9-185—July 1935
Revised

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES BRANCH

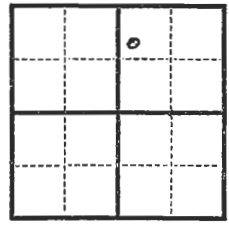
WELL SCHEDULE

Date ..... , 19..... Field No. .....

Record by ..... Office No. .....

Source of data .....

1. *Location:* State Iowa County Emmet
   Map .....
   ..... ¼ ..... ¼ sec. ..... T ..... N/S R ..... E/W
2. *Owner:* Private Address .....
   Tenant ..... Address .....
   Driller ..... Address .....
3. *Topography* Upland
4. *Elevation* ..... ft. above/below .....
5. *Type:* Dug, drilled, driven, bored, jetted Jan 19 46
6. *Depth:* Rept. ..... ft. Meas. 505 ft.
7. *Casing:* Diam. 300 8" - 6" in., to ..... in., Type .....
   Depth ..... ft., Finish .....



8. *Chief Aquifer* ..... From ..... ft. to ..... ft.
   Others .....
9. *Water level* 100 ft. rept./meas. ..... 19..... above/below .....
   ..... which is ..... ft. above/below surface
10. *Pump:* Type ..... Capacity ..... G. M. .....
    Power: Kind ..... Horsepower .....
11. *Yield:* Flow ..... G. M., Pump ..... G. M., Meas., Rept. Est. .....
    Drawdown 20 ft. after ..... hours pumping ..... G. M.
12. *Use:* Dom., Stock, PS., RR., Ind., Irr., Obs. .....
    Adequacy, permanence .....
13. *Quality* ..... Temp ..... °F.
    Taste, odor, color ..... Sample Yes/No .....
    Unfit for .....
14. *Remarks:* (Log, Analyses, etc.) Pump setting 20' into water .....
    .....
    .....

U. S. GOVERNMENT PRINTING OFFICE 6—7473

Well	8:57a	Temp 8°F	1490
Rumpled Sta	8:59a		1476
Well	9:01a		1487
Rumpled Sta	9:03		1473

Bonnieson drilling at Burd & Iowa Peaks

MASTER CARD-A 9-26-69

STATE	COUNTY	LATITUDE DEG.	LATITUDE MIN.	LATITUDE SEC.	LATITUDE N or S	LONGITUDE DEG.	LONGITUDE MIN.	LONGITUDE SEC.	SEQ. NO.
1 2	3 4	5 6	7 8	9 10	11	12 13 14	15 16	17 18	19
19	32	43	17	50	N	094	30	27	1

WELL SCHEDULE

US GEOLOGICAL SURVEY

IOWA DISTRICT WRD

WELL NO. 098-31W-21ABA CO. EMMET

OWNER RINGSTED, TOWN (1945) ADDRESS RINGSTED, IA

DRILLER K. BONNICKSEN DATE DRLD. RINGSTED, IA.

MAP COUNTY HWY 1:63,360

SOURCE OF DATA FILE

DESCRIPTION M. P. LSD FEET (ABOVE) (BELOW) LSD 1280

CONTINUED FROM ABOVE	ACCURACY	LOCAL WELL NUMBER T.	R.	E/W	SEC.	QUARTERS	LOCAL USE W-NUMBER	OPTIONAL	OWNER OR NAME	OWNERSHIP	WATER USE	WELL USE	WELL DATA	FREQ. W/L	FIELD CHAR.	HYD. LAB.	QW-DATA	QW-FREQ.	PUMPAGE	APERTURE	LOG DATA	CARD DESIG.
	20	21 22 23	24 25	26	27 28	29 30 31 32 33 34	35 36 37 38 39	40 41 42 43 44 45 46 47 48 49 50 51	52 53 54 55 56 57 58 59 60 61 62 63 64 65 66	67	68	69	70	71	72	73	74	75	76	77	78 79	80
	2	098	31	W	21	ABA	02302	/4SCITY	RINGSTED TOWN	M	P	W	1	Ø			C	I			G	A

