University of Wisconsin-Extension

GEOLOGICAL AND NATURAL HISTORY SURVEY
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AVAILABILITY OF GROUNDWATER IN GRANT COUNTY, WISCONSIN

by

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AVAILABILITY OF GROUND WATER IN GRANT COUNTY, WISCONSIN

Ground water is available from several sources in Grant County and an adequate quantity for most uses generally can be obtained throughout the county. The availability of ground water is dependent on the type and characteristics of the sedimentary rocks underlying the county. However, because of the high relief, the water table may lie as much as 350 feet below the surface in the upland areas. Water levels are within 100 feet of the land surface in the major valleys and within 10 - 20 feet in the Wisconsin and Mississippi river valleys.

Grant County is underlain by a thick section of sedimentary rock formations consisting mainly of sandstone and dolomite which rest on non-water bearing crystalline rock. Thick, unconsolidated deposits of sand, gravel, silt, and clay occur in the Mississippi and Wisconsin river valleys in a deep channel eroded into the sedimentary rock. Total thickness of the sedimentary rock formations varies across the county because of the several hundred feet of relief on the land surface. However, wells at Platteville and Lancaster both penetrated about 1700 feet of sedimentary rock before reaching the underlying crystalline rock. The log of the Lancaster well is attached. In general the sedimentary rocks thicken in a southwesterly direction. Maximum thickness of the unconsolidated deposits is not well known but probably exceeds 250 feet. A thickness of 230 feet was reported in a well at Muscoda.

Bedrock formations and rock types are listed in ascending order in the legend of the accompanying map and distribution of the units in the county is shown. The upper Cambrian Group which includes the Mt. Simon Sandstone, Eau Claire Sandstone, Galesville Sandstone, Franconia Sandstone, and Trempealeau Group (limestone and sandstone), is the principal aquifer in the county with Mt. Simon and Galesville sandstones being the most productive units. The St. Peter sandstone may yield moderate amounts of water but it, along with the Galena-Platteville unit often occurs above the water table in the uplands of Grant County.

Yields of 500-800 gallons per minute (GPM) or more generally can be obtained from properly constructed wells penetrating the full thickness of the sedimentary bedrock over most of Grant County. Yields of 10-50 gpm generally can be obtained from domestic wells in the shallow bedrock formations where they are saturated. Yields of 1000 gpm or more are available from the thick and permeable alluvial deposits along much of the Mississippi and Wisconsin River valleys (see attached log of well at Cassville). Bedrock wells drilled near the Mississippi and Wisconsin Rivers also may have high yields, 800-1000 gpm or more, because of recharge from the rivers and alluvium induced by pumping the well.

The chemical quality of ground water in Grant County generally is ade uate for most uses. However, the water is very hard. Chemical analysis of water from unconsolidated deposits at Muscoda and from bedrock at Blue River is shown below.

Location	Source	Calcium (ca)	Magnesium (Mg)	Sodium (Na)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (CL)	Fluoride (F)	Dissolved solids	Hardness (as $CaCO_3$)	pH
Muscoda	Sand & Gravel	38	22	.7	207	11.2	4.0	.1	206	192	7.4
Blue River	Sandstone	50	32	9.5	298	21.0	7.5	.1	268	262	7.5

(All values except pH in Milligrams per liter)

Saline water (over 1000 Milligrams per liter dissolved solids) has been reported from the deep bedrock formations in a small area near Prairie du Chien but good quality water is available in that area from unconsolidated deposits.

An important consideration of water quality in the county is potential pollution of the shallow bedrock formations. Dolomite or limestone underlies much of the area with very thin soil cover. This rock has little filtration

capacity and polluted water entering cracks and crevices in the rock will rapidly travel long distances and easily pollute wells open to the formation. Most wells and especially public supply wells must be cased to a considerable depth to avoid this problem.

The design and construction of new wells in the county should take into consideration the specific geologic and hydrologic conditions in the area of the well. The University Extension, the University of Wisconsin Geological and Natural History Survey is the repository for such information in the state and should be consulted for available information.

UNIVERSITY OF WISCONSIN GEOLOGICAL & NATURAL HISTORY SURVEY
1815 University Avenue, Madison, Wisconsin 53706

Log No. Gr-87
Issued: April, 1967

County: Grant

Well name City of Lancaster, Wis., Well #2

Owner.... Same as above
Address.. Clerk, City Hall, Lancaster, Wis.

Driller.. Varner Well and Pump Company
Engineer. Max F. Koletzke
Lakeland Engineers
Madison, Wisconsin

Completed... Feb., 1966
Field check.
Altitude....
Use.....Municipal Supply
Static w. 1.264 feet
Spec. cap...8.2+*

R. 3W.
T. 4 N.
Sec. 3

Quad. Lancaster

Drill Hole						Casing & Liner Pipe or Curbing							
Dia.	from	to	Dia.	from	to	Dia.	Wgt. & Kind	from	to	Dia.	Wgt. & Kind	from	to
26+"	0	276'3"				26"	O.D. csg.	+12"*	80.5'				
16½"	276'3"	760'				18"	O.D. csg.	+33"*	276'3				
13"	760'	1703'				14"	O.D. liner	625'	760'				
								*Approx.					

Grout: Kind	from	to
Cement grout between 18" and 16" csgs.	+12"*	276'3"
	* Approx.	

