

WATER PERMIT NO. 6040-3

Name of Applicant: City of Madison

Address: 116 West Center, Madison SD 57042

Phone: 605 256-7513

Amount of Water Claimed: 1.67 cfs (600 AF annually)

Total Acres: NA

Source of Water Supply: groundwater

Water to be used for: municipal use County: Lake

Type of Waste Disposal System:

Location:

PRIORITY Date Received: 1-14-98 Fee:

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

Remarks: Place to beneficial use water reserved by Future Use Permit No. 747-3

Diversion Point: N
NE 1/4 SW 1/4 and
NW 1/4 NW 1/4; both in Sec 8-T106N-R52W

Land to be Irrigated:

Depth of Well: 35, 33 & 32.5 feet deep

Well Driller: Lacey Well Drilling

Remarks:

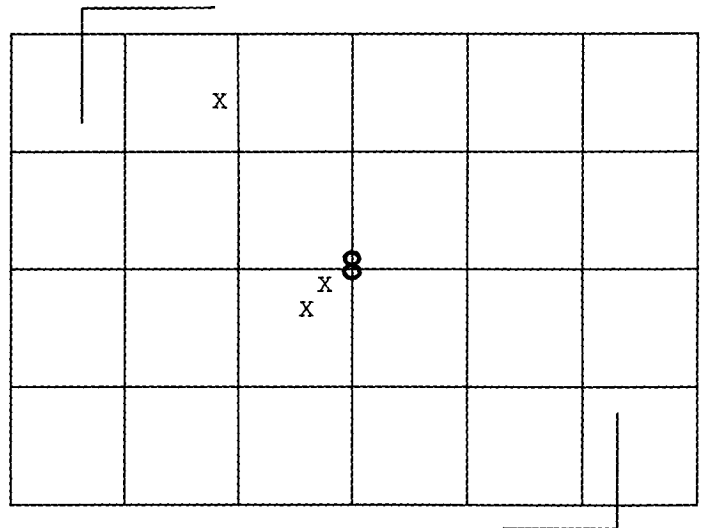
Type of Map: plat

Prepared by: Scott E VanderMeulen, RLS

Reviewed and the Number Assigned on: 1-20-98

By: Karen Schlaak

Notice of Hearing - date to intervene: _____



SOUTH DAKOTA
WATER PERMIT NO. 6040-3

Date of first receipt of application January 14, 1998.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 6040-3 to the City of Madison, 116 W Center, Madison SD 57042 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. 6040-3 authorizes the withdrawal of 1.67 cubic feet of water per second (600 acre-feet annually) from three wells (Big Sioux-Northern Skunk Creek Aquifer) 32.5, 33 and 35 feet deep located in the NE 1/4 SW 1/4 and NW 1/4 NW 1/4. This water was appropriated and reserved by future use Permit No. 747-3.
2. The water appropriated shall be used for the purpose of supply water to the City of Madison and may not exceed the amount of water needed for beneficial use for municipal use purposes.
3. The water is to be used during the following described annual period: January 1 - December 31.
4. The date of approval of Permit No. 6040-3 is March 2, 1998.
5. The date from which applicant may claim right is November 10, 1960 (established by Future Use Permit No. 747-3).
6. One-fifth of the construction is to be completed on or before September 2, 2000.
7. All construction is to be completed on or before March 2, 2003.
8. Water is to be put to beneficial use on or before March 2, 2007.
9. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

QUALIFICATIONS

1. The wells approved under this Permit will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner under this Permit shall control his withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
2. The wells authorized by Permit No. 6040-3 shall be constructed by a licensed well driller and construction 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.

(continued)

Water Permit No. 6040-3

City of Madison

Page 2

3. Water Permit No. 6040-3 authorizes a total annual diversion of 600 acre feet of water from the Big Sioux:Northern Skunk Creek Aquifer.
4. The City of Madison shall report to the Chief Engineer annually the amount of water withdrawn each year from the Big Sioux:Northern Skunk Creek Aquifer.

WATER MANAGEMENT BOARD

By: _____

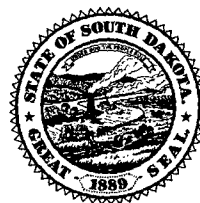
John Hatch
John Hatch, Chief Engineer

Water Rights Program

Department of Environment and Natural Resources

APR 23 1998

date



FCRM 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>6040-3</u>	(office use only) Hydrologic Unit <u>10170203</u>
	Basin <u>Sioux River</u>	
	Newspaper <u>Daily Leader, Madison, SD</u>	



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. 747-3
Amendment/Correction to Permit No.

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

- Name of Applicant City of Madison, South Dakota Phone 605-256-7513
(check one) ☐ Owner ☐ Tenant/lessee
Mailing Address 116 West Center, Madison State SD 57042
(Street, RR. or Box) (Zip Code)
- Amount of water claimed 1.67 *CFS or 750 (total) **GPM 600 ***AF
(*Cubic Feet per Second) (**Gallons per Minute) (***)Acre Feet - storage capacity of dam/dugout or annual use if applicable)
- Source of water supply Northern Skunk Creek Aquifer
- Location of point of diversion (example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W) Wells 21 and 23 are located in the NE 1/4 of Section 8, Well No. 22 is located in the NW 1/4 of Section 8, T106N, R52W (See att. map) County Lake
- County or counties where water will be used Lake
- Annual period during which water is to be used Year-round use Jan 1 - Dec 31
- 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)

Wells were constructed as a part of the water supply and treatment system expansion project for the City of Madison. The wells will increase the water supply capacity to match water demands. See Supplemental Information attached.

STATE OF SOUTH DAKOTA)
County of Lake 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, William J. Heyer, City Engineer, the applicant, certify that I have read this application, have examined the attached map and that the matters stated are true and that I intend, and am able to complete the necessary construction.

Signed William J. Heyer
7 day of Jan 19 98

Subscribed and sworn to before me this

Pamela J. Probst
Notary Public



MADISON, SOUTH DAKOTA

APPLICATION FOR PERMIT TO APPROPRIATE WATER

AND

INDEX TO DOCUMENTS

Prepared for

City of Madison
Madison, South Dakota

Prepared by

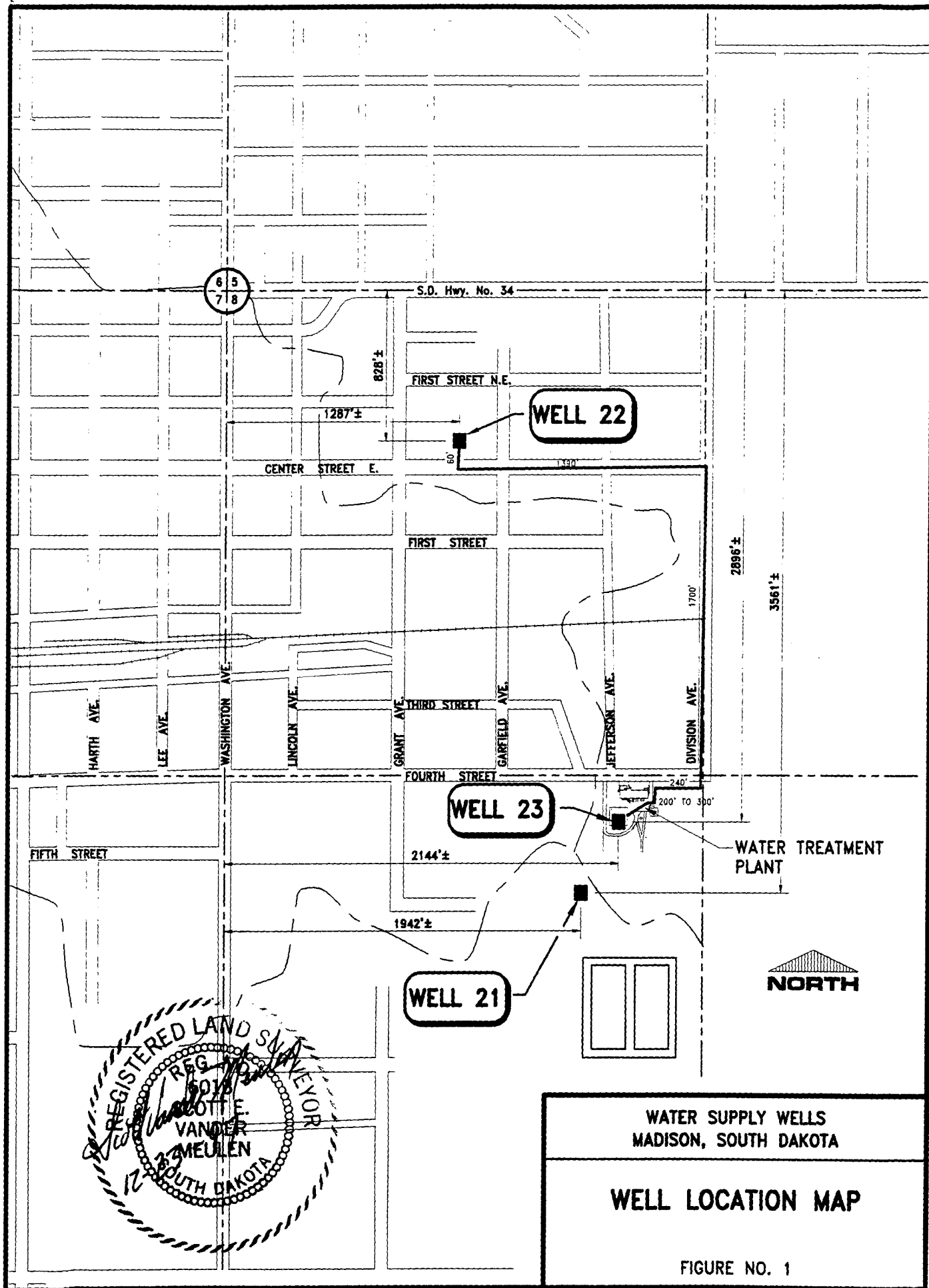
Banner Associates, Inc.
Brookings, South Dakota

January, 1998

7598-03

INDEX TO DOCUMENTS

Item No.	Description	No. of Pages
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	Well #22 - Form and Driller's Log	2
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4	Letter from Department of Environment and Natural Resources regarding Water Right Application and Calculation of fees for water right application	4
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LEGAL DESCRIPTIONS
PROPOSED SITES FOR WELLS #21, #22 AND #23
MADISON, SOUTH DAKOTA

WELL SITE #21

Well #21 is located southwest of the water treatment plant on a site south of Park Creek and west of the lime sludge lagoons. The site is located in Lot 3 of County Auditors 6th Addition to the City of Madison (also known as Schoeberls Addition). The site is located in the SW 1/4 of Section 8, Township 106N, Range 52 West. This site is located on City owned property.

WELL SITE #22

Well #22 is located on the north side of Center Street between Garfield Avenue and Grant Avenue. The site is located in Lots 16 and 17 of block 8 of Town Proprietor's Second Addition to the City of Madison. The site is located in the NW 1/4 of Section 8, Township 106N, Range 52 West. This site is located on City owned property.

WELL SITE #23

Well #23 is located on the water treatment plant site on the south side of Fourth Street Southeast in the City of Madison. The site is located in the SW 1/4 of Section 8, Township 106N, Range 52 West. This site is located on City owned property.

Supplemental Information

(type or print in ink)

1. Well Information - Proposed Construction Well No. 21

- a) Drill Hole Diameter 20" Depth 35' Pump Capacity 300 gpm
- b) Casing Type Steel Pipe Diameter 12" Thickness 0.5
- c) Screen Type St. Steel Diameter 12" Thickness
- d) Gravel Pack Yes Length of Gravel Pack 17'
- e) Depth to Top of Water Bearing Material 2'
- f) Depth to Water (ground surface to water level) 12'-6" (static) 25'-10" after 22 hr at 350 gpm
- g) Distance to nearest existing domestic well:

On applicants property 450' 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

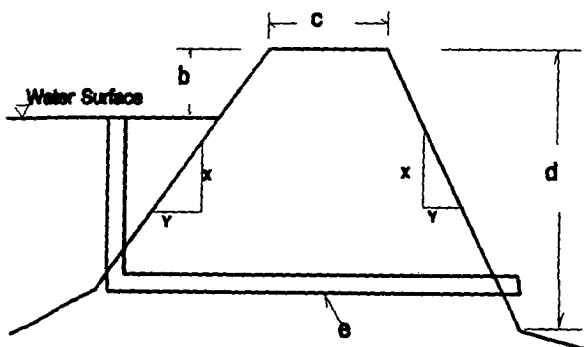
3. Dugout Information

- 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

Supplemental Information

(type or print in ink)

1. Well Information - Proposed Construction Well No. 22

- a) Drill Hole Diameter 20" Depth 33' Pump Capacity 300 gpm
- b) Casing Type Steel Pipe Diameter 12" Thickness 0.5"
- c) Screen Type St. Steel Diameter 12" Thickness
- d) Gravel Pack Yes Length of Gravel Pack 17'
- e) Depth to Top of Water Bearing Material 8' +1-
- f) Depth to Water (ground surface to water level) 7'-6" static, 21'-8" after 22 hr. at 350 gpm
- g) Distance to nearest existing domestic well:

On applicants property On property owned by others not known

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

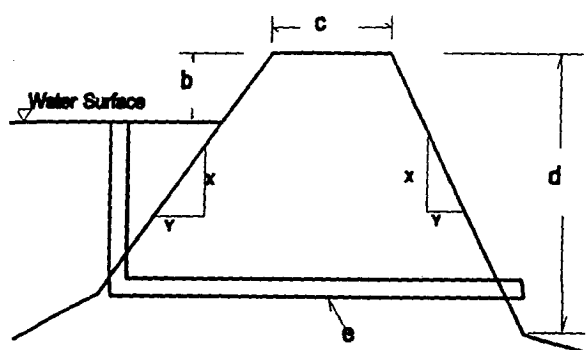
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- a) Surface Dimensions Depth
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If the proposed water use system contains one or more storage dams, please furnish the information requested below for each dam. The locations of the dams need to be 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

Center St.