WELL-DESCRIPTION CARD - B

DUPLICATE CARD A CC 1-19	DEPTH OF WELL	ACCURACY	DEPTH CASED OR FIRST PERF.	DIAM. INCHES	WELL FINISH	METH. DRILLED	YEAR DRILLED	PUMP SETTING	METH. LIFT	DEEP SHALLOW	POWER	ALTITUDE OF LSD (FEET)	ACCURACY	WATER LEVEL (FEET)	ACCURACY	DATE MONTH	DATE YEAR	YIELD OF WELL (GPM)	METH. DET.	DRAW-DOWN (FEET)	ACCURACY	PUMPING PERIOD (HOURS)	QUALITY OF WATER IRON	SULF.	CHLOR.	HARD	SP. COND.	TEMP	DATE SAMPLED	CARD DESIG.
	20 21 22 23	24	25 26 27 28	29 30	31	32	33 34 35	36 37 38	39	40	41	42 43 44 45 46	47	48 49 50 51	52	53 54	55	56 57 58 59 60	61	62 63 64	65	66 67 68	69	70	71	72	73	74 75 76	77 78 79	80
	505	3	364	8	X		945		T	D	5	12807		80	D	D	45	90		403			5	8	0	8	5	482	69	B

HYDROGEOLOGIC CARD - C

DUPLICATE CARD A CC 1-19	PHYS-IOG-RAPHY PROV.	SEC.	DRAINAGE BASIN	SUBBASIN	TOPO SETTING	MAJOR AQUIFER SYSTEM	SERIES USGS	SERIES IGS	UNIT	LITH-OLOGY	ORIG.	THICK-NESS	LENGTH WELL OPEN TO	DEPTH TO TOP OF	MINOR AQUIFER SYSTEM	SERIES USGS	SERIES IGS	UNIT	LITH-OLOGY	ORIG.	THICK-NESS	LENGTH WELL OPEN TO	DEPTH TO TOP OF	DEPTH TO CONSOLI-DATED ROCK	SOURCE	DEPTH TO BASEMENT	SOURCE	SURF. MAT. LITH-OLOGY	INFIL.	COEF. TRAN. SIG. FIG.	XIO	COEF. STOR. SIG. FIG.	XIO-	GEOL. CARDS CARD DESIG.
	20 21	22	23 24 25	26	27	28	29	30	31	32 33	34	35 36 37	38 39 40	41 42 43	44	45	46	47	48 49	50	51 52 53	54 55 56	57 58 59	60 61 62 63	64	65 66 67 68	69	70 71	72	73 74	75	76 77	78	79	80
	1	2	B	25	B	F	Ø	2	MG	2D	6		65	440	Ø	3	U	E	2D	6	55	55	385	304	C			8T	4						C

CASING AND SCREEN (SIZE, TYPE, INTERVALS):

304 FT OF 8" PIPE 0-304 FT.

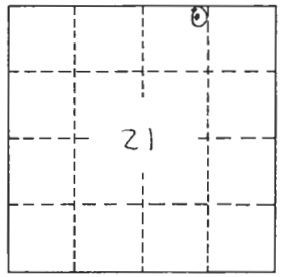
229 FT. OF 6" CASING SET @ 364 FT.

CODED BY D. AARONSON DATE 20 JAN 1970

PUNCHED BY T DATE

VERIFIED BY DATE

SKETCH ON REVERSE: YES NO ✓



WELL NO 098-31W-21ABA

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
Water Resources Division

Water Quality
(ppm)

Local Well No. 098-31W-21ABA
Aquifer Code(s) Ø2MG Ø3UE
Owner's Name RINGSTED, IOWA
W Number 2302

Card Q

State: IOWA (19) (1 2) County: EMMET (32) (3 4) Town: RINGSTED, IOWA

Well No. Latitude 43 17 50 N (5–11) Longitude 094 30 27 (12–18) Seq. No. 1 (19) Date M D Y 03 28 62 (20–25)

Sampling Depth 505 (26–29) Type 1 (30) Kx10⁶ 1540 (31–35) pH 7.1 (36–38) Temp. °F (39–41)