Samples from 0 to 1700' Date received: 2-9-66
Sample Nos. 263480 to 263820 Examined by: Joan McKee Date: 11-1-1966
Formations: Surface, Platteville-Galena, St. Peter, Prairie du Chien, Jordan, Franconia, Galesville, Eau Claire, Mt. Simon and Precambrian.
Remarks: Well tested for 3 hours at 760 gpm with 92 feet of drawdown.
*Pumping level as of 4-13-66 had returned to 288 feet.

LOG OF WELL:

SUR		0-5	5	St, dk yl or, M&C, G srtg; mch Vfn snd, ltl cl, tr org. material
	15	5-10	5	St, rd or, fn, P srtg; mch cl, ltl Vfn/M snd, ltl cht, gvl & snd
		10-15	5	St, rd or, fn, P srtg; mch cl, ltlM/Vfn snd, mch cht, gvl & snd
GALENA-PLATTEVILLE		15-20	5	Dol, yl gry, M&fn; ltl cht, tr sh
		20-30	10	Dol, lt yl gry, fn; mch cht, tr rd cl
		30-50	20	Dol, pl yl or, fn; mch cht, tr rd sh
		50-55	5	Ls, ol gry, M&fn; tr foss-frags, pyr, & lt yl sh; tr fn-VC snd&Ls
		55-65	10	Dol, dk yl or, fn; ltl lim stn & cem; ltl M & mch C snd, ltl VC
		65-70	5	Ls, dk yl or, fn; mch cht, ltl dol, ltl yl or calcic sh
		70-72	2	Dol, dk yl or, fn; ltl calcic yl or sh, mch cht
		72-85	13	Ls, lt gry, fn, ltl lim & qtz repl; foss frags; tr yl or calcic sh; few cal xls; ltl lim, pyr,
		85-110	25	Ls, pl yl or & lt gry, fn-Vfn, mny foss frags; ltl M-VC qtz snd; & lt gry sh
		110-120	10	Sh, Vlt gry gn, fn-Vfn, F cal-cem, mch lt yl bn & lt gry fossif Vfn grnd ls; tr xln pyr & M qtz snd
		120-125	5	Ls, dk ol gry, Vfn, dns, fossif; tr pyr & M-C qtz snd
		125-135	10	Ls, pl yl gry, Vfn, V dns, fossif; tr pyr
		135-140	5	Ls, lt ol gry, Vfn micro xln, dns, few foss frags; tr gn sh, pyr&calc xls
		140-145	5	Ls, lt ol gry mot pl bn, fn, slght por, tr pyr&xln cal, tr foss frags
		145-150	5	Dol, lt ol gry mot pl gry or, fn, slgt por, tr pyr, tr foss frags&calcic gn sh
		150-155	5	Dol, pl yl gry, fn, por, tr pyr & gn sh
	145	155-160	5	Dol, yl gry, fn, slght por, few foss frags; tr gn sh, few pyr xls in do
ST PETER		160-165	5	Ss, lt ol gry, C, P pyr cem, mch M, VC, ltl fn; ltl ol gry dol; mch gn pyritics
		165-170	5	Ss, pl yl gry, M&C, Vp pyr cem, mch fn; tr gn sh
		170-175	5	Ss, pl yl gry, M&fn, ltl C, tr Vfn & st; tr gn sh; tr pyr
		175-185	10	Ss, pl yl gry, M&C, VP pyr cem, tr VC, ltl gn pyric sh
		185-190	5	Ss, pl yl or, M&fn, mch C, ltl Vfn, ltl st, tr gn & yl bn sh; tr pyr

