Well No.	Location	Owner	Driller	Date Completed	Altitude of land surface (feet)	Use
Sj I16-2-T8	312 N. Mill St.	Mishawaka Rubber and Woolen Mfg. Co.	Layne-Northern Co.	May 28, 1939	-	Test
Sj I16-3-1	1121 W. 11th St.	Major Bros. Packing Co.	Smith-Monroe Co.	-	-	Industrial
Sj I16-3-2	1121 W. 11th St.	do.	do.	Nov. 30, 1942	-	do.
Sj I16-4	716 Lincoln Way West	H. B. Morrow	do.	Sept. 18, 1942	-	Domestic
Sj I16-5-1	724 S. Main St.	Mishawaka Farmers Dairy	do.	Feb. 1934	-	Cooling
Sj I16-5-3	do.	do.	do.	June 1939	-	do.

Well No.	Depth (feet)	Diameter (inches)	Principal Aquifer			Depth to bedrock (feet)	Water level		Yield		Drawdown		Hardness (gr./gal.)	Temperature (°F)	Notes
			Depth to top of bed (feet)	Thickness (feet)	Material		Above (+) or below land surface (feet)	Date	Yield (g.p.m.)	Date	Amount (feet)	Rate (g.p.m.)			
Sj I16-2-1	47	6	9	10	Sand and gravel	44	20	May 28, 1939	-	-	-	-	-	-	
			35	9	Sand										
Sj I16-3-1	75	10	-	-	-	-	-	-	-	-	-	-	-	-	-
Sj I16-3-2	89	12	67	22	Sand and gravel	-	5	Nov. 30, 1942	130	Nov. 30, 1942	76	130	-	-	-
Sj I16-4	116	-	98	18	Gravel	-	-	-	-	-	-	-	-	-	-
Sj I16-5-1	29	10	10	19	do.	-	12	Feb. 1934	-	-	-	-	-	-	Drilled to 46 feet
Sj I16-5-2	30	10	12	18	do.	-	5	June 1939	150	June 1939	5	150	-	-	-

RECORDS OF TEST WELLS IN THE SOUTH BEND AREA, ST. JOSEPH COUNTY, INDIANA

Wells Sj 6-1A to Sj 6-25A taken from report by William Artingstall (1) 1921.

Wells Sj 6-1B to Sj 6-3K taken from records of South Bend Water Department.

Wells Sj 7-1 to Sj 7-32 taken from report by Burns and McDonnell Engineering Company (3) 1928.

Wells Sj 8-1 to Sj 8-38 taken from report by C. B. Burdick (2) 1911.

See plate 1 for locations.

TEST WELLS

Well No.	Location	Owner	Driller	Date Completed	Altitude of land surface (feet)	Use
Sj 6-1A	Walnut St., 100 feet north of Indiana Avenue	City of South Bend	-	Prior to 1921	65.42 CD 723.24 MSL	Test
Sj 6-2A	300 feet west of Gertrude St. and 100 feet north of Indiana Avenue	do.	-	do.	63.77 CD 721.59 MSL	do.
Sj 6-3A	Indiana Avenue and Brookfield Street	do.	-	do.	62.3 CD 720.1 MSL	do.
Sj 6-4A	Indiana Avenue and Olive Street	do.	-	do.	60.38 CD 718.20 MSL	do.
Sj 6-5A	Olive St., midway between Indiana Avenue and Sample Street	do.	-	do.	58.23 CD 716.05 MSL	do.
Sj 6-6A	Olive St., 100± feet south of South Bend, St. Joe and So. Ry.	do.	-	do.	60.8 CD 718.7 MSL	do.
Sj 6-7A	Sample St., just west of Olive Street	do.	-	do.	56.48 CD 714.30 MSL	do.
Sj 6-8A	Sample St. and Camden St.	do.	-	do.	56.78 CD 714.60 MSL	do.
Sj 6-9A	Dunham St. and Camden St.	do.	-	do.	57.14 CD 714.96 MSL	do.

Well No.	Depth (feet)	Diameter (inches)	Principal Aquifer			Depth to bedrock (feet)	Water level		Yield		Drawdown		Hardness (gr./gal.)	Temperature (°F)	Notes
			Depth to top of bed (feet)	Thickness (feet)	Material		Above (+) or below land surface (feet)	Date	Yield (g.p.m.)	Date	Amount (feet)	Rate (g.p.m.)			
Sj 6-1A	132	-	56	76	Sand and gravel	-	12	Prior to 1921	-	-	-	-	-	-	H14 (1)
Sj 6-2A	135	-	10	125	do.	-	-	-	-	-	-	-	-	-	H15
Sj 6-3A	80	-	20	60	do.	-	-	-	-	-	-	-	-	-	H15
Sj 6-4A	173	-	63	110	do.	-	13	Prior to 1921	-	-	-	-	-	-	H15
Sj 6-5A	177.8	-	63	114.8	do.	177.8	8	do.	-	-	-	-	-	-	H15
Sj 6-6A	180	-	160	20	Fine sand	-	-	-	-	-	-	-	-	-	H15
Sj 6-7A	184	-	35	141	Sand and gravel	176	8	Prior to 1921	-	-	-	-	-	-	H10
Sj 6-8A	194	-	127	53	Sand	188	5.94	do.	-	-	-	-	-	-	H10
Sj 6-9A	182	-	100	60	Gravel and sand	180	5.41	do.	-	-	-	-	-	-	H10

Well No.	Location	Owner	Driller	Date Completed	Altitude of land surface (feet)	Use
Sj 6-10A	Ford St. and Camden St.	City of South Bend	-	Prior to 1921	57.14 CD 714.96 MSL	Test
Sj 6-11A	Camden St., 100 feet north of Western Avenue	do.	-	do.	54.98 CD 712.80 MSL	do.
Sj 6-12A	Camden St., 150 feet south of West Washington Street	do.	-	do.	55.42 CD 713.24 MSL	do.
Sj 6-13A	Southeast corner LaSalle Lake (now drained)	do.	-	do.	51.26 CD 709.08 MSL	do.
Sj 6-14A	Northwest corner LaSalle Lake	do.	-	do.	51.7 CD 709.5 MSL	do.
Sj 6-15A	Near LaSalle Lake, 100± feet north of R. R.	do.	-	do.	52.94 CD 710.76 MSL	do.
Sj 6-16A	Iowa St. and Huron St.	do.	-	do.	56.17 CD 713.99 MSL	do.
Sj 6-17A	Near LaSalle Lake, 100± feet north of R. R.	do.	-	do.	52.94 CD 710.76 MSL	do.
Sj 6-18A	Northwest corner Kaley Park, at creek.	do.	-	do.	53.24 CD 711.06 MSL	do.
Sj 6-19A	Southwest corner of City property.	do.	-	do.	56.01 CD 713.83 MSL	do.

Well No.	Depth (feet)	Diameter (inches)	Principal Aquifer			Depth to bedrock (feet)	Water level		Yield		Drawdown		Hardness (gr./gal.)	Temperature (°F)	Notes
			Depth to top of bed (feet)	Thickness (feet)	Material		Above (+) or below land surface (feet)	Date	Yield (g.p.m.)	Date	Amount (feet)	Rate (g.p.m.)			
Sj 6-10A	198	-	78	119	Sand and gravel	197	5.41	Prior to 1921	-	-	-	-	-	-	H10
Sj 6-11A	211	-	80	110	do.	211	5.8	do.	-	-	-	-	-	-	H10
Sj 6-12A	210	-	80	130	do.	207	6.92	do.	-	-	-	-	-	-	H10
Sj 6-13A	186	-	130	56	Sand	-	-	-	-	-	-	-	-	-	H10
Sj 6-14A	203	-	51	152	Sand and gravel	200	0.31	Prior to 1921	-	-	-	-	-	-	H9
Sj 6-15A	100	-	52	8	Gravel	-	2.49	do.	-	-	-	-	-	-	H4
Sj 6-16A	193	-	10	183	Sand and gravel	193	4.70	do.	-	-	-	-	-	-	H9
Sj 6-17A	170	-	80	90	do.	-	2.48	do.	-	-	-	-	-	-	H4 (2)
Sj 6-18A	196	-	163	32	do.	195	14.0	do.	-	-	-	-	-	-	H4
Sj 6-19A	200	-	80	120	do.	-	4.5	do.	-	-	-	-	-	-	H9

Well No.	Location	Owner	Driller	Date Completed	Altitude of land surface (feet)	Use
Sj 6-20A	Olive St. and Rupel St. (extended)	City of South Bend	-	Prior to 1921	52.14 CD 709.96 MSL	Test
Sj 6-21A	Sample St. and Fakon St. (extended)	do.	-	do.	55.93 CD 713.75 MSL	do.
Sj 6-22A	Brookfield St. and Old Creek	do.	-	do.	53.09 CD 710.91 MSL	do.
Sj 6-23A	Sancome St. and Old Creek just north of Van Buren St.	do.	-	do.	51.65 CD 709.47 MSL	do.
Sj 6-24A	Olive St., south of Sample Street	do.	-	do.	60.79 CD 718.61 MSL	do.
Sj 6-25A	Olive St. 200 feet south of Sample Street	do.	-	do.	58.98 CD 716.80 MSL	do.
Sj 6-1B	Sample St. and Lafayette St.	do.	-	-	68.0 CD 726.0 MSL	do.
Sj 6-6B	Prairie Ave., 200 feet south of Garst St.	do.	-	-	60 CD 718 MSL	do.
Sj 6-9B	Blaine Ave. and Portage Ave.	do.	-	-	48 CD 706 MSL	do.
Sj 6-16B	Kentucky St., near LaSalle Lake	do.	-	-	50 CD 708 MSL	do.