SOUTH DAKOTA WATER WELL COMPLETION REPORT

07-92

Location SE $\frac{1}{4}$ NW $\frac{1}{4}$ Sec 8 Twp 106-N Rg 52-W

County

North

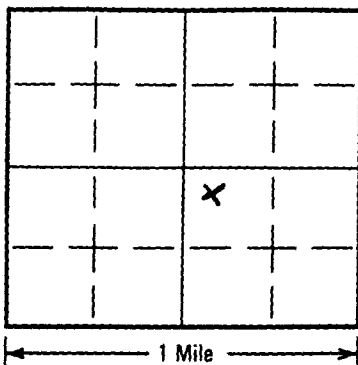
Lake

Please mark well location with an "X"

W

E

Well Completion Date

8-13-92

LOCATION:

Distance from nearest potential pollution source (septic tank, abandoned well, feed lot, etc.)? 1 Block South ft. from WATER TREATMENT (identify source).

PROPOSED USE:

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

METHOD OF DRILLING:

Bucket

CASING DATA:

☒ Steel ☐ Plastic ☐ Other

If other describe _____

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
_____ LB/FT	<u>12"</u> IN	<u>+1</u> FT	<u>27'</u> FT	<u>20"</u> IN
_____ LB/FT	_____ IN	_____ FT	_____ FT	_____ IN
_____ LB/FT	_____ IN	_____ FT	_____ FT	_____ IN

GROUTING DATA

Grout Type	No. of Sacks	Grout Weight	From	To
<u>Cement</u>	_____	_____ lb./gal	_____ ft	_____ ft
_____	_____	_____ lb./gal	_____ ft	_____ ft

Describe grouting procedure _____

SCREEN: ☐ Perforated pipe ☒ ManufacturedDiameter 12" IN Length 7' FEETMaterial Stainless SteelSlot Size .080 Set From 20 Feet to 33 Feet

Other information _____

WAS A PACKER OR SEAL USED? ☐ YES ☒ NO

If so, what material? _____

Describe packer(s) and location? _____

DISINFECTION: Was well disinfected upon completion?

☒ YES, How: Chlorine☐ NO, Why Not? _____

Laboratory sent to for water quality analysis

Madison did water testWell Owner: City of Madison

Business Name: _____

Address: P.O. Box 308Madison S.D. 57042

WELL LOG:

DEPTH

FORMATION	DEPTH	
	FROM	TO
<u>Fill</u>	<u>0</u>	<u>3</u>
<u>Ashes</u>	<u>3</u>	<u>4</u>
<u>Brown Clay</u>	<u>4</u>	<u>8</u>
<u>Brown Gravel w/ Rocks</u>	<u>8</u>	<u>15</u>
<u>Coarse Gray Gravel</u>	<u>15</u>	<u>30</u>
<u>Silt</u>	<u>30</u>	
<u>Coarse Gray Gravel</u>	<u>30</u>	<u>33</u>

STATIC WATER LEVEL

7'6"

Feet

If flowing: closed in pressure _____

PSI

GPM flow _____ through _____

inch pipe

Controlled by ☐ Valve ☐ Reducers ☐ Other _____

Reduced Flowrate _____

GPM

Can well be completely shut in? _____

WELL TEST DATA:

☒ Pumped

Describe: _____

☐ Bailed☐ Other

Pumping Level Below Land Surface

21'8" ft. After 29 Hrs. pumped 350 GPM

_____ ft. After _____ Hrs. pumped _____ GPM

If pump installed, pump rate _____

GPM

REMARKS

Well 22This well was drilled under license # 111

And this report is true and accurate.

Drilling firm Lacey Well Drilling

Signature of License Representative:

James J. Lacey

Signature of Well Owner or Equitable Property Holder:

Date: _____

Supplemental Information

(type or print in ink)

1. Well Information - Proposed Construction

Well No. 23

- a) Drill Hole Diameter 20" Depth 32.5 Pump Capacity 150 gpm
- b) Casing Type PVC Diameter 12" Thickness 0.5"
- c) Screen Type Wilmington PVC Diameter 12" Thickness
- d) Gravel Pack Yes Length of Gravel Pack 15' +/-
- e) Depth to Top of Water Bearing Material 11.75' static, 20' +/- after 22 hours pumping
- f) Depth to Water (ground surface to water level)
- g) Distance to nearest existing domestic well:

On applicants property 150'

On property owned by others

2. Wastewater Disposal System Information

- a) Type of System (i.e. septic tank, drain field)
- b) System Capacity (gallons) Year Constructed
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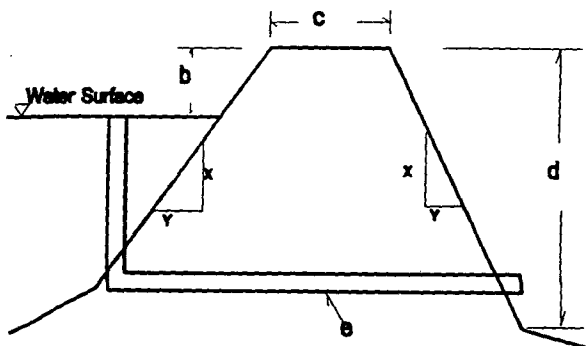
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- c) Crest Width
Crest Length
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- e) Primary Outlet Capacity
If pipe, diameter
- f) Secondary Spillway Capacity
Spillway Width
- g) X & Y Slope
Upstream
Downstream
- h) Surface Area of Impoundment
- i) Storage Acre Feet
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CLEARWELL DEWATERING WELLS	
Madison Water Treatment Plant	
Madison, South Dakota	
Banner Associates, Inc. 7598-04	
Prior to dewatering	Drawdown
Well No. 9 ON	32' - 5"
Well No. 9 OFF	18' - 8"

From Plans

	Existing Top El.	1656.71
	Existing Floor El.	1639.13
	Exist. Bottom Ftg. El.	1637.3

Location of the dewatering wells are relative to the clearwell

#9 WELLTOP CASING ELEV. APPROX.

	North wells		South wells		East Wells		West wells		Monitoring wells		
	W. Well	E. Well	E. Well	Well #23	N. Well	S. Well	S. Well	N. Well	South M. Well	East M. Well	Well House No. 9
Top Casing Elev.	1657.77	1657.8	1656.45	1657	1660.2	1659.9	1659.07	1657.87	1658.81	1658.49	1665.5
Depth of Well	23	28.1	22	32.5	30	30	27	31	21	21.1	
Bottom Of Screen Elev.	1634.77	1629.7	1634.45	1624.5	1630.2	1629.9	1632.07	1626.87	1637.81	1637.39	1665.5
Static depth from top	11.17		10.42		15.16		12.5				
Static Water Elevation	1646.6		1646.03		1645.04		1646.57				1665.5
5/16/96											
Static depth from top	12.33	12.67	11.5	11.75	16.4	15.25	13.58	12.25	13.42	13.83	
Static Water Elevation	1645.44	1645.13	1644.95	1645.25	1643.8	1644.65	1645.49	1645.62	1645.39	1644.66	
4/22/96											
Drawdown from top	21.04		22.1		23.83		20.6		14.83	15.44	34.29
Elevation	1636.73		1634.35		1636.37		1638.47		1643.98	1643.05	1631.21
4/23/96 (w/ #9 off)											
Drawdown from top	21		21.71		21.88		19.92		13.71	13.9	20.16
Elevation	1636.77		1634.74		1638.32		1639.15		1645.1	1644.59	1645.34
4/24/96 (w/ #9 on)											
Drawdown from top	21.33		22.1		24.67		20.84		15.6	15	34.46
Elevation	1636.44		1634.35		1635.53		1638.23		1643.21	1643.49	1631.04
4/25/96 (w/ #9 on)											
Drawdown from top	21.42		22.08		25.42		21.02		15.79	15.1	34.79
Elevation	1636.35		1634.37		1634.78		1638.05		1643.02	1643.39	1630.71
4/26/96 (w/ #9 on)											
Drawdown from top	21.04		21.75		25.92		21.25		15.33	15.96	
Elevation	1636.73		1634.7		1634.28		1637.82		1643.48	1642.53	1665.5
After Additional 4 wells											
5/16/96											
Drawdown from top	20.75	25.79	22.06	20.02	26.96	21.69	23.04	25.75	17.58	18.46	36.92
Elevation	1637.02	1632.01	1634.39	1636.98	1633.24	1638.21	1636.03	1632.12	1641.23	1640.03	1628.58
5/17/96											
Drawdown from top	20.42	22.33	22.25	20.67	27	22.5	24.86	25.58	19.25	19.12	
Elevation	1637.35	1635.47	1634.2	1636.33	1633.2	1637.4	1634.21	1632.29	1639.56	1639.37	1665.5
3/7/97(#9 off)											
Drawdown from top	19	19.5	22.3	18	19.4	20.5	23	24	Frozen	Frozen	#9 OFF
Elevation	1638.77	1638.3	1634.15	1639	1640.8	1639.4	1636.07	1633.87	#VALUE!	#VALUE!	22.5
3/10/97 (#9 OFF)											
Drawdown from top	19.8	16	24.5	19	23.5	21	24.9	24.7	FROZEN	FROZEN	23.42
Elevation	1638.0	1641.8	1632.0	1638.0	1636.7	1638.9	1634.2	1633.2	#VALUE!	#VALUE!	1642.1

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	North wells		South wells		East Wells		West wells		Monitoring wells		
	W. Well	E. Well	E. Well	Well #23	N. Well	S. Well	S. Well	N. Well	South M. Well	East M. Well	Well House No. 9
3/11/97 (#9 on) drawdowns at 10:00am, #9 started at 7:30am											
Drawdown from top	20.4	17	24.5	19.5	25	22	25.7	24.5	19	18.5	23.3
Elevation	1637.4	1640.8	1632.0	1637.5	1635.2	1637.9	1633.4	1633.4	1639.8	1640.0	1642.2
3/12/97 (#9 on) drawdowns at 9:30am, #9 started at 8:00am											
Drawdown from top	20.4	17	24.5	19.5	25	22	25.7	24.5	19	18.5	23.3
Elevation	1637.4	1640.8	1632.0	1637.5	1635.2	1637.9	1633.4	1633.4	1639.8	1640.0	1642.2
3/14/97 (#9 on) drawdowns at 9:00 am											
Drawdown from top	22.5	22.2	24.5	21	28	23.5	25	25	20.4	20.3	37.4
Elevation	1635.3	1635.6	1632.0	1636.0	1632.2	1636.4	1634.1	1632.9	1638.4	1638.2	1628.1
3/17/97 (#9 on) drawdowns at 9:00 am											
Drawdown from top	18	18	24.5	20.3	27.8	23	27.5	25.8	20	20	37.2
Elevation	1639.8	1639.8	1632.0	1636.7	1632.4	1636.9	1631.6	1632.1	1638.8	1638.5	1628.3
3/18/97 (#9 off) drawdowns at 8:30 am											
Drawdown from top	21.7	20.7	24.5	20	26.5	22.5	27	25.2	19.7	19	0
Elevation	1636.1	1637.1	1632.0	1637.0	1633.7	1637.4	1632.1	1632.7	1639.1	1639.5	1665.5

In Water Since 1946

LACEY WELL DRILLING

RR 1 Box 24

Dell Rapids, South Dakota 57022

Telephone (605) 428-5979

Wells
Dewatering Work
Test Drilling

Pumps
Water Specialists
Irrigation Supplies

Madison Job

3-20-96

Pete Hoogendorn

605-987-4319

Fax 605-987-4485

45' Well w/ 14" SS screen + casing + drilling + rock = 4700⁰⁰

3-45' Well w/ 12" PVC screen + casing + drilling + rock 2250⁰⁰ = 6750⁰⁰

2-30' Well w/ 12" PVC screen + casing + drilling. Cheap Rock @ 800⁰⁰ = 1600⁰⁰

On permanent wells cement grout would be 150⁰⁰ per well x 4 = 600⁰⁰

Travel on project

200⁰⁰

1000' x 6" Aluminum pipe + fittings 600⁰⁰/LS

If wells are pulled + no damage we pay 10⁰⁰ per foot for material

Madison to provide hook-up + power

1 1/2 hp - 15 hp pumps w/ some wire 1100⁰⁰ per pump per month

Installing pumps - drop pipe - hooking to discharge piping 800⁰⁰

Pulling pumps - picking up pipe + fittings

800⁰⁰

Any damage to pumps - piping - fittings - wire - etc - you pay

In Water Since 1946

Wells
Dewatering Work
Test Drilling

LACEY WELL DRILLING

RR 1 Box 24
Dell Rapids, South Dakota 57022
Telephone (605) 428-5979

Pumps
Water Specialists
Irrigation Supplies

City of Madison
Water Dept

3-24-97

JERRY - On the 2-12" PVC wells by the
TANK - one on west side and one at SW corner
setting them up @ 125-150 gpm each @ WD 75' of
total head would be as follows

12" casing extension, 9' long w/ 3" MAAS pitless
welded in side, vented lid, 12" galvanized
cplg to hook to PVC casing 1450⁰⁰ each

Well pump (135550-2 Grundfos) 3" drop pipe, 12' drop
w/ 15' @ 1615⁰⁰ each

Cost to do two wells 6131³⁰ - plus any
TAXES required

We'll throw the casing + screen + pack
in on the deal!! You will have to
open + close the holes with your hole.