Well name City of Lancaster, Wis., Well #2
Sample Nos. 263480 to 263820

ST PETER		190-195	5	Ss, pl yl or, M & C, VP lim cem, tr gn sh & pyr
		195-200	5	Ss, Vlt yl gry, M & C, VP pyr-cem, mch fn, tr gn sh
		200-205	5	Sh, yl bn, dolic;mch M,C rnd qtz snd,tr fn & Vfn; tr pyr
		205-210	5	Ss, Vlt gry,M, VP pyr-cem, mch C & fn; tr pyr-cem
		210-220	10	Ss,Vpl ol gry,M,mch C&fn;tr st; tr pyr, bn & gn sh
		220-225	5	Ss,Vpl ol gry,C,mch M,ltl fn,tr VC&Vfn;tr st, lim, pyr & dol
		225-245	20	Ss,Vpl ol gry,M, mch fn; ltl C; tr lim & pyr
		245-250	5	Ss,Vpl ol gry C, G pyr cem, mch VC & M, ltl fn
		250-255	5	Ss,ol gry & lt yl bn, M & C,G Si-cem,mch cht,some oolic,ltl por
	105'	255-265	10	Ss,lt ol gry, C,G pyr cem tr Si cem,mch VC & M,ltl fn; tr oolic cht
PRAIRIE DU CHIEN		265-280	15	Dol, pl yl gry to lt ol gry, Vfn & fn, mch fn & ltl M snd in dol; tr oolic cht; ltl C&VC rnd snd,tr gn sh; ltl pyr&qtz cem Ss
		280-290	10	Dol, pl or pl yl gry to wh,Vfn & fn, dns, some micro xln; ltl rnd snd; tr gn sh, cht & glauc?
		290-295	5	Dol, pl yl gry, fn-Vfn, dns; tr cht & glauc?
		295-310	15	Dol,pl yl gry,fn-Vfn,dns; ltl Vfn/C qtz snd; tr pyr, glauc?, lim, cht & oolic cht
		310-325	15	Dol,pl yl gry,fn, ltl M, dns; ltl cht; tr pyr-cem Ss
		325-335	10	Dol, Vpl yl gry,fn,dns,some M & C xls; tr cl with some xls of dol; tr gn sh & M/C rnd snd
		335-340	5	Dol,Vpl yl gry mot rd,fn,Vdns,tr por;ltl cht;tr cl W/Vfn dol xls
		340-345	5	Dol,pl yl gry mot rd,fn,dns;ltl cht,tr oolc;tr dk bn qtz;tr glauc
		345-355	10	Dol,pl yl gry mot rd,fn, dns; tr pl yl gn cl with fn xls of dol; tr cht, M/C qtz snd & pyr
		355-365	10	Dol,pl yl gry mot rd, fn&M, slgt por; dol xls in qtz veins; many wh cht veins; tr pyr xls
		365-375	10	Dol, pl yl or mot pnk,fn, dns; ltl cht; tr cl with dol
		375-385	10	Dol,lt yl bn mot pnk, fn&Vfn,slght por; ltl cht; tr pyr
		385-395	10	Dol,Vpl or mot pnk, M & C, ltl fn, por; tr Fe stn
		395-405	10	Dol,Vpl or mot pnk, fn, slght por; tr cht; tr Fe stn; tr pyr
		405-415	10	Dol, Vpl or mot pnk,M&C, dns; ltl lim, mch lim stn; tr pyr xls & cht
		415-420	5	Dol,Vpl or, M & fn,slght por, tr C; ltl Fe stn; tr cht
		420-435	15	Dol, pl yl gry, fn, dns, ltl pnk mot; tr pyr
		435-440	5	Dol,lt yl bn, fn, dns,ltl wh,tr mot pnk; ltl cht, tr pyr
		440-445	5	Dol,lt yl bn, fn,dns, some mot pnk; tr pyr& tr calcic cl W/fn pyr xl
		445-455	10	Dol,lt yl bn,fn,por,ltlM;tr cht&oolc cht; ltl Fe stn;tr pyr&Fn/Cqtz
		455-465	10	Dol,plylbn,M&fn, slght por, some mot pnk;mch cht&oolic cht;mch fn/C snd; mch fn/M sndy dol; tr glauc & pyr
	205'	465-470	5	Dol,pl yl bn,M,ltlC&fn,slght por,some mot pnk,mch cht&oolc cht;mch fn/C sn
JORDAN		470-475	5	Ss,Vpl yl gry,M&C,F lim cem,mch fn,ltl VC&Vfn;tr st,cht&glauc
		475-480	5	Dol,grysh pnk,M&C,F lim cem,ltl fn xls,ltl mot pnk;mchM&fn snd,ltlC&Vfn
		480-505	20	Ss, Vpl or, C, F dol cem, tr lim stn, gn sh & tr pyr, mch fn, tr Vfn & VC;
		505-510	5	Ss, gry or,M&C,G dol cem,mch fn,ltlC,Vfn&st;trVC;
	40'	510-515	5	Sts,pl yl or,M&C,slght dolic, mch Vfn snd; ltl cl
LODI	30'	515-540	30	Sts, pl yl or, M & C, slght dolic, mch Vfn snd; ltl cl
		540-545	5	Dol,pl bn mot wh&pl yl,fn,dns, ltl M; tr pyr
		545-550	5	Dol,pl bn mot wh&pl yl,fn,dns, ltl M;mch fn&M qtz snd;tr pyr&glauc

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Sample Nos. 263480 to 263820