Well No.	Depth (feet)	Diameter (inches)	Principal Aquifer			Depth to bedrock (feet)	Water level		Yield		Drawdown		Hardness (gr./gal.)	Temperature (°F)	Notes
			Depth to top of bed (feet)	Thickness (feet)	Material		Above (+) or below land surface (feet)	Date	Yield (g.p.m.)	Date	Amount (feet)	Rate (g.p.m.)			
Sj 6-20A	186	-	120	66	Sand and gravel	-	18.00	Prior to 1921	-	-	-	-	-	-	H3
Sj 6-21A	200	-	90	110	do.	200	3.70	do.	-	-	-	-	-	-	H9
Sj 6-22A	187	-	108	79	do.	-	21.71	do.	-	-	-	-	-	-	H3
Sj 6-23A	215	-	180	34	Sand	214	24.75	do.	-	-	-	-	-	-	H2
Sj 6-24A	170	-	90	80	Sand and gravel	-	12.20	do.	-	-	-	-	-	-	H15
Sj 6-25A	159	12	50	109	do.	-	10.4	do.	305	Sept. 15, 1921	22.1	305	-	-	H15 (3)
Sj 6-1B	102	-	86	11	do.	97	-	-	-	-	-	-	-	-	H13
Sj 6-6B	100	-	89	11	Sand	100	19	-	-	-	-	-	-	-	H14
Sj 6-9B	146	-	44	100	Sand and gravel	144	-	-	-	-	-	-	-	-	H2
Sj 6-16B	136	-	34	102	do.	-	-	-	-	-	-	-	-	-	H9

Well No.	Location	Owner	Driller	Date Completed	Altitude of land surface (feet)	Use
Sj 6-17B	Northeast corner LaSalle Lake	City of South Bend	-	-	-	Test
Sj 6-24B	Bronson St. between Main St. and Lafayette St.	do.	-	-	64 CD 722 MSL	do.
Sj 6-3K	Erskine Park, north end	do.	Robert Kersey	Aug. 1, 1926	138 CD 796 MSL	do.
Sj 7-1	South end of 18th St., near river	do.	Austin Drilling Co.	Feb. 15, 1926	35.4 CD 693.2 MSL	do.
Sj 7-2	South end of Esther St., near river	do.	do.	Feb. 27, 1926	34.67 CD 682.19 MSL	do.
Sj 7-3	Potawatomi Park, east end	do.	do.	Mar. 11, 1926	48.5 CD 706.3 MSL	do.
Sj 7-4	End of Clover St., near river	do.	do.	Mar. 15, 1926	29.84 CD 687.66 MSL	do.
Sj 7-5	Ewing Ave. and Kline St.	do.	do.	Apr. 12, 1926	74.05 CD 731.87 MSL	do.
Sj 7-6	600 ft. south of Kline St. on Ewing Ave.	do.	do.	Apr. 19, 1926	70.0 727.8 MSL	do.
Sj 7-7	Ernspberger St. (Ironwood Dr.) and Bowman St.	do.	do.	Apr. 18, 1926	57.63 CD 715.45 MSL	do.
Sj 7-8	Sampson St. and Randolph St.	do.	do.	Apr. 29, 1926	49.05 CD 706.87 MSL	do.

Well No.	Depth (feet)	Principal Aquifer: Diameter (inches)	Principal Aquifer: Depth to top of bed (feet)	Principal Aquifer: Thickness (feet)	Principal Aquifer: Material	Water level: Depth to bedrock (feet)	Water level: Above (+) or below land surface (feet)	Water level: Date	Yield: Yield (g.p.m.)	Yield: Date	Drawdown: Amount (feet)	Drawdown: Rate (g.p.m.)	Hardness (gr./gal.)	Temperature (°F)	Notes
Sj 6-17B	134	-	38	96	Sand and gravel	-	-	-	-	-	-	-	-	-	#9
Sj 6-24B	100	-	89	9	do.	98	45.5	-	-	-	-	-	-	-	#12
Sj 6-3K	185	-	0	125	Sand	180	92	Aug. 1926	-	-	-	-	-	-	T25
Sj 7-1	70	-	0	68	do.	68	-	-	-	-	-	-	-	-	T18 (4)
Sj 7-2	70	-	0	68	do.	68	-	-	-	-	-	-	-	-	I18
Sj 7-3	122	-	0	115	do.	115	-	-	-	-	-	-	-	-	I7
Sj 7-4	70	-	0	68	do.	68	-	-	-	-	-	-	-	-	I18
Sj 7-5	130	-	0	116	do.	-	-	-	-	-	-	-	-	-	I19
Sj 7-6	116	-	0	115	do.	-	26	Apr. 19, 1926	-	-	-	-	-	-	I19
Sj 7-7	140	-	0	130	do.	-	27	Apr. 18, 1926	-	-	-	-	-	-	I18
Sj 7-8	103	-	0	100	do.	-	32	Apr. 29, 1926	-	-	-	-	-	-	I18

Well No.	Location	Owner	Driller	Date Completed	Altitude of land surface (feet)	Use
Sj 7-9	South of watch factory near River	City of South Bend	Austin Drilling Co.	Apr. 20, 1926	34.67 CD 692.49 MSL	Test
Sj 7-10	Ewing Ave. and Kline St.	do.	do.	June 7, 1926	74.05 CD 731.87 MSL	do.
Sj 7-11	Playland Park	do.	do.	June 18, 1926	25.94 CD 683.76 MSL	do.
Sj 7-12	LaSalle Park	do.	do.	June 1926	33.56 CD 691.38 MSL	do.
Sj 7-13	Mishawaka Ave. and Roberts Ave.	do.	do.	July 18, 1926	47.77 CD 705.59 MSL	do.
Sj 7-14	Mishawaka Ave. and Roberts Ave. (near River)	do.	do.	July 30, 1926	34.1 CD 691.9 MSL	do.
Sj 7-15	Ewing Ave. west of perfume factory	do.	do.	Aug. 24, 1926	101.41 CD 749.23 MSL	do.
Sj 7-16	Donald St. and Taylor St.	do.	do.	Sept. 17, 1926	109.82 CD 767.64 MSL	do.
Sj 7-17	South of Ewing Ave. near SJ 7-15	do.	do.	Oct. 6, 1926	-	do.
Sj 7-18	Playland Park, 100 feet west of race track	do.	do.	Oct. 15, 1926	24.47 CD 682.29 MSL	do.

Well No.	Depth (feet)	Diameter (inches)	Principal Aquifer			Depth to bedrock (feet)	Water level		Yield		Drawdown				Notes
			Depth to top of bed (feet)	Thickness (feet)	Material		Above (+) or below land surface (feet)	Date	Yield (g.p.m.)	Date	Amount (feet)	Rate (g.p.m.)	Hardness (gr./gal.)	Temperature (°F)	
Sj 7-9	169	-	0	68	Sand	-	-	-	-	-	-	-	-	-	I18
Sj 7-10	183	-	0	115	do.	175	27	June 7, 1926	-	-	-	-	-	-	I19
Sj 7-11	105	-	0	100	do.	-	3.0	June 18, 1926	-	-	-	-	-	-	I18
Sj 7-12	333	-	45	35	do.	285?	15	June 1926	-	-	-	-	-	-	H12
Sj 7-13	151	-	25	45	do.	120	26	July 18, 1926	-	-	-	-	-	-	I7
Sj 7-14	112	-	0	70	Sand and gravel	-	24	July 30, 1926	-	-	-	-	-	-	I18
Sj 7-15	205	-	0	130	do.	195	27	Aug. 24, 1926	-	-	-	-	-	-	H23
Sj 7-16	155	-	70	81	do.	-	29.8	Sept. 17, 1926	-	-	-	-	-	-	H14
Sj 7-17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	H23
Sj 7-18	100	-	0	75	Sand	95	2.5	Oct. 15, 1926	-	-	-	-	-	-	I18

Well No.	Location	Owner	Driller	Date Completed	Altitude of land surface (feet)	Use
Sj 7-19	South end of Bellevue Ave. extended, near River	City of South Bend	Austin Drilling Co.	Nov. 4, 1926	32.30 CD 690.3 MSL	Test
Sj 7-20	Donmoyer St., 100 feet east of Michigan St.	do.	Gray Drilling Co.	Dec. 20, 1926	131.62 CD 789.44 MSL	do.
Sj 7-21	Donmoyer St. and Carroll St.	do.	do.	Jan. 1927	144.79 CD 802.61 MSL	do.
Sj 7-22	Potawatomie Park, north end.	do.	Austin Drilling Co.	Feb. 22, 1927	49.76 CD 707.58 MSL	do.
Sj 7-23	18th St., south of Hildreth St.	do.	do.	Mar. 9, 1927	34.11 CD 691.93 MSL	do.
Sj 7-24	South of Perfume Factory	do.	do.	Mar. 18, 1927	88.68 CD 746.50 MSL	do.
Sj 7-25	Marine St. and Ridgedale Blvd.	do.	do.	Apr. 7, 1927	98.14 CD 755.96 MSL	do.
Sj 7-26	Chippewa Ave. and Penna. R. R.	do.	do.	Apr. 21, 1927	103.48 CD 761.30 MSL	do.
Sj 7-27	Chippewa Ave., west of Penna. R. R.	do.	do.	May 6, 1927	109.81 CD 767.63 MSL	do.
Sj 7-28	Eckman St., west of Penna. R. R.	do.	do.	May 24, 1927	91.30 CD 749.12 MSL	do.