SiO_2 20. (42–44) Ca 196. (45–49) Mg 68. (50–53) Na 67. (54–58) K 5.2 (59–61)

HCO_3 400 (62–65) CO_3 0 (66 67) SO_4 553. (68–72) Cl 2. (73–78) Source No. 3 (79) Q (80)

Card R

Duplicate Columns 1-25 from Card Q

F .4 (26–28) NO_3 .4 (29–32) PO_4 (33–35) B (36–38) Al (39–41) Fe 2.9 (42–45)

Mn .12 (46–49) Cu (50–52) Pb (53 54) Zn (55–57)

Solids Determined 1120 (58–63) Calc. (64–69) Ca,Mg 770 (70–73) Hardness Non-Carb. 442 (74–77)

Color (78 79) No. R (80)

Card S

Duplicate Columns 1-25 from Card Q

Br (26–28) I (29–31) Alk. as $CaCO_3$ 328 (32–35) Free CO_2 (36–38) SAR (39–41)

RSC (42–44) ABS (45–47) (48–50)

Alpha (pc/l) (55–57) Beta (pc/l) (58–60) Ra (pc/l) (61–63) U (ug/l) (64–66)

No. S (80)

Recorded by: D. AARONSON

Punched by: T Date:

Published:

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
Water Resources Division

Water Quality
(ppm)

Local Well No. 098-31W-21ABA
Aquifer Code(s) Ø2MG ØØ3UE
Owner's Name RINGSTED, IOWA
W Number 2302

Card Q

State: IOWA (19) County: EMMET (32) Town: RINGSTED, IOWA

Well No. Latitude 43 17 50 N (5–11) Longitude 094 30 27 (12–18) Seq. No. 1 (19) Date M D Y 10 08 58 (20–25)

Sampling Depth 505 (26–29) Type 1 (30) Kx10⁶ 1500 (31–35) pH 7.5 (36–38) Temp. °F (39–41)

SiO_2 18. (42–44) Ca 195. (45–49) Mg 65. (50–53) Na 67. (54–58) K 5.0 (59–61)

HCO_3 404 (62–65) CO_3 0 (66–67) SO_4 558. (68–72) Cl 2. (73–78) Source No. 3 (79) Q (80)

Card R

Duplicate Columns 1-25 from Card Q

F .2 (26–28) NO_3 .4 (29–32) PO_4 (33–35) B (36–38) Al (39–41) Fe 3.8 (42–45)

Mn .15 (46–49) Cu (50–52) Pb (53–54) Zn (55–57)

Determined Solids 1210 (58–63) Calc. (64–69) Ca,Mg Hardness 756 (70–73) Non-Carb. 425 (74–77)

Color (78–79) No. R (80)

Card S

Duplicate Columns 1-25 from Card Q

Br (26–28) I (29–31) Alk. as $CaCO_3$ 331 (32–35) Free CO_2 (36–38) SAR (39–41)

RSC (42–44) ABS (45–47) (48–50)

Alpha (pc/l) (55–57) Beta (pc/l) (58–60) Ra (pc/l) (61–63) U (ug/l) (64–66)

No. (80)

Recorded by: D. AARONSON

Punched by: T Date:

Published:

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
Water Resources Division

Water Quality
(ppm)

Local Well No. 098-31W-21ABA
Aquifer Code(s) Ø2MG 03UE
Owner's Name RINGSTED, IOWA
W Number 2302

Card Q

State: IOWA (19) (1 2) County: EMMET (32) (3 4) Town: RINGSTED, IOWA

Well No. Latitude 43175ON (5–11) Longitude 094302 7 (12–18) Seq. No. 1 (19) Date M D Y 07 25 51 (20–25)

Sampling Depth 505 (26–29) Type 1 (30) Kx10⁶ 1350 (31–35) pH 7.1 (36–38) Temp. °F (39–41)

SiO_2 (42–44) Ca 193. (45–49) Mg 64. (50–53) Na +K 79. (54–58) K .C (59–61)

HCO_3 388 (62–65) CO_3 0 (66 67) SO_4 555. (68–72) Cl 5. (73–78) Source No. 3 Q (79 80)

