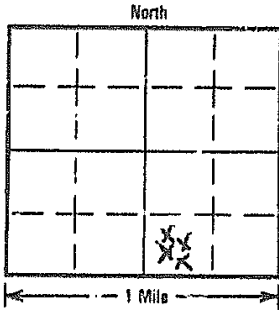


SOUTH DAKOTA WATER WELL COMPLETION REPORT

07-92

Location SW 1/4 SE 13 Twp 2N Rg 8E

County PENNINGTON



Well Completion Date 4-1-97, AND 4-3-97  
4-2-97

Well Owner: US ARMY CORPS OF ENGINEERS  
Business Name:  
Address: ELLSWORTH AIR FORCE BASE,  
SOUTH DAKOTA

WELL LOG:	FORMATION	DEPTH	
		FROM	TO
SEE ATTACHED LOGS			

LOCATION:  
Distance from nearest potential pollution source (septic tank, abandoned well, feed lot, etc.)? \_\_\_\_\_ ft. from \_\_\_\_\_ (identify source).

PROPOSED USE:  
 Domestic/Stock  Municipal  Business  Test Holes  
 Irrigation  Industrial  Institutional  Monitoring well

METHOD OF DRILLING:

CASING DATA:  
 Steel  Plastic  Other  
If other describe \_\_\_\_\_

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
____ LB/FT	____ IN	____ FT	____ FT	____ IN
____ LB/FT	____ IN	____ FT	____ FT	____ IN
____ LB/FT	____ IN	____ FT	____ FT	____ IN

GROUTING DATA

Grout Type	No. of Sacks	Grout Weight	From	To
		____ lb./gal	____ ft.	____ ft.
		____ lb./gal	____ ft.	____ ft.

Describe grouting procedure \_\_\_\_\_

SCREEN:  Perforated pipe  Manufactured  
Diameter \_\_\_\_\_ IN Length \_\_\_\_\_ FEET  
Material \_\_\_\_\_  
Slot Size \_\_\_\_\_ Set From \_\_\_\_\_ Feet to \_\_\_\_\_ 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: \_\_\_\_\_  
\_\_\_\_\_ NO. Why Not? \_\_\_\_\_

Laboratory sent to for water quality analysis \_\_\_\_\_

STATIC WATER LEVEL \_\_\_\_\_ 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  
\_\_\_\_\_ ft. After \_\_\_\_\_ Hrs. pumped \_\_\_\_\_ GPM  
\_\_\_\_\_ ft. After \_\_\_\_\_ Hrs. pumped \_\_\_\_\_ GPM  
If pump installed, pump rate \_\_\_\_\_ GPM

REMARKS SEE ATTACHED LOGS FOR WELLS  
MW970202  
SVE JP01  
SVE JP02  
MW970401

This well was drilled under license # 5105  
And this report is true and accurate.

Drilling firm MAXIM TECHNOLOGIES, INC.  
Signature of License Representative: *Ian B. Holden*  
Signature of Well Owner or Equitable Property Holder: \_\_\_\_\_

Date: 8/20/97

# SOIL BORING AND MONITORING WELL LOG

JOB NO. 4209-7-05879 VERTICAL SCALE 1" = 7' BORING NO. SB970202 WELL NO. MW970202  
 PROJECT Rust E & I Ellsworth AFB, South Dakota

Depth in Feet	Description of Material	Geologic Origin	Sample NO.	TYPE	Inu (ppm)	STANDPIPE ELEVATION
	SURFACE ELEVATION _____					<b>Well Construction</b>
	NO SAMPLES TAKEN		1			+3' Riser/4" x 10' Pro-top
5			2			Concrete Seal
			3			2" PVC Riser Pipe
10			4			Cement/Bentonite Grout
			5	CS		Bentonite
15						#10-20 Silica Sand Pack
20	UNWEATHERED SHALE, (Textural Classification: FAT CLAY, black, moist (CH))	Pierre Shale				Flush Threaded 2" PVC Screen 0.010" Screen Size Opening
25	END OF BORING					Bottom of Well
30						
35	PRELIMINARY COPY					
40						
45						
50						



### WATER LEVEL MEASUREMENTS

START 4-1-97 COMPLETE 4-1-97

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	WATER LEVEL	WATER ELEVATION	METHOD
						4 1/4" H.S.A. to 25'

CREW CHIEF: Benson

**MAXIM**  
Technologies, Inc.

# SOIL BORING AND MONITORING WELL LOG

JOB NO. 4209-7-05879 VERTICAL SCALE 1" = 7' BORING NOSVEJP01 WELL NO. SVEJP01  
 PROJECT Rust E & I Ellsworth AFB, South Dakota