Well No.	Depth (feet)	Diameter (inches)	Principal Aquifer			Depth to bedrock (feet)	Water level		Yield		Drawdown		Hardness (gr./gal.)	Temperature (°F)	Notes
			Depth to top of bed (feet)	Thickness (feet)	Material		Above (+) or below land surface (feet)	Date	Yield (g.p.m.)	Date	Amount (feet)	Rate (g.p.m.)			
Sj 7-19	220	-	0	68	Sand and gravel	219?	22.5	Nov. 4, 1926	-	-	-	-	-	-	I18
Sj 7-20	185	-	0	100	Sand	185?	-	-	-	-	-	-	-	-	H24
Sj 7-21	200	-	0	130	Fine sand	195?	-	-	-	-	-	-	-	-	H24
Sj 7-22	134	-	55	69.5	Sand and gravel	127	32	Feb. 22, 1927	-	-	-	-	-	-	I7
Sj 7-23	85	-	0	62.5	do.	75	5	Mar. 9, 1927	-	-	-	-	-	-	I18
Sj 7-24	129	-	4	66	do.	125.5	10.98	Mar. 18, 1927	-	-	-	-	-	-	H23
Sj 7-25	167.5	-	0 78	47 12	do.	161.5	20.54	Apr. 7, 1927	-	-	-	-	-	-	I19
Sj 7-26	160	-	0	116	do.	158	21.98	Apr. 21, 1927	-	-	-	-	-	-	H23
Sj 7-27	165	-	0	83	do.	163	28.01	May 6, 1927	-	-	-	-	-	-	H23
Sj 7-28	83	-	29	43	do.	72	11.0	May 24, 1927	-	-	-	-	-	-	H24

Well No.	Location	Owner	Driller	Date Completed	Altitude of land surface (feet)	Use
Sj 7-29	Eckman St., north of Studebaker Jarehouse	City of South Bend	Austin Drilling Co.	May 26, 1927	93.2 CD 751.0 MSL	Test
Sj 7-30	Broadway and Dale St.	do.	do.	June 4, 1927	55.4 CD 713.2 MSL	do.
Sj 7-31	South of Sample St. and west of Lincoln Way West	do.	do.	June 16, 1927	39.52 CD 697.34 MSL	do.
Sj 7-32	North of Chippewa Ave. and east of Penna. R. R.	do.	do.	Nov. 26, 1927	109 CD 767 MSL	do.
Sj 8-1	Allen St. and Queen St.	do.	-	Prior to 1911	20.0 CD 678.0 MSL	do.
Sj 8-2	Northeast corner Sherman St. and Rose St.	do.	-	do.	18.6 CD 676.4 MSL	do.
Sj 8-3	Blaine Ave., near tracks	do.	-	do.	24.1 CD 631.9 MSL	do.
Sj 8-4	Angella Ave., 1,500 feet east of River	do.	-	do.	18.6 CD 676.4 MSL	do.
Sj 8-5	Humboldt St. and Allen St.	do.	-	do.	49.2 CD 707.0 MSL	do.
Sj 8-6	Angella Ave., 225 feet east of river	do.	-	do.	16.2 CD 674.0 MSL	do.

Well No.	Depth (feet)	Diameter (inches)	Principal Aquifer			Depth to bedrock (feet)	Water level		Yield		Drawdown		Hardness (gr./gal.)	Temperature (°F)	Notes
			Depth to top of bed (feet)	Thickness (feet)	Material		Above (+) or below land surface (feet)	Date	Yield (g.p.m.)	Date	Amount (feet)	Rate (g.p.m.)			
Sj 7-29	86	-	5	76	Sand and gravel	-	9	May 26, 1927	-	-	-	-	-	-	H24
Sj 7-30	115	-	47	29.5	do.	110	20	June 4, 1927	-	-	-	-	-	-	H13
Sj 7-31	91	-	16	43	do.	87	20	June 16, 1927	-	-	-	-	-	-	H13
Sj 7-32	105	24-18	0	92.5	do.	-	18.5	Nov. 28, 1927	1,423	Feb. 5, 1928	19.4	1,423	-	-	H23 (5)
Sj 8-1	147	2.5	46	100	do.	146	+5.0	Prior to 1911	-	-	-	-	-	-	C35 (6)
Sj 8-2	146	2.5	64	90.5	do.	145.5	+5.7	do.	-	-	-	-	-	-	C35
Sj 8-3	144	2.5	46.5	97.5	do.	-	+5.7	do.	-	-	-	-	-	-	H2
Sj 8-4	125	-	44	74	do.	124	+4.0	do.	-	-	-	-	-	-	H2
Sj 8-5	152	-	77	75	do.	152	19.0	do.	-	-	-	-	-	-	H2
Sj 8-6	148	-	47	101	do.	148	+4.0	do.	-	-	-	-	-	-	H2

Well No.	Location	Owner	Driller	Date Completed	Altitude of land surface (feet)	Use
Sj 8-7	Portage Park	City of South Bend	-	Prior to 1911	21.5 CD 679.3 MSL	Test
Sj 8-8	LaSalle Park, Eddy St. at River	do.	-	Jan. 1911	31 CD 689 MSL	do.
Sj 8-9	Eckman St. and Lafayette St.	do.	-	-	95 CD 753 MSL	do.
Sj 8-10	Near Chapin and Warren Sts.	do.	-	-	107 CD 765 MSL	do.
Sj 8-11	Leeper Park	do.	-	-	17.5 CD 675.3 MSL	do.
Sj 8-14	North Pumping Station	do.	-	-	13.13 CD 670.95 MSL	do.
Sj 8-18	Central Station	do.	-	-	25.4 CD 683.2 MSL	do.
Sj 8-20	Washington and Main Sts.	Oliver Hotel	-	1903	51 CD 709 MSL	-
Sj 8-21	Main and Wayne Sts.	Y.M.C.A.	-	1907	51.7 CD 709.5 MSL	-
Sj 8-22	Bronson and Lafayette Sts.	Studebaker Corp.	-	1908	64 CD 722 MSL	-

Well No.	Depth (feet)	Diameter (inches)	Principal Aquifer			Depth to bedrock (feet)	Water level		Yield		Drawdown		Hardness (gr./gal.)	Temperature (°F)	Notes
			Depth to top of bed (feet)	Thickness (feet)	Material		Above (+) or below land surface (feet)	Date	Yield (g.p.m.)	Date	Amount (feet)	Rate (g.p.m.)			
Sj 8-7	102	10	-	-	-	-	+4.5	Prior to 1911	-	-	-	-	-	-	H2
Sj 8-8	150	-	50	10	Sand and gravel	150	-	-	-	-	-	-	-	-	H12
Sj 8-9	122	10	60 110	10 12	Gravel	122	4	Prior to 1911	-	-	-	-	-	-	H24
Sj 8-10	182	-	53	94	Sand and gravel	147	29	do.	-	-	-	-	-	-	H14
Sj 8-11	114	-	55	59	do.	114?	+11.3	do.	-	-	-	-	-	-	H1
Sj 8-14	121	-	42	75	do.	118	+15.87	do.	-	-	-	-	-	-	H1
Sj 8-18	111	-	73	38	do.	-	1.6	do.	-	-	-	-	-	-	H12
Sj 8-20	145	-	133	12	Gravel	145	19	1903	-	-	-	-	-	-	H12
Sj 8-21	100	-	0	100	Sand	100	12.7	1907	-	-	-	-	-	-	H12
Sj 8-22	100	-	0 90	60 10	Gravel Sand and gravel	100	20	1908	-	-	-	-	-	-	H11

Well No.	Location	Owner	Driller	Date Completed	Altitude of land surface (feet)	Use
Sj 8-23	Chapin and Ford Sts.	Oliver Chilled Plow Works	-	-	762 CD 720 MSL	-
Sj 8-24	Western Ave. and Jackson St.	Singer Mfg. Co.	-	1908	759 CD 717 MSL	-
Sj 8-25	Near Becks Lake	City of South Bend	-	-	751 CD 709 MSL	Test
Sj 8-26	-	South Bend Brewing Co.	-	1907	754 CD 712 MSL	-
Sj 8-27	Wilber and Elmwood Sts.	Muessel Brewing Co.	-	1908	743 CD 701 MSL	-
Sj 8-28	Springbrook Park	-	-	-	731 CD 689 MSL	-
Sj 8-29	East Jefferson St.	Clement Studebaker	-	1911	778 CD 736 MSL	-
Sj 8-30	Notre Dame	Notre Dame University	-	-	785.0 CD 743 MSL	-
Sj 8-31	St. Mary's Academy	St. Mary's Academy	-	-	710.2 CD 668.6 MSL	-
Sj 8-34	Mishawaka	Kamm and Schellinger Brewery	-	-	735 CD 693 MSL	-

Well No.	Depth (feet)	Diameter (inches)	Principal Aquifer			Depth to bedrock (feet)	Water level		Yield		Drawdown		Hardness (gr./gal.)	Temperature (°F)	Notes
			Depth to top of bed (feet)	Thickness (feet)	Material		Above (+) or below land surface (feet)	Date	Yield (g.p.m.)	Date	Amount (feet)	Rate (g.p.m.)			
Sj 8-23	40	240	0	40	Sand and gravel	-	12	Prior to 1911	-	-	-	-	-	-	H11 (7)
Sj 8-24	110	-	44	66	Sand	-	10	1908	-	-	-	-	-	-	H10
Sj 8-25	129	-	34	95	Sand and gravel	-	+6	Prior to 1911	-	-	-	-	-	-	H9
Sj 8-26	124	-	-	-	-	-	5	1907	-	-	-	-	-	-	H3
Sj 8-27	-	-	-	-	-	-	9	1908	-	-	-	-	-	-	H2
Sj 8-28	--	-	-	-	-	-	+1	Prior to 1911	-	-	-	-	-	-	I18
Sj 8-29	151	-	146	5	Gravel	-	-	-	-	-	-	-	-	-	I7
Sj 8-30	151	2	40	111	Sand and gravel	-	23	Prior to 1911	-	-	-	-	-	-	C36
Sj 8-31	123	6	30 119	85 4	do.	-	+1.8	do.	-	-	-	-	-	-	C35
Sj 8-34	725	-	160	5	Gravel	165	-	-	-	-	-	-	-	-	I16 (8)

Well No.	Location	Owner	Driller	Date Completed	Altitude of land surface (feet)	Use
Sj 8-35	Mishawaka, George St. and Prospect Drive	City of Mishawaka	-	-	62 CD 720 MSL	Test
Sj 8-36	Indiana Ave. and Joseph St., Mishawaka	-	-	Prior to 1911	56 CD 714 MSL	do.
Sj 8-38	Power House, Mishawaka	-	-	do.	19 CD 677 MSL	do.

