Circular 97

STATE OF ILLINOIS
DEPARTMENT OF REGISTRATION AND EDUCATION

Groundwater Availability in Ford County

by JAMES P. GIBB

ILLINOIS STATE WATER SURVEY
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HOW TO USE THESE MATERIALS

This circular provides a summary of all available information on water wells and groundwater conditions in Ford County. You can use these materials to find the possibilities of obtaining a dependable water supply at any location in the county.

First you will need the legal description (township, range, section, and portion of section) of your farm, home, or other location of interest. Then follow these steps.

1) **Turn to appendix A and find your location (township, range, section) in the list of well numbers for existing wells.**

2) **Examine the records of all the wells in your section and in the adjoining sections. The depths of these wells, the water-bearing formations they tap, their nonpumping water levels, and other information give an immediate picture of existing water supplies, which is one indication of what is possible in your location of interest.**

3) **Continue to appendix B for the chemical quality of water in the existing wells in your location, which indicates the quality you may usually expect for the different depths and sources.**

4) **Now turn to the maps in the text which illustrate all of this information to show the possibilities for dependable wells throughout the county. Figures 6, 7, and 8 illustrate information for relatively shallow wells in the upper water-bearing deposits, and figures 9, 10, and 11 give information for deeper wells in the lower deposits.**

An example of actual use of these materials for a specific location is presented on page 38, preceding appendix A.

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GROUNDWATER AVAILABILITY IN FORD COUNTY

by James P. Gibb

SUMMARY

Groundwater in Ford County normally can be obtained from one of two primary water-bearing units within the glacial drift or from the underlying bedrock formations. The drift deposits consist of the Wisconsinan, Illinoian, and Kansan age glacial materials underlain by Pennsylvanian, Mississippian, Devonian, and Silurian age bedrock formations.

Glacial deposits of Wisconsinan age provide approximately 64 percent of the county's current water supply. The maximum recorded depth of wells tapping this upper aquifer system is about 240 feet. Individual yields of domestic Wells finished in these deposits generally are limited by pump capacities of 5 or 10 gallons per minute (gpm). Municipal and industrial supply wells capable of producing in excess of 400 gpm have also been developed in this water-bearing unit. Adequate water for farm and domestic use is usually obtainable from the Wisconsinan deposits throughout the county.

Deeper lying Illinoian and Kansan age glacial deposits also are tapped for domestic and municipal water supplies. Wells tapping this lower aquifer system may be as deep as 340 feet and yield in excess of 1000 gpm. The larger groundwater supplies have been developed from morainal deposits or glacial fill materials contained in the three buried bedrock valleys crossing the county. Groundwater from the glacial deposits is hard and normally contains objectionable concentrations of iron.

The upper bedrock formations have been tapped by a few wells in the northern portion of the county. These wells approach 300 feet in depth and yield from 5 to 150 gpm. Throughout the remainder of the county the bedrock has not been extensively tapped because of the productivity of the overlying drift. The quality of water from the bedrock is generally poor and at depths below 300 or 400 feet may become too "salty" for most uses.

An estimated 2.2 million gallons of water is pumped from the aquifers of Ford County each day to satisfy industrial, municipal, domestic, and rural needs. A much larger quantity of water, perhaps as much as 51 million gallons a day, could probably be withdrawn without overdevelopment. Maps and tables indicating the probable maximum depths of wells, water levels, chemical quality, and general groundwater conditions for each water-bearing unit at specific locations are presented to serve as a guide in the development and utilization of the groundwater resources of Ford County.

INTRODUCTION

More than 500 requests for information concerning groundwater conditions in specific locations of Illinois are answered yearly by the Illinois State Water Survey. Approximately 40 percent of these requests are from individuals seeking advice on locating, developing, or treating home or farm groundwater supplies.

Many of these requests are answered with letter-type reports prepared jointly by the State Water Survey and State Geological Survey from available geohydrologic data in their basic record files. These reports, containing pertinent information on groundwater and geologic conditions at a specific site, permit meaningful appraisals for well construction which have saved considerable time, effort, and money in many cases. However, several thousand wells are constructed each year without the use of such information. If comprehensive summaries of groundwater conditions were available for all possible sites, great savings could result. This report presents such a summary for Ford County, where fairly complex groundwater conditions exist.

Ford County is located in the east-central part of the state (figure 1). It encompasses an area of 488 square miles and is mainly cultivated land. According to the 1960 census, the county has a population of 16,606 with 10,967 of the residents living in incorporated cities and villages. The county seat and largest city, Paxton, has a population of 4370.

The economy of the county is largely dependent on the production of farm crops such as corn, soybeans, and wheat and agriculturally oriented industry. Among the larger industries in Ford County are Central Soya Company, Inc., Stokely Van Camp Canneries, and M S W Gear Company all located in Gibson City.

Drainage from the county is predominantly to the south and west, but a small area southeast of Roberts drains to the northeast. Headwaters for the Iroquois, Mackinaw, North Fork Vermilion, and Vermilion Rivers are located in the upland areas of the county. The Sangamon River originating in neighboring McLean County flows through the extreme southwestern corner of the county.

Information on the streams and rivers in Ford County is not readily available in published form. Agencies in Illinois that may have data on file for these streams include: Illinois State Water Survey, Urbana; Illinois Division of Waterways, Springfield; and the U. S. Geological Survey, Champaign.

The rivers, streams, and creeks in Ford County are not sufficiently large to be considered as a source of water for most uses. All known water supplies in the county are from groundwater sources.

This report summarizes groundwater conditions in Ford County including pertinent geologic factors, occurrence and movement, temperature and chemical quality, and well development. Appendix A contains available records of all known wells, and appendix B lists the results of chemical analyses of water from all wells sampled.

This study is part of a continuing program of water-resource investigations being conducted by the Illinois State Water Survey under the general direction of Dr. William C. Ackermann, Chief, and H. F. Smith, Head of the Hydrology Section. The report was prepared under the direct guidance of William H. Walker. Grateful acknowledgment is made to the many well drillers, engineers, and public officials

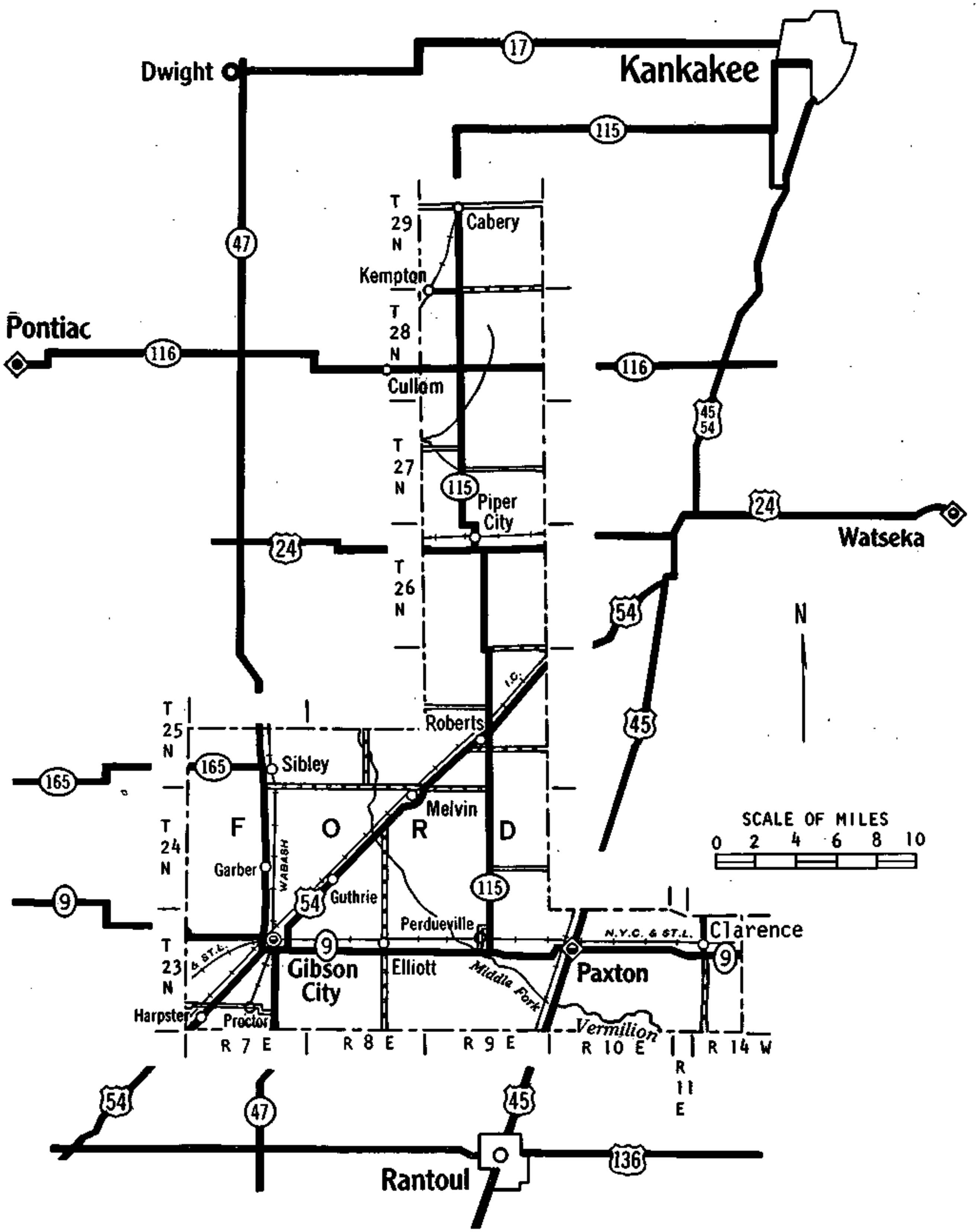


Figure 1. Location of Ford County

who provided invaluable information for use in this report. Special thanks is given to Verne Bear, science teacher from Roberts, who conducted the house to house inventory of wells in Ford County during the summer of 1967 which provided much of the basic data used in this report. Mrs. Dorothy Woller tabulated the well data and typed the manuscript, and John W. Brother, Jr., prepared the illustrations.

GEOLOGY

The geology of Ford County is summarized in general terms in State Geological Survey Circular 248, "Groundwater Geology in East-Central Illinois." The following brief discussion of geologic conditions in the county is taken largely from that publication. For a more detailed definition of the geology in this portion of the state, the reader is referred to the State Geological Survey which is located on the University of Illinois campus, Urbana.

Glacial deposits blanket all of Ford County resulting in a relatively level plain broken only by isolated knobs, stream valleys, and long ridges formed at the front of the glaciers (end moraines). The glacial deposits include those of Wisconsinan (upper deposits), Illinoian, and Kansan (lower deposits) age. Information from wells and rock exposures indicates that the topography of the county has been shaped principally by ice and running water. Features produced by ice were developed long ago when the glaciers, nourished by snow accumulation in Canada, several times advanced across Ford County and melted away leaving vast quantities of rock debris. In front of the ice, sediment-laden meltwaters escaped down valleys, partially filling them with outwash deposits of sorted sand, gravel, and finer materials. Thick extensive till sheets of unsorted clay, silt, sand, and pebbles also were laid down under the advancing ice or dumped into place during melting. The thickness of the glacial deposits varies from about 50 to more than 400 feet, the thicker sections being associated with the bedrock valleys and the morainic ridge just northwest of Gibson City (figures 2a, b, and c).

The Wisconsinan deposits form the present-day land surface of Ford County. Running water continues to modify this surface by cutting into the land, carrying away soil and rock particles, and depositing the debris in river bottoms. This modification is a small-scale version of the changes made on the bedrock surface by the glacial meltwaters. The Wisconsinan deposits in the study area consist primarily of till materials interspersed with somewhat discontinuous pockets and lenses of sand and gravel.

Underlying the Wisconsinan materials from the Piper City area southward are the Illinoian age deposits. The materials in these deposits are more uniform and occur as relatively impermeable till units interbedded with continuous layers of sand and gravel. The Kansan age deposits occupy the basal position in the drift section and consist primarily of permeable sands and gravels, particularly in the bedrock channels.

The bedrock formations in Ford County are layers of consolidated rocks of Pennsylvanian, Mississippian, Silurian, and Devonian geologic age (*see figure 2d for areal distribution*). These rocks consist of beds of shale, sandstone, limestone, and dolomite arranged one upon the other; the top surface of these rocks is called the bedrock surface (*see figure 2c for surface configuration*). Origi-

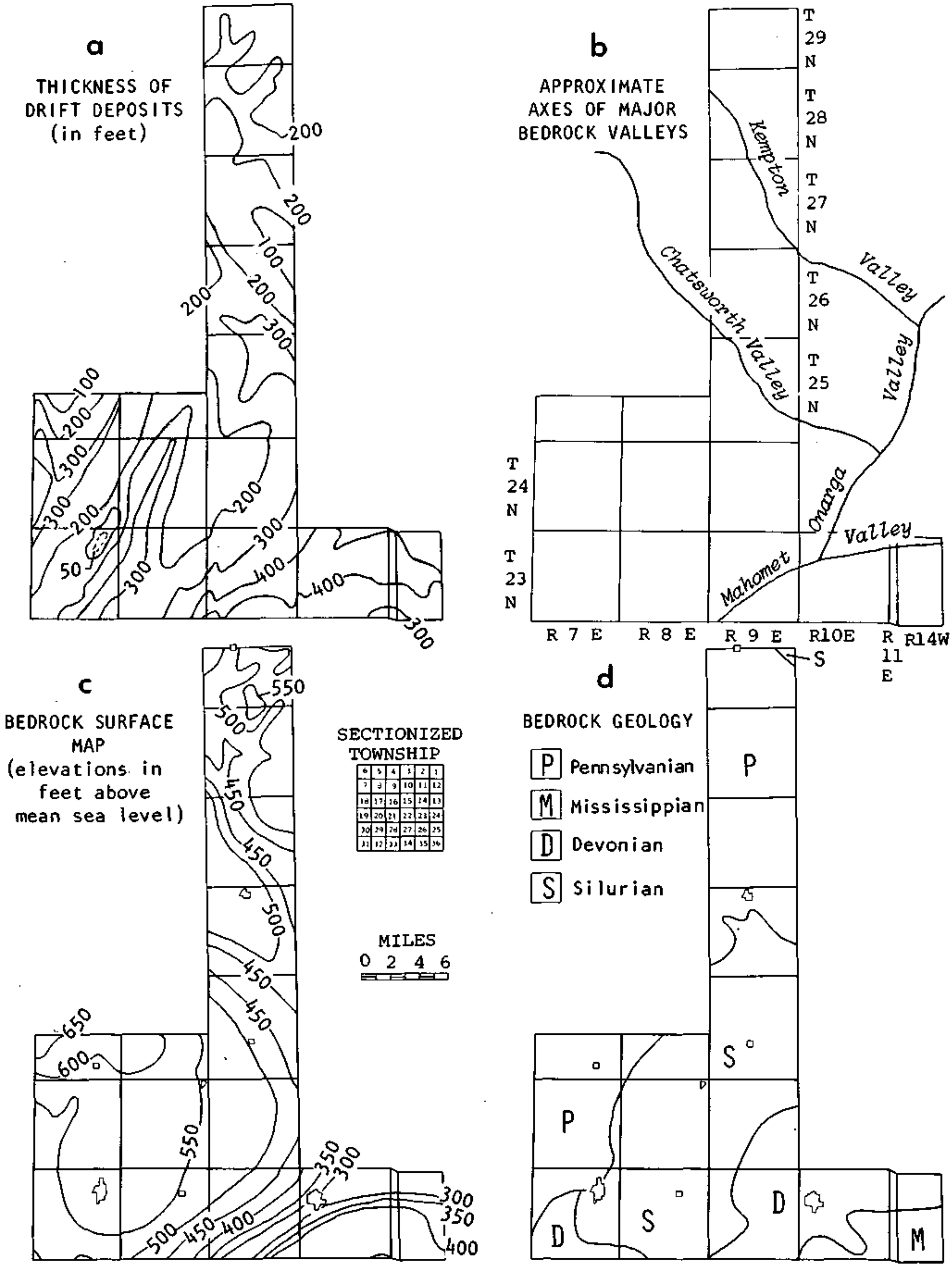


Figure 2. Geologic maps of Ford County

nally the bedrock formations were unconsolidated materials, deposited over many years as sediments in shallow seas or bordering marshes. They were then buried and hardened into solid rock during the several million years after the seas retreated from the area.

Erosion of the bedrock was not uniform through the county. In areas where soft shales and sandstone formations were exposed to weathering, valleys were formed by water and ice action. Hard sandstone and limestone formations in other areas resisted erosion and remained to form ridges and hills on the bedrock surface. Some of the old bedrock valleys coincide with present-day stream valleys, but some are partially or even completely buried by the glacial deposits so that there is little or no surface evidence of their presence. The principal buried valley system in Ford County occurs as part of the ancient Teays River, a master preglacial stream which headed in the Blue Ridge Mountains in North Carolina and discharged into the ancient Mississippi River west of Delavan in Tazewell County. The Teays River Valley, or Mahomet Valley as it is known in Illinois, enters the state in Iroquois County, northeast of Hoopeston, and continues westward into Ford County just east of Paxton. The valley proceeds westward across the county south of Paxton turning southwest into Champaign County about 8 miles northwest of Rantoul. The major tributaries to the Mahomet Valley include the Onarga Valley, with its major tributaries, the Kempton and Chatsworth Valleys (figures 2b and c).

Generalized graphic logs of the glacial deposits and bedrock formations of Ford County are given in figure 3.

GROUNDWATER

Groundwater in Ford County begins as precipitation which seeps downward into the ground through the soils. Figure 4a shows the generalized cycle of water movement from the atmosphere as precipitation to the surface and into the ground, and then away from the area either through the ground and in flowing streams or again into the atmosphere through transpiration of plants and evaporation.

Occurrence and Movement

Water enters and filters slowly down through the ground until it reaches a level where all available voids are completely water-filled. Water thus contained in this zone of saturation is groundwater, and its upper surface is the water table. Figure 5 illustrates the general configuration of the water table surface in Ford County. The water table normally lies some 5 to 10 feet below ground level in the lowlands along the streams (points of discharge) and from 15 to 25 feet below ground level in the upland areas. Seasonal fluctuations in the water table levels should be expected to range from 5 to 15 feet.

In glacial drift deposits, water fills the voids between the soil particles that make up the formations. In bedrock, water occurs primarily in two ways- it is contained in the spaces between partially cemented grains of sandstone or in the fractures, bedding plains, and solution cracks of limestone formations. A saturated formation of sand, gravel, sandstone, or limestone that is capable of yielding water to wells in usable quantities is called an aquifer.

GLACIAL DRIFT SECTION

	STAGE	FORMATION THICKNESS (FT) *(not to scale)*	SECTION	MATERIALS DRILLERS TERMS	WATER-YIELDING CHARACTERISTICS
UPPER GLACIAL DEPOSITS	WISCONSINAN	50 - 200		TILL, GRAVEL, SAND, SILT, LOESS	WATER-YIELDING FROM SAND AND GRAVEL DEPOSITS THROUGHOUT MOST OF THE COUNTY. WELL YIELDS FROM 5 - 400 gpm.
				LOESS	
				SILT, LOESS, PEAT	
LOWER GLACIAL DEPOSITS	ILLINOIAN	0 - 250		TILL, GRAVEL, SAND	WATER-YIELDING FROM SAND AND GRAVEL LAYERS IN SOUTH-CENTRAL PORTION OF THE COUNTY. WELL YIELDS FROM 10 - 600 gpm.
				SILT, PEAT	
	KANSAN	0 - 275		TILL, GRAVEL, SAND, SILT	WATER-YIELDING FROM EXTENSIVE SAND LAYERS IN SOUTHEAST PORTION OF THE COUNTY. WELL YIELDS FROM 20 - 1000 gpm.
	BEDROCK				

After Horberg (1953)

UPPER BEDROCK SECTION

SYSTEM	SERIES OR GROUP	FORMATION THICKNESS (FT) *(not to scale)*	GRAPHIC LOG	ROCK TYPE (DRILLERS TERMS)	WATER-YIELDING CHARACTERISTICS; DRILLING AND WELL CONSTRUCTION DETAILS
	PLEISTOCENE	0-500		UNCONSOLIDATED GLACIAL DEPOSITS, ALLUVIUM AND WIND-BLOWN SILT (DRIFT, SURFACE, OVERBURDEN)	WATER-YIELDING CHARACTER VARIABLE. LARGE YIELDS FROM THICKER SAND AND GRAVEL DEPOSITS IN BEDROCK VALLEYS. WELLS USUALLY REQUIRE SCREENS AND CAREFUL DEVELOPMENT. CHIEF AQUIFER IN AREA.
PENNSYLVANIAN	McLEANSBORO	0-1000		MAINLY SHALE WITH THIN LIMESTONE, SANDSTONE AND COAL BEDS (COAL MEASURES)	WATER-YIELDING CHARACTER VARIABLE. LOCALLY SHALLOW SANDSTONE AND CREVICED LIMESTONE YIELD SMALL SUPPLIES. WATER QUALITY USUALLY BECOMES POORER WITH INCREASING DEPTH. MAY REQUIRE CASING.
	CARBONDALE	0-150			
	TRADEWATER CASEYVILLE	0-600			
MISSISSIPPIAN	CHESTER	0-500		LIMESTONE, SANDSTONE AND SHALE	TOO DEEP TO BE CONSIDERED AS A SOURCE OF GROUNDWATER IN THIS AREA.
	VALMEYER	STE. GENEVIEVE 0-120		LIMESTONE	MAY BE WATER-YIELDING IN MASON COUNTY WHERE THESE FORMATIONS ARE PRESENT AT A SHALLOW DEPTH. IN THE REST OF THE AREA, TOO DEEP TO BE CONSIDERED AS A SOURCE OF GROUNDWATER.
		ST. LOUIS-SALEM 0-270		LIMESTONE	
		WARSAW 0-130		SHALE	
		KEOKUK-BURLINGTON 0-300		CHERTY LIMESTONE	
	KINDERHOOK	0-200		SHALE	NOT WATER-YIELDING
DEVONIAN		0-70		LIMESTONE	WATER-YIELDING FROM CREVICES WHERE ENCOUNTERED AT A SHALLOW DEPTH. IN MOST OF THE AREA, TOO DEEP TO BE CONSIDERED AS A SOURCE OF GROUNDWATER.
SILURIAN	NIAGARAN	0-350		DOLOMITE AND LIMESTONE	
	ALEXANDRIAN	0-100			
ORDOVICIAN	CINCINNATIAN	MAQUOKETA 0-200		SHALE WITH LIMESTONE AND DOLOMITE BEDS	NOT WATER-YIELDING AT MOST PLACES; CASING REQUIRED.
	MOHAWKIAN	GALENA-PLATTEVILLE 300-430		LIMESTONE AND DOLOMITE	NOT IMPORTANT AS AQUIFERS. CREVICED DOLOMITE PROBABLY YIELDS SOME WATER TO WELLS DRILLED INTO UNDERLYING SANDSTONE.
	CHAZY	GLENWOOD-ST. PETER 150-300		SANDSTONE, CLEAN, WHITE, THIN DOLOMITE AND SHALE AT TOP (ST. PETER)	DEPENDABLE SOURCE OF GROUNDWATER IN THE NORTHERN PART OF THE AREA. WATER BECOMES HIGHLY MINERALIZED WITH INCREASING DEPTH.
	PRAIRIE DU CHIEN	SHAKOPEE 200-410		CHERTY DOLOMITE THIN BEDS OF SANDSTONE	NOT IMPORTANT AS AQUIFER. LINERS IN LOWER ST. PETER SANDSTONE ARE COMMONLY SEATED IN UPPER PART OF SHAKOPEE.
		NEW RICHMOND 0-175		SANDSTONE AND DOLOMITE	NOT IMPORTANT AS AQUIFERS IN THIS AREA.
		ONEOTA 300-500		DOLOMITE WITH SOME SANDSTONE BEDS (LOWER MAGNESIAN)	

After Selkregg & Kempton (1958)

Figure 3. Generalized graphic logs of glacial deposits and bedrock formations

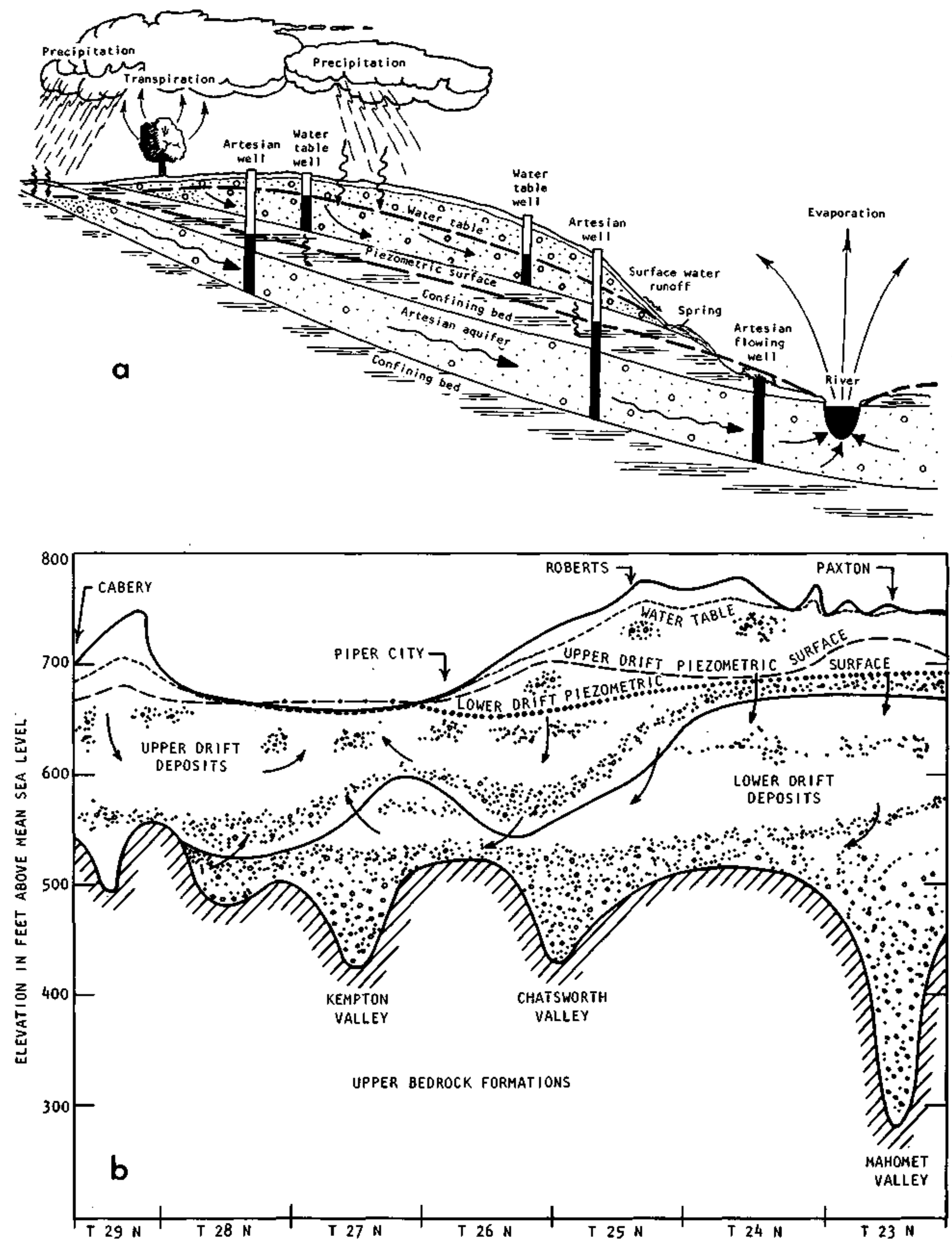


Figure 4. Cycle of water movement (a) and generalized movement of water in Ford County (b)

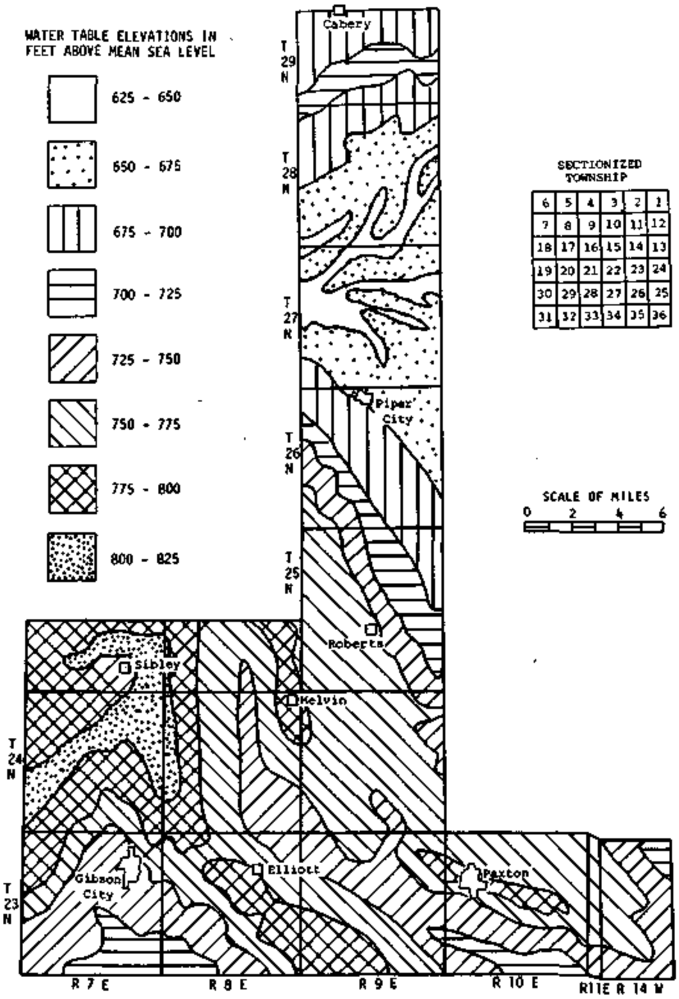


Figure 5. Water table contour map of Ford County

Under normal conditions, the upper glacial drift deposits are regularly recharged (refilled) by precipitation occurring in the immediate vicinity of the aquifer. Water continues to move freely downward under the influence of pressure and gravity to recharge the lower drift deposits and in some cases the underlying bedrock formations. However, layers of very dense (almost impermeable) materials separating water-bearing units may impede the downward movement of water. These layers, or confining beds, are usually clays or shales so compact that they cannot yield enough water to be classified as an aquifer. When such confining beds are present, water reaching the aquifer may come from a somewhat distant recharge area where the confining beds are missing or where the aquifer crops out at the land surface.

Water entering permeable formations in an outcrop or recharge area may become confined downslope beneath impermeable beds. Pressure is exerted on the groundwater in the confined aquifer by the weight of water at higher levels in the aquifer system. When a well penetrates such an aquifer downslope from the recharge area, the pressure forces the water to rise in the well above the top of the aquifer. The water in this instance is confined (or artesian) water, the well is an artesian well, and the upper surface of the water in the well is the piezometric surface of the aquifer. When the piezometric surface of the aquifer is above land surface, wells tapping the aquifer are flowing artesian wells (see figure 4*a*).

Groundwater movement from recharge areas to discharge points is influenced by gravity and pressure differences. Major points of discharge include springs, lakes, streams, swamps, drainage tiles, and pumping wells. The rate of movement toward points of discharge may amount to a few hundred feet per year in unconsolidated materials and to only a few feet per year in sandstone formations. Water may be held in bedrock aquifers for many years.

The general direction of movement of groundwater in Ford County is illustrated in figure 4*b*. Precipitation falling in the upland areas south of Cabery and Piper City infiltrates into the upper drift deposits where a portion of it is diverted to discharge into local streams and drainage ditches (note the intersection of the water table surface and stream valleys just north of Paxton). The water not discharged locally continues to move downward to recharge the lower drift deposits. Along with the general downward migration of water in both formations, there is movement downslope.(on the piezometric surfaces) toward the lowland drainage area just north of Piper City. Here the piezometric surfaces of both aquifers occur above land surface resulting in an upward movement of water from both systems to discharge into the streams and ditches draining the area.

Chemical Character

The results of chemical analyses made by the State Water Survey usually are expressed in parts per million (ppm). A part per million is a unit weight of a constituent in a million unit weights of water; thus, a water sample containing 1 ppm of iron (Fe) would indicate 1 pound of iron in a million pounds of water. In order to express chemical dissociations and show water analyses graphically, chemically equivalent weights or equivalents per million are used. Equivalents per million are calculated by dividing the parts per million by the combining weight of the respective cation or anion. Analyses made by private chemical laboratories sometimes are reported in terms of grains per gallon (gpg). In the grain weight system of measure, one grain per gallon is considered a 1/7000 of a pound of a mineral dissolved in a gallon of water. One grain per gallon is equal to 17.1 parts per million.

The sources and significance of the major dissolved elements and substances in the groundwater of Ford County are shown in table 1. The U. S. Public Health Service drinking water standards for these major constituents also are included in the table. These standards have been accepted by the American Water Works Association as desirable limits for public water supplies, and should serve as a guide to owners of farm and home water supplies in evaluating the quality of their water.

As generally may be inferred from the information in table 1, the dissolved minerals in groundwater are derived chiefly from the earth materials through which the water flows. The soils and glacial materials above bedrock are particularly rich in calcium, magnesium, iron, and other minerals which are readily absorbed by the groundwater as it passes over and through these deposits. Calcium and magnesium are responsible for hardness of water, and iron causes reddish-brown staining. The natural chemical quality of groundwater is sometimes altered by highly mineralized surface water that seeps down along the casings in poorly constructed wells. This type of seepage also can result in bacterial pollution of the well and contamination of the aquifer.

Groundwater from glacial deposits throughout the county varies from moderately hard to extremely hard (150 to 2000 ppm), but normally hardness can be successfully removed by home water-softening units that are now readily obtainable. The iron content of water from the drift deposits ranges between 0.1 and 15.0 ppm, and is most often well above the recommended limit of 0.3 ppm. Iron can be removed by units similar to home water softeners; however, for domestic users, tolerance rather than removal is the usual practice. The chemical quality of water from the various glacial formations is discussed in more detail later in this report.

The chemical quality of water from the bedrock aquifers in Ford County varies considerably depending on the formation tapped and depth of penetration into the aquifer. Generally speaking, water from the bedrock becomes more highly mineralized with depth. Chloride, sulfate, and sodium are normally present in larger concentrations than in drift water. A more detailed discussion of the

Table 1. Major Dissolved Elements and Substances in Groundwater in Ford County

Constituent and recommended upper limit[1]	Source	Remarks
Iron (Fe) 0.3 ppm	Dissolved from common iron-bearing minerals present in practically all rocks, clays, and soils; may also be derived from iron pipes, pumps, and other equipment.	On exposure to air, iron oxidizes to a reddish-brown sediment.' More than about 0.3 ppm stains laundry and porcelainware reddish brown; objectionable for food and beverage processing. Smalt concentrations may be removed by water softeners, larger concentrations by chlorination or aeration and filtration.
Manganese (Mn) 0.05 ppm	From soils and sediments. Less abundant in rocks than is iron.	Resembles iron in chemical behavior and has same objectionable features, except stains are brown to black. The same types of treatment used for iron are generally effective.
Nitrate (NO_3) 45 ppm	Results from decayed organic matter such as that from barnyards, feedlots, manure piles, septic tank fields, as well as from silage juices and animal tissue. Usually occurs in waters from shallow wells of less than 50-foot depth, often as the result of poor well construction permitting drainage into the well at or near the surface.	Values higher than a few ppm may suggest pollution. More than about 45 ppm nitrate may cause methemoglobinemia (blue babies) when such water is used in preparation of infant feeding formulas. Nitrate poisoning of livestock has also been reported. Removal by demineralization is possible but usually prohibitive in cost.
Chloride (Cl) 250 ppm	Dissolved from rocks and found in large amounts in ancient brines and sea water. Industrial and domestic waste also may contribute appreciable quantities to shallow aquifers.	In concentrations over about 250 ppm chloride gives a salty taste to water and increases its corrosive-'ness. Concentrations over 1000 ppm are very objectionable for domestic use; livestock tolerance is considerably higher.
Sulfate (SO_4) 250 ppm	Dissolved from rocks and soils containing gypsum, iron sulfides, and other sulfur compounds. Present in waters from coal mine drainage and some industrial wastes.	Sulfate in water containing calcium forms a hard scale. In concentrations over about 750 ppm sulfate in combination with sodium or magnesium has a laxative effect, most noted by infrequent users of the water.
Alkalinity [bicarbonate (HCO_3) and carbonate (CO_3)]	Results from action of carbon dioxide or acid in water on carbonate rocks such as limestone and dolomite.	Alkalinity is present almost entirely in the form of bicarbonates. In the presence of calcium, carbonates formed may produce a carbonate scale; they decompose on heating with release of carbon dioxide gas and attendant formation of calcium carbonate scale.
Hardness (as $CaCO_3$)	Caused by calcium and magnesium which occur in almost all rocks but especially in limestone, dolomite, and gypsum.	Before a lather will form, hard water precipitates soap, forming a sludge which causes deposits on bathtubs and is responsible for gray laundry and dingy glassware. Hard water also forms scale in boilers, hot water heaters, and pipes. Hardness normally can be removed by standard home water softening units.
Total dissolved minerals 500 ppm	Includes all mineral constituents dissolved from rocks and soil.	Mineralization of more than 500 ppm is normally detectable by taste; over 1000 ppm is undesirable for most domestic purposes; livestock may tolerate concentrations up to 7000 ppm.[2]

[1]u. S. Public Health Service. 1962. *Drinking water standards.* Publication No. 956.

[2]*Salinity and livestock water quality.* 1959. South Dakota State College Agricultural Experiment Station. Bulletin 481.

chemical character of bedrock water is included in the bedrock formations section of this report.

Water from wells throughout Ford County contains varying quantities of carbon dioxide. A relatively small area in and around Sibley also has water known to contain methane gas. These gases are colorless, odorless, and tasteless. Methane gas is lighter than air whereas carbon dioxide is heavier. When methane gas is mixed with air in concentrations of 5 to 15 percent, it is highly explosive if ignited. Most dangerous points of concentration are in the well house, within the air cushion of pressure tanks, and in hot water heaters. All such points should be vented to the outside air if methane gas is detected in a water supply. All new wells constructed should be checked for methane gas by the driller before the installation is placed in service.

Further, no one should ever enter a large-diameter dug well without previously checking for the presence of methane gas or carbon dioxide, both of which can cause asphyxiation. These gases can be readily removed from water by standard aeration procedures.

Nitrates, or simple nitrogen compounds that occur in water as mineral constituents, are considered harmful to people, particularly children, if concentrated in drinking water supplies in excess of 45 ppm. Nitrate poisoning of livestock has also been reported. Excessive concentrations of nitrate have been detected in only a few groundwater samples from Ford County. Among wells sampled during the 1967 well inventory, three bored wells (61, 84, and 122 feet deep) and three dug wells (16, 20, and 35 feet deep) contained more than 45 ppm nitrate. Approximately 2 percent of the sampled wells of less than 50 feet deep had nitrate concentrations greater than *h5* ppm, and only 3 percent had concentrations greater than 20 ppm.

Primary sources of the nitrate contamination in these wells were nearby septic tanks, old privies, or drainage from feedlots and pastures. Leachates (seepage) from these sources percolating through the soil or flowing overland to the wells have been determined to be the source of nitrate pollution in practically all such cases. Nitrogen fertilizers have not yet been demonstrated to be of importance in Illinois groundwater pollution. However, these may become a significant future source as larger quantities of nitrogen-rich fertilizers are applied to the soils of the state.

The treatment of water supplies containing nitrate poses a difficult problem. Boiling the water does not help, but rather results in concentrating the nitrate. Nitrates and similar mineral constituents such as chlorides and sulfates can be reduced or removed by demineralization, a process not economically desirable for private water supplies. It is usually easier to abandon the source of high nitrate water and develop a supply either at a location not susceptible to the nitrates or in another aquifer horizon.

Mineral analyses of groundwater from throughout the county are included in appendix B of this report.

Temperature

The temperature of groundwater varies with the location and depth of the aquifer, the. origin and time of occurrence of recharge, and the proximity of the aquifer to bodies of surface water. In Ford County the primary source of recharge is precipitation which enters the groundwater reservoirs mostly in the early spring and late fall when the precipitation is fairly cool. After infiltrating into the ground, little temperature change occurs because of the insulating effect of the surrounding earth materials. The lower groundwater temperatures generally are associated with the shallower aquifers, and temperatures slowly increase at a rate of about 3/4 to 1 degree Fahrenheit for each 100 feet in depth. Therefore, water obtained from a 1000-foot deep bedrock well should be expected to be approximately 10 degrees warmer than that from a shallow glacial drift well. Groundwater temperatures range from about 54 degrees Fahrenheit in the upper glacial deposits to 65 degrees in the deeper bedrock formations tapped in Ford County (see appendix B).

AQUIFERS

Aquifer selection for farm and domestic well construction in the past was often influenced by the quantity of water required, the type of drilling equipment available, and perhaps the amount of money the farmer or homeowner was willing to pay. In most cases, the shallowest water-bearing sand and gravel deposit encountered was capable of satisfying the relatively small water demands, could be easily developed, and provided the cheapest solution to the water supply problem. However, with the increased use of water on the farm and in the home, higher yielding wells than those previously constructed are often required.

Throughout most of Ford County there are two glacial aquifers, each containing one or more layers or zones of water-bearing sand and gravel. In many areas, the deeper deposits are more productive than the shallower sands and gravels currently being tapped. For these reasons, drilling for a farm and domestic well should continue until a satisfactory supply is obtained or until the underlying bedrock is encountered.

For larger capacity municipal or industrial wells, it is advisable to construct a test hole penetrating the entire drift section to determine the presence and relative potentials of the different glacial aquifers prior to completion of the final production well.

For either type of development, the services of a competent well driller experienced in constructing sand and gravel wells should be obtained to maximize the use of available resources. Drilling into the underlying bedrock aquifers is recommended only if a satisfactory supply cannot be developed from the glacial materials.

For the purposes of this study, the various water-bearing units are grouped into three general aquifer systems. The Wisconsinan age glacial deposits outlined by Horberg (1953) are hereafter designated as the upper glacial deposits or upper aquifer system.

The underlying Illinoian and Kansan age glacial deposits defined by Horberg (1953) appear to be hydraulically interconnected throughout most of the county and generally respond to pumpage as a unit. For this reason these deposits are considered as one geohydrologic unit, termed the lower glacial deposits or lower glacial aquifer.

The third aquifer system, the bedrock formations, is composed of all fresh-water bedrock units underlying the drift deposits throughout the county. Detailed discussions on the occurrence, water-yielding characteristics, and quality of water of each aquifer system are presented in the following sections.

Upper Glacial Deposits

Water-bearing sand and gravel deposits contained within the Wisconsinan drift section serve as a source of water for approximately 70 percent of the individual farm and domestic water supplies in the county. These deposits occur as scattered pockets in the upper portions of the aquifer, as fill materials in the Kempton Bedrock Valley, and as extensive sheet or striplike deposits present at or near the base of the upper glacial materials throughout most of the county.