BLACK EARTH		550-565	15	Dol, pl bn mot wh & pl yl,fn,ltl M, dns, tr mot wh; tr pyr
		565-580	15	Dol, pl gry or pnk,fn&M,por,ltl dns; tr pyr & glauc
		580-595	15	Dol, Vpl or, fn & M, tr C, dns; tr pyr
		595-615	20	Dol, yl bn, fn, ltl M, dns; ltl lim; tr glauc & pyr
		615-620	5	Dol,Vpl or,fn&Vfn, dns, tr por; tr glauc & lim
		620-625	5	Dol,Vpl or,fn&Vfn, dns, tr por,ltl mot pnk∨ltl glauc;tr pyr
		625-630	5	Dol,Vpl or,fn&Vfn,dns,ltl mot pnk∨trM-fn dol-cem Ss;tr glauc
		630-640	10	Dol,pl gry or,fn&Vfn,dns; ltl glauc, tr pyr & fn-M sndy dol
		640-645	5	Dol,pl gry or,fn&Vfn,dns;tr glauc,pyr& fn - M sndy dol
		645-650	5	Sh,pl gn,dolic;ltlglauc&glaucic dol,mchVfn grnd dol&fn qtz snd;
	115'	650-655	5	Dol,pl yl gry mot pnk,fn&Vfn;ltl fn qtz snd;ltl glauc&glaucic sh
FRANCONIA		655-670	15	Ss,gry gn,Vfn,Sang,F,P dol-cem,tr fn&M,ltl st;mch gn sh&glauc;
		670-680	10	Ss,pl gn,fn&Vfn,srnd,P dol-cem,trM,ltl st;mch gn. sh & glauc;
		680-695	15	Sh,brt gn mot gry gn,slght dolic,mch Vfn snd,ltl fn,ltl st;mch glauc
		695-700	5	Sh,brt gn,Vslght dolic;mch glauc&fn snd;ltl pl yl bn dol&M,Vfn snd
		700-720	20	Sh,brt gn mot gry gn,V slght dolic;mch fn&Vfn snd & glauc
		720-730	10	Ss,pl gn,fn&Vfn,VP dol-cem;mch pl gn sh&glauc;ltl dol;tr pyr & st
	90'	730-740	10	Sh,Vpl gry gn,fn&Vfn,Vslght dolic;mchVfn snd,ltl fn;ltl gry sh & ltl glauc,dol
		740-745	5	Sh,Vpl gry gn,Vslght dolic;mch Vfn snd;ltl glauc&fn snd,tr st&dol
IRON		745-750	5	Ss, yl gry,C,mch M&C, tr fn; tr glauc, dol & lim
		750-755	5	Ss,yl gry,C&VC,ltl M,tr fn;tr lim, glaucic dol & pyr
	15'	755-760	5	Ss,yl gry,C,mch M,ltl VC&fn;tr lim,glauc, gn sh & pyr
GALESVILLE		760-775	15	Ss,pl yl or,M,P lim-cem,ltl C&fn;tr Vfn,tr glauc,pl or dol & gn sh
		775-780	5	Ss,pl yl or,fn&Vfn,P lim-cem,ltl M & tr C; tr pyr
		780-790	10	Ss,pl yl or,M&fn,P lim-cem,mch Vfn,ltl C,lt st; tr glauc
		790-795	5	Ss,pl yl or,M,VP lim-cem,mch fn&C,ltl VC,ltl st & Vfn
		795-805	10	Ss,pl yl gry,M&fn,P lim-cem,ltl C, Cfn & st
		805-810	5	Ss,Vpl or,M&C,P lim-cem, ltl Vfn, fn & VC, tr st & cl
		810-815	5	Ss,Vpl gry or,Vfn, P lim-cem,ltl fn, tr M, C & st; tr pyr
		815-820	5	Ss,Vpl or, fn&Vfn,VP lim-cem, ltl M, C & st
		820-825	5	Ss,wh,Vfn,VP lim-cem,ltl fn & st, tr M; tr dolic wh sh
		825-830	5	Ss,Vpl or, M&C,P lim-cem,mch fn &Vfn,ltl st,tr VC;ltlVfn dolic whSs
		830-835	5	Ss,Vpl or,M&fn,P lim-cem,mch C&Vfn, tr st; tr pyr & pnk dol
		835-845	10	Ss,Vpl or,fn&Vfn,P lim-cem,mch M,ltl C&st;ltl pl yl dolci sh;tr pyr
		845-850	5	Ss,pl ol gry,M&C,G dol-cem,ltl VC,fn; tr glauc & lim
		850-860	10	Ss,pl bn,M&C,P dol-cem,tr fn,Vfn &VC; tr lim
		860-865	5	Ss,Vpl yl or,M&C,VP lim-cem,tr fn & Vfn, & st
		865-880	15	Ss,Vpl yl,M&C,P lim-cem,ltl VC, tr fn; tr st
		880-890	10	Ss,Vpl yl or, M & C, P lim-cem,ltl VC, tr fn & st, tr Fe stn
		890-895	5	Ss,Vpl yl,C,rnd,F srtg,mch M&VC,ltl fn,tr Vfn;tr dol&yl bn sh
		895-900	5	Ss,Vpl or,M,rnd P lim-&dol-cem,mch C,ltl fn; tr dol
		900-915	15	Ss,pl gry or,M&C,VP lim-&dol-cem,ltl fn, tr Vfn & VC;
		915-930	15	Ss,pl gry or,M&C,VP lim-cem,tr fn,st&VC;tr dolic sh,tr pyr,dol&cht

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1815 University Avenue, Madison, Wisconsin 53706