Depth in Feet	Description of Material	Geologic Origin	Sample NO.	TYPE	hnu (ppm)	STANDPIPE ELEVATION
0	<b>SURFACE ELEVATION</b> _____					
0 - 5	FILL - MOSTLY LEAN CLAY, brown, wet (CI.), trace sand and gravel	Fill	1	CU		<b>Well Construction</b> +3' Riser/5' x 7' Pro-top 4" PVC Riser Pipe Concrete Seal Bentonite #10-20 Silica Sand Pack Flush Threaded 4" PVC Screen 0.010" Screen Size Opening Bottom of Well
5 - 10	FILL - MOSTLY WELL GRADED GRAVEL, moist (GW)		2	CS		
10 - 15	FAT CLAY, brown, moist (CH)	Fine Alluvium	3	CS		
	SANDY LEAN CLAY, brown, wet (CL)					
	WEATHERED SHALE, (Textural Classification: FAT CLAY WITH GRAVEL, brown, moist (CH))	Pierre Shale				
15	END OF BORING					
20						
25						
30						
35						
40						
45						
50						

PRELIMINARY COPY

WATER LEVEL MEASUREMENTS						START <u>4-2-97</u>	COMPLETE <u>4-3-97</u>
DATE	TIME	SAMPLED DEPTH	CASING DEPTH	WATER LEVEL	WATER ELEVATION	METHOD	② 14:00
						6 1/4" H.S.A. to 15'	
						CREW CHIEF:	<u>Benson</u>

**MAXIM**  
Technologies, Inc.

# SOIL BORING AND MONITORING WELL LOG

JOB NO. 4209-7-05879 VERTICAL SCALE 1" = 7' BORING NO. SVEJP02 WELL NO. SVEJP02  
 PROJECT Rust E & I Ellsworth AFB, South Dakota

Depth in Feet	Description of Material	Geologic Origin	Sample NO.	TYPE	hnu (ppm)	STANDPIPE ELEVATION _____
5	LEAN CLAY, brown, moist (CL)	Fine Alluvium	1	CS		<div style="text-align: right; font-weight: bold;">Well Construction</div> +3' Riser/8"x7' Pro-top 4" PVC Riser Pipe Concrete Seal Bentonite #10-20 Silica Sand Pack Flush Threaded 4" PVC Screen 0.010" Screen Size Opening Bottom of Well
10	GRAVEL WITH SAND AND CLAY, brown, moist (GW-GC)	Coarse Alluvium	2	CS		
15	FAT CLAY, brown, moist to wet (CH), sand laminations, trace gravel	Fine Alluvium	3	CS		
15	END OF BORING					
20						
25						
30						
35						
40						
45						
50						

PRELIMINARY COPY

### WATER LEVEL MEASUREMENTS

START 4-3-97 COMPLETE 4-3-97

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	WATER LEVEL	WATER ELEVATION	METHOD
						6 1/4" H.S.A. to 14'

CREW CHIEF: Benson

# SOIL BORING AND MONITORING WELL LOG

mw 970401

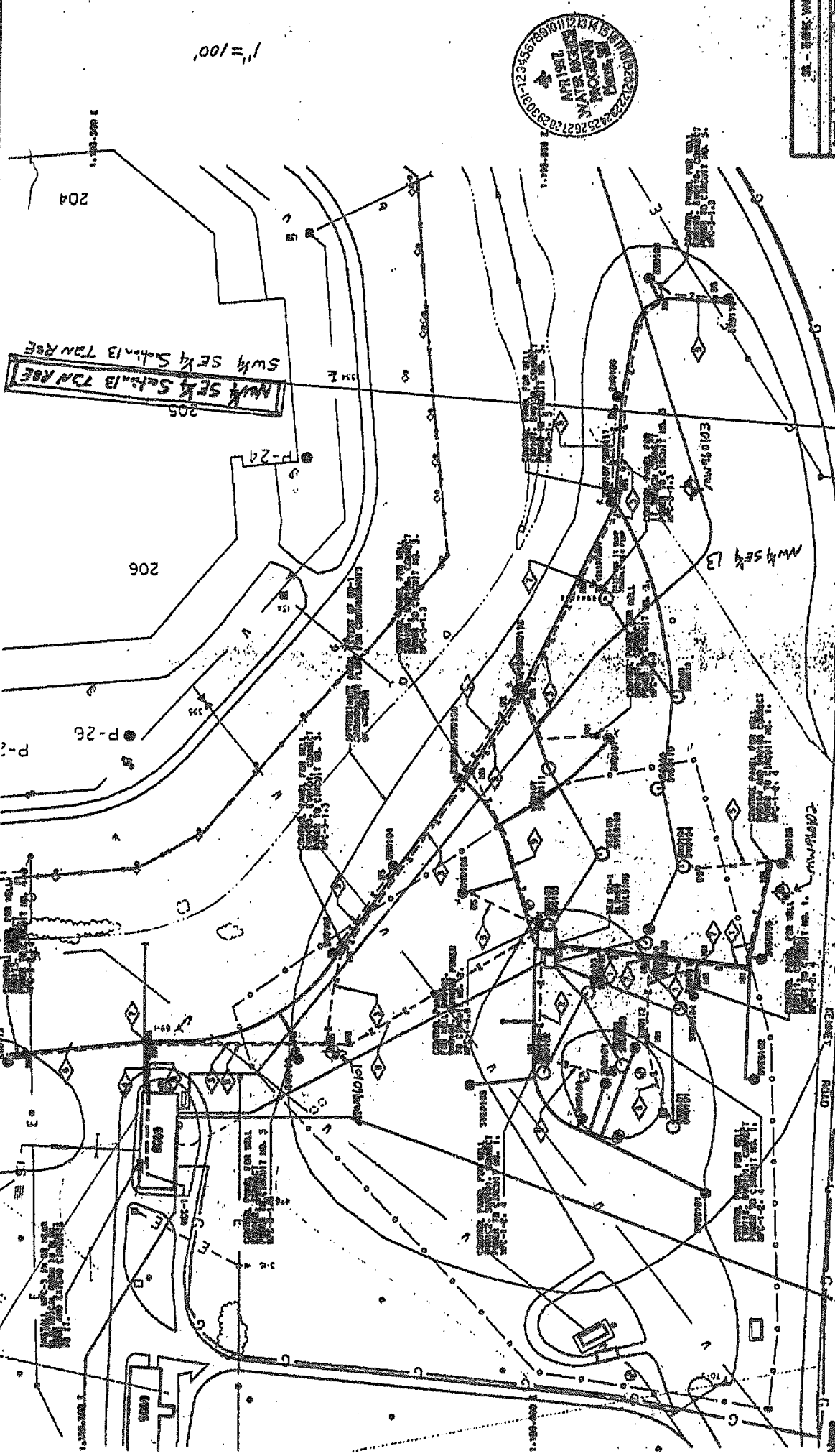
JOB NO. 4209-7-05879 VERTICAL SCALE 1" = 7' BORING NO. SB960407 WELL NO. MW960407  
 PROJECT Rust E & I Ellsworth AFB, South Dakota