Thanks,
Jim



RECEIVED

NOV 21 1997

**BANNER ASSOCIATES, INC. DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

November 19, 1997

Banner Associates, Inc.
David Odens, P.E.
PO Box 298
Brookings SD 57006-0298

RE: City of Madison

Dear Mr. Odens:

Enclosed are three sets of forms to apply for an *Application for Permit to Appropriate Water*. It appears from the information in your letter, that the City of Madison could submit one application for all three wells. The one application could include the three wells because the wells are located near each other and are approximately the same depths.

You should be aware that the City of Madison has Future Use Permit No. 747-3. This future use permit has a total of 1,972 acre feet of water still held in reserve for the City's future use needs. These three wells are located within the future use area authorized by Permit No. 747-3.

If you have any questions, or need assistance completing the application forms, please contact Eric Gronlund or me.

Sincerely,

Karen Schlaak

Karen Schlaak
Water Rights Program
605 77-3352

enclosures

c: Bill Heyer, City Engineer, City of Madison

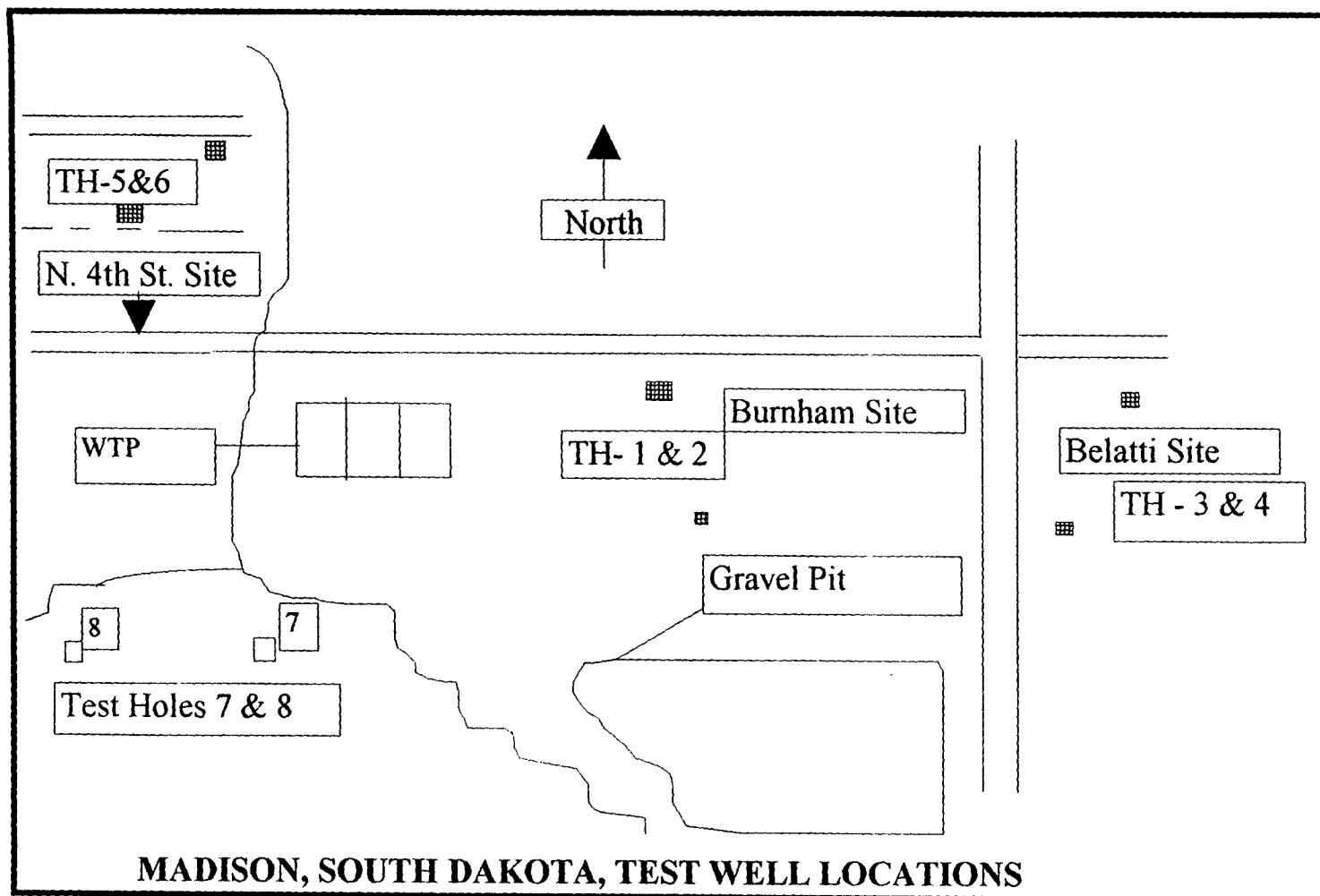
MADISON WATER RIGHT APPLICATION
CALCULATION OF FEE FOR WATER PERMIT

Well Capacity Summary:

Well 21	300 gpm	
Well 22	300 gpm	
Well 23	150 gpm	
Total Capacity Requested		750 gpm

Water Right Fee Calculation:

First 75 gpm	\$ 150.00
Second 75 gpm	\$ 75.00
Remaining capacity - 600 gpm	\$ 200.00
 TOTAL APPLICATION FEE	 \$ 425.00



Madison Well Field Expansion

REPORT OF TEST DRILLING MADISON, SOUTH DAKOTA

BURNHAM SITE

TEST HOLE #1			TEST HOLE #2		
Depth ft.	Soil Characteristics	Static Water level	Depth ft.	Soil Characteristics	Static Water level
0-2	Topsoil	11.75'	0-2	Topsoil	no record
2-4	Yellow Clay		2-4	Yellow Clay	
4-25	Gravel		4-24	Gravel	
25-28	Soft clay		24-31	Soft clay	
28-45	Medium gray sand		31-42	Coarse Gravel	
45-47	Hard Blue Clay		42-44	Hard Blue Clay	

BELATTI SITE

TEST HOLE #3			TEST HOLE #4		
Depth ft.	Soil Characteristics	Static Water level	Depth ft.	Soil Characteristics	Static Water level
0-1	Topsoil	no record	0-2	Topsoil	12.42'
1-20	Gravel		2-25	Gravel	
20-35	Soft to Hard Blue Clay		25-37	Clay	

SITE NORTH OF FOURTH STREET, WEST OF CREEK

TEST HOLE #5			TEST HOLE #6		
Depth ft.	Soil Characteristics	Static Water level	Depth ft.	Soil Characteristics	Static Water level
0-2	Topsoil		0-5	Yellow Clay	11.75
2-5	Clay		5-25	Red Gravel, Rocks Clean sand with fine	
5-38	Sand, Gravel, and Rock		25-40	streaks, shale materials	
38-40	Hard Blue Clay		40-42	Hard Blue Clay	

SITE SOUTH OF WATER TREATMENT PLANT, SOUTH OF CREEK

Report dated 12-12-96, Lacey Well Drilling

TEST HOLE #7			TEST HOLE #8		
Depth ft.	Soil Characteristics	Static Water level	Depth ft.	Soil Characteristics	Static Water level
0-4	Topsoil		0-9	Gravel with rocks	
4-6	Gravel		9-11	Clay streak	
6-8	Clay		11-30	Dirty (sand and gravel)	
8-35	Gravel (clean)	13	30-34	Clay	
35-47	Clay		34-36	Gravel	
			36-44	Clay	

SITES NORTH OF WATER TREATMENT PLANT, EAST OF CREEK

Report dated 2-14-97, Lacey Well Drilling

TEST HOLE #9			TEST HOLE #10		
East end of SE 1st St. 1 Blk E. of Garfield			NW Corner of the intersection of Center and Jefferso		
Depth ft.	Soil Characteristics	Static Water level	Depth ft.	Soil Characteristics	Static Water level
0-23	Gravel, red, rusty	15	0-4	Topsoil	
23-30	Hard blue clay		4-7	Yellow clay	
			7-23	Gravel	13
			23-37	Hard blue clay	

TEST HOLE #11		
1/2 Block West of Garfield, N. side of Center Street		
Depth ft.	Soil Characteristics	Static Water level
0-5	Topsoil	
5-37	Gravel, medium to coarse, gr	8
37-?	Clay	

**REPORT OF TEST DRILLING
MADISON, SOUTH DAKOTA**

SITE SOUTH OF WATER TREATMENT PLANT, SOUTH OF CREEK

Report dated 12-12-96, Lacey Well Drilling

TEST HOLE #7 - Site of Well #21

Depth ft.	Soil Characteristics	Static Water level
0-4	Topsoil	
4-6	Gravel	
6-8	Clay	
8-35	Gravel (clean)	13
35-47	Clay	

TEST HOLE #8

Depth ft.	Soil Characteristics	Static Water level
0-9	Gravel with rocks	
9-11	Clay streak	
11-30	Dirty (sand and gravel)	
30-34	Clay	
34-36	Gravel	
36-44	Clay	

SITES NORTH OF WATER TREATMENT PLANT, EAST OF CREEK

Report dated 2-14-97, Lacey Well Drilling

TEST HOLE #11 - Site of Well #22

1/2 Block West of Garfield, N. side of Center Street

Depth ft.	Soil Characteristics	Static Water level
0-5	Topsoil	
5-37	Gravel, medium to coarse, g	8
37-?	Clay	

**WATER QUALITY DATA
TEST WELL SAMPLES
MADISON WELL FIELD EXPLORATION**

PARAMETER	SITE IDENTIFICATION					
	Burnham Test Well 1	Burnham Test Well 2	N. of 4th St. Test Well 5	N. of 4th St. Test Well 6	S. of Creek Test Well 7	1/2 Blk W. of Garfield, Well 11
Nitrate-Nitrite	<1	<1	<1	<1	<1	<1
Alkalinity	280	320	284	306	262	283
Chloride	56.6	67.1	37.9	61.1	29.5	13
Sulfate	305	291	743	979	602	580
Iron	0.248	0.434	0.093	0.193	0.45	0.03
Manganese	0.902	1.014	1.66	1.716	2.3	0.1
Calcium Hardness as CaCO ₃	125	139	235	302	434	468
Total Hardness as CaCO ₃	796	864	1182	1455	760	765

MADISON WATER SUPPLY IMPROVEMENTS - WATER SUPPLY WELLS
SECTION 2C - WATER SUPPLY WELLS

DIVISION 2 - SITE WORK

MADISON WATER SUPPLY IMPROVEMENTS - WATER SUPPLY WELLS
SECTION 2C - WATER SUPPLY WELLS.

I. GENERAL.

1.01 Scope: These Specifications are intended to provide the information necessary for all parties concerned with the contract to know the nature and amount of equipment, materials and work required to successfully complete two (2) water supply wells in accordance with the South Dakota Well Construction Standards (ARSD 74:02:04).

These Specifications are in accordance with the American Water Works Association Standard for Deep Wells (AWWA A100). These Specifications are intended to supplement or modify the standards to fit the needs or expected conditions. Also, for more detailed description of the work to be performed, reference is made to a particular section of the AWWA Standard.

1.02 Location: One of the proposed water supply wells to be constructed under these Specifications is located southeast of Madison approximately one-half mile north of Highway 34, the second is located on East Center Street in the City of Madison. The more exact location is shown on the Location Map, Sheet No. 1 of the Drawings.

1.03 Location Conditions: The Contractor shall satisfy himself regarding all local conditions affecting his work by personal investigation. Neither the site information contained in these Specifications nor that derived from maps or plans or from the Owner or his agents or employees shall act to relieve the Contractor from any responsibility hereunder from fulfilling any and all of the terms and requirements of his contract.

The Contractor shall make arrangements with the Owner for water required for drilling of the wells. Contractor is responsible for temporary piping, fittings, etc.

1.04 Personnel and Drilling Equipment: The Contractor shall supply capable and experienced personnel and suitable drilling equipment to perform this work. Each bidder shall supply a list along with his bid which shows:

A. South Dakota Well Drillers License No.

C. Manufacturer's name and model number of drilling machine or machines to be used.

Adequate safety equipment, i.e., hard hats, hard toed shoes, and gloves shall be used by the drilling crew while on the job site.

Drilling method used shall be one of the following; reverse rotary, forced caisson, or boring with an auger bucket. However, no special drilling mud shall be used in the drilling operation in order to prevent invasion of the formation.

MADISON WATER SUPPLY IMPROVEMENTS - WATER SUPPLY WELLS
SECTION 2C - WATER SUPPLY WELLS

1.05 Mobilization and Demobilization: This item in the bid schedule includes moving onto and off the site all the materials and equipment for constructing and developing the well. It also includes cleaning up the site upon completion of the contract. Mobilization and demobilization will be paid only once for the completion of the well.

II. PRODUCTS.

2.01 Well Casings: All well casings shall be new. They shall be of steel and shall conform to AWWA-A100. The well casing may not be mill reject. The casing shall be joined by either (1) welding in accordance with the Standards of the American Welding Society or (2) threaded and coupled joints.

A. Production Casing - This casing shall have an external diameter of 12 inches, wall thickness of not less than 0.562 inch, and a weight of 104.67 lbs. per foot.

B. The Contractor shall deliver two copies of the mill certificate to the Engineer for approval before delivering the casing to the job site.

