper printed and published in Custer City, said County of Custer and has full and personal knowledge of all the facts herein stated; that said newspaper is a legal newspaper and has a bona-fide circulation of at least two hundred copies weekly, and has been published within said County for fifty-two successive weeks next prior to the publication of the notice herein, mentioned, and was and is printed wholly or in part in an office maintained at said place of publication: that the

Fall River Water Users District
Notice of Hearing

a printed copy of which, taken from the paper in which the same was published, is attached to this sheet, and is made a part of this Affidavit, was published in said newspaper at least once each week for 2 successive week(s), on which said newspaper was regularly published, to wit:

June 13, 2007; June 20, 2007;

_____, _____;

_____, _____;

_____, _____;

_____, _____;

the full amount of the fees for the publication of the annexed notice is \$ 77.98.

Charles W. Najacht

Subscribed and sworn to me before this 20

of June, 2007;

Norma Najacht

NOTARY PUBLIC

MY COMMISSION EXPIRES: May 5, 2007

NOTICE OF HEARING ON APPLICATION NO. 2560A-2 TO AMEND FUTURE USE AREA AND APPLICATION NO. 2615-2 TO PLACE RESERVED WATER TO BENEFICIAL USE

Notice is given that Fall River Water Users District, c/o Craig A DeBoer, PO Box 321, Oral SD 57766 has filed an application, to expand the future use area authorized by Future Use Permit No. 2560-2. Future Use Permit No. 2560-2 reserves 750 acre-feet annually from the Madison Aquifer. The area reserved for future water use is located in Section 32-T7S-R6E and Section 5-T9S-R5E (Fall River County) and Section 36-T6S-R6E (Custer County). This application proposes to include the SW 1/4 SW 1/4 Section 1-T7S-R6E (Fall River County) to the future use area. This application does not authorize construction of works or application of water to beneficial use.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 2560A-2 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.

Application No. 2615-2 proposes to construct and place to beneficial use 0.67 cubic feet of water per second (400 acre-feet annually) from one well to be completed into the Madison Aquifer (approximately 2750 feet deep) located in SW 1/4 SW 1/4 Section 1-T7S-R6E. This water was appropriated and reserved by Future Use Permit No. 2560-2 and 2560A-2. The water is for rural water system use by the district in Fall River and Custer Counties.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 2615-2 for a 20-year term because 1) the proposed diversion can be developed without unlawful impairment of existing rights, 2) the proposed use is a beneficial use and 3) it is in the public interest.

Any person interested in opposing or supporting these applications 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 recommendations. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by July 2, 2007. The petition may be informal, but must include a statement describing the petitioner's interest in the applications, the petitioner's reasons for opposing or supporting the applications, and the signature and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained.

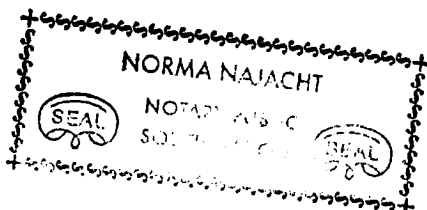
The Water Management Board will consider these applications at the Community Room, Milbank Visitors Center, 1001 E 4th Ave, Milbank SD at 9:30 a.m. on July 11, 2007. The Chief Engineer's recommendations are not final or binding upon the Board. The Board is authorized to 1) approve, 2) approve with qualifications, 3) defer, or 4) deny these applications based on the facts presented at the public hearing. The July 11, 2007 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 July 2, 2007.

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 July 2, 2007, at the above Water Rights Program address to request copies of information pertaining to these applications, to assure access to the hearing by the handicapped or to obtain an interpreter for the hearing impaired.

Since these applications do not involve a monetary controversy in excess of \$2,500.00 or termination of a property right in accordance with SDCL 1-26-18.3, the Chief Engineer has determined this contested case may not be referred to the Office of Hearing Examiners. If any party disagrees with this determination, the Chief Engineer shall be notified by July 2, 2007.

These applications are 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; 46-6-3, 46-6-3.1, 46-6-6.1, 46-6-10, 46-6-13, 46-6-14, 46-6-26; and Board Rules ARSD 74:02:01:01 thru 74:02:01:15. Steven M. Pirner, Secretary, Department of Environment and Natural Resources.

#172, 6/13, 6/20



RECEIVED

JUN 20 2007

WATER RIGHTS
PROGRAM

Form 8

PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA)
) SS
County of Fall River)I, Brett Nachtigallcertify that the attached printed Notice was
takenfrom the Dept. of Environment& Natural Resourcesprinted and published in Hot SpringsCounty of Fall River andstate of South Dakota. The notice was
published

in the newspaper on the following two dates:

June 12, 2007June 19, 2007Cost of Printing 91.16
(Signature)Publisher
(Title)June 14, 2007
(Date Signed)

274

NOTICE OF HEARING ON
APPLICATION NO. 2560A-2
TO AMEND FUTURE USE AREA
AND APPLICATION NO. 2615-2 TO
PLACE RESERVED WATER TO
BENEFICIAL USE

Notice is given that Fall River Water Users District, c/o Craig A DeBoer, PO Box 321, Oral SD 57766 has filed an application to expand the future use area authorized by Future Use Permit No. 2560-2. Future Use Permit No. 2560-2 reserves 750 acre-feet annually from the Madison Aquifer. The area reserved for future water use is located in Section 32-T7S-R6E and Section 5-T9S-R5E (Fall River County) and Section 36-T6S-R6E (Custer County). This application proposes to include the SW 1/4 SW 1/4 Section 1-T7S-R6E (Fall River County) to the future use area. This application does not authorize construction of works or application of water to beneficial use.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 2560A-2 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.

Application No. 2615-2 proposes to construct and place to beneficial use 0.67 cubic feet of water per second (400 acre-feet annually) from one well to be completed into the Madison Aquifer (approximately 2750 feet deep) located in SW 1/4 SW 1/4 Section 1-T7S-R6E. This water was appropriated and reserved by Future Use Permit No. 2560-2 and 2560A-2. The water is for rural water system use by the district in Fall River and Custer Counties.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 2615-2 for a 20-year term because 1) the proposed diversion can be developed with out unlawful impairment of existing rights, 2) the proposed use is a beneficial use and 3) it is in the public interest.

Any person interested in opposing or supporting these applications 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 recommendations. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by July 2, 2007. The petition may be informal, but must include a state-

ment describing the petitioner's interest in the applications, the petitioner's reasons for opposing or supporting the applications, and the signature and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained.

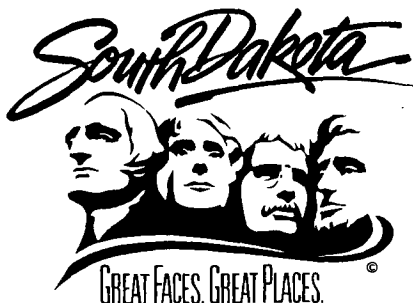
The Water Management Board will consider these applications at the Community Room, Milbank Visitors Center, 1001 E 4th Ave, Milbank SD at 9:30 a.m. on July 11, 2007. The Chief Engineer's recommendations are not final or binding upon the Board. The Board is authorized to 1) approve, 2) approve with qualifications, 3) defer, or 4) deny these applications based on the facts presented at the public hearing. The July 11, 2007 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 July 2, 2007.

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 July 2, 2007, at the above Water Rights Program address to request copies of information pertaining to these applications, to assure access to the hearing by the handicapped or to obtain an interpreter for the hearing impaired.

Since these applications do not involve a monetary controversy in excess of \$2,500.00 or termination of a property right in accordance with SDCL 1-26-18.3, the Chief Engineer has determined this contested case may not be referred to the Office of Hearing Examiners. If any party disagrees with this determination, the Chief Engineer shall be notified by July 2, 2007.

These applications are 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; 46-6-3, 46-6-3.1, 46-6-6.1, 46-6-10, 46-6-16, 46-6-14, 46-6-26; and Board Rules ARSD 74:02:01:01 thru 74:02:01:19. Steven M. Pirner, Secretary, Department of Environment and Natural Resources.

June 12, 2007



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

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

June 7, 2007

Hot Springs Star
PO Box 1000
Hot Springs SD 57747

ATTENTION: Legal Public Notice

Enclosed are Notices on Application Nos. 2615-2 & 2560A-2 to Appropriate Water to be published twice. Please publish the first notice on June 12, 2007 with the second publication 7 days later. The text of the notices can be e-mailed to your paper by contacting Karen Schlaak at (605) 773-3352.

The applicant must verify to you that the notices are to be published, before you make the first publication. **Please BILL the APPLICANT for the cost of publications.** The APPLICANT is Fall River Water Users District, Craig DeBoer, PO Box 321, Oral SD 57766 (Ph # 605-424-7648).

Please send the Water Rights Program the first publications immediately. The publications are checked for accuracy so any corrections can be made in the second publications. You may use the form below or fax a copy of the first publications. Any fax should be sent to the attention of Karen Schlaak at (605) 773-4068. Publication errors can invalidate the public notice.

After the second publications, **please send us an affidavit or use the enclosed Proof of Publication form.** The applicant pays the cost of publication, but the Water Rights Program records require an affidavit or Proof of Publication. Delays in receiving the affidavit can be costly to the applicant.

Sincerely,

Eric Gronlund
Natural Resources Engineer
605 773-3352

enclosures

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

No. 2615-2 & 2560A-2

Date _____

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

We are in receipt of your letter of June 7, 2007 enclosing Notice to Appropriate Water by Application Nos. 2615-2 & 2560A-2 which were first published in our issue of _____. ENCLOSED IS A COPY OF THIS FIRST PUBLICATION.

Name _____

Newspaper _____



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

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

June 7, 2007

Custer County Chronicle
PO Box 561
Custer SD 57730

ATTENTION: Legal Public Notice

Enclosed are Notices on Application Nos. 2615-2 & 2560A-2 to Appropriate Water to be published twice. Please publish the first notice on June 13, 2007 with the second publication 7 days later. The text of the notices can be e-mailed to your paper by contacting Karen Schlaak at (605) 773-3352.

The applicant must verify to you that the notices are to be published, before you make the first publication. **Please BILL the APPLICANT for the cost of publications.** The APPLICANT is Fall River Water Users District, Craig DeBoer, PO Box 321, Oral SD 57766 (Ph # 605-424-7648).

Please send the Water Rights Program the first publications immediately. The publications are checked for accuracy so any corrections can be made in the second publications. You may use the form below or fax a copy of the first publications. Any fax should be sent to the attention of Karen Schlaak at (605) 773-4068. Publication errors can invalidate the public notice.

After the second publications, **please send us an affidavit or use the enclosed Proof of Publication form.** The applicant pays the cost of publication, but the Water Rights Program records require an affidavit or Proof of Publication. Delays in receiving the affidavit can be costly to the applicant.

Sincerely,

Eric Gronlund
Natural Resources Engineer
605 773-3352

enclosures

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

No. 2615-2 & 2560A-2

Date _____

We are in receipt of your letter of June 7, 2007 enclosing Notice to Appropriate Water by Application Nos. 2615-2 & 2560A-2 which were first published in our issue of _____. **ENCLOSED IS A COPY OF THIS FIRST PUBLICATION.**

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

Name

Newspaper



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

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

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

June 7, 2007

FALL RIVER WATER USERS DISTRICT
PO BOX 321
ORAL SD 57766

Dear Mr. DeBoer:

Water Permit Application Nos. 2615-2 and 2560A-2 for rural water use have been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice has been sent to the Publishers of the following papers:

Hot Springs Star	Custer Co Chronicle
Hot Springs SD	Custer SD
(605) 745-4170	(605) 673-2217

You will need to contact the newspapers and authorize publication of this notice. For your information, a copy of the notice, the recommendations of the Chief Engineer and reports 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 newspapers to authorize publication of your Notice and to arrange for payment. Early contact with the papers can eliminate delays. Upon receiving authorization, the publishers have been instructed to publish your notice once each week for two consecutive weeks. The newspapers have also been instructed to send us the Proof of Publication. We must receive Proof of Publication before action can be taken on the applications.

Sincerely,

Eric Gronlund
Natural Resources Engineer
(605) 773-3352

enclosures

NOTE: If you plan to contest any part of the Chief Engineer's recommendation, you must file a petition pursuant to the procedures outlined in the attached notice of hearing. The Water Management Board will then consider your concerns during a hearing on the application.

Instruction to Newspaper - Publish first Notice on June 13, 2007 with the second publication 7 days later. The applicant is responsible for payment.

Notice of Hearing on Application No. 2560A-2 To Amend Future Use Area
and Application No. 2615-2 to Place Reserved Water to Beneficial Use

Notice is given that Fall River Water Users District, c/o Craig A DeBoer, PO Box 321, Oral SD 57766 has filed an application to expand the future use area authorized by Future Use Permit No. 2560-2. Future Use Permit No. 2560-2 reserves 750 acre-feet annually from the Madison Aquifer. The area reserved for future water use is located in Section 32-T7S-R6E and Section 5-T9S-R5E (Fall River County) and Section 36-T6S-R6E (Custer County). This application proposes to include the SW 1/4 SW 1/4 Section 1-T7S-R6E (Fall River County) to the future use area. This application does not authorize construction of works or application of water to beneficial use.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 2560A-2 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.

Application No. 2615-2 proposes to construct and place to beneficial use 0.67 cubic feet of water per second (400 acre-feet annually) from one well to be completed into the Madison Aquifer (approximately 2750 feet deep) located in SW 1/4 SW 1/4 Section 1-T7S-R6E. This water was appropriated and reserved by Future Use Permit No. 2560-2 and 2560A-2. The water is for rural water system use by the district in Fall River and Custer Counties.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 2615-2 for a 20-year term because 1) the proposed diversion can be developed with out unlawful impairment of existing rights, 2) the proposed use is a beneficial use and 3) it is in the public interest.

Any person interested in opposing or supporting these applications 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 recommendations. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by July 2, 2007. The petition may be informal, but must include a statement describing the petitioner's interest in the applications, the petitioner's reasons for opposing or supporting the applications, 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 these applications at the Community Room, Milbank Visitors Center, 1001 E 4th Ave, Milbank SD at 9:30 a.m. on July 11, 2007. The Chief Engineer's recommendations are not final or binding upon the Board. The Board is authorized to 1) approve, 2) approve with qualifications, 3) defer, or 4) deny these applications based on the facts presented at the public hearing. The July 11, 2007 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 July 2, 2007.

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

(continued)

the Circuit Court and State Supreme Court as provided by law. Contact Eric Gronlund by July 2, 2007, at the above Water Rights Program address to request copies of information pertaining to these applications, to assure access to the hearing by the handicapped or to obtain an interpreter for the hearing impaired.

Since these applications do not involve a monetary controversy in excess of \$2,500.00 or termination of a property right in accordance with SDCL 1-26-18.3, the Chief Engineer has determined this contested case may not be referred to the Office of Hearing Examiners. If any party disagrees with this determination, the Chief Engineer shall be notified by July 2, 2007.

These applications are 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; 46-6-3, 46-6-3.1, 46-6-6.1, 46-6-10, 46-6-13, 46-6-14, 46-6-26; and Board Rules ARSD 74:02:01:01 thru 74:02:01:15. Steven M. Pirner, Secretary, Department of Environment and Natural Resources.



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

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

AUG 06 2007

Fall River Water Users District
c/o Craig A DeBoer
PO Box 321
Oral SD 57766

Dear Mr. DeBoer:

Enclosed is Future Use Water Permit No. 2560A-2 and Water Permit No. 2615-2. Water Permit No. 2560A-2 expands the future use area authorized by Future Use Permit No. 2560-2 which reserved 750 acre-feet annually from the Madison Aquifer. Water Permit No. 2615-2 authorizes placing to beneficial use 400 acre-feet of water which was appropriated and reserved by Future Use Permit Nos. 2560-2 and 2560A-2.

For your information, 350 acre-feet of water remains in reserve as authorized by Nos. 2560-2 and 2560A-2.

Form 10, *Notice of Completion of Works and Application of Water to Beneficial Use*, is enclosed for Water Permit No. 2560-2. Please return this completed form after you have finished the system and have put the water to beneficial use. An investigation can then be scheduled so the water license may be issued, thus completing the acquisition of a water right.

Sincerely,

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

enclosures

26152

RECEIVED

DEC 17 2007

WATER RIGHTS
PROGRAM

**Fall River Water Users District
PO Box 321
Oral, SD 57766
Phone: 424-7648
Fax: 424-7748**

December 12, 2007

Dear Vendors,

We are writing this letter to inform you that Randy Scott is no longer employed at Fall River Water Users District. Please remove his name from our account with you. Please retain or add John Gillaspie and Marla Peters. Thank you for your attention to this matter.

Sincerely,



Marla Peters
Interim Manager
Fall River Water Users District

-50.00 MV 50.00

0.00

OHMS

RESISTIVITY

100.00

OHMS

STOP : 10.20

DEPTHS

Wed Dec 03 10:46:02 2008

LOG UP

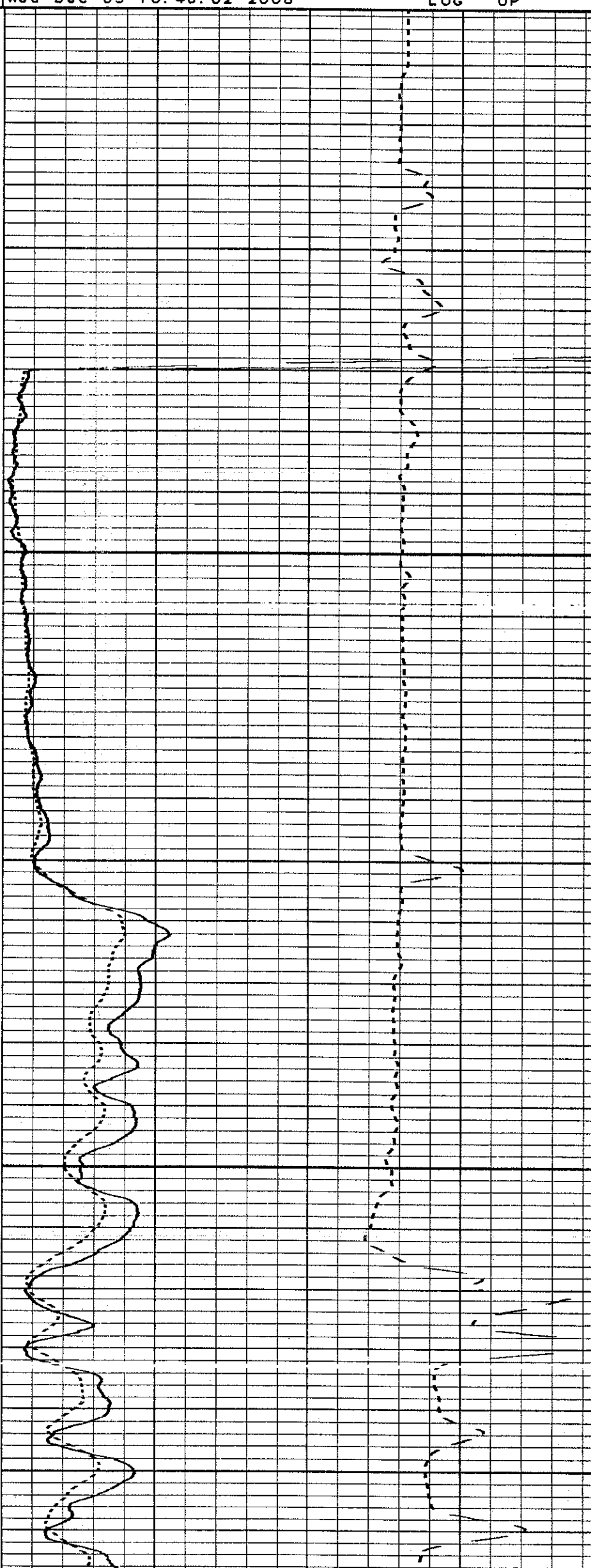
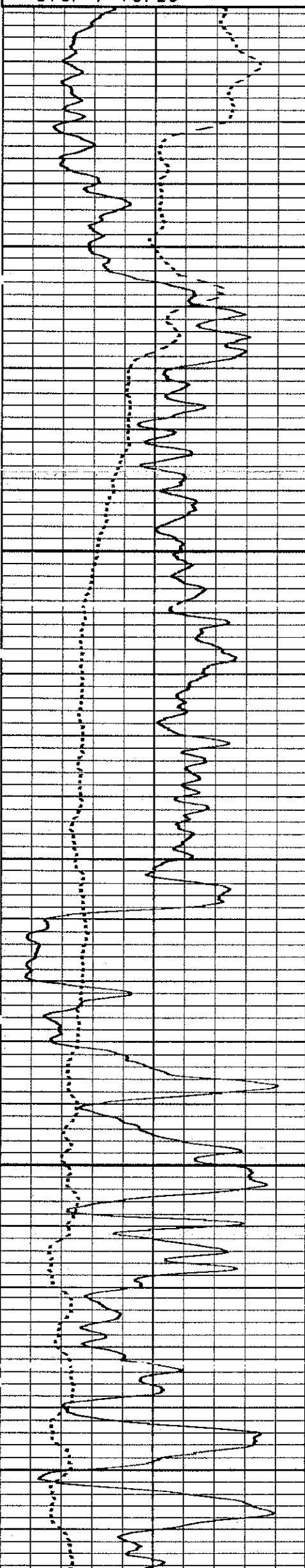
50