Well No.	Depth (feet)	Principal aquifer: Diameter (inches)	Principal aquifer: Depth to top of bed (feet)	Principal aquifer: Thickness (feet)	Principal aquifer: Material	Water level: Depth to bedrock (feet)	Water level: Above (+) or below land surface (feet)	Water level: Date	Yield: Yield (g.p.m.)	Yield: Date	Drawdown: Amount (feet)	Drawdown: Rate (g.p.m.)	Hardness (gr./gal.)	Temperature (°F)	Notes
Sj 8-35	302	-	0	53	Sand and gravel	(9)	7	Prior to 1911	-	-	-	-	-	-	
			100	25											
			145	75											
			224	78											
Sj 8-36	62	-	0	40	do.	62	-	-	-	-	-	-	-	-	I14
			40.5	21.5											
Sj 8-38	133	-	0	25	do.	55	-	-	-	-	-	-	-	-	I15

NOTES

1. Records of wells from Artingstall report (1).
2. To replace 17A.
3. Well used for pumping test.
4. Well records from report of Burns and McDonnell (3).
5. Used for pumping test. Well 2 at South Station.
6. Well records from Burdick report (2).
7. Open dug well.
8. See well Sj 116-1-1.
9. Did not strike bedrock.

APPENDIX B

Logs of deep wells penetrating the bedrock formations of St. Joseph County.

See plate 2 for location

All logs except that for well G-Sj Hll-1 were furnished by Division of Geology, Indiana Department of Conservation. The geologic names given are those used by the driller, except where noted.

G-Sj D14-1. Stuart Godfrey - No. 1, Karl Gadbury, 644 ft. from north line, 561 ft. from west line, NE¼NW¼, sec. 14, T. 38 N., R. 3 E. Completed August 22, 1945. Elevation 803 ft. Total depth 815 feet. Dry hole.

Material	Depth to bottom of stratum (feet)
Drift	470
Shale, blue	472
C. W. lime	476
Lime; shale	482
Lime, black; shale	483
Sand	487
Sand and gravel	497
Sand, dark brown at	497
Shale, dark brown, hard	548
Lime, gray, hard	560
Lime, gray; shale, soft	567
Lime, gray, brown	573
Traverse lime, hard	588
Coarse brown and black	593
Lime, hard, gray, buff	594
Gray and black	598
Traverse-calcite	711
Traverse washes in solution	740
Monroe dolomite, hard	765
Monroe dolomite, brown	780
Monroe, show of oil	785
Monroe dolomite, brown and gray	815

G-Sj E20-1. M. C. Pletcher - No. 1, Notre Dame University, 100 ft. from south line, 960 feet from east line, SW¼SW¼, sec. 20, T. 38 N., R. 4 E. Completed September 28, 1944. Dry hole. Drillers log.

Material	Depth to bottom of stratum (feet)
Unknown	450
Shale, brown	518
Traverse	527½
Water at 560	
Lime	978
Shale, gray	1008
Lower Monroe; set casing	1011½
Oil show at 1013½ to 1030	
Water, salt at 1045	
Total depth	1045
Plugged back to	1030

CASING RECORD:

5-3/16"	casing	1011½'

G-Sj E20-2. Worden, Emma, No. 1, 250 ft. from north line, 250 ft. from east line, NW¼NE¼, sec. 20, T. 38 N., R. 4 E. Completed May 2, 1941, by John H. McLean. Elevation 779 ft. Plugged May 2, 1941.

Material	Depth to bottom of stratum (feet)
Sand	144
Gravel	146
Shale	152
Shale, green	180
Shale, green, sandy	400
Shale, dark, Antrim	434
Shale, dark, Antrim	500
Shale, black, hard	548
Shale, gray	554
Lime shell	568
Lime shell and shale	587
Lime, brown; top of Traverse	598
Lime, dark gray	611
Lime, light gray	619
Lime, light brown	627
Lime, light gray	642

CASING RECORD:

8"	casing	150'
6-5/8"	"	180'
5-3/16"	"	483'

G-Sj E29-1. Sones, Harry, No. 1, 330 ft. from south line, 330 ft. from east line, NE¼SE¼, sec. 29, T. 38 N., R. 4 E. Completed June 24, 1940, by Robert Allen Crude Oils. Dry Hole. Plugged July 11, 1940.

Material	Depth to bottom of stratum (feet)
Drift	224
Shale, blue	243
Soapstone and water	253
Shale, blue	374
Shale, brown; gas 475-490'	500
Shale, gray	519
Shale, gray, and iron	525
Traverse lime - no fossils	530
Sand, brown and white-secondary Traverse	531
Sand, brown and white; oil-dead	533
Sand, brown and white; oil-semi dead	536
Sand, light brown	538
Sand, darker brown, coarser and some oil	547
White water sand; some fresh water-no salt	574

CASING RECORD:

8"	casing	228'
5"	"	510'7"

G-Sj E33-1. M. C. Pletcher - No. 1, Mrs. Clara Plass, 540 ft. from south line, 450 ft. from west line, SW¼NW¼, sec. 33, T. 38 N., R. 4 E. Completed March 1, 1945. Elevation 765 ft. Dry hole. Driller's log.

Material	Depth to bottom of stratum (feet)
Mud, gray	175
Lime, gray	185
Shale, gray; water	190
Shale, gray	232
Lime, dense	242
Shale, green	275
Shale and shells	292
Shale, green	330
Shale, green, and shells	382
Shale, light brown	411
Shale, gray	414
Shale, dark brown	488
Shale, gray	492
Lime, brown	504
Lime, gray	516
Gypsum, white	519
Traverse - little oil show	523
Total depth	551

WATER SANDS:

Shale, water 185 - 190'

CASING RECORD:

8¼"	drive pipe	127'
6½"	casing	196'
5¼"	casing	492'

G-Sj G8-1. Kush, Joseph - No. 1, 210 ft. from north line, 260 ft. from east line, NE¼NW¼, sec. 8, T. 37 N., R. 1 E. Completed September 27, 1939, by Clapsaddle and Harris, et al. Dry hole. Plugged October 19, 1939.

Material	Depth to bottom of stratum (feet)
Drift	167
Green shale	228
Lime shale	245
Shale and shells	267
Brown shale	400
Gray shale	412
Lime	538
Blue lime	545
Brown lime	565
Gray lime	580
Lime	624
Gray shale	631
Black lime, hard	651
Lime	660
Gray shale	667
Blue lime	673
Dark lime	720
White lime	727
Lime	773
Lime, shells and crevices	803
Lime	848
White lime	874
Lime	923
Gray lime	959
White lime	1034
Lime	1086
White lime	1102
Green shale	1120
Shale and shells	1160
Green shale and shells	1211
Lime	1286
Shale and shells	1291
Green shale, soft	1347
Shale	1403
Light brown shale	1484
Gray shale; top Trenton	1497
Hard Trenton lime	1513
Trenton sand	1532
Trenton lime	1625

CASING RECORD:

10"	casing	167'
8¼"	"	677'
6 5/8"	"	1112'

G-Sj Hll-1. Oliver Chilled Plow Works, South Bend, Indiana. Elevation 725 ft. Total depth 1676 feet.

Material	Depth to bottom of stratum (feet)	Correlations A. C. Lane	C. E. Wright
Sand	25		
Gravel	45	137-350 St. Clair of Ohio	137-350 Huron
Clay	75		
Sand	100		
Gravel	137		
"Blue shale", calcareous clay shale; dark drab	280		
Gas at 280 feet			
Strong smell of oil from 200 to 350 feet			
Bituminous argillaceous shale; dark brown "Red shale"	350	350-381 Traverse or Hamilton	350-610 Hamilton
Argillaceous limestone;bluish drab	425		
Salt water at 387 feet		381-540 Dundee or upper Helderberg	
Limestone, light gray to drab	455		
Crinoidal shaly limestone	475	540-900 Monroe or lower Helderberg	
Limestone, light drab	540		
Dolomitic limestone, drab	555		
Gypsum and dolomite, drab and white mixed	610		610-796 Corniferous
Salt water at 610 feet			
Dolomite, light drab	670		
Salt water at 670 feet			
Dolomitic limestone gray	680		
Dolomite, light gray	710		
Dolomitic limestone, light gray	733		
Dolomite, drab	780		
Dolomitic limestone, light gray	796		796-1300 Helderberg
Dolomitic limestone, bluish gray	900	900-1120 Niagara	
Dolomitic limestone greyish white	940		
Dolomitic limestone	960		
Dolomite, greyish white	1180	1120-1180 Clinton and Medina	
Argillaceous dolomite bluish drab gray and white	1300		1300-1600 Salina?
Argillaceous shale, dark bluish drab	1350	1180-1360 Hudson River	
Argillaceous shale, drak brown to black	1585		
Dolomitic limestone	1670	1360-1600 Utica 1600-1670 Trenton	1600-1670 Niagara?