2.02 Cement Grout: A mixture of Portland cement (ASTM C150) and not more than 6 gallons water per bag (one cubic foot or 94 lbs.) of cement. The water used shall be fresh, clear and potable.

2.03 Well Screen:

A. Material and aperture opening. The well screen and its fittings shall be manufactured entirely of Type 304 stainless steel. The well screen aperture opening shall be determined by the well screen manufacturer. It shall have sufficient open area to transmit the desired yield of 250 gpm at an aperture entrance velocity equal or less than 0.1 feet per second.

B. The well screen shall be of the continuous slot, wire wound type. It shall have a nominal inside diameter of 12 inches. Intermediate screen sections shall be joined by welded connections. The welding rod shall be of material suitable for joining stainless steel in order not to reduce the corrosion resistance. The rod selected must be approved by the Engineer.

C. The bottom of the screen shall be fitted with a closed bail bottom of the same connecting material as the screen.

D. Well screen shall be similar and equal to Johnson Well Screen Watermark or approved equal.

2.04 Gravel Pack Material: The gravel to be used for the gravel wall around the screen and casing shall be well-rounded particles containing not less than 95% siliceous material with not more than 5% calcareous materials. The gravel shall be washed and screened to required sizes for maximum aquifer development. Gravel shall be as produced by Northern Sand and Gravel of Muscatine, Iowa, or Eau Claire Sand and Gravel of Eau Claire, Wisconsin or approved equal. The gravel size and samples shall be submitted to the Engineer along with certified tests prior to

MADISON WATER SUPPLY IMPROVEMENTS - WATER SUPPLY WELLS
SECTION 2C - WATER SUPPLY WELLS

installation. Additional samples shall be selected by the Engineer during installation of the gravel wall. All gravel shall be furnished in bags properly labeled.

- A. The grading of the gravel pack shall be selected by the screen manufacturer.

2.05 Pitless Adapter Unit: The pitless adapter unit shall be 12-inch O.D. by 7 foot bury and of the positive self-sealing industrial heavy duty type. It shall have the capability for a minimum full 12-inch diameter thru-seal area for well maintenance purposes.

Positive pressure "O" ring seals shall be used throughout both for internal well sealing and external surface water sealing. Positive threaded well vent, cable entrance, and extra openings shall be provided and capped. A 6-inch mechanical joint discharge connection one foot from the end of the pitless unit shall be provided. A 3/4-inch drop tube attached to port in cover of the pitless unit shall be provided for drawdown measuring. Drop tube shall be Schedule 80 PVC pipe. Pitless adapter housing shall have a minimum 1/2" wall. The spool pipe shall be Schedule 80 steel with connection compatible to the column pipe. The pitless adapter unit shall be provided with the manufacturer's standard paint coating.

The pitless adapter unit shall be a Baker Monitor with separate check valve or equal as manufactured by Whitewater, Maas or Thorpe. The check valve shall be installed in the air release valve manhole. The check valve shall have flanged connections and external lever arm.

III. EXECUTION.

3.01 Construction of the Well:

A. General: The Contractor shall drill the wells at the locations designated by the Engineer. The Contractor shall drill the hole and install the materials previously described in order that the finished wells shall conform to the design illustrated in the Drawings and any applicable standards established by local, state or federal regulatory agencies. If mud pits are used, they shall be positioned at least 6 feet from the proposed finished base slab.

The Contractor shall dispose of cuttings and discharged water in a manner prescribed by the Engineer so as not to create damage to public or private property. During the test pumping, however, the water discharged shall be piped to a point of overland drainage.

B. Drilling - Casing Hole: The Contractor shall drill an 18-inch diameter hole to accommodate the 12" steel casing and screen to the depths shown on the Drawings. If the depths are adjusted because of underground conditions at the site, payment will be on the basis of unit price per lineal foot of the hole drilled.

C. Setting Steel Casing and Screen: The full diameter screen shall be fastened to the casing by welding procedures conforming to the

practice of the American Welding Society. The top of the steel casing shall terminate approximately 2 feet below natural ground level where a 12-inch O.D. pitless adapter unit shall be welded to well casing.

The casing and screen shall be centered in the hole such that a minimum of 3 inches exists between the face of the hole and the casing. Centering guides shall be so spaced around and along the pipe to insure adequate clearance for the gravel pack and cement grouting operation.

1. After the casing and screen have been lowered into position and before gravel pack operations begin, the casing and screen shall be tested for plumbness and alignment. This test shall be made in accordance with Sec. 8, "Testing for Plumbness and Alignment", of the AWWA Standard A100. Should the casing fail to meet the requirements and interfere with the installation and/or operation of the pumping equipment, the plumbness and/or alignment shall be corrected by the Contractor at his own expense.

D. Gravel Packing: The gravel pack shall be introduced in such a manner that it is readily known (with 10% accuracy) how much volume of gravel is in the hole. It shall be placed in a manner uniform and continuous such that hydraulic segregation and bridging are minimized or eliminated.

1. The gravel shall be placed via gravity through tremie pipes. These tremie pipes shall be located 180° apart in the annular space around the screen and inner casing. They shall terminate no more than 5 feet above the bottom of the hole or level of the gravel pack already placed in the hole. They shall be gradually lifted and sections removed as the level of gravel placed in the hole rises. Funnel fittings at the tops of the tremie pipes shall be used to facilitate the shoveling of the gravel into the tremie. Clean water shall be used to lubricate the downward movement of the gravel in the tremie pipes - usually from 1 to 3 gpm.
2. Five pounds of calcium hypochlorite (65% available chlorine) per cubic yard will be mixed in with and placed with the gravel. The gravel pack will be placed until it is 11' below natural ground surface. The rest of the annular space will be sealed with cement grout.

E. Grouting: Grouting of the steel casing shall be accomplished in the presence of the Engineer. It shall be grouted in one continuous operation, filling the annular space between the drilled hole and the casing to the land surface. A minimum of a 1-foot clay plug or seal shall be placed on top of the gravel pack at the indicated level prior to placing the cement grout.

1. The grout shall be placed in the annular space between the drilled hole and casing by use of a grout pipe outside the casing. (AWWA Standard Section 7). The pipe shall extend to the bottom of the annular space initially and should remain

submerged in grout during the entire time that grout is being placed.

The pipe may be left in place, or it may be gradually removed. In the event of interruption of the grouting operations, the bottom of the pipe shall be raised above the grout level and should not be resubmerged until all air and water have been displaced from the grout pipe. The grout may be pumped into the pipe or applied continuously by gravity. The grout returning to the surface shall be wasted until the Engineer determines that the grouting has been satisfactory.

1. No further work shall be done on the well until the grout has firmly set. (A minimum of 72 hours for neat cement and 24 hours for quick-setting cement).

3.04 Developing the Well:

A. The development process shall be accomplished by simultaneous high velocity, horizontal-jetting and pumping. The O.D. of the jetting tool shall be one inch less in diameter than the screen I.D.

The minimum exit velocity of the jetting fluid at the jet nozzle shall be 150 ft/sec. The tool shall be rotated at a speed less than 1 rpm. It shall be positioned at one horizon for not less than two minutes and then shall be moved to the next horizon which shall be no more than 6 inches vertically from the previous jetting horizon.

The jetting shall proceed from the bottom of the screen to the top.

Pumping from the well shall be at a rate from 5% to 15% more than that introduced through the jetting tool. Water to be used for jetting must be free of sand, turbidity and coliform bacteria.

1. Means shall be provided for removal of sand jetted into the screen and which settles to the bottom and which is not being removed by the installed pumping equipment.

B. In conjunction with high velocity, horizontal-jetting and pumping the well shall be surged using a test pump capable of pumping 150% of the design yield. The surging action shall consist of alternately lifting a column of water to ground level and letting the water fall back in the well. The above process is known as raw-hiding the well. Any sand damage to the pump is the responsibility of the Contractor.

C. The development shall continue until the Engineer decides further development is unnecessary

3.05 Testing the Wells:

A. Test Pump and Accessory Equipment: The Contractor shall furnish and install a test pump into each production well. The test pump shall be a vertical turbine with sufficient column and shaft to allow for testing the well to 100 percent drawdown if requested. The test pump shall be operated from a diesel engine or electric unit with variable speed drives and of sufficient size to vary pumping rate from 100 gpm to 300 gpm. When the final test is initiated, it shall be conducted continuously without stoppage. The

discharge from the pump shall be equipped with sufficient effluent pipe to carry the water away from the test area (minimum length of 500 feet) and shall be equipped with an orifice meter or other acceptable measuring device to observe the rate of discharge from the pump accurately.

1. A drawdown measuring tube of metal or plastic shall extend from the base of the pump discharge head to a depth no greater than 2 feet above the pump bowls. This tube shall permit the entry and use of a water level measuring device such as an electric sounder or a steel tape.

B. Pump Test: Each well will be test pumped for a period of 24 hours or until the water level stabilizes over a 3-hour period at a constant rate of 250 gpm. The discharge of the test pump will be measured via a circular orifice meter and the water level measured with a suitable measuring device to the nearest 1/4 inch. Measurements of the yield and water level will be made every minute for the first 10 minutes of the test, every 5 minutes for the next 90 minutes and then every 15 minutes until 3 hours have passed. Measurements between 3 and 5 hours should be made 30 minutes apart and then after 5 hours and until the end of the test they can be made hourly. A one-gallon water sample shall be obtained within 20 minutes after starting the pump and then about 5 minutes before shutting the pump down. After the pump is shut down, recovery measurements of the water level should be made for a period equal to at least one-half of the pumping period or until the water level has reached the original static level. The schedule of the recovery measurements shall be made at the same time intervals that the measurements were made during the pumping portion of the test.

3.06 Installation of Pitless Adapter: After the well has been developed and the pump test completed, the Contractor will excavate and cut off the 12" casing at the elevation required to install the 7-foot bury 12-inch diameter pitless adapter. The pitless adapter shall be connected to the 12" steel well casing by use of an adapter.

3.07 Disinfecting the Well: The well shall be disinfected before removing the test pump from the well and before collecting any samples for determining microbiological quality. This shall be done by introducing a chlorine solution into the well such that a concentration of at least 50 ppm of available chlorine exists in all parts of the well at static conditions. The chlorine solution should be introduced into the well in such a manner that the well surfaces above the static level will be completely flushed with the solution. A minimum of 2 hours contact time should be provided before pumping the well to waste. No separate payment shall be made for this work. Disinfection of the well shall be considered subsidiary to this section of the Specifications. At all times the Contractor shall use all reasonable measures to prevent either tampering with the well or the entrance of foreign matter into it. The Contractor shall be responsible for any objectionable material that may fall into the well and its consequences until the completion and acceptance of the work by the Engineer.

3.08 Records:

MADISON WATER SUPPLY IMPROVEMENTS - WATER SUPPLY WELLS
SECTION 2C - WATER SUPPLY WELLS

A. Two copies of the drillers log, signed and dated by the well driller will be given to the Engineer. The log will record the materials penetrated to the nearest foot.

B. All static water level measurements will be recorded. This record along with the times that the measurements were made, will be given to the Engineer.

C. A complete casing and screen location record will be made by the driller and given to the Engineer. This will show the individual length of sections of casing and screen and the location of packers, plugs and seals.

D. Pumping test data will be supplied to the Engineer from all pumping tests conducted on the well. These will show dates, water levels, discharge rates and times of stopping and starting the pump.

3.09 Site Restoration and Finish Grading:

All areas in the construction site are in an environmentally sensitive area. All areas disturbed in the construction of the wells shall be restored to the grades shown on the Drawings or original grade. Temporary construction access roads necessary for equipment shall be removed by the Contractor at the conclusion of the project and restored to the same grade as before construction.

All areas disturbed in the construction of the well shall be graded to provide proper drainage and a neat appearance. The top six inches of all disturbed areas shall be topsoiled and reseeded as directed by the Engineer, which work shall not be a pay item but shall be considered as subsidiary to this section of the Specifications. The Contractor shall provide fill material as necessary, properly graded and compacted to 95% of maximum density and finished to final established elevations as shown on the Drawings. Grading shall conform with Section 2A of these Specifications. The gravel surfacing shall be placed to a depth of approximately 3 inches.

IV. METHOD OF MEASUREMENT AND BASIS FOR PAYMENT:

4.01 Mobilization and Demobilization: The mobilization and demobilization of all equipment, tools, materials and manpower to the well sites for the City of Madison from the Contractor's offices and locally at the site as required to complete the drilling of the wells shall be paid for at the Contract lump sum price for "Mobilization and Demobilization" as stipulated in the Proposal, which price and payment shall be full compensation for mobilization and demobilization of all equipment, tools, material and manpower to complete the wells. One half of the amount bid shall be eligible for payment after the Contractor has mobilized to the site, the balance shall be eligible for payment upon removal of equipment and materials which are not a part of the finished project.

4.02 Drilling Permanent Well: The drilling of the well shall be measured in lineal feet of depth which shall be the total depth of the permanent casing plus screen. Payment for drilling shall be made at the Contract

MADISON WATER SUPPLY IMPROVEMENTS - WATER SUPPLY WELLS
SECTION 2C - WATER SUPPLY WELLS

unit cost per lineal foot for "Drilling Permanent Well Hole", as stipulated in the Proposal which price and payment shall be full compensation for all transportation, labor, tools, supplies, materials and equipment required to construct the well hole, including logging, sampling of each strata of the formation, drilling for both the permanent casing and the screen, cleanup and all other pertinent work required to complete the hole.