Log No. Gr-87

Well name City of Lancaster, Wis., Well #2
Sample Nos. 263480 to 263820

GVILLEAU CLAIRE MT SIMON		930-945	15	Ss,lt ol gry,M&C,VP lim-&dol-cem,mch fn,Vfn,ltl st; ltl dol,mch glau gry bn dol cem;
		945-955	10	Ss,Vpl yl bn,M&fn,ltl C;tr glauc; ltl pl bn & pl yl bn slght dolic sh w/sndy beams,tr gn sndy sh
	205'	955-960	5	Ss,Vpl yl,M,VP lim-cem,mchC&fn;ltl pl yl bn glaucic dol;tr gn sh
		960-965	5	Ss,Vpl or,M&fn,P lim-cem,tr Vfn & st; tr glauc & dol
		965-970	5	Dol,ol gry,fn&Vfn;tr pyr,tr yl or sh;ltl glauc;mchM&fn snd;mchdolic sh
		970-990	20	Sh,ol gry,fn&Vfn,slght dolic,tr mot pl yl bn;trM-Vfn snd&st;
		990-1000	10	Sh,brt rd bn,dolic;ltl C/Vfn snd;tr glauc;ltl gn sh&well cemtd dolic Ss
		1000-1010	10	Sh,pl gnsh gry,slght dolic;ltl dk gry sh; tr pyr & fn snd
	55'	1010-1020	10	Ss,mxd pl bn dk gry&pl or bn,VP pyr-cem, G dol-cem mch M,Vfn&st;mch dk gry sh, mch glaucic dol
		1020-1035	15	Ss,gry or pnk,C,mch VC&M,ltl fn,tr Vfn;tr gn,dk gry yl bn sh;
		1035-1040	5	Ss,gry or pnk,C,VP dol-cem,mch VC&M,ltlfn&Vfn;tr dk gry gn sh,mch yl bnsh
		1040-1050	10	Ss,gry or pnk,M,VP dol-cem, mch fn,ltl C&Vfn&st;mch pl yl bn slght dolic sh,tr gnsh
		1050-1060	10	Ss,yl bn,C,VP dol-cem,mch M&VC,ltl fn,tr st;mch pl yl bn dolic sh
		1060-1070	10	Ss,Vpl or,M&C,mch fn,ltl VC,tr st;tr sndy dol;tr gry gn&yl bn sh;
		1070-1075	5	Ss,Vpl yl,C,tr gry sh & lim,ltl fn&VC,tr Vfn & st;
		1075-1080	5	Ss,Vpl yl,M&C,rnd,P srtg,tr gry cl & lim cem
		1080-1095	15	Ss,Vpl yl,M&C,VP lim-cem,ltl fn&VC,tr Vfn & st;tr dol & or bn sh;
		1095-1100	5	Ss,wh,M,rnd,P srtg,mchC&fn,tr VC&Vfn&st;tr lim&dol;tr pl yl&dk gry sl
		1100-1105	5	Ss,wh,M&C,ltl fn&VC,tr Vfn&st;tr dol&lim;tr dk gry&pl yl bn sh
		1105-1110	5	Ss,wh,C&VC,G dol-cem,mch M,ltl fn,tr Vfn&st;dol cem pl yl bn&wh,ltl dk gn sh
		1110-1115	5	Ss,Vpl yl,M&C,VP dol-cem,mch fn,tr Vfn,VC&st;tr Fe stn;tr dk gn sh
		1115-1120	5	Ss,Vpl yl gry,M&C,mch fn,Vfn&st;tr dol,pyr,lim,gry sh& rd or sts
		1120-1135	15	Ss,Vpl yl gry,M&C,VP dol-cem,mch fn,Vfn&st,trVC;ltl gry sh;tr lim;
		1135-1140	5	Ss,pl yl gry,M&C,G dol-cem,mch fn,Vfn&st;ltl dol cem gry;fe stn
		1140-1145	5	Ss,pl yl gry,M&fn,G dol-cem,mchVfn&st;dol cem Vpl yl;tr fe stn
		1145-1150	5	Ss,yl gry,fn,G dol-cem,ltlM&C,trVC,mchVfn&st;Vpl yl dol cem;tr pyr
		1150-1155	5	Ss,yl gry,M&fn,G dol-cem,ltlC,trVC,mchVfn&st;Vpl yl dol cem,tr lim
		1155-1160	5	Ss,yl or Vpl gry,C,mchVC&M,ltl fn,tr Vfn&st;tr gry dol&lim&Festn
		1160-1165	5	Ss,wh,M&C,mch fn,tr VC,Vfn&st;tr gry dol & Fe stn
		1165-1170	5	Ss,wh,C,mch fn&VC,ltlVfn&M,tr st; tr gry dol
		1170-1190	20	Ss,Vpl ol gry,fn&Vfn,VP dol-cem,mch M&st,ltl C,tr VC,mch pl ol grysh
		1190-1195	5	Ss,Vpl ol gry,fn&Vfn,VP dol-cem,mchC,fn&Vfn,ltl st,trVC;mchplolgry s
		1195-1200	5	Ss,Vpl ol gry,fn,VP dol-cem,mchM,ltlC,VC,Vfn&st;mch sh;tr lim
		1200-1205	5	Ss,Vpl ol gry,fn,VP dol-cem,mch M,ltlC,Vfn&st,trVC;mch sh
		1205-1210	5	Ss,Vpl yl or,M&fn,ltl Vfn, tr st, & C; tr lim
		1210-1220	10	Ss,Vpl yl or,fn&Vfn,ang,F srtg, mch st; tr lim
		1220-1225	5	Ss,Vpl yl or,fn,ang G srtg, tr M; tr lim
		1225-1230	5	Ss,Vpl yl or,fn&Vfn,ang, F srtg, mch st; ltl pl yl bn cl;tr lim
		1230-1235	5	Ss,Vpl yl or,fn, ang, F srtg, tr Vfn & st; tr lim
		1235-1240	5	Ss,Vpl yl gry,M&fn,srnd,P srtg,ltl C,tr VC,mch Vfn&st; tr lim
		1240-1245	5	Ss,Vpl yl gry,fn&Vfn,ang VP srtg,ltl M & C, mch st
		1245-1250	5	Ss,Vpl or,M&fn,srnd,VP srtg, mch st, & C, ltl VC & Vfn; tr lim
		1250-1260	10	Ss,Vpl or,C&VC,rnd,VP srtg,mch M, ltl fn, Vfn & st; tr cl & lim
		1260-1285	25	Ss,Vpl yl or,M,srnd,mch C&fn,ltl Vfn,st & VC;mch sh; tr lim
		1285-1290	5	Ss,Vpl yl or,fn&Vfn,srnd,VP srtg,ltl M&C,tr st;mch sh; tr lim
		1290-1295	5	Ss,or pnk,M,VP Si-cem,mch or pnk sh,tr pl bn dolci sh;

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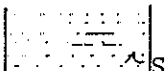
1815 University Avenue, Madison, Wisconsin 53706