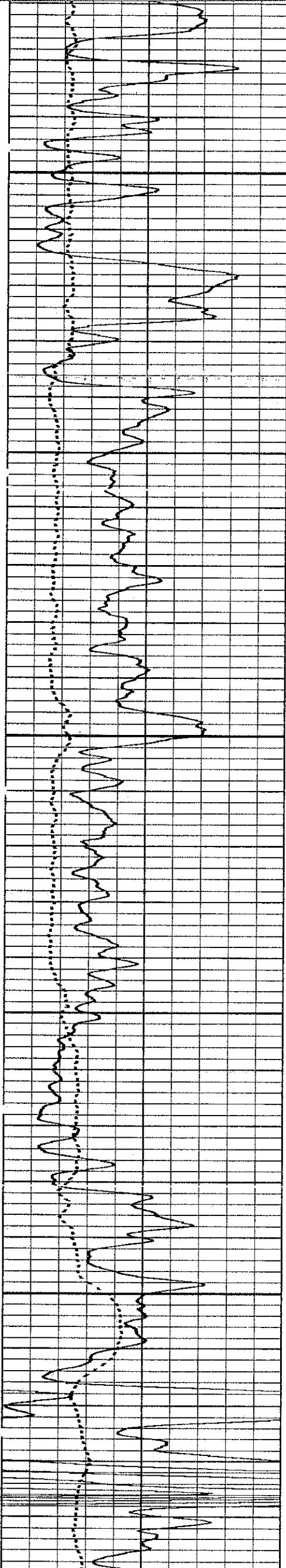
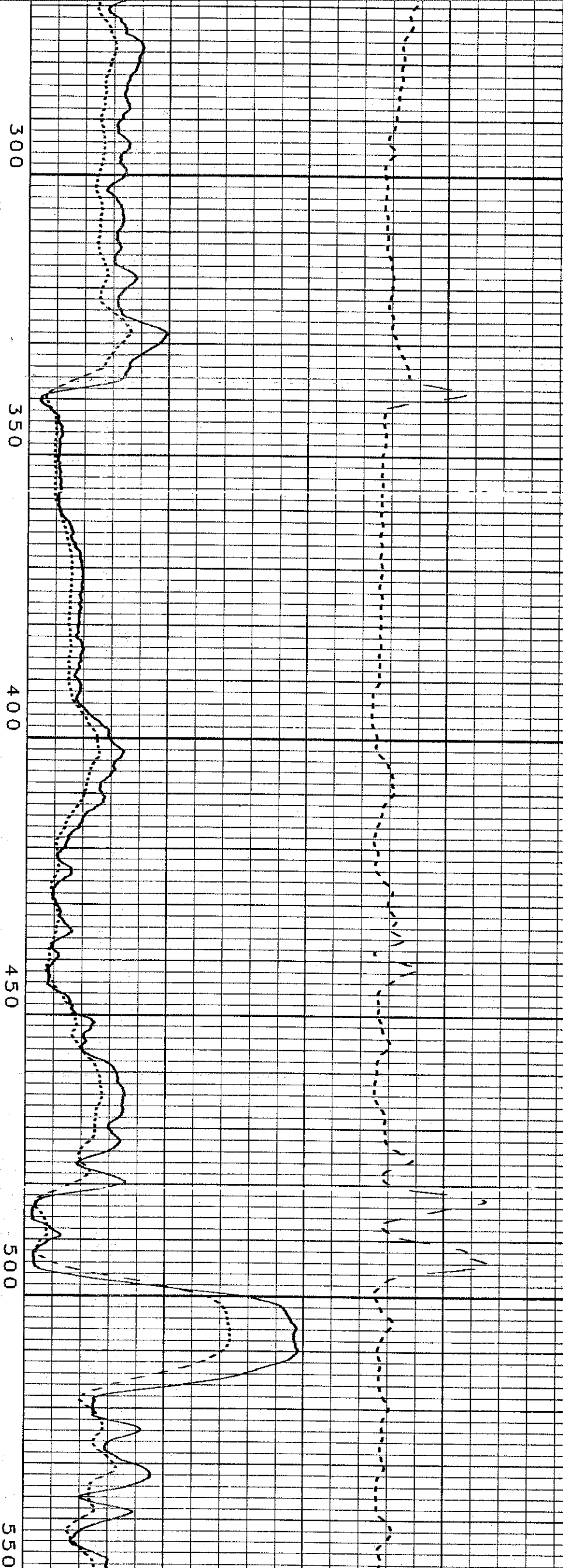
100

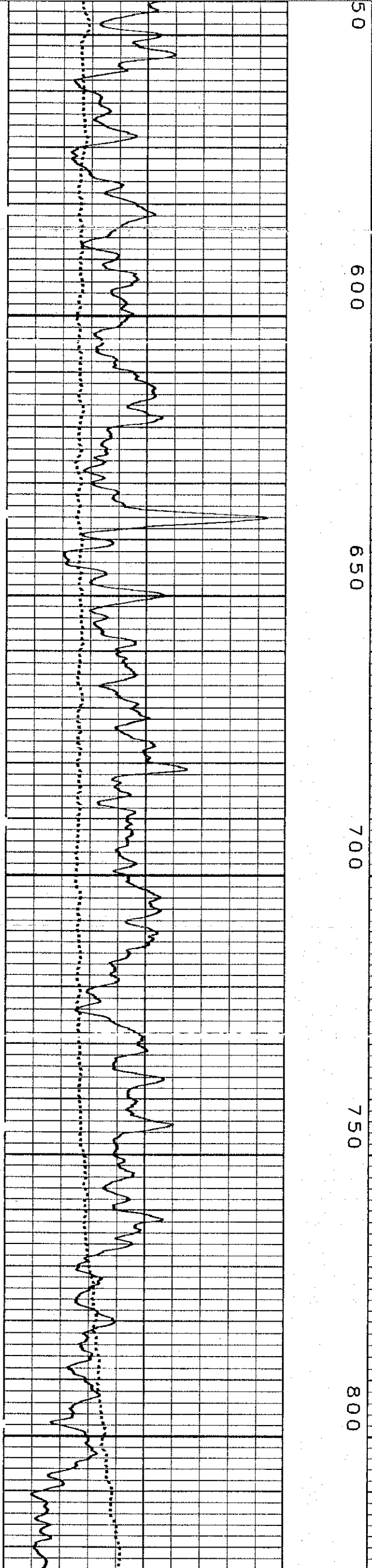
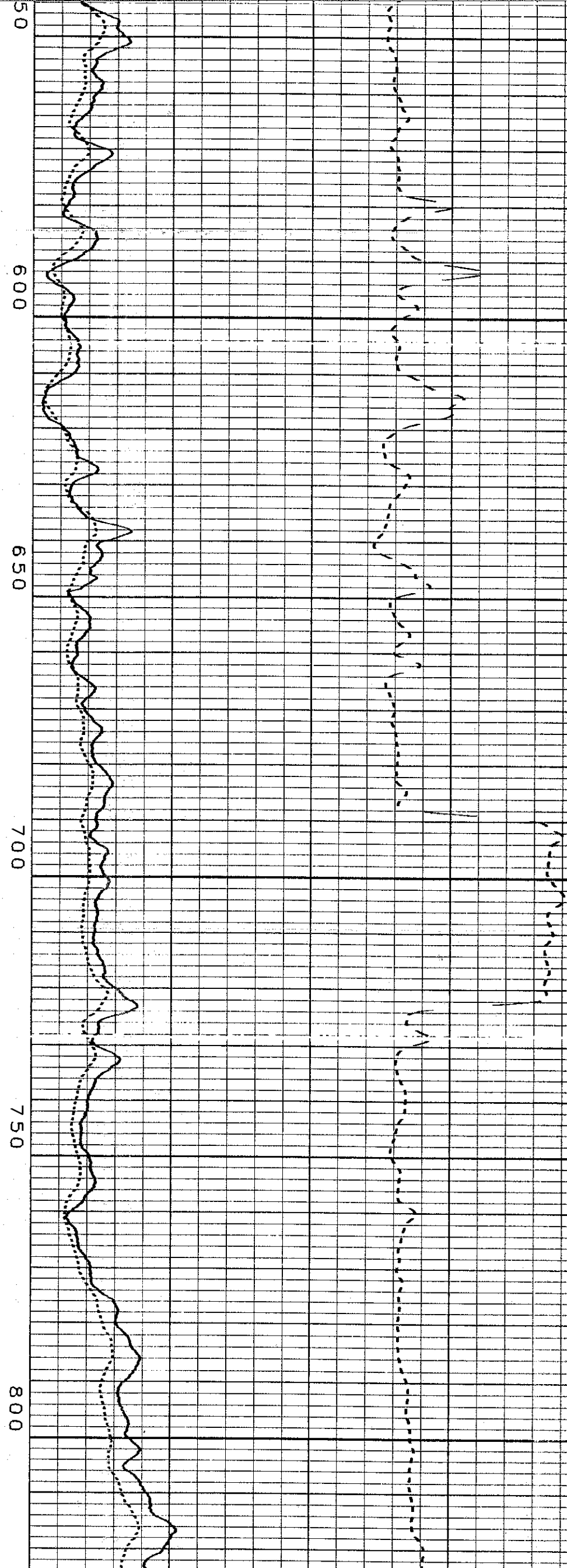
150

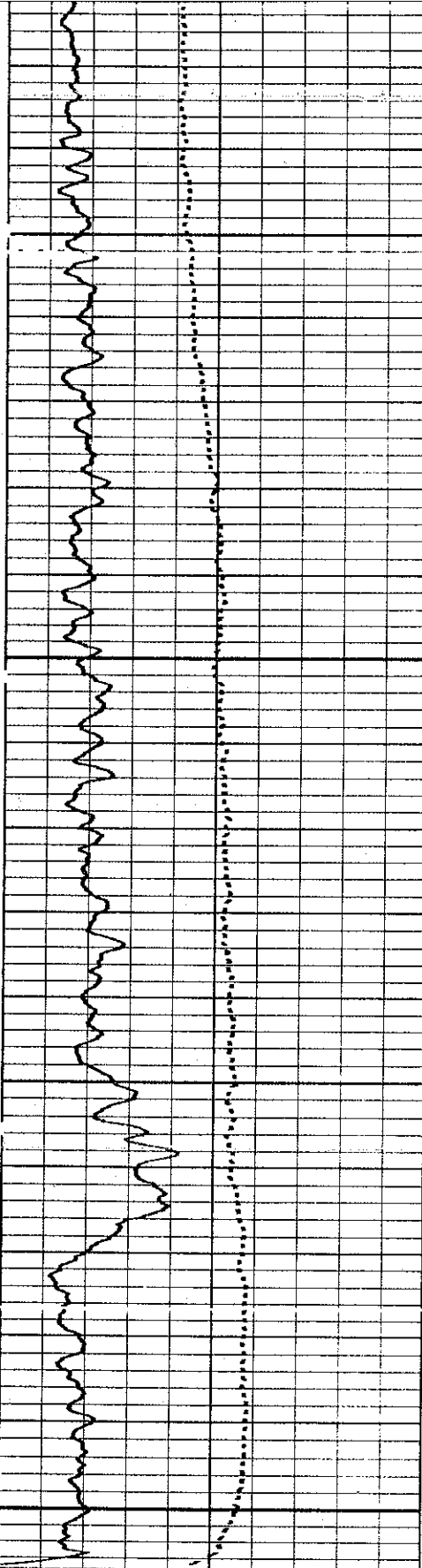
200

250









850
900
950
1000

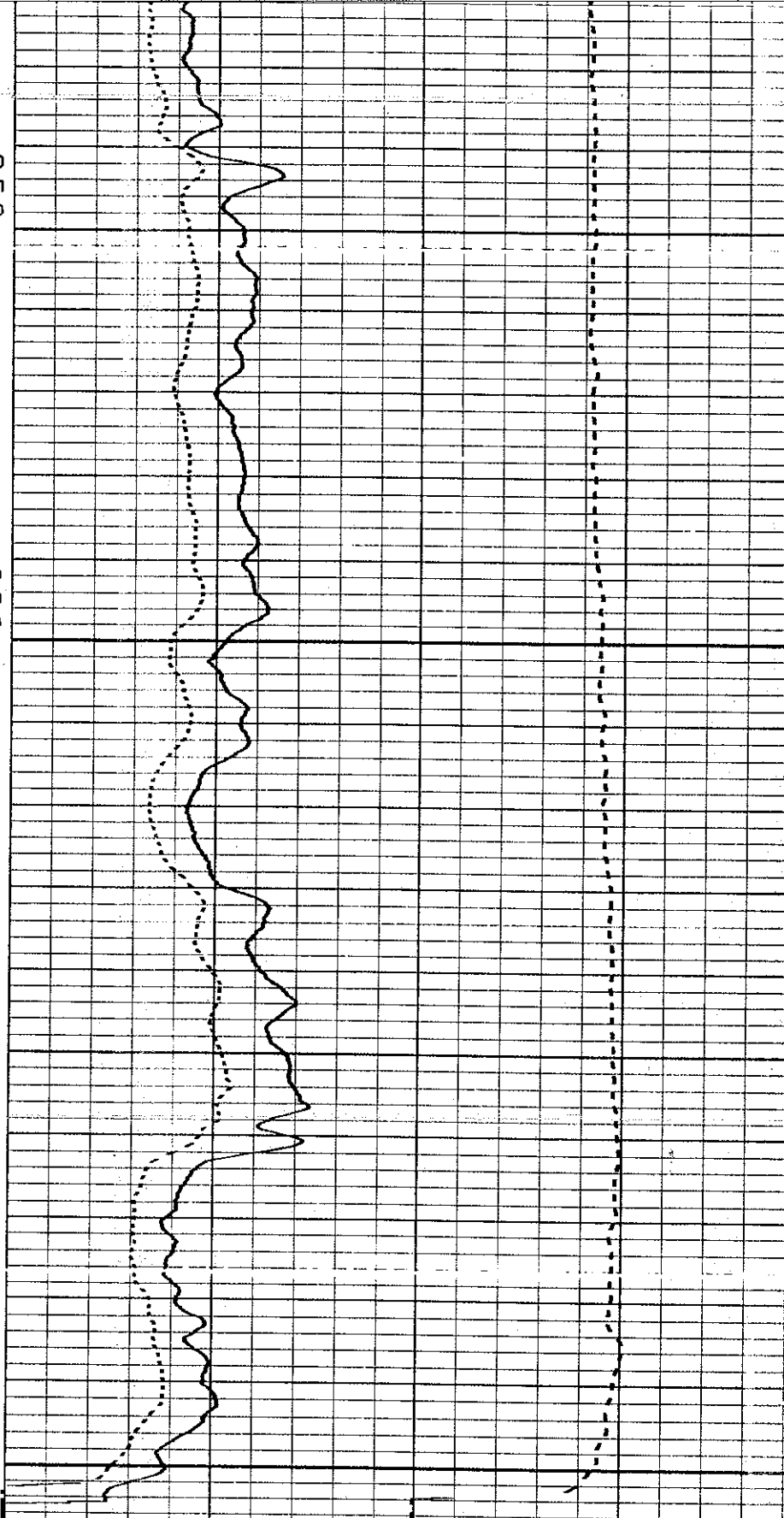


CHART SCALING		
0.00	GAMMA RAY	150.00
150.00	GAPI	300.00
50.00	SP	-50.00
-50.00	MV	50.00

START DEPTH: 1007.10

DEPTHS

Wed Dec 03 10:28:18 2008

LOG UP

CHART SCALING		
0.00	GAMMA RAY	180.00
180.00	GAPI	360.00
50.00	SP	-50.00
-50.00	MV	50.00

STOP : 939.84

DEPTHS

Thu Jan 08 09:07:32 2009

LOG UP

CHART SCALING

10.00 CALIPER 20.00
20.00 INCHES 30.00

0.00 RESISTIVITY 100.00
OHMS

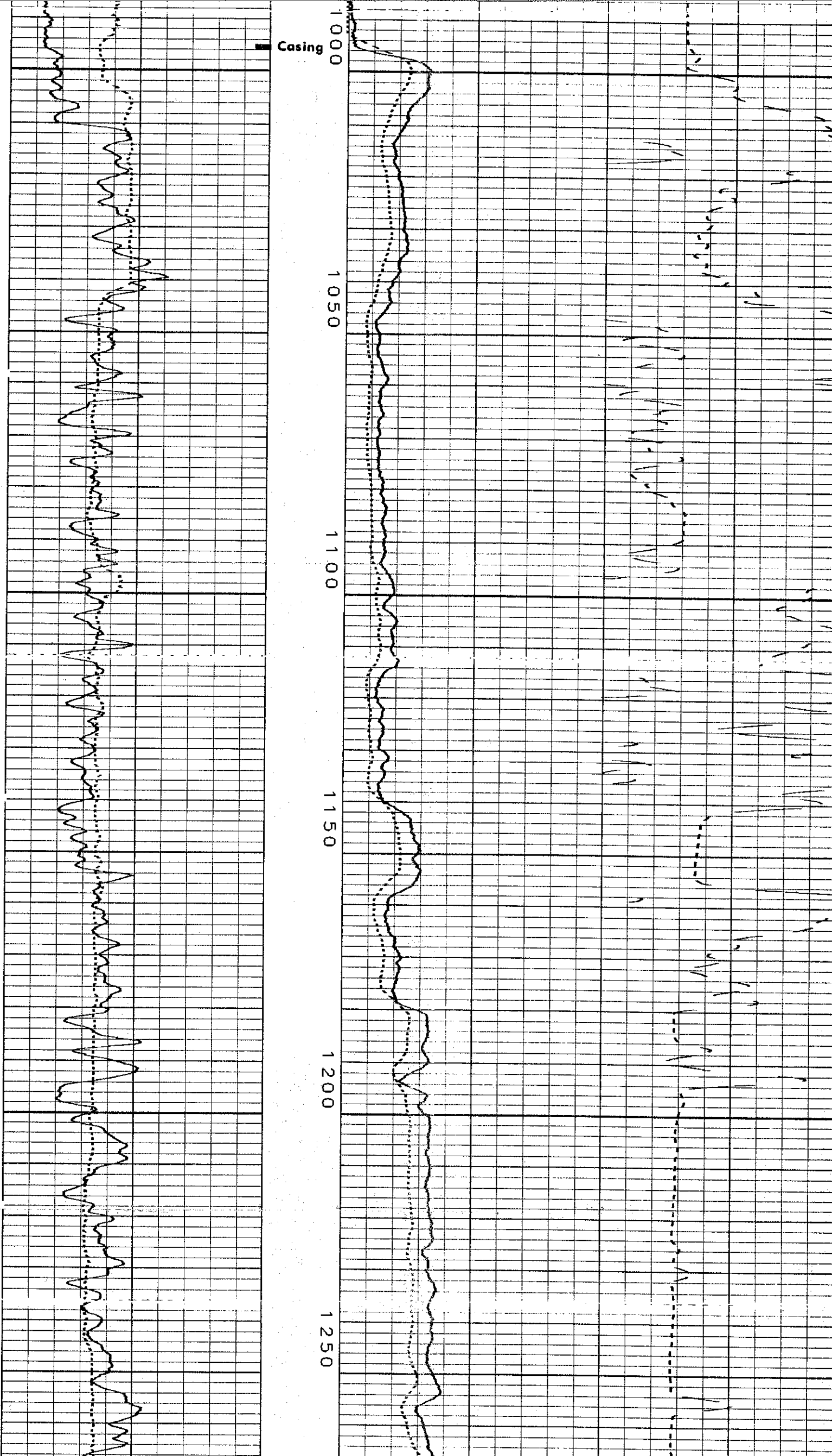
0.00 RESISTIVITY 100.00
OHMS

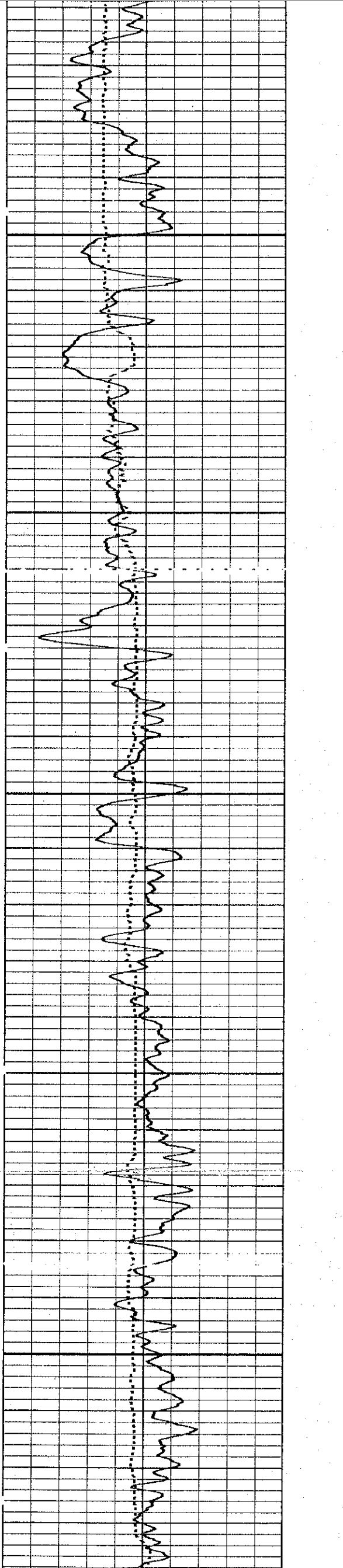
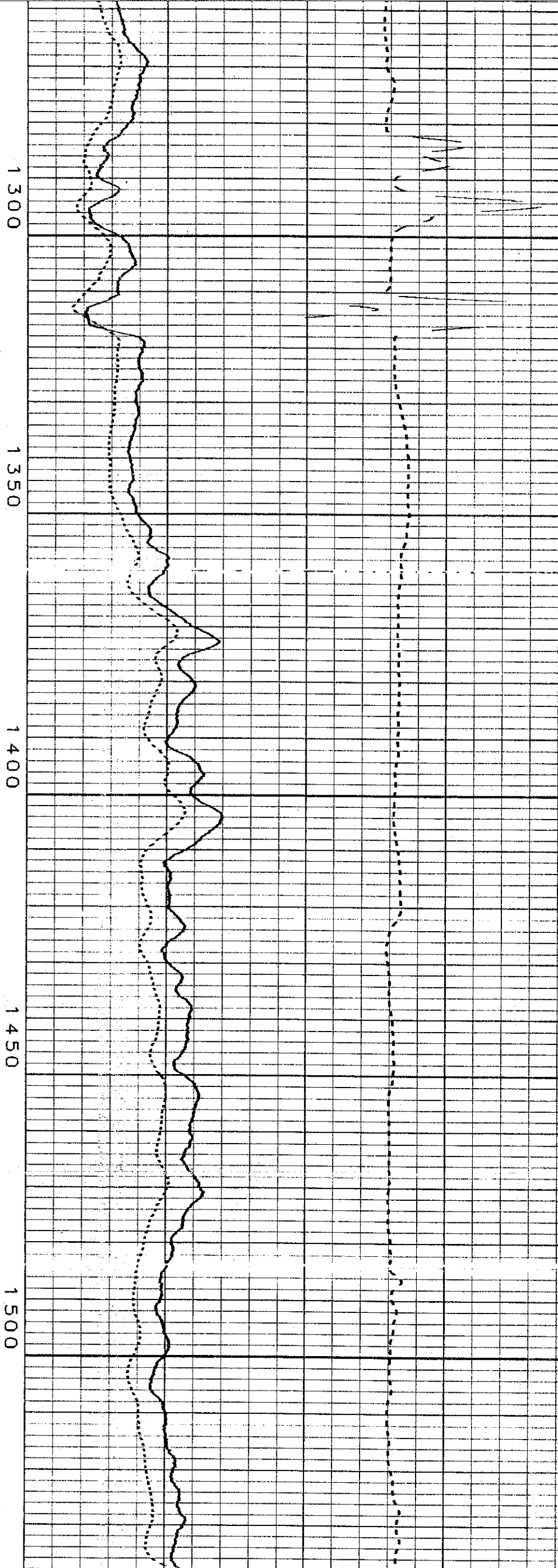
CHART SCALING