Development and Availability. Wells tapping the upper glacial aquifer are of four general types: dug, bored, driven, and drilled. Records of approximately 150 large-diameter dug and bored wells were collected from Water Survey files and from the direct inventory conducted during the summer of 1967. These wells range in depth from 20 to 60 feet below ground level and are from 12 to 48 inches in diameter. The yields of these wells are never large and are often barely adequate for domestic use. Most of these installations were constructed many years ago when water demands were small and mechanized drilling equipment was not always available. Today's larger water requirements usually cannot be obtained from such wells, and the availability of aquifers suitable for drilled . well development in Ford County make dug wells undesirable for most uses.

Records are available for 27 driven wells tapping the upper glacial aquifer to depths of about 20 feet. These wells are from 1-1/2 to 2 inches in diameter and usually yield less than 5 gpm, but generally are adequate for domestic use. This type of well construction in Ford County is limited to a small area south of Gibson City where relatively shallow sands and gravels are present.

The Water Survey files include records of 945 drilled wells finished in the upper aquifer system. These installations range in depth from 50 to 75 feet in the lowland areas of the major drainage courses of the county to about 200 feet on the higher grounds just south of Cabery, northwest of Roberts, north of Gibson City, and in the general vicinity of Paxton.

Figure 6 illustrates the probable maximum depth of a well finished in this aquifer anywhere in Ford County. In many locations several different water-bearing zones are present and conceivably could be penetrated before the maximum depths indicated would be reached. To insure that a suitable aquifer is not overlooked, homeowners are again urged to obtain the services of a competent well driller experienced in constructing screened wells in sand and gravel.

Farm and domestic drilled wells in this aquifer system range from 2 to 6 inches in diameter. However, well diameters between 4 and 6 inches are more desirable than the smaller wells because of the greater selection in types of pumps which can be used and the increased accessibility to the pump for inspection and repairs. The diameters of municipal and industrial wells in the upper deposits range from 6 to 24 inches, usually determined by the desired pump size requirements.

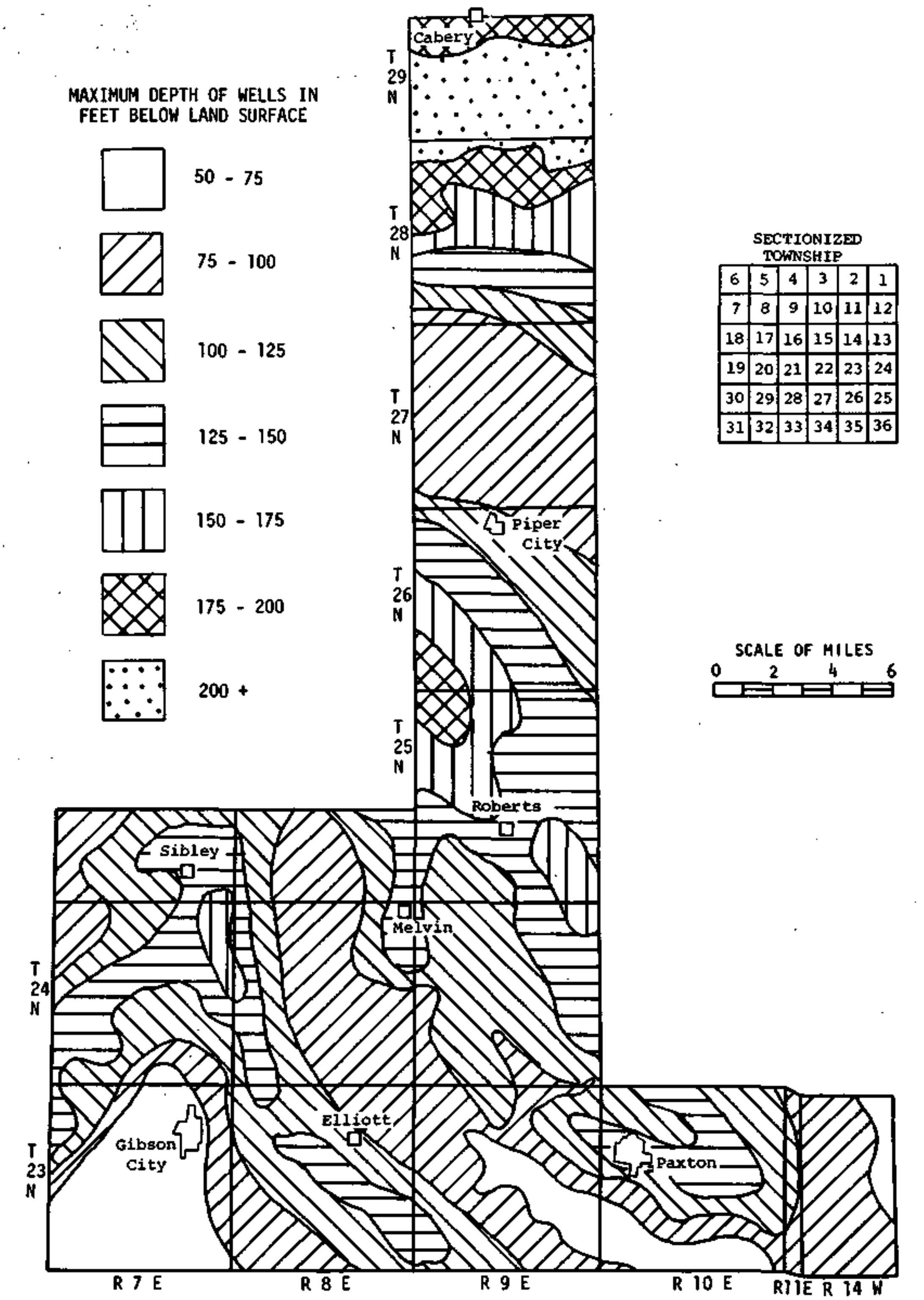


Figure 6. Probable maximum depth of wells in the upper glacial deposits

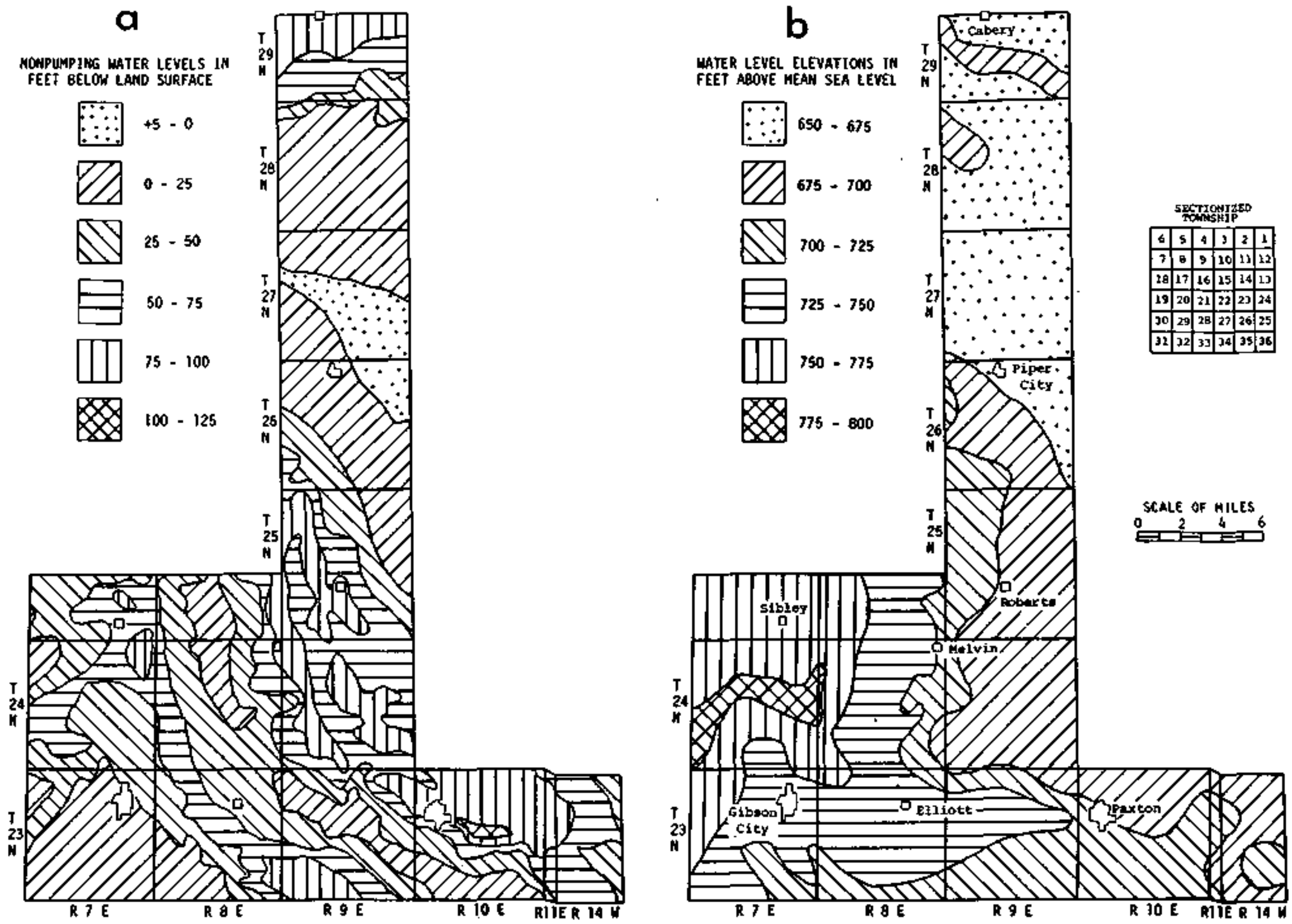


Figure 7. Nonpumping water levels (a) and water-level elevations (b) in drilled wells tapping the upper glacial deposits

The nonpumping water levels of the drilled wells finished in the upper aquifer are shown in figure 7a. The depths to water are to a large extent influenced by the land surface topography. Seasonal fluctuations as great as 5 or 10 feet may be experienced in the shallower wells and normally will be less in the deeper wells. Figure 7b illustrates the mean water-level elevations that occur in the drilled wells in the upper glacial deposits. The general direction of movement of water in this aquifer system can also be determined from this illustration since water always flows downward (from high to lower elevations) and perpendicular to the individual contours.

The yields of wells tapping the upper glacial deposits range from 5 gpm for farm and domestic wells (generally fixed by pump capacities) to over 400 gpm from the municipal wells finished in the outwash deposits at Gibson City. Municipal and industrial wells finished in this aquifer at Elliott, Gibson City, Kempton, Piper City, and Sibley produce approximately 60 percent of the municipal pumpage in the county. Installed pump capacities in these wells are 75 gpm, 250 to 400 gpm, 100 gpm, 140 to 170 gpm, and 58 gpm, respectively.

Total groundwater pumpage from the upper glacial aquifer is an estimated 1.4 mgd. Much larger quantities of water could probably be withdrawn without overdevelopment. Pumping tests and aquifer evaluations would be required to accurately determine the groundwater potential in localized areas.

Chemical Character. The chemical quality of water from the upper glacial deposits varies considerably within Ford County. Results of analyses of water from approximately 110 drilled wells finished in this aquifer system are included in appendix B. Typical analyses are shown graphically in figure 8a.

Available chemical and hydrologic data suggest that the variation in the chemical constituents in this aquifer system generally can be explained by the period of time the water has been underground and in contact with soil particles from which mineral constituents are dissolved. Relatively low mineralized water, indicating a short period of residence, is usually found in areas of recharge. More highly mineralized waters, suggesting longer periods of contact, are associated with regions of groundwater discharge. The validity of this approach is indicated by the similarity in general configuration of the variation in total dissolved minerals in figure 8b and the movement of water through these deposits shown in figure 7b.

Localized disturbances in the overall general pattern of chemical quality variability are evident in an area east of Roberts and in the extreme northern portion of the county (figures 8b and c). The more highly mineralized waters encountered in the area east of Roberts are probably the result of two separate phenomena. The wells in this area are somewhat deeper *(see figure 6)* and water recharged to their water-yielding deposits must percolate downward through a greater thickness of overlying materials. Therefore, water finally reaching these deposits would have experienced a longer period of residence during which minerals from the surrounding materials could be dissolved than water derived from shallower depths. Also, available logs of wells in this area suggest the presence of several scattered peat zones which normally would increase the acidity of water coming into contact with these beds, and in turn would result in an increase in total dissolved minerals.

The higher mineral content in the northern portion of the county also can be partially attributed to the increased depth of the wells in that area. In addition, the upper glacial deposits in this area lie directly on the Pennsylvanian age bedrock formations which characteristically contain highly mineralized water. Piezometric surface data show a gradient from the bedrock formations toward the upper aquifer indicating that the more highly mineralized water from the bedrock is being discharged upward into these deposits.

Total mineral concentrations of water from the upper glacial deposits are illustrated in figure 8b. Water from the upper aquifer system is below the recommended 500 ppm upper limit set by the U. S. Public Health Service in all areas except for the two locations just discussed.

The hardness of water obtained from these deposits throughout the county ranges from moderately hard (200 ppm) to extremely hard (over 400 ppm). Figure 8c suggests the probable hardness content which may be expected from this aquifer for any given location. In all areas, the general quality of water from these deposits could be improved by the use of standard home water-softening units.

Iron concentrations above the recommended 0.3 ppm upper limit set by the U. S. Public Health Service were detected in over 90 percent of the sampled wells. Water containing iron in such quantities usually causes staining of laundry and porcelain fixtures unless some type of iron removal equipment is used. Manufacturers of home water softeners advertise that these units will effectively remove as much as 5.0 ppm "dissolved" iron. It should be noted,

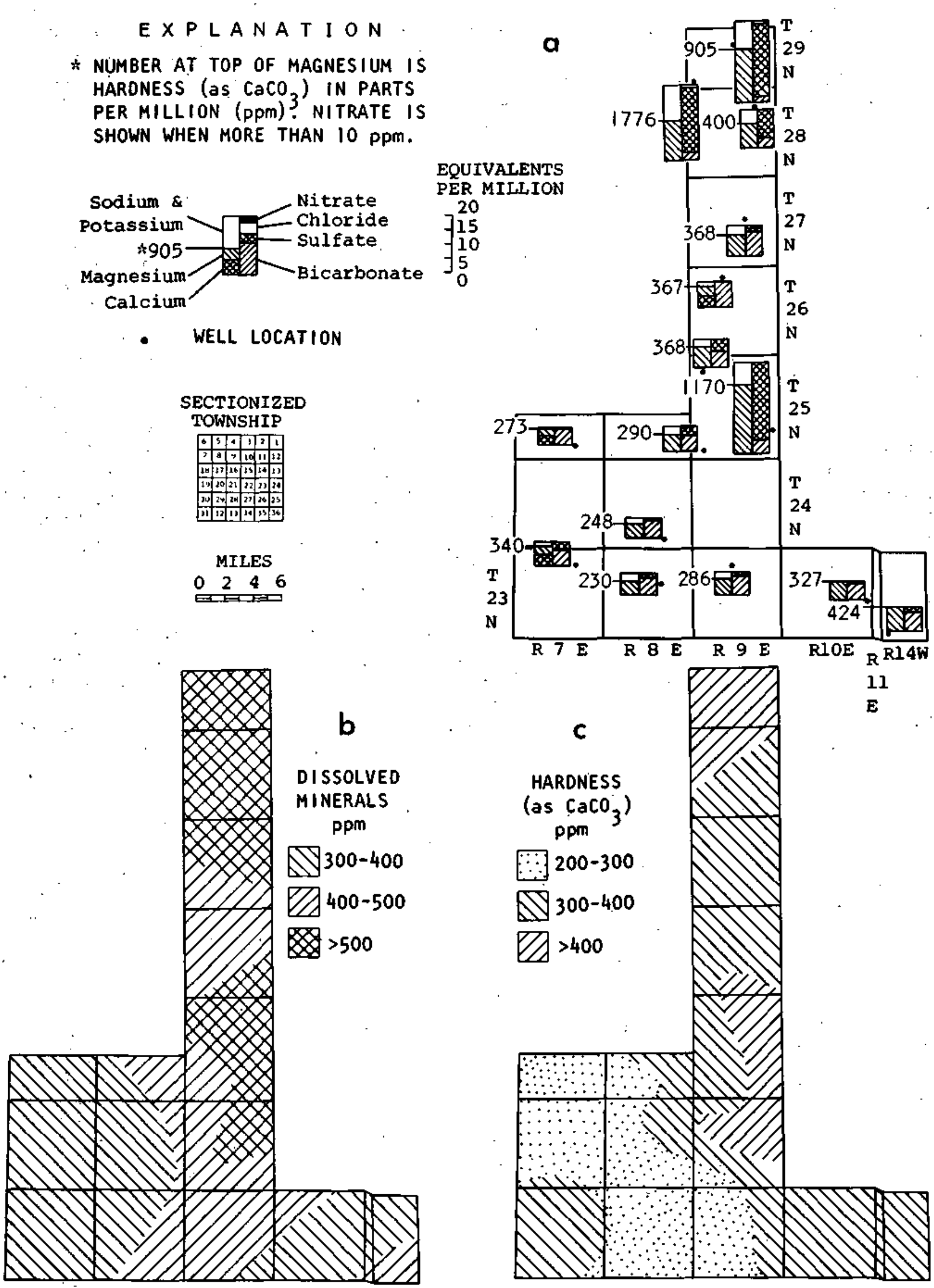


Figure 8. Selected chemical analysis (a), probable total dissolved minerals (b), and hardness (o) of water from the upper glacial deposits

however, that the iron found in the water in Ford County is normally in an insoluble state and can create serious plugging problems in water-softening units. The use of an oxidizing iron removal unit in conjunction with a water softener ' is usually required to provide continuous and effective treatment over a long period of time.

Lower Glacial Deposits

Sand and gravel deposits of Illinoian and Kansan age serve as a source of water for approximately 20 percent of the farm and domestic water supplies in the county. Continuous layers of water-bearing sands and gravels occur near the base of the Illinoian deposits throughout all but the northern one-fourth of the county (*see figure 9 for northern boundary*). Thicker more permeable sections of sand and gravel (Kansan age) also occur in the fill materials of the ancient Chatsworth and Mahomet Bedrock Valleys.

Developnent and Availability. Private farm and domestic drilled wells tapping the lower glacial deposits range in depth from about 125 feet in the lowland area just north of Piper City to over 250 feet in the upland areas of the southern portion of the county. Figure 9 illustrates the probable maximum depth that wells of this type may be expected to reach in this aquifer system. Larger capacity wells tapping the deeper.deposits in the bedrock valleys may range in depth from 250 to 340 feet below land surface.

The diameters of farm and domestic wells in this aquifer range from 2 to 6 inches, similar to the wells in the upper aquifer. Because these wells are deeper than those in the upper deposits, the larger selection in pump types and the accessibility for pump repair and maintenance afforded by the 4- and 6-inch wells become even more important. Municipal and industrial wells in the lower deposits are from 8 to 16 inches in diameter depending on the pump size requirements.

The nonpumping water levels of wells finished in the lower glacial aquifer are shown in figure 10a. Seasonal water-level fluctuations in these deposits are insignificant since water stored in the overlying materials normally is available to the lower aquifer system during prolonged periods of drought. Figure 10b illustrates the mean water-level elevations that occur in wells finished in the lower glacial deposits. The general direction of movement of water in this aquifer system also can be determined from this illustration since water always flows downward and perpendicular to the individual contours.

The yields of wells tapping the lower glacial aquifer range from 10 gpm for the farm and domestic wells (generally limited by the installed pump capacity) to about 1000 gpm for the larger capacity municipal and industrial wells finished in the permeable fill materials of the Mahomet Bedrock Valley. Municipal wells finished in the lower drift deposits at Melvin, Paxton, and Roberts produce approximately 38 percent of the current municipal pumpage in the county. Installed pump capacities in these municipal wells are 60 to 200 gpm, 100 to 1000 gpm, and 105 to 130 gpm, respectively. Maximum well yields obtained from the lower aquifer throughout the county generally are limited to about 200 gpm except for those finished in the productive Mahomet Valley deposits.

Total groundwater pumpage from the lower glacial aquifer is estimated to be 0.6 mgd. Much larger quantities of water can be withdrawn without overdevel-

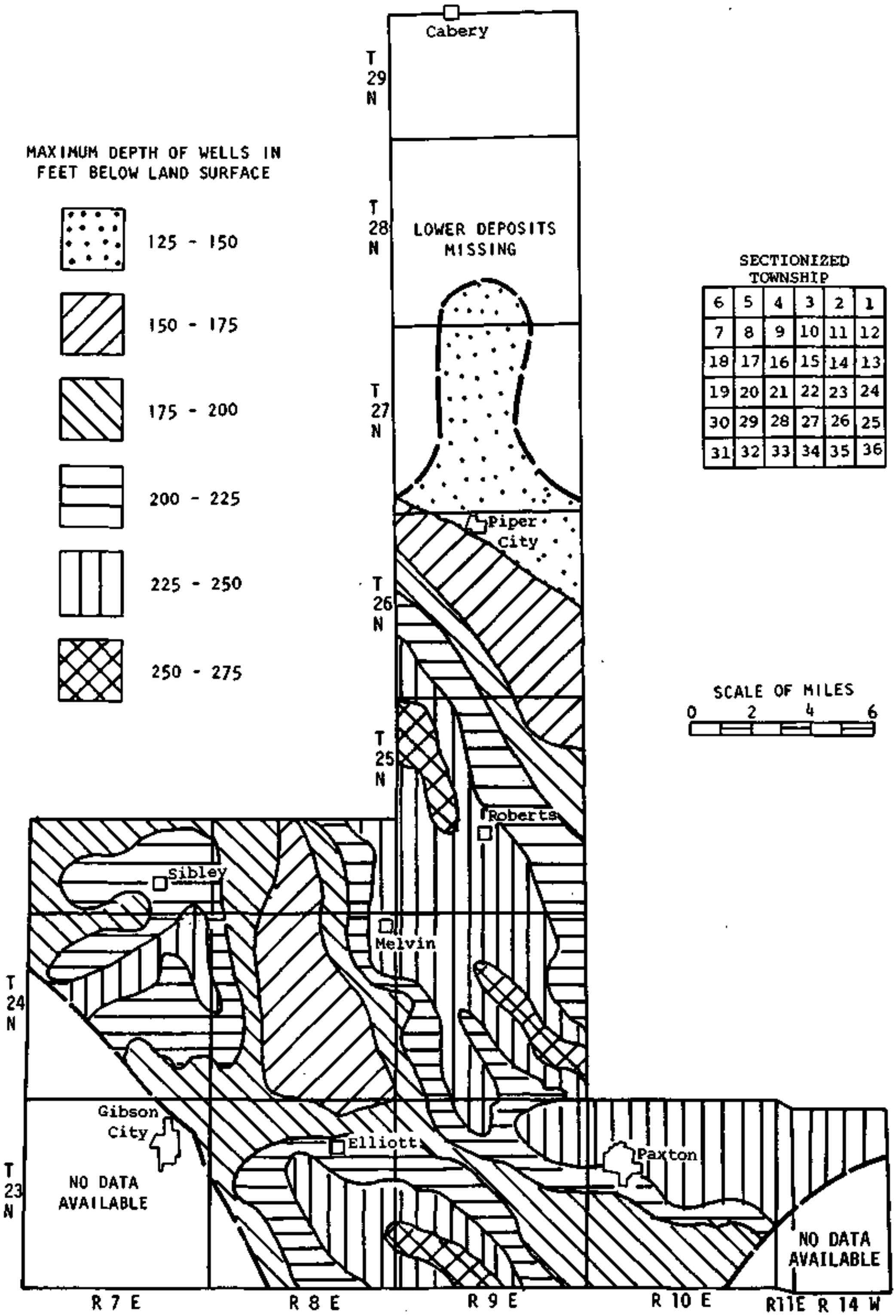


Figure 9. Probable maximum depth of wells in the lower glacial deposits

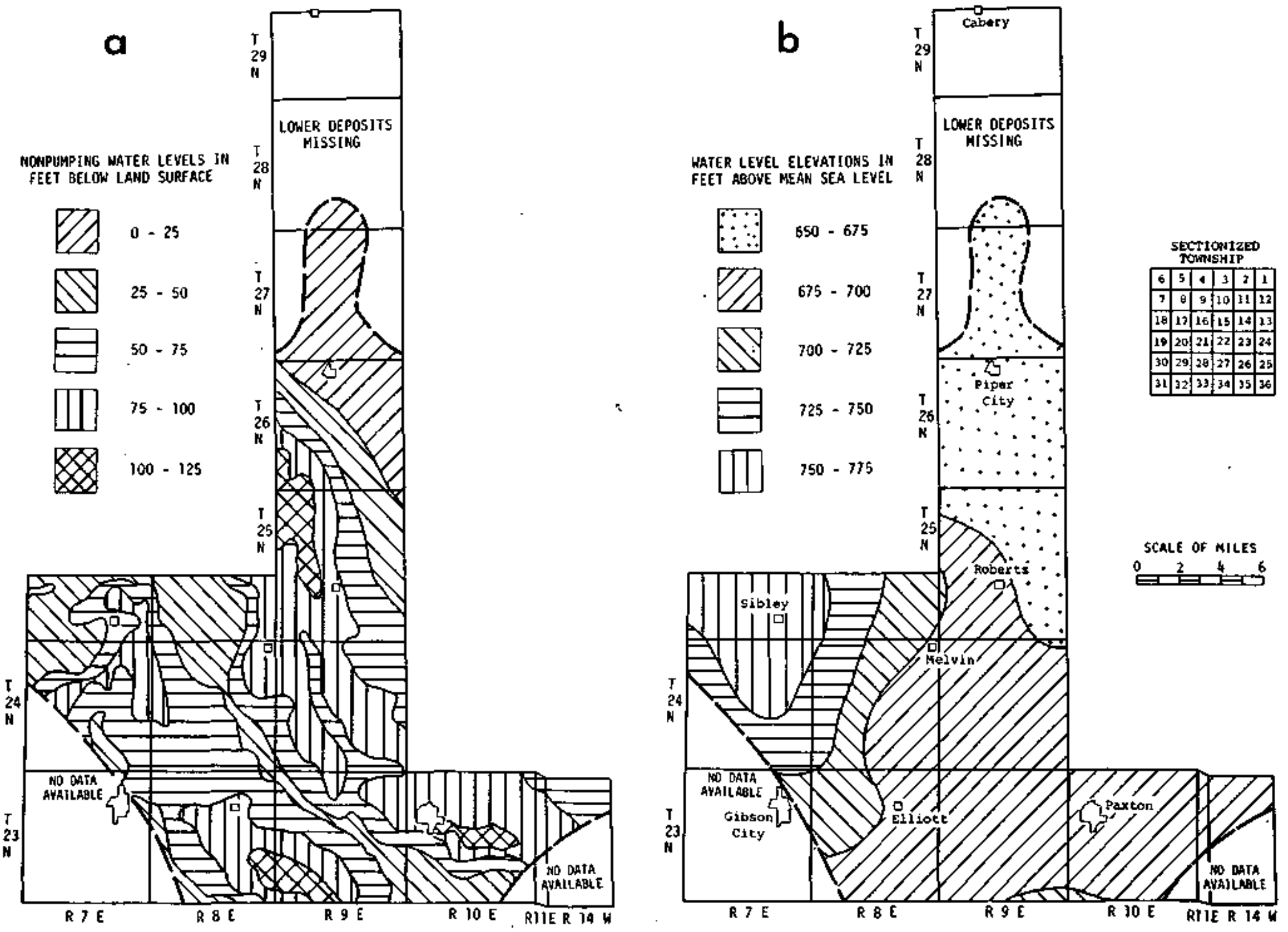


Figure 10. Nonpumping water levels (a) and water-level elevations (b) in wells tapping the lower glacial deposits

opment particularly in the areas overlying the Mahomet Bedrock Valley. The limited development of this aquifer system to date is largely due to the availability of water from the upper glacial deposits. Test drilling, pumping tests, and aquifer evaluations would be required to accurately determine the groundwater potential in localized areas.

Chemical Character. **The chemical quality of water from the lower glacial deposits is less variable than that from the upper aquifer but generally is higher in total mineral content. Results of analyses of water from approximately 40 wells finished in this aquifer system are included in appendix B. Typical analyses are shown graphically in figure 11a.**

Available chemical and hydrologic data generally imply that the length of time the water has been in the ground, and in contact with soil particles from which mineral constituents are dissolved, may account for most of the variation in the chemical constituents of water in this aquifer. Since water in the lower glacial deposits must first pass through the overlying upper aquifer, it follows that it should be slightly more mineralized than water from the upper glacial deposits. Relatively low mineralized water indicating the shortest period of residence is noted in the southern portion of the county (figure 11b) where recharge to the lower aquifer system occurs rapidly and readily because of the

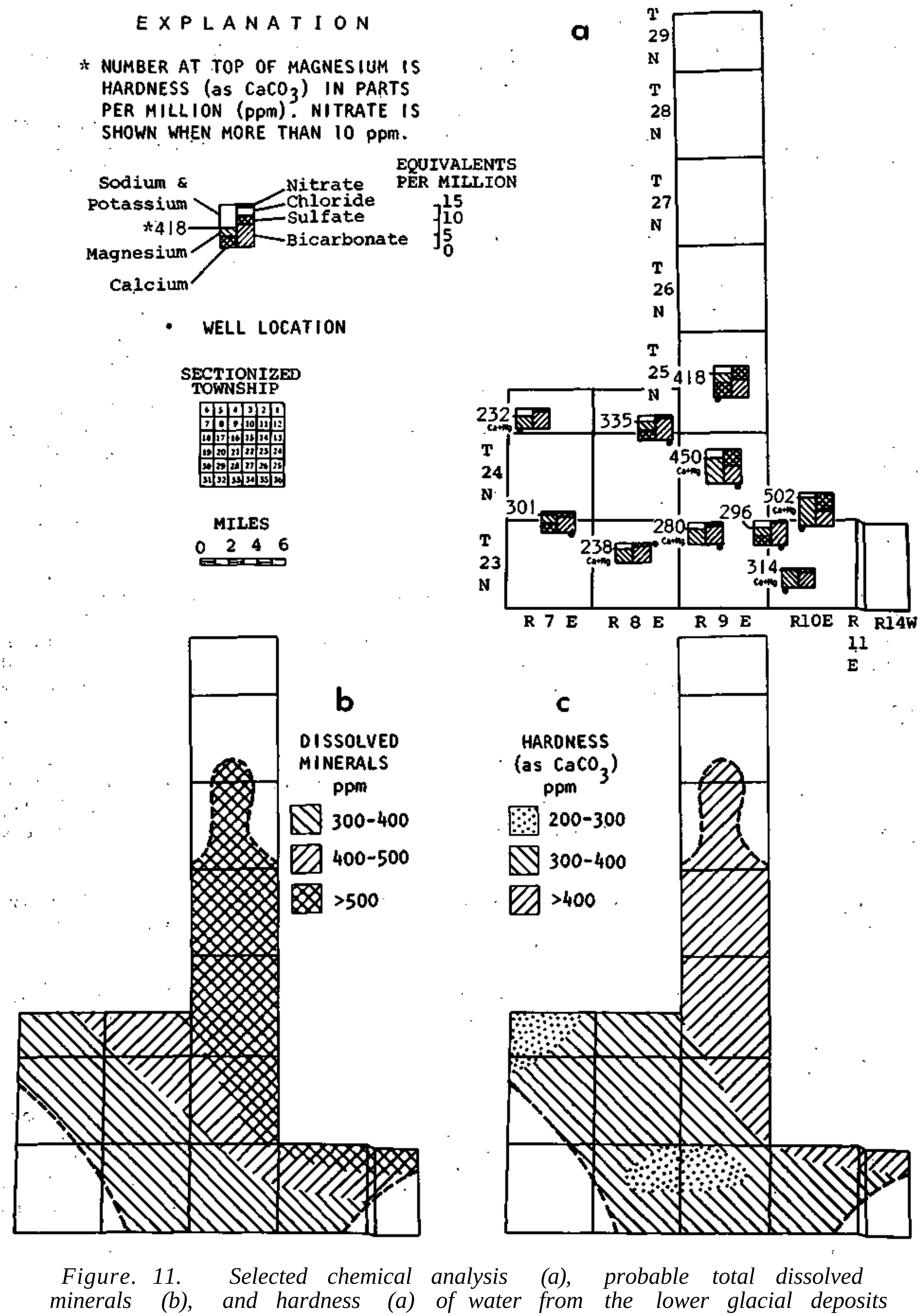


Figure. 11. Selected chemical analysis (a), probable total dissolved minerals (b), and hardness (a) of water from the lower glacial deposits

absence of an overlying confining clay layer. Then as the water slowly moves northward (*see figures 4b and 10b*) to discharge through the upper aquifer system, it gradually increases in total mineral content.

Total mineral concentrations of water from the lower glacial deposits are illustrated in figure 11b. Water from this aquifer system is below the recommended 500 ppm upper limit set by the U. S. Public- Health Service in the southwestern portion of the county.

The hardness of water obtained from the lower deposits ranges from moderately hard (200 ppm) to extremely hard (400 ppm). Figure 11c suggests the probable hardness content which may be expected from this aquifer for any given location. In all areas, standard home water-softening units could improve the general quality of water from these deposits.

Iron concentrations above the recommended 0.3 ppm upper limit set by the U. S. Public Health Service were detected in over 95 percent of the sampled wells. The use of an iron removal unit in conjunction with a water softener is usually the most efficient and long-lasting method for treating water of this quality.

Bedrock Formations

The upper bedrock formations in Ford County consist of Pennsylvanian, Mississippian, Devonian, and Silurian age rocks (*see figures 2a and d for surface configuration and areal distribution*). Water-bearing layers of sandstone, limestone, and dolomite contained within these geologic systems serve as a source of water for approximately 9 percent of the farm and domestic water supplies in the county.

Development and Availability. Private farm and domestic wells finished in the Pennsylvanian rocks range in depth, from 150 to 250 feet in the northern two townships of the county and from 350 to 450 feet in the area northwest of Sibley. Throughout the remaining portions, of the study area, the Pennsylvanian rocks are either not present or have not as yet been tapped by wells.

Farm and domestic wells finished in the Pennsylvanian rocks range in diameter from 4 to 8 inches. Two municipal wells owned by the village of Cabery tapping this aquifer are 6 and 8 inches in diameter.

The nonpumping water levels of wells tapping the Pennsylvanian formations range from about 25 to over 50 feet below land surface. Seasonal water-level fluctuations are negligible due to the availability of water from the thick overlying glacial materials.

The yields of wells finished in this formation range from 2 or 3 gpm from the thin layers of sandstone and limestone normally encountered in the upper portions of these rocks to over 100 gpm from thicker, more permeable water-bearing units occasionally found at greater depths. Municipal Well No. 3 (drilled 357 feet deep) owned by the village of Cabery is reportedly capable of producing 125 gpm for 4 hours with a drawdown of 34 feet from a nonpumping water level of 48 feet below ground level (specific capacity = 3.4 gpm/ft of drawdown). However, individual well yields from the Pennsylvanian rocks throughout most of Ford

County should not be expected to exceed 3 gpm, and yields in excess of 25 gpm as at Cabery should be considered anomalies.

Other more promising bedrock aquifers in the county are as yet relatively unexplored. The Silurian and Devonian age formations have been tapped by only one or two wells in the vicinity of Gibson City. However, yield data from these wells and previous studies by Csallany and Walton (1963) indicate that individual well yields ranging from about 50 to 250 gpm may be obtainable from these formations.

The deeper lying St. Peter sandstone of Ordovician age may also be a promising aquifer in the northernmost part of the county. This deeply buried formation (1000 to 1200 feet below land surface) is the deepest known fresh-water aquifer in this part of Illinois. It has been tapped by the nearby towns of Cullorn,. Chatsworth, and Fairbury, and the State Reformatory for Women in neighboring Livingston County. Individual production rates for these wells range from 75 to 200 gpm.

Total groundwater pumpage from all bedrock formations is estimated to be 0.2 mgd. Greater quantities of water could certainly be withdrawn without overdevelopment. However, because large quantities of groundwater are generally available from the overlying glacial aquifers throughout the county, the bedrock formations will probably always be explored and developed only as a last resort.

Chemical Character. The chemical quality of water from the bedrock formations varies considerably both areally and with depth. Results of analyses of water from the bedrock are included in appendix B.

Water from the Pennsylvanian age rocks in Ford County is generally highly mineralized. Restricted circulation of water through the relatively tight sandstone and limestone layers of these rocks probably accounts for the high degree of mineralization and the normal increase in chemical constituents with depth. Water obtained from depths below 300 or 400 feet is likely to be too highly mineralized for domestic use. Analysis number 116366 from the Cabery Village Well No. 2 generally illustrates the quality of water available from the Pennsylvanian rocks.

Analysis No. H6366

Chemical constituent	Symbol	Concentration (ppm)	Chemical constituent	Symbol	Concentration (ppm)
Iron	Fe	1.4	Silica	SiO_2	14.3
Manganese	Mn	Tr	Fluoride	F	1.0
Calcium	Ca	171.5	Chloride	Cl	21.0
Magnesium	Mg	67.5	Nitrate	NO_3	5.4
Ammonium	NH_4	1.4	Sulfate	SO_4	1059.8
Sodium	Na	278.8	Alkalinity	(as $CaCO_3$)	180
			Hardness	(as $CaCO_3$)	707
			Total dissolved minerals		1744

Although few data are currently available concerning the chemical quality of water from the Silurian and Devonian age formations in Ford County, regional data suggest that chemical constituents similar to those noted in water from the overlying glacial materials should be expected. Water contained in these formations throughout the county normally originates from recharge areas where the Pennsylvanian rocks are missing and a free exchange of water from the overlying drift materials occurs. Recharge from the Pennsylvanian rocks in other areas is usually prohibited by the presence of tight shale layers commonly found near the base of that formation. Analysis number 109960 of water from Central Soya Well No. 3 generally illustrates the quality of water which may be expected from the Silurian and Devonian formations.

Analysis No. 109960

Chemical constituent	Symbol	Concentration (ppm)	Chemical constituent	Symbol	Concentration (ppm)
Iron	Fe	0.9	Silica	SiO_2	21.3
Manganese	Mn	0.0	Fluoride	F	0.4
Calcium	Ca	58.8	Chloride	Cl	1.0
Magnesium	Mg	33.5	Nitrate	NO_3	0.6
Ammonium	NH_4	5.6	Sulfate	SO_4	2.5
Sodium	Na	49.7	Alkalinity	(as $CaCO_3$)	404
			Hardness	(as $CaCO_3$)	285
			Total dissolved minerals		406

The chemical quality of water from the deeper lying St. Peter sandstone in the northern portions of the county can only be inferred. Data from wells tapping this formation in nearby Livingston County suggest that water from the St. Peter sandstone in this part of Illinois might be similar to that obtained at Cullom (Fe = 0.5 ppm, Cl = 330 ppm, SO4 = 72.0 ppm, hardness = 122 ppm, and total dissolved minerals = 975 ppm).

In many attempted developments in the past, the St. Peter sandstone has been erroneously accused of containing very highly mineralized water and in some cases a very strong hydrogen sulfide (H_2S) or rotten egg odor. Several such cases have been the result of poor well construction allowing entrance of highly mineralized water and hydrogen sulfide from overlying formations to contaminate the St. Peter water. For this reason, careful quality monitoring and proper well construction are very important in attempting to finish a well in this formation.

WELLS

Types and Drilling Methods

Wells may be classified into types according to the method used in sinking the hole into the ground. The four types commonly found in Ford County are dug or augered, bored, driven, and drilled. The type of well constructed for a given location depends on the aquifer to be tapped and the needs and economic limitations of the user.

Dug or augered wells 2 to 5 feet in diameter are commonly used where water-bearing materials are not highly permeable (cannot transmit much water) and where they are less than 40 or 50 feet below land surface. Many of the large-diameter wells in use today are very old wells which were excavated with hand tools and lined with uncemented brick or stone. These wells are often subject to contamination by surface seepage and may be unsuitable for domestic use.

Current methods for constructing large-diameter wells involve the use of a rotary bucket drilling rig for the-excavating process. A large cylindrical bucket with auger type cutting blades on the bottom is rotated until the bucket is loaded with the materials being excavated.' When full, the bucket is raised and swung aside to be dumped. Sections of precast large-diameter porous concrete tile are then placed to case the hole. This type of operation has proven most successful in areas where clay formations are present and caving of overlying materials into the bore hole is at a minimum. '

Bored wells 6 to 18 inches in diameter were commonly sunk prior to 1930 when home and farm demands were relatively small. Water enters this type of well only through the bottom opening which limits its yield capabilities. Because the bored well has a small capacity for receiving and storing water from the aquifer, it usually is inadequate for present-day water demands.

Continuous-flight spiral augers are normally used to construct bored wells. This method of drilling is also limited to regions where sufficient clay is present so that the bore hole will not cave in.

Driven wells, constructed by driving a smal1-diameter pointed screen and attached pipe directly into the aquifer, are feasible only where the aquifer is shallow (less than about 30 feet below the surface) and the overlying materials are easily penetrated. These wells usually are 1 to 2 inches in diameter, and are pumped by shallow well suction lift type pumps.

Drilled wells, which are most common in Ford County, may be constructed by the cable-tool or hydraulic-rotary methods. In the cable-tool method, the earth materials are broken into small fragments by the alternate raising and dropping of a heavy chisel-edged bit, and these fragments are removed from the hole at intervals by a bailer. In unconsolidated formations, an open hole is maintained by driving a stringer of casing as drilling progresses. After the aquifer has been penetrated, a well screen usually is placed opposite the water bearing formation, the casing pulled upward to expose the screen, and the screen sealed to the casing.

In the conventional hydraulic-rotary method, the drill pipe with a bit attached to the lower end is rotated to break the material into small particles. A thin mud is pumped through the drill pipe, out through openings in the bit, and up to the surface through the space between the drill pipe and the walls of the hole. The circulating mud thus removes the drill cuttings and prevents caving by plastering and supporting the formations penetrated with a thin mud cake on the bore wall until the final well casing and screen are placed in the hole.

In reverse hydraulic-rotary drilling, the flow of the drilling fluid is reversed from that in the conventional rotary method. The drilling fluid, usually a relatively clear water rather than mud, moves slowly down through the opening between the drill pipe and the bore hole, picks up formation cuttings loosened by the drill bit, enters the drill pipe through holes in the bit, and by suction pumping moves to a surface pit where the cuttings settle. From there the clear water is again circulated down the hole. The fluid level in the hole must be kept at ground level at all times, since the difference in pressure between the water column in the hole and that in the aquifer prevents caving of the hole until the final well casing with attached screen is installed.

Construction Features

Construction features vary with the type of well and the characteristics of the aquifer to be utilized. Some of the features commonly employed in various types of wells in the county are casing, screening, gravel packing, and grouting (figure 12). These features, along with those for a dug well shown in detail in figure 13, are recommended by the Bureau of Public Water Supply of the Illinois Environmental Protection Agency. They are designed to minimize contamination from the surface. Detailed requirements are given in the rules and regulations of the Illinois Water Well Construction Code.