From
Michigan Geological Survey, volume 5, Plate LXIV, 1881-1893.

G-Sj-I27-1. M. C. Pletcher - No. 1, Clayton and Bertha Weiss, 130 ft. from south line, 1190 ft. from west line, SW¼SW¼, sec. 27, T. 37 N., R. 3 E. Completed July 19, 1945. Elevation 856 ft. Dry hole.

Material	Depth to bottom of stratum (feet)
Drift to rock	250
Lime	254
Oil, some	255
Salt water, little	256
Sand, gravel	400
Shale, gray	420
Shale, gray to green	435
Shale, green to light brown	445
Shale, light brown	455
Shale, light brown	465
Shale, light brown to dark brown	475
Shale, very dark brown	485
Shale, light brown	490
Shale, brown to very dark	495
Shale, very dark some gas; some green oil	505
Shale, brown, hard	515
Shale, to lime, brown	520
Lime, tight	525
Lime, tight and hard	560

CASING RECORD:

8"	casing	250'
6"	"	400'
5-3/16"	"	520'

G-Sj K25-1. Hay, W. F., and Rettie, No. 1, 100 ft. from north line, 200 feet from east line, in NE¼SE¼, sec. 25, T. 36 N., R. 1 W. Completed January 30, 1942, by P. F. Williams and C. R. Lonzo. Elevation 619 ft. Dry hole.

Material	Depth to bottom of stratum (feet)
Sand, gravel, quicksand, coarse water sand	190
Gravel	195
Gravel, sand, coarse	200
Sand and gravel, fine	205
Sand and gravel, coarse	218
Sand, light brown, water	225
Shale, brown	230
Shale, dark brown	234
Shale, dark brown, mixed	237
Shale, light brown	240
Shale, brown-black	242
Shale, light brown	246
Shale, black	250
Shale, black, mixed	256
Shale, black, limestone, gray, mixed, enter Devonian	259
Shale, black, limestone, gray, mixed	263
Shale, black, limestone, gray, mixed	270
Lime, black and light, mixed, finer	273
Lime, black and light, mixed, lime and dolomite	275
Lime, light and dark mixed	277
Lime, medium free, light show oil	279
Lime, medium fine, show oil	280
Lime, light fine, show oil	281
Lime, light, coarse, show oil	282
Lime, light dark mixed, coarse	283
Lime, medium light and dark, mixed	284
Lime, light, fine	287
Lime, medium light, fine	289
Lime, light brown, fine	289½
Lime, light brown, fine	290
Lime, light and fine	291
Lime, light brown, fine	293
Lime, light brown, fine	296
Lime, light and fine into sulfur water, stagnant black and heavy.	300

CASING RECORD:

8¼"	casing	180'
6¼"	"	187'
5 3/16"	"	284'

G-Sj L28-1. Pearse, Delbert A, et al, No. 1, 330 ft. from north line, 330 ft. from west line, NE¼NW¼, sec. 28, T. 36 N., R. 1 E. Completed December 24, 1941, by the Ohio Oil Co. Elevation 729 ft. Dry hole.

Material	Depth to bottom of stratum (feet)
Sand, clay and gravel	202
Shale, gray, green, brown	205
Shale, brown, light brown	210
Shale, green, gray	219
Shale, dark brown, solid, Antrim, 219 ft.	286
Dolomite, fine sucrose, Traverse formation 286 ft.	287½
Shale, light gray dolomite, hard	295
Shale, with quartz grains	296
Dolomite, calcareous, brown	307
Dolomite, with quartz grains	310
Dolomite, light buff, dead oil	313
Limestone, light buff	315
Dolomite, calcareous, light buff	319
Limestone, light buff, Traverse limestone, 319 feet	386
Limestone, brown, gray, Detroit River 386 ft.	413
Dolomite, brown	448
Dolomite, light gray	455
Dolomite, some sandy, Bass Island 448 ft.	460
Dolomite, gray-white, Guelph 460 ft.	571
Dolomite	937
Dolomite, milky to brown chert, Brassfield 937 ft.	970
Dolomite, no chert	990
Dolomite, chert, white	1055
Dolomite, green shale streak, Richmond 1055 ft.	1197
Shale, green-gray	1210
Shale, green-gray, soft, Maysville 1197 ft.	1278
Shale, brown, light brown, Eden 1278 ft.	1397
Dolomite, buff to brown, Galena 1379 ft. some dead oil	1514

CASING RECORD:

7" Casing 223'

APPENDIX C

Chemical analyses of water from the South Bend municipal Water-supply wells and from St. Joseph River.

Analyses made by the

Indiana State Board of Health and others

Chemical analyses of water of South Bend municipal water supply.
St. Joseph County, Indiana.

	Total solids ppm	Total hardness as $CaCO_3$ ppm	Total hardness as $CaCO_3$ gr./gal.	Alkalinity as $CaCO_3$ ppm	Chloride ppm	Nitrate ppm	Total iron ppm	pH	Temperature, °F.	Well No.	Analyst a/
North Station											
Nov. 11, 1911	496	358	20.8	-	0.6	-	-	-	-	2	1
Jan. 9, 1934	-	284	16.6	236	11	-	0.8	7.4	-	2	1
Dec. 14, 1935	-	290	16.9	240	10	-	.7	7.4	-	2	1
Dec. 6, 1936	-	306	17.9	288	10	-	.8	7.3	-	2	1
Mar. 5, 1938	-	270	15.8	268	13	-	.7	7.4	-	2	1
Feb. 8, 1939	-	335	19.6	256	5	-	1.0	7.5	-	2	1
Nov. 21, 1941	-	268	15.7	244	11	-	.7	7.7	-	2	1
May 21, 1942	-	324	18.9	244	10	-	.8	7.6	-	2	1
Sept. 19, 1942	-	320	18.7	238	10	-	1.0	7.5	-	2	1
Mar. 27, 1943	-	316	18.5	240	12	-	.8	7.9	-	2	1
Oct. 21, 1944	-	452	26.4	204	3	-	.6	8.0	-	2	1
Jan. 11, 1945	368	342	20.0	243	9	-	.9	7.6	-	3	2
Feb. 28, 1945	342	332	19.4	240	8	0.5	.2	-	-	2	1
Mar. 28, 1945	360	304	17.8	234	8	0.7	.3	-	-	2	1
Apr. 28, 1945	296	248	14.5	188	8	0.0	.3	-	-	2	1
June 5, 1945	402	366	21.4	242	7	0.4	.5	-	-	2	1
June 20, 1945	326	324	18.9	238	6	1.0	.1	-	-	2	1
June 20, 1945	365	342	20.0	238	6	1.0	.3	-	-	2	1
July 12, 1945	340	371	21.7	244	8	0.8	.5	-	-	2	1
Aug. 23, 1945	427	368	21.5	244	7	0.4	.3	-	53	2	1
Sept. 28, 1945	436	384	22.4	244	6	0.4	.6	-	53	2	1
Nov. 1, 1945	381	332	19.4	244	6	0.4	.5	-	52	2	1
Jan. 10, 1946	394	298	17.4	244	-	0.2	.4	-	53	2	1
Mar. 1, 1946	380	301	17.6	218	8	0.4	.5	-	52	2	1
May 3, 1946	322	292	17.1	240	7	0.5	.4	-	52	2	1
July 31, 1946	314	258	15.1	188	10	0.1	.5	-	52	2	1
July 31, 1946	395	345	20.2	-	10	0.5	.48	-	52	2	3
Oct. 25, 1946	434	352	20.6	260	10	0.16	.5	-	52	2	1
Dec. 10, 1946	390	318	18.6	260	8	0.16	.3	-	52.5	2	1
Mar. 28, 1947	382	307	18.0	192	12	0.4	.5	-	52	2	1
Average	378	323	18.9	238	8.5	0.45	.55	7.6	52		

a/ See notes at end of tables.