4.03 Permanent Casing: The permanent casing installed in the well shall be measured by the actual length in feet of casing furnished and installed. Payment for casing shall be made at the Contract unit price per lineal foot for "Furnish and Install 12-Inch O.D. Casing", as stipulated in the Proposal, which price and payment shall be full compensation for all transportation, labor, tools, materials, supplies and equipment required to furnish and install the casing in its final location.

4.04 Well Screen: The well screen installed in the well shall be measured by the actual length in feet of screen furnished and installed, measured from and including the bail bottom to the top of the connection to the casing. Payment for well screen shall be made at the Contract unit price per lineal foot for "Furnish and Install 12-Inch PS Well Screen", as stipulated in the Proposal which price and payment shall include all transportation, labor, tools, material, supplies and equipment required to satisfactorily install the well screen to its final location.

4.05 Selected Silica Gravel Pack: The selected silica gravel used for the gravel wall around the well screen and casing shall be measured in lineal feet of annular space for the total length of selected silica gravel wall. Payment shall be made at the Contract unit price per lineal foot for "Selected Silica Gravel Pack", as stipulated in the Proposal which price and payment shall be full compensation for all transportation, labor, tools, material and equipment required to construct the selected silica gravel pack in a satisfactory manner.

4.06 Clay Plug Seal: The clay material used for the clay plug seal around the well casing shall be measured in linear feet of annular space for the total length of clay plug seal. Payment shall be made at the Contract unit price per linear foot for "Clay Plug Seal", as stipulated in the Proposal which price and payment shall be full compensation for all transportation, labor, tools, material and equipment required to construct the clay plug seal in a satisfactory manner.

4.07 Concrete Grout Seal: The concrete grout used for seal around the well casing shall be measured in lineal feet of depth of seal. Payment shall be made at the Contract unit price per lineal foot for "Concrete Grout Seal", as stipulated in the Proposal which price and payment shall be full compensation for all transportation, labor, tools, materials and equipment required to construct the concrete grout seal in a satisfactory manner.

4.08 Development of Permanent Well: Complete development of the well shall be measured by the complete item to produce a clear and sand-free effluent from the well. Payment for development shall be made at the Contract unit price per hour for "Development of Permanent Well", based

on actual pump operation time, as stipulated in the Proposal, which price and payment shall be full compensation for all transportation, labor, tools, materials and equipment required to develop the well in a satisfactory manner, including surging, backwashing, installation and removal of test pump, disinfecting the well, clean-up and other appurtenances required to complete the work.

4.09 Test Pumping: The actual production pumping test shall be measured by the actual number of hours of continuous operation of the pump performed under the test. An unauthorized interruption of the pumping test shall nullify the test up to the time of interruption and no payment shall be made therefore.

The production pumping test shall be paid for at the Contract unit price per hour for "Production Pumping Test", based on actual pump operation time performed without interruption for the period of time as stipulated in the Proposal, which price and payment shall be full compensation for furnishing labor, materials, supplies, tools and equipment to perform the test pumping, record drawdown and discharge readings during the pumping test, water sampling, record recovery readings and other pertinent work required to complete the testing in a satisfactory manner.

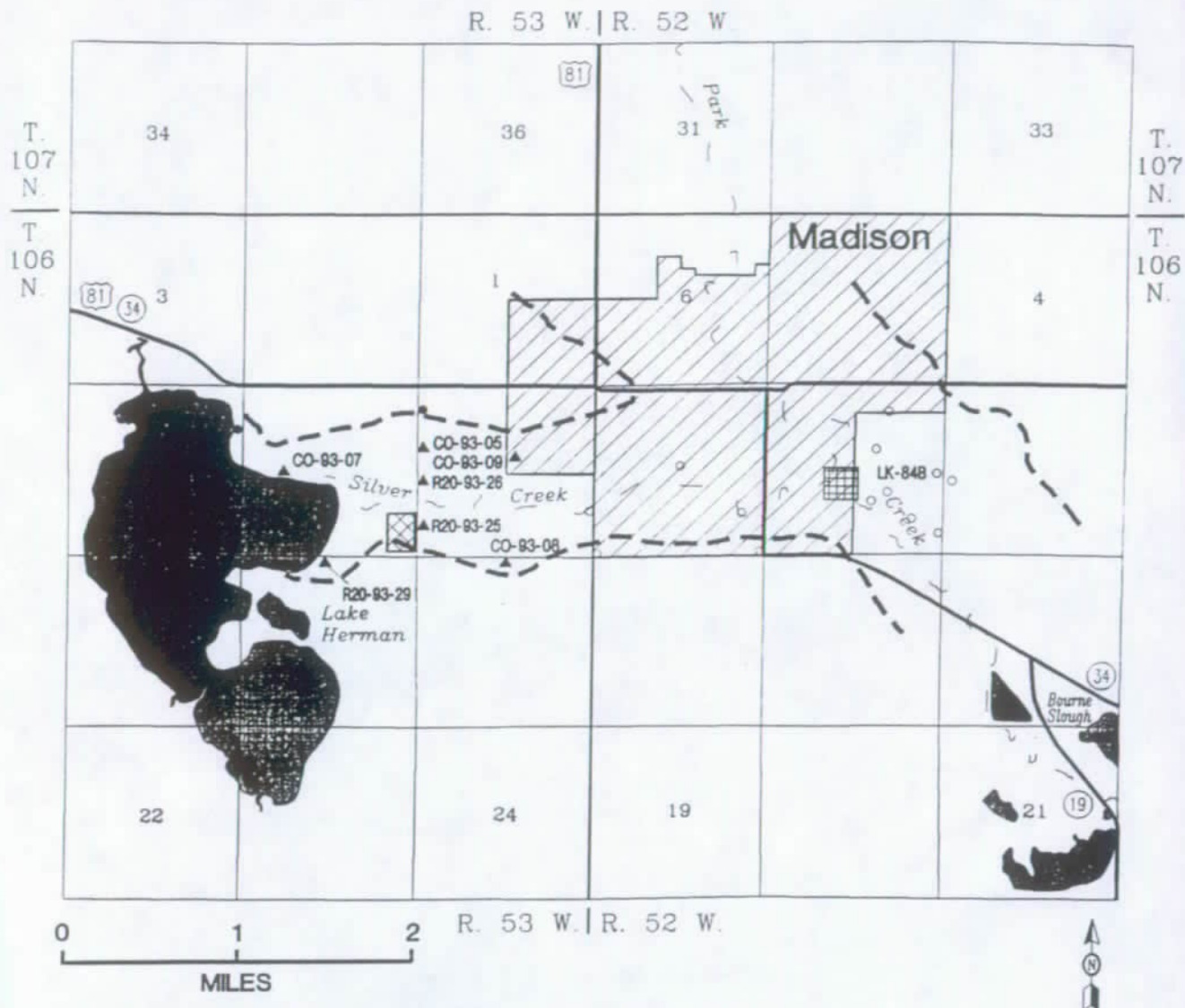
4.10 Pitless Adapter Unit: The pitless adapter unit installed in the well shall be measured as a unit actually furnished and installed as called for on the detailed drawings. Payment for the pitless adapter unit shall be made at the Contract unit price for "Furnish and Install 12" O.D. Pitless Adapter Unit", as stipulated in the Proposal, which price and payment shall be full compensation for all transportation, labor, tools, materials, supplies and equipment required to furnish and install the pitless unit including the 6-inch mechanical joint discharge adapter in its final location and the 3/4-inch, Schedule 80, PVC drawdown line.

4.11 Site Restoration and Finish Grading: Site restoration and finish grading as required to complete the restoration of all areas disturbed in the construction of the well, and fill material to provide finished grade elevations shall be paid for at the Contract lump sum price for "Site Restoration and Finish Grading", as stipulated in the Proposal, which price and payment shall be full compensation for furnishing of all equipment, tools, material and manpower to complete the item in a satisfactory manner.

Department of Environment and Natural Resources
Division of Financial and Technical Assistance
Geological Survey Program

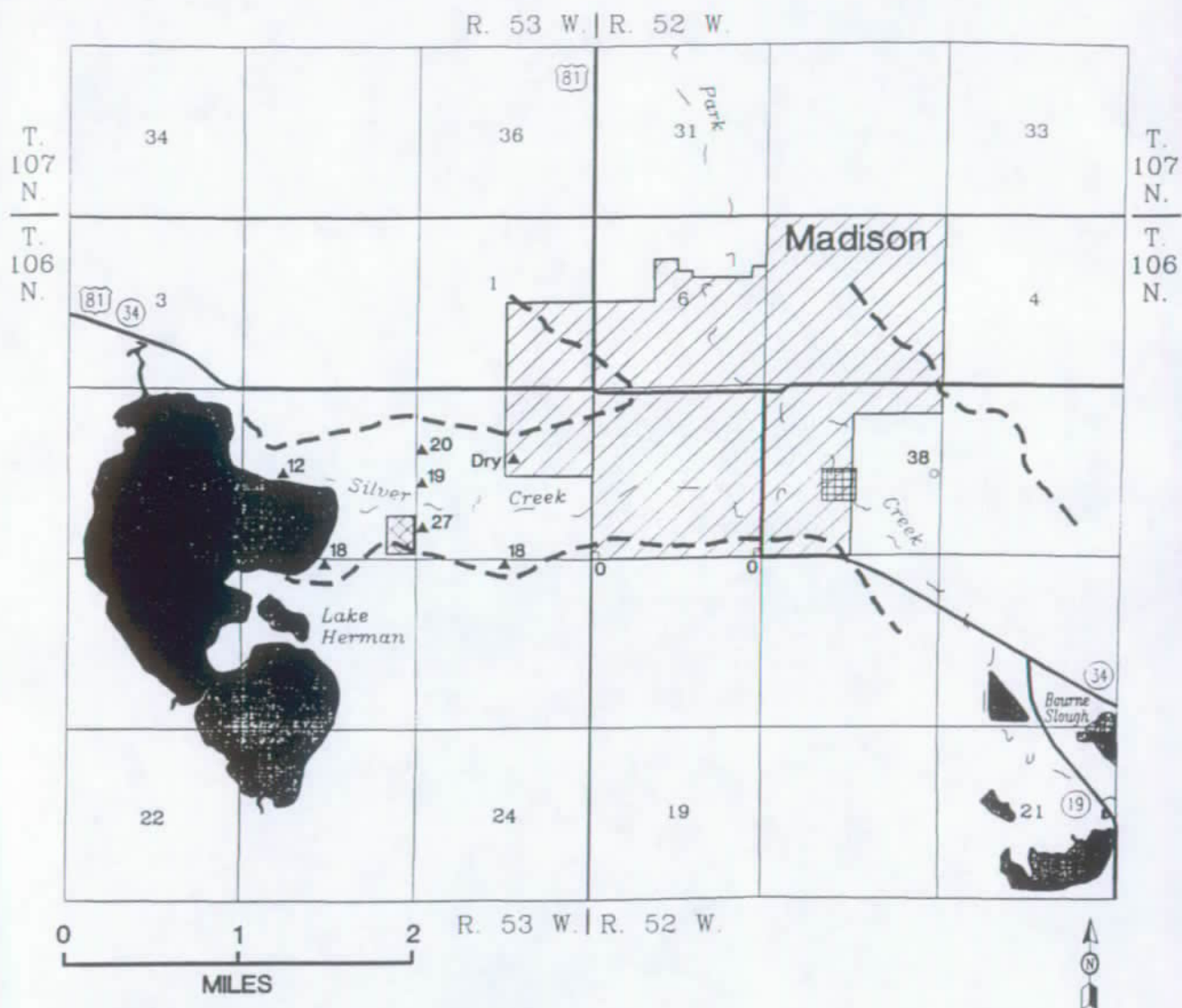
**Preliminary Results of Investigation
for the
City of Madison, South Dakota**

March, 29 1996



- Test hole drilled for the current project.
- LK-848 ○ Test hole or well drilled for a previous project.
The number is the well identifier.
- ▲ CO-93-08 Observation well drilled and sampled for the current project.
The number is the well identifier.
- City well field.
- Approximate boundary of the northern Skunk Creek aquifer
for the area directly east of Lake Herman.
- Area filled with dredge cuttings from Lake Herman.
- Intermittent stream.