Casing. Wells are cased to maintain an open hole and to assist in protecting the quality of the water supply. Wells penetrating bedrock aquifers are cased opposite the overlying unconsolidated materials (figure 12a) and opposite any bedrock formations subject to caving. Drilled wells tapping water-bearing sand and gravel deposits are cased to the top of the well screen (figures 12b and c). Steel casing is used in drilled wells and some large-diameter dug wells;

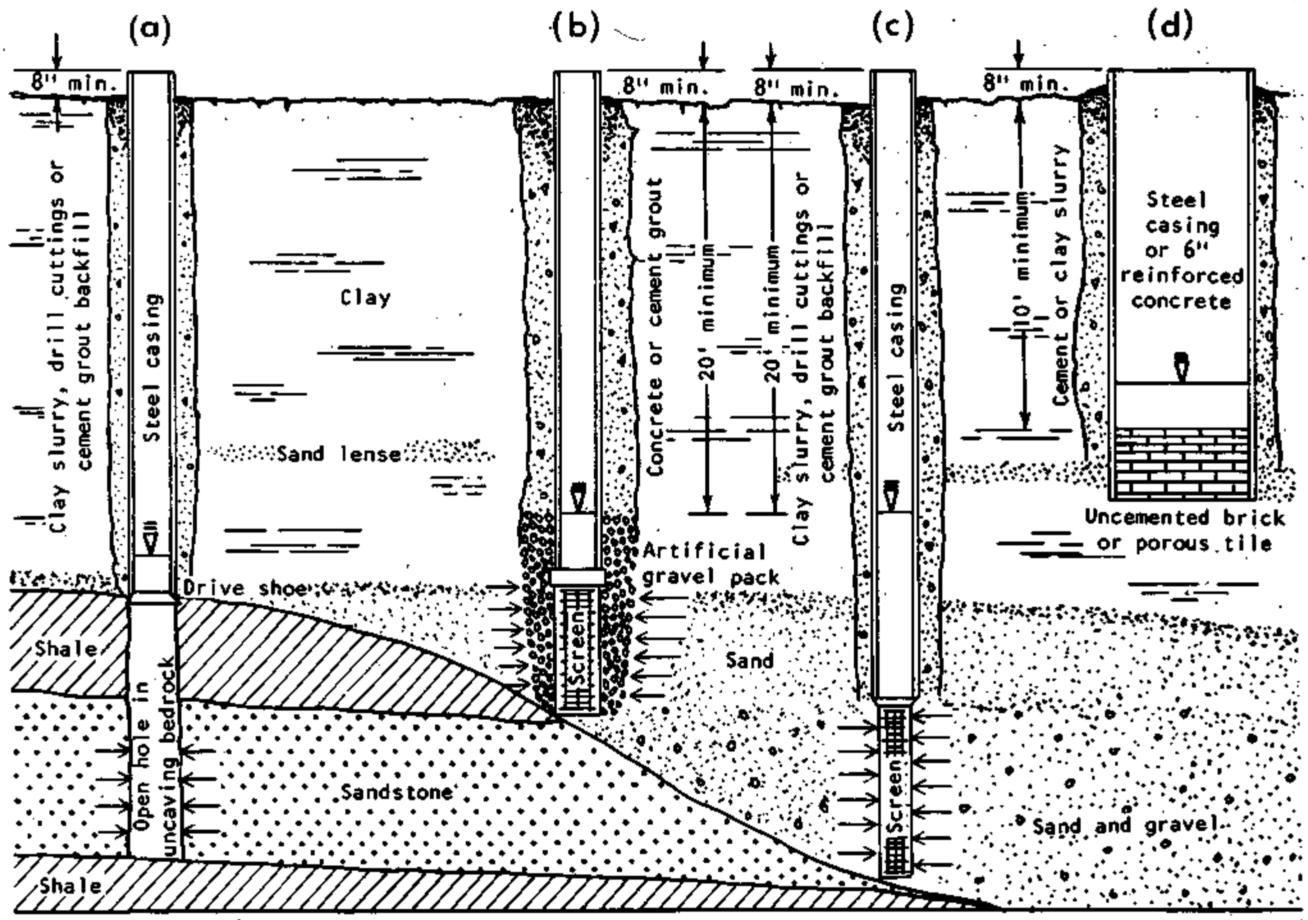


Figure 12. Construction features used in Ford County wells

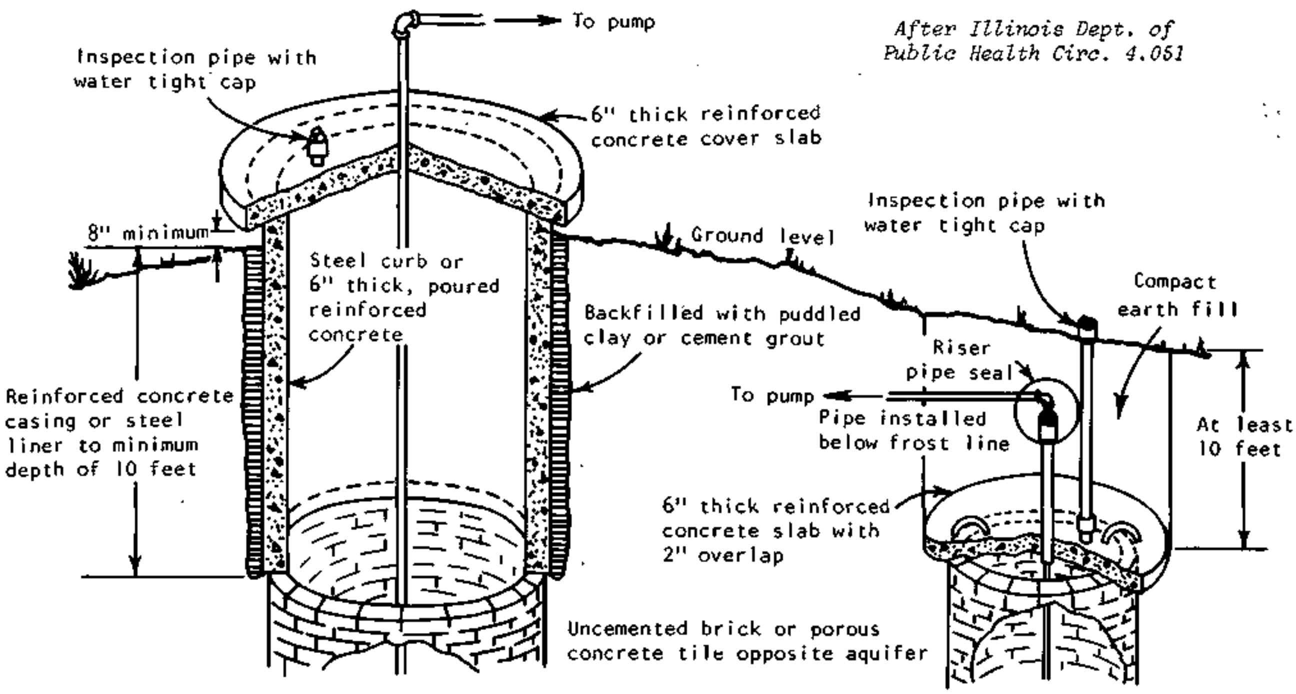


Figure 13. Recommended construction features for large-diameter dug wells

bored and dug wells may be cased with 6-inch thick reinforced concrete from at least 8 inches above ground level to a minimum depth of 10 feet below land surface with the lower portion usually lined with clay or porous concrete tile or uncemented brick (figures 12 and 13). Pitless adaptor units or surface well seals are normally used to provide sanitary protection to small-diameter wells equipped with steel casings. Sanitary protection for bored and dug wells also may be provided by placing a concrete slab at a point at least 10 feet below ground level and by filling in above the slab with compacted earth (figure 13).

Screening. Most successful drilled wells tapping sand and gravel are equipped with a length of commercially made well screen placed opposite the water-bearing formation (figures 12b and c). A properly selected and installed screen is designed to retain the aquifer material yet permit water to freely enter the well. Torch-cut and hand-sawed slotted casing sometimes is substituted for commercially made well screens because of the cheaper initial cost; this practice is not recommended because the openings in such a casing are usually too large to retain the aquifer material and too few to allow free water flow into the well. Most wells so equipped have a history of silt or sand pumping, low yield, and short production life, thus often proving to be more costly on a long-term basis than the well equipped with a commercially made screen.

Wells finished in bedrock aquifers not subject to caving do not require well screens.

Gravel Packing. Drilled wells finished in sand and gravel (figure 12c) usually are equipped with a screen that will retain the coarser 30 to 60 percent of the aquifer material immediately adjacent to the well screen; the remaining fine grains are removed from this area by surging, pumping, and bailing. This development practice causes a layer of coarse materials (a natural gravel pack) to accumulate around the screen. If the aquifer is uniformly fine-grained (figure 12b) and the natural development methods are not possible, an artificial gravel pack envelope at least 6 inches thick may be required around the outside of the screen to prevent migration of fine material into the well. The grain size of this gravel pack should be about five times as large as the average grain size of the water-bearing material.

Some drillers partially fill the well casing with large-diameter gravel in an attempt to hold back the aquifer and term this gravel packing. This procedure is a very poor substitute for a true gravel pack, as it greatly reduces the yield-capability of the well and usually permits fine-grained materials to move into the well to plug it up or "chew up" the pump.

Grouting. The annular space between the casing and the bore hole must be sealed to minimize the chance of contamination from the surface. In drilled, dug, or bored wells (figures 12a, c, d) a clay slurry or cement grout must be used to seal the opening between the casing and the upper part of the bore hole. For artificial gravel-pack wells (figure 12b), a cement or concrete grout is required to insure an adequate seal. Minimum depths for grouting depend on the materials penetrated at the well site and vary from 10 feet for dug wells to 20 or more feet for the drilled wells.

Disinfection

New wells, or old installations after rehabilitation, usually are bacterially contaminated and should be disinfected before being placed in service. After the disinfection is completed, the well should be sealed to safeguard against future contamination. The Illinois Environmental Protection Agency, Bureau of Public Water Supply, recommends disinfection procedures using a *strong chlorine laundry bleach* (5.25 percent chlorine). The correct amount to use can be determined from table 2, as explained in the instructions which follow.

1) Measure the depth of water in the well if possible. (Considering the well full of water will be satisfactory in most cases since a slight overdose does no harm.)

2) Determine the amount of laundry bleach (from table 2) and mix it in about 10 gallons of water. For example, a 6-inch diameter well with 75 feet of water would require 3 cups of laundry bleach.

3) Pour this solution into the well between the casing and the drop pipe. (This may involve raising the pump about 4 inches to allow sufficient space for the addition of the solution and for the placement of a sanitary well seal.)

4) Connect one or more hoses from faucets on the discharge side of the pressure tank to the top of the well, and while pumping the well, let water from these flow back into the well for at least 15 minutes. Then open each faucet in the system and let the water run until a chlorine odor or taste is detected. Close all faucets. Seal the top of the well casing.

5) Let stand for several hours, preferably overnight.

6) Operate the pump, discharging water from all outlets until all chlorine odor and taste disappears. Faucets on fixtures discharging to septic tank systems should be throttled to a low flow to avoid overloading the disposal system.

Table 2. Recommended Chlorine Dosages for Well Disinfection

Diameter of well *(inches)*	Amount of chlorine *(cups)* for given depth of water in well *(feet)*					
	5	10	25	50	75	100
2	0.5	0.5	0.5	0.5	0.5	0.5
3	0.5	0.5	0.5	0.5	1.0	1.0
4	0.5	0.5	0.5	1.0	1.5	2.0
6	0.5	0.5	1.0	2.0	3.0	4.0
8	0.5	1.0	2.0	3.5	5.5	7.0
10	1.0	1.5	3.0	6.0	9.0	12.0
12	1.0	2.0	4.0	8.0	12.0	16.0
18	2.0	3.5	9.0	18.0	27.0	36.5
24	3.0	6.5	16.0	32.5	48.5	64.5
30	5.0	10.0	25.0	50.5	76.0	----
36	7.0	14.5	36.0	72.5	----	----
48	13.0	26.0	64.5	----	----	----
60	20.0	40.3	----	----	----	----

Chlorine always should be used outside or in well-ventilated places because breathing the fumes is dangerous. In heavy concentrations, chlorine also is harmful to the skin and clothing.

Additional instructions on safe water supplies from wells can be obtained from the Bureau of Public Water Supply of the Illinois Environmental Protection Agency (formerly Illinois Department of Public Health), Springfield.

Methods of Pumping Water

Most wells in Ford County are equipped with electrically driven pumps of the suction, jet, cylinder, or turbine types. Suction pumps can be used only where the pumping level is less than about 18 feet. For greater lifts, deep-well jet, cylinder, or vertical and submersible turbine pumps are required. Farm and domestic pumps generally are of the deep-well jet, cylinder, or submersible turbine types. Sizes of commercially available submersible pumps limit their use to wells with minimum inside diameters of 4 inches. Large-capacity municipal and industrial wells in the county utilize both the submersible and vertical turbine type pumps.

SUMMARY OF MAJOR WATER SUPPLIES

Municipalities and industries in Ford County pump about 1.4 mgd from wells. Groundwater pumped for farm and domestic purposes is estimated to be 0.8 mgd.

The major portion of municipal pumpage occurs at Gibson City and Paxton which pump about 500,000 and 365,000 gpd, respectively. In addition, industrial pumpage at Gibson City is an estimated 200,000 gpd. All municipal water supplies are obtained from wells tapping sand and gravel deposits of the drift materials with the exception of Cabery which obtains its water supply from the Pennsylvanian bedrock formations. Wells tapping the upper glacial deposits yield from 100 to 400 gpm; two wells tapping the lower deposits in the buried Mahomet Valley at Paxton yield about 1000 gpm. The bedrock wells at Cabery reportedly yield 125 . gpm.

The municipal and industrial groundwater supplies described in this section should provide a general indication as to what could be obtained from other such installations in areas where similar aquifer conditions are present. Probable maximum well yields can be estimated using specific capacity (yield per foot of drawdown) data in conjunction with available drawdown information at the area of interest. For example: Paxton City Well No. 6 has a reported specific capacity of 10 gpm/ft and nonpumping water level 102 feet below land surface. The top of the screen in this well is 133 feet below ground level providing an available drawdown of about 30 feet (133 feet minus 102 feet = 31 feet available drawdown). The estimated maximum short-term yield of this well should therefore be about 300 gpm (10 gpm/ft times 31 feet = 310 gpm).

In the descriptions below, population figures are taken from the 1960 census; pumping figures are the most recent available and in most cases are for 1969.

Cabery

The municipal water supply for the village of Cabery (population 293) is obtained from two wells (Nos. 2 and 3), located on the south edge of town, that tap the Pennsylvanian age bedrock formations. Well No. 1, the old Park well, was abandoned in 1930.

The older well (No. 2) was drilled in 1920 by Lars Jensen, Clifton, to a depth of 233 feet below ground level. The well is cased with 200 feet of 6-inch pipe and is used only for standby purposes. The other well (No. 3) was drilled in 1956 by J. Bolliger and Sons, Fairbury, to a depth of 357 feet. The well is cased with. 8-inch pipe from 3 feet above the surface down to 214 feet 10 inches, below which the hole was finished 8 inches in diameter. Upon, completion, the well reportedly produced 125 gpm for 4 hours with a drawdown.of 34 feet from a. nonpumping water level of 48 feet (specific capacity = 3.6 gpm/ft of drawdown).

Analyses of water samples from the two wells show the water to have the following mineral constituents in parts per million (ppm) :

Well No.	Hardness	Iron	Total dissolved minerals
2	684	1.6	1406
3	640	0.2	1619

The water is not treated.

Central Soya Company, Inc. (Gibson City)

Five wells have been drilled at the Central Soya Company processing plant. Three wells have been abandoned, and the plant now uses Well No. 4, tapping the bedrock, and Well No. 5, finished in the upper glacial materials, as a supplemental supply to water purchased from the city. Well No. 4 was drilled by L. F. Swanson and Sons, Gibson City, in 1947 to a depth of 552 feet below ground level. It is cased with 7"inch diameter pipe from 1 foot above land surface to 395 feet, below which is open hole. The well is equipped with a vertical turbine pump rated at about 150 gpm against 300 feet of head. Upon completion, the well produced 120 gpm for 30 hours with 59 feet of drawdown from a nonpumping water level 75 feet below ground level (specific capacity = 2.0 gpm/ft of drawdown).

Well No. 5 was constructed in 1947 by plant employees to a depth of 34 feet below ground level. It is cased with 60-inch porous concrete pipe from 2 feet above land surface to a depth of 34 feet. The well is equipped with a vertical turbine pump rated at 100 gpm against 75 feet of head.

Average daily pumpage is estimated to be about 200,000 gallons.

Analysis of a sample from Well No. 4 (appendix B, Lab. No. 110829) showed the water to have a hardness of 236 ppm, total dissolved minerals of 346 ppm, and an iron content of 0.6 ppm.

The water is not treated.

Elliott

The village of Elliott (population 343) uses one well (No. 2) finished in the upper glacial formation as a source of municipal supply. Well No. 1 drilled in 1911 is no longer in use. Well No. 2 was constructed in 1950 by J. Bolliger and Sons, Fairbury, to a depth of 126 feet below land surface. The well is cased with 8-inch pipe to a depth of 120 feet and is equipped with 6 feet of No. 80 slot (0.080 inch) Johnson Everdur well screen. Upon completion, the well produced 120 gpm for 5 hours with a drawdown of 53.4 feet from a nonpumping water level of 69.8 feet below land surface (specific capacity = 2.2 gpm/ft of drawdown). This well is equipped with a 75-gpm vertical turbine pump.

Average daily pumpage is reported to be 20,000 gallons.

Analysis of a sample (appendix B, Lab. No. 144933) showed the water to have a hardness of 244 ppm, total dissolved minerals of 363 ppm, and an iron content of 2.1 ppm.

The water is not treated.

Gibson City

The municipal water supply for Gibson City (population 3453) is obtained from three wells, located in the north end of town, tapping the upper glacial formation. Well No. 1 was drilled by American Water Company, Aurora, in 1927 to a depth of 58 feet below ground level. It has 10 feet of 24-inch screen with a gravel-pack annulus 7 inches thick. Wells No. 2 and 3 were drilled by Layne-

Western Company, Aurora, in 1939 and 1949 to depths of 56 and 58 feet below land surface, respectively. Both are equipped with 20 feet of 18-inch screen with gravel-pack annuli 9 inches thick. Pumping tests conducted on the wells indicate they have specific capacities from 22 to 24 gpm/ft of drawdown and should be capable of yielding 300 to 400 gpm each on a short-term basis. Pump capacities in the three wells range from 250 gpm to 400 gpm.

Average daily pumpage is reported to be 575,000 gallons, of which approximately 100,000 gallons per day is used by Central Soya Company.

Analyses of water samples from the three wells show the water to have the following mineral content in parts per million (ppm):

Well No.	Hardness	Iron	Total dissolved minerals
1	304	2.0	355
2	360	1.5	388
3	340	1.3	382

The water is fluoridated.

Kempton

Four wells have been drilled at the village of Kempton (population 252). Wells No. 1 and 3 have been abandoned and filled. Wells No. 2 and 4, finished in the upper glacial formation, serve as the source for municipal water supply.

The older well (No. 2) was drilled in 1931 by E. W. Johnson, Bloomington, to a depth of 238 feet below ground level. It is 8 inches in diameter and is equipped with 10 feet of Johnson welded screen, the top 7 feet having No. 20 (0.020 inch) slot openings and the lower 3 feet having No. 30 (0.030 inch) slots. When completed, the well produced 110 gpm for 4 days with a drawdown of 100 feet from a nonpumping water level of 80 feet (specific capacity = 1.1 gpm/ft of drawdown).

Well No. 4 was drilled in 1962 by J. Bolliger and Sons, Fairbury, to a depth of 238 feet. It is an 8-inch well equipped with 5 feet 8 inches of No. 20 (0.020 inch) slot Johnson Everdur screen. Upon completion, the well produced 100 gpm for 4 hours with a drawdown of 61.5 feet from a nonpumping water level of 87.5 feet (specific capacity = 1.6 gpm/ft of drawdown). The long-term safe yields of the two wells are estimated as 75 and 50 gpm (108,000 and 72,000 gpd), respectively. Both wells are equipped with 100-gpm submersible turbine pumps.

Analyses of water from the two wells show the water to have the following mineral contents in parts per million (ppm):

Well No.	Hardness	Iron	Total dissolved minerals
2	734	2.1	1688
4	730	2.2	1776

The supply is continuously chlorinated for bacterial protection.

Melvin

The village of Melvin (population 559) utilizes one well (No. 4), finished in the lower glacial formation, as a source of water supply. A second well (No. 3) is maintained for emergency use. Two earlier wells (Nos. 1 and 2) are no longer in service. Well No. 4 was constructed in 1954 by J. Bolliger and Sons, Fairbury, to a depth of 260 feet. It is an 8-inch well equipped with 20 feet 8 inches of No. 12 (0.012 inch) slot Johnson Everdur screen. Upon completion, the well produced 153 gpm for 4.5 hours with a drawdown of 13 feet from a nonpumping water level of 118 feet (specific capacity =11.8 gpm/ft of drawdown). Well No. 3 was drilled in 1923 by E. W. Johnson, Bloomington, to a depth of 265 feet. It is a 6-inch well, equipped with 25 feet of No. 10 (0.010 inch) slot screen. Wells No. 4 and 3 are equipped with 200-gpm and 60-gpm pumps, respectively.

Average daily pumpage is reported to be approximately 27,000 gallons.

Analyses of water from the two wells show the water to have the following mineral contents in parts per million (ppm):

Well No.	Hardness	Iron	Total dissolved minerals
3	335	0.6	427
4	316	0.7	426

The supply is continuously chlorinated for bacterial protection.

Paxton

Eight wells have been drilled at the city of Paxton (population 4370). Four wells (Nos. 1, 2, 3, and 4) have been abandoned and sealed. The city now uses two wells (Nos. 7 and 8), located approximately 2 miles west of town, as the primary source for municipal water supply. These wells tap the lower glacial (Kansan) deposits. Wells No. 7 and 8 were drilled in 1956 and 1959 by J. P. Miller Artesian Well Company, Brookfield, to depths of 340 feet. Both are gravel-packed wells with 16-inch diameter casings, 10-inch thick annuli, and 100 feet of 16-inch No. 80 (0.080 inch) slot screen.

Two older wells (Nos. 5 and 6) located in town, which are also in the lower glacial (Illinoian) deposits, are maintained for emergency use. Well No. 5 was drilled in 1945 by Woollen Brothers, Wapella, to a depth of 149 feet. It is an 8-inch well and is equipped with 23 feet of Johnson Armco-iron screen. Well No. 6 was drilled in 1950 by Hayes and Sims, Champaign, to a depth of 153 feet. It is a 10-inch well and is equipped with 20 feet of Johnson screen. The top 6 feet of screen has No. 30 (0.030 inch) slot openings, the middle 5 feet has No. 25 (0.025 inch) slots, and the bottom 9 feet has No. 18 (0.018 inch) slots.

Upon completion the individual wells were tested to determine their potential yields. A summary of the test data is as follows:

Well No.	Pumping rate (gpm)	Length of test (hr)	Drawdown (ft)	Nonpumping water level (ft below land surface)	Specific capacity (gpm/ft)
5	155	1	13	101	12
6	200	4	20	102	10
7	800-1900	2k	\k	66	135 (avg)
8	1200	2k	8	68	150

Installed pump capacities for the four wells are: No. 5, 100 gpm; No. 6, 150 gpm; No. 7, 1000 gpm; and No. 8, 1000 gpm.

Average daily pumpage is reported to be 450,000 gallons.

Analyses of water samples from the four wells show the water to have the following mineral contents in parts per million (ppm):

Well No.	Hardness	Iron	Total dissolved minerals
5	194	1.4	311
6	295	1.3	451
7	332	1.6	368
8	350	1.7	418

The water is treated with phosphate to sequester the iron (help hold it in solution) and is continuously chlorinated for bacterial control. The water is also fluoridated.

Piper City

Seven wells have been drilled at the village of Piper City (population 807). The first five wells constructed have been abandoned and the village now uses two wells, finished in the upper glacial formation, as a source of water supply. The two wells (Nos. 6 and 7) were drilled in 1944 and 1953 by Hayes and Sims, Champaign, to depths of 90 feet and 127 feet, respectively. Both wells are 16-inch gravel-packed wells with 8-inch diameter inner casings and screens. Well No. 6 is equipped with 19 feet of No. 60 (0.060 inch) slot Johnson Everdur screen.

Upon completion, Well No. 7 yielded 100 gpm for 1 hour with 8.5 feet of drawdown from a nonpumping water level 9 feet below land surface (specific capacity = 12 gpm/ft of drawdown). Wells 6 and 7 are equipped with vertical turbine pumps rated at 170 and 140 gpm, respectively.

Average daily pumpage is reported to be 55,000 gallons.

Analyses of water samples from the wells show the water to have the following mineral constituents in parts per million (ppm):

Well No.	Hardness	Iron	Total dissolved minerals
6	304	1.2	380
7	319	2.1	405

The water is not treated.

Roberts

The village of Roberts (population 504) uses two wells (Nos. 5 and 6), finished in the lower glacial deposits, as a source of municipal water supply. Four earlier wells (Nos. 1, 2, 3, and 4) have been abandoned and filled.

The older well (No. 5) was drilled in 1950 by J. Bolliger and Sons, Fairbury, to a depth of 226 feet below land surface. It is an 8-inch well with 9 feet of continuous slot screen exposed to the water-bearing formation. The upper 3 feet has No. 10 (0.010 inch) slot openings and the lower 6 feet has No. 20 (0.020 inch) slot openings.

Upon completion the well was pumped at rates varying from 75 to 105 gpm for about 4 hours with 34.6 feet of drawdown from a nonpumping water level 81 feet below land surface (final specific capacity = 3 gpm/ft of drawdown). The well is equipped with a 105-gpm vertical turbine pump.

The other well (No. 6) was drilled in 1960 by J. Bolliger and Sons, Fairbury, to a depth of 228 feet below land surface. It is an 8-inch well with 13 feet of No. 16 (0.016 inch) slot Johnson Everdur screen. Upon completion, this well produced 128 gpm for 5 hours with a drawdown of 19.8 feet from a nonpumping water level of 86.6 feet from land surface (specific capacity = 6.5 gpm/ft of drawdown). The well is equipped with a 130-gpm submersible turbine pump.

Average daily pumpage is estimated to be 20,000 gallons.

Analyses of water samples from the wells show the water to have the following mineral constituents in parts per million (ppm):

Well No.	Hardness	Iron	Total dissolved minerals
5	446	1.6	685
6	426	1.2	681

The water is treated with a chlorinated solution of polyphosphate to sequester the iron (hold it in solution) and is continuously chlorinated for bacterial control.

Sibley

The village of Sibley (population 386) uses one well (No. 1), finished in the upper glacial formation, as a source of municipal water supply. It was constructed in 1907 by Otto Stiegman, Roberts, to a depth of 117 feet. It is an 8-inch well with 8.5 feet of enlarged No. 10 (0.010 inch) slot Cook screen. The well is equipped with a 58-gpm vertical turbine pump.

Analysis of a sample (appendix B, Lab. No. 116216) showed the water to have a hardness of 273 ppm, total dissolved minerals of 310 ppm, and an iron content of 0.8 ppm.

The water is not treated.

Stokely Van Camp Canning Co. (Gibson City)

The Stokely Van Camp Canning Co. uses three wells (Nos. 2, 3, and 4), all finished in the upper glacial deposits, as a source of water. One earlier well (No. 1) has been abandoned and sealed. Wells No. 2, 3, and 4 were drilled by L. F. Swanson and Sons, Gibson City, in 1932, 1951, and 1967 to depths of 47, 58, and 59 feet, respectively. Wells No. 2 and 3 are 6 and 8 inches in diameter, have 15~foot long screens, and are equipped with vertical turbine pumps capable of pumping about 400 gpm. Well No. 4 is an 8-inch well, is equipped with a total of 20 feet of No. 30 and 50 (0.030 and 0.050 inch) slot screen, and has a submersible turbine pump rated at about 600 gpm. Upon completion, the well reportedly produced 569 gpm for 4 hours with 2 feet of drawdown from a nonpumping water level 10.5 feet below ground level (specific capacity = 284.5 gpm/ft of drawdown).

No average pumpage data are available. However, peak usage during the canning season may approach as much as 750,000 gpd.

Water used in the processing plant is continuously chlorinated for bacterial control.

EXAMPLE USE OF MATERIALS

The following brief discussion illustrates how the tables and maps in this circular may be used to evaluate the groundwater conditions at any given location in the county. Assume that a well is desired for a dependable farm water supply (5 to 10 gpm) in the Southeast corner of Section 31, Township 25 North, Range 9 East, Wall Township, Ford County (FRD 25N9E-31.1a).

A quick search of the data tabulated in appendix A shows three wells located in the section of interest. Two of these wells tap the upper glacial deposits at depths of 101 and 120 feet and one has a reported nonpumping water level about 90 feet below ground level. The third well is finished in the lower glacial deposits at a depth of 222 feet below ground level and also has a non-pumping water level 90 feet below ground level. Records of 28 additional wells located in the adjoining sections (24N8E-1 , 24N9E-5 & 6, 25N8E-25 & 36, and 25N9E-29, 30, S 32) are also tabulated in appendix A. Twenty of these wells tap the upper deposits between depths of 60 and 143 feet and have reported nonpumping water levels from 50 to 96 feet below ground level. The remaining eight wells are finished in the lower deposits at depths from 210 to 260 feet and have reported nonpumping water levels from 75 to 156 feet below ground level. No records of wells tapping the underlying bedrock formations are recorded in the general area of interest.

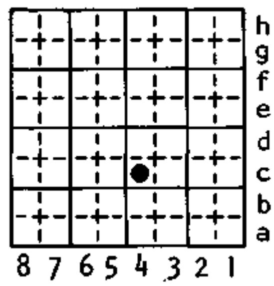
Most of the wells near this location are 2 or 4 inches in diameter and are equipped with lengths of commercially made screen designed to hold back the aquifer materials yet permit free entry of water into the well. Available information suggests that 3 or more feet of water-bearing sand (and screen) are normally required to insure an adequate farm supply. Although many of the wells now in use in Ford County are 2 inches in diameter, increased water usage and ease of pump maintenance make 4- or 6-inch wells more desirable.

The chemical quality of water from each aquifer is illustrated in appendix B. Water from the upper glacial deposits in the area of interest contains 3.5 ppm iron, 290 ppm hardness, and 488 ppm total dissolved minerals (Lab. No. 172369). Analysis of a sample (Lab. No. 116241) shows water from the lower deposits to have 0.6 ppm iron, 335 ppm hardness, and 427 ppm total dissolved minerals.

Maps in the text indicate that a satisfactory farm well can probably be developed from either the upper or lower glacial formations. A drilled well less than about 100 feet deep (figure 6) with a nonpumping water level near 90 feet below ground level (figure 7a) should be obtainable from the upper deposits. Total dissolved minerals would be expected to range between 400 and 500 ppm (figure 8b) with a hardness content between 300 and 400 ppm (figure 8c). Providing no deposits worthy of development are encountered at these depths, drilling into the lower deposits is recommended. A well tapping these materials should be less than about 240 feet deep (figure 9) with a nonpumping water level of about 90 feet below ground level (figure 10a). Total dissolved minerals and hardness content would be expected to range between 400 and 500 ppm and 300 and 400 ppm, respectively (figures 11b and c).

APPENDIX A - RECORDS OF WELLS

The well-numbering system used in this report is based on the location of the well, and uses the township, range, and section for identification. The well number consists of five parts: county abbreviation (FRD), township (T), range (R), section, and coordinate within the section. Sections are divided into rows of 1/8-mile squares. Each 1/8-mile square contains 10 acres and corresponds to a quarter of a quarter of a quarter section. A normal section of 1 square mile contains 8 rows of 1/8-mile squares; an odd-sized section contains more or fewer rows. Rows are numbered from east to west and lettered from south to north as shown in the diagram.



Ford County
T23N, R7E
Section 23

The number of the well shown is FRD 23N7E-23.4c. Where there is more than one well in a 10-acre square they are identified by arabic numbers after the lower case letter in the well number. Any number assigned to the well by the owner is shown in parentheses after the location well number.

In the listing of wells owned by municipalities, the place-name is followed by V, T, or C in parentheses to indicate whether it is a village, town, or city, except where the word City is part of the place-name.

Owners are listed according to the most current information available -- the 1969 plat book and recent well records for Ford County.

Symbols and abbreviations shown indicate the following:

→ = constructed before year given, exact date unknown
* = test hole not developed as well
** = abandoned wel1
drv = driven well
drl = drilled well
bor = bored well
drl-GP = drilled well, gravel packed

The types of wells and methods of construction used in Ford County, their susceptibility to surface contamination, and methods of disinfection are discussed in the text of this report.

Appendix A. Records of Wells

Well number	Owner	Well: Year constructed	Well: Type	Well: Depth (ft)	Well: Diameter (in)	Screen: Length (ft)	Screen: Diameter (in)	Screen: Slot size (in)	Land surface elevation (ft above msl)	Non-pumping water level (ft)	Drawdown (ft)	Pumping rate (gpm)	Observed specific capacity (gpm/ft)	Length of test (hr)	Water-bearing formation and depth (ft)	Driller
T23N, R7E																
1.2a	Lillie Ogg	1920	drl	75	2	--	--	--	781	40	--	--	--	--	Sand at 75	--
1.8a	Helen Berger**	1918	drl	55	3	--	--	--	765	26	--	--	--	--	Sand at 55	Swanson
1.8e	Helen Berger	1918	drl	80	3	--	--	--	792	30	--	--	--	--	Sand at 80	Swanson
2	Gibson City Aquatic Assn.	~1922	drl	34	6	--	--	--	--	--	--	--	--	--	Sand & gravel at 34	--
2	Gibson City Aquatic Assn.	~1923	drl	37	--	--	--	--	--	--	--	110	--	36	--	--
2.3a	Gibson City	1949	drl	60	--	--	--	--	758	--	--	--	--	--	*Sand, 27-35; sand & gravel, 35-59	Layne-Western
2.4b1	Dr. R. H. Lane	~1916	drv	20	--	--	--	--	755	--	--	--	--	--	--	--
2.4b2	Gibson City	1949	drl	58	6	5	6	--	755	20.5	19.3	74	3.8	5	*Sand, 22-30; sand & gravel, 30-58; limestone at 58	Layne-Western
2.4b3	Gibson City	1949	drl	55	--	--	--	--	755	--	--	--	--	--	*Sand, 25-50; limestone, 50-55	Layne-Western
2.4b4	Gibson City	1949	drl	50	--	--	--	--	755	--	--	--	--	--	*Sand & gravel, 25-47	Layne-Western
2.4b5(3)	Gibson City	1949	drl-GP	58	30-18	19.5	18	.130	755	19.7 17.5 26.4	17.9 26.5 13.9	400 -- --	22.3 -- --	8 -- .3	Sand, 22-30; sand & gravel, 35-58	Layne-Western
2.8a	Cordie Ogg**	1913	drl	30	1.25	--	--	--	742	10-15	--	--	--	--	Sand at 30	--
2.8e	Archie Fox	1913	drv	40	1.25	--	1.25	--	755	10-15	--	--	--	--	Sand at 40	--
3.4d1	Lain Foster**	1932	drv	31	1.25	--	--	--	754	10	--	--	--	--	Sand, 30.5-31	Johnson
3.4d2	Lain Foster	--	drl	--	2	--	--	--	754	--	--	--	--	--	Sand	--
3.4f	Helen F. Kelly	--	drl	65	2	--	--	--	752	--	--	--	--	--	--	Swanson
4.2e	W. J. McClure	1963	drl	44	2	4	2	--	762	--	--	--	--	--	Sand at 44	Swanson
4.2f	W. J. McClure	1931	drl	45	3	--	--	--	764	20	--	--	--	--	Sand at 45	Riblet
4.5e1	Rutkowski Bros.**	--	drl	42	1.25	--	--	--	770	15	--	--	--	5	Sand at 42	--
4.5e2	Rutkowski Bros.	--	drl	65	4	--	--	--	770	--	--	--	--	--	Sand at 65	--
4.8d1	W. E. McKeever**	1923	drl	61	2	--	--	--	790	30	--	--	--	--	Sand at 61	Riblet
4.8d2	W. E. McKeever	1964	drl	90-95	4	--	4	--	792	--	--	--	--	--	--	Taylor
5.4h	Rutkowski Bros.**	1914	drl	70	2	--	--	--	780	30	--	--	--	--	Sand at 70	--
5.5e	Harvey Tjardes	--	drl	90	4	--	4	--	802	--	--	--	--	--	--	Swanson
6.1d	Robert S. McCormick	1925	drl	87	3	--	--	--	805	25	--	--	--	--	Sand at 87	Swanson
6.5e1	Robert S. McCormick	1924	drl	135	3	--	--	--	822	50	--	--	--	--	Sand at 135	Swanson
6.5e2	Robert S. McCormick	1943	drl	--	4	4.5	3.75	.014	822	60	--	--	--	--	--	Swanson
6.6a1	Robert S. McCormick	--	drl	120	2	--	--	--	825	55	--	--	--	--	Sand at 120	--
6.6a2	Robert S. McCormick	1960	drl	103	6	4	6	.025	825	65	3	25	8.3	3	Sand & gravel, 98-103	Swanson
7.3a	Walter L. Taylor	1918	drl	90	2	--	--	--	835	45	--	--	--	--	Sand at 90	Riblet
7.8f	Stephen McCormick	--	drl	110	4	--	--	--	850	65	--	--	--	--	Sand at 110	--
8.1g	Emily Mason	1908	drl	75	2	--	--	--	785	30	--	--	--	--	Sand at 75	Riblet
8.4d	Lawrence Ropp	--	drl	90	4	--	4	--	800	--	--	--	--	--	--	Tipsord
8.5d1	Lawrence Ropp	--	drl	85	4	--	4	--	802	--	--	--	--	--	--	Tipsord
8.5d2	Lawrence Ropp**	1941	drl	72	2	--	1.25	.015	802	29	--	--	--	--	Sand, 61-68, 69-72	Swanson
8.8g	Irene Johnson**	1910	drl	96	2	--	--	--	820	60-65	--	--	--	--	Sand at 96	--
9.3d	A. Gerling, et al	1890	drl	25	1.25	--	--	--	750	3.5-2.5	--	--	--	--	Sand at 25	Swanson
9.7e	Marjorie Nagle**	1912	drl	32	2	--	--	--	760	15	--	--	--	--	Sand at 32	Riblet
10.1c	Cargill, Inc.	1968	drl	29	6	4	5.75	.014	740	5.68	9	37	4.1	5	Sand, 26-29	Swanson
10.5f	Eleanor Onken**	1919	drl	32	1.25	--	--	--	744	3-4	--	--	--	--	Sand at 32	Anderson
10.8a	Maybelle Barr	--	drv	--	2	--	--	--	743	--	--	--	--	--	--	--
11	Dr. Otto Fikenscher	~1878	dug	20	--	--	--	--	--	--	--	--	--	--	Dirty sand & gravel at 20	--
11	Charles Condit	~1908	drv	32	--	--	--	--	--	--	--	--	--	--	Dirty sand at 32	--
11	Dr. Otto Fikenscher	~1908	drv	30	--	--	--	--	--	--	--	--	--	--	Sand & gravel, 20-23	--
11	Stokely Van Camp Canning Co.**	~1933	--	25	--	--	--	--	--	--	--	--	--	--	--	--
11(5)	Central Soya Co., Inc.	1947	dug	34	60	--	--	--	--	10	--	--	--	--	Sand & gravel at 34	--
11.3h1	Gibson City**	~1911	drl	55	6	5	--	slotted pipe	760	--	--	--	--	--	Sand & gravel, 47-55	--
11.3h2	Gibson City**	~1918	drl	55	15	10	--	.006	760	10-25	--	--	--	--	--	Swanson
11.4c	A. H. Barnhart	~1908	bor	18	--	--	--	--	745	--	--	--	--	--	Sand & gravel at 18	--
11.4h1(1)	Gibson City	1927	drl-GP	58	38-24	10	24	--	758	13.8 13.5 18.9 17.1	14.8 20 15.7 13.6	450 -- 322 303	30.4 -- 20.5 22.3	40 5 3 3	Sand, 38-58	American Water Corp.
11.4h2	Gibson City	1939	drl	61	--	--	--	--	758	--	--	--	--	--	*Sand, 21-61	Hayes & Sims
11.5h(2)	Gibson City	1939	drl-GP	56	30-18	20	18	--	750	15.5 20 12.5	22 17.5 20	500 375 --	22.7 21.4 --	4 5 --	Sand & gravel, 17-30; sand, 31-56	Layne-Western
11.6g1	Stokely Van Camp Canning Co.**	1929	drl	45	6	--	--	--	745	12	--	--	--	--	--	Swanson
11.6g2(2)	Stokely Van Camp Canning Co.	1932	drl	47	6	15	6	--	745	--	--	--	--	--	Sand at 47	Swanson
11.6g3(3)	Stokely Van Camp Canning Co.	1951	drl	58	8	15	8	--	745	8	--	315	--	8	Sand & gravel, 16-33; sand, 33-58	Swanson
11.6g4(4)	Stokely Van Camp Canning Co.	1967	drl	59	8	20	8	.030-.050	745	10.5	2	569	284.5	4	Sand & gravel, 17-62	Swanson
11.6h1	Wabash RR	--	drl	54	8	9	8	--	748	--	--	--	--	--	Sand & gravel, 15-47.5	Swanson
11.6h2	Gibson City	--	drl	60	--	--	--	--	748	--	--	--	--	--	*Sand & gravel, 12-60	Swanson
11.6h3	Gibson City	--	drl	55	--	--	--	--	748	--	--	--	--	--	*Sand & gravel, 12-25; sand, 25-30; sand & gravel, 30-35; sand, 35-42; sand & gravel, 42-55	Swanson
11.7d(4)	Central Soya Co., Inc.	1947	drl	552	12-10-7	--	--	--	745	75 64	59 72	120 127	2.0 1.8	30 39	--	Swanson
11.7h	Gibson City	--	drl	47.5	--	--	--	--	747	--	--	--	--	--	*Sand, 38-40; sand & gravel, 40-47.5	Swanson
11.8c1	Central Soya Co., Inc.**	1940	drl	31	6	7	6	.040	742	9	16	--	--	24	Sand, 25-31	Swanson
11.8c2(1)	Central Soya Co., Inc.**	1947	drl	33	6	6	--	.060	742	--	--	--	--	--	--	Swanson
11.8d1(2)	Central Soya Co., Inc.**	1944	drl	385	6	--	--	--	744	45 76 57	90 74 180	100 35-40 30	1.1 -- .2	24 -- 1	Sand, 125-127; sand & gravel, 152-161; lime, 161-385	Swanson
11.8d2(3)	Central Soya Co., Inc.**	1947	drl	400	12-10	--	--	--	744	60	75	80	1.1	--	Lime, 162-233, 234-400	Swanson
12.8d	Mary Mitchell & Anna Hessett	--	drl	42	2	--	--	--	748	--	--	--	--	--	--	Swanson
12.8g1	Mary Mitchell & Anna Hessett	--	drl	40-50	2	4	2	--	755	20	--	--	--	--	Sand at 40-50	--