Date	Total solids ppm	Total hardness as $CaCO_3$ ppm	Total hardness as $CaCO_3$ gr./gal.	Alkalinity as $CaCO_3$ ppm	Chloride ppm	Nitrate ppm	Total iron ppm	pH	Temperature °F.	Well No.	Analyst
Central Station											
Nov. 11, 1911	900	414	24.2	-	16.4	-	-	-	-	-	1
Dec. 12, 1935	-	434	25.4	300	37	-	-	7.2	-	-	1
Dec. 6, 1936	-	398	23.3	288	26	-	-	7.3	-	-	1
Feb. 8, 1939	-	476	27.8	310	26	-	-	7.5	-	-	1
Oct. 21, 1944	-	432	25.2	232	2	-	-	7.9	-	-	1
Jan. 11, 1945	480	420	24.6	284	19	-	0.1	7.4	-	1	2
Feb. 28, 1945	543	452	26.4	282	19	0.5	.1	-	-	1	1
June 5, 1945	519	443	25.9	298	16	.5	.2	-	-	1	1
June 20, 1945	471	428	25.0	278	23	.8	.1	-	-	1	1
June 20, 1945	463	428	25.0	278	21	.8	.1	-	-	1	1
July 12, 1945	542	436	25.5	272	18	.7	.1	-	-	1	1
Aug. 23, 1945	479	424	24.8	268	18	.8	.1	-	57	1	1
Sept. 28, 1945	511	480	28.0	268	19	.6	.1	-	57	1	1
Nov. 1, 1945	511	410	23.9	270	21	.5	.1	-	56	1	1
Jan. 10, 1946	510	416	24.3	278	-	.4	.1	-	55.5	1	1
Mar. 1, 1946	494	405	23.7	274	18	.5	.1	-	55.5	1	1
May 3, 1946	500	411	24.0	282	20	.6	.3	-	56	1	1
July 31, 1946	378	314	20.5	276	16	.3	.2	-	55.5	1	1
July 31, 1946	463	375	21.9	-	16	2.6	.9	-	-	3	3
Oct. 25, 1946	524	411	24.0	301	20	.6	.2	-	56	1	1
Dec. 10, 1946	532	407	23.8	296	18	.16	.1	-	55.5	1	1
Mar. 28, 1947	488	369	21.6	242	20	.5	.2	-	55	1	1
Average	518	418	24.4	279	20	.7	.2	7.4	56		

Date	Total solids ppm	Total hardness as $CaCO_3$ ppm	Total hardness as $CaCO_3$ gr./gal.	Alkalinity as $CaCO_3$ ppm	Chloride ppm	Nitrate ppm	Total iron ppm	pH	Temperature °F.	Well No.	Analyst
Oliver Park Station											
Jan. 9, 1934	-	500	29.2	286	9	-	0.0	7.4	-		1
Dec. 14, 1935	-	504	29.4	288	5	-	.0	7.2	-		1
Dec. 6, 1936	-	508	29.6	288	7	-	.0	7.3	-		1
Mar. 5, 1938	-	484	28.3	290	5	-	.0	7.2	-		1
Feb. 8, 1939	-	596	34.8	300	7	-	.0	7.5	-		1
Nov. 21, 1941	-	432	25.2	230	7	-	-	7.4	-		1
Sept. 19, 1942	-	576	33.7	282	2	-	-	7.6	-		1
Oct. 21, 1944	-	600	35.0	228	2	-	.1	8.0	-		1
Jan. 11, 1945	608	534	31.2	288	6	-	.1	7.3	-		2
Feb. 28, 1945	741	620	36.2	392	8	6.0	.0	-	-		1
Mar. 28, 1945	709	628	36.7	270	5	4.0	.0	-	-		1
Apr. 28, 1945	653	540	31.4	286	7	0.7	.0	-	-		1
June 5, 1945	726	636	37.1	292	6	3.0	.1	-	-		1
June 20, 1945	680	635	37.0	290	7	4.0	.1	-	-		1
June 20, 1945	670	640	37.2	290	7	4.0	.0	-	-		1
July 12, 1945	732	636	37.1	292	7	4.0	.1	-	-		1
Aug. 23, 1945	730	681	39.7	290	6	4.0	.05	-	54		1
Sept. 28, 1945	647	669	39.0	286	7	4.0	.05	-	54		1
Nov. 1, 1945	780	589	34.3	286	8	4.5	.05	-	54		1
Jan. 10, 1946	713	570	33.2	290	-	4.0	.1	-	54		1
Mar. 1, 1946	732	560	32.7	294	7	4.0	.0	-	53		1
May 3, 1946	718	561	32.8	290	6	5.0	.1	-	54		1
July 31, 1946	512	512	30.0	264	5	4.7	.1	-	54		1
July 31, 1946	732	525	30.6	-	6	20	.13	-	54		3
Oct. 25, 1946	724	566	33.0	309	8	5.0	.1	-	54		1
Dec. 10, 1946	714	572	33.4	312	8	3.0	.05	-	54		1
Mar. 28, 1947	668	493	28.8	216	8	5.0	.05	-	53		1
Average	694	569	33.3	285	6.4	4.9	.05	7.4	54		

Date	Total solids ppm	Total hardness as $CaCO_3$ ppm	Total hardness as $CaCO_3$ gr./gal.	Alkalinity as $CaCO_3$ ppm	Chloride ppm	Nitrate ppm	Total iron ppm	pH	Temperature °F.	Well No.	Analyst
South Station											
Jan. 9, 1934	-	274	16.0	250	7	-	-	7.4	-	-	1
Dec. 14, 1935	-	254	14.7	240	5	-	-	7.4	-	-	1
Dec. 6, 1936	-	256	14.9	232	5	-	-	7.3	-	-	1
Mar. 5, 1938	-	244	14.3	240	5	-	-	7.4	-	-	1
Nov. 21, 1941	-	232	13.6	240	7	-	-	7.4	-	-	1
Sept. 19, 1942	-	296	17.3	262	3	-	-	7.5	-	-	1
Oct. 2, 1944	-	304	17.8	218	1	-	-	8.2	-	-	1
Jan. 11, 1945	300	280	16.4	230	5	22	0.05	7.6	-	2-3	2
Feb. 28, 1945	500	300	17.5	226	5	4.0	.1	-	-	-	1
Mar. 28, 1945	316	300	17.5	232	5	4.0	.1	-	-	2	1
April 28, 1945	298	228	13.3	200	7	1.0	.1	-	-	2	1
June 5, 1945	323	299	17.5	232	6	1.0	.1	-	-	2	1
June 20, 1945	281	304	17.8	226	7	4.0	.1	-	-	2	1
June 20, 1945	313	304	17.8	226	7	4.0	.0	-	-	2	1
July 12, 1945	314	299	17.5	230	5	4.0	.1	-	-	-	1
Aug. 23, 1945	313	366	21.4	290	4	4.0	.1	-	52	1	1
Sept. 28, 1945	350	336	19.6	226	7	4.0	.1	-	53	2	1
Nov. 1, 1945	352	301	17.5	282	5	4.5	.2	-	52	1	1
Jan. 10, 1946	322	280	16.4	232	-	3.5	.1	-	52	2	1
Mar. 1, 1946	343	285	16.6	266	5	4.0	.0	-	52	1	1
May 3, 1946	323	280	16.4	226	6	5.0	.1	-	52	2	1
July 31, 1946	214	243	14.2	232	4	5.7	.1	-	52	2	1
July 31, 1946	313	285	16.6	-	6.5	20	.17	-	52	2	3
Oct. 25, 1946	336	283	16.5	264	7	6.0	.1	-	52	2	1
Dec. 10, 1946	344	283	16.5	264	10	0.5	.05	-	52	2	1
Mar. 28, 1947	292	221	12.8	180	10	4.0	.05	-	52	2	1
Average	323	310	18.2	238	6	5.5	.1	7.5	52		

Date	Total solids ppm	Total hardness as $CaCO_3$ ppm	Total hardness as $CaCO_3$ gr./gal.	Alkalinity as $CaCO_3$ ppm	Chloride ppm	Nitrate ppm	Total iron ppm	pH	Temperature °F.	Well No.	Analyst
Coquillard Station											
Jan. 11, 1945	278	259	15.1	256	4	-	1.4	7.6	-	1	2
Feb. 28, 1945	290	272	15.9	250	5	0.5	0.9	-	-	1	1
Mar. 28, 1945	266	260	15.2	240	5	.5	.9	-	-	1	1
Apr. 28, 1945	254	216	12.6	216	7	.0	1.0	-	-	1	1
June 5, 1945	288	286	16.7	258	6	.4	1.2	-	-	1	1
June 20, 1945	267	272	15.9	252	8	.4	1.2	-	-	1	1
June 20, 1945	256	272	15.9	254	7	4.0	.0	-	-	1	1
July 12, 1945	273	278	16.2	258	6	.4	.9	-	-	1	1
Aug. 23, 1945	273	272	15.9	254	8	.4	.9	-	53	1	1
Sept. 28, 1945	288	283	16.5	254	6	.4	.9	-	54	1	1
Nov. 1, 1945	272	251	14.7	256	6	.2	.9	-	53	1	1
Jan. 10, 1946	241	234	13.7	256	-	.3	.8	-	53	1	1
Mar. 1, 1946	246	216	12.6	246	4	.3	.8	-	53	1	1
May 3, 1946	264	258	15.1	254	4	.3	1.0	-	53.5	1	1
July 31, 1946	187	232	13.6	270	5	.1	.6	-	53	1	1
July 31, 1946	272	278	16.2	-	7	.5	.58	-	53	1	2
Oct. 25, 1946	288	252	14.7	274	6	.12	.9	-	53	1	1
Dec. 10, 1946	278	252	14.7	276	4	.08	.6	-	53	1	1
Mar. 28, 1947	250	206	12.0	202	5	.3	.9	-	52	1	1
Average	262	254	14.8	251	6	.5	.9	7.6	53		

Date	Total solids ppm	Total hardness as $CaCO_3$ ppm	Total hardness as $CaCO_3$ gr./gal.	Alkalinity as $CaCO_3$ ppm	Chloride ppm	Nitrate ppm	Total iron ppm	pH	Temperature °F.	Well No.	Analyst
St. Joseph River											
Feb. 28, 1945	339	272	15.9	184	2	2.5	0.3	-	-		1
Mar. 28, 1945	334	276	16.1	196	8	2.0	.3	-	-		1
Apr. 28, 1945	324	272	15.9	186	5	0.3	.3	-	-		1
June 5, 1945	316	278	16.2	196	3	2.0	.4	-	-		1
July 12, 1945	303	272	15.9	198	7	1.3	.2	-	-		1
Aug. 23, 1945	310	428	25.0	270	14	.6	.1	-	75		1
Sept. 28, 1945	335	370	21.6	198	7	1.0	.2	-	66		1
Nov. 1, 1945	319	249	14.5	202	6	.3	.1	-	57		1
Jan. 10, 1946	283	219	12.8	178	-	.2	.3	-	37		1
Mar. 1, 1946	360	230	13.4	186	4	1.5	.3	-	40		1
May 3, 1946	309	236	13.8	200	4	.6	.4	-	61		1
July 31, 1946	309	216	12.6	190	5	.5	.5	-	78		1
Oct. 25, 1946	330	252	14.7	218	12	.4	.3	-	59		1
Dec. 10, 1946	338	251	14.7	220	7	.5	.1	-	41.5		1
Mar. 28, 1947	340	213	12.5	144	7	1.4	1.5	-	37		1
Average	321	268	15.7	195	6.5	1.0	.3				

Analysts: 1. Indiana State Board of Health
2. Infilco, Inc., Chicago, Illinois
3. U. S. Geological Survey

APPENDIX D

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INDIANA DEPARTMENT OF CONSERVATION
DIVISION OF WATER RESOURCES

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

MAP OF
SOUTH BEND, ST. JOSEPH COUNTY, INDIANA
SHOWING LOCATIONS OF WELLS AND OF GEOLOGIC CROSS SECTIONS

SCALE 0 1000 2000 3000 4000 5000 6000 FT.