Log No. Gr-87

Well name City of Lancaster, Wis., Well #2
Sample Nos. 263480 to 263820

MT SIMON

1295-1315	20		Ss,or pnk,fn,sang,VP srtg,mch M,Vfn&st,ltl C;mch or pnk sh;tr lim
1315-1320	5		Sh,rd bn,VP srtg;mch st; ltl fn & M snd,tr C,ltl st; ltlVfn,fn,M,C
1320-1330	10		Sh,or bn,VP srtg;tr VC snd; tr V wea. ign snd, ltl st
1330-1340	10		Sh,or pnk,VP srtg,mch M,C&VC snd,ltl fn, Vfn & st; tr fn gvl
1340-1345	5		Ss,Vpl yl or,VC,VP pyr-cem,mchC,ltlM,tr fn&st;trVwea ign snd; tr sh
1345-1350	5		Ss,pnk or,M&fn,mch C, Vfn & VC; tr st; mch pnk or sh
1350-1355	5		Ss,pnk or,M&C,mch fn,Vfn & VC;tr st & fn gvl;mch or pnk sh
1355-1370	15		Sh,pl rd bn,VP srtg,mch Vfn/VC snd;ltl feldspathic Si-&Fe-cem snd
1370-1375	5		Ss,pl rd bn,M&fn,mchVfn,C&VC;mch pl rd bn sh;tr gn mica sh;
1375-1380	5		Sscong,gry or pnk,C&VC snd;mch fn&Vfn gvl;ltl st;ltl pl rd bn sh;
1380-1385	5		Sh, pl rd bn, VP srtg, mch Vfn/VC snd
1385-1390	5		Sh, pl rd bn, VP srtg, mch Vfn/VC snd; tr fn gvl
1390-1395	5		Sh, pl rd bn, VP srtg, VP pyr-cem, mch Vfn/VC snd; tr fn gvl
1395-1400	5		Sh, pl gry or, mch fn/VC,ltl Vfn snd; tr V wea ign snd
1400-1405	5		Ss,pl gry or,C,mch M,VC&fn,tr Vfn; mch pl gry or sh
1405-1410	5		Sh,pl gry or,C;mch fn/VC snd, ltl Vfn
1410-1425	15		Sh,pl gry or;VC,mchM&C,ltl fn&Vfn; tr pnk dol & Fe stn,fn gvl; ltl pl gry or sh;
1425-1430	5		Ss,or pnk,fn,ltl M&Vfn; mch or pnk sh
1430-1435	5		Ss,or pnk,M&fn,sang,P srtg,ltl Vfn & st;mch or pnk sh,mch fn gvl
1435-1450	15		Ss cong,pl or bn,C&VC snd, ltl M, fn & Vfn;mch fn & M gvl,ltl wea ign snd & gvl;tr sh;ltl qtz cem Ss
1450-1470	20		Sh,rd bn,VP srtg;mch fn,M&C ang snd,ltl VC;tr gvl;ltl V wea ign& meta snd
1470-1480	10		Sh,rd bn,P srtg;mch M, fn & Vfn snd; ltl ign snd
1480-1485	5		Sh,rd bn, P srtg; mch st
1485-1490	5		Sh, rd bn, mch st; mch VC/Vfn snd; ltl Vfn gvl
1490-1500	10		Ss cong,rd bn,C&VC snd,grain size ranges from fn gvl down to cl
1500-1505	5		Ss,rd bn,M&C,mch fn & Vfn, tr VC; mch st & cl
1505-1530	25		Ss cong,Vpl or,C&M snd,mch VC&M;ltl Vfn gvl;all grns qtz; ltl st
1530-1535	5		Ss,pl rd bn,C&M snd,mch VC&fn, ltl Vfn; tr Vfn gvl; ltl st
1535-1555	20		Ss cong,pl rd bn,C&VC snd,mch M&ltl fn; mch Vfn gvl;all grns qtz
1555-1560	5		Ss cong,pl rd bn,tr fn; mch VC, C & M snd; mstly qtz
1560-1565	5		Ss,Vpl or,VC&C,mch M/Vfn; mch st; tr Vfn gvl
1565-1570	5		Ss cong,Vpl or,VC&C snd,mch M/Vfn;ltl Vfn gvl; ltl st
1570-1580	10		Ss,Vpl or,VC&C, mch M/Vfn; tr Vfn gvl; ltl st
1580-1595	15		Ss cong,gry or,VC&C snd,ltl M; mch Vfn gvl; few pnk grns feld
1595-1610	15		Ss,Vpl or,VC&C,ltl M; fn & Vfn; tr Vfn gvl
1610-1615	5		Ss cong,Vpl or,VC&C snd, ltl M; mch Vfn gvl, tr fn; mch st
1615-1625	10		Ss,Vpl or, VC & C, mch M,ltl fn; tr Vfn gvl; mch st
1625-1645	20		Ss cong,Vpl or, VC & C Ss,F cal-cem,ltl M;mch Vfn gvl,tr fn;ltl st

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M		1645-1675	30	Ss, Vpl or, VC&C, ltl M, ltl Vfn gvl; ltl st
T		1675-1680	5	Ss, Vpl or, C & M, Sang, P srtg, mch VC & fn; ltl st
S		1680-1690	10	Ss cong, VC&C Ss, srnd, P srtg, mch M; mch Vfn gvl, ltl fn
	675'	1690-1695	5	Red granite, or pnk blk wh, C, VC, ltl rd bn sh, tr pyr
PC	5'	1695-1700	5	Granite, or pnk blk wh, C, biotite mic, qtz, orth feld, amphibole?