Depth in Feet	Description of Material	Geologic Origin	Sample NO.	TYPE	Inu (ppm)	STANDPIPE ELEVATION
0	<b>SURFACE ELEVATION</b> _____					
0 - 5	LEAN CLAY, brown, moist (CL), organics trace sand	Fine Alluvium	1	CS		+3' Riser/4"x10' Pro-top
5 - 10	SAND WITH GRAVEL AND COEBLES, brown, moist (SP)	Coarse Alluvium	2	CS		2" PVC Riser Pipe
10 - 15			3	CS		Concrete Seal
15 - 20	FAT CLAY WITH GRAVEL, brown, wet (CH), sand layers waterbearing	Fine Alluvium	4	CS		Cement/Bentonite Grout
20 - 25	SAND, brown, waterbearing (SP), trace gravel	Coarse Alluvium	5	CS		Bentonite
25 - 30	WEATHERED SHALE, (Textural Classification: FAT CLAY, brown to gray (CF))	Pierre Shale				#10-20 Silica Sand Pack
30 - 35	SHALE, (Textural Classification: FAT CLAY, gray (CH))					Flush Threaded 2" PVC Screen 0.010" Screen Size Opening
35 - 50	END OF BORING					Bottom of Well

PRELIMINARY COPY

WATER LEVEL MEASUREMENTS						START	COMPLETE
DATE	TIME	SAMPLED DEPTH	CASING DEPTH	WATER LEVEL	WATER ELEVATION	<u>4-2-97</u>	<u>4-2-97</u>
							@ 17:50
						CREW CHIEF:	<b>Benson</b>

**MAXIM**  
Technologies, Inc.



1" = 100'



NO.	DATE	REVISIONS

- LEGEND**
- ◊ EXISTING UNDER VOLTAGE EXTRACTION WELL
  - ◊ PROPOSED UNDER VOLTAGE EXTRACTION WELL
  - WELL SURVEY POINT. SEE DETAIL 11.1
  - ELECTRICAL SYSTEM. SEE DETAIL 11.2
  - ELECTRICAL WOOD WELLS. SEE DETAIL 11.3
  - UNDERGROUND ELECTRICAL OR CANAL CONDUIT. SEE DETAIL 11.4
  - SYMBOL OF UNDERGROUND WELLS
  - W.P. - WATER 11.1, STAGE 1 & 2
- NOTES**
- 1. ALL POWER CONDUITS SHALL BE 2" PC POWER CONDUIT.
  - 2. ALL UNDERGROUND ELECTRICAL SHALL BE 2" PC POWER CONDUIT.
  - 3. ALL UNDERGROUND ELECTRICAL SHALL BE 2" PC POWER CONDUIT.
  - 4. ALL UNDERGROUND ELECTRICAL SHALL BE 2" PC POWER CONDUIT.
  - 5. ALL UNDERGROUND ELECTRICAL SHALL BE 2" PC POWER CONDUIT.
  - 6. ALL UNDERGROUND ELECTRICAL SHALL BE 2" PC POWER CONDUIT.
  - 7. ALL UNDERGROUND ELECTRICAL SHALL BE 2" PC POWER CONDUIT.
  - 8. ALL UNDERGROUND ELECTRICAL SHALL BE 2" PC POWER CONDUIT.
  - 9. ALL UNDERGROUND ELECTRICAL SHALL BE 2" PC POWER CONDUIT.
  - 10. ALL UNDERGROUND ELECTRICAL SHALL BE 2" PC POWER CONDUIT.