- • WELL
- ⬚ MUNICIPAL WELL FIELD AND PUMPING STATION
- ⊕ OBSERVATION WELL

BASE MAP FROM C.E. WILLIAMS CITY ENGINEER 1942

INDIANA DEPARTMENT OF CONSERVATION
DIVISION OF WATER RESOURCES

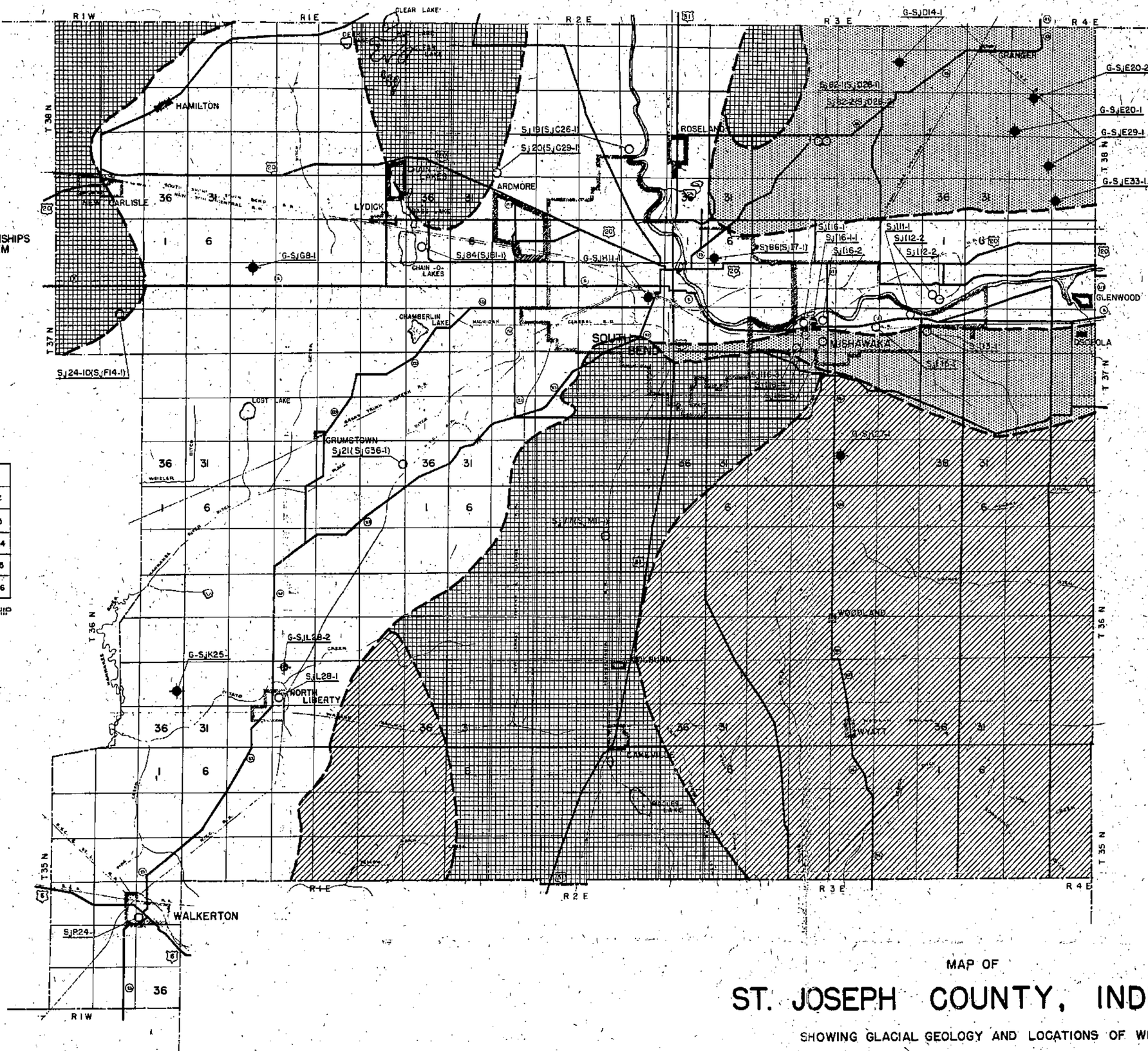
UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

	R1W	R1E	R2E	R3E	R4E
T38N	A	B	C	D	E
T37N	F	G	H	I	J
T36N	K	L	M	N	O
T35N	P	Q	R	S	T

LETTER DESIGNATION OF TOWNSHIPS IN WELL NUMBERING SYSTEM

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

DIAGRAM OF TOWNSHIP



LEGEND

- WELLS IN GLACIAL DRIFT
- WELLS PENETRATING BEDROCK
- OIL OR GAS TEST WELL

GEOLOGY

- TILL PLAIN
- MORAINE
- OUTWASH TERRACE
- ALLUVIUM

MAP OF

ST. JOSEPH COUNTY, INDIANA

SHOWING GLACIAL GEOLOGY AND LOCATIONS OF WELLS

SCALES

GEOLOGY AFTER - GAPPS AND LEVERETT
BASE - FROM INDIANA STATE HIGHWAY COUNTY MAP

HLG 6-8-42

INDIANA DEPARTMENT OF CONSERVATION
DIVISION OF WATER RESOURCES

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

MAP OF
SOUTH BEND, ST. JOSEPH COUNTY, INDIANA

SHOWING CONTOURS OF THE BEDROCK SURFACE

0 1000 2000 3000 4000 5000 6000 FT.
SCALE

CONTOUR INTERVAL 20 FEET

LEGEND

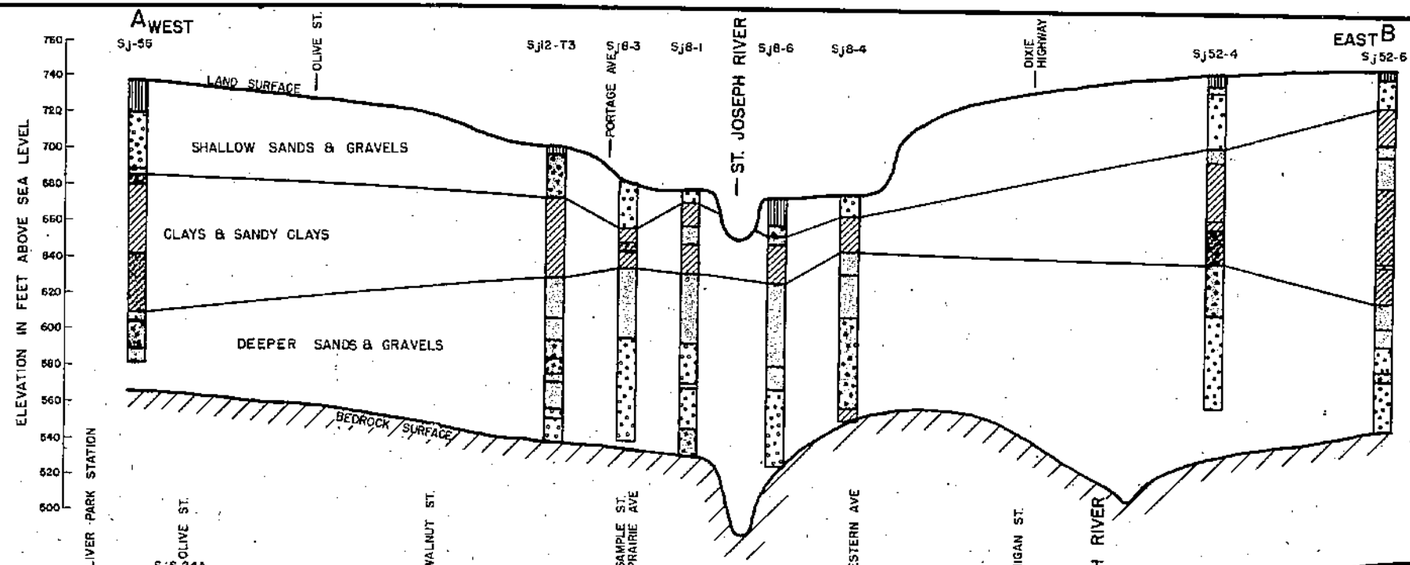
7-10 / 557 — WELL NO. / ELEVATION OF BEDROCK SURFACE