Well number	Owner	Well: Year constructed	Well: Type	Well: Depth (ft)	Well: Diameter (in)	Screen: Length (ft)	Screen: Diameter (in)	Screen: Slot size (in)	Land surface elevation (ft above msl)	Nonpumping water level (ft)	Drawdown (ft)	Pumping rate (gpm)	Observed specific capacity (gpm/ft)	Length of test (hr)	Water-bearing formation and depth (ft)	Driller
T23N, R7E (Continued)																
12.8g2	Mary Mitchell & Anna Hassett	1919	drl	50	1.25	--	--	--	756	15	--	--	--	--	Sand at 50	Riblet
13.1d	Raymond Reiners	1890±	dug	40	36	--	--	--	752	25	--	--	--	--	Sand at 40	--
13.5c	Clarence Goodrich	1945	drl	47	4	6	3.75	.030	764	30	9	11	1.2	8	Dirty sand, 30-37; sand, 37-42; sand & gravel, 42-47	Swanson
13.5g	Harvey Rasmussen	1912	dug & drl	80	36-2	--	--	--	770	16	--	--	--	--	Sand at 80	Swanson
14	Del Rancho Motel	1950	drl	30	6	--	--	.020	--	3	17	30	1.8	3	Sand & gravel, 18-21; sand, 25-30	Swanson
14.4b	W. C. DeWall, Jr.	--	drl	20	1.25	4	1.25	--	738	6	--	--	--	--	Sand at 20	--
14.7d1	William Anderson	--	dug	28	40	--	--	--	731	7.4	--	--	--	--	Sand, 27.5-28	--
14.7d2	William Anderson	--	drl	312	6-4	--	--	--	730	50	20	20	1.0	--	Sand & gravel, 175-178; limestone, 178-260; lime, 275-285, 288-312	Swanson
15.1e	Fern Coutts	1906	drl	38	1.25	--	--	--	731	3	--	--	--	--	Sand & gravel at 38	Swanson
15.2g	G. W. Schroeder	1966	drl	33	6	--	6	--	734	--	--	--	--	--	--	Swanson
15.3f	G. W. Schroeder	--	drv	42	1.25	--	2	--	734	8-10	--	--	--	--	Sand at 42	--
15.5e	William Holland	--	dug	20	--	--	--	--	734	--	--	--	--	--	--	--
15.8h1	Evan Eminger	1905	drl	35	1.25	4	1.25	--	745	8	--	--	--	--	Sand at 35	Swanson
15.8h2	Evan Eminger	1947	drl	32	2	4	2	--	745	--	--	--	--	--	Sand at 32	Swanson
16.1f	Wallace Dillman**	1898	drv	30	2	--	--	--	738	12	--	--	--	--	Sand at 30	Holm
16.4e	Wallace Dillman	--	drl	24	2	3	2	--	737	--	--	--	--	--	--	Swanson
16.5e	Wallace Dillman**	--	drl	30	1.25	--	--	--	740	10	--	--	--	--	Sand at 30	--
16.8f1	Wallace Dillman**	--	drl	30	2	--	--	--	752	+2	--	--	--	--	Sand at 30	--
16.8f2	Wallace Dillman	--	drv	--	2	--	--	--	752	10	--	--	--	--	--	--
17.1h	W. S. Huston Est.	1910	drl	23	1.25	--	--	--	755	.0	--	--	--	--	Sand at 23	--
17.5a1	George Reiners	+1919	dug	15	--	--	--	--	752	--	--	--	--	--	--	--
17.5a2	George Reiners	1966	drl	--	--	--	--	--	752	--	--	--	--	--	--	Swanson
17.6a	George Reiners	--	drv	27	1.25	--	1.25	--	752	.0	--	--	--	--	Sand at 27	--
17.8b	Schertz Service	1915	drl	70	2	--	--	--	791	30	--	--	--	--	Sand at 70	--
18.1a	M. A. Schroeder**	--	drv	28	1.25	--	--	--	762	3	--	--	--	--	Sand at 28	--
18.4g	Walter Taylor	--	drl	120	3	4	3	--	800	--	--	--	--	--	--	--
18.8h	Clarence Bradd, Tr.	1922	drv	110	2	--	--	--	832	60-65	--	--	--	--	Sand at 110	Anderson
19.2g	Maude Yates	--	dug	10.5	36	--	--	--	758	1.2	--	--	--	--	--	--
19.4a	Maude Yates	--	drl	--	4	--	--	--	752	--	--	--	--	--	--	--
19.4g	Maude Yates**	1931	drl	45	1.25	--	--	--	765	12-15	--	--	--	--	Sand at 45	Riblet
20.1b	Doris M. Tjardes	--	drl	35	2	--	2	--	740	--	--	--	--	--	Sand at 35	--
20.2h	Elmer Nelson	1925	drl	32	2	--	2	--	750	18	--	--	--	--	Sand at 32	Riblet
20.8f1	George Reiners	--	drl	30	2	4	2	--	752	3	--	--	--	--	Sand at 30	--
20.8f2	George Reiners	--	drl	29	1.25	3	1.25	--	752	--	--	--	--	--	Sand at 29	--
21.1d	Elmer Nelson	1891	dug & drv	28	36-1.25	--	1.25	--	733	6.9	--	--	--	--	Sand at 28	Zimmerman
21.5a	Flora Helmick	--	dug	22.6	36	--	--	--	740	13.6	--	--	--	--	Sand at 22.6	--
21.7h	W. S. Huston Est.	--	drl	27	2	--	2	--	741	--	--	--	--	--	--	Swanson
22.3h	Harry Martin	--	drl	30	1.25	--	--	--	734	8	--	--	--	--	Sand at 30	Riblet
22.5h	Harry Martin	1945	drl	237	4	--	--	--	732	50	140	6.5	.1	5	Lime, 160-171, 172-237	Swanson
22.7a	Vandel J. Whitten	1942	drl	30	6	2	6	slotted pipe	734	18	9	2.5	.3	--	Sand & gravel, 22-24	Swanson
23.1h1	James Thompson**	1921	drl	16	1.25	--	--	--	745	4	--	--	--	--	Sand at 16	Swanson
23.1h2	James Thompson**	1959	drl	16	--	--	--	--	745	--	--	--	--	--	--	Swanson
23.5d	Raymond Green	1913	drl	80	2	--	--	--	737	--	--	--	--	--	Sand at 80	Swanson
23.7g	P. L. Myers	1932	drl	60	2	--	2	--	735	15	--	--	--	--	Sand, 59-60	Riblet
23.7h	P. L. Myers	--	drl	28	1.25	--	--	--	735	--	--	--	--	--	Sand at 28	--
24.2h1	Glenn Reynolds	1909	drl	38	2	--	2	--	752	18	--	--	--	--	Sand at 38	Riblet
24.2h2	Glenn Reynolds	1967	drl	60	6	--	--	--	757	--	--	--	--	--	Sand at 60	Swanson
24.4c	Elizabeth McCall**	1953	drl	335	--	--	--	--	740	--	--	--	--	--	Sand, 112-114; lime, 279-304, 320-335	Swanson
24.5e	Elizabeth McCall	--	drl	19	4	5	4	.030	738	8	3	6	2.0	4	Sand, 15-19	Swanson
24.8h	Walter Jordan Est.	--	drl	16	1.25	4	1.25	--	745	10	--	--	--	--	Sand & gravel at 16	--
25.2d	T. B. & A. A. Day**	--	dug	35	36	--	--	--	732	20	--	--	--	--	Sand at 35	--
25.4h	Loel Helmick	1930	drl	86	2	--	--	--	735	40	--	--	--	--	Sand & gravel, 80-86	Riblet
26.4b	Waldo Roth	1940	drl	40	4	4	4	--	732	--	--	--	--	--	Sand at 40	Swanson
26.4d	Corn Belt Hatchery	1964	drl	84	4	--	--	.014	731	15	--	--	--	3	Sand, 33-36; dirty sand, 36-78; sand, 78-84	Swanson
26.4g	Raymond Green	1950	drl	71	4	3	4	.014	732	8	--	5	--	3	Sand & gravel, 69-71	Swanson
26.5c	H. & E. Roth**	--	dug & drl	27	42-4	--	2	--	732	15	--	--	--	--	Sand at 27	Swanson
26.5h	Herbert Green	1933	drl	15	1.25	--	--	--	734	10	--	--	--	--	Sand, 10-15	Green
27.3e	Lester Moody	1914	drl	50	2	--	--	--	730	25	--	--	--	--	Sand at 50	Swanson
27.6g	Mabel DeWall**	--	drl	40	1.25	--	--	--	732	11	--	--	--	--	Sand, 28.5-40	--
27.8e	Mabelle Ferlin	--	drl	35	1.25	--	--	--	740	--	--	--	--	--	Sand at 35	--
28.1h	L. M. Cross**	1915	dug	28	--	--	--	--	733	6	--	--	--	--	Sand, 27.5-28	Zimmerman
28.2d	John Mooney	1921	drl	52	4	--	--	--	740	20	--	--	--	--	Sand at 52	Tipsord
28.8b	Mary H. Cox**	--	dug	26	48	--	--	--	740	10	--	--	--	--	Sand at 26	--
29.1f	Florence T. Rich	1949	drl	27	4	--	--	slotted pipe	735	3.5	2	9	4.5	1	Sand, 18-20, 22-25	Swanson
29.3b1	Leonard Cross	+1904	drl	35	1.25	--	--	--	742	--	--	--	--	--	Sand at 35	--
29.3b2	Leonard Cross	--	drl	40	2	--	--	--	742	--	--	--	--	--	--	--
29.6h	August Peters	1930	drl	27	1.25	4	1.25	--	742	7	--	--	--	--	Sand, 20-22, 24-27	Peters
30.2h1	Joe Suter	1908	dug	31	36	--	--	--	745	2.5	--	--	--	--	--	--
30.2h2	Joe Suter	1914	drl	31	4	--	4	--	746	7	--	--	--	--	Sand at 31	Budoff
30.3a1	E. C. Conrad**	1908	drl	25	1.25	--	--	--	740	--	--	--	--	--	Sand at 25	Swanson
30.3a2	E. C. Conrad	1908	dug	26	36	--	--	--	740	--	--	--	--	--	--	--
30.8a1	Willis Sommer	1950	drl	198	6	5-6	6	--	760	--	--	--	--	--	--	--
30.8a2	Willis Sommer	1968	drl	47	4	4	3.75	.016	760	25.5	4.5	20	4.4	4	Sand & gravel, 25.5-30; sand, 37-47	Swanson
31.1e	C. Phillips**	1895	drl	28	2	--	--	--	760	11	--	--	--	--	Sand, 27-28	Swanson
31.1h1	Maxine Arends	--	dug	23.6	48	--	--	--	740	4.2	--	--	--	--	--	--
31.1h2	Maxine Arends	1965	drl	66	4	3.75	3.75	.016	740	3	9	15	1.7	--	Sand & gravel, 18-20, 61-66	Swanson
31.2d	H. Mizorak, et al	1969	drv	25	2	4	2	--	750	--	--	9	--	3	Sand & gravel, 18-25	--
32.2c	George Tjardes	1886	drl	28	2	--	--	--	738	4	--	--	--	--	Sand at 28	--
32.5h	George Tjardes	1928	drl	20	1.25	--	--	--	740	10	--	--	--	--	Sand, 16-20	Riblet
32.6e	George Tjardes	1918	drl	38	1.25	--	--	--	740	10	--	--	--	--	Sand at 38	Riblet
33.8b	Geneva Campbell	--	drl	25	2	--	--	--	732	12	--	--	--	--	Sand at 25	Swanson
34.3f	Bernice DeWall	--	drv	32	1.25	--	--	--	735	15	--	--	--	--	Sand at 32	--
34.6b	Bernice DeWall**	1922	drl	45	4	--	--	--	738	16	--	--	--	--	Sand & gravel, 33-45	Budoff
35.1f	Waldo Roth	1920	drv	17	1.5	--	--	--	733	7	--	--	--	--	Sand, 16-17	Riblet
35.2c1	Waldo Roth	--	dug	30	42	--	--	--	725	20	--	--	--	--	Sand at 30	--
35.2c2	Waldo Roth	1966	drl	52	4	--	4	--	725	--	--	--	--	--	Sand at 52	Swanson
35.4c	Waldo Roth**	1890	drl	35	2	--	--	--	722	15	--	--	--	--	Sand at 35	Swanson
35.5d1	John Summers**	1900	dug	35	42	--	--	--	725	8	--	--	--	--	Sand at 35	--

Well number	Owner	Well: Year constructed	Well: Type	Well: Depth (*ft*)	Well: Diameter (*in*)	Screen: Length (*ft*)	Screen: Diameter (*in*)	Screen: Slot size (*in*)	Land surface elevation (*ft above msl*)	Nonpumping water level (*ft*)	Drawdown (*ft*)	Pumping rate (*gpm*)	Observed specific capacity (*gpm/ft*)	Length of test (*hr*)	Water-bearing formation and depth (*ft*)	Driller
T23N, R7E (Continued)																
35.5d2	John Summers	1925	drl	65	2	--	2	--	725	11	--	--	--	--	Sand at 65	Swanson
36.5d	William Day Est.**	1928	drl	24	1.25	--	--	--	725	12	--	--	--	--	Sand, 22.5-24	Riblet
T23N, R8E																
1.2g	E. D. Cameron	1928	drl	185	2	--	--	--	748	70	--	--	--	--	Sand at 185	--
1.6e	Evelyn McClure	1914	drl	200	3	--	--	--	750	--	--	--	--	--	Sand at 200	Stiegman
2.5a	Stokely Van Camp Canning Co.	1939	--	90	--	--	--	--	765	--	--	--	--	--	--	--
2.7b	Stokely Van Camp Canning Co.	--	drl	110	2	--	--	--	770	50	--	--	--	--	Sand at 110	--
2.8f1	M. B. & I. Shertz**	1916	drl	92	2	--	--	--	760	33	--	--	--	--	Sand at 92	Swanson
2.8f2	M. B. & I. Shertz	1953	drl	156	2	--	--	--	760	--	--	--	--	--	--	Weburg
3.3h	Ray Hollen	1904	drl	80	2	--	--	--	760	40	--	--	--	--	Sand at 80	Swanson
3.4a	Bertha Ulfers	1919	drl	110	2	--	--	--	768	35-40	--	--	--	--	Sand at 110	--
4.1f	Granville Brewer	--	drl	110	2	--	--	--	778	60-70	--	--	--	--	Sand at 110	--
4.7a	Eva Jones	--	drl	95	2	--	--	--	782	50	--	--	--	--	Sand at 95	--
4.7h1	Mrs. C. Bonnen**	1915	drl	110	2	--	--	--	790	55	--	--	--	--	Sand at 110	Swanson
4.7h2	Mrs. C. Bonnen	1941	drl	105	4	5	3.75	.020	790	70	15	10	.7	7	Sand, 101-105	Swanson
5.2a	Floyd Mathews & Florence Walters	--	drl	70	2	--	--	--	781	50	--	--	--	--	Sand at 70	--
5.8d	L. S. Wissmiller	1930	drl	50	2	--	--	--	800	18	--	--	--	--	Sand at 50	Stiegman
6.2a	Fred Witt	1900	drl	100	2	--	--	--	790	60	--	--	--	--	Sand at 100	--
6.8g	Nie Buhs	--	drl	85	2	--	--	--	790	20-25	--	--	--	--	Sand at 85	--
7.8a	Anna P. Carrick	--	drl	60	2	--	--	--	755	35-40	--	--	--	--	Sand at 60	--
7.8h	L. L. Ogg	1894	drl	90	2	--	--	--	775	--	--	--	--	--	Sand at 90	--
8.6h	W. G. McGuire	--	drl	80	2	--	--	--	780	45	--	--	--	--	Sand at 80	--
8.7b	Elmer Main	1909	drl	112	2	--	--	--	790	50	--	--	--	--	Sand at 112	Anderson
9.2h	Nelson Sommer	--	drl	125	2	--	--	--	780	65-70	--	--	--	--	Sand at 125	--
9.3a	Pearl Sawyer	1932	drl	206	2	--	--	--	802	40	--	--	--	--	Sand at 206	Stiegman
10.6h	J. B. Christie	--	drl	110	2	--	--	--	768	60	--	--	--	--	Sand at 110	Stiegman
11	Martha Punke	--	drl	239	4	8	--	.008-.012	--	104	4	17	4.3	--	Sand, 105-121, 220-239	Swanson
11.6h	Roy Forman	--	drl	180	2	--	--	--	770	--	--	--	--	--	Sand at 180	--
11.8d1(1)	Elliott (V)	1911	drl	120	--	--	8	--	770	--	--	--	--	--	--	--
11.8d2(2)	Elliott (V)	1950	drl	126	8	6	--	.080	770	69.8	53.4	120	2.2	5	Sand, 105-114, 117-126	Bolliger
12.2h	Thomas Scott	1920	drl	194	3	--	--	--	751	--	--	--	--	--	Sand at 194	Stiegman
12.8e	Silas Hill	1930	drl	186	2	--	--	--	767	106	--	--	--	--	Sand at 186	Stiegman
13.8b	Rena Wiles	--	drl	104	2	--	--	--	772	60±	--	--	--	--	--	--
14.3h	Earl Anderson	1925	drl	103	2	--	--	--	772	60	--	--	--	--	Sand at 103	Stiegman
14.5e	Robert Little	1968	drl	162	4	4	4	.015	790	118	16	15	.9	1	Sand, 152-162	Weburg
14.8g	Kermit Mustadt	1970	drl	120	4	4	4	.018	780	94	1	15	15.0	2	Sand, 94-120	Weburg
15.1d	Agnes Berger	--	drl	118	2	--	--	--	789	90	--	--	--	--	Sand at 118	--
15.1g	Isabelle Renolds	1919	drl	126	2	--	--	--	790	46	--	--	--	--	Sand at 126	Anderson
15.6h	Violet Jones	1910	drl	118	2	--	--	--	790	40-45	--	--	--	--	Sand at 118	Anderson
16.1c	Henry Horsch	1916	drl	150	2	--	--	--	820	75	--	--	--	--	Sand at 150	Swanson
17.1h	Alva Osman	1890	drl	75	2	--	--	--	802	35-40	--	--	--	--	Sand at 75	--
17.5a	Ella Speedie	1899	drl	85	2	--	--	--	765	40	--	--	--	--	Sand at 85	Wilson
18.1f	W. S. McCall Est.	1940	drl	75	2	2	1.25	.012	774	--	--	4	--	15	Sand, 60-62, 73-75	Swanson
18.1g	W. S. McCall Est.**	1930	drl	80	2	--	--	--	775	45	--	--	--	--	Sand at 80	Riblet
18.8d1	Pearl Gordon	--	drl	27	2	--	--	--	761	15-18	--	--	--	--	Sand at 27	--
18.8d2	Pearl Gordon	1965	drl	62	4	4	4	.018	761	40	--	15	--	--	Sand & gravel, 55-62	Stiegman
19.1h	Pearl Sawyer	1884	drl	65	2	--	--	--	768	20	--	--	--	--	Sand at 65	--
19.6h	Fannie Spry	--	drl	80	2	--	--	--	752	45	--	--	--	--	Sand at 80	--
19.8d	Gene Rankin	1900	drl	55	2	--	--	--	745	12-15	--	--	--	--	Sand at 55	--
20.1a	Merrit Kerchenfaut	1904	drl	70	2	--	--	--	750	25	--	--	--	--	Sand at 70	Riblet
20.8d	Lucille Cumming	1959	drl	120	2	--	--	--	765	50-60	--	--	--	--	Sand at 100	Woollen
21.3h	Neva Rankin	1926	drl	109	3	--	--	--	801	70	--	--	--	--	Sand at 109	Swanson
21.8d	John Havens	--	drl	85	2	--	--	--	761	50	--	--	--	--	Sand at 85	--
22.3h	Warfield & Punke	1890	drl	180	1.5	--	--	--	801	15	--	--	--	--	Sand at 180	--
22.8b	Kenneth Orendorff	--	drl	140	2	--	--	--	770	50	--	--	--	--	Sand at 140	--
23.8b	W. A. Krietzer	--	drl	120	2	--	--	--	770	50	--	--	--	--	Sand at 120	--
23.8h	W. A. Krietzer	1918	drl	185	2	--	--	--	795	80	--	--	--	--	Sand at 185	Gimble
24.5h	Madeline Pugh	1933	drl	200	2	--	--	--	782	70	--	--	--	--	Sand at 200	Stiegman
24.8c	Anderson & Hanson	1921	drl	210	2	--	--	--	800	60-65	--	--	--	--	Sand at 210	Stiegman
25.2h	Mayme Seng	1913	drl	115	2	--	--	--	805	--	--	--	--	--	Sand at 115	Anderson
25.6h	Fred Mennenga	1944	drl	121	4	4	3.75	.018	815	80	--	8	--	--	Dirty sand, 83-117.5; sand, 117.5-121	Swanson
26.1a	Ruth A. Anderson	1931	drl	120	2	--	--	--	795	50	--	--	--	--	Sand at 120	Gimble
26.8e	J. M. K. Noland	--	drl	105	2	--	--	--	780	16	--	--	--	--	Sand at 105	--
27.1h	Florence P. Johnson	--	drl	115	2	--	--	--	780	20-25	--	--	--	--	Sand at 115	--
27.8g	Walter Barnes	1929	drl	140	2	--	--	--	772	50	--	--	--	--	Sand at 140	Swanson
28.2e	Donovan & Young	1913	drl	90	3	--	--	--	750	35	--	--	--	--	Sand at 90	Stiegman
28.7e1	Florence T. Rich**	--	drl	125	2	--	--	--	772	30	--	--	--	--	Sand at 125	--
28.7e2	Florence T. Rich	1945	drl	149	4	4	3.75	.014	772	75	21.5	20	.9	5	Sand, 88-100, 139-149	Swanson
29.4e	C. W. Christie	1927	drl	180	2	--	--	--	720	25	--	--	--	--	Sand at 180	Swanson
29.7h1	Nola Nelson	--	drl	70	2	--	--	--	752	40	--	--	--	--	Sand at 70	--
29.7h2	Nola Nelson	1953	drl	--	4	--	--	--	752	--	--	--	--	--	--	Swanson
30.1a	B. B. Syverson**	1939	drl	141.5	2	3.5	1	.010	732	25	--	--	--	--	Sand, 61-69; dirty sand & gravel at 69; sand, 69-76, 78-82.5, 85.3-95.5; dirty sand, 95.5-110; sand, 137-141.5	Swanson
30.1d	W. & S. Brown**	1903	drl	72	2	--	--	--	745	15	--	--	--	--	Sand at 72	Swanson
30.4h	William Day Est.	--	--	24	--	--	--	--	742	12	--	--	--	--	Sand at 24	--
31.1h	P. M. Kerchenfaut	--	drl	40	2	--	--	--	731	15	--	--	--	--	Sand at 40	--
31.6d	May E. Reynolds	1913	drl	40	2	--	--	--	725	20	--	--	--	--	Sand at 40	Swanson
32.1e	Alton R. Zahr**	1944	drl	55	--	--	--	--	730	--	--	--	--	--	Sand, 51-55	Swanson
32.4h1	S. E. Leonard**	1921	drl	75	3	--	--	--	735	24	--	--	--	--	Sand at 75	Swanson
32.4h2	S. E. Leonard	1964	drl	170	2	--	--	.008	735	24±	--	--	--	--	--	Weburg
33.1d	Grace Elkins	1918	drl	80	2	--	--	--	750	35	--	--	--	--	Sand at 80	Anderson
33.5h	Ezra Johnson	1933	drl	86	2	--	--	--	750	30	--	--	--	--	Sand, 81-86	Riblet
33.8a1	Lela Utterback	1918	drl	20	2	--	--	--	730	12	--	--	--	--	Sand at 20	Swanson
33.8a2	Lela Utterback	1965	drl	35	2	--	--	--	730	12	--	--	--	--	--	Weburg
34.5h	Anna B. Kidd	1927	drl	140	2	--	--	--	773	35-40	--	--	--	--	Sand at 140	Stiegman
34.8b	Pearl Sawyer	1913	drl	80	2	--	--	--	735	35	--	--	--	--	Sand at 80	Swanson
35.8b	Ed Farmer	1932	drl	87	2	--	--	--	755	50	--	--	--	--	Sand at 87	Swanson
35.8g	Milo Burwash	1905	drl	120	2	--	--	--	780	35	--	--	--	--	Sand at 120	Swanson
36.1f	Mahlon J. Cender	1893	drl	157	2	--	--	--	831	--	--	--	--	--	Sand at 157	Swanson
36.7h	Ruth A. Anderson	1909	drl	185	2	--	--	--	794	50	--	--	--	--	Sand at 185	--
36.8e	Pearle Swanstrom	1913	drl	213	2	--	--	--	780	20-25	--	--	--	--	Sand at 213	Stiegman

Well number	Owner	Well: Year constructed	Well: Type	Well: Depth (ft)	Well: Diameter (in)	Screen: Length (ft)	Screen: Diameter (in)	Screen: Slot size (in)	Land surface elevation (ft above msl)	Nonpumping water level (ft)	Drawdown (ft)	Pumping rate (gpm)	Observed specific capacity (gpm/ft)	Length of test (hr)	Water-bearing formation and depth (ft)	Driller
T23N, R9E																
1.1f	Charles Palmer	1967	drl	105	2	4	1	.050	771	60	5	10	2.0	2	Sand, 80-105, 220-235	Beck
1.2a	Anna M. Johnson	--	drl	128	2	--	--	--	790	116	--	--	--	--	--	Stiegman
1.7e	Mildred Siddens	--	drl	93	2	--	--	--	780	85	--	--	--	--	--	Stiegman
2.1f	William Plackett	1908	drl	104	4	--	--	--	776	90	--	--	--	--	Sand at 104	Stiegman & Schuler
2.5a	Rhoda Holtzman	1927	drl	98	2	--	--	--	782	92	--	--	--	--	Sand & gravel at 98	Stiegman
2.8g	Roland Selbring	1968	drl	96	4	3	4	.018	750	74	5	15	3.0	1	Sand & gravel, 84-96	Weburg
3.1g	Paul E. Johnson	--	drl	105	2	--	--	--	750	30	--	--	--	--	Sand at 105	Stiegman
3.5a	Paul E. Johnson	1925	drl	93	2	--	--	--	750	70	--	--	--	--	--	Stiegman
3.5b	Paul E. Johnson	1922	drl	98	2	--	--	--	750	83	--	--	--	--	--	Stiegman
4.3a	R. & K. Humphrey	--	drl	102	2	--	--	--	775	30	--	--	--	--	Sand & gravel at 102	Rardin
4.7a	Robert Short	--	drl	--	2	--	--	--	770	--	--	--	--	--	--	Weburg
5.3a1	Edward Boshell	--	drl	104	2	--	--	--	765	30	--	--	--	--	--	--
5.3a2	Edward Boshell	--	drl	102	2	--	--	--	765	--	--	--	--	--	--	--
6.1c	Mrs. Lewis Brown	--	drl	190	2	--	--	--	750	--	--	--	--	--	--	--
6.4h	Sadie Elliott**	1908	drl	198	2	--	--	--	750	90	--	4	--	--	--	Stiegman
6.6c	Hazel L. Martin	1940	drl	192	4	4	2.5	.012	751	50	--	40	--	1	Sand, 76-75, 185-192	Swanson
7.2h	W. Johnson & H. N. Stevens Est.	1968	drl	203	4	4	4	.018	745	73	15	18	1.2	4	Sand, 130-132; sand & gravel, 186-203	Weburg
7.4h	W. Johnson & H. N. Stevens Est.	--	drl	101	2	--	--	--	750	--	--	--	--	--	--	--
8.5c	Russell S. Foster	--	drl	83	2	4	--	--	743	--	--	--	--	--	--	--
8.8a	Herschel Keal	--	drl	90	2	--	--	--	761	80	--	4	--	--	--	--
9.2d	Perdue Elevator	--	drl	101	2	--	--	--	765	--	--	--	--	--	--	--
9.2h1	Ada M. Burwash	--	drl	109	2	--	--	--	775	102	--	--	--	--	--	Rardin
9.2h2	Ada M. Burwash	1956	drl	100	2	--	--	--	775	--	--	--	--	--	--	Weburg
9.3d	Carson Farm Account	--	drl	92	2	--	--	--	762	82	--	--	--	--	--	--
10.2b	H. H. Kemp Est.**	1919	drl	100	2	--	--	--	750	--	--	--	--	--	Sand & gravel at 100	Stiegman
10.4h	Dorothy Branham	--	drl	98	2	--	--	--	762	70	--	--	--	--	--	--
10.5a	W. F. Judkins	1964	drl	148	4	--	--	--	745	96	--	--	--	--	--	Swanson
11.1e	Henry Albers	--	drl	135	2	--	--	--	780	110	--	--	--	--	--	Stiegman
11.2b	Paxton (C)	1956	drl	345	--	--	--	--	760	--	--	--	--	--	*Dirty sand & gravel, 68.5-112.5; sand & gravel, 150-185, 205-213.5, 236-330	Hayes
11.7h	H. H. Kemp Est.	1896	drl	108	2	--	--	--	768	32	--	--	--	--	Sand at 108	Rardin
12.1h1	Edward Gustafson	1913	drl	114	4	--	--	--	785	80	--	--	--	--	--	Stiegman
12.1h2	Edward Gustafson	1969	drl	248	4	4	4	.015	785	98	2	20	10.0	1	Sand, 116-126; silty sand, 126-156; sand, 228-248	Weburg
12.2g	Paxton (C)	1956	drl	415	--	--	--	--	795	--	--	--	--	--	*Sand & gravel, 120-150, 170-180, 188-197, 262.5-270, 275-291, 324-345; dirty sand, 345-365; sand & gravel, 365-376, 378.5-385, 395-413.8	Hayes
12.4a	Klass Hinrichs	--	drl	92	2	--	--	--	792	58	--	4	--	--	Sand at 92	Stiegman
12.6h	Edwin Rosendahl	1919	drl	128	2	--	--	--	810	110	--	--	--	--	--	Stiegman
13.2d	Harry Watkins	1962	drl	85	3	--	--	--	780	--	--	--	--	--	--	Weburg &
13.4d	Paxton (C)	1955	drl	339	--	--	--	--	760	--	--	--	--	--	*Sand, 55-65; sand & gravel, 75-130; sand, 165-190; sand & gravel, 200-225; sand, 230-320	Hayes
13.4h	B. Yazel**	1916	drl	85	2	--	--	--	790	60	--	4	--	--	--	Stiegman
13.7f	Carl Hanson, Jr.	1924	drl	115	2	--	--	--	770	--	--	3.5	--	--	Sand at 115	Stiegman
14	Dr. J. F. White	+1929	dug	15	--	--	--	--	--	flows	--	--	--	--	Sand & gravel at 15	--
14.1b	Harold Tribbey	1926	drl	108	2	--	--	--	760	--	--	--	--	--	Sand & gravel at 108	Stiegman
14.1g(8)	Paxton (C)	1959	drl-GP	340	36-16	100	16	--	765	68	8	1200	150.0	24	Sand & gravel, 165-193; sand, 235-245; sand & gravel, 245-340	Miller
14.2g1	Paxton (C)	1956	drl	339	--	--	--	--	758	--	--	--	--	--	*Dirty sand & gravel, 34-61, 72-82; sand & gravel, 84-123, 150-180, 201-225, 227-339	Hayes
14.2g2	Paxton (C)**	1956	drl	125	20-10	10	10	--	758	65	35	400	11.4	200	Sand & gravel at 125	Miller
14.2g3(7)	Paxton (C)	1956	drl-GP	340	36-16	100	16	.080	758	65.5 68	6.3 2	1000 1000	158.7 500.0	-- 1	Sand & gravel, 85-130, 160-190, 206-340	Miller
14.6g	Howard Thomas	--	drl	90	2	--	--	--	750	75	--	--	--	--	Sand at 90	Stiegman
14.8f	Ed Carlson**	1940	drl	85	--	--	--	--	748	--	--	--	--	--	Sand at 85	Stiegman
15.3c	Marian Given	1943	drl	71	2	2.5	1	.050	740	48	--	--	--	--	Sand, 51-62; sand & gravel, 62-71	Stiegman
15.3f	W. F. Judkins	1943	drl	66	2	--	--	--	740	--	--	--	--	--	--	--
15.4h1	Lucille Johnson	--	dug	18	48	--	--	--	745	16	--	--	--	--	--	--
15.4h2	Dorothy Judkins	1964	drl	123	4	8	--	.010-.012	745	60	48	30	.6	3	Sand, 87-91, 99-123	Swanson
16.2h1	Elsie Hamilton**	--	drl	82	2	--	--	--	750	74	--	--	--	--	--	--
16.2h2	Elsie Hamilton	--	drl	--	4	--	--	--	750	--	--	--	--	--	--	--
16.6h	James Jarboe	1899	drl	85	2	--	--	--	742	30	--	--	--	--	Sand at 85	Rardin
17.1d	Harry Gustafson	1924	drl	120	2	--	--	--	758	35	--	--	--	--	--	Rardin
17.1h	Joe H. Volden	1917	drl	95	2	--	--	--	745	--	--	--	--	--	Sand & gravel at 95	Stiegman
17.8g	O'Hara & Anderson	1918	drl	86	2	--	--	--	761	76	--	3.5	--	--	--	Stiegman
18.2a	Walter Nelson**	1889	drl	103	2	8	2	--	775	32	--	4	--	--	Sand at 103	Fredrickson
18.3a1	William Decker	1924	drl	102	2	5	2	--	775	28	--	--	--	--	Sand at 102	Stiegman
18.3a2	William Decker	1969	drl	112	4	4	4	.018	775	85	3	12	4.0	2	Sand & gravel, 92-112	Weburg
18.8a	J. & T. Tomblin	1889	drl	160	2.5	--	2	--	782	100	--	3.5	--	--	Sand at 160	Swanson
19.1b	Virginia Warnecke	--	drl	145	2	--	2	--	792	130	--	--	--	--	--	--
19.1f	Milford Skog	1910	drl	160	2	--	2	--	782	55	--	--	--	--	Sand at 160	Swanson
19.5a	E. J. Siebring	--	drl	145	2	5	2	--	805	112	--	4	--	--	Sand at 145	--
19.6b	Lillian Heuzel	1920	drl	185	2	4	2	--	812	120	--	4.5	--	--	Sand at 185	Stiegman
20.7h	Emily Floyd Est.	--	drl	96	2	--	--	--	780	90	--	--	--	--	Sand at 96	Stiegman
20.8f	J. O. Roisland	1969	drl	212	4	4	4	.015	785	93	35	15	.4	2	Sand, 203-212	Weburg
21.1d1	Helen Henderson**	1915	drl	66	2	--	--	--	765	56	--	3.5	--	--	Sand & gravel at 66	Willard
21.1d2	Helen Henderson	1942	drl	90	2	2.5	5	.050	765	70	--	--	--	--	Dirty sand & gravel, 70-74; sand, 74-76; sand & gravel, 86-90	Stiegman
21.1p	Lennea Younggreen	--	drl	130	2	--	--	--	758	90	--	4	--	--	Sand at 130	--
21.7a	E. Engelbrecht	--	drl	145	2	--	--	--	778	106	--	3.5	--	--	Sand & gravel at 145	Gimble
21.8g	Milo Hansen	1898	drl	84	2	--	--	--	760	35	--	--	--	--	Sand at 84	--
22.2e	Homer L. Brooks	--	drl	--	2	--	--	--	750	--	--	--	--	--	--	--
22.7h	Richard Livingston	--	drl	76	2	--	--	--	752	64	--	5	--	--	Sand & gravel at 76	--
23.1e	Mrs. John Maloney	--	drl	118	2	--	--	--	741	--	--	--	--	--	--	--
23.6a1	E. K. Kane	--	drl	130	2	--	--	--	750	--	--	--	--	--	--	--
23.6a2	E. K. Kane	1952	drl	88	2	--	--	--	750	--	--	--	--	--	--	Weburg

Well number	Owner	Well: Year constructed	Type	Depth (ft)	Diameter (in)	Screen: Length (ft)	Screen: Diameter (in)	Slot size (in)	Land surface elevation (ft above msl)	Nonpumping water level (ft)	Drawdown (ft)	Pumping rate (gpm)	Observed specific capacity (gpm/ft)	Length of test (hr)	Water-bearing formation and depth (ft)	Driller
T23N, R9E (Continued)																
24.3a	Helen Sandstedt	--	drl	85	2	--	--	--	741	--	--	--	--	--	--	--
24.7d	P. E. Larson Est.**	1892	drv	48	2	--	--	--	739	35	--	--	--	--	Sand & gravel at 48	Rardin
24.7e	Mrs. W. B. Collins	1947±	drl	90-100	2	--	--	--	745	--	--	--	--	--	--	--
25.1b	Samuel Baird	--	drl	83	2	--	--	--	730	--	--	--	--	--	--	--
25.4h	Treva Sadler	1917	drl	85	2	--	--	--	741	45	--	--	--	--	Sand & gravel at 85	Stiegman
26.1a	Lillie Burklund	1914	drl	90	2	--	--	--	748	50	--	--	--	--	Sand & gravel at 90	Stiegman
26.7a	Lewis Thompson	1890	drl	100	2	--	--	--	765	64	--	--	--	--	Sand at 100	Lunde
26.8f	William A. Anderson	--	drl	78	2	--	--	--	750	60	--	--	--	--	--	Stiegman
27.1h	Marvin Gritton	1916	drl	140	2	--	--	--	748	35	--	--	--	--	Sand & gravel at 140	--
27.6h	Dorothy Judkins	1949	drl	90	2	--	--	--	761	--	--	--	--	--	--	Stiegman
28.1h	Ruth Flanigam	--	drl	112	2	--	--	--	768	--	--	4.5	--	--	Sand & gravel at 112	--
28.6h	G. L. Anderson	--	drl	106	2	--	--	--	777	90	--	4	--	--	Sand & gravel at 106	Thompson
29.3h	Martha Punke	--	drl	80	2	--	--	--	788	--	--	--	--	--	--	--
30.1h	Selma Skog	1915	drl	145	2	--	2	--	800	105	--	--	--	--	Sand at 145	Stiegman
31.1f	George E. Burton	--	drl	--	2	--	--	--	830	--	--	--	--	--	Sand	Beck
32.1d	Ronald Apland**	--	drl	155	2	4	2	--	818	125	--	4.5	--	--	Sand at 155	Swanson
33.4h	Lela Buhrmester	1939	drl		2	--	--	--	800	--	--	--	--	--	--	Stiegman
34.1h	Irene Grove	--	drl	90-100	2	--	--	--	767	--	--	--	--	--	--	--
34.4a	Amy Enerson	1891	drl	125-130	2	2.5	--	.012	792	85	--	--	--	--	--	--
34.8h	Lawrence Selo	--	drl	95	2	--	--	--	787	--	--	--	--	--	--	--
35.7b	Mabel Apland Est.	1967	drl	112	6.25	6	4	.014	767	85	10	14	1.4	1	Sand & gravel, 94-112	Weburg
35.8b	Charles Rydell Est.	--	drl	80	2	--	--	--	770	--	--	--	--	--	--	--
35.8h	Mabel Apland Est.	--	drl	104	2	--	--	--	767	93	--	--	--	--	--	Stiegman
36.4h1	Arthur Stevenson**	1917	drl	84	4	--	--	--	750	31	--	--	--	--	Sand & gravel at 84	Stiegman
36.4h2	Arthur Stevenson	1966	drl	104.2	4	9.3	3.75	.012-.014	750	61.1	--	--	--	--	Sand, 64-104	Swanson
36.8h	John Stevenson**	1884±	drl	81	2	--	--	--	748	30	--	--	--	--	Sand & gravel at 81	--
T23N, R10E																
1.2a1	E. T. Chapin**	--	drl	102	2	--	--	--	782	--	--	--	--	--	Sand at 102	Rardin
1.2a2	E. T. Chapin	1965	drl	126	2	--	--	.008	782	--	--	--	--	--	--	Weburg
1.3h	Elmer Bellinger	--	drl	70	2	--	--	--	753	62	--	--	--	--	Sand at 70	Stiegman
1.7g	Mabel Tibby	1879	drl	124	2	--	--	--	785	23	--	--	--	--	Sand & gravel at 124	Congram
2	Dr. S. S. Fuller	+1914	dug	20	--	--	--	--	--	--	--	--	--	--	--	--
2.4a1	Minnie Frederick**	1925	drl	158	2	--	--	--	790	100	--	--	--	--	--	Stiegman
2.4a2	Minnie Frederick**	1943	drl	161	2	2.5	1	.050	790	131	--	--	--	--	Dirty sand & gravel, 131-150; sand, 155-161	Stiegman
2.6a	Raymond Sommer	1926	drl	136	2	--	--	--	780	106	--	--	--	--	Sand at 136	Stiegman
2.8h	Raymond Sommer	--	drl	158	2	--	--	--	788	100±	--	--	--	--	--	--
3.1a	Elmer Bellinger	--	drl	122	2	--	--	--	785	102	--	--	--	--	--	Stiegman
3.3h	Elmer Peterson	--	drl	--	2	--	--	--	781	--	--	--	--	--	--	--
3.5a	Polly White	1911	drl	102	2	--	--	--	790	48	--	--	--	--	Sand at 102	Stiegman
3.8a	Adelle Moffett	--	drl	160	2	--	--	--	785	--	--	--	--	--	--	--
4.7e	C. C. Brocksmith**	1910	drl	154	2	--	--	--	790	104	--	--	--	--	--	Stiegman
4.7f	C. C. Brocksmith	1939	drl	157	2	6	--	--	790	100±	--	--	--	--	Sand & gravel at 157	Stiegman
4.8a	Ethel White	1928	drl	155	2	--	--	--	790	101	--	--	--	--	Sand at 155	Stiegman
5.1a1	Edward Brocksmith	--	dug	23.2	--	--	--	--	792	6	--	--	--	--	--	--
5.1a2	Edward Brocksmith	1909	drl	147	2	--	--	--	792	102	--	4	--	--	--	Stiegman
5.5d	Ford County Nursing Home	1948	drl	165.5	4	--	3	--	779	92	8	16	2.0	--	Sand, 92-105; 115-138; sand & gravel, 140-165.5	--
6.1g1	George Carter	1924	drl	120	2	--	--	--	790	107	--	3	--	--	Sand at 120	Stiegman
6.1g2	George Carter	--	drl	110	2	--	--	--	790	--	--	--	--	--	--	--
6.4a	C. & H. Schrader	--	drl	115	2	--	--	--	781	--	--	--	--	--	--	--
6.7a	Ellen Anderson	1885	drl	125	2	--	--	--	782	100	--	--	--	--	--	--
7.1b1	Paxton (C)**	1875	drl	2673.5	--	--	--	--	794	--	--	--	--	--	--	--
7.1b2	Paxton (C)**	1912	drl	140	8	16	--	--	794	98 100	-- --	-- --	-- --	-- --	-- --	Ebert
7.1b3	Paxton (C)**	1917	drl	140	6	14	--	--	794	--	--	--	--	--	--	Husson
7.1b4(3)	Paxton (C)**	1922	drl	151	8	20	8	.012	794	100 107	-- --	-- --	-- --	-- --	Sand & gravel, 130-151	Stiegman
7.1b5(2)	Paxton (C)**	1923	drl	150	8	16	--	--	794	--	--	--	--	--	--	Johnson
7.1e(4)	Paxton (C)**	1930	drl	150	10	21	10	--	793	110	28	180	6.4	7	Sand, 130-148	Johnson
7.1d1	Paxton (C)	1945	drl	145	--	--	--	--	790	--	--	--	--	--	*Sand, 110-145	Woollen
7.1d2(5)	Paxton (C)	1945	drl	149.7	8	23	8	.040	790	101 106 102	13 -- --	155 -- --	11.9 -- --	1 -- --	Sand & gravel, 109-116, 117-135; sand, 135-149	Woollen
7.3d(6)	Paxton (C)	1950	drl	153	10	21	10	.030-.025-.018	790	102	20.2	200	9.5	4	Sand, 102-157.5	Hayes & Sims
8	Dr. A. Cottingham	+1917	dug	17	--	--	--	--	--	6	--	--	--	--	Sand & gravel at 17	--
8.2a	H. Carlson	1912	drl	98	2	6	--	--	790	91	--	3	--	--	--	Witchcher
8.4e	Guy Kenney**	--	drl	107	2	--	--	--	782	92	--	--	--	--	Sand & gravel at 107	--
8.8a1	Paxton (C)**	+1912	drl	142	6	--	--	--	795	--	--	--	--	--	--	--
8.8a2	Paxton (C)**	+1912	drl	148	5	--	--	--	795	--	--	--	--	--	--	--
8.8a3(1)	Paxton (C)**	+1912	drl	148	8	--	--	--	795	--	--	--	--	--	--	--
8.8c	S. S. Fuller	+1907	dug	25	--	--	--	--	790	--	--	--	--	--	Sand & gravel at 25	--
8.8d	Paxton (C)	1953	drl	403	--	--	--	--	788	--	--	--	--	--	*Dirty sand, 115-120; sand & gravel, 125-151; sand, 200-237; sand & gravel, 240-290, 310-360	Hayes
8.8e	S. S. Fuller	+1908	dug	25	--	--	--	--	785	--	--	--	--	--	--	--
9.4a	Melvin Coulter	1929	drl	158	2	--	--	--	785	120	--	--	--	--	--	Stiegman
9.4h1	John Flannery**	1920	drl	142	2	--	--	--	782	40	--	--	--	--	Sand at 142	Stiegman
9.4h2	John Flannery	1967	drl	141	2	--	--	--	782	--	--	--	--	--	--	Weburg
9.5h	Luther Gustafson	1920	drl	97	2	--	--	--	782	30	--	--	--	--	Sand & gravel at 97	Stiegman
10.3a1	Mrs. L. E. Rust**	--	drl	153	2	--	--	--	784	130	--	--	--	--	--	--
10.3a2	Mrs. L. E. Rust	1966	drl	145	2	--	--	--	784	--	--	--	--	--	--	Beck
10.3h	Elmer Zimmerman	1929	drl	177	2	--	--	--	790	--	--	--	--	--	Sand at 177	Stiegman
10.8a	Julius Rasmus	--	drl	170	2	--	--	--	784	70	--	--	--	--	--	Rardin
10.8h	Loren H. Allen	--	drl	160	2	--	--	--	785	30-40	--	--	--	--	--	--
11.1d	Alvin Knerr	--	drl	126	2	--	--	--	785	90-100	--	--	--	--	--	--
11.1f	Marvin Goold**	1926	drl	120	2	--	--	--	790	110	--	--	--	--	Sand at 120	Stiegman
11.2h	Marvin Goold	1968	drl	130	4	4	4	.015	789	96	3	15	5.0	1.5	Sand & gravel, 97-130	Beck
11.4h	Horace Fredrick	--	drl	134	2	--	--	--	790	100	--	--	--	--	--	Stiegman
12.1c	Russell Larimer	1940	drl	95	2	--	--	--	780	70±	--	--	--	--	--	Weburg
12.1f	Elizabeth Chapin**	1907	drl	102	2	--	--	--	780	--	--	--	--	--	Sand at 102	Rardin
12.3h	Elizabeth Chapin	1924	drl	90	2	--	--	--	780	80	--	--	--	--	Sand at 90	Stiegman
13.1b	Laura E. Adkins	--	drl	80	2	--	--	--	792	60	--	3	--	--	Sand at 80	--
13.6a	J. P. Schrader	--	drl	104	2	--	--	--	789	35	--	--	--	--	--	--
13.8a	William Lee	--	drl	102	2	--	--	--	798	--	--	--	--	--	--	--
13.8h	Guy Gilbert	1914	drl	123	2	--	--	--	789	64	--	--	--	--	Sand at 123	Stiegman