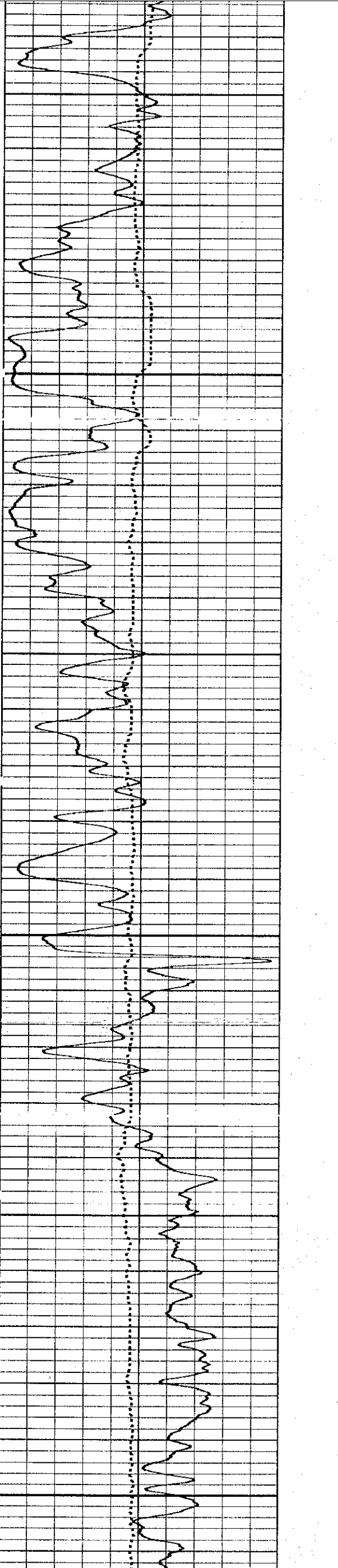
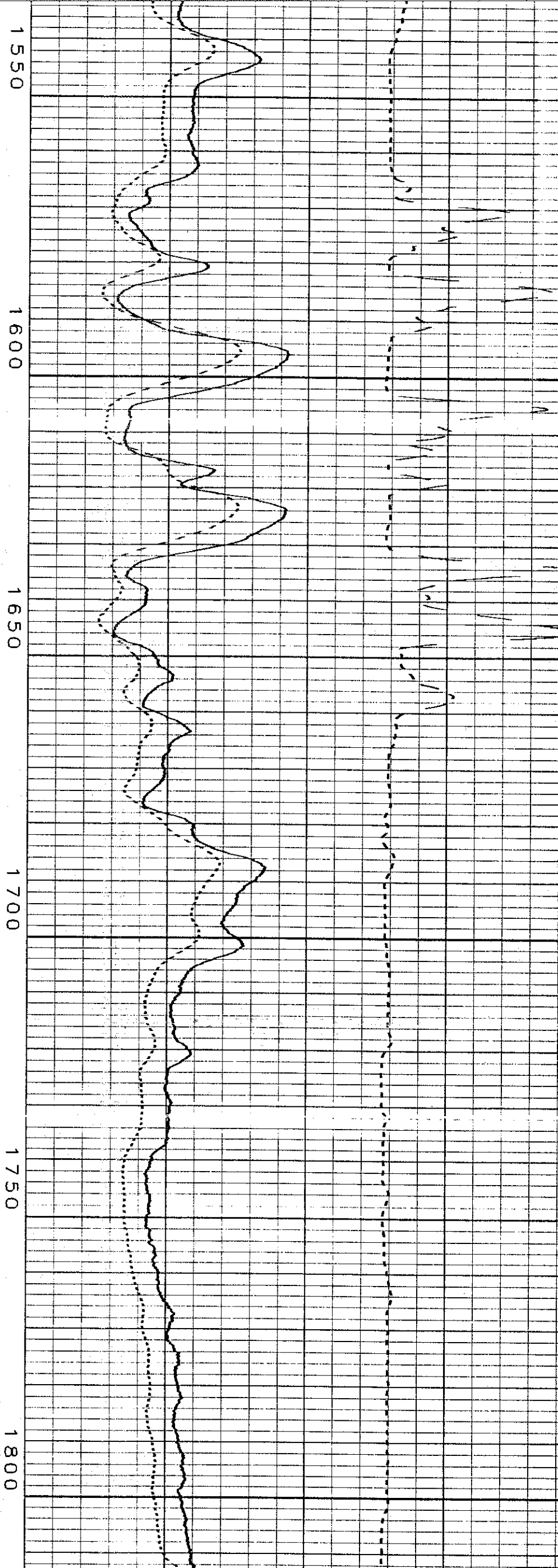
6.00 CALIPER 16.00
16.00 INCHES 26.00

0.00 RESISTIVITY 100.00
OHMS

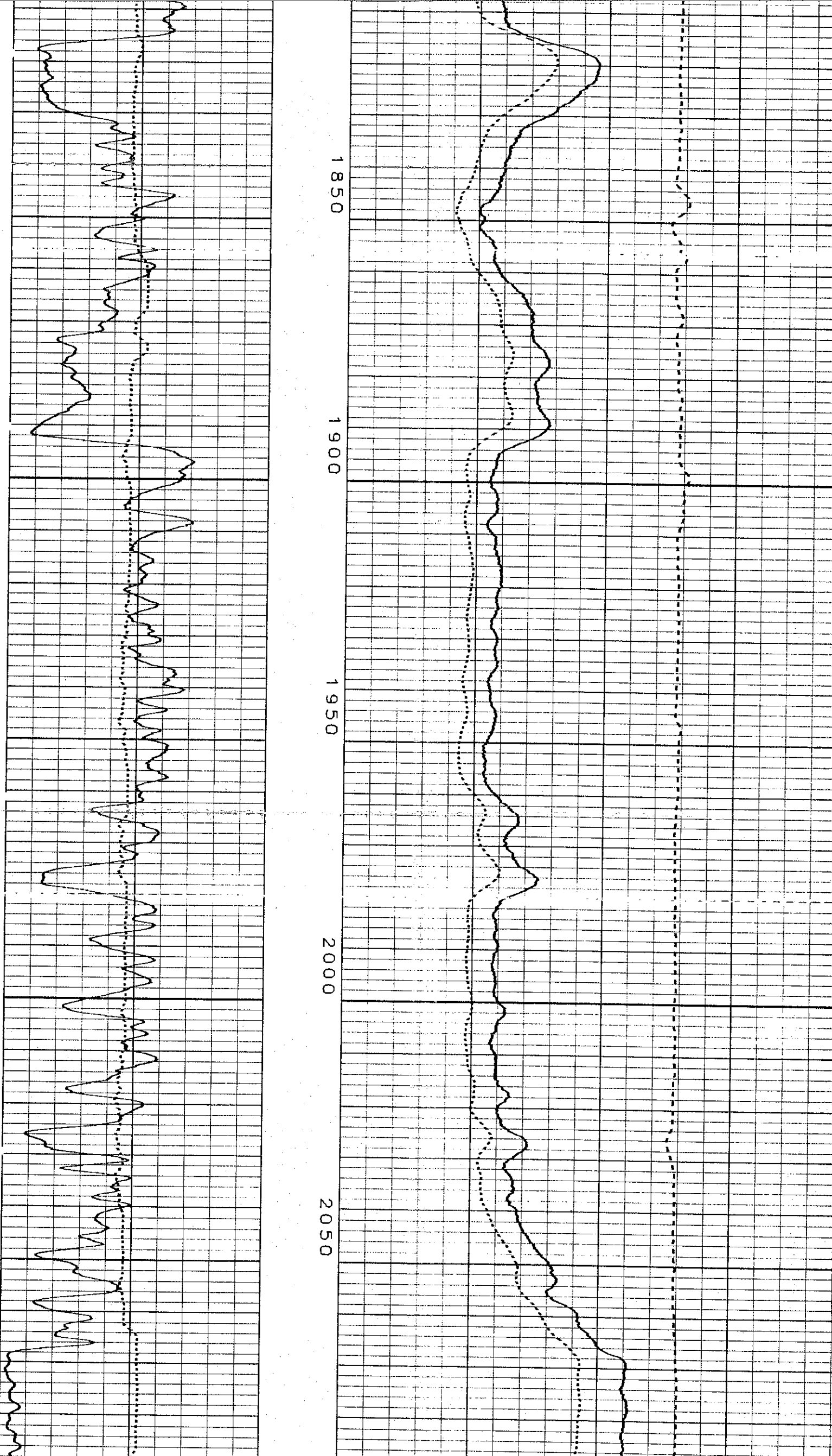
0.00 RESISTIVITY 100.00
OHMS



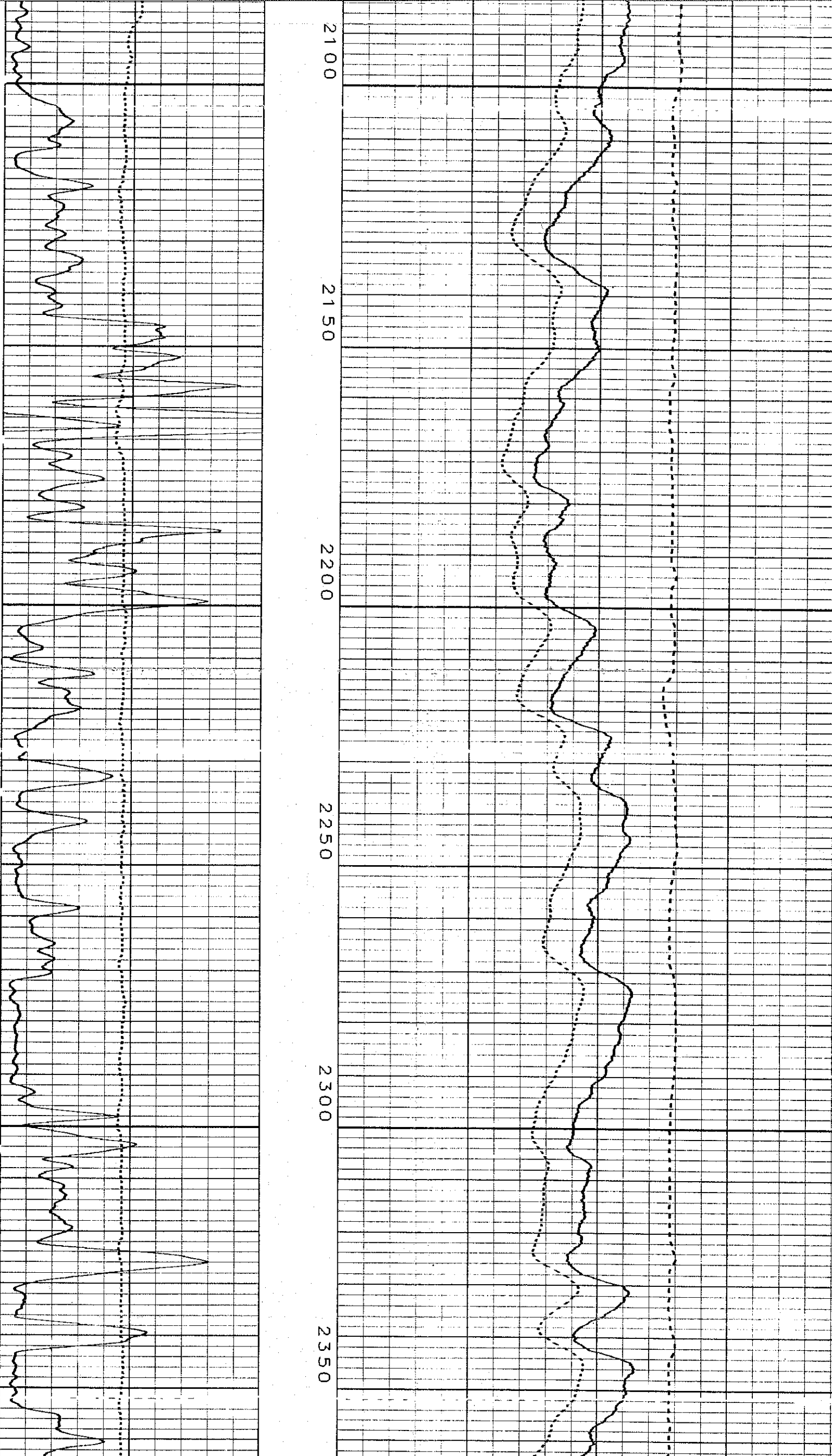


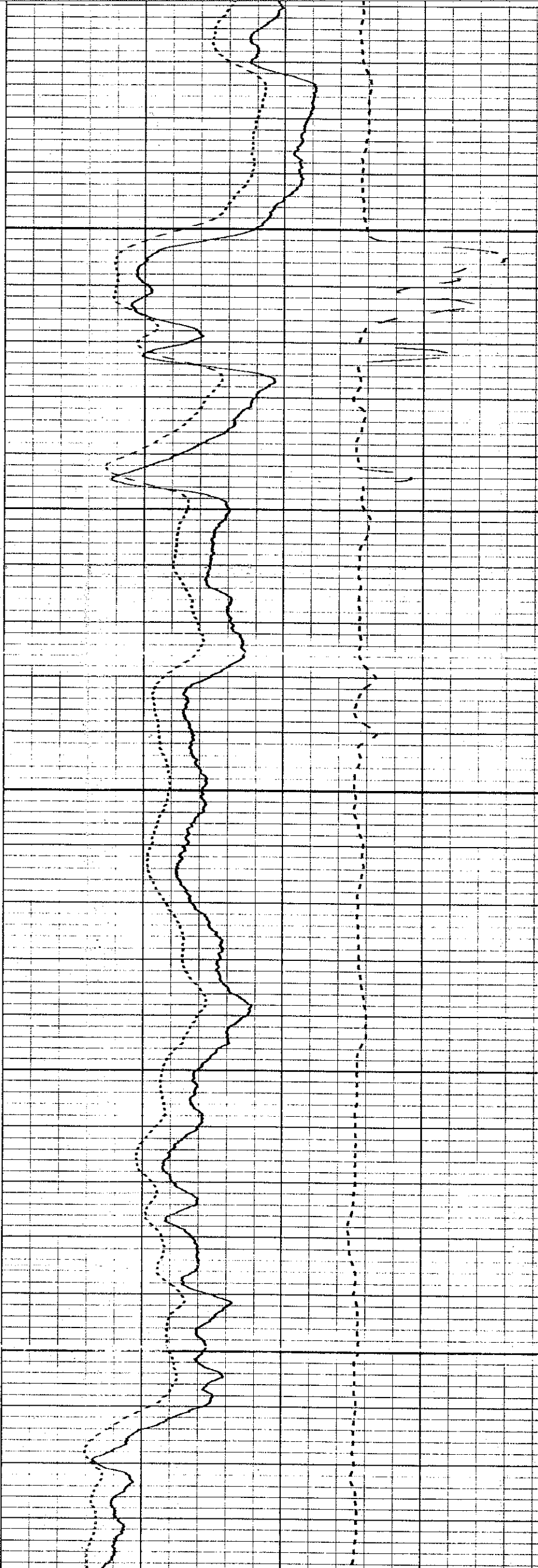


1850 1900 1950 2000 2050



2100 2150 2200 2250 2300 2350





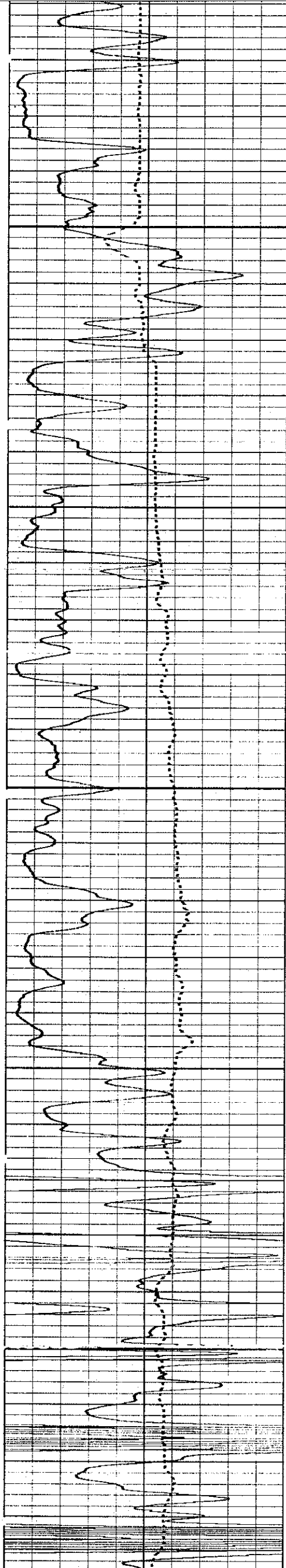
2400

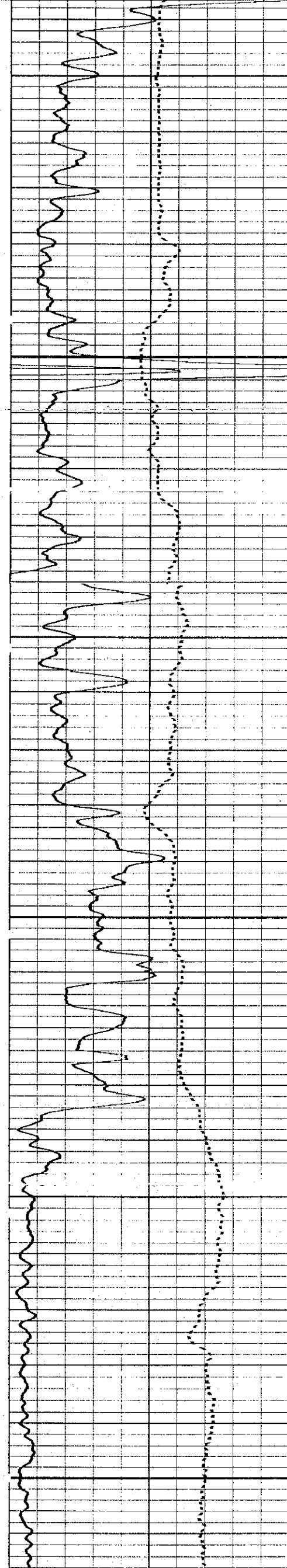
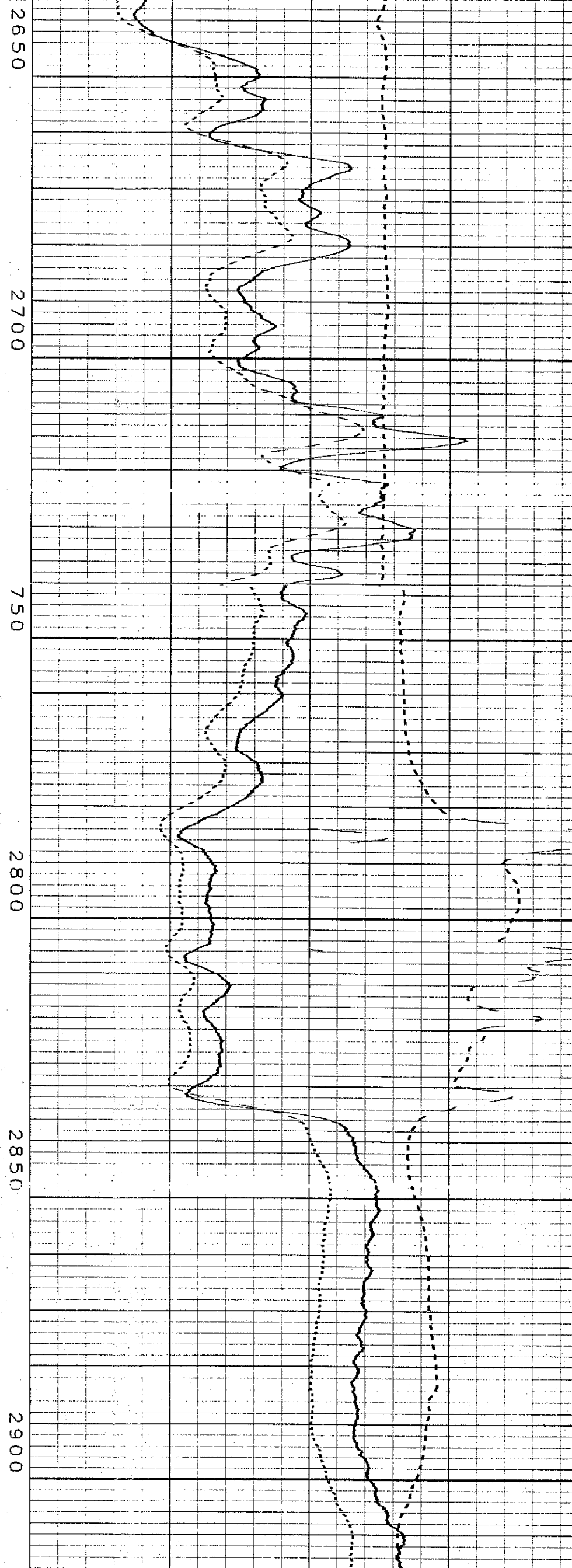
2450