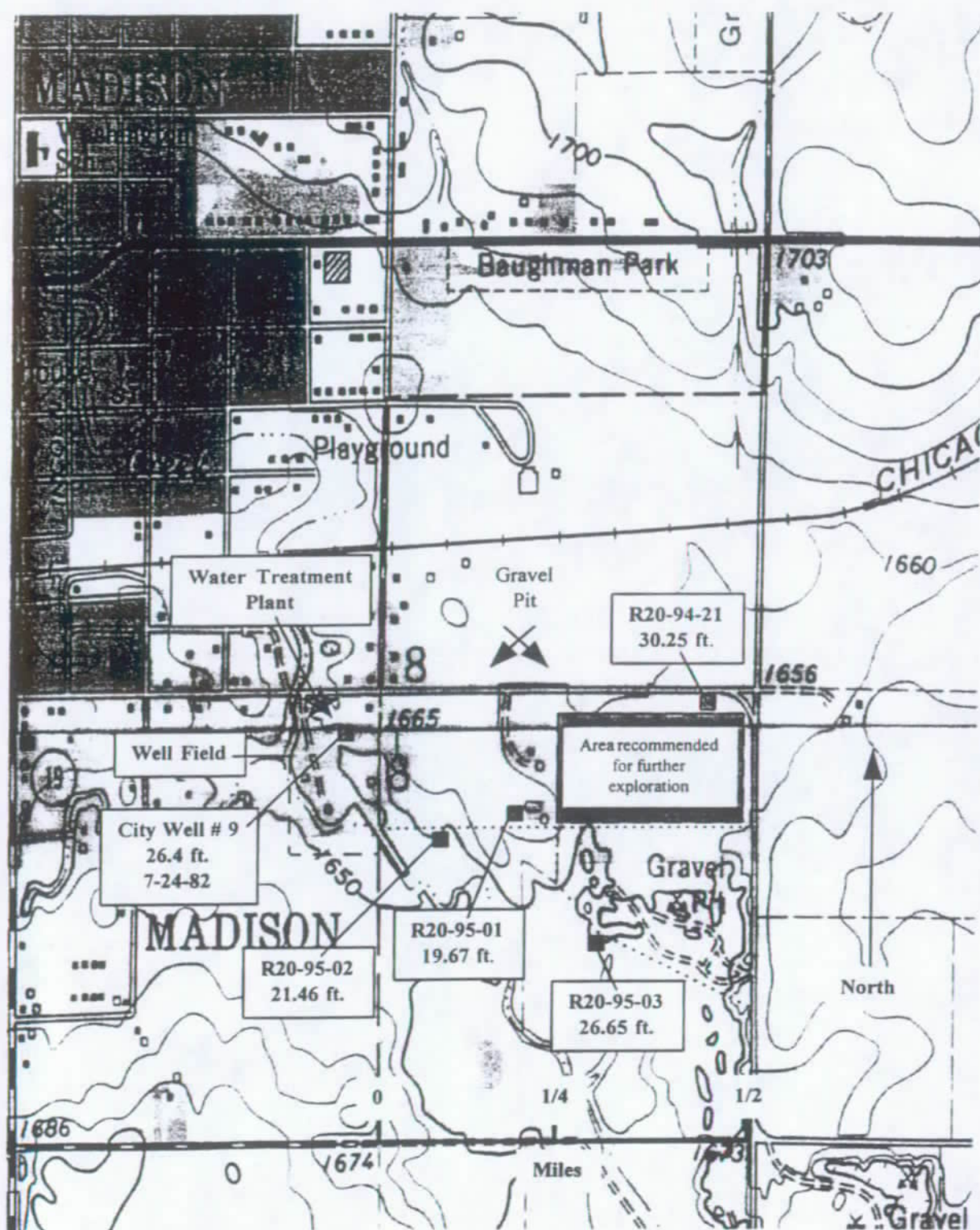
Locations of test holes and
observation wells and sample locations.



- 38^o Test hole or well drilled for a previous project.
The number is saturated thickness.
- 20[▲] Observation well.
The number is saturated thickness.
- City well field.
- Approximate boundary of the northern Skunk Creek aquifer
for the area directly east of Lake Herman.
- Area filled with dredge cuttings from Lake Herman.
- Intermittent stream.

Saturated thickness.

Well Locations and Saturated Thickness May 30, 1995



Chemical analyses of water samples for Madison City study

Legal location	Well name	Date collected	Well depth (2)	Conduc- tivity (3)	Field pH	(1) parameter and concentration													
						Alk-T	HCO3	Ca	Cl	F	Fe	K	Mg	Mn	NO3-N + NO2-N		SO4	TDS	Hardness as CaCO3
															Na				
									250 (4)	2.4 (5)	0.3 (4)	—	—	0.05 (4)	—	10 (5)	250 (4)	500 (4)	—
NORTHERN SKUNK CREEK AQ. (west of Madison)																			
SE,SE,SW,NW, sec. 11, T. 106 N., R. 53 W.	CO-93-07	9-13-93	17	1690	7.70	268	327	162	66	0.14	<0.0	20	92	0.21	85	<0.04	630	1310	783
SW,NW,SW,NW, sec. 12, T. 106 N., R. 53 W.	CO-93-05	9-13-93	18	1690	7.42	266	324	198	66	0.54	<0.0	7.2	101	0.14	63	0.06	684	1380	910
SW,NW,NW,SW, sec. 12, T. 106 N., R. 53 W.	R20-93-26	9-13-93	28	1180	7.63	257	313	119	13	0.17	<0.0	12	65	1.98	48	<0.04	410	880	565
NW,NW,SW,SW, sec. 12, T. 106 N., R. 53 W.	R20-93-25	9-13-93	40	2880	6.80	364	444	444	14	0.12	3.32	17	184	2.33	57	0.05	1660	2770	1870
NW,NW,NW,NE, sec. 13, T. 106 N., R. 53 W.	CO-93-08	9-13-93	21	1730	7.33	198	241	174	18	0.56	<0.0	2.5	113	<0.05	76	29.8	770	1460	900
NE,NE,NE,NW, sec. 14, T. 106 N., R. 53 W.	R20-93-29	9-13-93	34	1450	7.28	301	367	167	18	0.08	<0.0	15	79	5.19	58	<0.04	573	1160	742
	AVERAGES			1770	7.36	276	336	211	33	0.27	0.57	12.3	106	1.97	65	9.97	788	1493	962

Legal location	Well name	Date collected	Well depth (2)	Conductivity (3)	Field pH	(1) parameter and concentration													
						NO3-N Hardness as													
						Alk-T	HCO3	Ca	Cl	F	Fe	K	Mg	Mn	Na	NO2-N	SO4	TDS	CaCO3
									250	2.4	0.3	—	—	0.05	—	10	250	500	—
						(4)			(4)	(5)	(4)			(4)		(5)	(4)	(4)	
NORTHERN SKUNK CREEK AQ. (southeast of Madison)																			
NE, SW, NW, SE, sec. 8 T. 106 N., R. 52 W.	R20-95-02	5/30/95	30	1368	7.12	239	291	179	35	0.30	0.63	9.3	53	2.58	51	<0.04	478	1040	665
NE, SE, NW, SE, sec. 8 T. 106 N., R. 52 W.	R20-95-01	5/30/95	40	1445	7.09	259	316	202	43	0.21	0.89	9.6	57	2.25	46	<0.04	471	1090	739
NE, NW, SE, SE, sec. 8 T. 106 N., R. 52 W.	R20-95-03	5/30/95	34	1516	7.02	241	294	264	44	0.16	1.89	10	42	2.59	31	<0.04	530	1200	832
	AVERAGES			1443	7.08	246	300	215	41	0.22	1.14	9.6	51	2.47	43	<0.04	493	1110	745
(6) AVERAGE OF NE, SW, sec 8, T. 106 N., R. 52 W. MADISON CITY WELLS SKUNK CREEK AQ.																			
				2072				266	318	0.17	<0.05		76	2.74	157	<0.10	647	1528	973
(6) AVERAGE OF NE, SW, sec 8, T. 106 N., R. 52 W. MADISON CITY WELLS HOWARD AQ.																			
				1820				269	16.6	0.65	<0.05		107	38	110	<0.10	1015	1520	1110
COMPOSITE TREATED WATER SUPPLY FOR THE CITY OF MADISON (6)																			
				1581				118	124	1.68	0.23		70	<0.02	105	<0.10	578	1156	582
(6) SW,NE,NE,NW, sec. 14, T. 106 N., R. 53 W. LAKE HERMAN																			
		07-23-81		1453				98	31	0.23	<0.05		30	0.10	128	<0.10	488	1110	326

- (1): All concentrations are listed in milligrams per liter. TDS - total dissolved solids; Alk-T - total alkalinity; HCO₃ - bicarbonate; Ca - calcium; Cl - chloride; F - fluoride; Fe - iron; K - potassium; Mg - magnesium; Mn - manganese; Na - sodium; NO₃-N + NO₂-N - nitrate + nitrite as nitrogen; SO₄ - sulfate.
- (2): Well depth is presented in feet below top of casing.
- (3): Numbers are presented in micromhos.
- (4): U.S. Environmental Protection Agency recommended maximum limit (U.S. Environmental Protection Agency, 1985b).
- (5): U.S. Environmental Protection Agency enforceable maximum limit (U.S. Environmental Protection Agency, 1985a).
- (6): Source of information from Hammond and Green, 1991, South Dakota Geological Survey Open-File Report No. 49 UR, Ground Water Study for the city of Madison, South Dakota.



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

November 7, 1997

William Heyer, City Engineer
City of Madison
PO Box 308
Madison SD 57042-0308

Dear Mr. Heyer:

The Water Rights Program recently received driller reports for two wells drilled last August by Lacey Well Drilling for the City of Madison. I am writing to inquire whether these two new wells replace wells previously authorized by the city's existing water rights or if they are additional wells for the city.

A review of our files indicates the City of Madison has the following water rights:

Water Right No.	Amount of water	Location of well(s)	Depth of well
371-3	0.31 cfs (140 gpm)	NW 1/4 SW 1/4 Sec 7-T106N-R52W	27 feet
372-3	0.26 cfs (120 gpm)	SW 1/4 NW 1/4 Sec 7-T106N-R52W	30 feet
1079-3	2.70 cfs (1,215 gpm)	NE 1/4 NE 1/4 Sec 7-T106N-R52W	35 feet
1453-3	0.78 cfs (350 gpm)	NE 1/4 SW 1/4 Sec 8-T106N-R52W	50 feet
1604-3	1.22 cfs (550 gpm)	NE 1/4 SW 1/4 Sec 8-T106N-R52W	257 & 258 feet

State law provides that the location of a point of diversion may be changed or additional points of diversion may be approved if the new or additional point of diversion is from the same source of water and no additional water is appropriated. A change in location of diversion points may be allowed without application or publication, if the chief engineer is contacted and makes a finding that the change does not increase the potential for interference with existing diversions. The procedure followed in determining whether the chief engineer can make this finding is for the well owner to supply a map showing the location of the well(s) and an explanation that the well is either a replacement well or an additional well with no additional appropriation of water.

If these wells increase the city's ability to divert water to meet the community water needs, this constitutes a new appropriation of water and will require a new water right permit. If this is the case, we can send you the necessary water right permit application form.

Please let us know if these wells are additional wells or replacement wells and if any additional water is being appropriated to the amounts listed in the above table. If you have questions, please contact Eric Gronlund or me (605) 773-3352. We will be happy to assist you in any way possible.

Sincerely,

Karen Schlaak
Water Rights Program



BANNER ASSOCIATES, INC.
409 22nd Avenue South • P.O. Box 298
Brookings, South Dakota 57006-0298
(605) 692-6342
FAX: (605) 692-5714

November 17, 1997

South Dakota Department of
Environment and Natural Resources
Joe Foss Building
523 East Capitol
Pierre, SD 57501-3181

Attn. Karen Schlaak

RE: Madison South Dakota
Water Supply Wells

Dear Ms. Schlaak:

Banner Associates has received a copy of your letter to the City of Madison dated November 7, 1997 regarding water rights for two new wells constructed in 1997. The City does intend to use these wells as an additional water supply for the municipal water system and not as a replacement for existing wells. It is intended that additional water be appropriated through the use of these wells. An request for an additional appropriation for this well will be requested under separate cover.

The well south of Park Creek (identified on the enclosed map as Well #21) is at a location which is less than 500 feet from an existing city well in the same aquifer and some effect on pumping levels may be noticed if both wells are operated simultaneously. Since the wells are on opposite sides of Park Creek, it is expected that the interference will be minimized.

The well located on Center Street (identified on the enclosed map as Well #22) is a new well in a new location and an additional appropriation for use as a public water supply will be requested for this well. The well is at a distance of more than 1000 feet from the nearest water supply well for the City and is located in the outwash deposits of the creek that flows through the City.

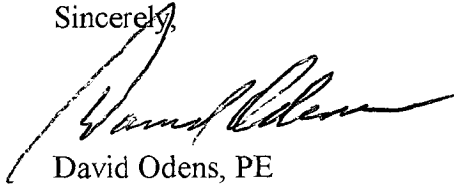
A third well, (identified on the enclosed map as Well #23) will also be developed and connected to the water supply system. This well was originally drilled as a dewatering well for the water treatment plant renovation project. The well is located within 150 feet of Well #9 which is developed in the same aquifer. During the construction project it was found that the dewatering well operation dropped the water level in Well #9 about one foot when operating at flows of up to 300 gpm. The well has been fitted with a stainless steel screen, pump and pitless adapter unit. An application for additional appropriation from this point of diversion will be submitted under separate cover.

Exploration for additional water supplies for the City of Madison has been conducted by both the South Dakota Department of Environment and Natural Resources, Division of Geological Survey and the City of Madison. After two drilling investigations by the Geological Survey and two drilling investigations conducted by the city in consultation with the survey, the wells described above appeared to be the most feasible opportunity for development of additional well capacity. The locations selected were selected in third quarter 1997. The wells have been drilled but the connections to the water treatment plant have not yet been made. The completion date for the connections to the water treatment plant is June 1, 1998.

Please provide copies of the necessary forms for application for permit to appropriate water from the new wells. The City of Madison will have those forms completed and returned as soon as practical.

If you have any questions, please call either David Odens at Banner Associates, 605-692-6342 or Bill Heyer at 605-256-7513.

Sincerely,

A handwritten signature in black ink, appearing to read "David Odens", written over a horizontal line.

David Odens, PE

Enclosure (map and legal description)

cc: Bill Heyer, City Engineer, Madison

Water Rights Program - DENR
Conversation File Documentation

NAME OF PERSON OR FILE: City of Madison

ADDRESS: COUNTY:

DATE: 1/16/98 TELEPHONE:

RE: Call from Dave Odens, Banner & Associates

COMMENTS:

Mr. Odens returned my call regarding the acre foot amount of water claimed as part of the City of Madison's application. He indicated that 600 acre feet of water annually was a reasonable estimation of water use.

I told him the application filing fee would now be \$300 instead of the \$450 submitted. We'll send the check back and request the \$300 filing fee. In the meantime we will begin processing the application.