Appendix A (Continued)

Well number	Owner	Well				Screen			Land surface elevation (ft above msl)	Nonpumping water level (ft)	Drawdown (ft)	Pumping rate (gpm)	Observed specific capacity (gpm/ft)	Length of test (hr)	Water-bearing formation and depth (ft)	Driller
		Year constructed	Type	Depth (ft)	Diameter (in)	Length (ft)	Diameter (in)	Slot size (in)								
T23N, R10E (Continued)																
14.1c	Arthur Magnuson	--	drl	106	2	--	--	--	795	92	--	--	--	--	--	Stiegman
14.2h	Ray Hizer	1920	drl	115	2	--	--	--	792	18-20	--	--	--	--	--	Stiegman
14.4h	Delmar Burton**	1908	drl	128	2	--	--	--	789	106	--	--	--	--	--	Stiegman
14.7a	Grace Karr	1922	drl	145	2	--	--	--	800	--	--	--	--	--	--	Stiegman
15.2h	Daniel Kupferschmid	--	drl	--	2	--	--	--	785	--	--	--	--	--	--	--
15.4a	C. D. Maulding	--	drl	100+	2	--	--	--	805	--	--	--	--	--	--	--
16.1a	Donald Cleary	--	drl	159	2	--	--	.050	805	--	--	--	--	--	Sand, 124-159	Beck
16.2h	Charles Coulter	--	drl	145	2	--	--	--	785	125	--	--	--	--	--	Rardin
16.5a	Nellie M. Neal	--	drl	102	2	--	--	--	780	80	--	--	--	--	--	Thompson
17	Dr. S. A. Lundgren	~1909	dug	20	--	--	--	--	--	--	--	--	--	--	--	--
17.8f	Paxton (C)	1945	drl	146	6	12	6	.060	790	30	--	--	--	--	*Sand & gravel, 120-131	Woollen
18.3c	Paxton (C)	1954	drl	375	--	--	--	--	760	--	--	--	--	--	*Dirty sand & gravel, 85-120; sand & gravel, 280-310	Sims
18.4f	Olson Bros.	1941	drl	104	2	--	--	.040	780	--	--	--	--	--	Sand at 104	Stiegman
18.8a1	Richard Leider	--	drl	80	--	--	--	--	758	--	--	--	--	--	--	--
18.8a2	Edward Carlson	1968	drl	118	4	4	4	.015	780	78	5	10	2.0	2	Sand, 88-118	Weburg
18.8g	John O. Schuldt	1924	drl	120	2	--	--	--	790	90	--	--	--	--	Sand at 120	Stiegman
19.1e	Robert Rasmus	1969	drl	120	4	4	4	.015	745	53	5	15	3.0	2	Sand & gravel, 53-65; sand, 65-120	Weburg
19.8f	Pollack Est.	--	drl	83	2	--	--	--	748	76	--	--	--	--	--	Stiegman
19.8g	Milton Schofield	1917	drl	96	2	--	--	--	755	30	--	--	--	--	Sand & gravel at 96	Stiegman
20.1c	Elmer Woodworth	--	drl	85	2	--	--	--	765	--	--	--	--	--	--	Striegman
20.1f	Roger Maulding	--	drl	65	2	--	--	--	760	--	--	--	--	--	--	--
20.8e1	George Bauer	1919	drl	98	2	--	--	--	748	86	--	4	--	--	--	Stiegman
20.8e2	George Bauer	1969	drl	118	4	4	4	.020	748	63	10	15	1.5	2	Sand, 84-86; sand & gravel, 112-118	Weburg
20.8f	George Bauer	--	drl	90	2	--	--	--	752	80	--	4	--	--	Sand at 90	--
21.4h	D. & P. Schaefer	--	drl	110	2	--	--	--	775	98	--	4	--	--	--	Rardin
21.8a	Charles Shaw	--	drl	104	2	--	--	--	760	96	--	--	--	--	Sand & gravel at 104	--
22.2h	Ella Swanson	--	drl	124	2	--	--	--	803	105	--	--	--	--	--	--
22.8a	Cecil Maycraft	1919	drl	134	2	--	--	--	780	112	--	3.5	--	--	Sand & gravel at 134	Stiegman
22.8g	E. M. Canavan	--	drl	116	2	--	--	--	810	86	--	4.5	--	--	--	--
23.4c	W. W. Atkins	--	drl	65	2	--	--	--	792	22	--	--	--	--	Sand & gravel at 65	--
23.5f	H. Peter Larson, Jr.	1921	drl	138	3	--	--	--	803	95	--	--	--	--	--	Stiegman
24.1d	Leo R. Carlson, Sr.	1947	drl	115	2	--	--	--	782	--	--	--	--	--	--	Stiegman
24.4h	Leo R. Carlson, Sr.	--	drl	106	2	--	--	--	789	--	--	--	--	--	--	Stiegman
24.8a	Ray Bowen	--	drl	70	2	--	--	--	750	25	--	--	--	--	Sand & gravel at 70	Stiegman
24.8h	L. P. Lovell, et al	1931	drl	150	2	--	--	--	798	--	--	--	--	--	Sand at 150	Stiegman
26.1c	Mrs. Jessie Mueller	--	drl	120	2	--	--	--	747	18	--	--	--	--	--	--
26.5a	Clark Corbly	1930	drl	68	2	--	--	--	732	43	--	--	--	--	--	--
27.8g	Orville Leischner	1923	drl	123	2	--	--	--	761	96	--	4	--	--	--	Stiegman
28.2h	Clarence Thompson	--	drl	124	2	--	--	--	770	86	--	4	--	--	--	--
28.8d	Bruno B. Glazik	1915	drl	98	2	--	--	--	740	70	--	--	--	--	Sand & gravel at 98	Stiegman
28.8h	Robert Glazik	--	drl	106	2	--	--	--	760	80	--	4	--	--	Sand & gravel at 106	--
29.1b1	L. & A. Carlson	--	drl	96	2	--	--	--	740	--	--	3.5	--	--	--	--
29.1b2	L. & A. Carlson	1966	drl	112	4	--	--	--	740	--	--	--	--	--	--	Beck
29.5c	Leon Foster	--	drl	28	2	--	--	--	731	20	--	--	--	--	--	--
29.6c	Leon Foster	1968	drl	96	4	4	4	.015	730	40	20	25	1.3	2	Sand, 58-63, 80-96	Beck
29.8b	Chuck Condit	--	drl	160	2	--	--	--	731	--	--	--	--	--	--	--
30.1c	Robert Duffin	--	drl	--	2	--	--	--	732	--	--	--	--	--	--	Weburg
30.3h	John Roisland	--	drl	78	2	--	--	--	739	63	--	--	--	--	--	Stiegmen
30.7a1	Albert Quivey	1967	drl	107	6	4	4	.014	740	50	6	16	2.7	2	Sand, 83-90; sand & gravel, 90-107	Weburg
30.7a2	Floyd Birkey	1968	drl	107	4	4	4	.018	740	48	10	15	1.5	2	Dirty sand, 78-98; sand & gravel, 98-107	Weburg
31.1c	Paul Cleary	--	drl	87	2	--	--	--	745	--	--	--	--	--	--	--
31.1h	Eilt Johnson	--	drl	70-80	2	--	--	--	730	--	--	--	--	--	--	--
31.8h	LeHigh Paving Co.	1967	drl	78	2	4	1	.012	741	50	5	7	1.4	2	Sand, 66-78	Beck
32	E. E. Hester	1879	dug	78	--	--	--	--	--	--	--	--	--	--	Sand & gravel at 78	--
32	Dr. S. A. Fuller	~1907	dug	6	--	--	--	--	--	1.5	--	--	--	--	Sand at 6	--
32.1g	J. Johnson, Heirs	1921	drl	104	2	--	--	--	730	84	--	4	--	--	Sand & gravel at 104	Stiegman
32.6h	Sadie Ingold	--	drl	100	2	--	--	--	735	--	--	--	--	--	--	--
32.8h	Bloomquist Est.	--	drl	--	2	--	--	--	730	--	--	--	--	--	--	--
33.2h	Willard Unzicker	1943	drl	98	2	--	--	--	745	80	--	3.5	--	--	Sand & gravel at 98	Stiegman
33.3b	Horner, Heirs	--	drl	80±	2	--	--	--	725	--	--	--	--	--	--	--
33.8a	Arlin Roy	--	drl	98	2	--	--	--	743	68	--	4.5	--	--	Sand & gravel at 98	--
33.8e	H. C. & R. J. Clark	1914	drl	98	2	--	--	--	740	81	--	--	--	--	Sand & gravel at 98	Stiegman
34.3a	J. & E. Speck	--	drl	81	--	--	--	--	745	--	--	--	--	--	--	--
34.8b	Jerome O'Donnell	--	drl	78	2	--	--	--	732	15	--	--	--	--	Sand & gravel at 76	--
34.8e	Rodeen & Wasslund	~1915	drl	70	2	--	--	--	732	55	--	4.5	--	--	--	--
35.2f	Martin Lewis	--	drl	70	2	--	--	--	730	7.1	--	--	--	--	--	--
35.3f	Ill. Wesleyan Univ.	1896	drl	40	2	--	--	--	730	20	--	--	--	--	Sand & gravel at 40	--
35.5a	Mrs. W. B. Collins	--	drl	90±	--	--	--	--	741	--	--	--	--	--	--	--
35.6a	Allie Collins & Martin Hanson, Tr.	--	drl	48	2	--	--	--	740	28	--	--	--	--	Sand at 48	--
36.3a	Welby Adkins	1949	drl	40	2	--	--	--	720	18	--	--	--	--	--	Stiegman
T23N, R11E																
1.1a	Alvin Roemer	--	drl	65	2	--	--	--	783	40	--	--	--	--	--	--
12.5c	C. Johnson, Heirs	1908	drl	110	2	--	--	--	780	--	--	--	--	--	--	Rardin
13.5c	Allie Collins	1930	drl	120	2	--	--	--	789	50	--	--	--	--	Rock, 112-120	Bouyer
13.5e	Chester Sommer	--	drl	116	2	--	--	--	783	90	--	--	--	--	--	--
24.1h	Selke Farm Account	1932	drl	128	2	--	--	--	785	93	--	--	--	--	--	Stiegman
24.5a	Joseph Brammer & Mary Harper	--	drl	92	2	--	--	--	770	80	--	4	--	--	Sand at 92	--
25.3h	George Mabry	--	drl	94	2	--	--	--	775	88	--	--	--	--	--	--
25.5b	Mary Sandquist	--	drl	73	2	--	--	--	764	65	--	--	--	--	--	Stiegman
36.1b	E. E. Evans	--	drl	60	2	--	--	--	725	--	--	--	--	--	--	--
36.1d	James Goodwin	--	drl	52	2	--	--	--	738	37	--	--	--	--	--	Thompson
T23N, R14W																
4.1e	Newell Johnson	1912	drl	86	3	--	--	--	730	71	--	--	--	--	Sand & gravel at 86	Stiegman
4.3a	O. & R. Blackford	1908	drl	72	2	--	--	--	722	60	--	--	--	--	Sand & gravel at 72	Stiegman
4.8f	Delbert Nelson	--	drl	--	2	--	--	--	732	--	--	--	--	--	--	--
5.1b1	Fred Wessels**	--	drl	95	2	--	--	--	742	40	--	--	--	--	Sand & gravel at 95	--
5.1b2	Fred Wessels	1958	drl	994	6	--	--	--	742	110	--	6	--	--	--	Bolliger
5.4h	Ida Tribby	--	drl	146	2	--	--	--	730	--	--	--	--	--	--	Stiegman
5.7a	R. Hutchison, Agt.	1917	drl	104	3	--	--	--	751	92	--	--	--	--	Sand & gravel at 104	Stiegman

Well number	Owner	Well				Screen			Land surface elevation (ft above msl)	Non-pumping water level (ft)	Draw-down (ft)	Pumping rate (gpm)	Observed specific capacity (gpm/ft)	Length of test (hr)	Water-bearing formation and depth (ft)	Driller
		Year con-structed	Type	Depth (ft)	Diam-eter (in)	Length (ft)	Diam-eter (in)	Slot size (in)								
T23N, R14W (Continued)																
6.5h	N. Sanders**	1924	drl	106	2	--	--	--	750	38	--	--	--	--	Sand at 106	Harrington
6.8b	A. M. Gulick Est.	1918	drl	112	2	--	--	--	790	95	--	4	--	--	Sand at 112	Stiegman
6.8h1	Mildred Kennaw	--	drl	80	2	--	--	--	749	--	--	--	--	--	--	--
6.8h2	Mildred Kennaw	1874	dug	32.4	36	--	--	--	749	9.8	--	--	--	--	Sand at 32.4	--
7.1b	W. T. Morrison Est.	1900	drl	102	2	--	--	--	770	--	--	--	--	--	Rock	Swartz
7.2d	Walter Congram	--	drl	106	2	--	--	--	765	60	--	--	--	--	Sand & gravel at 106	Rardin
7.2e	L. Shelenburger	1883	drl	87.5	2	--	--	--	770	55	--	--	--	--	Sand at 87.5	Shelenburger
7.5h	Fred Menzke	1958	drl	--	2	--	--	--	770	--	--	--	--	--	--	--
7.6a	J. A. Johnson Est.	--	drl	106	2	--	--	--	773	--	--	--	--	--	--	Rardin
8.2a	Doris V. Johnson	1921	drl	115	2	--	--	--	750	50	--	--	--	--	Sand & gravel at 115	--
8.3h	Lawrence Ulrich	--	drl	98	2	--	--	--	750	--	--	--	--	--	--	Weburg
8.8h	R. R. Hutchison	1917	drl	90	3	--	--	--	750	75	--	--	--	--	Sand & gravel at 90	Stiegman
9.3e1	Mary J. Peterson**	1894	bor	21	10	--	--	--	743	14	4	--	--	--	Sand & gravel at 21	McCormick
9.3e2	Mary J. Peterson**	1894	bor	80	10	--	--	--	743	40	5	--	--	2	Sand & gravel at 80	McCormick
9.6a1	Ed Brocksmith	--	drl	124	2	--	--	--	740	40	--	--	--	--	--	--
9.6a2	Ed Brocksmith	--	drl	150	--	--	--	--	740	--	--	--	--	--	--	Beck
9.8g	Elmer Klef	1944	drl	135	2	--	--	--	742	70-80	--	--	--	--	Sand at 135	Sharp & Stiegman
16.1e	Hugh Barr	--	drl	80	2	--	--	--	751	50	--	--	--	--	Sand at 80	--
16.3e	Charles Rydell Est.	1915	drl	96	3	--	--	--	753	76	--	--	--	--	Sand & gravel at 96	Stiegman
16.4g	Lois Weaver	1913	drl	176	3	--	--	--	745	50	--	--	--	--	Sand at 176	Swartz
16.8a	K. Gordon Murrey	--	drl	80	2	--	--	--	761	72	--	--	--	--	--	--
17.8d	Charles H. Kenner	1918	drl	106	2	--	--	--	780	90	--	3	--	--	Sand at 106	Stiegman
17.8h	L. Kirkpatrick Est.	1890	drl	104	2	--	--	--	767	40	--	--	--	--	Sand at 104	Rardin
18.1d	Alberta Berquist	--	drl	90	2	--	--	--	780	82	--	--	--	--	--	--
18.7a	Edward W. Carlson	--	drl	120+	4	--	--	--	780	80-90	--	--	--	--	--	--
19.2h1	W. Rinkenberger**	--	dug	40	48	--	--	--	763	15	--	--	--	--	--	--
19.2h2	W. Rinkenberger	--	drl	86	2	--	--	--	763	70	--	--	--	--	--	--
19.4e	Pool & Taylor	--	drl	80	2	--	--	--	770	60-70	--	--	--	--	--	--
20.2b	Gordon Parson	1952	drl	75	2	--	--	--	760	60	--	--	--	--	--	Sharp & Weburg
20.8a	Andrew Riggleman	1909	drl	90	2	--	--	--	760	50	--	--	--	--	Sand at 90	Rardin
21.2g	Dr. W. L. Hamm	1919	drl	111	4	--	--	--	760	50	--	--	--	--	Sand at 111	Stiegman
21.6f	R. & H. McCracken	1931	drl	123	2	--	--	--	762	60	--	--	--	--	Sand at 123	Stiegman
28.1h	Stacy Fairchild	1911	drl	90	2	--	--	--	743	45	--	--	--	--	Sand & gravel at 90	--
28.5a	Robert Johnson	--	drl	28	2	--	--	--	745	10	--	--	--	--	Sand at 28	--
28.8e	C. J. Bevington	--	drl	86	2	--	--	--	760	--	--	--	--	--	--	Stiegman
29.6d	Nell Orr	1941	drl	--	2	--	--	--	770	--	--	--	--	--	--	Stiegman
29.8f	Nell Orr	--	drl	122	2	--	--	--	780	107	--	--	--	--	--	--
29.8g	Marvin Lewis	1940	drl	110	2	6	--	--	780	50	--	--	--	--	Sand at 110	Stiegman
29.8h	Marvin Lewis**	1903	drl	106	2	--	--	--	775	50	--	--	--	--	Sand & gravel at 106	Droll
30.1a	David Patton	--	drl	112	2	--	--	--	778	98	--	--	--	--	Sand & gravel at 112	Stiegman
30.1e	James Flagg	--	drl	112	2	--	--	--	782	70	--	4	--	--	Sand at 112	--
31.4c	Joseph Van Ham	--	drl	88	2	--	--	--	750	73	--	--	--	--	Sand & gravel at 88	Stiegman
31.8e	William Hood	1928	drl	74	2	--	--	--	730	49	--	--	--	--	Sand & gravel at 74	Stiegman
32.1a	Ruth Cade	--	drl	90	2	--	--	--	750	80	--	--	--	--	--	Bohur
32.1f	Margarette Corbly	--	drl	90	2	--	--	--	773	40	--	--	--	--	Sand & gravel at 90	Stiegman
32.8h	Phyliss Althoff	1912	drl	104	2	--	--	--	784	89	--	--	--	--	Sand & gravel at 104	Stiegman
33.4h	Frances Wilson	--	drl	60	2	--	--	--	745	16	--	4	--	--	Sand at 60	--
33.8e	Eugene Clark	1934	drl	90	2	--	--	--	770	50	--	--	--	--	--	--
T24N, R7E																
1.1b	Hiram Sibley	1957	drl	279	10-8	--	--	--	842	80	--	--	--	--	Sand & gravel, 110-220; sand, 225-240, 250-260; sand & gravel, 260-279	Zink
1.4h	Louise Smith Corp.	1895	drl	110	2	--	2	--	850	45-50	--	--	--	--	Sand at 110	Swanson
1.7a1	Urling S. Iselin	1899	drl	120	2	--	2	--	850	85	--	--	--	--	Sand at 120	Swanson
1.7a2	Urling S. Iselin	1963	drl	283	4	4	4	.008-.012	850	149	42	15	.4	--	Dirty sand, 149-275; sand, 275-283	Swanson
1.7h1	Louise Smith Corp.	1904	drl	100	2	--	2	--	845	45	--	--	--	--	Sand at 100	Swanson
1.7h2	Louise Smith Corp.	1957	drl	--	4	--	4	--	845	--	--	--	--	--	--	Swanson
2.3h	1st National Bank, Champaign, Tr.**	1921	drl	100	2	--	--	--	830	45	--	--	--	--	Sand at 100	Swanson
2.8g	1st National Bank, Champaign, Tr.	--	drl	100	2	--	2	--	810	50	--	--	--	--	Sand at 100	Swanson
3.1d	Anne Sibley	1915	drl	100	2	--	2	--	820	70	--	--	--	--	Sand at 100	Swanson
3.8a	Anne Sibley	1890	drl	104	2	--	2	--	820	55	--	--	--	--	Sand at 104	Swanson
4.1g	Oscar A. Yentes	--	drl	18	4	--	4	--	785	5	--	--	--	--	Sand at 18	--
4.3a1	Susanne Stroh Est.	1894	dug	35	48	--	--	--	802	29	--	--	--	--	Sand at 35	--
4.3a2	Susanne Stroh Est.	--	drl	35-40	2	4	2	--	802	--	--	--	--	--	Sand at 40	--
4.7a1	F. G. Bielfeldt**	1893	drl	35	2	--	2	--	792	12	--	--	--	--	Sand at 35	Swanson
4.7a2	F. G. Bielfeldt	1948	drl	31.5	4	--	--	--	792	13	5	14	2.8	3	Dirty sand & gravel, 20-29; sand & gravel, 29-31.5	Swanson
4.7a3	F. G. Bielfeldt	1964	drl	52	6	--	6	--	792	--	--	--	--	--	Sand at 52	Taylor
5.5e	Louise Smith Corp.	1905	drl	18	2	--	2	--	775	5	--	--	--	--	Sand at 18	Swanson
6.1b	C. Morris	1910	drl	195	4	--	4	--	780	15	--	--	--	--	Sand at 195	Swanson
6.1f1	James S. Watson, Jr.	1910	drl	16	2	3	2	--	772	5	--	--	--	--	Sand, 15-16	Swanson
6.1f2	James S. Watson, Jr.	1962	drl	140	4	--	4	slotted pipe	772	--	--	--	--	--	Sand at 140	Taylor
7.2a	Don & Gary Busing	--	drl	90	2	--	2	--	788	15	--	--	--	--	Sand at 90	--
7.4h	Walton & Bates**	1930	drl	192	2	--	--	--	772	10	--	--	--	--	Sand at 192	Swanson
7.8a	Louis Stroh	1916	drl	29	2	--	2	--	780	2	--	--	--	--	Sand at 29	Anderson
8.1c	Esther Vehrs	1951	drl	80	4	--	--	.014	810	40	15	15	1.0	--	Sand, 40-45, 76-80	Swanson
8.1f	Bertha Davidson	1894	drl	108	2	--	2	--	792	25	--	--	--	--	Sand at 108	--
8.7h1	Claribel Fretty	--	drl	19	4	--	4	--	780	17.6	--	--	--	--	Sand at 19	--
8.7h2	Claribel Fretty**	1931	drl	42	4	4	4	--	780	10	--	--	--	--	Sand at 42	Kaffer
9.5h	Harold Shappelman	1895	drl	45	2	--	2	--	791	15	--	--	--	--	Sand at 45	--
9.8c	Norman B. Ashley	1895	drl	90	2	--	2	--	802	20	--	--	--	--	Sand at 90	--
10.1a	M. & E. Munsell	+1900	drl	125	2	--	2	--	833	65	--	--	--	--	Sand at 125	Swanson
10.1h	1st National Bank, Champaign, Tr.	--	drl	150	2	--	2	--	830	65	--	--	--	--	Sand at 150	Swanson
10.5h	Louise Smith Corp.	1950	drl	96.5	4	--	--	.018	820	52	21	18	.9	2	Sand & gravel, 74-94; sand, 94-96.5	Swanson
10.8b	Louise Smith Corp.	1933	drl	103	2	--	--	--	831	55	--	--	--	--	Sand at 103	Swanson
11.1b	Urling S. Iselin	1948	drl	130	4	--	--	--	831	84	10	8	.8	6	Sand, 127-130	Swanson
11.4h	Louise Smith Corp.**	--	drl	138	2	--	--	--	832	60	--	--	--	--	Sand at 138	Swanson
11.8f	Louise Smith Corp.	--	drl	100	2	--	--	--	833	25	--	--	--	--	Sand at 100	Swanson

Well number	Owner	Well: Year constructed	Well: Type	Well: Depth (ft)	Well: Diameter (in)	Screen: Length (ft)	Screen: Diameter (in)	Screen: Slot size (in)	Land surface elevation (ft above msl)	Nonpumping water level (ft)	Drawdown (ft)	Pumping rate (gpm)	Observed specific capacity (gpm/ft)	Length of test (hr)	Water-bearing formation and depth (ft)	Driller
T24N, R7E (Continued)																
11.8h	Louise Smith Corp.**	1957	drl	485	10-8	--	--	--	829	80	--	--	--	--	Sand & gravel, 110-185, 238-294, 300-350; limestone, 358-485	Zink
12	James Watson, Jr.**	~1913	drl	100	--	--	--	--	--	--	--	--	--	--	Sand & gravel at 100	--
12.2h	Hiram Sibley	--	drl	--	4	--	4	--	850	--	--	--	--	--	Sand	--
12.8h	Urling S. Iselin	1957	drl	127	4	8	4	--	840	--	--	--	--	--	Sand at 127	Swanson
13.1b	Edna Ulfers	--	drl	--	4	--	--	--	850	--	--	--	--	--	Sand	--
13.1f	Milton R. Bell	1941	drl	147	4	4	3.75	.025	850	66	--	--	--	--	Sand, 144-147	Swanson
13.8a	Shaner Implement Co., Inc.**	1904	drl	100	2	4	--	--	815	25	--	--	--	--	Sand at 100	--
14.1g	Irene Fickwiller	1907	drl	115	2	4	2	--	831	60	--	--	--	--	Sand at 115	Swanson
14.2d	Ralph Borchers	--	drl	120	--	--	--	--	815	--	--	--	--	--	--	--
14.8g	H. & L. Borchers	1916	drl	115	2	--	2	--	831	50	--	--	--	--	Sand at 115	Swanson
15.1c	Frank Traeger	--	drl	115	2	--	2	--	825	40	--	--	--	--	Sand at 115	Swanson
15.5a	Dewey Smith	--	drl	90	2	--	--	--	810	30	--	--	--	--	Sand at 90	--
15.8g	Herbert Brucker	1914	drl	102	2	--	2	--	818	25	--	--	--	--	Sand at 102	Anderson
16.1d	Francis Ashley	1897	drl	90	2	--	2	--	812	30	--	--	--	--	Sand at 90	Wilson
16.6d	Cora E. Glascock	--	drl	--	4	--	--	--	851	--	--	--	--	--	--	--
17.1b	Clyde Ashley	1892	drl	90	2	--	--	--	850	65	--	--	--	--	Sand at 90	Wilson
17.8d	Laura S. Ashley	1918	drl	88	2	4	2	--	822	35	--	--	--	--	Sand at 88	Swanson
18.1f	Mae Clutts	1913	drl	106	2	4	2	--	820	20	--	--	--	--	Sand at 106	Swanson
18.8c1	Eunice Gaylord	--	drl	--	6	--	--	--	792	--	--	--	--	--	--	--
18.8c2	Eunice Gaylord**	1918	drl	60	2	--	2	--	792	25	--	--	--	--	Sand at 60	Kaffer
18.8h	Leo Miller	1926	drl	30	4	--	--	--	782	5	--	--	--	--	Sand at 30	Kerber
19.1a	Mrs. John Erp	1916	drl	110	2	4	2	--	845	30	--	--	--	--	Sand at 110	--
19.8d	Susanne Stroh**	1914	drl	110	2	4	2	--	830	40	--	--	--	--	Sand at 110	Anderson
20.1b1	G. Champion, Tr.	--	drl	110	4	--	--	--	812	--	--	--	--	--	Sand at 110	Taylor
20.1b2	G. Champion, Tr.**	--	drl	64	2	4	--	--	812	15	--	--	--	--	Sand at 64	--
20.3g1	G. Champion, Tr.	--	drl	128	2	--	2	--	840	65	--	--	--	--	Sand at 128	--
20.3g2	G. Champion, Tr.	1960	drl	118	4	3	2	--	840	--	--	--	--	--	Sand at 118	Taylor
21.1b	Theodore Auterman	1894	dug	68	48	--	--	--	785	40	--	5	--	--	Sand at 68	--
21.1f	Beulah Locher	--	drl	115	2	--	2	--	800	57	--	--	--	--	Sand at 115	--
21.6e1	H. J. Saathoff**	1941	drl	188	4	--	--	--	812	57	13	--	--	30	Sand, 186-189	Swanson
21.6e2	H. J. Saathoff	1950	drl	229	4	--	--	--	812	--	--	--	--	--	Sand at 229	--
22.1d1	Kemp Farms, Inc.	1884	drl	110	2	--	2	--	805	30	--	--	--	--	Sand at 110	--
22.1d2	Kemp Farms, Inc.	1951	drl	123.5	6	5	5.75	.014	805	48	37	10	.3	4.5	Sand & gravel, 89-92; sand, 118-123.5	Swanson
22.8h	Kemp Farms, Inc.**	1911	drl	134	2	--	2	--	810	20-30	--	--	--	--	Sand at 134	--
23.2a	Paul Elkin	1908	drl	95	2	--	--	--	840	50	--	--	--	--	Sand at 95	Swanson
23.7e	George Stolz	1920	drl	101	2	4	2	--	810	40-45	--	--	--	--	Sand at 101	Swanson
23.8g	James Longmire	1910	drl	45	2	--	2	--	800	20	--	--	--	--	Sand at 45	Swanson
24.1c	William W. Woolsey	1918	drl	150	4	--	4	--	812	80	--	--	--	--	Sand at 150	Kaffer
24.8c	Catherine Woolsey	1890	drl	100+	2	--	2	--	820	30	--	--	--	--	Sand at 100+	--
25.7e	Ernest L. Beecher	1926	drl	120	2	--	2	--	810	65	--	--	--	--	Sand at 120	Swanson
26.1a1	Fred Gilmore	1908	drl	90	2	--	2	--	787	45	--	--	--	--	Sand at 90	Swanson
26.1a2	Fred Gilmore	1952	drl	83	4	5	3.75	.012	787	35	14	15	1.1	7.5	Sand, 80-83	Swanson
26.1h	E. B. Radliffe**	1899	drl	100	2	--	2	--	828	60	--	--	--	--	Sand at 100	--
27.5a	Arthur Gilmore	1940	drl	59	4	4	4	.020	780	40	--	--	--	--	Sand at 59	Swanson
27.5b1	Arthur Gilmore	1884	drl	60	2	--	2	--	795	30	--	--	--	--	Sand at 60	Swanson
27.5b2	Arthur Gilmore	1948	drl	65.5	4	--	--	.014	795	22	20	15	.8	4	Sand, 58-65.5	Swanson
27.7a	Arthur Gilmore	1942	drl	77	4	3.5	4	.025	790	35	--	--	--	--	Sand, 74-77	Swanson
28.1b1	Emma J. Shirley	1929	drl	89	2	4	2	--	802	35	--	--	--	--	Sand at 89	Riblet
28.1b2	Emma J. Shirley	1953	drl	86	4	5	3.75	.020	802	46	--	--	--	--	Sand & gravel, 74-86	Swanson
28.8a	1st National Bank, Gibson City	1900	drl	110	2	--	2	--	825	70	--	--	--	--	Sand at 110	--
28.8f1	L. & J. Tompkins	1884	drl	95	2	3	2	--	815	20-40	--	--	--	--	Sand at 95	--
28.8f2	L. & J. Tompkins	1965	drl	95.5	4	6.5	3.75	.016	815	55	--	16	--	--	Sand, 89-95.5	Swanson
29.3h1	Grace Anderson	--	drl	--	2	--	2	--	820	--	--	--	--	--	Sand	--
29.3h2	Grace Anderson**	--	dug	32	48	--	--	--	820	6-10	--	7	--	--	Sand at 32	--
29.8f	Gesina Nelson	1904	drl	96	2	4	2	--	832	20	--	--	--	--	Sand at 96	Swanson
30.6a	Mary Voelker	--	drl	165	2	--	2	--	830	55	--	--	--	--	Sand at 165	--
31.2g	Harry Diehl	1952	drl	114.5	4	5	3.75	.018	810	63	3	15	5.0	4	Sand, 96-114.5	Swanson
31.2h	Harry Diehl	--	drl	97	2	--	--	--	820	40	--	--	--	--	Sand at 97	--
32.2c1	Harry Diehl	1924	drl	85	2	--	--	--	810	50	--	--	--	--	Sand at 85	Swanson
32.2c2	Harry Diehl	1957	drl	--	6	--	6	--	810	--	--	--	--	--	Sand	Swanson
32.2g	J. & R. L. Fox	--	drl	86	2	--	--	--	830	40-45	--	--	--	--	Sand at 86	Anderson
33.1h	Ray Ropp	--	drl	85	2	--	--	--	794	20	--	--	--	--	Sand at 85	Swanson
33.7h	Ray Ropp	1949	drl	93	4	4	4	.014	820	65	--	6.5	--	3	Sand, 88-93	Swanson
34.5h	J. S. Foster Est.	--	drl	70	2	--	--	--	770	40-45	--	--	--	--	Sand at 70	--
35.1f1	Emma Shirley**	1898	drl	90	2	--	--	--	782	50	--	--	--	--	Sand at 67	Swanson
35.1f2	Emma Shirley	1947	drl	75.5	4	--	3.75	.020	782	37	11	15	1.4	6	Sand, 70-76	Swanson
35.8a1	Marlen K. Mills	1900	dug	40	42	--	--	--	760	28	--	--	--	--	Sand at 40	--
35.8a2	Marlen K. Mills	1945	drl	47	4	4	3.75	.025	760	21	10	20	2.0	5	Sand & gravel, 42-47	Swanson
36.4h	Emma Shirley	1913	drl	67	2	--	--	--	800	30	--	--	--	--	Sand at 67	Swanson
36.8b1	W. S. Swearingen	1918	drl	80	2	--	--	--	800	40	--	--	--	--	Sand at 80	Riblet
36.8b2	W. S. Swearingen	1949	drl	85	4	4.9	3.75	.018	800	18	6	20	3.3	3	Sand, 19-21, 50-52; sand & gravel, 77-85	Swanson
36.8h	Emma Shirley**	1905	drl	54	2	--	--	--	785	25	--	--	--	--	Sand at 54	Riblet
T24N, R8E																
1(1)	Melvin (V)**	1908	drl	242	--	--	--	--	--	--	--	--	--	--	--	--
1.6b	Ronald Buchholz	1908	drl	125	3	--	--	--	810	80-85	--	--	--	--	Sand at 125	--
1.7e1(2)	Melvin (V)**	1913	drl	245	8	19.5	--	--	810	--	--	--	--	--	--	--
1.7e2(3)	Melvin (V)	1923	drl	265	8-6	25	6	.010	810	156	40	60	1.5	5	--	Johnson
1.7e3(4)	Melvin (V)	1954	drl	260	8	20	8	.012	810	118	13	153	11.8	4.5	Sand, 230-260	Bolliger
2.1b1	F. Dixon Est.**	--	drl	110	2	--	--	--	805	90	--	--	--	--	Sand at 110	Gimble
2.1b2	F. Dixon Est.	1953	drl	145	2.5	--	--	--	805	--	--	--	--	--	--	Stiegman
3.1a1	L. & E. DeWall	1894	drl	84	2	--	--	--	772	25-30	--	--	--	--	Sand at 84	Riblet
3.1a2	L. & E. DeWall	1965	drl	92	4	--	3.75	--	772	--	--	--	--	--	Sand, 50-52, 82-92	Swanson
3.1h	S. & M. Siems	--	drl	60	2	--	--	--	759	25	--	--	--	--	Sand at 60	Gimble
4.1a	George Arends	1963	drl	58	4	4	4	.015	760	25	--	25	--	--	--	Stiegman
4.1b	George Arends	1911	drl	75	3	--	--	--	762	35	--	--	--	--	Sand at 75	--
4.4h	Pauline Lippincoff	1948	drl	63	4	--	--	.018	765	15	5	15	3.0	4.5	Sand & gravel, 55-63	Swanson
4.5a	A. B. Arends	1915	drl	80	2	--	--	--	771	30	--	--	--	--	Sand at 80	Gimble
4.8f	A. B. Arends	1894	drl	65	2	--	--	--	772	30	--	--	--	--	Sand at 65	--
5.1a	Walt Arends	1953	drl	85	4	5	3.75	.014	780	35	7	20	2.9	5	Sand, 77-85	Swanson
5.3h	Gilbert Arends	--	drl	55	2	--	--	--	781	30	--	--	--	--	Sand at 55	Gimble
5.8a	Mary Brucker	1946	drl	94	4	4	3.75	.025	808	50	5.5	20	3.6	15	Sand, 61-63, 85-94	Swanson
6.2h1	Weldon Conger	--	drl	85	2	--	--	--	812	45	--	--	--	--	Sand at 85	--
6.2h2	Weldon Conger	1969	drl	107	4	4	4	.012	812	60	18	14	.8	1.5	Dirty sand & gravel, 90-102; sand & gravel, 102-107	Stiegman

Appendix A (Continued)