2500

2550

2600





2950

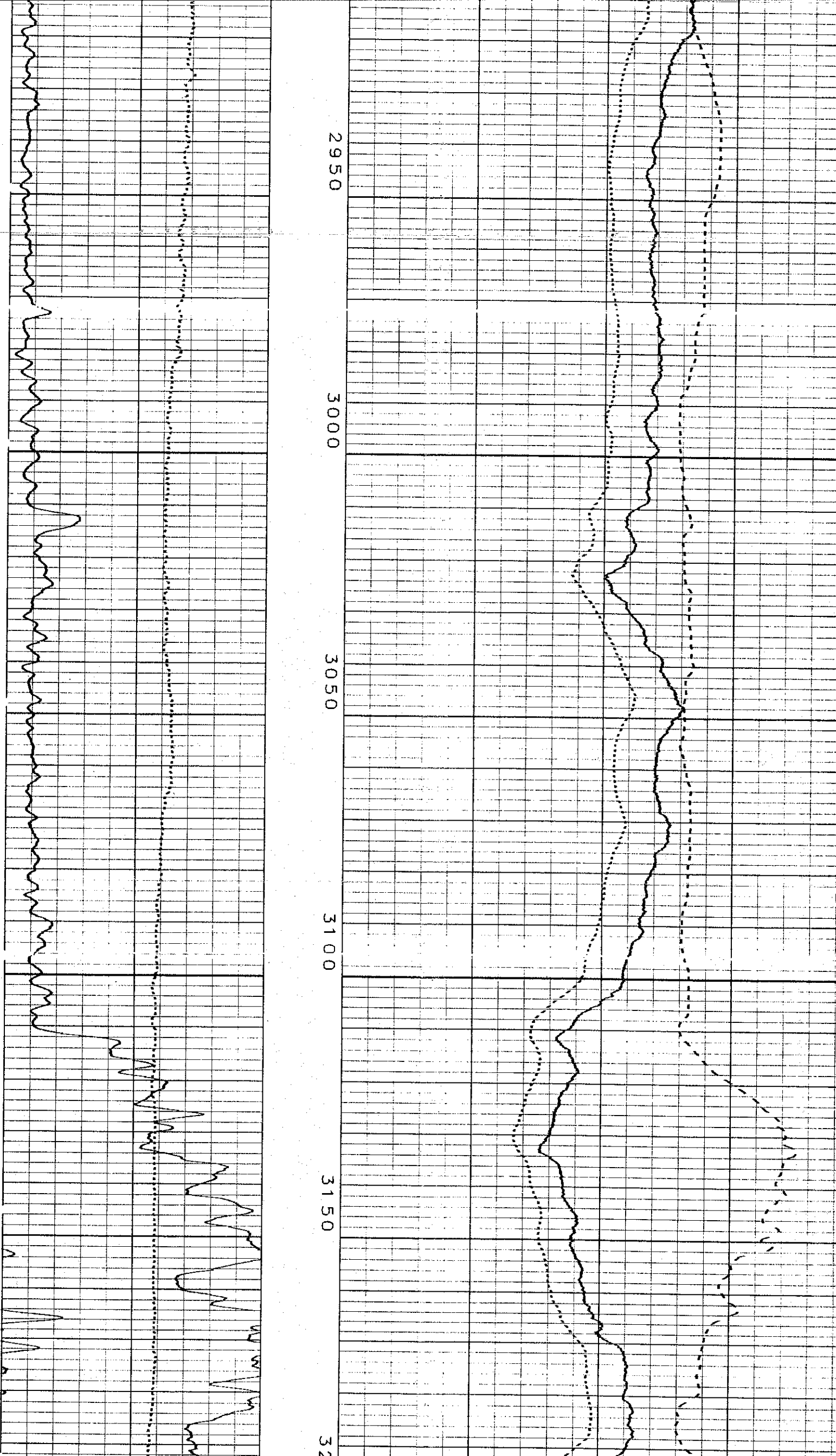
3000

3050

3100

3150

3200



3200

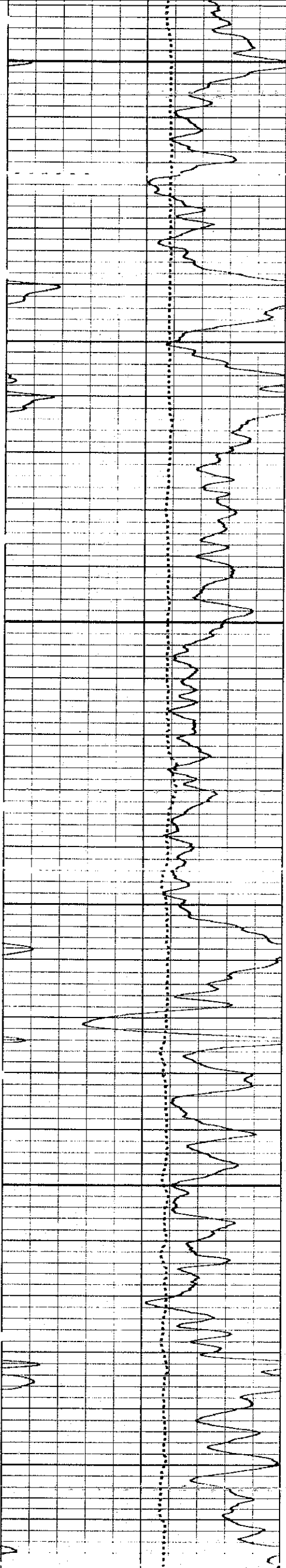
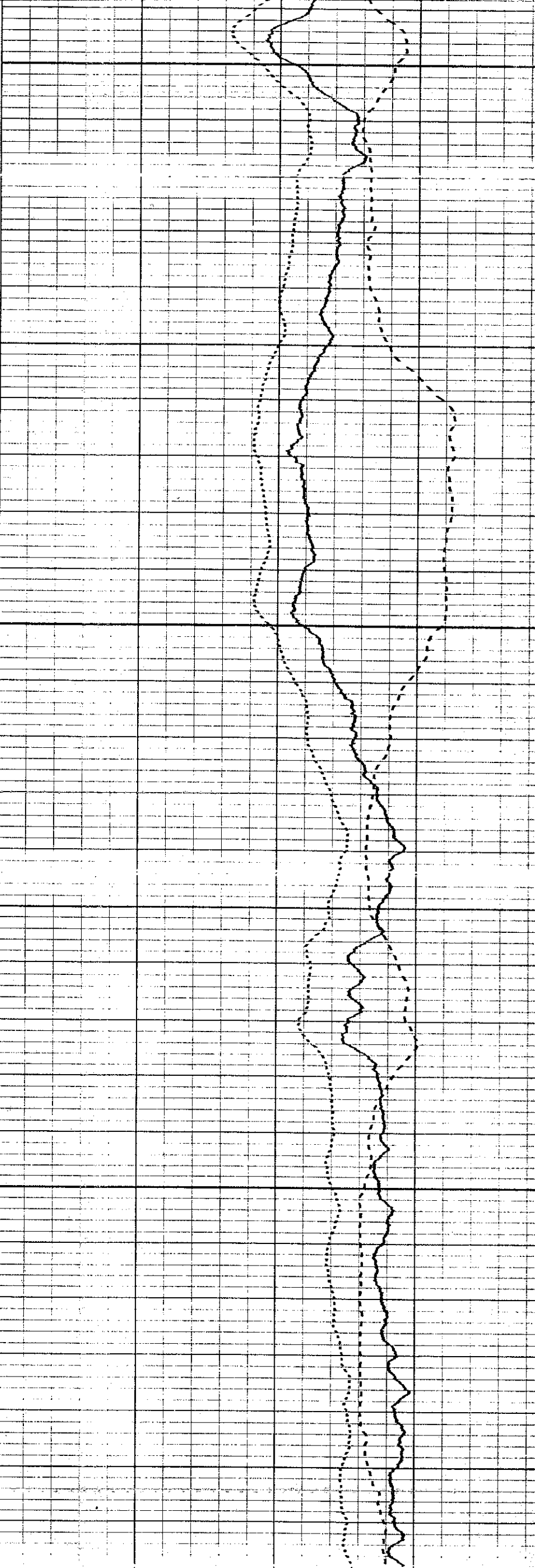
3250

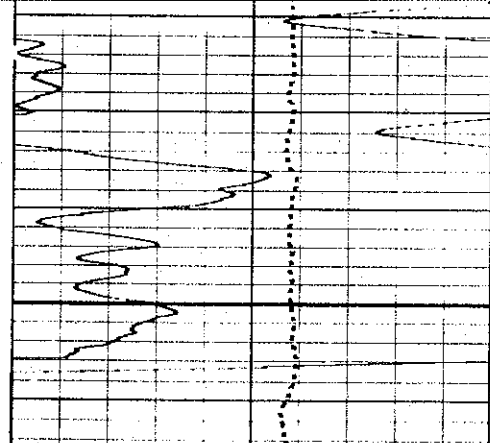
3300

3350

3400

3450





3500

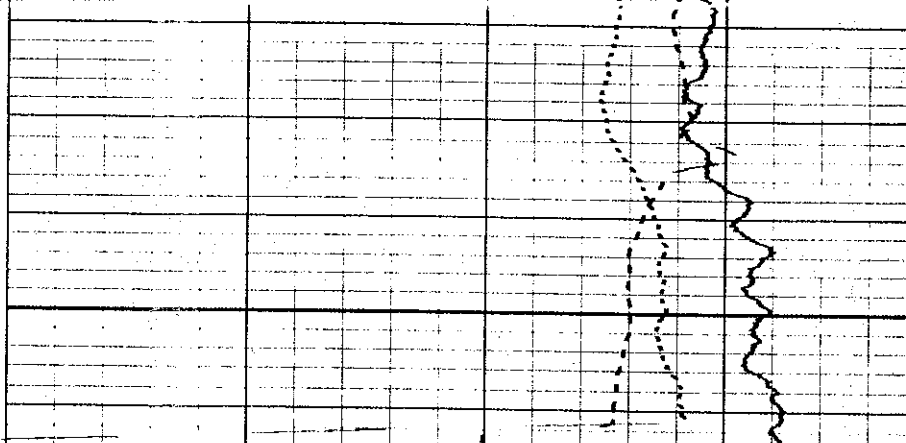


CHART SCALING		
0.00	GAMMA RAY	180.00
180.00	GAPI	360.00
50.00	SP	-50.00
-50.00	MV	50.00

CHART SCALING		
6.00	CALIPER	16.00
16.00	INCHES	26.00
0.00	RESISTIVITY	100.00
	OHMS	
0.00	RESISTIVITY	100.00
	OHMS	

START DEPTH: 3516.00

DEPTHS

Thu Feb 26 10:40:39 2009 LOG UP

CHART SCALING		
0.00	GAMMA RAY	180.00
180.00	GAPI	360.00
-5.00	DIFFERENTIAL	5.00
5.00	-/+	15.00

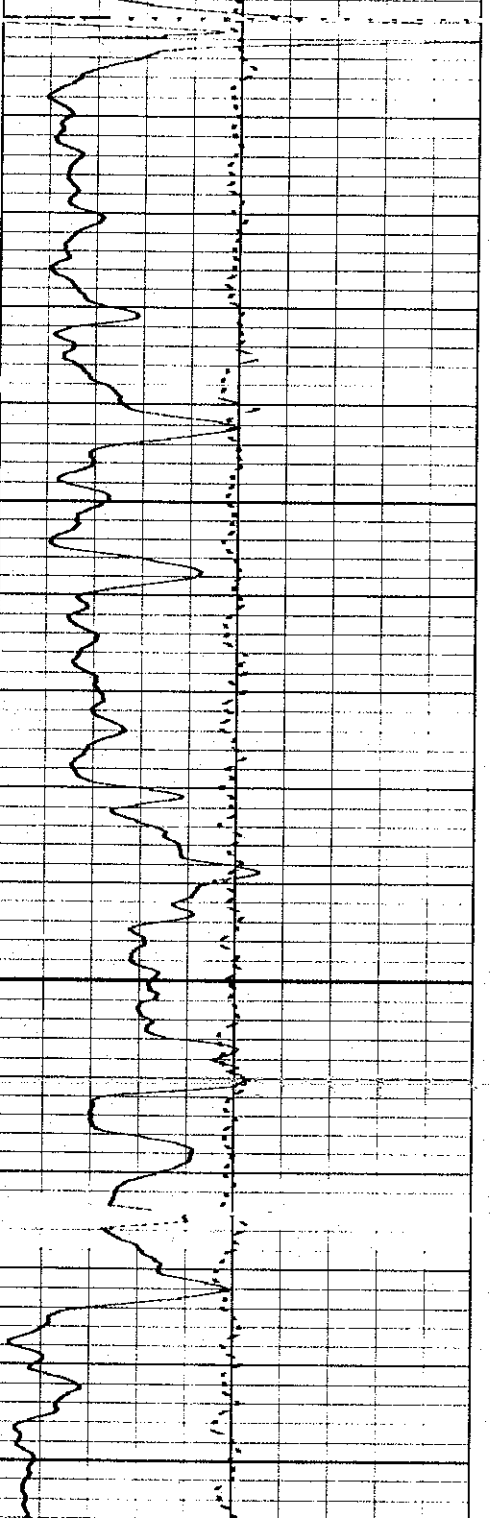
CHART SCALING		
80.00	TEMPERATURE	100.00
100.00	DEGREES	120.00