Card R

Duplicate Columns 1-25 from Card Q

F .3 (26–28) NO_3 33. (29–32) PO_4 (33–35) B (36–38) Al (39–41) Fe 2.6 (42–45)

Mn 0. (46–49) Cu (50–52) Pb (53 54) Zn (55–57)

Determined Solids 1220 (58–63) Calc. (64–69) Ca,Mg 745 (70–73) Hardness Non-Carb. 427 (74–77)

Color (78 79) No. R (80)

Card S

Duplicate Columns 1-25 from Card Q

Br (26–28) I (29–31) Alk. as $CaCO_3$ 318 (32–35) Free CO_2 (36–38) SAR (39–41)

RSC (42–44) ABS (45–47) (48–50)

Alpha (pc/l) (55–57) Beta (pc/l) (58–60) Ra (pc/l) (61–63) U (ug/l) (64–66)

No. S (80)

Recorded by: D. AARONSON

Punched by: T Date:

Published:

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
Water Resources Division

Water Quality
(ppm)

Local Well No. 098-31W-21ABA
Aquifer Code(s) Ø2MG Ø3UE
Owner's Name RINGSTED, IOWA
W Number 2302

Card Q

State: IOWA (1 2) 19 County: EMMET (3 4) 32 Town: RINGSTED, IA.

Well No. Latitude 43 17 50 N (5–11) Longitude 094 30 27 (12–18) Seq. No. 1 (19) Date M D Y 02 10 69 (20–25)

Sampling Depth 505 (26–29) Type 1 (30) Kx10⁶ 1500 (31–35) pH 6.9 (36–38) Temp. °F 48 (39–41)

SiO_2 21. (42–44) Ca 204. (45–49) Mg 58. (50–53) Na 75. (54–58) K 6.2 (59–61)

Source No. 3 Q (79–80)

HCO_3 400 (62–65) CO_3 0 (66–67) SO_4 570. (68–72) Cl 2. (73–78)

Card R

Duplicate Columns 1-25 from Card Q

F .4 (26–28) NO_3 .1 (29–32) PO_4 . (33–35) B . (36–38) Al . (39–41) Fe 2.1 (42–45)

Mn .17 (46–49) Cu . (50–52) Pb . (53–54) Zn . (55–57)

Solids Determined 1200 (58–63) Calc. (64–69) Ca,Mg 750 (70–73) Hardness Non-Carb. 422 (74–77)

Color (78–79) No. R (80)

Card S

Duplicate Columns 1-25 from Card Q

Br . (26–28) I . (29–31) Alk. as $CaCO_3$ 328 (32–35) Free CO_2 (36–38) SAR . (39–41)

RSC (42–44) ABS . (45–47) (48–50)

Alpha (pc/l) (55–57) Beta (pc/l) (58–60) Ra (pc/l) . (61–63) U (ug/l) . (64–66)

No. S (80)

Recorded by: D. AARONSON

Punched by: T Date:

Published:

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
Water Resources Division

Local Well No. 098-31W-21ABA
Aquifer Code(s) Ø2MG Ø3UE
Owner's Name RINGSTED, IOWA
W Number #2302

Water Quality
(ppm)

Card Q

State: IOWA [19] (1 2) County: EMMET [32] (3 4) Town: RINGSTED, IOWA

Well No. Latitude [4317 50 N] (5–11) Longitude [094 30 27] (12–18) Seq. No. [1] (19) Date M D Y [05 18 46] (20–25)

Sampling Depth [505] (26–29) Type [1] (30) Kx10^6 (31–35) pH [7.6] (36–38) Temp. °F (39–41)

SiO_2 (42–44) Ca [205.] (45–49) Mg [61.] (50–53) Na +K [75.] (54–58) K [.C] (59–61)

HCO_3 [400] (62–65) CO_3 (66 67) SO_4 [557.] (68–72) Cl [4.] (73–78) Source No. [3] [Q] (79 80)

Card R

Duplicate Columns 1-25 from Card Q

F [.5] (26–28) NO_3 [2.] (29–32) PO_4 (33–35) B (36–38) Al (39–41) Fe [.6] (42–45)