Well number	Owner	Well: Year constructed	Well: Type	Well: Depth (*ft*)	Well: Diameter (*in*)	Screen: Length (*ft*)	Screen: Diameter (*in*)	Screen: Slot size (*in*)	Land surface elevation (*ft above msl*)	Nonpumping water level (*ft*)	Drawdown (*ft*)	Pumping rate (*gpm*)	Observed specific capacity (*gpm/ft*)	Length of test (*hr*)	Water-bearing formation and depth (*ft*)	Driller
T24N, R8E (Continued)																
6.4a	Louise Smith Corp.	--	drl	115	2	--	--	--	820	55	--	--	--	--	Sand at 115	--
7.1h	Louise Smith Corp.	--	drl	90	2	--	--	--	810	50	--	--	--	--	Sand at 90	Swanson
7.8g1	Louise Smith Corp.	1929	drl	134	3	--	--	--	842	65	--	--	--	--	Sand at 134	Swanson
7.8g2	Louise Smith Corp.	1946	drl	125	4	--	--	--	842	--	--	--	--	--	Sand, 80-85, 100-105; sand & gravel, 120-125	Swanson & Larson
8.1d	R. E. & D. J. Ulfers	--	drl	85	2	--	--	--	780	35	--	--	--	--	Sand at 85	--
8.7h	H. & L. Helmig	1943	drl	95	4	4.5	3.75	.025	795	55	--	--	--	--	Sand, 85-89, 91-95	Swanson
9.1a	Grace Bubon	--	drl	80	2	--	--	--	760	20	--	--	--	--	Sand at 80	Gimble
9.1d	A. T. Arends	1946	drl	105	--	--	--	--	760	--	--	--	--	--	*Sand & gravel, 80-105	Larson's Swanson
10.1a	Ronald Buchholz	1963	drl	74	4	4	--	.014	758	29	.5	10	20.0	3	Sand, 49-52, 69-74	Swanson
10.1f	Fulton & Frost	1931	drl	80	2	--	--	--	772	35-40	--	--	--	--	Sand & gravel at 80	Roberts
10.1b	L. & E. DeWall	1965	drl	92	4	--	3.75	--	768	--	--	40	--	--	Sand, 50-52, 82-92	Swanson
10.6a	Daniel Arends	1899	drl	60	2	--	--	--	755	20	--	--	--	--	Sand at 60	--
10.8f	Harry Strelluf	--	drl	60	2	--	--	--	760	25	--	--	--	--	Sand at 60	Gimble
11.1d	Edith Benson	1899	drl	105	2	--	--	--	791	75	--	--	--	--	Sand at 105	Roberts
11.3h	Clarence Brinkman	1904	drl	100	2	--	--	--	790	40	--	--	--	--	Sand at 100	--
11.7h	Fred G. Arends	1909	drl	86	2	--	--	--	780	30	--	--	--	--	Sand at 86	Gimble
12.1c	Emerson Busick	1884	drl	110	2	--	--	--	800	70	--	--	--	--	Sand at 110	--
12.5a	Mrs. C. Spellmeyer	--	drl	120	2	--	--	--	801	80	--	--	--	--	Sand at 120	Gimble
12.7h1	John W. Pool	--	drl	128	2	--	--	--	800	108	--	--	--	--	Sand at 128	Gimble
12.7h2	John W. Pool	1966	drl	112	4	4	4	.012	800	80	--	20-25	--	--	Sand & gravel at 112	Stiegman
13.1g1	Roy W. Otto**	--	drl	125	--	--	--	--	790	--	--	--	--	--	--	--
13.1g2	Roy W. Otto	1922	drl	117	2	--	--	--	790	87	--	--	--	--	Sand at 117	Roberts
13.1g3	Roy W. Otto	1960	drl	112	4	4	4	.010	790	75	--	20	--	--	--	Stiegman
13.4a	C. J. Kingler, Tr.	1908	drl	80	2	--	--	--	762	60	--	--	--	--	Sand at 80	Roberts
13.5a	Helen Otto	1943	drl	90	2	4	1.25	.015	762	45	--	--	--	--	Sand, 87.5-90	Swanson
14.2h	Earl Thackery	1916	drl	102	2	--	--	--	775	72	--	--	--	--	Sand at 102	Gimble
14.7h	Bond Farm**	1918	drl	65	1	--	--	--	762	45	--	--	--	--	Sand at 65	Phillips
15.1c	R. & L. Defries	--	drl	68	2	--	--	--	750	20	--	--	--	--	Sand at 68	Bond
15.7a	Ida Bond	1896	drl	71	2	--	--	--	754	19	--	--	--	--	Sand at 71	Bond
16.1c	Peach Orchard School	1922	drl	163	2	--	--	--	760	25	--	--	--	--	Sand at 163	Gimble
16.8h1	Peach Orchard School	--	drl	92	2	--	--	--	780	40	--	--	--	--	Sand at 92	Bond
16.8h2	Peach Orchard School	1959	drl	120	2	--	1.25	--	780	50	--	10	--	--	--	Stiegman
17.6a	Mrs. A. W. Johnson	1893	drl	83	2	--	--	--	800	35-40	--	--	--	--	Sand at 83	Gimble
17.8h	E. B. Radliff	1925	drl	90	2	--	--	--	802	55	--	--	--	--	Sand at 90	--
18.1a	R. & H. Miller	1927	drl	110	2	--	--	--	812	70	--	--	--	--	Sand at 110	Gimble
18.2e	H. Fitzpatrick	1926	drl	135	2	--	--	--	825	105	--	--	--	--	Sand at 135	Gimble
18.8e	Louise Walters	--	drl	135	2	--	--	--	845	65-70	--	--	--	--	Sand at 135	--
19.1c1	C. A. Hedlund**	1928	drl	125	2	--	--	--	820	105	--	--	--	--	Sand at 125	Gimble
19.1c2	C. A. Hedlund	1953	drl	132	4	6	3.75	.016	820	87	13	10	.8	5.5	Sand, 119-132	Swanson
19.2b	C. A. Hedlund	1953	drl	132	--	--	--	--	830	--	--	--	--	-	*Sand, 85-90, 120-132	Swanson
19.2g	Celia Anderson**	1890	drl	110	2	--	--	--	824	30	--	--	--	--	Sand at 110	--
20.1h	Ralph Duerfinger	1896	drl	80	2	--	--	--	782	25-30	--	--	--	--	Sand at 80	Gimble
21.1g	Lula Cothern	1922	drl	62	3	--	--	--	756	20-25	--	--	-	--	--	Stiegman
21.3g	Harry Hall	1941	drl	70.5	4	--	--	--	763	35	--	6.6	--	8	Sand, 69-70.5	Swanson
21.7a	G. & E. Duerinqer	1884	drl	80	2	--	--	--	780	40	--	--	--	--	--	Gimble
22.3h	Helen Freehill**	--	drl	70	2	--	--	--	750	35	--	--	--	--	Sand at 70	--
22.7f	Joos Est.**	--	drl	81	4	--	--	--	755	--	--	--	--	--	Sand & gravel, 76-81	Swanson
22.8a	Joos Est.**	--	drl	75	2	--	--	--	760	8	--	--	--	--	Sand at 75	--
23.1h	Mabel Spellmeyer	1894	drl	65	2	--	--	--	754	20-25	--	--	--	--	Sand at 65	--
23.7h	Freehill & Maloney	1900	drl	65	2	--	--	--	751	35	--	--	--	--	Sand at 65	Gimble
24.8c1	Hanna Shilts**	1931	drl	190	4	--	--	--	745	20-25	--	--	--	--	Sand at 190	Roberts
24.8c2	Hanna Shilts	1963	drl	197	3	--	1.25	.012	745	60	--	15	--	--	--	Stiegman
25.1d1	Letitia Bromwell**	1919	drl	190	3	--	--	--	750	20-25	--	--	--	--	Sand at 190	Stiegman
25.1d2	Letitia Bromwell	1965	drl	219	2	--	--	--	750	--	--	--	--	--	--	Weburg
26.3h	Charles L. Sharp	1918	drl	200	4	--	--	--	745	20	--	--	--	--	Sand at 200	Roberts
26.8h	John Benson**	1930	drl	90	2.5	--	--	--	751	20	--	--	--	--	Sand at 90	Stiegman
27.1e	S. E. Cameron	1904	drl	80	2	--	--	--	750	20	--	--	--	--	Sand at 80	Gimble
27.8h	Raleigh Underwood	1894	drl	70	2	--	--	--	760	25	--	--	--	--	Sand at 70	--
28.1b	Emma Yentes	--	drl	76	2	--	--	--	762	40	--	--	--	--	Sand at 76	--
28.3h	R. & D. Ulfers	1962	drl	260	3	--	--	--	770	--	--	--	--	--	Sand at 156 & at 260	Swanson
28.8c	Joos Est.	1926	drl	95	2	--	--	--	781	60	--	--	--	--	Sand at 95	Riblet
29	G. H. Schuttee	1950	drl	210	4	5.4	3.75	.010	--	65	20	15	.8	5	Sand & gravel, 75-79; sand, 198-210	Swanson
29	Charles Schuttee	1952	drl	112	4	5	3.75	.025	--	62	--	17	--	5.5	Sand & gravel, 88-90; sand, 105-112	Swanson
29	W. S. Brown	1965	drl	105	4	6.5	3.75	.016	--	65	--	16	--	--	Sand, 80-83, 101-105	Swanson
29.1d	Cliff Augsberger	1894	drl	100	2	--	--	--	772	36-40	--	--	--	--	Sand at 100	--
29.5a	Kathleen McDougal	1930	drl	98	3	--	--	--	795	40	--	--	--	--	Sand at 98	Swanson
29.7e1	H. W. Underwood	1943	drl	107	4	4.5	3.75	.025	805	60	--	--	--	--	Sand & gravel, 86-88, 105-107	Swanson
29.7e2	Guthrie Elevator	1962	drl	90	2	--	1	.012	800	70	--	12	--	--	--	Stiegman
29.7e3	Walter Borcher	1962	drl	87	2	--	1.25	--	800	65	--	10	--	--	--	Stiegman
30.1c	Ora Reynolds**	1873	dug & drl	105	48-2	--	--	--	820	75	--	--	--	--	Sand at 105	--
30.7f	Mrs. Ivan Brucker	--	dug & drl	120	36-2	--	--	--	805	70	--	--	--	--	Sand at 120	--
31.1h	Elmer C. Asher**	1921	drl	137	2	--	--	--	812	50	--	--	--	--	Sand at 137	Riblet
31.8b	Charles Steinberg	1894	drl	75	2	--	--	--	793	20-25	--	--	--	--	Sand & gravel at 75	Riblet
31.8h	Elmer C. Asher	1948	drl	122	4	--	--	.014	800	78	14	7.5	.5	3	Sand, 117-122	Swanson
32.8a	J. W. Swearingen	--	drl	135	2	--	--	--	812	55	--	--	--	--	Sand at 135	--
33.1a	Ernest Remmers	1926	drl	90	4	--	--	--	763	40	--	--	--	--	Sand at 90	Swanson
33.4h1	Ernest Remmers**	1920	drl	123	2	--	--	--	770	45	--	--	--	--	Sand at 123	Swanson
33.4h2	Ernest Remmers	1947	drl	225	4	5	4	.014	770	75	50	7.5	.2	6	Sand, 91-98, 190-225	Swanson
33.8g	Omar Leathers	1928	drl	110	2	--	--	--	792	40	--	--	--	--	Sand at 110	Stiegman
34.5h	George J. Arends	1913	drl	60	2	--	--	--	755	30-35	--	--	--	--	Sand at 60	--
34.8c	Emma Danielson	1890	drl	92	2	--	--	--	765	55	--	--	--	--	Sand at 92	--
35.1e	Paul Cameron	1929	drl	210	2	--	--	--	750	96	--	--	--	--	Sand at 210	Stiegman
35.8g	Florence Stephens	1924	drl	85	2	--	--	--	752	40	--	--	--	--	Sand at 85	Swanson
36.4h	Letitia Bromwell	1920	drl	193	4	--	--	--	745	75	--	--	--	--	Sand at 193	Stiegman
T24N, R9E																
1.1e	Richard Voorhees	1916	drl	206	2	--	--	--	767	85	--	--	--	--	--	Roberts
1.8h	D. Henricks	--	drl	200	2	--	--	--	742	80	--	4	--	--	--	Houtzel
2.4a1	John Sheppelman	--	dug	55	36	--	--	--	780	25	--	--	--	--	--	--
2.4a2	John Sheppelman	1953	drl	110	2	--	--	--	780	--	--	--	--	--	--	Stiegman
3.1e	V. & A. Greenlee	1912	drl	122	2	--	--	--	761	76	--	3.5	--	--	--	Roberts
3.1h	H. E. & A. Minch	1964	drl	146	4	4	4	.018	770	85	--	--	--	--	--	Stiegman
3.8e	Fred Reifsteck	1916	drl	206	2	--	--	--	771	82	--	4	--	--	--	Roberts
3.8e	Margaret Kendrick	1916	drl	205	2	--	--	--	772	80	--	4.5	--	--	--	Roberts

Well number	Owner	Well: Year constructed	Well: Type	Well: Depth (ft)	Well: Diameter (in)	Screen: Length (ft)	Screen: Diameter (in)	Screen: Slot size (in)	Land surface elevation (ft above msl)	Nonpumping water level (ft)	Drawdown (ft)	Pumping rate (gpm)	Observed specific capacity (gpm/ft)	Length of test (hr)	Water-bearing formation and depth (ft)	Driller
T24N, R9E (Continued)																
4.5a	V. Alcorn & O'Bane	1916	drl	233	2	--	--	--	775	86	--	4.5	--	--	--	Stiegman
5.5h	M. I. Kendrick	1901	drl	60	2	--	--	--	772	50	--	--	--	--	--	Stiegman
6.4b	Minnie Muehlenpfort	1964	drl	107	4	4	4	.012	780	85	--	20	--	--	--	Stiegman
6.4h	Raymond Steinman	1967	drl	210	4	4	4	.010	780	95	5	10	2.0	2	Dirty sand, 180-200; sand, 200-210	Stiegman
6.6h	Arends Bros. Farms, Inc.	--	drl	112	2	--	--	--	790	90	--	--	--	--	--	Stiegman
6.8h	L. Stubblefield	1900	drl	140	2	--	--	--	800	90	--	--	--	--	Sand at 140	Phillips
7.1h	Faye Sackett	1916	drl	108	2	--	--	--	780	86	--	4	--	--	--	Roberts
7.3a	George Dodd	--	drl	103	2	--	--	--	785	80	--	4	--	--	--	--
7.8h	Gus Otto	1965	drl	111	4	4	4	.015	788	90	--	20-25	--	--	--	Stiegman
8.3b	Marguerite Kendrick	--	drl	98	2	--	--	--	764	35	--	4.5	--	--	--	Roberts
8.7h	Harvey Branzt	1915	drl	106	2	--	--	--	771	78	--	4.5	--	--	--	Roberts
8.8d	Charles Weber	1917	drl	102	2	--	--	--	775	80	--	4	--	--	--	Roberts
9.1b1	Leo Kietzman**	1921	drl	117	2	--	--	--	780	65	--	4	--	--	--	Roberts
9.1b2	Leo Kietzman	1950	drl	230	2	--	--	--	780	65	--	--	--	--	--	Stiegman
10.3a	Roy Reifsteck	1916	drl	165	2	--	--	--	771	74	--	--	--	--	--	Roberts
10.7h	Thomas Eheart	1919	drl	215	2	--	--	--	771	80	--	--	--	--	--	Roberts
11.6b	Clarence Reifsteck	1909	drl	220	4	--	--	--	764	98	--	4	--	--	--	Roberts
12.7b	J. G. Currie, Heirs	1931	drl	208	2	--	--	--	780	105	--	4	--	--	Sand at 208	Stiegman
12.7g1	Lindsay & Price	--	drl	212	2	--	--	--	763	80	--	--	--	--	--	--
12.7g2	Lindsay & Price**	1911	drl	210	2	--	--	--	763	80	--	4	--	--	--	Roberts
13.1a	H. F. LaBolle Est.	1919	drl	110	2	--	--	--	770	90	--	4	--	--	--	Stiegman
13.6a	Paul E. Nicewander	1926	drl	127	2	--	--	--	770	90	--	3	--	--	--	Roberts
13.6h	William Brathorst	1930	drl	108	2	--	--	--	770	78	--	3.5	--	--	--	Roberts
13.8d	Roy Nicewander	1912	drl	225	2	--	--	--	770	96	--	3.5	--	--	--	Roberts
13.8e	Roy Nicewander	1968	drl	228	4	4	4	.018	770	75	10	20	2	2	Sand, 163-170, 200-228	Weburg
14.5h	Luella Nicewander**	1916	drl	233	2	--	--	--	770	80	--	3.5	--	--	--	Roberts
14.8b	R. & R. Stanford	--	drv	110	2	--	--	--	780	76	--	3.5	--	--	--	Roberts
15.1b1	M. J. Weaver	--	drl	160	2	--	--	--	780	80	--	4.5	--	--	--	Roberts
15.1b2	M. J. Weaver	1960	drl	161	4	8	--	--	780	91	--	--	--	--	--	Swanson
15.7g	Arthur Currie**	1912	drl	222	2	--	--	--	790	80	--	3.5	--	--	--	Roberts
16.1a	Eva Spellmeyer	--	drl	120	2	--	--	--	780	--	--	--	--	--	--	--
16.8d	E. & G. Kietzman	1961	drl	128	4	4	4	.020	770	70	8	15	1.9	4.5	Sand, 116-123; sand & gravel, 123-128	Swanson
18.3a	Wayne Niewold	1919	drl	105	2	--	--	--	755	80	--	4.5	--	--	--	Roberts
18.5h	Holiver Dale	1900	drl	125	2	--	--	--	792	78	--	--	--	--	--	Roberts
18.7a	Emerson Busick	--	drl	102	2	--	--	--	752	64	--	4	--	--	--	Phillips
18.8d	Emerson Busick	1931	drl	102	2	--	--	--	765	50	--	4	--	--	--	Gimble
19.1a	Rachel Shaw	--	drl	235	2	--	--	--	802	96	--	3.5	--	--	--	--
19.1h	A. G. & L. Peters	1919	drl	103	2	--	--	--	761	79	--	4	--	--	--	Roberts
19.3a1	Warren Albers	1924	drl	236	2	--	--	--	782	96	--	4	--	--	--	Stiegman
19.3a2	Warren Albers	1968	drl	230	4	4	4	.014	782	83	15	20	1.3	2	Sand, 148-156; sand & gravel, 156-230	Weburg
19.8h	John Maloney & Helen Freehill	--	drl	90	2	--	--	--	755	60	--	--	--	--	--	Phillips
20.3a	Charles Sharp	1966	drl	152	4	4	4	.018	780	81	--	20	--	--	Sand & gravel, 145-150	Stiegman
20.7h	H. W. Payne	1918	drl	101	2	--	--	--	780	80	--	4	--	--	--	Roberts
20.8a	H. W. Payne	1906	drl	236	2	--	--	--	801	96	--	4	--	--	--	Stiegman
21.4a1	W. C. Cooper	--	drl	103	2	--	--	--	770	90	--	4	--	--	--	Roberts
21.4a2	W. C. Cooper	1967	drl	110	6	--	--	--	770	80.5	8	16	2.0	2	Sand & gravel, 80.5-110	Weburg
21.8c	Robert E. Kenny	1924	drl	133	2	--	--	--	773	105	--	4	--	--	Sand at 133	--
22.1d1	E. & J. Lind**	--	drl	96	2	--	--	--	785	79	--	3	--	--	--	--
22.1d2	E. & J. Lind	--	drl	220	2	2.5	1	.050	785	96	--	--	--	--	Dirty sand, 100-112; sand & lime, 214-216; sand, 216-220	Stiegman
22.5h	Ardmon Andrews	1914	drl	253	2	--	--	--	785	96	--	4	--	--	--	Roberts
22.8a	John F. Kenney	1922	drl	103	3	--	--	--	760	80	--	4	--	--	--	Roberts
22.8h	Ardmon Andrews	+1929	drv	200	2	--	--	--	778	--	--	--	--	--	Sand at 200	--
24.1e	B. Anderson, et al	--	drl	90	2	--	--	--	771	80	--	4	--	--	Sand at 90	Stiegman
24.1h	B. Anderson, et al	--	drl	108	2	--	--	--	765	94	--	3.5	--	--	--	--
24.5a	Harry Payne	1965	drl	235	2.5	11	1.25	.010	780	75	--	10	--	--	Sand, 83-85, 220-235	Swanson
24.6a	Harry Payne	--	drl	85	2	--	--	--	772	80	--	3.5	--	--	--	Roberts
25.3a	Walter Overstreet**	--	drl	112	2	--	--	--	785	80	--	6	--	--	--	--
25.3h	L. & B. Bachman	--	drl	106	2	--	--	--	780	70	--	4	--	--	--	Roberts
25.4a	Walter Overstreet	--	drl	120	2	--	--	--	790	80	--	--	--	--	--	Stiegman
25.4h	L. & B. Bachman	1969	drl	106	4	4	4	.020	775	83	2	10	5.0	2	Sand & gravel, 83-106	Weburg
25.5a	Audrey Gray	1920	drl	150	2	--	--	--	785	80	--	--	--	--	--	Roberts
25.8h	Leona Pilcher	1920	drl	75	2	--	--	--	778	40	--	3.5	--	--	--	Roberts
26.1b	Dr. A. W. Peterson	1916	drl	242	2	--	--	--	790	72	--	4	--	--	--	Stiegman
26.1g	Ray Aukland	1918	drl	158	2	--	--	--	791	120	--	4	--	--	Sand at 158	Stiegman
26.5h	Harry Payne	1948	drl	241	4	4	--	.012	781	92	17	6	.4	6.5	Sand & gravel, 105-137; sand, 137-142; sand & gravel, 142-167, 171-181; sand, 201-241	Swanson
26.6a	Harry Payne	1926	drl	114	2	--	--	--	781	100	--	4	--	--	Sand at 114	Stiegman
26.6h	Harry Payne**	1916	drl	106	2	--	--	--	781	80	--	4	--	--	--	Roberts
27.1e	Florence Wright	1950	drl	245	4	5.2	3.75	.014	770	97	17	12.5	.7	3	Sand, 215-245	Swanson
27.1g1	Victor Burklund	1917	drl	166	2	--	--	--	778	80	--	3.5	--	--	--	Roberts
27.1g2	Victor Burklund	1970	drl	175	4	4	4	.015	778	83	10	15	1.5	2	Sand, 158-175	Weburg
27.2a	Florence Wright	--	drl	104	2	--	--	--	774	96	--	4	--	--	Sand at 104	--
27.5a	Ralph Kelly	--	drl	104	2	--	--	--	761	60	--	3	--	--	--	--
28.5a	Alice Burklund	--	drl	120	2	--	--	--	783	--	--	--	--	--	--	Stiegman
29.1e1	Adrienne Burklund**	1945	drl	235	4	4	2.5	.018	780	84	6	15	2.5	5	Sand, 130-132, 182-184, 187-235	Swanson
29.1e2	Adrienne Burklund	1961	drl	196	2	--	1	--	780	90	--	10	--	--	--	Stiegman
29.4a1	Casper Cramer	1918	drl	216	2	--	--	--	795	98	--	4.5	--	--	--	Stiegman
29.4a2	Casper Cramer	1951	drl	267	--	7	--	.010	795	120	40	15	.4	--	Sand, 130-152; dirty sand, 209-220; sand, 220-267	Swanson
29.4h	A. B. Loudy	--	drl	242	4	5.4	3.75	.018	783	--	--	15	--	4	Sand, 210-242	Swanson
29.8a	Casper Cramer	--	drl	216	2	--	--	--	772	115	--	4	--	--	--	Gimble
30.2g1	Franklin Sharp**	1920	drl	225	2	--	--	--	791	96	--	4	--	--	--	Stiegman
30.2g2	Franklin Sharp	1964	drl	235	4	3	4	.010	791	90	--	15	--	--	--	Stiegman
30.6a1	William Reltz**	1920	drl	224	4	--	--	--	755	96	--	8	--	--	--	Stiegman
30.6a2	William Reltz	1940	drl	190.1	2	--	--	--	755	95.6	--	--	--	--	--	--
30.7a	William Reltz	1968	drl	210	6	4	4	.010	755	75	15	15	1.0	2	Sand, 198-204; sand & gravel, 204-210	Weburg
31.1h	Anna Strange	1916	drl	212	2	--	--	--	770	85	--	--	--	--	--	Stiegman
32.4h	Carson Farm Account	1912	drl	224	2	--	--	--	790	96	--	--	--	--	--	Stiegman
32.6h1	Maloney & Freehill	1917	drl	212	2	--	--	--	778	85	--	--	--	--	--	Stiegman
32.6h2	Maloney & Freehill	1925	drl	140	--	--	--	--	778	--	--	--	--	--	--	Gimble
32.8a	Bates Willis	1949	drl	197	4	--	--	.014	758	63	1	15	15.0	4	Sand & gravel, 80-85, 110-115; sand, 185-197	Swanson

Well number	Owner	Well: Year constructed	Well: Type	Well: Depth (ft)	Well: Diameter (in)	Screen: Length (ft)	Screen: Diameter (in)	Screen: Slot size (in)	Land surface elevation (ft above msl)	Nonpumping water level (ft)	Drawdown (ft)	Pumping rate (gpm)	Observed specific capacity (gpm/ft)	Length of test (hr)	Water-bearing formation and depth (ft)	Driller
T24N, R9E (Continued)																
33.4h	Mrs. E. J. Pacey	1917	drl	180	2	--	--	--	783	76	--	4	--	--	--	Roberts
33.5h1	Howard Burklund	1917	drl	225	2	--	--	--	783	96	--	4	--	--	--	Roberts
33.5h2	Howard Burklund	1954	drl	217	2	--	--	--	783	96	--	--	--	--	--	Weburg
33.8h	Howard Burklund	1923	drl	230	2	--	--	--	780	96	--	3.5	--	--	--	Roberts
34.1f	E. Clark Karr	--	drl	74	2	--	--	--	758	68	--	3	--	--	Sand & gravel at 74	--
34.5h	Mrs. F. Abrahamson	--	dug	40	48	--	--	--	760	30	--	--	--	--	--	--
35.1f	Alton J. Little	1884±	dug	45	96	--	--	--	766	30	--	5	--	--	--	--
35.8f	William R. Burklund	1930	drl	98	2	--	--	--	761	83	--	3.5	--	--	Sand & gravel at 98	--
36.1h	John H. Brokate	--	drl	98	2	--	--	--	783	92	--	3.5	--	--	Sand & gravel at 98	Rardin
36.4h	Wendell Siddens	1962	drl	225	4	--	--	--	789	96	--	--	--	--	--	--
36.5h1	Wendell Siddens	--	drl	104	2	--	--	--	780	96	--	4.5	--	--	Sand & gravel at 104	Stiegman
36.5h2	Wendell Siddens	1969	drl	245	4	6	4	.015	780	98	10	100	10.0	2	Sand & gravel, 98-105; sand, 220-245	Weburg
T25N, R7E																
19.1c	Grace Moberly	1917	drl	75	4	--	--	--	804	30	--	--	--	--	Sand at 75	Cook
19.7g	Delmar Huppert	1904	drl	97	4	--	--	--	781	20	--	--	--	--	Sand at 97	Cook
20.1a1	James W. Liddle	1894	dug	14	42	--	--	--	790	7	--	6	--	--	Sand at 14	--
20.1a2	James W. Liddle	1941	drl	189	4	--	--	--	790	57	13	--	--	30	Sand, 186-189	Swanson
20.8a	Fred Brucker, Heirs	1930	drl	101	4	--	--	--	813	40	--	--	--	--	Sand at 101	Bolliger
20.8h	Bethel Armstrong	1914	drl	48	6	--	--	--	777	11	--	--	--	--	Sand at 48	Cook
21.1d1	Elven Richardson	1905	drl	145	2	--	2	--	812	50	--	--	--	--	Sand at 145	Swanson
21.1d2	Elven Richardson	1963	drl	120	4	--	4	--	812	--	--	--	--	--	Sand at 120	Taylor
21.2h1	Harold Heil	1909	drl	45	2	--	2	--	791	30	--	--	--	--	Sand at 45	Swanson
21.2h2	Harold Heil	1951	drl	42.5	4	--	--	slotted pipe	791	20	5	40	8.0	8	Sand & gravel, 40-42.5	Swanson
22.3a1	Louise Smith Corp.**	1900	drl	101	2	--	--	--	830	50	--	--	--	--	Sand at 101	Swanson
22.3a2	Louise Smith Corp.	1955	drl	150	4	--	4	--	830	--	--	--	--	--	Sand at 150	Swanson
22.5e	Louise Smith Corp.	1961	drl	210	4	5±	4	--	830	--	--	--	--	--	Sand at 210	Swanson
22.6f	Louise Smith Corp.	1915	drl	95	2	--	2	--	810	55	--	--	--	--	Sand at 95	Swanson
23.4h	J. & L. Bemway	--	drl	80	4	--	--	--	805	60	--	--	--	--	Sand at 80	--
23.8a1	Elsie Walters**	+1906	dug	30	--	--	--	--	830	--	--	--	--	--	--	--
23.8a2	Elsie Walters**	+1906	drl	75	--	--	--	--	830	--	--	--	--	--	Sand at 75	--
23.8a3	Elsie Walters	1961	drl	108	4	4	4	.010	830	70	--	20	--	--	Sand at 108	Stiegman
24.6h	Theodore Mayer	1924	drl	110	2	--	2	--	810	50	--	--	--	--	Sand at 110	Cook
24.8a	Edna Mueller	1914	drl	127	2	--	2	--	835	40	--	--	--	--	Sand at 127	Stiegman
25.1g	L. H. Kerrick	--	drl	115	2	4	2	--	830	60	--	--	--	--	Sand at 115	--
25.5a	Genevieve Rudolph	--	drl	186	4	--	4	--	822	55-60	--	--	--	--	Sand at 186	--
26.3h	Anna Koehler	--	drl	136	4	--	4	--	850	60	--	--	--	--	Sand at 136	--
26.4a	Sibley Estate	--	drl	117	2	--	--	--	810	50	--	--	--	--	Sand at 117	--
27	Sibley Estate	1946	drl	80	--	--	--	--	--	--	--	--	--	--	*Sand, 60-80	Larson & Swanson
27.1a	Willard Erb	--	drl	--	4	--	4	--	832	--	--	--	--	--	--	--
27.8a1	Louise Smith Corp.	1890	drl	100	2	--	2	--	822	45	--	--	--	--	Sand at 100	Swanson
27.8a2	Louise Smith Corp.	1958	drl	80	4	--	4	--	822	--	--	--	--	--	Sand at 80	Swanson
27.8h	Willard Erb	1957	drl	285	10	15	10	--	810	225	--	--	--	--	Sand, 225-285; lime, 504-517, 550-568; sandstone, 568-575; lime, 575-605	Zink
28.1g	Willard Erb	1900	drl	90	2	--	2	--	821	35	--	--	--	--	Sand at 90	Swanson
28.8f	Willard Erb	1895	drl	96	2	--	2	--	805	50	--	--	--	--	Sand at 96	Swanson
29.1a	E. A. Steinberg	1914	drl	98	4	--	--	--	812	55	--	--	--	--	Sand at 98	Bolliger
29.2h	Fred Sheppleman	1898	drl	47	4	--	--	--	785	20	--	--	--	--	Sand at 47	--
30.1b	Elvin Barker	1913	drl	88	6	--	--	--	780	12	--	--	--	--	Sand & gravel at 88	Cook
30.7c1	Mary Brucker	1913	drl	63	4	--	--	--	775	15	--	--	--	--	Sand at 63	Cook
30.7c2	Mary Brucker	1961	drl	20.5	4	4	4	--	775	9	--	20	--	--	--	Stiegman
30.7h	D. & M. Estague	1915	drl	90-95	4	--	--	--	805	40	--	--	--	--	Sand at 90-95	Kaffer
31.1a	James Watson, Jr.	1958	drl	118	4	--	--	--	780	10-26	--	50	--	7	--	--
31.2a	James Watson, Jr.**	1928	drl	125	2	4	--	--	790	25	--	--	--	--	Sand at 125	Swanson
31.6h1	Louise Smith Corp.	1914	drl	70	2	--	--	--	777	40-45	--	--	--	--	Sand at 40-45	Swanson
31.6h2	Louise Smith Corp.	1952	drl	193	4	--	--	--	777	21	18	15	.8	2.5	Sand, 188-192	Swanson
32.1a1	Louise Smith Corp.	1890	drl	140	2	4	2	--	790	20	--	--	--	--	Sand at 140	Swanson
32.1a2	Louise Smith Corp.	1946	drl	225	--	--	--	--	790	--	--	--	--	--	*Sand, 30-40, 50-70, 185-205, limestone, 220-225	Larson & Swanson
32.5h	Urling S. Iselin**	1910	drl	65	2	--	2	--	788	40	--	--	--	--	Sand at 65	Swanson
32.8a	Urling S. Iselin	1957	drl	335	10-7	10	7	slotted pipe	775	25	--	--	--	--	Sand & gravel, 25-290; lime, 290-296; limestone, 359-367; sandstone, 367-412; limestone, 551-575, 603-633	Zink
32.8d	Urling S. Iselin	--	dug	24	36	--	--	--	781	18	1	7	7.0	24	Sand at 24	--
33.1b	James Watson, Jr.**	1894	drl	25	2	--	--	--	785	10	1	--	--	--	Sand at 25	--
33.1c	James Watson, Jr.	1957	drl	320	10	15	10	slotted pipe	788	80	--	--	--	--	Sand, 80-160; sand & gravel, 185-215, 238-265; limestone, 480-496, 533-547; limestone & dolomite, 585-625	Zink
33.5g	James Watson, Jr.	--	drl	--	4	--	4	--	830	--	--	--	--	--	--	--
34.1d1	James Watson, Jr.	1930	drl	85	2	--	2	--	810	40-45	--	--	--	--	Sand at 85	Swanson
34.1d2	James Watson, Jr.	1963	drl	--	4	--	4	--	810	--	--	--	--	--	Sand	Taylor
34.2h1	Ozark Pipe Line Co.**	1926	drl	221	8	--	--	--	802	--	--	10	--	--	--	Johnson
34.2h2	Shell Pipe Line	1929	drl	174	8	--	8	--	802	--	--	--	--	--	Sand, 173-174	Woollen
34.3h	Neva J. Rohrer	1965	drl	71	4	6.5	3.75	.010	805	39	19	12	.6	--	Sand & gravel, 56-58; sand, 64-71	Swanson
34.6h	James Watson, Jr.	1908	drl	70	2	--	2	--	815	40	--	--	--	--	Sand at 70	Swanson
35	Sibley (V)	--	drl	120	--	--	--	--	--	--	--	--	--	--	*Sand, 100-103	--
35.3f	Louise Smith Corp.	1950	drl	90	4	--	4	--	811	45	--	--	--	--	Sand at 90	Swanson
35.6g	Otto Fikenscher	+1906	drl	96	--	--	--	--	810	--	--	--	--	--	--	--
35.7g1(1)	Sibley (V)	1907	drl	117	8	8.5	7.75	.010	814	46	--	35	--	--	Sand, 106-118	Stiegman
										50	--	--	--	--		
35.7g2(2)	Sibley (V)**	1925	drl	108	4	--	--	--	814	--	--	--	--	--	--	--
35.8b	Elmo Meiners**	--	drl	90	2	--	--	--	810	45-50	--	--	--	--	Sand at 90	Swanson
36.1d	James Watson, Jr.	--	drl	115	2	--	--	--	830	55	--	--	--	--	Sand at 115	Swanson
36.3h	1st Trust & Savings Bank of Taylorville	--	drl	103	2	--	2	--	832	55	--	--	--	--	Sand at 103	--
36.7d	Hiram Sibley	1909	drl	125	2	--	2	--	840	80	--	--	--	--	Sand at 125	Swanson

Well number	Owner	Well: Year constructed	Well: Type	Well: Depth (*ft*)	Well: Diameter (*in*)	Screen: Length (*ft*)	Screen: Diameter (*in*)	Screen: Slot size (*in*)	Land surface elevation (*ft above msl*)	Non-pumping water level (*ft*)	Drawdown (*ft*)	Pumping rate (*gpm*)	Observed specific capacity (*gpm/ft*)	Length of test (*hr*)	Water-bearing formation and depth (*ft*)	Driller
T25N, R8E																
19.8a	George Brucker	1906	drl	114	2	--	--	--	832	8	--	--	--	--	Sand at 114	Stiegman
19.8h	Wade Acres Est.	1922	drl	120	3	--	--	--	824	70	--	--	--	--	Sand at 120	Swanson
20.2a	Herman Johnson	--	drl	40	2	--	--	--	775	15	--	--	--	--	Sand at 40	--
20.2h	McKinley Koehler	1892	drl	96	2	--	--	--	782	25	--	--	--	--	Sand at 96	--
20.8d	Lowell Dueringer	1925	drl	75	3	--	--	--	794	40	--	--	--	--	Sand at 75	Swanson
20.8h	Arthur Brucker	1904	drl	70	4	--	--	--	800	40	--	--	--	--	Sand at 70	Swanson
21.1a1	Delmar Lee	1890	drl	48	2	--	--	--	762	20	--	--	--	--	Sand at 48	Gimble
21.1a2	Delmar Lee	1965	drl	61	4	--	--	--	762	20	--	--	--	--	--	Swanson
21.1g	Henry Ficken	1961	drl	63.8	4	5.5	3.5	.010	765	--	--	30	--	41	Sand, 54-63.8	Swanson
21.7g	L. & M. Dunahoo	1904	drl	55	2	--	--	--	780	20	--	--	--	--	Sand at 55	Johnson
21.8g	L. & M. Dunahoo	1958	drl	60	4	--	2	.012	780	30	--	20	--	--	--	Stiegman
22.1h	Clyde & Rose Day**	--	drl	85	2	--	--	--	785	55	--	--	--	--	Sand at 85	Gimble
22.4a	J. W. Arther	1951	drl	72	4	5	2.75	.018	765	15	47	5	.1	2	Sand & gravel, 67-72	Swanson
22.8a	Nora Cannady	1899	drl	62	2	--	--	--	765	12	--	--	--	--	Sand at 62	Gimble
23.1e	Anne Gaines	1920	drl	100	2	--	--	--	792	30	--	--	--	--	Sand at 100	Gimble
23.3a	Earl Kresin	1944	drl	70	4	4	3.75	.018	768	45	20	8	.4	--	Sand, 54-70	Swanson
23.8c	Frank Traeger	1922	drl	195	2	--	--	--	772	50	--	--	--	--	Sand at 195	Stiegman
24.1g	Albert T. Arends	1916	drl	97	2	--	--	--	782	47	--	--	--	--	Sand at 97	Gimble
24.2a	Richard Shreve	1908	drl	105	2	--	--	--	800	80	--	--	--	--	Sand at 105	Roberts
25.1c	William Arends	1930	drl	240	2	--	--	--	792	75	--	--	--	--	Sand at 240	Roberts
25.5a	L. B. Nieswander	--	drl	116	2	--	--	--	810	78	--	--	--	--	Sand at 116	Gimble
25.5h	Gretchen Wiegal	1944	drl	121	--	--	--	--	805	--	--	--	--	--	Sand, 103-109; dirty sand, 115-117.5; sand, 117.5-121	Swanson
25.7h	L. B. Nieswander	1930	drl	110	2	--	--	--	790	80	--	--	--	--	Sand at 110	Roberts
26.3a	S. & H. Siems	1899	drl	46	2	--	--	--	772	23	--	--	--	--	Sand at 46	Gimble
26.5h	Lloyd A. Falck	1963	drl	103	4	--	--	.014-.025	765	43	--	75	--	--	Dirty sand & gravel, 43-88; sand, 88-103	Swanson
26.6h	Lloyd A. Falck	1894	drl	96	2	--	--	--	765	45	--	--	--	--	Sand at 96	--
26.8d1	Charles R. Nielson	1914	drl	63	2	--	--	--	762	30	--	--	--	--	Sand at 63	Roberts
26.8d2	Charles R. Nielson	1914	drl	84	2	--	--	--	762	30	--	--	--	--	Sand at 84	Roberts
26.8d3	Charles R. Nielson	1953	drl	142	4	4	3.75	--	762	54	11	18	1.6	6	Sand & gravel, 65-89; sand, 89-142	Swanson
27.2h	P. J. Benz	1915	drl	60	2	--	--	--	763	20	--	--	--	--	Sand at 60	Gimble
27.5a	Fred G. Arends	+1904	drl	57	2	--	--	--	755	18	--	--	--	--	Sand at 57	Gimble
28.1d	Iva Johnson	--	drl	47	2	--	--	--	763	20	--	--	--	--	Sand at 47	Gimble
28.8a	Dorothy Emlinger	1930	drl	76	2	--	--	--	780	56	--	--	--	--	Sand at 76	Roberts
28.8h	Lyle A. Brucker	1952	drl	69.5	4	5	3.75	.014	772	18	12	20	1.7	4.5	Sand, 60-69.5	Swanson
29.2a	J. & G. Lanz	--	drl	70	2	--	--	--	782	30	--	--	--	--	Sand at 70	--
30.1f	Charles Brucker, Sr.	1921	drl	100	4	--	--	--	785	45	--	--	--	--	Sand at 100	Stiegman
30.4a	Arnold E. Brucker	1914	drl	82	4	--	--	--	810	50	--	--	--	--	Sand at 82	--
31.3h	Robert W. Eckert	--	drl	90	2	--	--	--	800	45-50	--	--	--	--	Sand at 90	Swanson
31.4a	James Watson, Jr.	1915	drl	75	3	--	--	--	815	45	--	--	--	--	Sand at 75	Swanson
32.8b	Robert Brucker	--	drl	85	3	--	--	--	811	60	--	--	--	--	Sand at 85	--
33.4h1	William R. Curtis	--	dug	18	48-24	--	--	--	768	5	--	--	--	--	Sand & gravel at 18	--
33.4h2	William R. Curtis	--	dug	22	48-24	--	--	--	768	5	--	--	--	--	Sand & gravel at 22	--
33.6a	Velma Weber	1908	drl	65	2	--	--	--	770	40	--	--	--	--	Sand at 65	Gimble
33.8e	Remus Curtis	1954	drl	58	6	--	--	.030	781	18	--	50	--	--	Sand, 53-58	Bolliger
34.1h	John Goggins, et al	1894	drl	60	2	--	--	--	760	25	--	--	--	--	Sand at 60	Gimble
34.3a	Francis Swearingen	--	drl	60	2	--	--	--	755	25	--	--	--	--	Sand at 60	Gimble
34.8f	Asbury Theological Seminary	--	drl	50	2	--	--	--	760	10	--	--	--	--	Sand at 50	Gimble
35.1g1	Elmer Underwood	1895	drl	80	2	--	--	--	780	40	--	--	--	--	Sand at 80	Gimble
35.1g2	Elmer Underwood	1968	drl	151	4	4	3.75	.018	780	52	23	40	1.7	1	Dirty sand, 85-98; sand, 131-151	Swanson
35.2a	Edna Arends	1915	drl	77	2	--	--	--	780	50	--	--	--	--	Sand at 77	Gimble
35.6a	Roger Arends	1899	drl	70	2	--	--	--	770	45	--	--	--	--	Sand at 70	Gimble
36.4a	John Pool	--	drl	120	2	--	--	--	810	75	--	--	--	--	Sand at 120	Gimble
36.5f	Irene Thompson	--	drl	236	2	--	--	--	801	110	--	--	--	--	Sand at 236	Gimble
T25N, R9E																
1.1h	Vernon Stoeckman	1933	drl	115	3	--	--	--	700	12	--	--	--	--	--	Roberts
1.6a	Patrick Cleary	1965	drl	136	2	--	1.25	--	720	40	--	12	--	--	--	Stiegman
1.6l	C. & D. Gayles	1906	drl	80	2	--	--	--	700	15	--	--	--	--	--	Stiegman
1.7p	Harlan Kahle	1930	drl	115	2	--	--	--	700	14	--	--	--	--	--	Stiegman
1.8h	Betourne & Zick	--	dug	50	36	--	--	--	700	25	--	--	--	--	--	Asey
2.3c	Jean Allen	1952	drl	196	4	5	3.75	.025	712	35	35	15	.4	4	Sand, 177-196	Swanson
2.4i	Minnie Maehle	1884	dug	64	36	--	--	--	712	25	--	--	--	--	--	Asey
2.8i	Kenneth Carmany	--	drl	145	2	--	--	--	720	--	--	--	--	--	--	--
2.8p	Guy Davis	--	drl	140	2	--	--	--	718	40	--	--	--	--	--	Wilson
3.1d	Cletus & Mary Day	1930	drl	195	2	--	--	--	731	60	--	--	--	--	--	Roberts
3.1h	L. W. Orr	1922	drl	158	3	--	--	--	727	25	--	--	--	--	Sand at 158	Stiegman
3.1j	Wilhelmina Higgins	--	drl	160	2	--	--	--	725	25	--	--	--	--	--	Roberts
3.1p	Bob Yena	--	drl	150	2	--	--	--	722	60	--	--	--	--	--	--
3.7a	Lloyd Orr**	1908	drl	115	2	--	--	--	728	40	--	--	--	--	--	Stiegman
3.8a	Helen Otto**	+1923	drl	90	--	--	--	--	750	--	--	--	--	--	Sand at 90	--
3.8l	R. E. Bradbury	--	drl	165	2	--	--	--	738	--	--	--	--	--	--	--
4.1f	Herbert Kohler	1928	drl	204	2	--	--	--	735	70	--	--	--	--	--	Stiegman
4.7h	A. B. Kohler	--	drl	150	2	--	--	--	762	40	--	--	--	--	--	--
4.8a	L. C. & I. Heringer	1909	drl	106	2	--	--	--	770	80	--	--	--	--	--	Stiegman
4.8m	W. & V. Hawthorne	--	drl	115	2	--	--	--	754	80	--	--	--	--	--	Havner
5.1d	Clarence Sturm	--	drl	218	2	--	--	--	766	--	--	--	--	--	--	Stiegman
5.2f	H. & W. Sherman**	--	drl	100	2	--	--	--	774	80	--	--	--	--	Sand at 100	Havner
5.5l	Barney Sturm Est.	1964	drl	198	2	--	1	.010	795	90	--	12	--	--	--	Stiegman
5.6p	K. Hawthorne Est.	1933	drl	119	2	--	--	--	790	82	--	--	--	--	Sand at 119	Stiegman
6.1d	W. W. Shambrook	1914	drl	112	2	--	--	--	782	80	--	--	--	--	--	Roberts
6.1h1	Margaret Stehmer**	1919	drl	108	2	--	--	--	785	78	--	--	--	--	--	Roberts
6.1h2	Margaret Stehmer	1952	drl	120	2	--	--	--	785	--	--	--	--	--	--	--
6.1j	Dale E. Shambrook	--	drl	125	2	--	--	--	790	80	--	--	--	--	--	Roberts
6.1m	Floyd Shambrook	--	drl	118	2	--	--	--	790	--	--	--	--	--	--	--
6.8h	James Philpps	--	drl	101	2	--	--	--	790	50	--	--	--	--	--	--
6.8j	Harlan Kahle	--	drl	120	3	--	--	--	790	80	--	--	--	--	--	Roberts
7.2a	A. & J. Hickey & J. Morris	--	drl	235	2	--	--	--	781	90	--	--	--	--	--	Stiegman
7.6a	D. & V. Martenson	1963	drl	218	2	--	1	--	780	85	--	10	--	--	--	Stiegman
7.8a	Clyde Weaver	--	drl	113	2	--	--	--	786	--	--	--	--	--	--	--
8.1a1	Wilfred Coltesux	--	dug	16.3	36	--	--	--	780	7.7	--	--	--	--	--	--
8.1a2	Wilfred Coltesux	--	drl	111	2	--	--	--	780	80	3	--	--	--	Sand at 111	Roberts
8.4a	B. & F. Grieves**	1906	drl	205	2	--	--	--	787	100	--	--	--	--	Sand at 205	Roberts
9	A. McDonald**	+1924	dug & drl	120	--	--	--	--	--	--	--	--	--	--	Sand, 100-120	--