TEMPERATURE SURVEY

STOP : 2697.87

DEPTHS

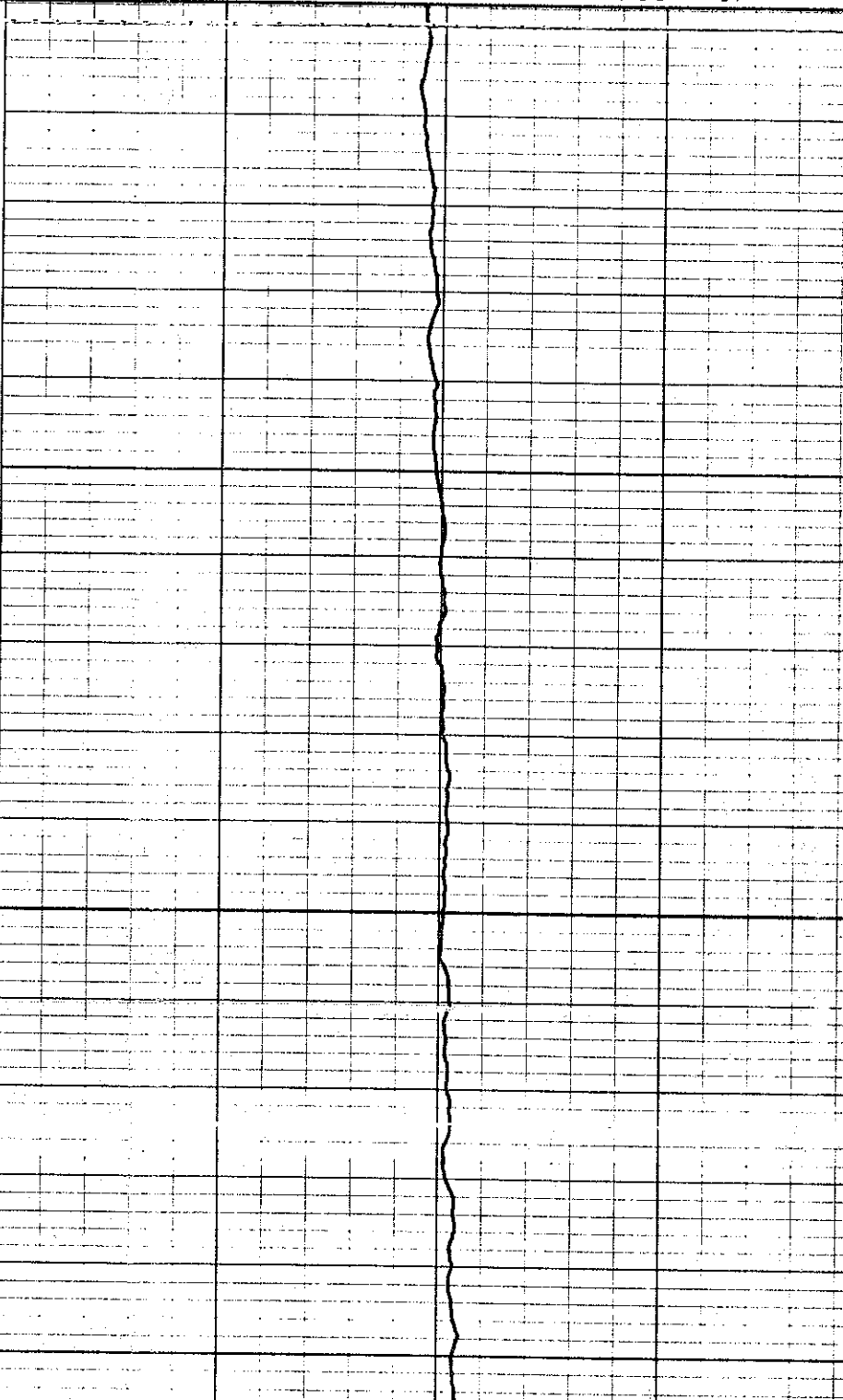
Thu Feb 26 12:48:38 2009 LOG UP

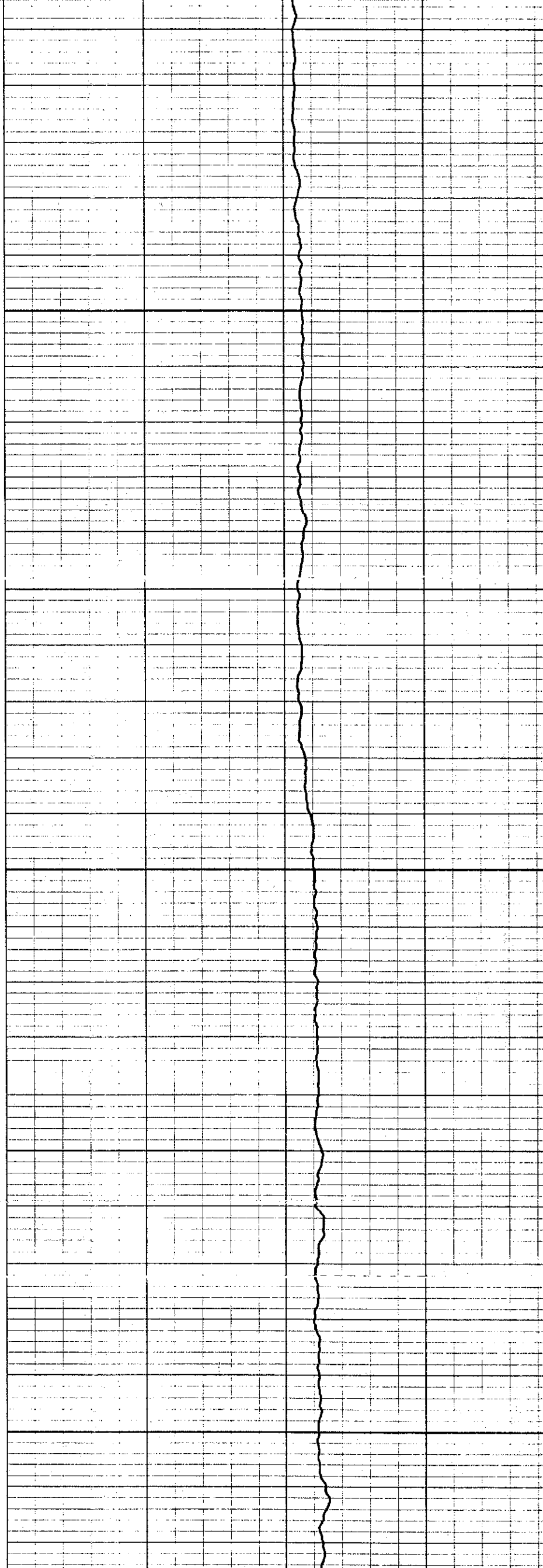


2750

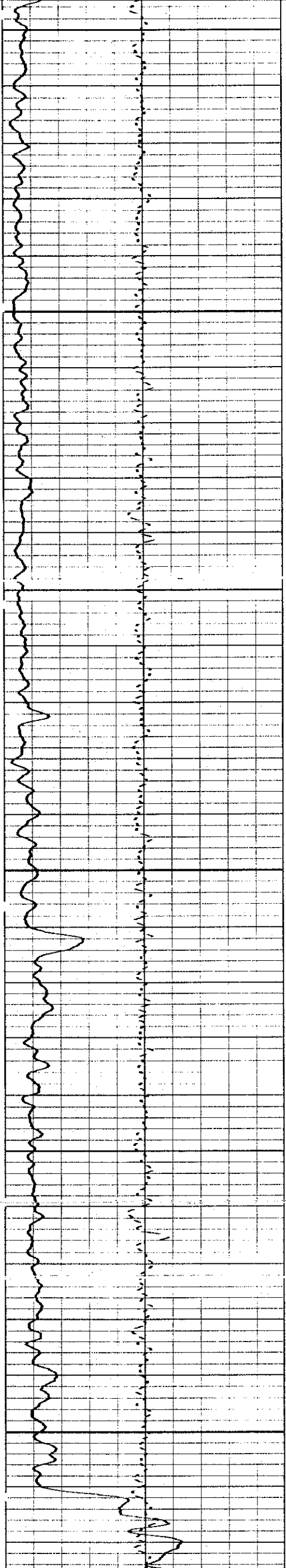
2800

2850

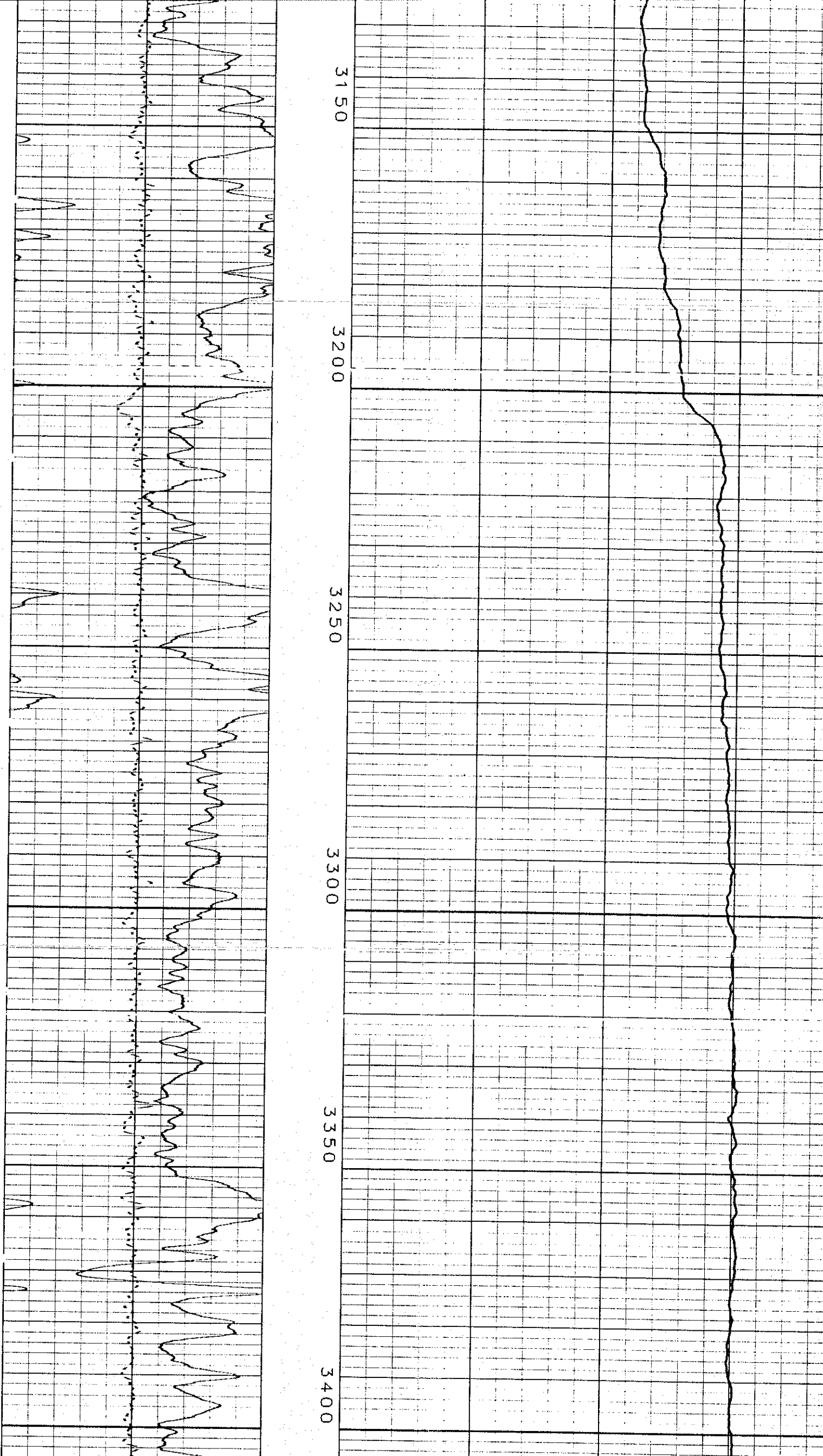




2900 2950 3000 3050 3100



3150 3200 3250 3300 3350 3400



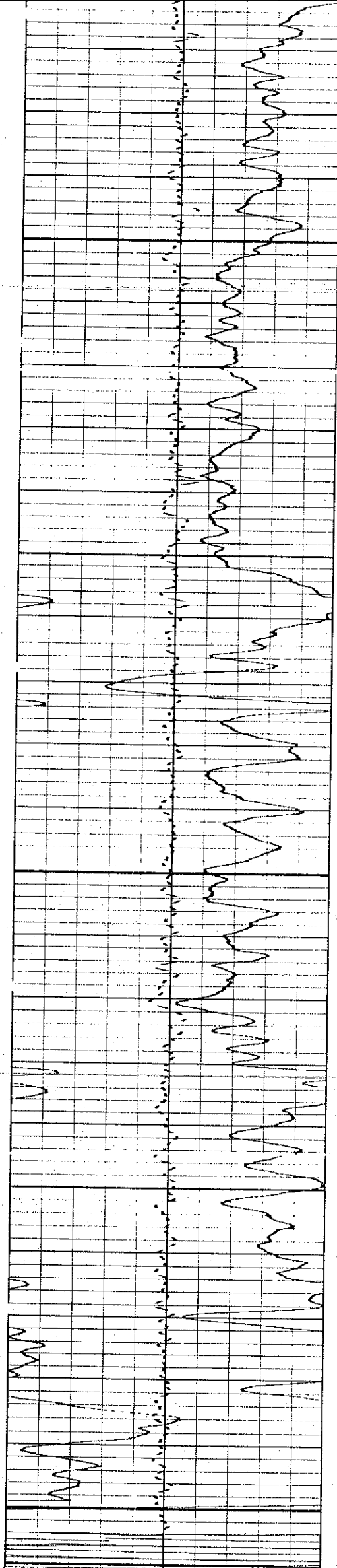


CHART SCALING			
0.00	GAMMA RAY	180.00	
180.00	GAPI	360.00	
-5.00	DIFFERENTL	5.00	
5.00	-\+	15.00	

START DEPTH: 3509.57

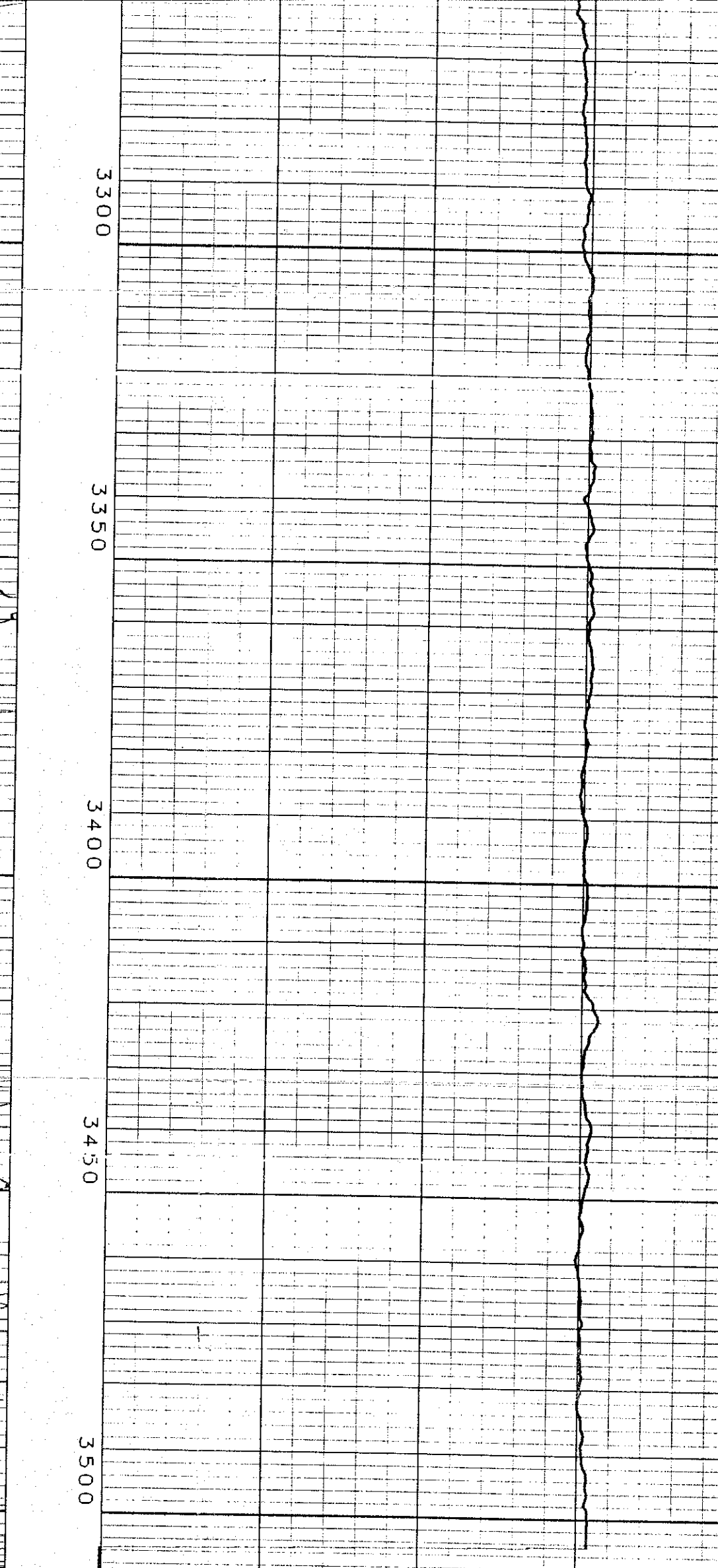


CHART SCALING			
80.00	TEMPERATUE	100.00	
100.00	DEGREES	120.00	

DEPTHS Thu Feb 26 12:32:48 2009 LOG UP

RECEIVED

MAY 20 2010

WATER RIGHTS
PROGRAM

TYVO, LLC
PO Box 500
Upton, WY 82730
307-468-2466

May 18, 2010

Mr. Ken Buhler
Department of Environmental and Natural Resources
PMB 2020
Joe Foss Building
523 East Capitol
Pierre, SD 57501-3982

Re: Cementing exception Fall River Water District

Dear Mr. Buhler:

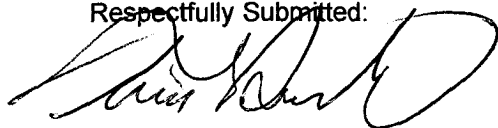
I am writing to request an exception to a small portion of free pipe that was noticed during our inspection of a cement bond log that was run on the recently drilled O'Brian Number One Water Supply Well located in SW SW Section 1 T 7 S - R 6 E, Fall River County, SD for the Fall River Water District of PO Box 321, Oral, SD 57766.

The well has 9-5/8 inch casing cemented in place to approximately 1000 feet, then a 7-inch liner placed from there to approximately 2850 feet to the top of the Madison formation. It appears that the liner has good bond all the way up to approximately 1150 feet but there is a small section of free pipe up from that depth to 1000 feet which would leave 150 feet that is free in the Spearfish formation. The district would like to request your acceptance of the current construction, rather than make a very expensive attempt to place cement in the annular space of the liner for such a small void. We are still in the development phase to get production to an acceptable rate for their project.

Your timely acceptance of this request would be greatly appreciated so that we can work to further develop the well in a timely fashion.

As always, thanks for your help.

Respectfully Submitted:



Tim Barritt

President
TYVO, LLC
PO Box 500
121 West Merino Street
Upton, WY 82730
Phone: 307.468.2466
Cell: 307.680.3549
Fax: 307.468.9359
E-mail: tbarritt@bigcatenergy.com



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
denr.sd.gov

May 24, 2010

Tim Barritt
TYVO, LLC
PO Box 500
121 West Merino Street
Upton, WY 82730

Dear Mr. Barritt:

I am writing in response to your recent letter regarding the Fall River Water User District "O'Brian Number One Water Supply" which is located in the SW $\frac{1}{4}$ SW $\frac{1}{4}$ Section 1, T7S-R6E. Upon review of the Cement Bond Log that was supplied to the DENR-Water Rights Program by Goodwell Inc., I concur that the entire length of the liner was not cement grouted. It appears that approximately the upper 150 feet of the 7-inch diameter casing was not adequately cemented.

The South Dakota Well Completion Report submitted for the well indicates that the driller attempted to grout the liner with 270 sacks of 15.8 pound per gallon Class G cement. The resultant 310 cubic feet of cement slurry represents 1.43 times greater volume than the annular volume calculated for an in-gauge wellbore. The 43% excess factor used was reasonable and it can be considered a good-faith effort to grout the well. If a cement bond log were not run on the well, which of course is not required, the 150 feet of free pipe would be unnoticed unless it allowed for Spearfish Formation water and/or sediment to enter the well.

The purpose of grouting is to: protect the well casing; isolate the production zone; prevent underground waste of water; prevent commingling of aquifers; and to protect the State's water resources. Although the cement bond log indicates a small amount of free pipe, for the most part, the grout job accomplishes its intent. Therefore, corrective action will not be required at this time.

If you have any questions, please contact Ken Buhler at 605.773.3352.

Sincerely,


Garland Erbele, Chief Engineer
SD DENR-Water Rights Program

2615-2

RECEIVED

JUN 14 2010

WATER RIGHTS
PROGRAM

TYVO, LLC
PO Box 500
Upton, WY 82730
307-468-2466

June 10, 2010

Mr. Ken Buhler
Dept of Environment & Natural Resources
PMB 2020
Joe Foss Building
523 East Capitol
Pierre, SD 57501-3182

Re: Perforating Top of Madison

Dear Mr. Buhler:

I am writing to request permission to perforate a section of casing in the Fall River Water District "O'Brian Number One Water Supply Well", which is located in the SW ¼ SW ¼ Section 1, T7S R6E, Fall River County. The section in the Madison transition would be approximately from 2680 to 2780 and would be chosen from the logs for the best spots. I believe you have a copy of the electric log that was run on this well. If you are in agreement that the water quality in this transition should be very similar to the current upper Madison that is open, I believe the cement bond log results would demonstrate that no mingling of water from above in the Minnelusa could take place. We will collect samples again of the total production to verify our procedure.

I appreciate your attention in this matter and if you have further questions or concerns please let me know.

Sincerely,
TYVO, LLC

Tim Barritt, Jr.

Tim Barritt
President



June 17, 2010

**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
denr.sd.gov

Tim Barritt
TYVO, LLC
PO Box 500
Upton, WY 82730

Dear Mr. Barritt:

I am writing in response to your recent letter to Ken Buhler regarding the Fall River Water User District "O'Brian Number One Water Supply" well which is located in the SW $\frac{1}{4}$ SW $\frac{1}{4}$ Section 1, T7S-R6E. I understand the well is currently completed into the Madison aquifer and its yield is insufficient for the owner's needs. You have requested authorization to perforate the well casing above the top of the Madison Limestone in what you describe as a "Madison transition".

A review of the well's geophysical logs that were provided to the DENR-Water Rights Program by Goodwell, Inc., identified the top of the Madison Limestone approximately 2,834 feet below land surface datum (lsd). In your June 16, 2010 telephone conversation with Ken you indicated that you would like to perforate the well casing from 2,706 feet below lsd to 2,780 feet below lsd.

It appears from the geophysical logs that the "Leo Sands" of the Minnelusa Formation are located about 2,550 feet below lsd to 2,645 feet below lsd and the bottom of the Leos look to be mainly anhydrite. In addition to the probable anhydrite zone, the logs also suggest a tighter, lower permeability zone from 2,700 feet below lsd to the anhydrite.

Considering the geology of this area identified by this well's logs, and the reality that the contact between the Minnelusa Formation and the Madison Limestone is often obscure and not necessarily a hydrologic boundary, it appears to be appropriate to consider the Minnelusa Formation below 2645 feet below lsd distinct from the Minnelusa above 2645 feet below lsd, and the lower Minnelusa Formation can probably be considered part of the Madison aquifer.

Your request to perforate the well from 2,706-2,780 feet below lsd is conditionally approved. The well water must be sampled and tested for common ions before and after the casing is perforated. If the post-perforation water can be distinguished from the pre-

perforation water, the two water zones must be isolated or the well will be considered in violation of Standard 74:02:04:34.01.

If you have any questions, please contact Ken Buhler at 605.773.3352.

Sincerely,

A handwritten signature in cursive script, reading "Garland Erbele". The signature is written in dark ink and is positioned above the printed name and title.

Garland Erbele, Chief Engineer
SD DENR-Water Rights Program

The geophysical logs for the Fall River Water User District "O'Brian Number One Water Supply Well" were analyzed by Fred Steece, SD DENR-Oil and Gas Program, and by Tim Bickett and Gerald Bullard the owners and operators of Goodwell Inc. Their interpretations are listed below.

STEECE FORMATION TOPS

Minnelusa=1538
Red Marker= 2300
Madison= 2834
Deadwood= 3200
PreCambrian= ?

BICKETT/BULLARD FORMATION TOPS

Minnekahta= 1815
Minnelusa= 2060
Leo Sands= 2550 (bottom @2645)
Madison Top= 2834

**NOTICE OF COMPLETION OF WORKS AND
APPLICATION OF WATER TO BENEFICIAL USE**Date 9/15/11TO: Water Rights Program, DENR
523 E. Capitol
Pierre, SD 57501-3181FROM: Fall River Water Users District
(name)
27600 Woral Rd.
(address)
Oral SD 57766 (605) 424-7648
(city, state, zip) (phone)

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

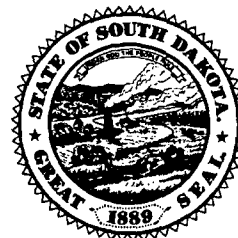
Water Permit No. 2615-2 states that the water use system is to be constructed by July 11, 2012, and water is to be put to beneficial use by July 11, 2016.
(date) (date)

The water use system was completed on Sept. 13, 2011.
(date)

Applying the water to beneficial use was completed on July 1, 2011.
(date)

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

Keith Neugebauer
(signature)





**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

September 19, 2011

2615-2

Keith Neugebauer
Fall River Water Users District
27600 W Oral Rd
Oral SD 57766

Dear Mr. Neugebauer:

I am writing to acknowledge receipt of the "Notice of Completion of Works" form that you sent in to let us know the water use system authorized under Water Permit No. 2615-2 has been completed.

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

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

Sincerely,

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

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

Robert Welchman

From: Tim Barritt [tbarritt@bigcatenergy.com]
Sent: Thursday, August 12, 2010 7:26 PM
To: wester@qwestoffice.net
Cc: 'Robert Welchman'
Subject: Fall River

Larry,

I don't have the job sheets for the acid job, as I was not there. Hopefully you or Mike have them from when you were there, otherwise I will have to try and get them from Basic.

The Fall River Water User District approved a controlled pump test to better evaluate the actual condition of the newly drilled O'Brian Number One Water Supply Well located SW1/4, SW1/4 Section 1, T7S-R6E in Fall River County near Hot Springs, South Dakota. DC Drilling of Lusk Wyoming installed a test pump to 876 feet with air lines to monitor water levels. The test was started on April 5, 2010 and continued until April 6, 2010 when recoveries were then monitored. The well test indicated poor production results and proposals were developed for the Board's consideration to enhance production rates on April 13, 2010. The board approved moving forward with a procedure to perforate the lower most piece of Madison Formation behind the casing as well as a small piece just below the casing, both of which had previously had possible cement contamination. Goodwell Inc. moved in and ran wireline equipment to 3119 feet to verify the location of the plug back cement plug that had been placed previously. The well was then perforated from 2835 feet to 2870 feet with 90 Gram Frac Jets. (70 shots). The well was then air developed through 2-7/8 inch tubing from approximately 900 feet to establish a production rate and clean any debris from the well bore.

The SDDNR was asked to grant an exception of the non-compliant cement cover of the 7-inch casing liner top which was void of 150 feet of cement. On May 24, 2010 the SDDNR agreed that no harm was created by the small amount of free pipe in the well at it's location in the formation, and that no remedial action was required. An acid injection procedure was also concurred. DC Drilling installed a treatment packer in the well on 2-7/8 inch tubing into the top of the 7-inch liner at approximately 1200 feet on May 26, 2010. Weather precluded further work until June 2, 2010 when Basic Energy Inc. conducted a 15000 gal HCL acid stimulation through the 2-7/8 inch tubing and the treating packer set in the top of the 7-inch liner. On June 3, 2010 the packer was released and the spent acid water was began to be produced by means of compressed air being injected down the 2-7/8 inch tubing and lifting the water to surface. Conductivity and production rates were closely monitored through June 4, 2010. Continued production of high TDS water continued while being monitored for rate until June 11, 2010. Comparative production rates showed modest increase. The tubing was pulled from the well on June 15, 2010.

With permission from the Board, the SDDNR was asked to permit the perforating of the Madison Transition Zone in the well behind casing. Approval was granted on June 17, 2010. On June 18, 2010 Goodwell Inc. again rigged up and perforated the casing from 2706 feet to 2780 feet with 90 Gram Frac Jets. (296 holes). The 2-7/8 inch tubing was again run into the well and air development performed to clean and asses the production rate. The well development finished on June 21, 2010 and the tubing was retrieved on June 22, 2010. The test pump was again run into 876 feet on June 23, 2010 and tested at a constant rate of 50 GPM for a period of 24 hours. Recovery data was gathered for total recovery through June 28, 2010. Final test results were then compiled for final pump design.



ENERGY LABORATORIES, INC. * 400 W Boxelder Rd * Gillette, WY 82718-5315
Toll Free 866.686.7175 * 307.686.7175 * FAX 307.682.4625 * gillette@energylab.com

ANALYTICAL SUMMARY REPORT

May 18, 2010

Wester-Wetstein and Associates
PO Box 2202
Laramie, WY 82073

Workorder No.: G10050277

Project Name: Full River Well

Energy Laboratories Inc. received the following 1 sample for Wester-Wetstein and Associates on 05/11/10 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Dat	Matrix	Test
G10050277-001	Fall River Well	05/04/10 14:45	05/11/10	Drinking Water	Metals by ICP/ICPMS, Drinking Water Metals Digestion by EPA 200.2

As appropriate, any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these tests results, please call.