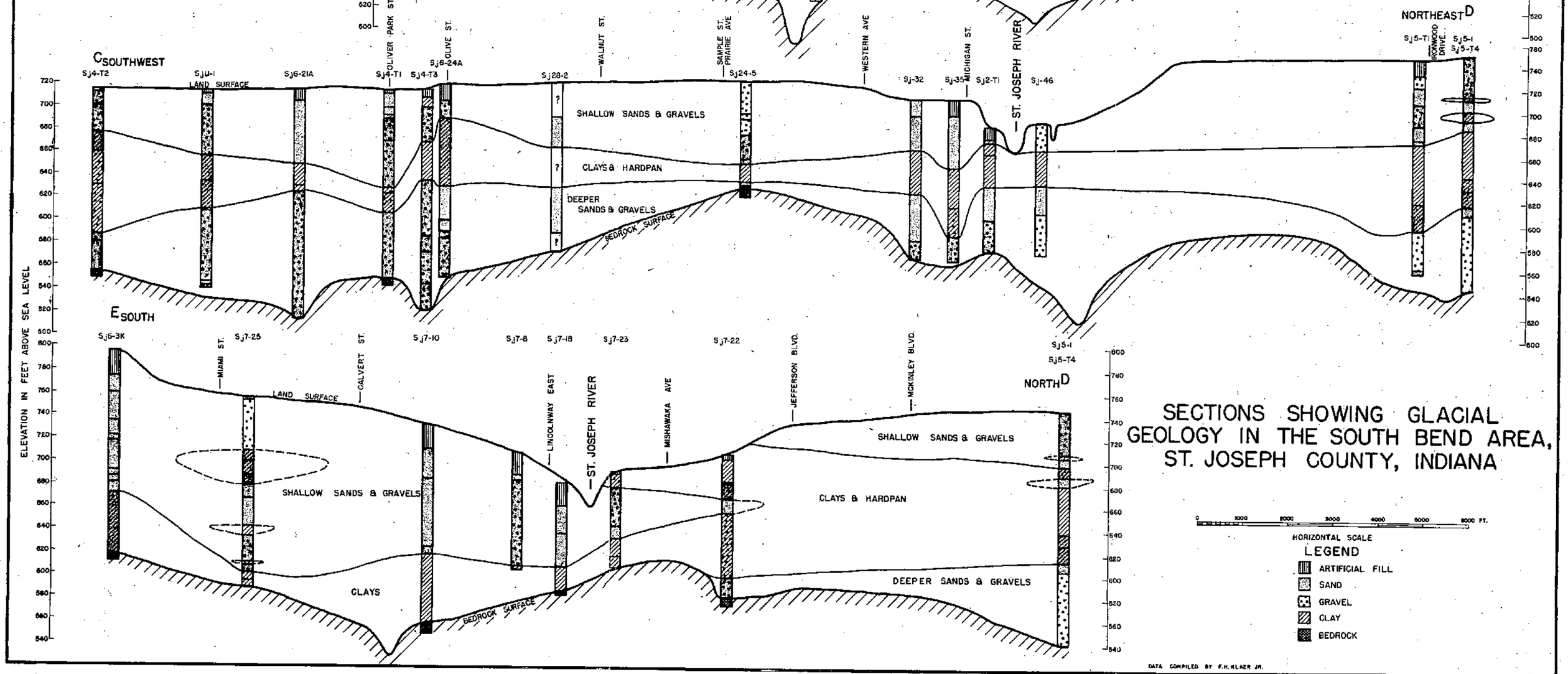
7-16 / 604- — WELL NO. / ELEVATION OF BOTTOM OF WELL THAT DID NOT REACH BEDROCK

BEDROCK TOPOGRAPHY BY F.H.KLAER
BASE MAP FROM C.E.WILLIAMS CITY ENGINEER 1942

FHK 12-10-46

PLATE 4





SECTIONS SHOWING GLACIAL GEOLOGY IN THE SOUTH BEND AREA, ST. JOSEPH COUNTY, INDIANA

0 1000 2000 3000 4000 5000 6000 FT.

HORIZONTAL SCALE

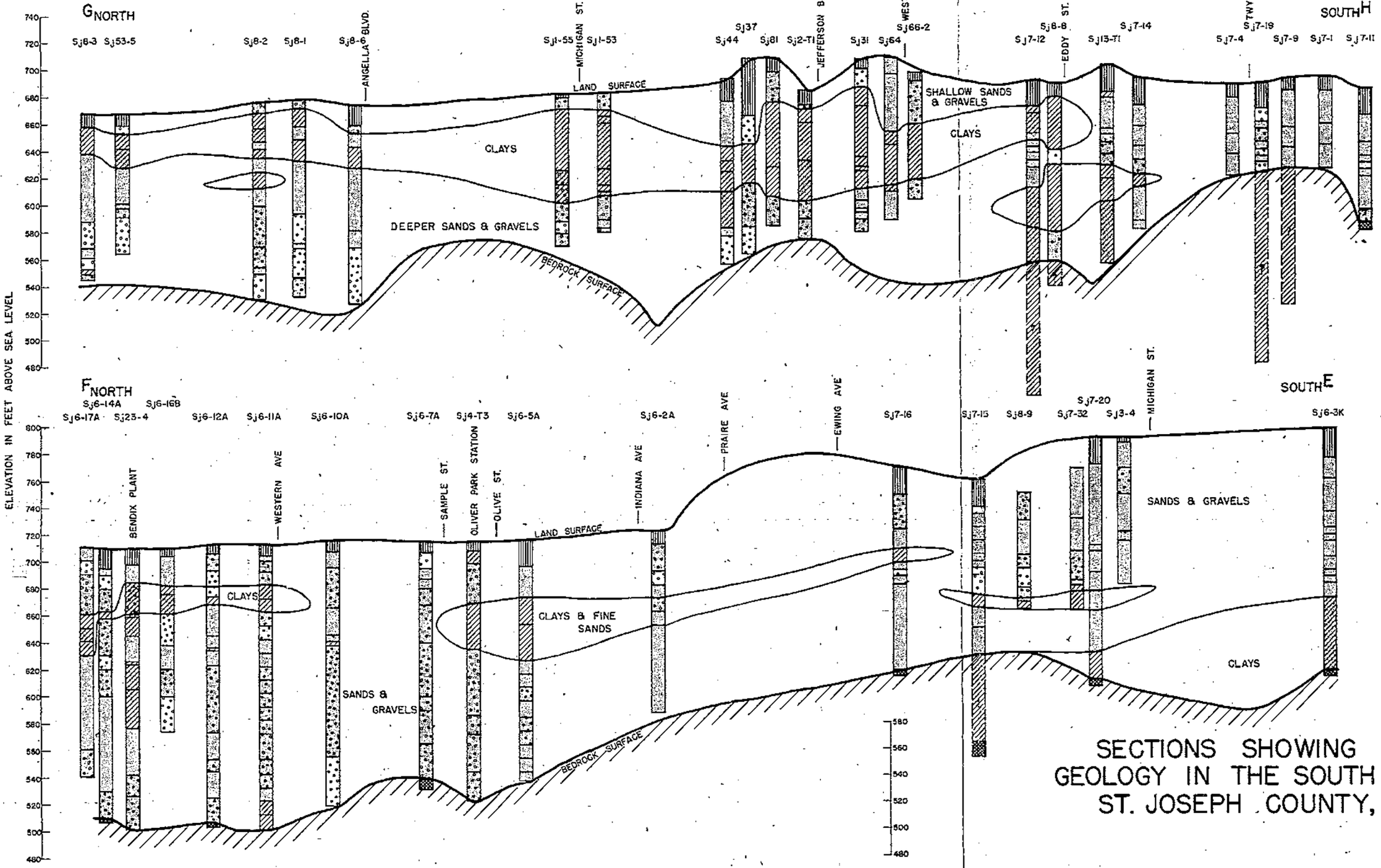
LEGEND

- ARTIFICIAL FILL
- SAND
- GRAVEL
- CLAY
- BEDROCK

DATA COMPILED BY F.H. KLAER JR.

3409

PLATE 5



SECTIONS SHOWING GLACIAL GEOLOGY IN THE SOUTH BEND AREA, ST. JOSEPH COUNTY, INDIANA

0 1000 2000 3000 4000 5000 6000 FT.

HORIZONTAL SCALE

LEGEND

- ARTIFICIAL FILL
- SAND
- GRAVEL
- CLAY
- BEDROCK

DATA COMPILED BY F.H. KLAER JR.

3197

INDIANA DEPARTMENT OF CONSERVATION
DIVISION OF WATER RESOURCES

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

PLATE 6

MAP OF SOUTH BEND, ST. JOSEPH COUNTY, INDIANA

SHOWING THE CONTOURS OF THE PIEZOMETRIC SURFACE - 1945

SCALE 0 1000 2000 3000 4000 5000 6000 FT.

- WELL
- MUNICIPAL WELL FIELD AND PUMPING STATION
- OBSERVATION WELL
- 28-1 / 701 — WELL NUMBER / ELEVATION OF THE WATER LEVEL
- CONTOUR
- LIMITS OF AREA OF DIVERSION WITHIN 700-FOOT CONTOUR

BASE MAP FROM C.E. WILLIAMS CITY ENGINEER 1942

NORTH STATION
CENTRAL STATION
SOUTH BEND DAM
SOUTH STATION
OLIVER PARK STATION
COQUILLARD STATION
ST. JOSEPH RIVER
ST. JOSEPH'S LAKE
ST. MARY'S LAKE
ST. MARY'S CONVENT
UNIVERSITY OF NOTRE DAME
SOUTH BEND CITY LIMITS