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

NAME: 

REPORT ON WATER PERMIT APPLICATION NO. 6040-3
for the City of Madison
January 26, 1998

Application No. 6040-3 propose to construct and place to beneficial use 1.67 cfs (600 acre feet annually) from three wells approximately 32.5, 33 and 35 feet deep located in the NE 1/4 SW 1/4 and the NW 1/4 NW 1/4 of Section 8, T106N R52W in Lake County. This water was appropriated and reserved by future use Permit No. 747-3. The water will be used to supply municipal needs of the City of Madison.

AQUIFER - BIG SIOUX NORTHERN SKUNK CREEK (BS-NSC)

The Big Sioux Northern Skunk Creek is a surficial outwash (sand and gravel) which is under predominantly unconfined or water table conditions in this area. The aquifer is hydraulically connected to Park and Silver Creeks (major drainage between Lake Herman and Lake Madison) and to Lake Madison. Ground water movement is from west to east and locally toward the creek and to Lake Madison which is the major discharge zone for the aquifer. The aquifer underlies 48 square miles and contains an estimated 163,000 acre feet of water in storage in Lake County (Hansen, 1986).

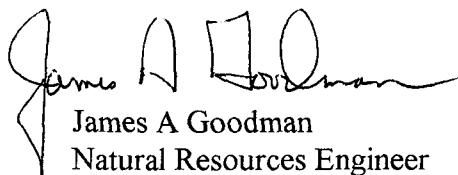
The Water Rights Program monitors an observation well, LK-84B, which is completed into the Big Sioux Northern Skunk Creek aquifer and is located about one-half mile east of this application. Water levels for this well show good response to climatic conditions, that is, rising water levels during wet years (recharge) and gradually declining water levels during dry years. In general, the water level record indicates that the aquifer is capable of sustaining additional withdrawals (Water Rights, 1998). Another observation well, LK-84A, which is completed into the Howard aquifer is located next to LK-84B. A hydrograph for each of these observation wells is included with this report.

REVIEW OF EXISTING WATER PERMITS/RIGHTS

The only other existing permits/rights in this area also belong to the City of Madison. According to the application, these new wells will vary in distance from 150 feet (well # 23), 500 feet (well # 21) and over 1000 (well # 22) feet from existing city wells. Interference is not a concern. There will be overlapping drawdown created but this can be managed by the city. Records submitted by the city indicate that during pumping of well #23 at a rate of 300 gpm there was about one foot of drawdown in existing city well #9 which is located about 150 feet away. Drawdown of this magnitude is easily manageable and should not be a significant problem for the city. The city also withdraws water from the Howard aquifer in this same area. There is no hydraulic communication between the Howard aquifer and the Big Sioux Northern Skunk aquifer in this area. The hydrographs for the observation wells illustrate this point.

CONCLUSIONS

1. Water is available from the Big Sioux Northern Skunk Creek aquifer.
2. The aquifer is under water table conditions and drawdown created by pumping should not be significant. This is also shown by preliminary testing by the city. Interference is not a concern.
3. The wells authorized by this application must be constructed in accordance with SD Well Construction Standards. Records for two of the wells were filed with the application. Both of these wells, #21 and #22, appear to have been completed in accordance with the Standards.
4. Approval of this application will leave 1372 acre feet of water remaining under Future Use Permit No. 747-3.



James A Goodman
Natural Resources Engineer

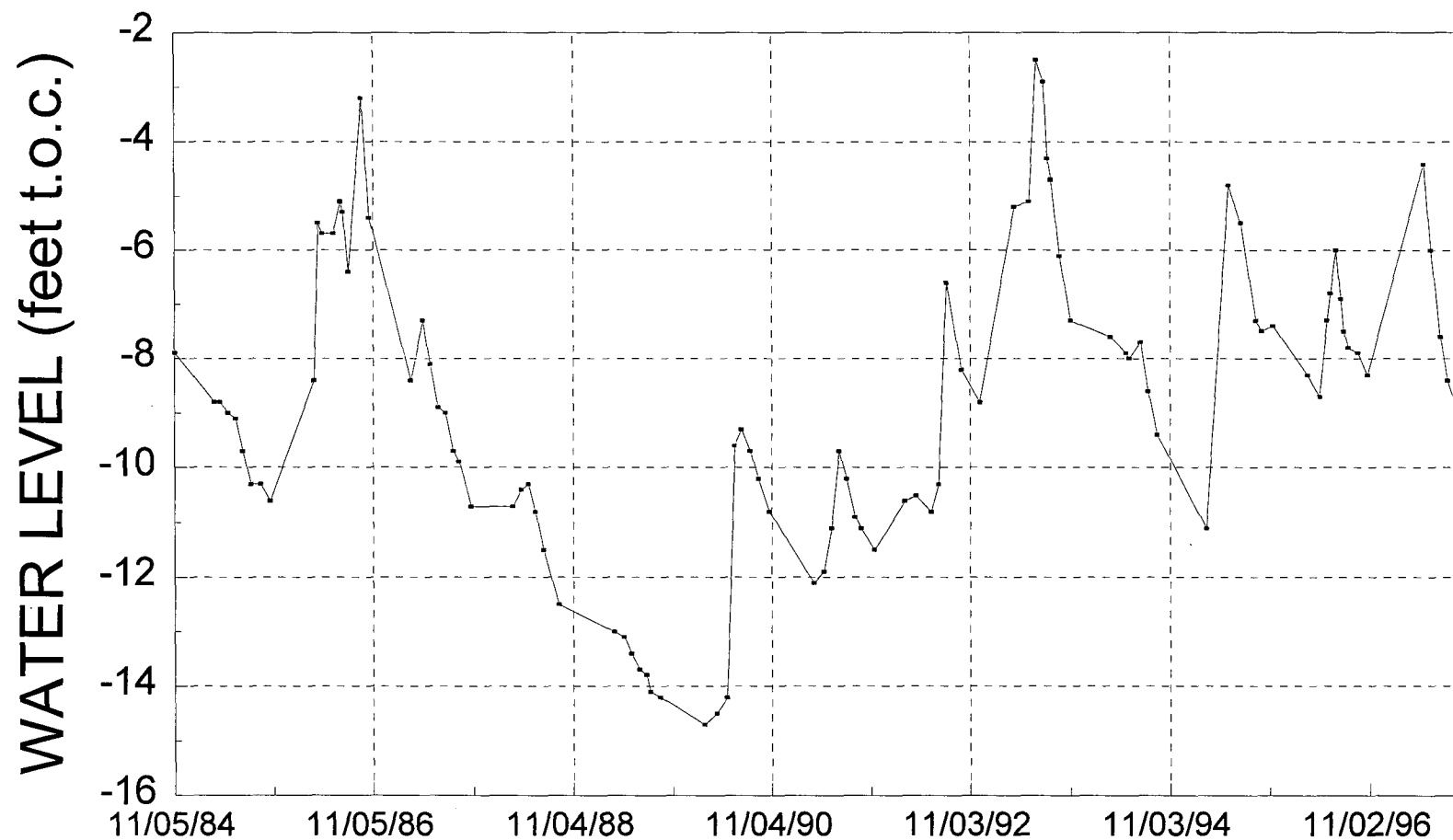
BIBLIOGRAPHY

Hansen, D.S., 1986, Water Resources of Lake and Moody Counties, South Dakota, USGS WRI 84-4209, USGS, Huron, SD, 57350.

Water Rights, 1998, Unpublished Observation Well Data for Lake County, SD DENR, Division of Environmental Services, Water Rights Program, Pierre, SD, 57501.

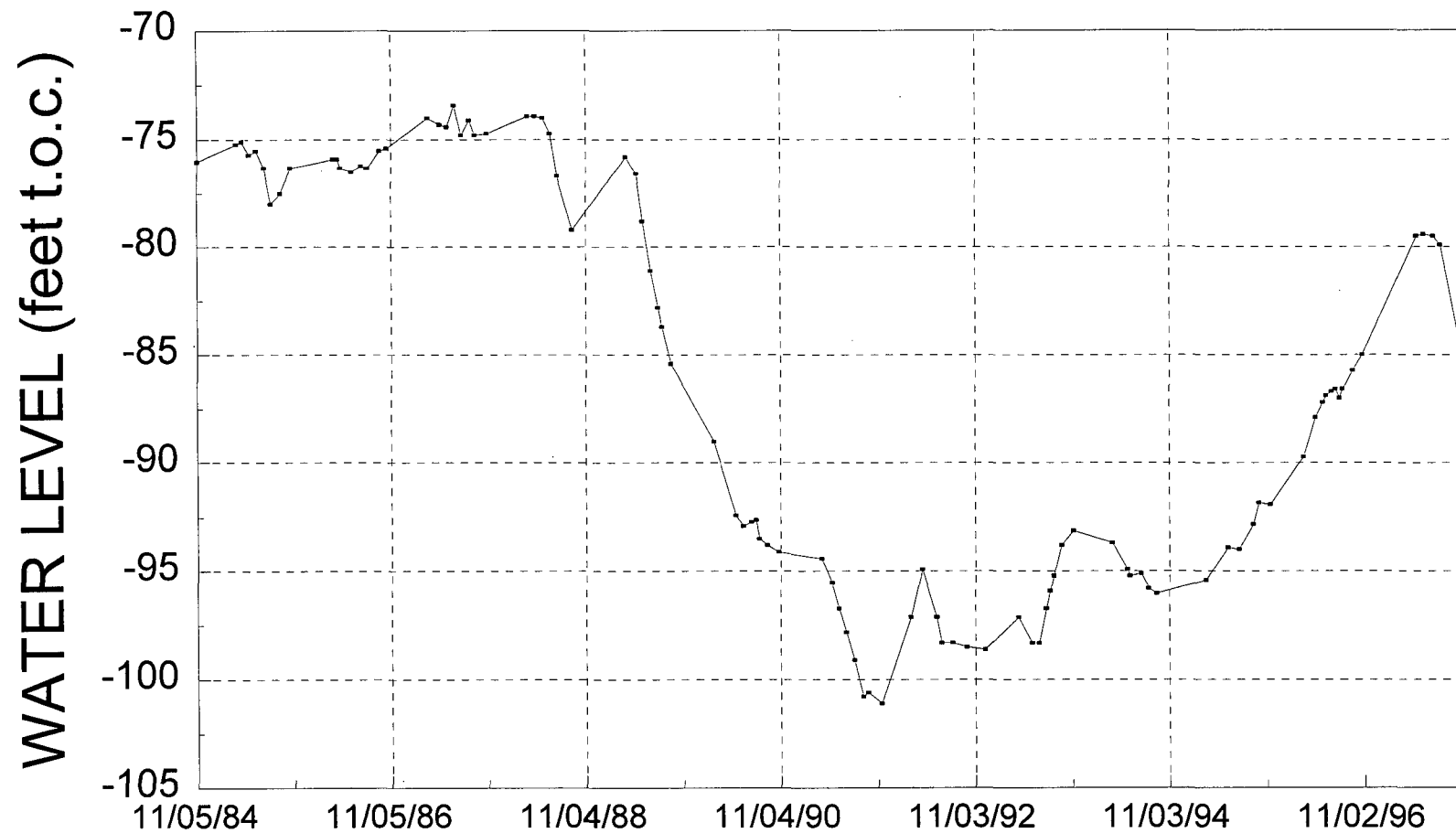
WATER RIGHTS OBSERVATION WELL

LK-84B



WATER RIGHTS OBSERVATION WELL

LK-84A



**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 6040-3, City of Madison**

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. 6040-3, c/o William Heyer, City Engineer, 116 West Center, Madison, SD 57042.

The Chief Engineer is recommending APPROVAL of Application No. 6040-3 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. The wells approved under this Permit will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner under this Permit shall control his withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
2. The wells authorized by Permit No. 6040-3 shall be constructed by a licensed well driller and construction shall comply with Water Management Board Well Construction Rules, Chapter 74:02:04 with the well casing pressure grouted (bottom to top) pursuant to Section 74:02:04:28.
3. Water Permit No. 6040-3 authorizes a total annual diversion of 600 acre feet of water from the Big Sioux:Northern Skunk Creek Aquifer.
4. The City of Madison shall report to the Chief Engineer annually the amount of water withdrawn each year from the Big Sioux:Northern Skunk Creek Aquifer.

See report on application for additional information.



JOHN HATCH, Chief Engineer
January 30, 1998



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

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

February 3, 1998

City of Madison
%William Heyer, City Engineer
116 West Center
Madison, SD 57042

Dear Mr. Heyer:

Water Permit Application No. 6040-3 for municipal use has been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice of hearing has been sent to the Publisher of the Daily Leader printed at Madison, SD (Ph # (605) 256-4555). For your information, a copy of the notice, the recommendation of the Chief Engineer and a report on the application are enclosed. Please review the notice prior to publication and notify this office, if you have any corrections or questions.

Be sure to contact the above newspaper to authorize publication of your Notice of Hearing and to arrange for payment. Early contact with the paper can eliminate delays. The publisher has been instructed to publish your notice once each week for two consecutive weeks with the last publication to occur twenty days before the board meeting. The newspaper has been instructed to send us the Proof of Publication. We must receive Proof of Publication before action can be taken on the application.

Sincerely,

Eric Gronlund
Natural Resources Engineer
605 773-3352

enclosures

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

C: Dave Odens, Banner Associates, P.O. Box 298, Brookings, SD 57006-0298



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

February 3, 1998

Daily Leader
P.O. Box 348
Madison, SD 57042-0348

ATTENTION: Legal Department

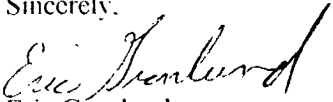
Enclosed is a Notice of Hearing on Application No. 6040-3 to be published twice. Please publish the first notice on February 11, 1998, with the second publication 7 days later.