Appendix A (Continued)

Well number	Owner	Well: Year con- structed	Well: Type	Well: Depth (ft)	Well: Diam- eter (in)	Screen: Length (ft)	Screen: Diam- eter (in)	Screen: Slot size (in)	Land surface elevation (ft above msl)	Non- pumping water level (ft)	Draw- down (ft)	Pumping rate (gpm)	Observed specific capacity (gpm/ft)	Length of test (hr)	Water-bearing formation and depth (ft)	Driller
T25N, R9E (Continued)																
9.7c	Helen & Floyd Otto	--	drl	100	2	--	--	--	773	80	--	--	--	--	--	Roberts
9.8g	Seward Arnold	1920	drl	108	2	--	--	--	770	86	--	--	--	--	--	Roberts
10.1f	Mary Wright	1909	drl	110	2	--	--	--	742	45	--	--	--	--	--	Stiegman
10.2a	Ida Bleich**	1930	drl	80	2	--	--	--	720	75	--	--	--	--	--	Stiegman
10.3a	Darrell Townsend	--	drl	80	2	--	--	--	740	--	--	--	--	--	--	--
10.6a	Wilbert Schumacher	1904	drl	220	2	--	--	--	751	80	--	--	--	--	--	Stiegman
11.1h	Alfred Joerger	1950	drl	147	2	--	--	--	721	9	--	--	--	--	--	Stiegman
11.3c	Merle Flessner	--	drl	85	2	--	--	--	725	30	--	--	--	--	--	--
11.5b	Margaret Forster**	1906	drl	80	2	--	--	--	732	70	--	--	--	--	--	Stiegman
11.8g	Ray & Leonard Rock	1924	drl	118	2	--	--	--	741	45	--	--	--	--	--	Stiegman
12.1c	Artie Whitson	--	drl	115	3	--	--	--	700	--	--	--	--	--	--	--
12.1h	Peter Olson Est.	1902	drl	50	2	--	--	--	689	15	--	--	--	--	Sand at 50	Stiegman
12.8a	George A. Fuoss	1922	drl	70	2	--	--	--	720	60	--	--	--	--	Sand at 70	Stiegman
12.8f	C. & A. Fuoss	--	drl	127	2	--	--	--	711	20	--	--	--	--	--	Stiegman
13.1b	F. & V. Vest	1959	drl	130	2	--	1	--	711	35	--	12	--	--	--	Stiegman
13.2g	Louise Arnold	1931	drl	96	2	--	--	--	702	26	--	--	--	--	--	Stiegman
14.6a	Mathew Rock	1900	drl	70	2	--	--	--	740	40	--	--	--	--	--	Havner
14.8h	Dr. W. Raudabaugh	--	drl	70	2	--	--	--	730	40	--	--	--	--	--	--
15.5h	Darrell Townsend	1930	drl	224	2	--	--	--	742	80	--	--	--	--	--	Stiegman
15.6c	Hicks Grain Terminals, Inc.	1960	drl	202	5	--	--	.015	750	62.1	--	50	--	--	Dirty sand, 100-180; sand, 180-202	Bolliger
15.8e	Hicksgas	1953	drl	135	4	5	3.75	.018	760	65	15	20	1.3	10.5	Sand & gravel, 78-83; sand, 128-135	Swanson
16.1d	Thomas Talbot**	1909	drl	145	2	--	--	--	758	80	--	--	--	--	--	Roberts
16.1e	Viola Allison	--	drl	160	2	--	--	--	758	--	--	--	--	--	--	--
16.2b1	Thomas Talbot**	1924	drl	106	2	--	--	--	771	80	--	--	--	--	--	Roberts
16.2b2	Thomas Talbot	1961	drl	206	3	4	1.25	--	771	85	--	15	--	--	--	Stiegman
16.7b	F. J. Musson	1924	drl	224	2	--	--	--	780	80	--	--	--	--	--	Stiegman
17.1b	Earl & Lucille Day	1958	drl	110	2.5	--	1.25	.014	780	75	--	15	--	--	--	Stiegman
17.1e	Mosher Est.	1894	drl	100	2	--	--	--	780	80	--	--	--	--	--	Roberts
17.5a	Mary Netherton	--	drl	160	2	--	--	--	783	90	--	--	--	--	Sand at 160	Houtzel
18.3g	Alice Hickey	1906	drl	160	2	--	--	--	780	90.7	--	--	--	--	--	Stiegman
18.8a	Robert D. Boundy	1920	drl	110	2	--	--	--	780	80	--	--	--	--	--	Stiegman
19.1h1	Joe Mies	--	dug	20.8	48	--	--	--	780	12.6	--	--	--	--	--	--
19.1h2	Joe Mies	--	bor	13.7	24	--	--	--	780	11.2	--	--	--	--	--	--
19.5a1	Helen E. Otto	--	drl	180	2	--	--	--	780	75-80	--	--	--	--	--	--
19.5a2	Helen E. Otto**	1894	drl	90	2	--	--	--	780	80	--	--	--	--	--	Ebert
19.5h	H. Speers, et al**	1894	drl	112	2	--	--	--	774	85	--	--	--	--	--	Ebert
20.1b	Sylvia Seng**	--	drl	114	2	--	--	--	780	82	--	--	--	--	--	Roberts
20.1e	Joe Rock	--	drl	111	2	--	--	--	781	80	--	--	--	--	--	--
20.6g	Opal King	1929	drl	96	2	--	--	--	783	82	--	--	--	--	--	Roberts
21	J. A. Colteaux	+1914	drv	200	--	--	--	--	--	--	--	--	--	--	--	--
21(1)	Roberts (V)**	1890±	drl	216	4	10	--	--	780	95	--	--	--	--	Sand & gravel at 216	--
21.3a1(2)	Roberts (V)**	1916	drl	220	3	10	3	.010	780	--	--	--	--	--	Sand & gravel, 110-135; sand, 210-213, 215-218	Stiegman
21.3a2(3)	Roberts (V)**	1917	drl	225	3	10	3	.010	780	--	--	--	--	--	--	Roberts
21.3a3(4)	Roberts (V)**	1940	drl	232	4	10	4	.014	780	86	--	40	--	3	Sand, 104-130, 208-232	Ebert
21.5g1(5)	Roberts (V)	1950	drl	226	8	5	--	.010	775	81.1	34	105	3.1	4	Dirty sand, 210-215; sand, 215-226	Bolliger
						6	--	.020								
21.5g2(6)	Roberts (V)	1960	drl	228	8	12	8	.016	775	84	--	--	--	--	Dirty sand, 102-108; sand, 140-145, 188-229	Bolliger
										86.6	19.8	128	6.5	5		
21.7f	Mamie Seng	--	drl	110	3	--	--	--	778	--	--	--	--	--	--	Roberts
22.1c	R. & L. Rock	--	drl	96	2	--	--	--	751	68	--	--	--	--	--	--
22.1e	James Rock	--	drl	135	2	--	--	--	745	82	--	--	--	--	Sand at 135	Roberts
22.4h	James Rock	--	drl	129	2	--	--	--	752	60	--	--	--	--	--	--
23.1g	Jane Miles	1884	drl	92.1	2	--	--	--	720	19.6	--	--	--	--	--	Roberts
23.6h	Mathew Rock	--	drl	80	2	--	--	--	739	50	--	--	--	--	--	--
23.8d	Ray Rock	1957	drl	139.1	2	--	1	--	747	70	--	12	--	--	--	Stiegman
24.1d	Paul F. Benz	--	drl	90	2	--	--	--	730	--	--	--	--	--	--	Stiegman
24.8e	Eugene Baillie	1905	drl	72	3	--	--	--	725	40	--	--	--	--	--	Stiegman
25.2h	G. B. & M. Furby	--	drl	108	2	--	--	--	730	68	--	--	--	--	--	--
26.1h	Dr. S. B. Furby	1924	drl	110	2	--	--	--	746	80	--	--	--	--	--	Houtzel
26.8b	M. & K. McCorkle	1922	drl	112	2	--	--	--	765	82	--	--	--	--	--	Roberts
27.1b1	Vernon Veatch	1916	drl	234	2	--	--	--	770	92	--	--	--	--	Sand at 234	Stiegman
27.1b2	Vernon Veatch	1965	drl	163.3	4	7	4	.015	770	90.1	--	30	--	--	--	Stiegman
27.1h	Mrs. V. Veatch**	1924	drl	140	2	--	--	--	748	80	--	--	--	--	--	Roberts
27.8a	R. & L. Rock	1922	drl	238	2	4	1	--	773	80-85	--	--	--	--	Sand at 238	Stiegman
27.8d	K. Barnes & R. Kiley	1922	drl	110	2	--	--	--	782	80	--	--	--	--	Sand at 110	Houtzel
27.8g	Leonard Rock	1899	drl	235	3	--	--	--	779	80	--	--	--	--	--	Roberts
28.1e	Emerson Seng & A. Trimmer	1930	drl	235	2	--	--	--	782	83	--	--	--	--	Sand at 235	Roberts
28.3h	George Seng Est.	1960	drl	225	3	--	2	.010	778	90	--	15	--	--	--	Stiegman
28.8a	Wilfred E. Killip	1916	drl	110	2	--	--	--	771	82	--	--	--	--	Sand at 110	Roberts
28.8g	F. J. Musson	--	drl	108	2	--	--	--	780	81	--	--	--	--	Sand at 108	Stiegman
29.1h	Naomi Howe	--	drl	106	2	--	--	--	780	80	--	--	--	--	Sand at 106	Stiegman
29.6a	Oliver Williams	--	drl	120	2	--	--	--	780	80	--	--	--	--	--	--
30.4e	Mildred Kottke	1894	drl	111	2	--	--	--	778	96	--	--	--	--	--	Phillips
30.7d	Mildred Kottke	1950	drl	120	2	--	--	--	788	--	--	--	--	--	--	Stiegman
30.8g1	F. G. Arends	1899	drl	110	2	--	--	--	785	80	--	--	--	--	--	Stiegman
30.8g2	F. G. Arends**	1916	drl	115	2	--	--	--	785	82	--	--	--	--	--	Houtzel
31.1e	R. H. Morgan	--	drl	101	2	--	--	--	773	--	--	--	--	--	--	--
31.8b1	Ralph Roberts	1895	drl	120	2	--	--	--	792	90	--	--	--	--	--	Phillips
31.8b2	Ralph Roberts	1963	drl	222	2	--	1	--	792	90	--	10	--	--	--	Stiegman
32.1e	Ellis Fields	--	drl	109	4	--	--	--	776	80	--	--	--	--	--	Roberts
32.1d	Hazel Malcolm	--	drl	112	2	--	--	--	773	90	--	--	--	--	--	Roberts
32.5a	Ted Kendrick	1962	drl	99.6	4	4	4	.010	770	70.1	--	20-25	--	--	--	Stiegman
32.7h	Dick Pelle	--	drl	90	3	--	--	--	773	--	--	--	--	--	--	--
32.8a1	Ted Kendrick	1930	drl	230	2	--	--	--	772	80	--	--	--	--	Sand at 230	Gimble
32.8a2	Ted Kendrick	1968	drl	143	4	4	3.75	.015	772	76.2	3	20	6.7	3	Mud sand, 98-106; sand & gravel, 137-143	Swanson
33.1g	Katherine Stamm	1929	drl	112	2	--	--	--	770	82	--	--	--	--	--	Stiegman
33.7h	Seward Arnold	1958	drl	190	2	4	1.25	--	771	85	--	10	--	--	--	Stiegman
34.1d	E. & M. Harris	1930	drl	90	2	--	--	--	770	80	--	--	--	--	--	Roberts
34.1h1	A. Dalrymple Est.**	1918	drl	230	2	--	--	--	761	80	--	--	--	--	Sand at 230	Stiegman
34.1h2	A. Dalrymple Est.	--	drl	170	4	5	3.75	.018	761	80	--	15	--	4	Sand, 125-132, 153-170	Swanson
34.5a	R. Kennerd Est.**	--	drl	110	2	--	--	--	760	90	--	--	--	--	--	Havner
35.1d	Roy W. Otto	1919	drl	110	2	--	--	--	750	80	--	--	--	--	--	Roberts
35.1g	H. Roeder & Son	--	drl	110	2	--	--	--	745	35	--	--	--	--	--	--
35.8c	Dick Pelle	1908	drl	235	3	--	--	--	765	90	--	--	--	--	--	Stiegman
35.8g	H. Roeder & Son**	1920	drl	118	2	--	--	--	760	30	--	--	--	--	--	Roberts
36.1h	Don Pioletti	1906	drl	173	2	--	--	--	730	70	--	--	--	--	--	Stiegman
36.8d	Earl Evans	--	drl	110	2	--	--	--	750	40-45	--	--	--	--	--	--

Appendix A (Continued)

Well number	Owner	Well: Year constructed	Well: Type	Well: Depth (ft)	Well: Diameter (in)	Screen: Length (ft)	Screen: Diameter (in)	Screen: Slot size (in)	Land surface elevation (ft above msl)	Non-pumping water level (ft)	Drawdown (ft)	Pumping rate (gpm)	Observed specific capacity (gpm/ft)	Length of test (hr)	Water-bearing formation and depth (ft)	Driller
T26N, R9E																
1.3h	Lola B. Ferrell**	1933	drl	90	1.25	--	--	--	663	+1	--	--	--	--	Sand at 90	--
1.4a	Julius Boma	--	drl	98	2	--	--	--	666	flows	--	--	--	--	--	--
1.8e	John Ark	1914	drl	110	1.25	--	--	--	665	flows	--	--	--	--	Sand at 110	Roberts
2.1f1	Dora Johnson Est.	--	drl	60+	2	--	--	--	664	flows	--	--	--	--	--	--
2.1f2	Dora Johnson Est.	1964	drl	78+	2	--	--	--	664	2	--	--	--	--	--	Wilson
2.3a	Ada Chesebro**	1905	drl	65	2	--	--	--	665	.0	--	--	--	--	Sand at 65	--
2.6h	Otto Keever	1951	drl	45-50	1.5	--	--	--	664	+.5	--	--	--	--	--	Hitchens
3.1h	D. & R. Murray	1924	drl	68	2	--	--	--	664	+1	--	--	--	--	Sand at 68	Westerhausen
3.8d	Robert D. Jensen	1927	drl	70	2	--	--	--	665	+1	--	--	--	--	Sand at 70	Westerhausen
4	Piper City (V)**	1913	drl	70	8	8	--	--	--	--	--	--	--	--	--	Townsell & Park
4	Piper City (V)**	1913	drl	70	8	12	--	--	--	.0	27	60	2.2	.25	--	Townsell & Park
4	Piper City (V)**	1913	drl	70	6	8	--	--	--	--	--	--	--	--	--	Townsell & Park
4	Piper City (V)**	-1918	drl	80	8	--	--	--	--	--	--	--	--	--	Sand at 80	--
4.2f1(3)	Piper City (V)**	1944	drl-GP	78.5	16-8	15.7	6.6	.060	670	3.2 4.5	11.5 10.8	90.5 83	7.9 7.7	1.5 7	Sand & gravel, 34-38; dirty sand, 57-78.5	Hayes & Sims
4.2f2(6)	Piper City (V)	1944	drl-GP	90	16-8	19	--	.060	670	--	--	--	--	--	--	Hayes & Sims
4.3f(2)	Piper City (V)**	1942	drl	79	8	6	8	.020	670	1.3	10.7	40	3.7	--	Sand & gravel, 30-38; sand, 58-79	Bolliger
4.4f1	Toledo, Peoria, & Western RR	+1912	drl	168	--	--	--	--	672	flows	--	--	--	--	Sand & gravel at 168	--
4.4f2	Piper City (V)**	+1912	--	28	--	--	--	--	672	--	--	--	--	--	--	--
4.5b	Producers Seed Co.	--	drl	96	--	--	--	--	678	--	--	--	--	--	--	--
4.5f(7)	Piper City (V)	1953	drl-GP	127	16-8	29	8	.060	672	9	22	--	--	--	Sand, 98-127	Hayes & Sims
5.1d1	Ray Keefe	1915	drl	24	2	--	--	--	679	2-3	--	--	--	--	Sand at 24	Westerhausen
5.1d2	Ray Keefe	--	drl	73	2	--	--	--	679	--	--	--	--	--	--	Hitchens
5.1f	Monsano Co.	1965	drl	74	4	--	--	--	678	4	--	--	--	--	--	--
5.1h	Eugene Rice	--	drl	24	2	--	--	--	675	8	--	--	--	--	--	--
5.2d	Ron McCoy	--	drl	35	4	--	--	--	680	2-3	--	--	--	--	--	Stiegman
5.4d	John Keefe	1963	drl	23	2	--	1	--	680	3	--	12	--	--	--	Stiegman
5.8d	R. & M. Bradbury	1932	drl	24	1.5	--	--	--	691	8	--	--	--	--	Sand & gravel at 24	Bennett
5.8e	Mervin Kaeding	--	drl	--	2	--	--	--	693	--	--	--	--	--	--	--
6.2a	D. M. R. Bradbury	--	drl	24	1.5	--	--	--	701	--	--	--	--	--	--	--
6.5d1	Flessner Est.	--	dug	22	36	--	--	--	700	12-15	--	--	--	--	Sand at 22	--
6.5d2	Flessner Est.	--	drl	22	2	--	--	--	700	10	--	--	--	--	--	--
6.8h	Anton Gerdes	--	dug	22	48	--	--	--	697	15	--	--	--	--	Sand at 22	--
7.4h	L. & L. Flessner**	--	bor	27	6	--	--	--	713	6	--	--	--	--	Sand at 27	--
7.8a1	Lyman Brown**	1919	drl	72	3	--	--	--	740	40	--	--	--	--	Sand at 72	Taylor
7.8a2	Lyman Brown	1953	drl	75	4	--	--	.014	740	30	38	15	.4	--	Sand, 70-75	Swanson
7.8h	Edward Rebholz	1950	drl	155	4	--	--	--	715	--	--	--	--	--	--	French
8.1d	Robert Kurtenbach	1964	drl	48	4	--	--	--	702	--	--	--	--	--	--	--
8.2f	Lydia Minz	--	drl	40	2	--	--	--	698	--	--	--	--	--	--	--
8.7a	Velma Pearson	--	drl	37	3	--	--	--	711	15	--	--	--	--	Sand at 37	--
8.8e1	A. M. Mooney**	--	dug	12	36	--	--	--	711	5	--	--	--	--	Sand at 12	--
8.8e2	A. M. Mooney	--	drl	--	4	--	--	--	711	--	--	--	--	--	--	Bolliger
9.1f	Edmund Johnson	--	drl	34	3	--	--	--	675	6	--	--	--	--	Sand at 34	--
9.3f(1)	Piper City (V)**	1942	drl	39	8	9	8	.050	678	3	18	60	3.3	--	Sand & gravel, 20-23, 31.5-39	Bolliger
9.8d1	Vera Campion**	1910	drl	37	2	--	--	--	700	10	--	--	--	--	Sand at 37	Taylor
9.8d2	Vera Campion	1959	drl	26	3	--	2	--	700	10	--	15	--	--	--	Stiegman
10.1c	Lloyd Downs	1949	drl	90	3	--	--	--	670	flows	--	--	--	--	--	Wilson
10.2h1	T. & I. Jeffries**	--	drl	38	1.25	--	--	--	665	2	--	--	--	--	Sand at 38	--
10.2h2	T. & I. Jeffries	--	drl	68	1.25	--	--	--	665	flows	--	--	--	--	--	--
10.4h	Rauhbaugh Est.	1963	drl	60	1.25	--	--	--	668	flows	--	--	--	--	--	Wilson
10.8f	Robert Meikle	--	drl	30-40	4	--	--	--	672	--	--	--	--	--	--	--
11.2h	Catherine Woolsey	1918	drl	85	4	--	--	--	666	flows	--	--	--	--	Sand at 85	Kaffer
11.7d	Catherine Woolsey	--	drl	90	2	--	--	--	670	flows	--	--	--	--	Sand at 90	--
12.2h	Orville Pennicook	--	drl	94	1.25	--	--	--	666	+1	--	--	--	--	Sand at 94	--
12.8f	L. E. Jackson, Jr.	--	drl	90	1.25	--	--	--	667	flows	--	--	--	--	Sand at 90	--
13.1g	Warren Hanna	1874	drl	85	1.25	--	--	--	668	+1.5	--	--	--	--	Sand at 85	--
13.2a	Diercuff & Hanna	1950	drl	102	2	--	--	--	671	flows	--	--	--	--	--	--
13.6a	Mrs. John Best	--	drl	79	2	--	--	--	672	13	--	--	--	--	Sand & gravel at 79	--
13.8f	Agnes Weber	1946	drl	155	2	--	1	--	671	.0	--	--	--	--	--	Wilson
14.3h	George Weber	1900	drl	65	1.5	--	--	--	649	+.2	--	--	--	--	--	Lovett
14.5a1	Mrs. John Best**	1890	dug	18	36	--	--	--	682	8	--	--	--	--	--	--
14.5a2	Mrs. John Best	1966	drl	126	4	4.8	4	.020	682	8	72	75	1.0	5	Mud sand, 28-30; sand, 30-40; dirty sand, 40-82; sand, 100-126	Bolliger
14.5h	Mrs. Rex Cribbet	--	drl	56	1.25	--	--	--	669	flows	--	--	--	--	--	--
15.3a	Alma Keefe**	1924	drl	56	3	--	--	--	688	18	--	--	--	--	Sand at 56	Shunk
15.8e	Anna Willett	1965	drl	98	4	4	4	.010	699	35	--	25	--	--	--	Stiegman
15.8h	Lillie B. Dunn**	1869	drl	25	3	--	--	--	689	.0	--	--	--	--	Sand at 25	Dunn
16	F. & G. Rebholz	1948	drl	86	4	--	--	.018	--	6	52	12	.2	4	Sand & gravel, 10-15; sand, 74-86	Swanson
16.1c	Bertha Arends	--	drl	75	4	--	--	--	700	--	--	--	--	--	--	--
16.5a	Tucker & Harrison	1926	drl	113	2	--	--	--	705	35	--	--	--	--	Sand at 113	Westerhausen
16.5h	Emma Seegmiller	--	drl	32	1.25	--	--	--	700	6	--	--	--	--	Sand at 32	--
17.1a	Edwin Bork	1960	drl	45	4	--	--	--	719	--	--	--	--	--	--	Swanson
17.1g	Elizabeth Malloy	1924	drl	105	2	--	--	--	710	40	--	--	--	--	Sand at 105	Westerhausen
18.1d	John Kronenburger	1910	drl	58	3	--	--	--	725	42	--	--	--	--	Sand at 58	Westerhausen
18.5a	Joseph P. Kratz	--	drl	80	2	--	--	--	740	40	--	--	--	--	Sand at 80	--
18.8g	Duane Wagner	--	drl	75	2	--	--	--	750	--	--	--	--	--	--	--
19.1a	Henry Kurtenbach	--	drl	220	2	--	--	--	760	--	--	--	--	--	--	--
19.2f	John A. Rebholz	1901	bor	73	10	--	--	--	750	57	--	--	--	--	Sand at 73	Westerhausen
19.8b	J. M. Schiffgen	1955	drl	94	2	--	--	--	760	68	--	--	--	--	--	Stiegman
19.8f	Joseph Rebholz	1894	bor	67	8	--	--	--	750	56	--	--	--	--	Sand at 67	--
20.1h1	Clarence Reising**	1894	bor	41	10	--	--	--	720	35	--	--	--	--	Sand at 41	--
20.1h2	Clarence Reising	1964	drl	106	4	4	3.75	.040	720	47	23	10	.4	--	Sand & gravel, 104-106	Swanson
20.4a	John L. Kurtenbach	1955	drl	185	4	--	--	--	730	42-46	--	--	--	--	--	French
20.8a	John L. Kurtenbach	1920	drl	180	2	--	--	--	760	64	--	--	--	--	Sand at 180	Stiegman
21.1d1	Emma Seegmiller**	1884	dug	30	36	--	--	--	705	20	--	--	--	--	Sand at 30	--
21.1d2	Emma Seegmiller	1940	drl	140	2	--	--	--	705	15	--	--	--	--	--	--
21.5h	Roy Stamm	--	drl	--	3	--	--	--	702	16	--	--	--	--	--	--
21.8d	Roy Stamm	1931	drl	165	2	--	--	--	715	17	--	--	--	--	Sand at 165	Roberts
22.2h	F. Gourley & S. Fey	1940	drl	99	2	--	1	--	690	--	--	--	--	--	--	Wilson
22.3h	B. & T. Reinagle	--	drl	98	2	--	--	--	693	2-3	--	--	--	--	--	--
22.7h	Clark Est.	1916	drl	62	3	--	--	--	700	16.5	--	--	--	--	Sand at 62	Westerhausen
22.9a	Mable Grossenback	--	drl	148.9	2	--	--	--	711	18.6	--	--	--	--	--	Schunk & Stiegman
23.2c	June Jones	--	drl	120	3	--	--	--	682	30	--	--	--	--	Sand at 120	--
23.3a1	Leland Eshleman	1949	drl	120	2	--	1	--	692	16	--	--	--	--	--	Wilson

Well number	Owner	Well: Year constructed	Well: Type	Well: Depth (*ft*)	Well: Diameter (*in*)	Screen: Length (*ft*)	Screen: Diameter (*in*)	Screen: Slot size (*in*)	Land surface elevation (*ft above msl*)	Non-pumping water level (*ft*)	Drawdown (*ft*)	Pumping rate (*gpm*)	Observed specific capacity (*gpm/ft*)	Length of test (*hr*)	Water-bearing formation and depth (*ft*)	Driller
T26N, R9E (Continued)																
23.3a2	Leland Eshleman	1959	drl	120	2	--	1	--	692	16	--	--	--	--	--	Wilson
23.8h	Alva Hylcraine	1913	drl	75	3	--	--	--	680	11	--	--	--	--	Sand at 75	Roberts
24.3f1	L. C. Rasmussen**	1894	drl	28	1.25	--	--	--	675	7	--	--	--	--	Sand at 28	Lovett
24.3f2	L. C. Rasmussen	--	drl	96	2	--	--	--	675	--	--	--	--	--	--	Wilson
24.3f3	L. C. Rasmussen	--	dug	8.8	48	--	--	--	675	5.8	--	--	--	--	--	--
25.1c	Milford Hildenbrand	1957	drl	38	3	--	2	--	682	10	--	20	--	--	--	Stiegman
25.1f	Larkin Copes	1907	drl	45	1.25	--	--	--	680	flows	--	--	--	--	Sand at 45	Koritz
25.6h	Ira Dingledine	--	drl	26	4	--	--	--	685	11	--	--	--	--	Sand at 26	--
26.1b1	Edward Fuoss, Sr.	--	drl	125	2	--	--	--	695	--	--	--	--	--	--	--
26.1b2	Edward Fuoss, Sr.	1895	dug	15.9	60	--	--	--	695	7.9	--	--	--	--	Sand, 8-15.9	--
26.2f	Mary Railsback	1932	drl	137	2	--	--	--	691	15-18	--	--	--	--	Sand at 137	Stiegman
26.8h	M. Hildenbrand	1950	drl	120.2	2	--	--	--	692	18.2	--	--	--	--	--	--
27.1f	Leo Gourley	--	drl	65.5	2	--	--	--	701	16.5	--	--	--	--	Sand at 65.5	--
27.8b	Elsie Opperman	--	drl	86	3	--	--	--	712	17	--	--	--	--	--	--
27.8h	H. & F. Otto**	1903	drl	118	2	--	--	--	711	10-15	--	--	--	--	Sand at 118	Stiegman
28.1a	Clifford Boma	1941	drl	78	3	--	--	--	720	20	--	--	--	--	--	Hammel
28.1b	John Plank, et al	1932	drl	82	2	--	--	--	721	40	--	--	--	--	Sand at 82	Stiegman
28.1g	Carl Brauman	1914	drl	148	3	--	--	--	720	14-16	--	--	--	--	--	--
28.6g	Clarence Grosenbach	--	drl	158	2	--	--	--	730	--	--	--	--	--	--	Weburg
28.8e	Gertrude Brauman	1900	drl	70	2	--	--	--	740	45	--	--	--	--	Sand at 70	Stiegman
29.5b	Lloyd Kemnetz	--	drl	98	2	--	--	--	770	44-46	--	--	--	--	--	--
29.6h	John Kurtenbach	1902	drl	164	2	--	--	--	750	80	--	--	--	--	Sand & gravel at 164	Roberts
29.7c	Lloyd Kemnetz	--	drl	125	2	--	--	--	760	100	--	--	--	--	Sand at 125	Roberts
29.7h	Henry Kurtenbach	--	drl	89	4	--	--	--	745	--	--	--	--	--	--	Stiegman
30.2g	Lloyd Kemnetz	--	drl	90	3	--	--	--	770	65	--	--	--	--	--	--
30.5c1	Lloyd Kemnetz	1947	drl	120	2	--	--	--	790	40	--	--	--	--	Sand at 120	Roberts
30.5c2	Lloyd Kemnetz	1968	drl	112	4	4	4	.018	790	84	5	12	2.4	3	Sand & gravel, 104-112	Stiegman
30.6h1	Charles Laue	1919	drl	112	4	--	--	--	780	95	--	--	--	--	Sand at 112	Keifer
30.6h2	Charles Laue	1964	drl	102	4	4	4	--	780	80	--	20-25	--	--	--	Stiegman
31.1h	Francis Shambrook	--	drl	98-102	2	--	--	--	762	--	--	--	--	--	--	Stiegman
31.3a	James Phipps	--	drl	100	2	--	--	--	681	50	--	--	--	--	Sand at 100	--
31.3e	Gertrude Hoppler	--	drl	280	2	--	--	--	770	--	--	--	--	--	--	--
32.1h	Louis Scharer	--	drl	85	6	--	--	--	751	35	--	--	--	--	Sand at 85	Roberts
32.3h	Anna Brauman	--	drl	110	2	--	--	--	760	--	--	--	--	--	--	--
32.5a	Leroy Hawthorne	1930	drl	119	2	--	--	--	790	82	--	--	--	--	--	Roberts
32.8f	J. Montelius Est.	--	drl	110	2	--	--	--	770	40	--	--	--	--	Sand at 110	Westerhausen
33.1e	Roland Bork	1913	drl	125	3	--	--	--	732	20	--	--	--	--	Sand at 125	Stiegman
33.6h	Don Richardson	--	drl	110	2	--	--	--	735	--	--	--	--	--	--	--
33.8c	Hy W. Koritz	--	drl	105	2	--	--	--	761	35	--	--	--	--	Sand at 105	Roberts
34.1e	Louis Scharer	--	drl	140	4	--	--	--	710	--	--	--	--	--	--	--
34.3a	Melvin Ennen	--	drl	95	2	--	--	--	724	30	--	--	--	--	Sand at 95	--
35.4a	Clyde Crawford	1914	drl	104	2	--	--	--	700	15-20	--	--	--	--	Sand at 104	Roberts
35.8g	Ronald E. Davis	--	drl	65	4	--	--	--	701	16	--	--	--	--	Sand at 65	Stiegman
36.1a	Forrest Hildenbrand	--	drl	120	2	--	--	--	690	--	--	--	--	--	--	--
36.2h	Pearl Mason	1927	drl	99	3-2	--	--	--	682	5	--	--	--	--	Sand at 99	Roberts
36.5a	Veatch Est.	1909	dug & drl	43	48-1.25	--	--	--	698	10-20	--	--	--	--	Sand at 43	Allen
36.7a	Arthur C. Anderson	1966	drl	122	4	4	4	.010	700	20	--	25	--	--	Sand, 110-122	Stiegman
T27N, R9E																
1.1g1	A. & L. Stoller	--	drl	--	6	--	--	--	662	--	--	--	--	--	--	--
1.1g2	A. & L. Stoller**	--	dug	--	--	--	--	--	662	--	--	--	--	--	--	--
1.2c	A. & L. Stoller	--	drl	8.4	4	--	--	--	661	5	--	--	--	--	--	--
1.8a	Clara Zulke	--	dug & drl	38	48-2	--	--	--	663	6.7	--	--	--	--	Sand at 38	--
1.8e	Eva Karcher**	--	dug & drl	35	36-1.25	--	--	--	660	6	--	--	--	--	Sand at 35	--
2.5a	Roy Ackerman, Sr.	1940	drl	75-80	4	--	--	--	660	--	--	--	--	--	--	--
2.8c	Roy Ackerman, Sr.	1918	drl	140	2	--	--	--	655	3	--	--	--	--	Rock, 120-140	Westerhausen
2.8e1	Walrich Heirs	--	dug	18	48	--	--	--	657	--	--	--	--	--	--	--
2.8e2	Walrich Heirs	1937	drl	100+	4	--	--	--	657	--	--	--	--	--	Rock	Hitchens
2.8g	Walrich Heirs**	--	drl	40	1.25	--	--	--	655	5	--	--	--	--	Sand at 40	--
3.1c	Phillips Pipe Line Co.	1939	drl	200-250	6	--	--	--	658	--	--	--	--	--	Rock	--
3.8a	William Pike	1890	dug & drv	60.1	48-1.25	--	--	--	658	6.2	--	--	--	--	Sand at 60.1	--
3.8e1	Les Arends	--	dug & drv	55	36-1.25	--	--	--	658	5.4	--	--	--	--	Sand at 55	--
3.8e2	Les Arends	1950	drl	40	2	--	--	--	658	--	--	--	--	--	--	--
4.1a	Mrs. J. B. Walrich	1890	dug & drl	69	48-1.25	--	--	--	658	8	7	8	1.1	24	Sand at 69	Crandell
4.1b	Mrs. J. B. Walrich	--	dug	13.5	60	--	--	--	658	7.7	--	--	--	--	--	--
4.1e	Lester Overacker	1955	drl	100	2	--	--	--	658	--	--	--	--	--	--	--
4.3a1	Mrs. W. R. Crandall	--	drl	50+	3.5	--	--	--	660	--	--	--	--	--	--	Westerhausen
4.3a2	Mrs. W. R. Crandall	--	drv	50	3.5	--	--	--	660	--	--	--	--	--	--	Westerhausen
4.8a1	Everett Thorndyke**	1919	drl	45	2	--	--	--	658	4-5	--	--	--	--	Sand at 45	Westerhausen
4.8a2	Everett Thorndyke	1959	drl	140-160	4	--	--	--	658	--	--	--	--	--	Rock	Swanson
5	Minnie Frieden	1953	drl	76	4	6	3.75	.018	--	8.5	2.5	15	6.0	4.5	Sand, 69-76	Kingsley
5.3a	Irvin Heins	--	dug & drl	50	48-1.25	--	--	--	654	5.6	--	--	--	--	Sand at 50	--
5.6f	Joe Russell	--	drl	33	--	--	--	--	657	--	--	--	--	--	Sand & gravel, 31-33	French
6.1c	Dorothy Jehle	1965	drl	76	4	4	4	.020	660	9	--	20	--	--	Sand & gravel, 70-76	Stiegman
6.1g	John Harms**	1919	drl	78	2	--	--	--	658	1.5	--	--	--	--	Sand at 78	Westerhausen
6.3a1	Wes Harms	1904	drl	64	1.25	--	--	--	659	2	--	--	--	--	Sand at 64	Westerhausen
6.3a2	Wes Harms	1960	drl	34	4	--	--	--	659	--	--	--	--	--	Sand at 34	Stiegman
6.8b	J. W. Adams	--	dug	11.3	27	--	--	--	658	3.3	--	--	--	--	--	--
7.4a	Balwin & Herr	--	drl	50	2	--	--	--	660	10	--	--	--	--	Sand at 50	--
7.8f	Yates Est.	1957	dug	12.7	36	--	--	--	654	4.9	--	--	--	--	--	--
8.2h	Richard D. Fagan	1894	dug & drl	68	60-1.25	--	--	--	656	4	--	--	--	--	Sand at 68	--
8.3a	Alfred Montelius	1928	drl	90	4	--	--	--	658	6	--	--	--	--	Sand at 90	Westerhausen
8.8b1	Robert Brucker	--	drl	60	2	--	--	--	660	flows	--	--	--	--	--	--
8.8b2	Robert Brucker	1950	drl	66	4	4	4	.014	660	18	3	18	6.0	2	Sand, 60-66	Swanson
9.1a	Sara C. Andrews	1932	drl	40	1.25	--	--	--	657	2-3	--	--	--	--	Sand at 40	Westerhausen
9.1g	Mrs. Harvard Johnson	1966	drl	80	2	--	--	--	659	--	--	--	--	--	--	Wilson
9.2h1	Mrs. Merle Harford	1884	dug & drl	50	36-1.25	--	--	--	660	6.3	--	--	--	--	Sand at 50	Dick
9.2h2	Mrs. Merle Harford	1964	drl	43	2	--	1.25	--	660	10	--	12	--	--	--	Stiegman
9.8a1	Ben Miller	--	dug & drl	36	42-4	--	--	--	660	8	--	--	--	--	Sand at 36	--
9.8a2	Ben Miller**	--	dug	--	--	--	--	--	660	--	--	--	--	--	--	--