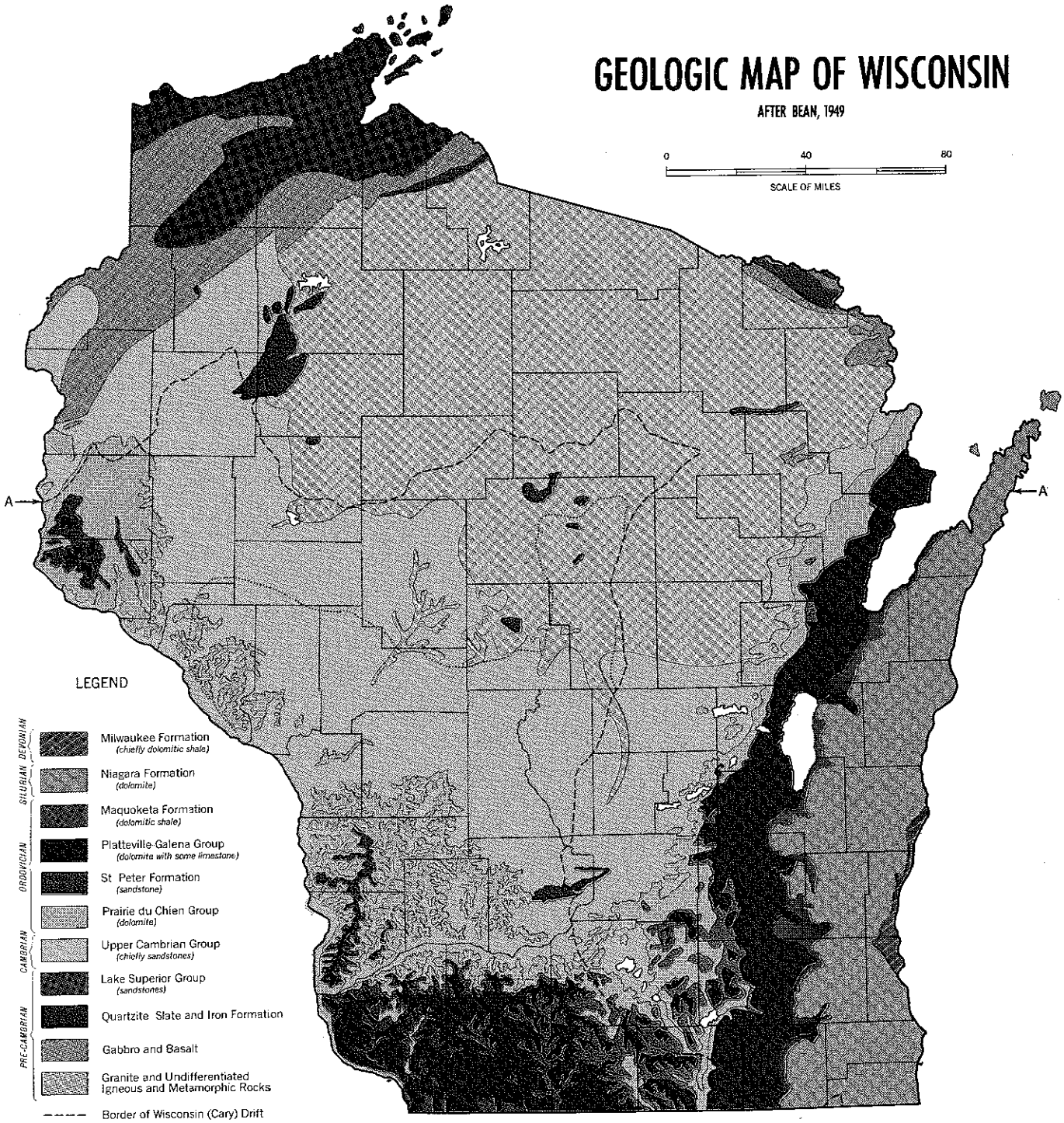
END OF WELL

GEOLOGIC MAP OF WISCONSIN

AFTER BEAN, 1949

0 40 80

SCALE OF MILES



LEGEND

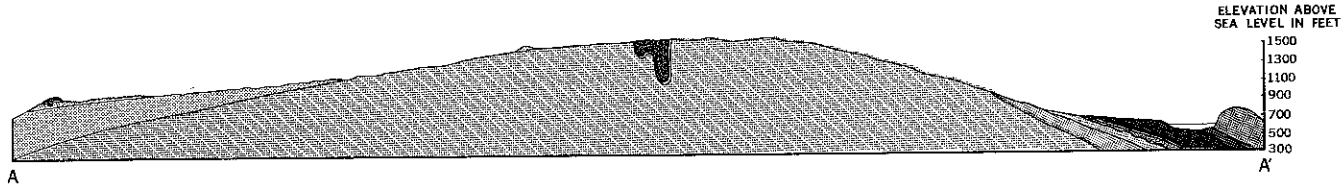
DEVONIAN
SILURIAN
ORDOVICIAN
CAMBRIAN
PRE-CAMBRIAN

- Milwaukee Formation *(chiefly dolomitic shale)*
- Niagara Formation *(dolomite)*
- Maquoketa Formation *(dolomitic shale)*
- Platteville-Galena Group *(dolomite with some limestone)*
- St Peter Formation *(sandstone)*
- Prairie du Chien Group *(dolomite)*
- Upper Cambrian Group *(chiefly sandstones)*
- Lake Superior Group *(sandstones)*
- Quartzite Slate and Iron Formation
- Gabbro and Basalt
- Granite and Undifferentiated Igneous and Metamorphic Rocks
- Border of Wisconsin (Cary) Drift
- Border of Older Drift

University of Wisconsin

Wisconsin Geological and Natural History Survey

1963



0 10 20 30 40

HORIZONTAL SCALE IN MILES

SHORT GEOLOGIC HISTORY OF WISCONSIN

The bedrock of Wisconsin is separated into two major divisions: (1) older, predominantly crystalline rocks of the Precambrian Era, which were extensively deformed after their deposition by movements of the Earth's crust; and (2) younger flat-lying sedimentary rocks of the Paleozoic.