Mn [.1] (46–49) Cu (50–52) Pb (53 54) Zn (55–57)

Determined Solids [1180] (58–63) Calc. (64–69) Ca,Mg Hardness [763] Non-Carb. [435] (70–73) (74–77)

Color (78 79) No. [R] (80)

Card S

Duplicate Columns 1-25 from Card Q

Br (26–28) I (29–31) Alk. as $CaCO_3$ [328] (32–35) Free CO_2 (36–38) SAR (39–41)

RSC (42–44) ABS (45–47) (48–50)

Alpha (pc/l) (55–57) Beta (pc/l) (58–60) Ra (pc/l) (61–63) U (ug/l) (64–66)

No. [S] (80)

Recorded by: D. AARONSON

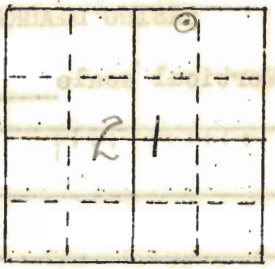
Punched by: T Date:

Published:

W-2302

IOWA GEOLOGICAL SURVEY
In Cooperation with U. S. Geological Survey

RECORD OF WELL



Location:

Town: RINGSTED (N E / S W): County EMMET E.

NE¼ NW¼ NE¼ sec. 21 T 98 N., R. 31 W. DENMARK Twp.

Well name and number Ringsted Town Well (1945)

Owner Town of Ringsted Address

Tenant Address

Contractor Knut Bonnicksen Address

Drillers Chalmer Bonnicksen

Drilling dates Finished Dec. 16, 1945

Well data:

Elevations: Drilling curb feet; Land surface 1280 feet

Determined by

Topographic position Hilltop

Total depth: Reported 505 feet, Measured feet

Drilling method Cable tool

Hole and casing data 304' of 8-inch pipe from 0 to 304'
229' of 6-inch casing set at 364 feet.

Original depth to water 80 ft. below Land surface Date Dec. 1945
above

Original elevation of water level ft.; Source of data

Sources of water: Principal Galena 365-505; Others

CASING DIAGRAM Vertical scale _____	LOG
	Driller's Log
	Yellow clay 0'-20'
	Blue clay 20'-160'
	Hard pink shale 160-260'
	Sand 260'-266'
	Hard pink shale 266'-285'
	sand & shale 285'-290'
	shale 290'-364'
	Curle 364'-505'

Production data: Date _____

Static depth to water 80 Measuring point Land surface

Pumping level 120 ft setting at 90 gpm g.p.m.

Specific capacity _____ g.p.m. per ft. drawdown; Temperature _____ °F.

Pump data: Type pump Turbine Column Dia. _____ Length 120 ±

Cylinder or bowls: Dia. _____ Length _____ Suction pipe _____

Power Electric Airline _____

Estimated rate of production: _____ g.p.m. for _____ hrs. a day

Use of water City supply

WATER ANALYSES (in parts per million)

Date samples	May 18, 1946			
Sampled by	K. Bannickson			
Total solids	1175			
Insoluble matter	14.5			
Alkalinity (Meo)	328			
Alkalinity (Phn)	0			
pH	7.6			
Fe_2O_3 + Mn_2O_3 + Al_2O_3	8			
Alkali as sodium	74.6			
Calcium	201.8			
Magnesium	60.8			
Iron (unfiltered)	0.6			
Manganese	0.1			
Nitrate	0.89			
Fluoride	0.5			
Chloride	1			
Sulfate	557.2			
Bicarbonate	400.2			
Hardness (ppm)	762.6			
Hardness (gpg)	44.6			

Remarks _____

Laboratory data: Sample storage location _____

Sample range 10-505 No. spls. 81 No. dupls. & cond. 81 F-G

Spls. prepared by P. Horick Washed range 260-505 by P. J. H.

Driller's log and cond. _____

Insoluble residues: Prepared by _____ Studied by _____ Strip log _____

Microscopic study 0-505 Ed strip log May 11, 1946 Ed

Gen. log _____ Correl. by E. Schultz