Report Approved By:


Project Manager

Digitally signed by
Alyson T. Degnan
Date: 2010.05.18 11:44:41 -06:00



ENERGY LABORATORIES, INC. * 400 W Boxelder Rd * Gillette, WY 82718-5315
Toll Free 866.686.7175 * 307.686.7175 * FAX 307.682.4625 * glllette@energylab.com

LABORATORY ANALYTICAL REPORT

Client: Wester-Wetstein and Associates

Project: Full River Well

Lab ID: G10050277-001

Client Sample ID: Fall River Well

Report Date: 05/18/10

Collection Date: 05/04/10 14:45

Date Received: 05/11/10

Matrix: Drinking Water

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
INORGANIC COMPOUNDS, SDWA							
Arsenic	0.003	mg/L		0.001	0.01	E200.8	05/15/10 08:26 / eli-b

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



Workorder Receipt Checklist



G10050277

Login completed by: Misty Voegelé

Date Received: 5/11/2010

Reviewed by: Kasey Ruff

Received by: klr

Reviewed Date: 5/12/2010

Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes ☒	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☒
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☒
Chain of custody present?	Yes ☒	No ☐	
Chain of custody signed when relinquished and received?	Yes ☒	No ☐	
Chain of custody agrees with sample labels?	Yes ☒	No ☐	
Samples in proper container/bottle?	Yes ☒	No ☐	
Sample containers intact?	Yes ☒	No ☐	
Sufficient sample volume for indicated test?	Yes ☒	No ☐	
All samples received within holding time?	Yes ☒	No ☐	
Container/Temp Blank temperature:	11.0°C On Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☒
Water - pH acceptable upon receipt?	Yes ☒	No ☐	Not Applicable ☐

Contact and Corrective Action Comments:

None



Chain of Custody and Analytical Request Record

Page ____ of ____

PLEASE PRINT (Provide as much information as possible.)

Company Name: Wester-Welstein			Project Name, PWS, Permit, Etc. Full River Well			Sample Origin State:		EPA/State Compliance: Yes ☐ No ☐		
Report Mail Address:			Contact Name: Mike Moore			Phone/Fax: (301) 686-1125		Email:		
Invoice Address:			Invoice Contact & Phone:			Purchase Order:		Quote/Bottle Order:		
Special Report/Formats: ☐ DW ☐ POTW/WWTP ☐ State: _____ ☐ Other: _____ ☐ EDD/EDT (Electronic Data) Format: _____ ☐ LEVEL IV ☐ NELAC			Number of Containers Sample Type: A W S V B O DW Air Water Solids/Solids Vegetation Bioassay Other DW - Drinking Water Arsenic - Drinking Water			ANALYSIS REQUESTED SEE ATTACHED Standard Turnaround (TAT) R U S H			Contact ELI prior to RUSH sample submittal for charges and scheduling - See Instruction Page	
									Shipped by: Hand Cooler ID(s):	
SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)			Collection Date	Collection Time	MATRIX	RUSH LABORATORY USE ONLY			Receipt Temp 11.0 °C	
1 Full River Well			5/11/10	2:45 PM	W				On Ice: ☒ N	
2									Custody Seal On Bottle ☒ N On Cooler ☒ N	
3									Intact ☒ Y N	
4									Signature Match ☒ Y N	
5									40050277	
6										
7										
8										
9										
10										
Custody Record MUST be Signed			Relinquished by (print): Mike Moore		Date/Time: 5/11/10 16:23		Signature: [Signature]		Received by (print):	
			Relinquished by (print):		Date/Time:		Signature:		Received by (print):	
			Sample Disposal: Return to Client:		Lab Disposal:		Received by Laboratory:		Date/Time: 5/11/10 16:23	

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.



www.energylab.com
Analytical Excellence Since 1952

Helena, MT 877-472-0711 • Billings, MT 800-735-4489 • Casper, WY 888-235-0515
Gillette, WY 866-686-7175 • Rapid City, SD 888-672-1225 • College Station, TX 888-690-2218

ANALYTICAL SUMMARY REPORT

July 07, 2010

Wester-Wetstein and Associates

PO Box 2202

Laramie, WY 82073

Workorder No.: G10060612

Project Name: Full River Well

Energy Laboratories Inc. received the following 1 sample for Wester-Wetstein and Associates on 06/18/10 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Dat	Matrix	Test
G10060612-001	Full River Well Original Water	05/04/10 13:50	06/18/10	Aqueous	Metals by ICP/ICPMS, Drinking Water Alkalinity Anion - Cation Balance Conductivity Hardness Anions by Ion Chromatography pH Metals Digestion by EPA 200.2 Sodium Absorption Ratio Solids, Total Dissolved

This report was prepared by Energy Laboratories, Inc., 400 W. Boxelder Rd., Gillette, WY 82718. As appropriate, any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these tests results, please call.

Report Approved By:


Project Manager

Digitally signed by
Alyson T. Degnan
Date: 2010.07.07 11:18:00 -06:00



CLIENT: Wester-Wetstein and Associates
Project: Full River Well
Sample Delivery Group: G10060612

Report Date: 07/07/10

CASE NARRATIVE

It was confirmed on 06/18/10 with Mike Moore that this sample (Fall River Well Original Water) was a drinking water sample.

The balance calculation reported for Full River Well Original Water is 8.61%. The balance calculation is a quality control calculation. It is preferred by Energy Laboratories that this value fall between -5% and 5%, although in some cases this is not possible for various reasons. This sample contained a large amount of sediment that would have contributed to the cations upon digestion. All analytes have been re-analyzed for verification.

Thank You,

Alyson Degnan
Project Manager

LABORATORY ANALYTICAL REPORT

Client: Wester-Wetstein and Associates
Project: Full River Well
Client Sample ID: Full River Well Original Water
Location:
Samp FRQ/Type:
Lab ID: G10060612-001

Report Date: 07/07/10
Collection Date: 05/04/10 13:50
Date Received: 06/18/10
Matrix: Aqueous
Sampled By: Mike Moore

Analyses	Result	Units	RL	Qualifier	Method	Analysis Date / By
MAJOR IONS, DISSOLVED						
Bicarbonate as HCO ₃	201	mg/L	5	H	A2320 B	06/21/10 17:43 / mli
Chloride	26	mg/L	1	H	E300.0	06/22/10 02:58 / mli
Fluoride	0.6	mg/L	0.1	H	E300.0	06/22/10 02:58 / mli
Sulfate	40	mg/L	1	H	E300.0	06/22/10 02:58 / mli
Calcium	64	mg/L	1		E200.7	06/23/10 18:40 / eli-b
Magnesium	22	mg/L	1		E200.7	06/23/10 18:40 / eli-b
Potassium	4	mg/L	1		E200.7	06/29/10 16:05 / eli-b
Sodium	16	mg/L	2	D	E200.7	06/29/10 16:05 / eli-b
NON-METALS						
Alkalinity, Total as CaCO ₃	165	mg/L	5	H	A2320 B	06/21/10 17:43 / mli
Conductivity @ 25 C	495	umhos/cm	10	H	A2510 B	06/18/10 16:19 / adr
Hardness as CaCO ₃	250	mg/L	10		A2340 B	07/06/10 13:35 / clb
pH	7.81	s.u.	0.01	H	A4500-H B	06/18/10 16:19 / adr
Sodium Adsorption Ratio (SAR)	0.4	unitless	0.1		Calculation	07/06/10 13:35 / clb
Solids, Total Dissolved TDS @ 180 C	288	mg/L	10	H	A2540 C	06/22/10 15:11 / rap
DATA QUALITY						
A/C Balance	8.61	%			A1030 E	07/06/10 13:36 / clb
Anions	4.89	meq/L	0.01		A1030 E	07/06/10 13:36 / clb
Cations	5.81	meq/L	0.01		A1030 E	07/06/10 13:36 / clb

Report Definitions: RL - Analyte reporting limit.
 QCL - Quality control limit.
 D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 H - Analysis performed past recommended holding time.

Workorder Receipt Checklist



Wester-Wetstein and Associates

G10060612

Login completed by: Misty Voegele

Date Received: 6/18/2010

Reviewed by: BL2000\adegan

Received by: mav

Reviewed Date: 6/18/2010

Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes ☒	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☒
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☒
Chain of custody present?	Yes ☒	No ☐	
Chain of custody signed when relinquished and received?	Yes ☒	No ☐	
Chain of custody agrees with sample labels?	Yes ☒	No ☐	
Samples in proper container/bottle?	Yes ☒	No ☐	
Sample containers intact?	Yes ☒	No ☐	
Sufficient sample volume for indicated test?	Yes ☒	No ☐	
All samples received within holding time?	Yes ☐	No ☒	
Container/Temp Blank temperature:	21.8°C From Field		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☒
Water - pH acceptable upon receipt?	Yes ☒	No ☐	Not Applicable ☐

 Contact and Corrective Action Comments:

None



Page ____ of ____

Sample Origin

EPA/State Compliance

State: _____

Email:

Sampler: (Please Print)

2001/10/28

1510

Contact

Shipped by:

for cha

Cooler ID(s):

Instruc

Birth Year

0.8

5

Custody Seal

1

Intact

Match	Score	Time	Location
1	1-0	10:00	Stadium
2	2-1	11:00	Stadium
3	1-1	12:00	Stadium
4	0-0	13:00	Stadium
5	1-0	14:00	Stadium
6	2-0	15:00	Stadium
7	1-0	16:00	Stadium
8	0-0	17:00	Stadium
9	1-0	18:00	Stadium
10	2-1	19:00	Stadium
11	1-0	20:00	Stadium
12	0-0	21:00	Stadium
13	1-0	22:00	Stadium
14	2-1	23:00	Stadium
15	1-0	24:00	Stadium

[illegible]

--	--

FC

US

[illegible]

RV

AT

30

[illegible]

LA

Date/Time:

Originals:

—

10

10

5

series in order to c

an analysis requested.

This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

Visit our web site at www.energylab.com for additional information, downloadable resources, contact information and more.

2615-2



**DIVISION OF
ADMINISTRATION**
Public Health Laboratory

615 East Fourth Street
Pierre, South Dakota 57501-1700
605/773-3368 FAX: 605/773-6129
www.state.sd.us/doh/lab/index.htm

Submitter copy to:

* Page 1 of 2*
Date: 5/17/2012

DENR-ODW/PWSS-5112 *2316*
FOSS BUILDING
523 E CAPITOL
PIERRE, SD 57501

Spec #: E12EC001867
Subm #:
Lab: ENV CHEMISTRY
Tel #: (605) 773-3368

Source
FALL RIVER - NORTH

Date Rcvd: 5/4/2012
Time Rcvd: 1142
Date Coll: 5/3/2012
Time Coll: 0915
Spec Type: WATER
Coll By: FRIEDEMANN
Date Built: 2009
Location PUMPHOUSE
Site Location: PUMPHOUSE

Source Name NORTH WELL
Source Sampled: WELL
Source: WELL
Tap Location: PUMPHOUSE
Treatment: NONE
Type of Sample: RAW
Well Depth: 3500'
medium water

OK

Final Results

Nitrate	Nitrate-N	0.2 mg/L	Limit: 10.0
Fluoride		0.62 mg/L	
Chloride		10 mg/L	
Iron, Total		0.09 mg/L	
Manganese		0.02 mg/L	
Sulfate		58.6 mg/L	
SOLIDS, TOTAL DISS.		277 mg/L	
Standard Method 2540C			
PH		7.68 pH UNITS	
EPA Method 150.1			
Alkalinity-M		172 mg/L	
Alkalinity-P		0 mg/L	
Bicarbonate		210 mg/L	
Carbonate		0 mg/L	
Conductivity		461 umho/cm	
Calcium		52.8 mg/L	
Magnesium		19.0 mg/L	
SM3111B			
Hardness (calc)		210 mg/L	
Langlier Index		0.14	
Sodium		16.4 mg/L	

(continued)



**DIVISION OF
ADMINISTRATION**
Public Health Laboratory

615 East Fourth Street
Pierre, South Dakota 57501-1700
605/773-3368 FAX: 605/773-6129
www.state.sd.us/doh/lab/index.htm

Submitter copy to:

* Page 2 of 2*
Date: 5/17/2012

DENR-ODW/PWSS-5112
FOSS BUILDING
523 E CAPITOL
PIERRE, SD 57501

Spec #: E12EC001867
Subm #:
Lab: ENV CHEMISTRY
Tel #: (605)773-3368

Source
FALL RIVER - NORTH

Potassium

3.5 mg/L

Specimen Comments:
Error = 0.1/4.4

2615-2

Date: 12/8/2008
Observer: Rick Baker

As of today they had finished placing the top 1000 feet of production casing and grouted in place. They are going to continue air drilling using the hammer bit, and should start drilling later today. They expect fairly good production as they move through the Spearfish formation. We reviewed the geologic column a little bit, and I left them a more detailed column description. I discussed the Spearfish a little bit with Bob Buckner and the possibility of voids in the lower gypsum sections, possible loss of circulation, etc. Also, mentioned the Minnekahta beneath the Spearfish as being a nice marker bed. Bob also gave me a copy of the geophysical log today, although I had mentioned to him that Goodwell had sent me one directly.

Date: 12/9/08
Observer Alex Fisher

They were at about 1750 when I got on-site today at about 10:00. They were still in the Spearfish Fm drilling with air/foam and the hammer bit. Production appeared pretty good with poor to moderate circulation. Discussed with Mitch that gyp might be the problem with circulation. Bob arrived on site as I was about to leave at 11:00, and I discussed where we thought we were with him. I left him the log that Brandon had put together which went down to 1000 feet. Bob and Mitch mentioned that they definitely got into the Spearfish Fm at 1300 feet. Bob thought that the well was going to be much deeper than thought, since we hadn't hit the Minnekahta yet. I mentioned that we should be in it very soon and that I wasn't sure that we were going to be far off our depth estimate, if at all. He still seemed to think we'd end up going deeper. He asked if I could stick around for a while to see if I could help them identify the top of the Minnekahta. I said I could, and ran into Hot Springs for quick lunch. By the time I got back at about 12:15, they were clearly in the Minnekahta as evidenced by the color of the discharge mist/fluid and the last cutting sample from about 1826 feet. Bob wasn't on-site, so I collected all the samples and let the Mitch and the guys know we had hit the Minnekahta. I called Bob when I got back to Rapid City and let him know as well.

Date: 12/11/08
Observer: Alex Fisher & Rick Baker

Visited the site today, as the drillers had reached approximately 2450 ft and had stopped drilling. It was their understanding that they were to stop here and wait for further instructions. We went to the site to gather samples and help determine what formation they were in at that depth. Samples from 2450 ft were a shale, so it didn't appear that they were in the Madison yet. We indicated to the crew on-site, Dallas, Mitch, Mike, that we weren't probably in the Madison yet. Bob wasn't on site.

Date: 12/15/08
Observer: Alex Fisher

We received a call from the Fall River Water Users District that the drillers had reached 2750 ft, plus or minus. I traveled to the site to collect samples and visit with the crew. When I arrived, the crew was not on-site, so I collected the samples that were sitting on the table in the job trailer. There were only about 7 or 8 samples, so I checked near the discharge of the diverter for more samples. I returned the samples to the office and Brandon began logging them. The bottom sample that we have to date is from 2632 ft, so if they are at 2750 ft, there are some missing samples. The sample from 2632ft is a black shale, so they still are not in the Madison at that depth.

Date: 12/31/08
Observer: Alex Fisher

After the drillers had stopped at approx 2630 in a black shale to discuss contractual procedures, since they were not yet in the Madison as anticipated by this depth. During this time, the weather turned very cold, and the drillers decided to wait until the weather broke to resume. Bob Buckner indicated that they would start up again after Christmas. We placed a call to Bob after Christmas and he said there would be a crew on site drilling on the 31st, however when I arrived on-site, the crew was planning to wait until New Years Day to start drilling.

Date: 1/2/09
Observer: Alex Fisher & Brandon Silver

Brandon and I returned to the site to check drilling progress and collect any new samples. The drillers were working their way back into the hole as they had left it full of mud during the down time. They told us that they should be back drilling by Saturday.

Date: 1/3/09
Observer: Brandon Silver

Tried to call Bob before driving to the site, but no answer. So drove to the site to check progress. Bob said the mud pump had broken down and it would take 3 to 5 days to fix. Left phone numbers with Bob to call once they started again and left the site.

Date: 1/7/09
Observer: Alex Fisher

Received a call today from Dave Dunbar indicating that the drillers had called him and were drilling again. They told Dave that they were out of the black shale and into a sandstone type material. I drove to the site to inspect and collect the samples. Bob said they got out of the black shale at about 2640 or so and were currently at approximately

2720 and had been in the same sandstone type material with only slight color changes to this depth. Dave and Jim from Fall River stopped by, and I mentioned to them and Bob that just visually looking at the cuttings it appeared to be a pale red to reddish brown sandstone, but I would like to take them back and wash the mud off and look closer. Upon returning to the lab I washed the samples and applied some acid. The cuttings effervesced strongly and when inspected under a magnifying glass appeared exhibit fracturing and other visual appearances of a limestone. I asked Rick's and Brandon's opinion and we agreed that based on the stratigraphy of the well and the characteristics of these samples, these were samples from the Madison. I called Bob Buckner and let him know that based on what we are able to observe, we believe the top of the Madison to be at approximately 2640 or so, basically where Bob mentioned that they got out of the black shale. Bob said that they should probably set casing then, and said he'd call his casing people to see when they could get it to the site. I also mentioned that we thought it would be beneficial to hang the casing 30 to 40 feet into the Madison.

Date: 1/8/2009

Observer: Alex Fisher

Buckner had the well logged and the logger (Goodwell) told him that they are definitely not in the Madison, rather they are in what is called the Bell Sands. The logger said this is a common misconception as the Bell Sands are not universally present in the Black Hills, just primarily in the southern and southwestern parts of the hills. He had another log from a similar Madison well that the stratigraphy closely correlated to our well. According to that log, the Bell Sands should be several hundred feet thick, and this is the estimate given by the logger. Crew stopped drilling left the site after the well was logged, but Buckner planned to continue drilling below this depth when they returned.

Date: 2/17/09

Observer: Alex Fisher

Received a call from Dave Dunbar with Fall River Water. Says driller is at about 3100ft and still not in the Madison. Evidently no samples obtained from 2745 to 3276. Sample at 3276 appears to be SS. Wrote to Dr. Davis for advice.

Date: 2/21/2009

Observer: Alex Fisher

Got a call from the drillers wanting someone to check the cuttings at about 5pm. They thought they had a change and were at about 3475. went to the site and observed the cuttings, which were a black sand with some white grains. Not a limestone. Driller said they were not showing any water production but may be mixing with formation water as the mud was coming back up thinner. But no artesian pressure. They continued to drill. Drilling rate is about 4-5 ft per hour, slow.

Date: 2/23/2009

Observer: Brandon Silver

Traveled to the site tonight at about 7pm. Driller just wanted someone to check cuttings. Same cuttings as on the 21st. They were at about 3495. same drilling rate. Told them it was not the Madison. They continued to drill.

Date: 2/25/09

Observer: Alex Fisher

Got a call from the drillers that they were at 3515 and tripping out of the hole to mob to a different job. No Madison Fm or water at this depth. They will be back to finish up this hole later.

Date: 2/26/09

Observer: Alex Fisher

Got a call from Dave Dunbar (to Al) that the well was logged and indicated that the driller had drilled through the Madison and past. Logger said the Madison was from about 2834 to 3112. Called the logger (Tim with Goodwell) and visited a bit with him. He's sending a copy of the log over. Says Madison is plain as day on the logs, and he's not sure how it was missed by the drillers. By 3200 feet they were in a crystalline rock, presumably after penetrating the Deadwood and the Englewood-Whitewood-Winnipeg sequence. At this date, the total depth is about 3515. approximately 400 ft past the bottom of the Madison.

Drillers had left the site after the 2nd logging at about 2750. We weren't aware that they were back drilling until we received a call from Dave Dunbar on Feb 17th to say they were at 3100 feet and they didn't think they were in the Madison yet. so we're not sure of the actual date that drilling resumed. Also during this time, no samples were obtained. The last samples we have are from about 2750, which show Bell Sands. the next Sample we have is from 3276, which completely misses the Madison Fm. Wrote to Dr Davis and stopped in to visit about the situation. he expressed concern about producing from the Deadwood Fm on account of radioactivity and dissolved iron, but he mentioned that mixing with Madison water often dilutes these constituents to acceptable levels.

Date 3/5/09

Observer: Alex Fisher

Met on-site with Buckner, Dunbar, Dave, Tim Beckett from Goodwell, Tim Barrett from TYVO/Big Cat/WesterWetstein (petroleum engineer) to discuss completion options for the well. Main problem is the fact that we have 400ft of open hole below the zone we wish to case. Discussed fillin the open hole with sand up to top of Madison, casing , then washing the sand out. But that would be labor intensive. There also exist tools for such situations, but they can be spendy. Buckner also had some ideas and will price out the best option to get the well cased about 30-40ft into the Madison. Also discussed developemetn of the well. Concensus was to case the well then pump from the existing open hole, including the Madison and Deadwood Fms. Test water quality and flow rates.

If flow rates are less than ideal but quality is good, then the option is to stimulate via acid job or frac, most likely acid first. Barrett mention that fracs are not always 100% effective in the Madison for several reasons. If quality is down due to the Deadwood water, we would then cement off the portion of the hole below the Madison and produce only from the Madison. Still may need stimulation in this scenario. Biggest hurdle at this point is the casing. Shared all information with Dr Davis to keep him in the loop.

Fall River Water Users District
O'Brian Well

Formation Log

RECEIVED
DEC - 4 2009
W. RIGHTS
GRAM

	DEPTH	
	FROM	TO
Brown Colluvium	0	36
Dark Gray Skull Creek Shale	36	160
Pale Yellow Inyan Kara	160	340
Dark Gray Morrison	340	505
Yellow Unkpapa Sandstone	505	515
Dark Gray Sundance	515	970
Reddish Brown Spearfish	970	1065
Brown Some White Spearfish	1065	1100
Reddish Brown Spearfish	1100	1355
Brown Minnekahta very weathered (gravelly)	1355	1405
Reddish Brown Opeche	1405	1565
Reddish Minnelusa	1565	2645
Red & Brown Minnelusa Limestone	2645	2715
Brownish Red Minnelusa Sandstone	2715	2805
Reddish Brown Minnelusa Dolomite	2805	2840
Reddish Brown with Flecks of White Dolomite	2840	2970
Very Red Dolomitic Rough Drilling	2970	2995
Brownish Red Pahasapa	2995	3220
Very Rough & Hard Drilling Deadwood	3165	3515

Cement Plug from 3205' back to 3120'

Air Drilled from 0' - 2,646'

Mud Drilled from 2,646' - 3,515'

WESTERN WATER DEVELOPMENT
P.O. Box 1670
Redmond, OR 97756

PROJECT

Fall River WTR DIST

CLIENT

OBSERV # 1

DESCRIPTION

JOB NO.