The Precambrian Era lasted from the time the earth cooled, over 4,000 million years ago, until the Paleozoic Era which began about 500 million years ago. During this vast period of 3,500 million years sediments, some of which were rich in iron and which now form our iron ores, were deposited in ancient oceans, volcanoes spewed forth ash and lava, mountains were built and destroyed, and the rocks of the upper crust were invaded by molten rocks of deep-seated origin. Only a fragmentary record of these events remains but, as tree stumps attest the former presence of forests, the rocky roots tell the geologist of the former presence of mountains.

At the close of the Precambrian Era most of Wisconsin had been eroded to a rather flat plain upon which stood hills of more resistant rocks as those now exposed in the Baraboo bluffs. There were still outpourings of basaltic lava in the north and a trough formed in the vicinity of Lake Superior in which great thicknesses of sandstone were deposited.

The Paleozoic Era began with the Cambrian Period, the rocks of which indicate that Wisconsin was twice submerged beneath the sea. Rivers draining the land carried sediments which were deposited in the sea to form sandstones and shales. Animals and plants living in the sea deposited calcium carbonate and built reefs to form rocks which are now dolomite—a magnesium-rich limestone. These same processes continued into the Ordovician Period during which, as indicated by the rocks, Wisconsin was submerged three more times. Deposits built up in the sea when the land was submerged were partially or completely eroded at times when they were subsequently elevated above sea level. During the close of the Ordovician Period, and in the succeeding Silurian and Devonian periods, Wisconsin is believed to have remained submerged.

There are no rocks outcropping in Wisconsin that are younger than Devonian. Absence of this part of the rock record makes interpretation of post-Devonian geologic history in Wisconsin a matter of conjecture. Available evidence from neighboring areas, where younger rocks are present, indicates that towards the close of the Paleozoic Era, perhaps some 250 million years ago, a period of gentle uplift began which has continued to the present. During this time the land surface was carved by rain, wind and running water.

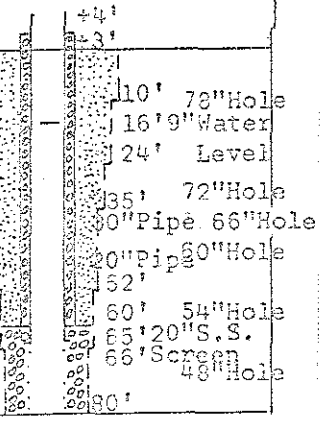
The final scene took place during the last million years when glaciers invaded Wisconsin from the north and sculptured the land surface. They smoothed the hill tops, filled the valleys and left a deposit of glacial debris over all except the southwest quarter of the State where we may now still see the land as it might have looked a million years ago.

Prepared by U. of W. Geological and Natural History Survey, 1963.

WISCONSIN GEOLOGICAL SURVEY, Science Hall, University of Wisconsin, Madison, Wis. Log No. Gr-86

Village of Cassville, #2, Cassville, Wisconsin
NE 1/4, SE 1/4, NE 1/4, Sec. 28, T. 3N., R. 5W.
Layne-Northwest Co., Driller - May 1965
Sample Nos. 252596-252611, Examined by M.E. Ostrom 1-13-65

ALLUVIUM	0 - 5	5		Snd,mxd,C,VC,tr fn,Vfn,M,mchVfn,fn,Mgvl
	5 -10	5		Snd,mxd,C,VC,Srnd,P,trM,mchVfn,fn,M,gvl
	10-15	5		Snd,mxd,M,C,Srnd,P,trVC
	15-20	5		Snd,mxd,C,VC,Srnd,P,trM,fn,mchVfn,fn,gvl
	20-25	5		Snd,mxd,C,VC,Srnd,P,trM,mchVfn,fn,Mgvl
	25-35	10		Snd,mxd,C,VC,Srnd,P,trM,mchVfn,fn
	35-45	10		Snd,mxd,C,VC,Srnd,P,mchVfn,fn,gvl
	45-50	5		Snd,mxd,M,C,Srnd,P,trVC,trVfn,fn,gvl
	50-55	5		Snd,mxd,M,C,Srnd,P,trVfn,fn
	55-60	5		Snd,mxd,C,VC,Srnd,P,trM,trVfn,fn,gvl
	60-65	5		Snd,mxd,C,VC,Srnd,P,trM,mchVfn,fn,gvl
	65-75	10		Snd,mxd,C,VC,Srnd,P,trM,trVfn,fn,gvl
80	75-80	5		Snd,mxd,C,VC,Srnd,P,trM,trVfn



Formations: Alluvium

Well tested for 12 hours at 1900 gpm with 15'9" of drawdown.
Specific capacity = 120.6 gpm per ft. of drawdown.