The APPLICANT MUST VERIFY TO YOU THAT THE NOTICE IS TO BE PUBLISHED, before you make the first publication. Please BILL the APPLICANT for the cost of publication. The APPLICANT is City of Madison, %William Heyer, City Engineer, 116 West Center, Madison, SD 57042 (Ph # (605) 256-7513).

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

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

Sincerely,


Eric Gronlund
Natural Resources Engineer
605 773-3352

enclosures

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

FIRST TRANSMITTAL NOTICE

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

No. _____

Date _____

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

Name

Newspaper

Instruction to Newspaper - Publish first Notice on February 11, 1998, with the second publication 7 days later. The applicant is responsible for payment.

NOTICE OF APPLICATION NO. 6040-3 to Develop Reserved Water

Notice is given that the City of Madison, 116 West Center, Madison SD 57042 has filed an application for a water permit to construct and place to beneficial use 1.67 cubic feet of water per second (600 acre-feet annually) from three wells (Big Sioux-Northern Skunk Creek Aquifer) 32.5, 33 and 35 feet deep located in the NE 1/4 SW 1/4 and NW 1/4 NW 1/4 Section 8-T106N-R52W. This water was appropriated and reserved by future use Permit No. 747-3. The water will be used to supply municipal needs of the City of Madison.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 6040-3 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. In accordance with SDCL 46-2A-23, the chief engineer will act on the application, as recommended, unless a petition is filed opposing the application or the applicant files a petition contesting the chief engineer's recommendation. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled and the Water Management Board will consider the application. Notice of the hearing will be given to the applicant and any person filing a petition.

Any person interested in opposing or supporting this application or recommendation must file a written petition with BOTH the applicant and chief engineer. The applicant must file a petition if contesting the chief engineer's recommendation. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by March 2, 1998.

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



PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA)
) SS
 County of Lake)

I, Deanna Bergheim

certify that the attached printed Notice was taken
 from the Madison Daily Leader

printed and published in City of Madison

County of Lake and

state of South Dakota. The notice was published

in the newspaper on the following two dates:

Wednesday, February 11, 98

Wednesday, February 18, 98

Cost of Printing \$ 36.85

Deanna Bergheim
 (Signature)

Secretary

(Title)

Feb 18, 98
 (Date Signed)

Wednesday, Feb. 11 & 18

**NOTICE OF APPLICATION
 NO. 6040-3 TO DEVELOP
 RESERVED WATER**

Notice is hereby given that the City of Madison, 116 West Center, Madison, SD 57042 has filed an application for a water permit to construct and place to beneficial use 1.67 cubic feet of water per second (600 acre-feet annually) from three wells (Big Sioux-Northern Skunk Creek Aquifer) 32.5, 33 and 35 feet deep located in the NE 1/4 SW 1/4 and NW 1/4 NW 1/4 Section 8-T106N-R52W. This water was appropriated and reserved by future use Permit No. 747-3. The water will be used to supply municipal needs of the City of Madison.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 6040-3 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. In accordance with SDCL 46-2A-23, the chief engineer will act on the application, as recommended, unless a petition is filed opposing the application or the applicant files a petition contesting the chief engineer's recommendation. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled and the Water Management Board will consider the application. Notice of hearing will be given to the applicant and any person filing a petition.

Any person interested in opposing or supporting this application or recommendation must file a written petition with both the applicant and chief engineer. The applicant must file a petition if contesting the chief engineer's recommendation. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E. Capitol, Pierre, SD 57501 (605-773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by March 2, 1998.

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

NETTIE H. MYERS

Secretary
 Department of Environment
 and Natural Resources



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

APR 23 1998

City of Madison
%William Heyer, City Engineer
116 W. Center
Madison, SD 57042

Dear Mr. Heyer:

Enclosed is Water Permit No. 6040-3 authorizing construction of your water diversion system and beneficial use of the water, not exceeding the limits as specified in the Water Permit.

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

Very truly yours,

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

enclosures

PLEASE NOTE: Certain changes may be made to your water permit usually without affecting the priority date. The location of a point of diversion may be changed or additional points of diversion may be approved if the water source remains unchanged; no additional water is appropriated; and, if irrigating, no additional land is irrigated. The change may be allowed without application or publication, if the Water Rights Program is contacted and the chief engineer makes a finding that the change does not increase the potential for interference with existing diversions.

A new water permit application is required to change water sources, increase the permitted diversion rate, or increase the irrigated acreage. If the application is approved, the water permit will receive a new priority date.

RECEIPT

Water Rights Program

South Dakota Department of Environment and Natural Resources

NO 415622

Pierre, January 29, 19 98

RECEIVED OF City of Madison, P.O. Box 388, Madison, SD 57042
the following amount in fees for services rendered as provided for by law:

Fee for Application for Permit No. 6040-3 to Appropriate Water, to construct
and to put water to beneficial use _____

300 00

Fee for Application for Permit No. _____ to Appropriate Water, for Future
Use _____

Fee to retain Future Use Permit No. _____ after period of seven years.

Fee for Inspecting Constructed Works, confirming beneficial use and issuing Water
License No. _____

Fee for Filing Transfer Form _____

Fee for Filing Extension Request _____

Fee for _____

(Any Other Work Provided by Law)

Total

300 00

By _____
Chief Engineer

John Hatch

Permit No. 6040-3
Big Sioux River - Water District

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

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

I have this day, July 15, 2008, made a thorough examination of the water use system constructed by City of Madison of 116 West Center, Madison, SD 57042 holder of Permit No. 6040-3, bearing the priority of November 10, 1960 authorizing the diversion of 1.67 cu. ft. per second (600 acre-feet annually) of the waters of the Big Sioux-Northern Skunk Creek Aquifer for Municipal purposes, in Lake County.

Inspection contact & relationship **Heath Von Eye (256-7515)**
to permit holder, if applicable:

A. Works used to divert the water:

Well Information:

- 1) Well Drilling Firm: Lacey Well Drilling
- 2) No. of Wells 3
- 3) Depth(s) Well 21: 35 feet, Well 22: 33 feet, Well 23: 33 feet
- 4) Well log is available Y

Casing:

- 1) Diameter (3) 12 inches
- 2) Length Well 21: 28 feet, Well 22: 27 feet, Well 23: 23 feet
- 3) Type Steel

Screen:

- 1) Type Wells 21 and 22 Steel, Well 23: PVC
- 2) Length Well 21: 7 feet, Well 22: 7 feet, Well 23: 10 feet
- 3) Static water level Well 21: 12 feet, Well 22: 7 feet, Well 23: 8 feet

Pump:

- 1) Make (3) Grundfos
- 2) Model 300S-150-3
- 3) Size 15 hp
- 4) Capacity 300 GPM

Motor:

- 1) Make (3) Hitachi
- 2) Model No. Unknown

B. Compliance with Permit Requirements:

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

The system is in Good condition with the point(s) of diversion located as follows:

All Wells are in Section 8-T106N-R52W

Well 21: Approximately 1,719 feet north and 1,942 feet east of the SW corner.

(N 43.99801, W -97.10254) (~~NW 1/4 NW 1/4~~) NE 1/4 SW 1/4)

Well 22: Approximately 828 feet south and 1,285 feet east of the NW corner.

(N 44.00555, W -97.10500) (~~NE 1/4 SW 1/4~~) -- NW 1/4 NW 1/4)

Well 23: Approximately 2,384 feet north and 2,144 feet east of SW corner.

(N 43.99988, W -97.10172) (NE 1/4 SW 1/4)

The works are capable of diverting and conveying to the place of use 2.00* cu. ft. per second of water which is to be used for Municipal use. Water has been put to beneficial use to the maximum extent as follows:

The license should be issued for 1.67 cfs.

All structures, wells and lands on map Y

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

*Wells 21, 22 and 23 are each capable of producing 0.67 cfs (300 gpm) from the Big Sioux-Northern Skunk Creek aquifer which is more than the permitted rate. However, these three wells do not pump water continuously or at the same time as the city has nine other wells completed into the Northern Skunk Creek aquifer or the Howard aquifer. This permit should be licensed for the 1.67 cfs as originally permitted.



Mike DeFea

Natural Resources Project Engineer
DENR, Water Rights Program

Date report completed: June 10, 2010

City of Madison

Water Permit No. 6040-3



Mike DeFea

Mike DeFea
Natural Resources Engineer
DENR, Water Rights Program
June 10, 2010

0 400 800 1,600 2,400 3,200 Feet



South Dakota
Department of Environment
& Natural Resources
Protecting SD's Tomorrow...Today



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

JUL 14 2010

6040-3

Heath Von Eye. PWD
City of Madison
116 W Center
Madison SD 57042

Dear Mr. Von Eye:

Enclosed is Water License No. 6040-3. This is the final water right document completing your process of obtaining a Water Right. Included with your license is a map prepared by the staff engineer who conducted the field investigation.

For your information SDCL 46-6-27 requires that if the owner of an existing well, such as the well authorized by Water Right No. 6040-3, constructs a replacement well and does not plan to use the old well, the old well is considered abandoned and must be plugged. Also, any well that is being used or is not considered abandoned must be valved and controlled, if flowing, or sealed and capped so that no leaking occurs either underground or at the surface.

As long as you use the water beneficially, as stated in the Water License, the State Water Laws provide that you have a continuing right to use the water. If you have any questions, please contact our office.

Sincerely,

A handwritten signature in black ink, appearing to read "Garland Erbele". The signature is fluid and cursive, with the first name "Garland" and last name "Erbele" clearly distinguishable.

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

enclosures

**STATE OF SOUTH DAKOTA
WATER LICENSE NO. 6040-3**

(1) The City of Madison, 116 W Center, Madison SD 57042 made Application No. 6040-3, January 14, 1998 for a water permit to divert 1.67 cubic feet of water per second (600 acre feet annually) from ground water (three wells Big Sioux Northern Skunk Creek Aquifer), Lake County, South Dakota for municipal purposes. Water Permit No. 6040-3, with a priority date of November 10, 1960 (established by Future Use Permit No. 747-3) was approved March 2, 1998 and issued to the city for diversion of water with construction of the described water supply system to be completed on or before March 2, 2003 and for the application to beneficial use of said water on or before March 2, 2007.

(2) It is certified that the permit holder has complied with the provisions of South Dakota State Law relating to completion of the construction of the water supply system and is entitled to divert 1.67 cubic feet of water per second for beneficial use. The location of the diversion points are:

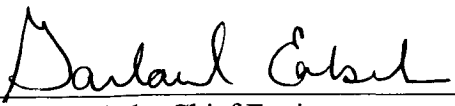
- (Well 21) 1,719 feet north and 1,942 feet east of the SW corner of Section 8, T106N, R52W (NE $\frac{1}{4}$ SW $\frac{1}{4}$);
- (Well 22) 828 feet south and 1,285 feet east of the NW corner of Section 8, T106N, R52W (NW $\frac{1}{4}$ NW $\frac{1}{4}$);
- (Well 23) 2,384 feet north and 2,144 feet east of the SW corner of Section 8, T106N, R52W (NE $\frac{1}{4}$ SW $\frac{1}{4}$).

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

(4) Pursuant to South Dakota Water Law 46-5-30.1 the City of Madison, 116 W Center, Madison SD 57042 the holder and/or owner of Water Right No. 6040-3 is issued a license to appropriate water, the right to use 1.67 cubic feet of water per second from ground water (three wells, Big Sioux Northern Skunk Creek Aquifer) with a priority date of November 10, 1960 (established by Future Use Permit No. 747-3) from the location specified in (2) of this license for municipal use purposes.

This license is subject to South Dakota Water Law, any limitations or conditions listed in Water Right No. 6040-3 and subject to the following qualifications:

- The wells approved under this Permit will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner under this Permit shall control his withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
- The wells authorized by Permit No. 6040-3 shall be constructed by a licensed well driller and construction shall comply with the 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 (*wells drilled by Lacey Well Drilling – logs on file with the Water Rights Program.*)
- Water Permit No. 6040-3 authorizes a total annual diversion of 600 acre feet of water from the Big Sioux Northern Skunk Creek Aquifer.
- The City of Madison shall report to the Chief Engineer annually the amount of water withdrawn each year from the Big Sioux Northern Skunk Creek Aquifer.


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

JUL 14 2010
date





1079-3 1453-3 1604-3 371-1 372-3
6512-3 6511-3 6510-3 747-3 6040-3

**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 E. CAPITOL AVE
PIERRE SD 57501-3182
danr.sd.gov

October 21, 2025

8792-3

City of Madison
c/o Finance Officer
503 S Highland Ave
Madison SD 57042

Attention Finance Officer:

Enclosed is a "Notice" dated October 8, 2025, concerning the 2025 Irrigation Questionnaire.

The notice was originally mailed to the City of Madison at 116 W Center St, Madison SD 57042. The post office notified our office that your address has changed, and your records have been updated accordingly.

This is a time sensitive matter. Please complete and return the enclosed questionnaire or submit your report online at <https://danr.sd.gov/iq/> using this password **FFDLQE**.

If this change of address is in-correct, please contact our office immediately to update your contact information.

Sincerely,

Amanda Dewell
Permitting Administrator
Water Rights Program
605 773-3352
Amanda.Dewell@state.sd.us

enclosures

553 NFE 1 C24C0010/15/25
RETURN TO SENDER
: CITY OF MADISON
503 S HIGHLAND AVE
MADISON SD 57042-3227

RETURN TO SENDER