DATE

BY

SHEET NO. OF



**Wester
Wetstein &
Associates**
Consultants in Engineering and Hydrogeology

805 Plaza Court

P.O. Box 2202

Laramie, WY 82073

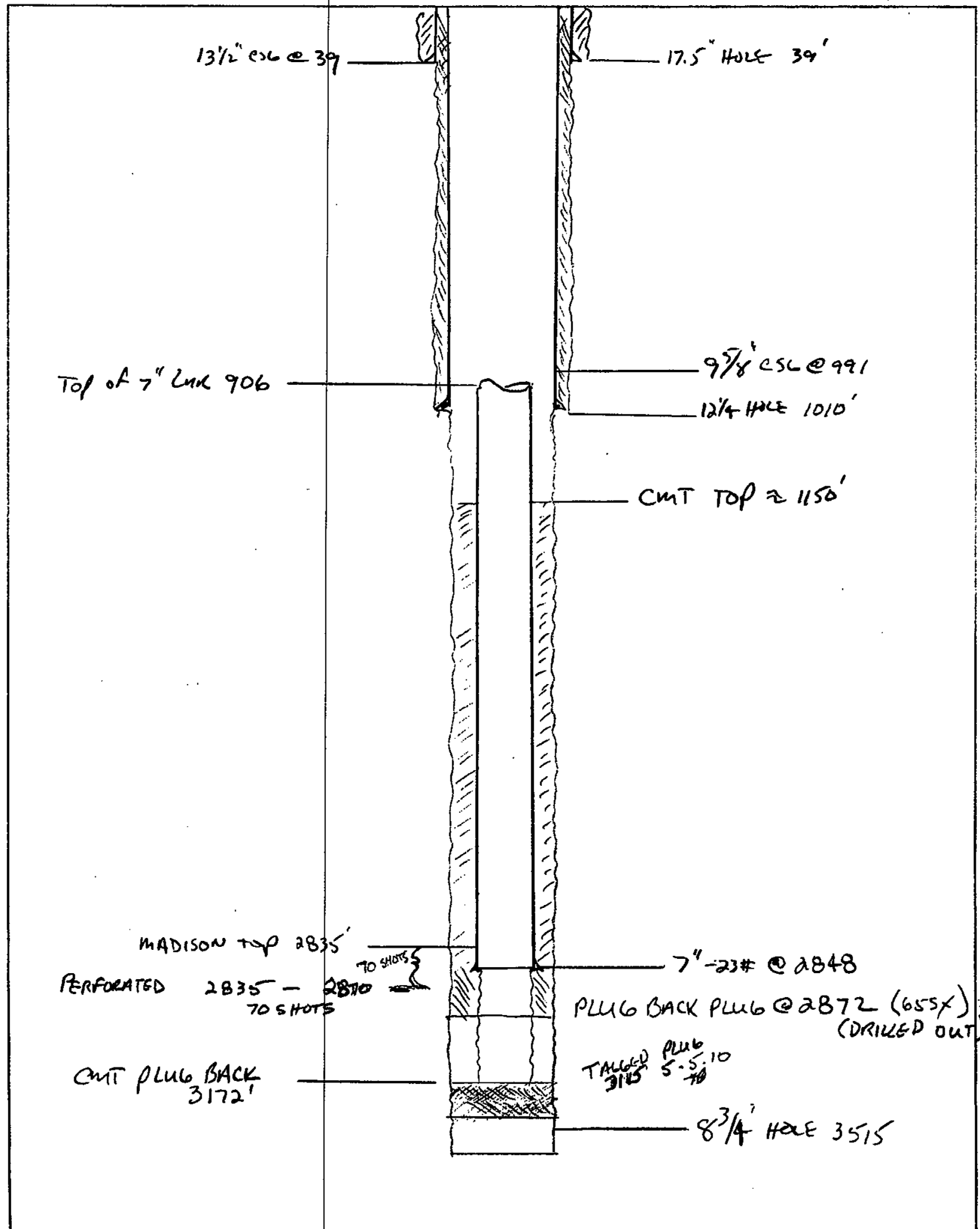
(307) 742-9220

201 W. Lakeway

Suite 1000

Gillette, WY 82718

(307) 686-1125



07-92

Date: _____

PROJECT: New water well - Fall River Water Users District		GEOLOGIC LOG OF BOREHOLE 1  3700 STURGIS ROAD RAPID CITY, SOUTH DAKOTA 57702		BORING LOCATION: Buffalo Gap GROUND ELEVATION: _____ DATUM: _____ BORING DIAMETER: 5 7/8 inches COLLAPSE DEPTH: _____ FILL DEPTH: No Fill Obsv	
LOCATION: Buffalo Gap, SD					
PROJECT #: 998436.14					
DATE STARTED: 11/20/08 COMP.: _____					
CONTRACTOR: Western Water Resources					
DRILL METHOD: Rotary w/ Air&Foam Circ.					

ELEVATION / DEPTH	WATER	GEOLOGY GRAPHIC	SAMPLE TYPE #	USCS	DESCRIPTION	NM (%)	DD (pcf)	LL (%)	PI (%)	QU (psf)	phi	Swe (%/ks)
0		Colluvium 		GW-GC	Colluvium, Stratified Gravels and Clays.							
		Skull Creek Shale 		CH**	Dark Gray to Dark Olive Gray Shale, Containing Iron and Carbonate Concretions.							
-200		Inyan Kara Group 		SS	Fine Grained Yellow to Pale-Yellow Sandstone with Thick Gray Shale Interbeds (10+ ft).							
		Morrison Formation 		CH**	Dark Olive Gray Shale with Thin Fine Grained, Dark Gray Sandstone							
-400		Unkpapa Sandstone Sundance Formation 		SS CH**	Massive, Fine Grained, Yellow to Pale Yellow Sandstone. Dark Gray to Dark Olive Gray Shale with Thick Dark Gray and Red Sandstone Interbeds.							
-600												
-800												
-1000												
-1200												
-1400		Spearfish Formation 		CH**	Red Shale with Fine Grained, Red Sandstone Interbeds.							

SEE ATTACHED KEY FOR ABBREVIATIONS, NOTES & DESCRIPTIONS

[illegible]

Sheet 2 of 2

KEY TO SYMBOLS

Symbol Description

Strata symbols



**Well graded gravel
with clay**



Shale



Sandstone



Limestone



Schist

Misc. Symbols



Boring continues

Notes:

1. The exploratory borings were drilled on the dates presented on the boring logs. Please refer to the attached Soils Classification System Chart for more detailed explanations of the soils and their properties.
2. The Geologic Logs of the Boreholes and related information depict only the conditions and materials encountered at the specific boring location and at the particular time designated on the Logs. Soil conditions at other locations will likely vary from those indicated at each specific boring or sample location. The given depths of material changes & the sample depths shown are approximate. Variations may occur.
3. These logs are subject to the limitations, conclusions, and recommendations in this report.
4. The numbers adjacent to the SPT sample symbols are the blows/interval and represent the number of blows required to drive the 1" I.D. split spoon sampler the given distance into the soil with a 140# automatic hammer that drops 30". The SPT test is performed for a length of 18". The "N" value for each given SPT is the number of blows required to drive the 1" I.D. sampler into the last 12 inches of soil.
5. The Results of some tests conducted on samples recovered are reported on the Borehole Logs. Abbreviations used are:
 NM = Natural Moisture Content of the Soil (in percent).
 DD = Dry Density of the Soil (in Pounds per Cubic Foot).
 LL = Atterberg Liquid Limit of the Soil (in percent).
 PI = Atterberg Plasticity Index of the soil (in percent)
 phi = Internal Angle of Friction (in degrees)
 QU = Unconfined Compressive Strength (in Pounds per Square Foot).
 Swell = (%) Percent Swell Against 100psf Surcharge; (ksf) Maximum Swell Pressure Generated by Material.

**North Well Pump Test
8/5/2011 -8/9/2011**

Date	Time	GPM	Approximate Level below grade	Gallons Produced
8-5-2011	7:59 A.M. Start	90	508.4 ft	
8-7-2011	8:44 A.M.	40	1137.55	126,000
8-9-2011	7:15 A.M. End	40	1137.55	110,000

Well Test Summary

The static level May 5, 2010 was found to be near 140 feet below ground before any pumping was conducted from the well. Well was run periodically before the pump test was conducted. The well had a shutdown time before the test of 24 hrs. The testing period was for 95.25 hours and averaged a flow rate of 41.29gpm.



FALL RIVER WATER USERS DISTRICT

PO BOX 321
ORAL SD 57766
(605)424-7648
keith.frwud@goldenwest.net

August 6, 2012

Jeffrey C. Hughes, Hydrologist
National Park Service, Water Resources Division
1201 Oakridge Dr. Suite 250, Fort Collins, CO 80525

Dear Mr. Jeffrey C. Hughes:

I have included as much info on the Madison Well 2615-2, which I could dig up. Included are the well logs, completion report, inspection report, and basic pump test conducted on 8/5/11- 8/9/11. I did find a leak in the airline that is attached to the pump and repaired it so if you request further drawdown testing we could complete that. If there is any other information that you think would be needed or helpful let me know. I have contacted USGS to complete the water analysis required and when that is complete I will get that info forwarded to you. I hope we can work together in the future to serve and protect the needs of the National Parks and yet provide necessary water to local residents.

Please feel free to contact me with any questions or concerns.

Sincerely,

Keith Neugebauer
Manager

Keith Neugebauer

From: Kaylea <frwud1@goldenwest.net>
Sent: Monday, July 25, 2011 10:55 AM
To: keith.frwud@goldenwest.net
Subject: FW: North Well House Project
Attachments: CCF07222011_0000.jpg

From: Mike Moore [mailto:m_moore@wester-wetstein.com]
Sent: Friday, July 22, 2011 2:22 PM
To: Fall River Water Users District
Cc: Larry Wester
Subject: North Well House Project

Keith,

On May 5, 2010 we found the static water level to be approximately 140 feet below ground. Prior to replacing the submersible pump the pump was set at 1432.4 feet and the end of the airline at 1426.3 feet below the top of the pitless. As a replacement pump was installed these depths may vary but are not expected to do so significantly. To determine water level do the following:

Water level above pump intake (ft) = (pressure gauge reading in psi x 2.31) + 6.1 (distance in ft from airline end to pump intake)

Water depth below top of pitless = 1426.3 ft – pressure gauge reading x 2.31

For a static depth of 140 ft the pressure reading would be $(1426.3 - 140)/2.31 = 556.8$ psi

Let me know if I can be further assistance.

Thanks,

Mike Moore

Report of Examination of Works and/or Application of Water to Beneficial Use For Permit No. 2615-2

I have this day, **February 1, 2016**, made a thorough examination of the water use system constructed by **Fall River Water User District, P.O. Box 321, Oral, SD 57766** of Permit No. **2615-2**, bearing the priority of **5/16/2005** authorizing the diversion of **0.67** cu. ft. per second of water from 1 well for **rural water system** purposes, in **Fall River** County.

Inspection contact & relationship to permit holder, if applicable: **Keith Neugebauer, District Manager**
605-424-7648

A. Works used to divert the water:

Well Information:

- 1) Well Drilling Firm: Western Water Development Corporation (5/27/09)
- 2) No. of Wells 1
- 3) Depth(s) 3,515 feet
- 4) Well log is available Yes

Casing:

- 1) Diameter 13 3/8" (+1 to 38.5' surface casing)
9 5/8" (+2 to 997')
7" (903 to 2849')
- 2) Length casing to total depth of 2,849 feet
- 3) Type Steel

Screen:

- 1) Type N/A
- 2) Length N/A feet
- 3) Static water level 131 feet (5/27/09)

Pump:

- 1) Make Grundfos
- 2) Model 85S300-24
- 3) Size 6"
- 4) Capacity 30 GPM (metered flow)
- 5) Horsepower rating 30 hp

B. Works used to transport water to place of use: This well is designated the O'Brian Well and satisfies demands on the northern portion of the Fall River Water Users system with the excess delivered to a 180,000 gallon storage reservoir located at the well site. The system is isolated from the southern portion via a manually controlled valve.

C. Works used to apply water to beneficial use:

Fall River Water Users District Rural Water System

D. Compliance with Permit Requirements:

- 1) Permit qualifications being abided by Yes

Monthly water withdrawal figures have been sent to the National Park Service. Aquifer test data for well test run from April 5 – April 9, 2010 was transmitted to NPS. NPS did not require FRWUD to have USGS collect and analyze water samples for chemical constituents since the well was perforated in the Madison aquifer as well as the aquifer above the Madison and there would be no way to differentiate the contributions of each.

- 2) Exceptions to compliance are: None

E. Condition and Location:

1. The system is in good condition with the point of diversion located as follows:
**SW ¼ SW ¼ S1, T7S, R6E (310 ft. east and 790 ft. north of the SW corner),
N 43.465285° W 103.36100°**
2. The works are capable of diverting and conveying to the place of use .07 cu. ft. per second (30 gpm) of water which is to be used for **rural water system use** and the license should be issued for **.07 cfs**.
3. All structures, wells and lands on map –**No, only the well and storage reservoir location are shown. All of the other water system details are available in other documents.**

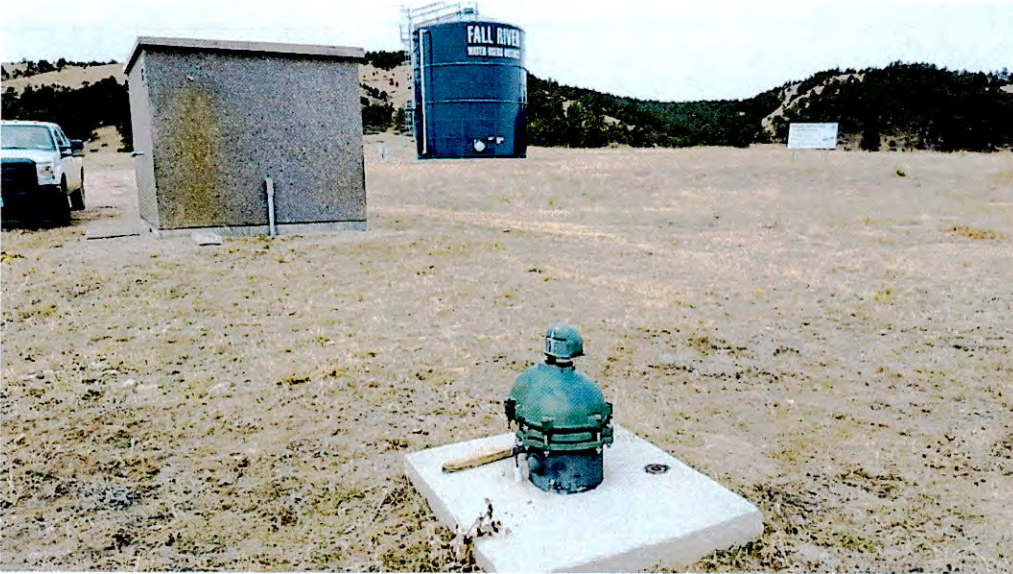
F. Comments or other permit(s) associated with the project:

The well was test pumped at a constant rate of 50 gpm in June of 2010 but production has been slowly decreasing since that time. Current well capacity is 30 gpm as register by digital flow meter. It is not likely any further attempt will be made to increase production on this well.



Steven Quissell
Water Rights Inspector
DENR, Water Rights Program

Date report completed: February 9, 2016

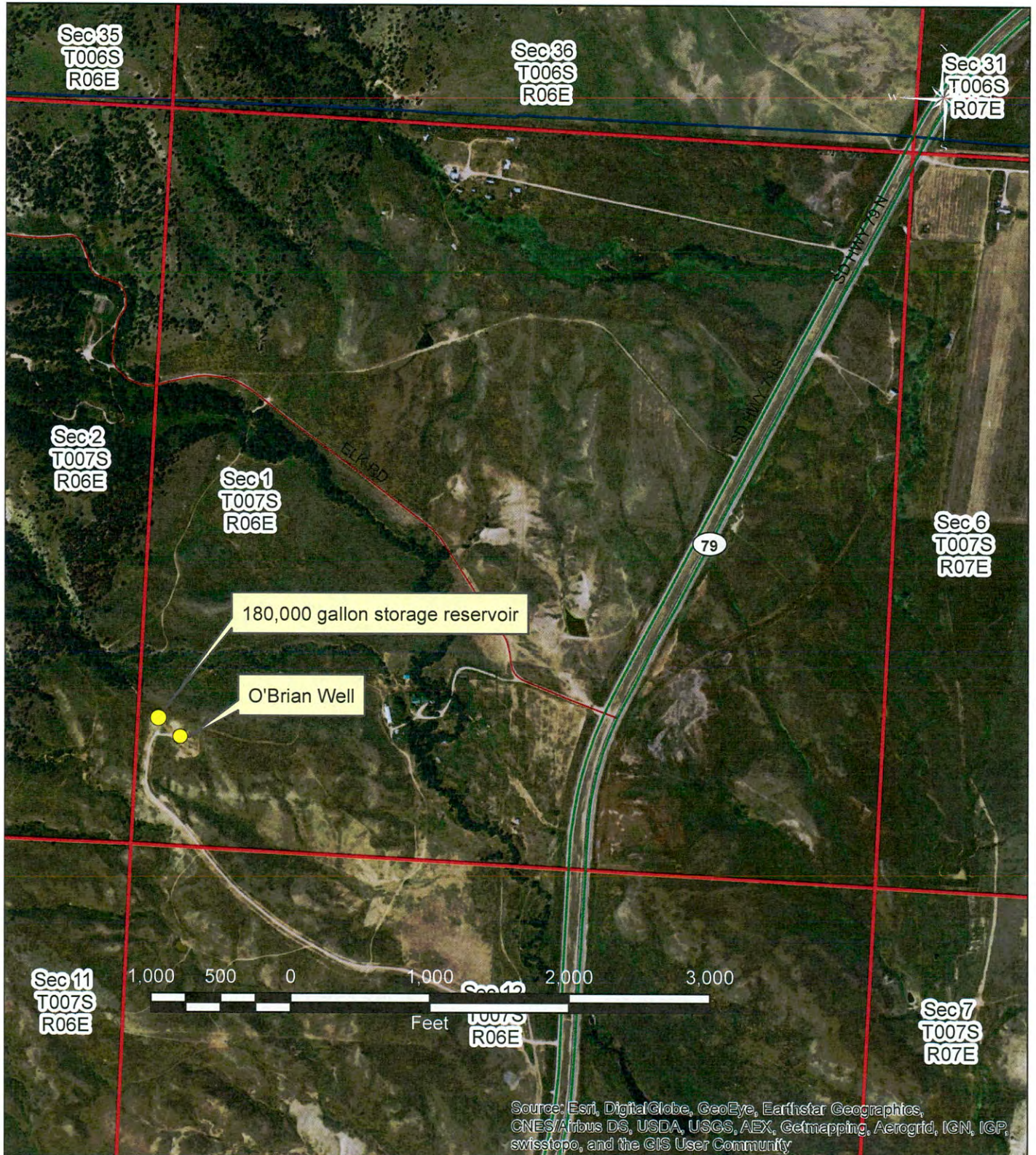


Fall River Water Users "O'Brian" well with 180,000 gallon reservoir and Well house



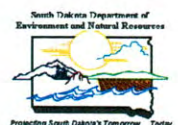
Manifold installation in well house

Water Right # 2615-2
Fall River Water Users District
2/1/2016



Steven Quissell

Steven Quissell
Water Rights Inspector
DENR Water Rights Program





DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182

denr.sd.gov

MAR 23 2016

2615-2
2629-2

Fall River Water Users District
c/o Keith Neugebauer, District Mgr
PO Box 321
Oral SD 57766

Dear Mr. Neugebauer:

Enclosed are Water License Nos. 2615-2 and 2629-2. These are the final water right documents completing the process of obtaining a Water Right. Also, included with each license is a map prepared by the staff engineer who conducted the investigation.

The inspection of No. 2615-2 found the permit was not developed to its fullest extent. Subsequently, an acre-foot volume of water reverts back to Future Use Permit No. 2560-2. All future use permits are subject to a seven year review by the Water Management Board. You will soon be notified by letter what is required for this review.

For your information SDCL 46-6-27 requires that if the owner of an existing well, such as the wells authorized by Water Right Nos. 2615-2 and 2629-2, constructs a replacement well and does not plan to use the old well, the old well is considered abandoned and must be plugged. Also, any well that is being used or is not considered abandoned must be valved and controlled, if flowing, or sealed and capped so that no leaking occurs either underground or at the surface.

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

Sincerely,

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

enclosures

STATE OF SOUTH DAKOTA

WATER LICENSE NO. 2615-2

(1) Fall River Water Users District, c/o Keith Neugebauer, District Manager, PO Box 321, Oral SD 57766 made Application No. 2615-2, April 12, 2007 for a water permit to divert 0.67 cubic feet of water per second (400 acre-feet annually) from one well (Madison Aquifer), Fall River County, South Dakota for rural water system use purposes. Permit No. 2615-2, with a priority date of May 16, 2005 (established by Future Use Permit Nos. 2560-2, 2560A-2 and 2560B-2) was approved July 11, 2007 and issued to the applicants for diversion of water with construction of the described water supply system to be completed on or before July 11, 2012 and for the application to beneficial use of water on or before July 11, 2016.

(2) The water supply system has been completed and water applied to beneficial use in accordance with South Dakota State Law. Pursuant to South Dakota Codified Law 46-5-30.1, the holder and/or owner of Water Right No. 2615-2 is issued a license, bearing a priority date of May 16, 2005 to appropriate 0.07 cubic feet of water per second (42 acre-feet annually) from one well (Madison Aquifer) for rural water system use.

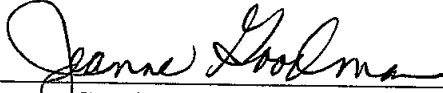
The diversion point is located: 310 feet east and 790 feet north of the SW corner of Section 1-T7S-R6E (SW 1/4 SW 1/4). The district serves users in Fall River and Custer Counties.

(3) This license is subject to South Dakota Water Law, any limitations or conditions listed in Water Permit No. 2615-2 including the following qualifications:

1. In accordance with SDCL 46-1-14 and 46-2A-20, Permit No. 2615-2 is issued for a 20-year term. Pursuant to SDCL 46-2A-21, the 20-year term may be deleted at any time during the 20-year period or following its expiration. If the 20-year term is not deleted at the end of the term, the permit may either be cancelled or amended with a new term limitation of up to twenty years. Permit No. 2615-2 may also be cancelled for nonconstruction, forfeiture, abandonment, or three permit violations pursuant to SDCL 46-1-12, 46-5-37, 46-5-37.1 and ARSD 74:02:01:37.
2. The well approved under this Permit will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner under this Permit shall control his withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights. In constructing the well authorized by Permit No. 2615-2 particular attention is to be given to the flows of Beaver Creek Springs, Cascade Springs, and Hot Springs, so that those preexisting flows are not adversely impacted.
3. The well authorized by Permit No. 2615-2 shall be constructed by a licensed well driller and construction of the well and installation of the pump shall comply with Water Management Board Well Construction Rules, Chapter 74:02:04 with the well casing pressure grouted (bottom to top) pursuant to Section 74:02:04:28. ***The well was drilled by Western Water Development Corporation in 2009. A copy of the log is on file with the Water Rights Program.***
4. Fall River Water Users District shall meter its water use and record its monthly water withdrawals from the well. The District shall transmit the water withdrawal values recorded each month to the DENR and the NPS by no later than March 1 of the following year. The copy of this report for the NPS should be sent to: Chief, Water Rights Branch, National Park Service, Water Resources Division, 1201 Oakridge Dr., Suite 250, Fort Collins, CO 80525. ***This information has been submitted to DENR yearly.***

(continued)

5. Fall River Water Users District shall perform a flowing-well or constant-rate aquifer test on the production well that is of sufficient duration to define the transmissivity of the aquifer system, and to provide the test procedures and data collected during the test to the NPS. The data will include the static water level (or shut-in head) prior to pumping, the time pumping begins, the pumping rate, drawdown versus time in the pumping well during the pumping and recovery periods, and the time pumping stops. A copy of the well completion report and well log shall be transmitted to the NPS at the address provided in qualification No. 4.
6. Fall River Water Users District shall collect and analyze water samples from the well for the constituents listed in attached Appendix A. The U.S. Geological Survey or a certified laboratory to conduct public drinking water analysis will be contracted to analyze the samples. The results will be transmitted to the NPS at the address provided in qualification No. 4.



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

MAR 23 2016
date



Water Rights Program - File Documentation

NAME: Fall River Water Users District

ADDRESS: Oral SD

DATE: 3-16-16 **COUNTY:** Fall River

RE: Water Remaining in Future Use Permit No. 2560-2

COMMENTS:

Future Use Permit No. 2560-2 authorized 750 acre-feet Priority date: 5-16-05

Permit No. 2615-2 authorized 400 acre-feet Priority date: 5-16-05

Future Use Permit No. 2560-2 350 acre-feet remaining

Permit No. 2629-2 authorized 350 acre-feet Priority date: 5-16-05
authorized 374 acre-feet Priority date: 3-5-08

Future Use Permit No. 2560-2 -0- remaining

Water Right No. 2615-3 licensed for 42 acre-feet Priority date of 5-16-05
400 AF – 42 AF = 358 AF reverting back to future use

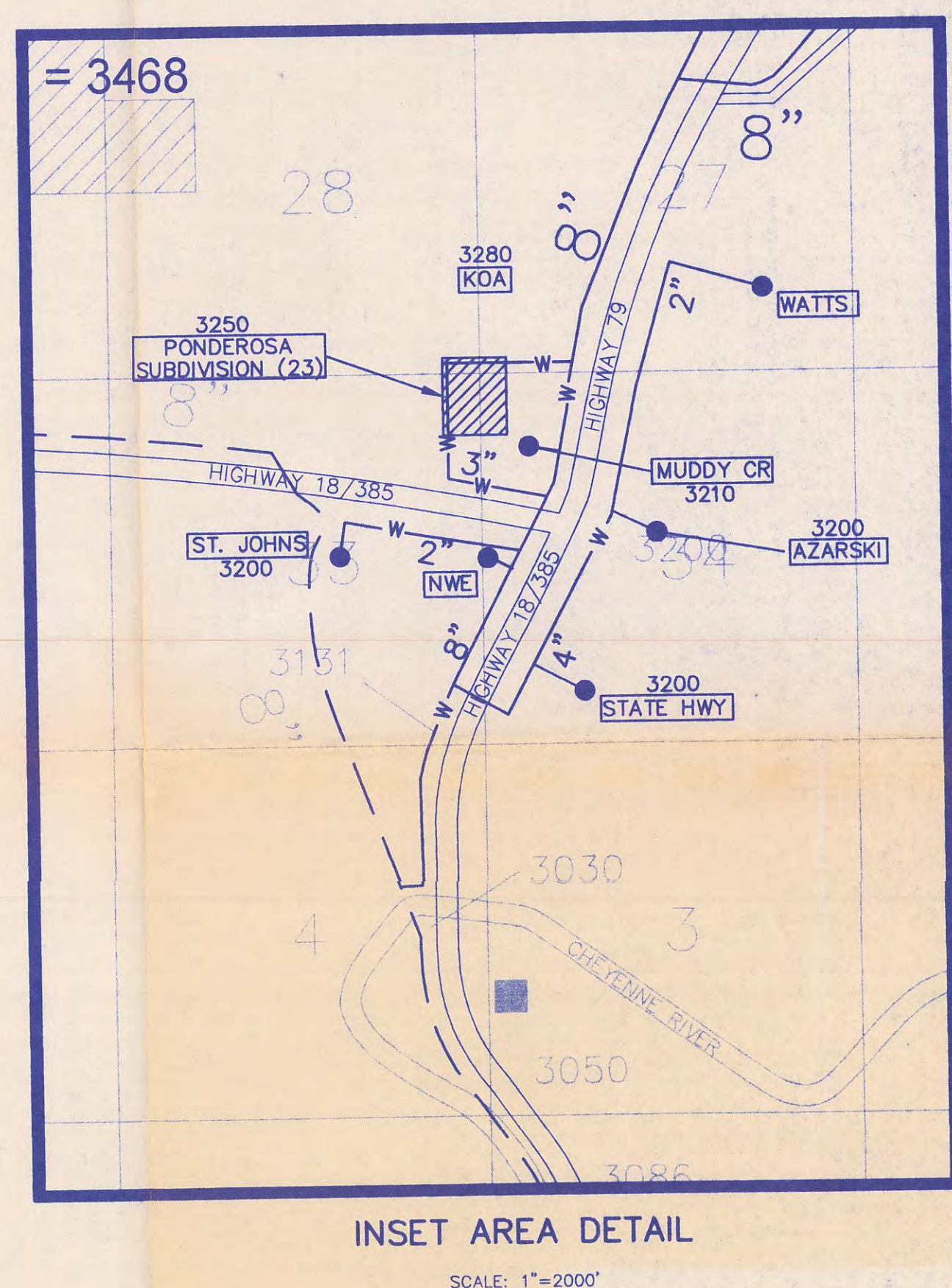
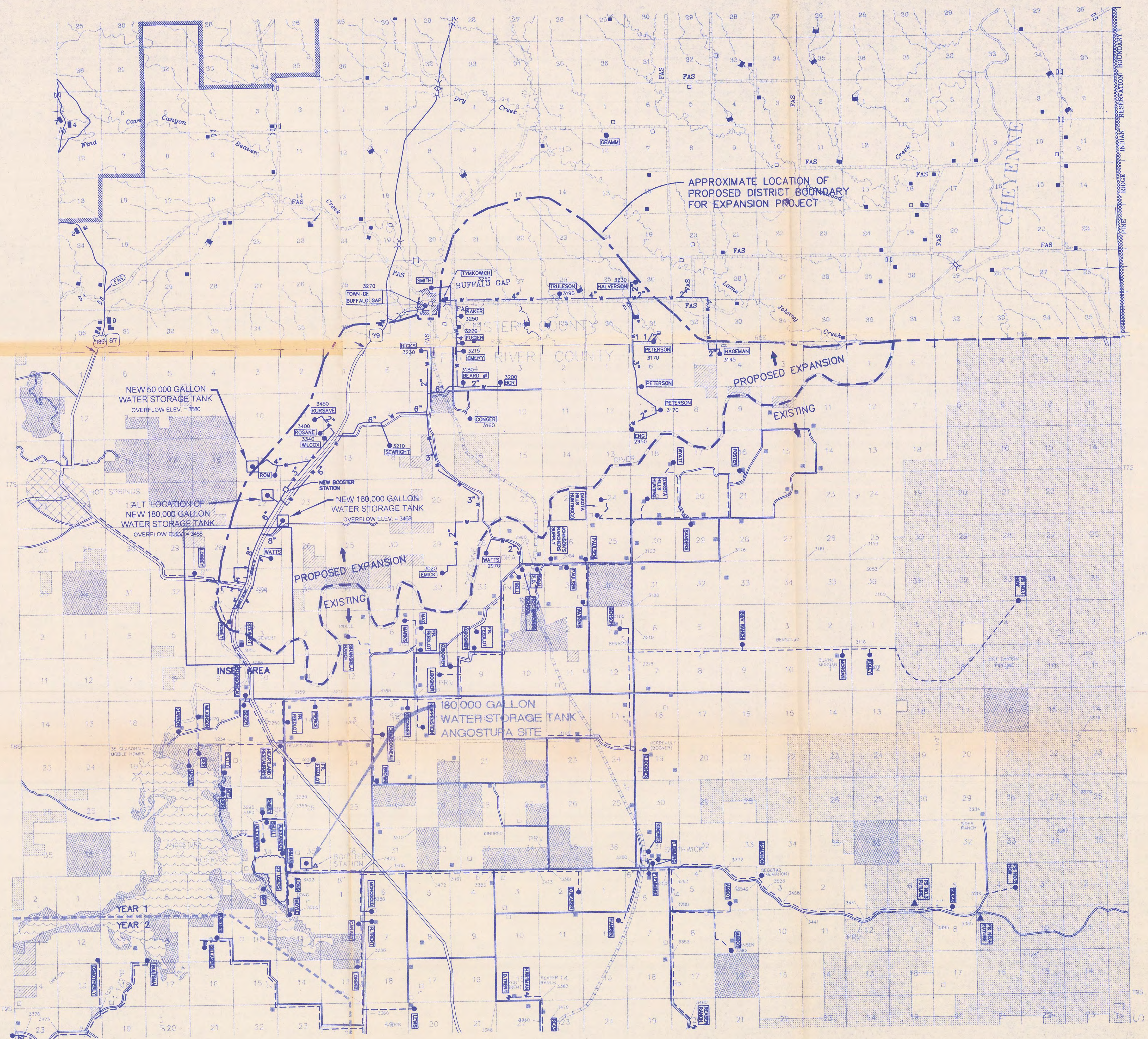
Water Right No. 2629-2 licensed for 350 acre-feet Priority date of 5-16-05
licensed for 174 acre-feet Priority date of 3-5-08

Future Use Permit No. 2560-2 358 acre-feet remaining

Future Use Permit No. 2560-2 should be scheduled for the 7 year review by the Water Management Board.

Karen Schlaak

Karen Schlaak
Water Rights Program



F M G, Inc.
3700 Sturgis Road
Rapid City, SD 57702-0317
(605) 342-4105 FAX (605) 342-4222



EMG File No: 8436 04

Location:

Surveyed By: _____

Date: _____

Designed By: _____

Checked By: AD

[illegible]

NORTH AREA EXPANSION FEASIBILITY STUDY
FALL RIVER WATER USERS DISTRICT
FALL RIVER COUNTY, SOUTH DAKOTA

OCTOBER 2001

10/29/02

5/20/05

Revision / Date

Sheet Name

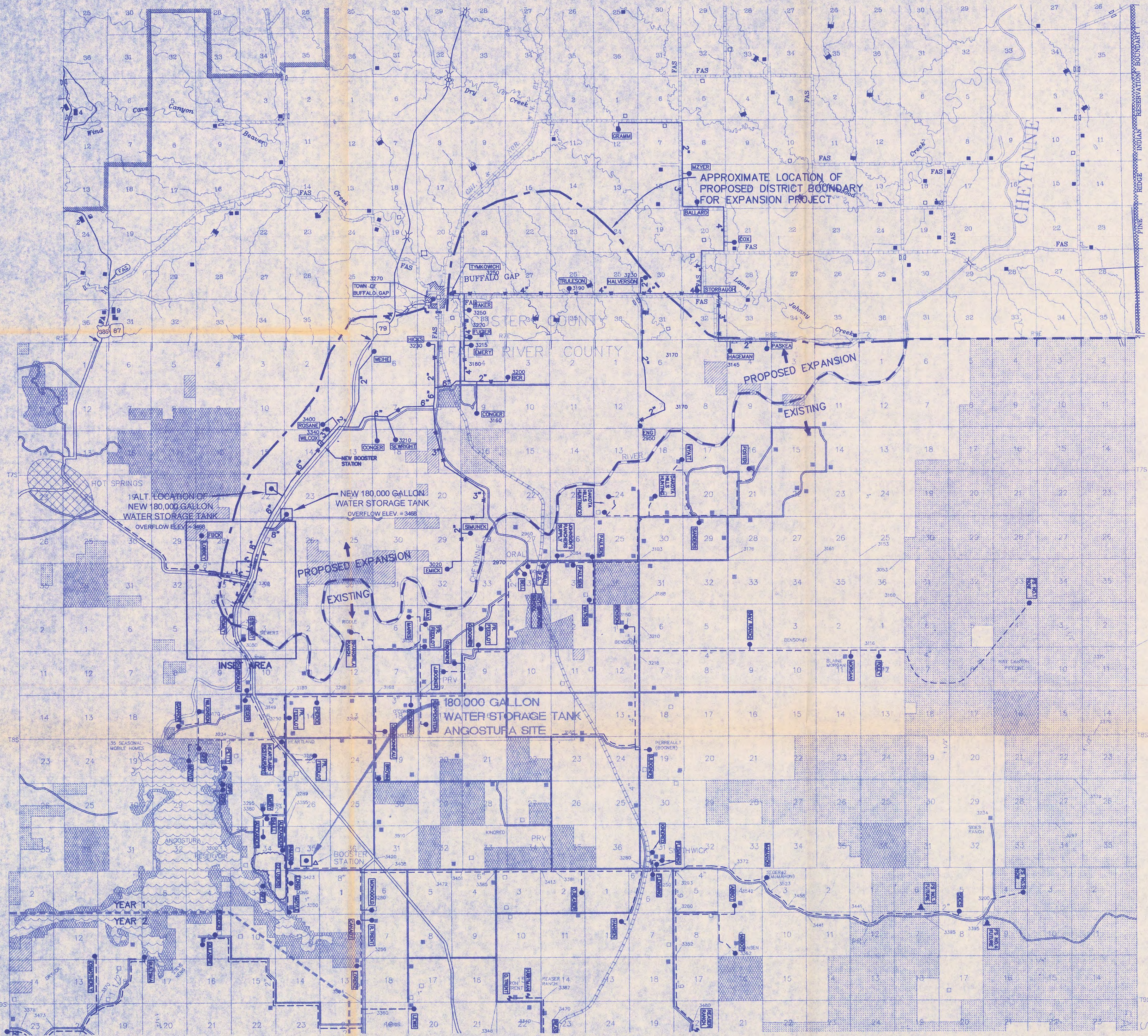
FIGURE 1
LAYOUT

Sheet Number

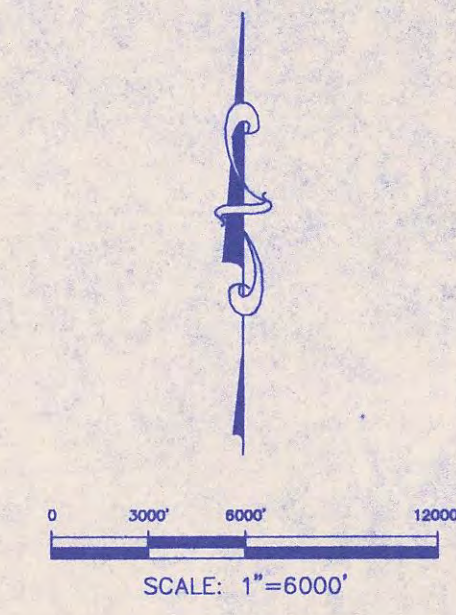
1

Total Sheets

1

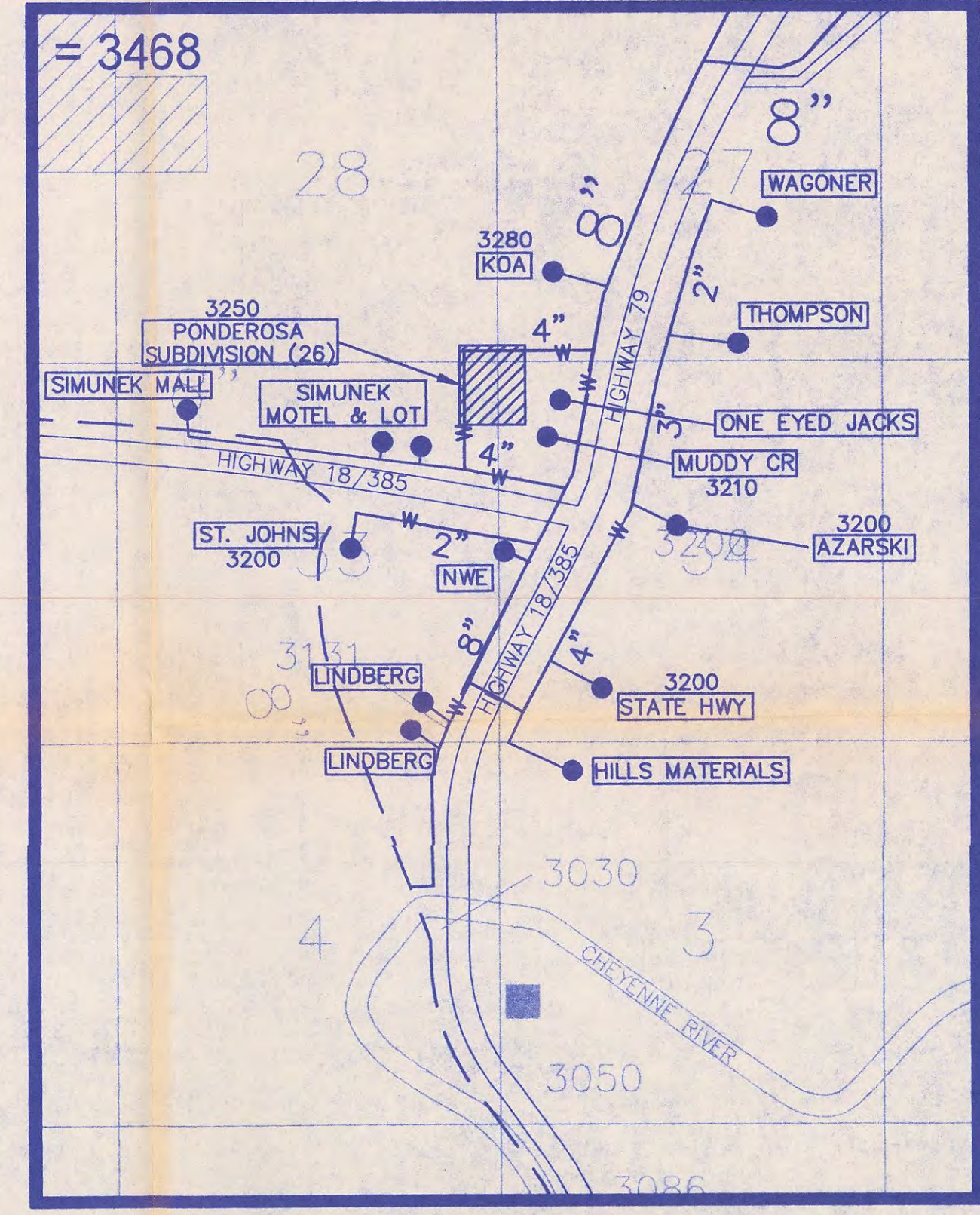


SH 4



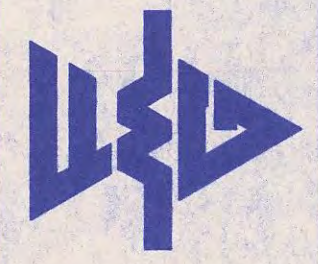
LEGEND

- PROPOSED WATER LINE
- - - EXISTING WATER LINE
- WATER USER
- ▨ STATE LAND
- ▩ B.L.M. LAND
- ▧ NATIONAL FOREST LAND



INSET AREA DETAIL
SCALE: 1"=2000'

F M G, Inc.
3700 Sturgis Road
Rapid City, SD 57702-0317
(605) 342-4105 FAX (605) 342-4222



FMG File No.: 8436.04
Location: _____
Surveyed By: _____
Date: _____
Designed By: _____
Drawn By: CGK
Checked By: ADT

NORTH AREA EXPANSION FEASIBILITY STUDY
FALL RIVER WATER USERS DISTRICT
FALL RIVER COUNTY, SOUTH DAKOTA

10/29/02
5/20/05
4/9/06
Revision / Date

Sheet Name:
FIGURE 1 LAYOUT

Sheet Number:
1
Total Sheets:
1

OCTOBER 2001