Well number	Owner	Well: Year constructed	Well: Type	Well: Depth (ft)	Well: Diameter (in)	Screen: Length (ft)	Screen: Diameter (in)	Screen: Slot size (in)	Land surface elevation (ft above msl)	Nonpumping water level (ft)	Drawdown (ft)	Pumping rate (gpm)	Observed specific capacity (gpm/ft)	Length of test (hr)	Water-bearing formation and depth (ft)	Driller
T27N, R9E (Continued)																
10.1e	Irvin Heins	1961±	bor	49.1	18	--	--	--	658	1.9	--	--	--	--	--	--
10.1g1	W. Essington	--	dug	24.1	72	--	--	--	660	6.2	--	--	--	--	--	--
10.1g2	W. Essington	1926	drl	79	4	--	--	--	660	8	--	--	--	--	Sand at 79	Quick
10.6h	Harry Arch	1956	drl	170	2	--	--	--	659	--	--	--	--	--	--	Hitchens
10.8c	Mary Carr	1923	drl	42	2	--	--	--	655	8-10	--	--	--	--	Sand at 42	Woodruff
11.1b	Robert Read	1960	drl	69	2	--	--	--	661	--	--	--	--	--	--	Hitchens
11.4h	Elmo Read	1951	drl	56	1.25	--	--	--	660	8	--	--	--	--	--	Hitchens
11.5g	Elmo Read**	1918	drl	80	2	--	--	--	661	10	--	--	--	--	Sand at 80	Westerhausen
11.8g	Irvin Heins	--	drl	50±	--	--	--	--	660	--	--	--	--	--	--	--
12.8a	Mrs. T. Read**	1930	drl	96	2	--	--	--	658	.5	--	--	--	--	--	Westerhausen
12.8h	Howard Read**	--	dug & drl	38	42-2	--	--	--	663	8-10	--	--	--	--	Sand at 38	--
13.4a	Dos Rios Ranches	1906	bor & drl	58	24-2	--	--	--	659	2	--	--	--	--	--	--
13.4b	Dos Rios Ranches	--	drl	65	2	--	--	--	659	--	--	--	--	--	--	--
13.6h	C. T. Aylesbury	--	dug & drl	--	36-?	--	--	--	658	1.7	--	--	--	--	--	--
13.8d	C. T. Aylesbury**	--	drl	60	1.25	--	--	--	658	.0	--	--	--	--	Sand at 60	--
14.1g	Clara Zulke	--	dug & drl	50	36-1.25	--	--	--	658	8	--	--	--	--	Sand at 50	--
14.5a	Ed Froelich	1948	drl	51	2	--	--	--	655	2-3	--	--	--	--	--	Hitchens
14.8a	Elmer Aupperle**	--	drl	51	1.25	--	--	--	658	5	--	--	--	--	Sand at 51	Westerhausen
15.1a1	Durell White**	--	drv	10	.5	--	--	--	658	--	--	--	--	--	--	--
15.1a2	Durell White	--	drl	38	2	--	--	--	658	3-4	--	--	--	--	--	--
15.1a3	Durell White	1884	drl	45	1.5	--	--	--	658	.0	--	--	--	--	Sand at 45	--
15.8f1	Alex Waakman**	--	drl	65	1.25	--	--	--	658	6	--	--	--	--	Sand at 65	--
15.8f2	Alex Waakman	1961	drl	46	3	--	--	--	658	--	--	--	--	--	--	Wilson
16.1e	A. McGuire Est.	--	drl	60	4	--	--	--	658	6	--	--	--	--	--	--
16.3a	Joseph Walle	1964	drl	179	4	--	--	--	657	29	13	15	1.2	--	Sand, 33-36; sand & gravel, 50-52; dirty sand, 52-141; limestone, 141-179	Swanson
16.5a	Earl Gray**	--	bor & drl	60	24-1.25	--	--	--	656	6	--	--	--	--	Sand at 60	--
16.8a1	A. McGuire Est.	--	drl	40	4	--	--	--	652	--	--	--	--	--	--	--
16.8a2	A. McGuire Est.**	1919	drl	38	1.25	--	--	--	652	6	--	--	--	--	Sand at 38	Shunk
17.3a	Joseph Walle	--	drl	94	1.25	--	--	--	653	8	--	--	--	--	Sand at 94	--
17.8b	John Blumenschein	1854	drl	100	6-3	--	--	--	651	+3	--	--	--	--	Sand at 100	--
18.1a	Havener Est.	1957	drl	84	2	--	1.25	--	659	flows	--	--	--	--	--	Stiegman
18.3a	Grace Havener	--	drv	90	1.25	--	--	--	659	flows	--	--	--	--	Sand at 90	--
18.4h	Martin F. Brown	--	drl	--	4	--	--	--	660	--	--	--	--	--	--	--
18.8c	E. & H. Harrington	1940	drl	98	2	--	--	--	659	--	--	--	--	--	--	Stiegman
18.8e	Glen Dehm	1926	drv	78	2	--	--	--	653	.0	--	--	--	--	Sand at 78	Westerhausen
19.1a	Yates Est.	--	drl	98	1.25	--	--	--	660	.0	--	--	--	--	Sand at 98	--
19.7h	Nellie Dehm	--	dug	14	36	--	--	--	660	4.7	--	--	--	--	--	--
19.8d	Florence Collins**	--	drl	14	1.25	--	--	--	661	6	--	--	--	--	Sand at 14	--
20.1g	Hippen Est.	--	dug & drv	40	36-2	--	--	--	651	.0	--	--	--	--	Sand at 40	Bradbury
20.3a	Hannah Clark**	--	dug	17	18	--	--	--	660	12	2	6	3.0	--	Sand at 17	--
20.4a	Hannah Clark	1961	drl	28.5	2	--	1.25	--	661	9	--	15	--	--	--	Stiegman
20.8d	Marie Kane	1964	drl	40	2	--	--	--	661	--	--	--	--	--	--	Wilson
20.8g	Marie Cell	--	drl	90-100	2	--	--	--	659	--	--	--	--	--	--	--
21.1a	Ada Chesebro	1915	drl	45	4-3	--	--	--	658	flows	--	--	--	--	Sand at 45	Westerhausen
21.1f	Ada Chesebro	1960	drl	46	4	4	4	.012	660	7	--	--	--	--	--	Stiegman
21.8a	R. W. Rosenboom	1933	drl	94	1.25	--	--	--	661	.0	--	--	--	--	Sand at 94	Meisenhelder
21.8e	Charles Parkinson	--	drl	25	2	--	--	--	658	--	--	--	--	--	--	--
22.4a	G. & E. Gibb	--	drl	48	1.25	--	--	--	659	flows	--	--	--	--	Sand at 48	--
22.5h	Hilda Miller**	--	drl	60	1.25	--	--	--	658	+1	--	--	--	--	Sand at 60	Westerhausen
22.6a1	G. & E. Gibb	1950	drl	190	4	--	--	--	659	--	--	--	--	--	Rock	French
22.6a2	G. & E. Gibb	1952	drl	63	6	--	--	--	659	--	--	--	--	--	--	French
22.8h	Polla Townhouse	--	drl	--	4	--	--	--	658	--	--	--	--	--	--	--
23.1a	John P. Gallahue	1869	drl	48.9	1.25	--	--	--	658	1.3	--	--	--	--	Sand at 48.9	--
23.1f	John P. Gallahue	1955	drl	103	4	--	--	--	658	--	--	--	--	--	--	Bolliger
23.5a	F. Cassidy Est.**	1909	drl	55	1.25	--	--	--	660	+1	--	--	--	--	Sand at 55	--
23.8a	Charles Purdum**	--	dug & drl	46	48-2	--	--	--	659	2.5	--	--	--	--	Sand at 46	--
23.8h	Charles Purdum	--	drl	29.8	1.5	--	--	--	659	+.5	--	--	--	--	--	--
24.1a1	Roy Wahls	--	drv	45	1.25	--	--	--	659	+1.1	--	--	--	--	Sand at 45	--
24.1a2	Roy Wahls	1963	drl	--	4	--	--	--	659	--	--	--	--	--	--	--
24.2h	John P. Gallahue	1870	drl	55-58	1.25	--	--	--	660	+.5	--	1.5	--	--	--	--
24.3f	John P. Gallahue	1917	drl	56	2	--	--	--	660	+.5	--	--	--	--	Sand at 56	Taylor
24.3h1	John P. Gallahue	1904	bor & drl	60	24-2	--	--	--	660	flows	--	--	--	--	--	--
24.3h2	John P. Gallahue	1925	drl	68	2	--	--	--	660	--	--	--	--	--	--	--
24.5a	George Ficklin	1957	drv	59-60	2	--	--	--	660	+1.5	--	--	--	--	--	--
24.6a	George Ficklin	--	drl	60	1.5	--	--	--	660	.0	--	--	--	--	--	--
24.7a	George Ficklin	1967	drl	63	4	4	4	.012	660	flows	20	25	1.3	2	Sand, 35-38, 57-63	Swanson
24.8h	O'Hara Sisters	1920	drl	90	2	--	--	--	660	flows	--	--	--	--	Sand at 90	Taylor
25.3a	H. F. Johnson	--	drl	88	1.5	--	--	--	663	flows	--	--	--	--	--	Wilson
25.3h	Robert Dooley, Tr.**	--	drv	--	1.25	--	--	--	660	--	--	--	--	--	--	--
25.5h	George Ficklin	--	drv	78-80	2	--	--	--	660	+1	--	--	--	--	--	--
25.6h	George Ficklin	1894	drv	58-60	--	--	--	--	660	.0	--	--	--	--	Sand at 60	--
25.8c	Mrs. H. H. Cassidy	1906	drl	72	1.25	--	--	--	663	flows	--	--	--	--	Sand at 72	--
26.1f	James Stuckey	1884	drl	50	1.25	--	--	--	661	flows	--	--	--	--	Sand at 50	Lamb
26.8a	Orell Stuckey	1918	drl	65-68	1.25	--	--	--	662	--	--	--	--	--	Sand at 65-68	Westerhausen
26.8f	Howard Kawley**	--	drl	61	1.25	--	--	--	661	+1.5	--	--	--	--	Sand at 61	Westerhausen
27.1f	Watson McKee	--	drl	58	1.25	--	--	--	661	flows	--	--	--	--	Sand at 58	--
27.8a1	Ada Chesebro	--	drl	51	2	--	--	--	660	+1.5	--	--	--	--	Sand at 51	--
27.8a2	Ada Chesebro	--	drl	46	4	4	4	.012	660	7	--	15	--	--	--	Stiegman
27.8a3	Ada Chesebro	1941	drl	57	4	--	--	--	660	flows	--	--	--	--	--	Bolliger
27.8a4	Ada Chesebro	1957	drl	91	4-2	--	1	--	660	9	--	12	--	--	--	Stiegman
28.3g1	Frank Whitney	--	drl	32	2	--	--	--	657	--	--	15	--	--	Sand, 30-32	--
28.3g2	Frank Whitney	1932	drl	80	2	--	--	--	657	+2	--	--	--	--	Sand at 80	Hitchens
28.5b1	Frank Drilling	--	drl	37	2	--	--	--	662	--	--	--	--	--	--	--
28.5b2	Frank Drilling	1947	drl	15	2	--	--	--	662	--	--	--	--	--	--	--
28.5b3	Frank Drilling	1947	drl	15	2	--	--	--	662	--	--	--	--	--	--	--
28.8a1	Warren Miles Est.	--	dug	12	36	--	--	--	664	8	2	8	4.0	--	Sand & gravel at 12	--
28.8a2	Warren Miles Est.	1958	drl	62	4	--	--	--	664	--	--	--	--	--	--	Bolliger
29.1f	Paul Parkinson	+1951	drl	85	3	--	--	--	663	--	--	--	--	--	--	--
29.3a1	Mae Dowling	1920	drl	77	4	--	--	--	670	--	--	--	--	--	--	Bolliger
29.3a2	Mae Dowling	1938	drl	77	4	--	--	--	670	--	--	--	--	--	--	Bolliger
29.6a	J. J. Lyons	--	drl	132	3	--	--	--	671	4	--	--	--	--	Sand at 132	--

Appendix A (Continued)

Well number	Owner	Well: Year constructed	Well: Type	Well: Depth (ft)	Well: Diameter (in)	Screen: Length (ft)	Screen: Diameter (in)	Screen: Slot size (in)	Land surface elevation (ft above msl)	Nonpumping water level (ft)	Drawdown (ft)	Pumping rate (gpm)	Observed specific capacity (gpm/ft)	Length of test (hr)	Water-bearing formation and depth (ft)	Driller
T27N, R9E (Continued)																
29.8a	Bob Sterrenberg	--	drl	90	2	--	--	--	674	--	--	--	--	--	--	--
30.3a	S. A. Weeden	1932	drl	15.5	1.25	--	--	--	671	2.5	--	--	--	--	Sand at 15.5	Westerhausen
30.5a1	D. & G. Cooke**	--	drl	18	1.25	--	--	--	670	8	--	--	--	--	Sand at 18	--
30.5a2	D. & G. Cooke	1943	drl	85	--	--	--	--	670	--	--	--	--	--	Sand, 22-25, 60-62, 80-85	Bolliger
30.6a	Mae Dowling	1962	drl	29	2	--	1	--	680	8	--	12	--	--	--	Stiegman
30.8f	Lynn Switzer	1962	drl	36	3	--	2	--	670	10	--	15	--	--	--	Stiegman
31	John Arks	--	drl	120	4	--	--	--	--	3	35	10	.3	4	Sand, 75-77; dirty sand & gravel, 93-109; limestone, 109-120	Swanson
31.1b1	LaVern Kiehm	1920	drl	54-60	4	--	--	--	682	16-20	--	--	--	--	Sand at 54-60	Westerhausen
31.1b2	LaVern Kiehm	1938	drl	52-54	4	--	--	--	682	--	--	--	--	--	--	--
31.1f	J. Richard Ark	--	drl	50	2	--	--	--	680	--	--	--	--	--	--	--
31.8d	Anna Lutson	1910	drl	93	2	--	--	--	685	17	--	--	--	--	Sand at 93	Taylor
32.1c1	Flora King**	1890	dug	16	36	--	--	--	669	10	--	--	--	--	Sand at 16	--
32.1c2	Flora King	--	drl	--	2	--	--	--	669	--	--	--	--	--	--	--
32.1e	John Wilson	--	drl	90	4	--	--	--	665	1-2	--	--	--	--	--	--
32.1h	John Wilson	1967	drl	24	1.5	--	--	--	664	7.9	--	--	--	--	--	Wilson
32.3h1	Joseph Dowling**	1904	drl	36	1.5	--	--	--	668	10	--	--	--	--	Sand at 36	--
32.3h2	Joseph Dowling	1939	drl	90+	2	--	--	--	668	7	--	--	--	--	--	Stiegman
32.7h	John Blumenschein	1955	drl	--	4	--	--	--	672	--	--	--	--	--	--	Stiegman
33	Albert E. Dehm**	+1914	drv & drl	85	2	--	--	--	--	--	--	--	--	--	Sand at 85	--
33.4c	Hermina Zimmerman	--	drl	--	2	--	--	--	665	--	--	--	--	--	--	--
33.5d1	John Wilson**	1894	bor	12	24	--	--	--	665	4	--	--	--	--	Sand at 12	--
33.5d2	John Wilson	--	drl	90	4	--	--	--	665	4	--	--	--	--	--	--
33.8a	Wilma Finch	1962	drl	33	2	--	--	--	675	--	--	--	--	--	--	Stiegman
34.1e	Rex Cribbet	--	drl	75.4	1.5	--	--	--	660	2.2	--	--	--	--	--	--
34.1g	Mildred Weber**	1884	drl	64	1.25	--	--	--	662	.0	--	--	--	--	Sand at 64	--
34.4a1	Watson McKee	1955	drl	94	1.5	--	--	--	664	1.5	--	--	--	--	--	--
34.4a2	W. M. Pennicook	1955	drl	94	1.5	--	--	--	664	flows	--	--	--	--	--	--
34.5a1	Watson McKee	1956	drl	96	1.5	--	--	--	664	flows	--	--	--	--	--	--
34.5a2	Watson McKee	1956	drl	80	1.5	--	--	--	664	+1.7	--	--	--	--	Sand at 80	--
35.1a	G. Tucker & B. Harrison	--	drl	55	2	--	--	--	663	+.5	--	--	--	--	Sand at 55	--
35.1e	Nellie Kelly	1904	drl	75	--	--	--	--	663	+1	--	--	--	--	Sand at 75	--
36.1c	Robert Wrenn	1919	drl	78	1.25	--	--	--	663	flows	--	--	--	--	Sand at 78	Hitchens
36.5h1	John P. Gallahue	+1934	drl	68	2	--	--	--	662	+1.5	--	--	--	--	Sand at 68	--
36.5h2	John P. Gallahue	1937	drl	67	2	--	--	--	662	flows	--	3	--	--	--	Taylor
T28N, R9E																
1.1c	M. C. Dyrby	1955	drl	200+	4	--	--	--	702	36	--	--	--	--	--	Jensen
1.1g	Fred Crane	1907	drl	85	4	--	--	--	711	40	--	6	--	--	Sand at 85	--
1.3c	M. C. Dyrby	1954	drl	710	8	--	--	--	702	25-26	--	--	--	--	--	--
1.8a	Riordan Est.	1911	drl	165	4-3	--	--	--	704	60	--	5	--	--	--	Farley
2.1d	Florence Schaub	--	bor	100.6	18	--	--	--	701	53	--	--	--	--	--	--
2.4g	Minnie Devereaux	1925	drl	111	4	--	--	--	691	--	--	--	--	--	Sand & gravel at 111	Jensen
2.6g	Mrs. John McKinley	--	drl	170	4	--	--	--	693	49	--	4	--	--	--	--
3.5h	Henry Flessner**	1898	drl	202	3	--	--	--	700	32	--	4	--	--	Rock	Munger & Burns
3.6a	Avis Smith	+1947	drl	--	4	--	--	--	685	--	--	--	--	--	--	--
3.6h	Henry Flessner	1930	drl	300	4	--	--	--	705	32	--	--	--	--	Limestone, 165-300	Jensen
3.7h	Henry Flessner	1932	drl	160	4	--	--	--	697	32	--	4	--	--	Sand at 160	Jensen
4.1a	Thelma Falter**	1958	drl	240	6	--	--	--	697	25	--	7	--	--	Sandstone, 210-235	Bolliger
4.3h	Lillian Allford	1912	drl	166	4	--	--	--	700	31	10	7.5	.8	48	--	Stuard
4.6g	Eula Farley	1962	drl	105	--	--	--	--	693	--	--	--	--	--	*Dirty sand, 40-45; dirty sand & gravel, 90-100	Hayes
4.6h1	Eula Farley	1962	drl	105	--	--	--	--	693	--	--	--	--	--	*Dirty sand, 48-105	Hayes
4.6h2	Eula Farley	1962	drl	135	--	--	--	--	693	--	--	--	--	--	*Dirty sand, 84-85, 102-107.5	
4.6h3	Eula Farley	1962	drl	126	--	--	--	--	693	--	--	--	--	--	*Dirty sand & gravel, 83.5-85; dirty sand, 110-126	Hayes
4.6h4	Eula Farley	1962	drl	160	--	--	--	--	693	--	--	--	--	--	*Sand & gravel, 106.5-108; dirty sand, 108-117	Hayes
4.6h5	Eula Farley	1962	drl	135	--	--	--	--	693	--	--	--	--	--	*Dirty sand, 82-84.5, 106.5-123	Hayes
4.7a	D. & O. Falter	+1867	drl	285	4	--	--	--	682	30	--	--	--	--	Rock	--
4.8h	Lewis E. Farley	--	drl	450	3	--	--	--	693	80	--	4	--	--	Rock	--
5.1c	Kathryne Gardner	--	drl	--	4	--	--	--	689	--	--	--	--	--	--	--
5.2h	D. Wright, et al**	1927	drl	339	--	--	--	--	700	--	--	--	--	--	Lime rock, 235-339	Jensen
5.5h	Mary J. Spires	1900±	drl	327	4	--	--	--	710	--	--	--	--	--	--	--
5.8a	Dora Brown	1930	drl	113	4	--	--	--	690	--	--	--	--	--	Sand & gravel at 113	Jensen
6.1c	E. & E. Freed	--	drl	300+	4	--	--	--	690	--	--	--	--	--	Rock	--
6.5h1(1)	Kampton (V)**	1909	drl	404	6	--	--	--	737	80	--	8-10	--	--	Sand & gravel, 230-240; rock, 285-404	--
6.5h2(2)	Kampton (V)	1931	drl	238	8	10	8	.020-.030	737	80	100	110	1.1	--	Sand, 228-235; sand & gravel, 235-238	Johnson
6.5h3(3)	Kampton (V)**	1949	drl	386	8	--	--	--	737	100	210	12	.1	2	Sand & gravel, 245-250; sandstone, 250-255, 328-380	French
7.1b	Mrs. R. D. Scott	--	dug	68.8	17.5	--	--	--	700	36	--	--	--	--	--	--
7.1f	Dora Brown	--	drl	200+	4	--	--	--	690	--	--	--	--	--	--	--
7.8e	Marshal Bute	--	drl	203	3	--	--	--	708	10	--	3.5	--	--	--	--
8.2a	Duane Dowse	--	drl	--	4	--	--	--	686	--	--	--	--	--	Rock	--
8.5h	Frank Scott	1953	drl	205	4	--	--	--	687	19	--	9.5	--	--	Sand, 58-90; sandstone, 175-205	Bolliger
8.8a	Ida Dowse	--	bor	65	18	--	--	--	689	10	--	3	--	--	--	--
8.8g	Donald Gardner	--	drl	--	4	--	--	--	687	--	--	--	--	--	--	--
9.1a1	Stanley Falter	--	bor	39.4	36	--	--	--	676	6.3	--	--	--	--	--	--
9.1a2	Stanley Falter	--	drl	--	6	--	--	--	676	--	--	--	--	--	--	--
9.5a	P. Scott Trust**	--	bor	15	36	--	--	--	671	4	6	.9	.2	1	--	--
9.6a	P. Scott Trest	1942	drl	246	6	--	--	--	675	--	--	--	--	--	Sand rock, 210-216, 226-246	Bolliger
10.1b1	Harold Kelley	--	dug	43.8	30	--	--	--	690	3.8	--	--	--	--	--	--
10.1b2	Harold Kelley	1914	bor	72.3	30	--	--	--	690	33	--	--	--	--	Sand at 72.3	--
10.1f1	Ed Krull	--	drl	--	--	--	--	--	680	--	--	--	--	--	*	--
10.1f2	Ed Krull	1951	drl	200	6	--	--	--	680	80-90	--	--	--	--	--	--
10.7h1	Ivan Paterson	--	drl	--	6	--	--	--	681	--	--	--	--	--	--	--

Well number	Owner	Well: Year constructed	Well: Type	Well: Depth (ft)	Well: Diameter (in)	Screen: Length (ft)	Screen: Diameter (in)	Screen: Slot size (in)	Land surface elevation (ft above msl)	Nonpumping water level (ft)	Drawdown (ft)	Pumping rate (gpm)	Observed specific capacity (gpm/ft)	Length of test (hr)	Water-bearing formation and depth (ft)	Driller
T28N, R9E (Continued)																
10.7h2	Ivan Peterson	--	drl	--	4	--	--	--	681	--	--	--	--	--	--	--
10.7h3	Ivan Peterson**	--	dug	--	48	--	--	--	681	--	--	--	--	--	--	--
11.3h	Louis Gualandi	1948	drl	97	6	--	--	--	700	28	32	15	.5	--	Sand, 95-97	Bolliger
11.6a	Duane Donley	--	bor	71.3	24	--	--	--	675	10.6	--	--	--	--	Sand at 71.3	--
12.2d	John Bergan	--	drl	180+	4	--	--	--	665	--	--	--	--	--	Rock	Jensen
12.3h	H. E. Essington	1894	drl	258	3-2.5	--	--	--	675	20	--	4	--	--	Rock	Jensen
12.7a	Duane Donley & Lettie Kelly**	--	drl	68	3	--	--	--	659	+2.3	--	7	--	--	--	--
12.7d1	Kathryne Gardner	--	drl	--	3	--	--	--	680	--	--	--	--	--	--	--
12.7d2	Kathryne Gardner	1950	drl	180+	6	--	--	--	680	30	--	--	--	--	--	--
13.4a1	W. Kroll, Jr.**	--	bor	70	36	--	--	--	658	20	--	--	--	--	Sand at 70	--
13.4a2	W. Kroll, Jr.	1940	drl	50.3	4	--	--	--	658	1.8	--	--	--	--	--	--
13.8a	Andrew Meister	1920	drl	190	4	--	--	--	657	15	--	--	--	--	Rock	Jensen
14.4a1	John Thielman	1921	dug	42	18	--	--	--	659	5	--	--	--	--	--	--
14.4a2	John Thielman	1960	drl	190+	6	--	--	--	659	--	--	--	--	--	Rock	Sienfield
14.4h	Robert Lewin	--	dug	60+	36	--	--	--	669	--	--	--	--	--	--	--
14.6a1	Howard Hills**	1929	drl	82	3	--	--	--	659	10	--	4	--	--	Sand at 82	Bolliger
14.6a2	Howard Hills**	1957	drl	186	--	--	--	--	659	15	--	10	--	--	Sand at 186	Bolliger
14.6a3	Howard Hills	1966	drl	220	6-5	--	--	--	659	4	116	14	.1	--	Dirty sand, 45-48; sand, 64-83; dirty sand, 83-94; sand, 103-107; limestone, 152-220	Bolliger
14.8h1	Merle Haley	--	drl	59.9	4	--	--	--	686	20.1	--	--	--	--	--	--
14.8h2	Merle Haley	1946	drl	200±	6	--	--	--	686	40	--	--	--	--	Rock	French
14.8h3	Merle Haley	1966	drl	180	6	--	--	--	686	--	--	--	--	--	Rock	Bolliger
14.8h4	Merle Haley	1966	drl	400	6	--	--	--	686	--	--	--	--	--	"	Bolliger
15.1a	Bowman Bros.	+1917	drl	185	4	--	--	--	670	12	--	4	--	--	Rock	--
15.8e	H. W. Kelley	1922	drl	285	4	--	--	--	681	23.7	--	--	--	--	Rock gravel at 285	Jensen
16.1f	Henry Schoder	1950±	drl	208	6	--	--	--	682	30	--	--	--	--	Rock	Bolliger
16.7h	Sue Tofte	1916	drl	240	4	--	--	--	680	10	--	4.5	--	--	Rock	Jensen
16.8b	Dora Brown	--	drl	250+	4	--	--	--	690	--	--	--	--	--	--	--
17.5a	Oswald Keller, Sr.	--	dug	61.3	36	--	--	--	690	40.3	--	--	--	--	--	--
17.8e1	Pearl Sutherland	--	bor	79.9	18	--	--	--	693	4.6	--	--	--	--	Sand at 79.9	--
17.8e2	Pearl Sutherland	1919	drl	285	6	--	--	--	693	60	--	4	--	--	Rock	Jensen
18.1b	Donald Johnson	--	dug	--	24	--	--	--	700	--	--	--	--	--	--	--
18.1g	Nonia VanWicklin	1925	drl	205	4	--	--	--	690	27	--	5	--	--	Rock	Jensen
18.8b	M. Bute & E. Wagner	--	bor	86	18	--	--	--	696	40	--	3	--	--	Sand at 86	--
19.1c	Merle Throne	--	dug & drl	60	36-3	--	--	--	670	12	--	4	--	--	Sand at 60	--
19.1h	R. & C. Sengfiel	--	drl	108	4	--	--	--	692	18	--	4	--	--	Sand at 108	--
19.8c	J. & L. Riebe	--	dug & bor	45+	54-7	--	--	--	693	17	--	4	--	--	--	--
20.1a	Kenny Turner	--	drl	300	4	--	--	--	658	3	--	--	--	--	Rock	--
20.1d	Howard Hills	--	drl	185	6	--	--	--	665	--	--	--	--	--	Rock	Bolliger
20.3h1	Clara Watts	--	drl	212	6	--	--	--	690	--	--	--	--	--	Rock	--
20.3h2	Clara Watts**	--	dug	50+	34	--	--	--	690	3	--	--	--	--	--	--
20.8a1	Howard Ferry	--	drl	--	3	--	--	--	665	--	--	--	--	--	--	--
20.8a2	Howard Ferry	1918	drl	200	4	--	--	--	665	5	--	5	--	--	Rock	Bolliger
20.8e	Art Ramien**	1916	drl	213	4-3.5	--	--	--	680	60	--	6	--	--	Limestone at 180	Stuart
21.2a	Frank Drendel	1919	drl	200	4	--	--	--	658	--	--	6	--	--	Rock, 180-200	Jensen
21.3h	Glen Anderson	--	drl	160	6	--	--	--	668	--	--	--	--	--	Rock	--
21.4a	Ford County Farm Service, Inc.	1966	drl	190	6	--	--	--	660	8	82	17	.2	5	Shale, 168-190	Bolliger
21.6h	L. Drendel Est.**	--	drl	235	4	--	--	--	670	5	--	5	--	--	Rock	Jensen
21.8d	Louis Drendel	1919	drl	229	4	--	--	--	665	3	--	5	--	--	Rock, 200-229	Jensen
21.8f1	Louis Drendel	--	dug	60	36	--	--	--	680	--	--	--	--	--	--	--
21.8f2	Louis Drendel	1966	drl	160	6	--	6	.020	680	12	28	25	.9	--	Sand, 80-88; dirty sand, 148-154; sand, 154-160	Bolliger
22.1c	William Halpin	--	drl	135	4	--	--	--	659	18	--	--	--	--	--	--
22.1g	Ben Mueller	1966	drl	215	6	--	--	--	661	8	52	15	.3	--	Dirty sand & gravel, 80-95; dirty sand, 95-100; sand, 140-143; limestone, 168-215	Bolliger
22.2h	Ben Mueller**	--	drl	200	4	--	--	--	663	--	--	4	--	--	Rock	Jensen
22.8d1	John Riebe	--	dug	10.2	48	--	--	--	661	4.7	--	--	--	--	--	--
22.8d2	John Riebe	1920	drl	206	4	--	--	--	661	4	--	6	--	--	Rock	Jensen
23.2f	Maxine Haag	1950	drl	196	6	--	--	--	650	--	--	--	--	--	--	Bolliger
23.4h1	Mrs. Arthur Ramien	--	drl	60	4	--	--	--	660	--	--	--	--	--	--	--
23.4h2	Mrs. Arthur Ramien	1901	drl	68	4	--	--	--	660	1.5	--	--	--	--	Sand at 68	Roar
23.5h	Russell Mills	1953	drl	200	6	--	--	--	660	--	--	--	--	--	Rock	Bolliger
23.8d	W. & E. Halpin	--	dug	40	36	--	--	--	659	12	--	3.5	--	--	--	--
24.1b	Maurice Nelson**	1939	drl	51	--	--	--	--	657	--	--	--	--	--	Sand & gravel at 51	Johnson
24.4h	Donald Read	--	dug & bor	62	48-24	--	--	--	658	2.5	--	--	--	--	Sand at 62	--
24.8a1	E. & M. Haag**	1914	drl	150	4	--	--	--	657	30	--	4	--	--	Sand at 150	Jensen
24.8a2	E. & M. Haag	1953	drl	100	6	--	--	--	657	12	--	4	--	--	Sandstone, 87-100	Bolliger
25.1a	T. B. McMatton	--	drl	--	4-3.5	--	--	--	660	--	--	--	--	--	--	--
25.1f	Andrew Meister	1958	drl	63	6	6	--	.020	659	10	--	40	--	--	Sand, 50-63	Bolliger
25.4a	T. B. McMatton	--	drl	63	4	--	--	--	659	10	--	4	--	--	--	--
26.1h	Harold Rhode	--	drl	--	6	--	--	--	657	--	--	--	--	--	--	--
26.8a1	Herman Elies**	--	dug & drl	70	48-4	--	--	--	658	8	--	4	--	--	--	--
26.8a2	Herman Elies	1948	drl	190	6	--	--	--	658	--	--	--	--	--	Rock	Jensen
26.8e	R. H. Kaltenbach	1941	drl	181	6	--	--	--	658	--	--	--	--	--	Rock	--
26.8h	Charles Chandler	--	drl	--	4	--	--	--	656	--	--	--	--	--	--	--
27.2a	Martin Dietz	1912	drl	80	4	--	--	--	658	20	--	4	--	--	Sand at 80	Jensen
27.4h	Chris Walters	--	drl	--	6	--	--	--	658	--	--	--	--	--	--	--
27.6a1	W. & L. Dohman	--	drl	65	4	--	--	--	658	5	--	4.5	--	--	Sand at 65	--
27.6a2	W. & L. Dohman	1944	drl	59.5	--	--	--	--	658	--	--	--	--	--	Sand & gravel, 57-59.5	French
28.1c1	E. Haag & L. Chandler	--	drl	60	4	--	--	--	657	3	--	5	--	--	Sand at 60	--
28.1c2	E. Haag & L. Chandler	--	drl	230	--	--	--	--	657	--	--	--	--	--	--	--
28.1c3	E. Haag & L. Chandler	--	drl	203	--	--	--	--	657	--	--	--	--	--	Sand, 36-60; quicksand, 70-75; lime rock, 158-203	Bolliger
28.1h1	Alice Riebe	--	dug	12.7	36	--	--	--	657	5.7	--	--	--	--	--	--
28.1h2	Alice Riebe	1916	drl	199	5	--	--	--	657	10	--	--	--	--	Rock, 179-199	Jensen
28.8h	Howard McCracken	1921	drl	188	5	--	--	--	658	4	--	--	--	--	Rock	Jensen
29.2h1	Irma Blair	--	drl	--	6	--	--	--	659	--	--	--	--	--	--	--
29.2h2	Irma Blair	--	dug	--	48	--	--	--	659	--	--	--	--	--	--	--
29.2h3	Irma Blair	1956	drl	183	6	--	--	--	659	--	--	--	--	--	Rock	Bolliger
29.6a1	Charles Riebe	--	dug	12-15	36	--	--	--	657	--	--	--	--	--	--	--

Appendix A (Continued)

Well number	Owner	Well: Year con-structed	Type	Depth (ft)	Diam-eter (in)	Screen: Length (ft)	Diam-eter (in)	Slot size (in)	Land surface elevation (ft above msl)	Non-pumping water level (ft)	Draw-down (ft)	Pumping rate (gpm)	Observed specific capacity (gpm/ft)	Length of test (hr)	Water-bearing formation and depth (ft)	Driller
T28N, R9E (Continued)																
29.6a2	Charles Riebe	1964	drl	164	6	--	--	.020	657	1.5	--	--	--	--	Sand, 80-88; dirty sand, 148-154; sand, 154-160	Bolliger
29.8f	James McDermott	--	dug & drl	--	60-3	--	--	--	659	3-5	--	--	--	--	--	--
30.2a	Art Riebe	--	drl	--	6	--	--	--	660	--	--	--	--	--	--	--
30.6a	Hills Bros.	--	dug & drl	60	36-2	--	--	--	658	9.2	--	--	--	--	--	--
30.8h1	Russell D. Hills**	--	dug	30	60	--	--	--	671	20	--	3	--	--	--	--
30.8h2	Russell D. Hills**	1944	drl	58	--	--	--	--	671	--	--	--	--	--	Sand, 57-58	Bolliger
30.8h3	Russell D. Hills	1964	drl	129	6	6	--	.050	671	27	--	50	--	--	Sand, 60-65, 100-104, 120-129	Bolliger
31.1g	E. J. Donahue	--	dug	20	36	--	--	--	658	5	--	5	--	--	--	--
31.3e	Gene Weerts	--	drl	--	4	--	--	--	656	--	--	--	--	--	--	--
31.7c	Orville Grubbs	1894	dug	60	48	--	--	--	655	5	--	4	--	--	--	Eilers
31.7h1	Lewis Arch	--	bor	80	18	--	--	--	658	10	--	4	--	--	Sand at 80	--
31.7h2	Lewis Arch	--	bor	65	8	--	--	--	658	--	--	--	--	--	--	--
32.5b	McKinney Est.	--	drl	--	4	--	--	--	656	--	--	--	--	--	--	--
32.8c1	H. & L. Flessner**	--	dug	40	48	--	--	--	657	12	--	3	--	--	Sand at 40	--
32.8c2	H. & L. Flessner	1950	drl	50±	6	--	--	--	657	--	--	--	--	--	--	--
32.8e	H. & L. Flessner	1950	drl	56.7	6	--	--	--	656	6.8	--	--	--	--	Sand at 56.7	--
33.5a	McKinney Est.	1940	drl	196	4	--	--	--	656	+2.5	--	--	--	--	Sand & gravel, 53-57; sand, 181-186, 192-196	Swenson
33.8e	Henry Schoder	--	drl	80	6	--	--	--	658	--	--	--	--	--	--	--
34.1b	Helen Jackson	--	dug & drl	60	60-3	--	--	--	652	5	--	3	--	--	--	--
35.1e	J. Montellus Est.	--	dug & drl	65	60-2	--	--	--	661	12	--	3.5	--	--	Sand at 65	--
35.1h	J. Montellus Est.	--	drl	180	4	--	--	--	658	--	--	--	--	--	Rock	Swenson
35.7h1	John McKinney**	--	dug & drl	65	36-4	--	--	--	657	6	--	4	--	--	Sand at 65	--
35.7h2	John McKinney	1948	drl	138	6	--	--	--	657	6	2	8	4.0	10.5	Sand & gravel, 34-45; sand rock, 117-138	Jennek
35.8b	Clara Switzer	--	drl	40	3.5	--	--	--	657	--	--	--	--	--	--	--
36.1e	Evelyn Meister	--	dug & drl	60	60-7	--	--	--	662	8	--	4	--	--	--	--
36.2b	Jennie Schultz	--	drl	90	4	--	--	--	660	12	--	4	--	--	--	--
36.8e	L. G. Anderson	1957	drl	185	6-5	--	--	slotted pipe	661	--	--	--	--	--	Rock	French
T29N, R9E																
13.1g	Emery DuBois	+1947	drl	117.7	4	--	--	--	690	38.1	--	--	--	--	--	--
13.3e	Donald Meyer**	--	dug & drl	50	36-2	--	--	--	711	20	--	3.5	--	--	--	--
13.6e	Mary Wene	--	dug	40	42	--	--	--	711	--	--	--	--	--	--	--
13.8e	Ethel Fritz	1924	drl	195	6	--	--	--	712	30	--	4	--	--	Rock	Stewart
13.8h	Donald Mees	1941	drl	143	4	--	--	--	699	37.5	--	--	--	--	Shale & a little lime-stone, 140-193	Jensen
14.1a1	Royce Down**	--	drl	190	4	--	--	--	715	36	--	3	--	--	Rock	--
14.1a2	Royce Down	1947	drl	250	4	--	--	--	715	37.7	--	--	--	--	--	--
14.4h	Cecil Cochran	+1952	drl	200	6	--	--	--	704	--	--	--	--	--	--	Bolliger
14.6h	Cecil Cochran**	--	drl	195	4	--	--	--	710	30	--	3	--	--	Rock	--
15.1b	Ardell Sutton	--	drl	186	4	--	--	--	715	40	--	4	--	--	Rock	--
15.1h	Edward Quayle	--	drl	180	4	--	--	--	700	28	--	4	--	--	Rock	Ryile & Munger
16	Cabery (V)	1956	drl	133	8	3 1 2	-- -- --	.040 .030 .020	--	--	--	--	--	--	Dirty sand, 110-113; sand, 128-133	Bolliger
16.1g1	Mrs. H. J. Smicker	1898	drl	--	3	--	--	--	690	33	--	--	--	--	--	--
16.1g2	Mrs. H. J. Smicker	1954	drl	275	6-4	--	--	--	690	41	--	10	--	--	Sand, 110-113, 121-124; limestone, 187-275	Wills
16.6g	--	1892	drl	230	4-3	--	--	--	690	22	--	--	--	--	Rock at 200	Nelson
16.6h	Ernst Reising	1890	drl	230	4	--	--	--	698	--	--	--	--	--	--	--
16.8c	Roy B. Johnson	1956	drl	230	6	--	--	--	700	--	--	--	--	--	Sand, 129-132, 185-187; limestone, 212-230	Bolliger
16.8g(3)	Cabery (V)	1956	drl	357	8	--	--	--	700	48	34.5	125	3.6	4	Dirty sand, 124-126; sand, 196-198; lime-stone, 212-357	Bolliger
16.8h(2)	Cabery (V)	1920	drl	233	6	--	--	--	700	42 39.5	19.5 19.5	30.5 30.5	1.6 1.6	3.5 8.5	Lime rock, 192-233	Jensen
17.8b	Clifford Clapp	1954	drl	180	--	--	--	.020	710	34	--	50	--	--	Sand at 40, 169-180	Bolliger
17.8h	Peter Sadler**	1904	drl	233	6-4	--	--	--	690	80	--	3.5	--	--	Rock	Roser
18.1h1	F. & L. Paredies	1870	dug & bor	40	48-6	--	--	--	690	--	--	--	--	--	--	--
18.1h2	F. & L. Paredies	1954	drl	387	6-5	10	5	slotted pipe	690	49	--	--	--	--	--	Bolliger
18.6a1	Henry Canham	1880	dug	40	--	--	--	--	707	--	--	--	--	--	--	Canham
18.6a2	Henry Canham	1894	drl	104.7	4	--	--	--	708	44.4	--	--	--	--	--	Canham & Adams
18.6a3	Henry Canham	1910	drl	316	4	--	--	--	710	--	--	--	--	--	--	Canham
18.7h1	Bill Middleson	--	drl	--	6	--	--	--	698	--	--	--	--	--	--	Lower
18.7h2	Bill Middleson	1894	drl	280	4	--	--	--	696	82	--	3	--	--	Rock	Lower
18.8h	Glenn Sargeant**	--	drl	260	4	--	--	--	696	80	--	3.5	--	--	Rock	--
19.4h	W. A. Heckett	--	dug	122	18	--	--	--	710	24.5	--	--	--	--	--	--
19.6e	George Frame	1955	drl	485	4	--	--	--	708	60-80	--	10	--	4	--	Bolliger
20	A. T. Anderson**	--	drl	175	--	--	--	--	--	--	--	--	--	--	--	--
20.1b	R. & H. Wagner	--	drl	222	--	--	--	--	740	--	--	--	--	--	Sand, 220-222	Bolliger
20.3h	Mrs. J. Jensen	--	drl	100+	4	--	--	--	712	30	--	--	--	--	--	--
20.8b	Frederick Raab	--	dug	40	72	--	--	--	729	20	--	--	--	--	--	--
20.8e	Willard Walsmith	1953	drl	167	6	--	--	.020	713	--	--	10	--	--	Sand & gravel at 130; sand, 130-167	Bolliger
21.1a	Merle Haley	--	drl	--	6	--	--	--	729	--	--	--	--	--	--	--
21.1h	Sarah Stith**	--	drl	160	4	--	--	--	730	10	--	--	--	--	--	--
21.8c	Abel A. Hanson	1900	drl	--	6	--	--	--	740	--	--	--	--	--	--	--
22.4e	Cecil Cochran	--	dug	--	54	--	--	--	731	--	--	--	--	--	--	--
22.8h	J. Ogilvie Est.	--	drl	185	4	--	--	--	730	30	--	4	--	--	--	--
23.1f	Ina Hummel	1921	drl	295	4	--	--	--	725	--	--	--	--	--	Lime rock, 190-295	Jensen
23.6h1	Dorothy Moroff**	--	drl	180	4	--	--	--	722	30	--	3.5	--	--	Rock	--
23.6h2	Dorothy Moroff	1956	drl	353	6	--	--	--	722	52	148	2	.01	--	Dirty sand, 140-182; limestone, 250-353	Griffy

Appendix A (Concluded)

Well number	Owner	Well: Year constructed	Well: Type	Well: Depth (ft)	Well: Diameter (in)	Screen: Length (ft)	Screen: Diameter (in)	Screen: Slot size (in)	Land surface elevation (ft above msl)	Non-pumping water level (ft)	Drawdown (ft)	Pumping rate (gpm)	Observed specific capacity (gpm/ft)	Length of test (hr)	Water-bearing formation and depth (ft)	Driller
T29N, R9E (Continued)																
23.6h3	Dorothy Moroff	1959	drl	376	5	--	--	--	722	70	120	2	.02	--	Dirty sand, 140-191; limestone with shale beds, 191-376	Griffy
24.1a1	Helen L. Hughes	1889	drl	976	6-3	--	--	--	737	84	--	5	--	--	--	Sykes
24.1a2	Helen L. Hughes	1960	drl	1250	6-5	--	--	--	740	--	--	--	--	--	Limestone, 210-440, 515-1025; sandstone, 1025-1245	Wehling
24.1b	Helen L. Hughes**	1925	drl	523	--	--	--	--	740	--	--	--	--	--	Limestone, 184-523	Jensen
24.3h	K. N. Hughes	1917	dug	84.4	30	--	--	--	711	9.2	--	--	--	--	--	--
24.6g	Leslie Hummel	--	drl	143.5	4	--	--	--	720	44	--	--	--	--	--	--
24.8e	Orville Rouk	1963	drl	326	6	--	--	--	740	75	--	15	--	--	Sand, 103-107; limestone, 216-223, 228-236, 240-252, 278-326	Bolliger
25.3e	Mrs. J. Rinehart	1956	drl	--	6	--	--	--	750	--	--	--	--	--	--	--
25.3h	Mrs. J. Rinehart**	--	drl	178	4	--	--	--	740	40	--	--	--	--	--	--
25.6a1	Minnie Schaforth	--	dug	--	48	--	--	--	730	--	--	--	--	--	--	--
25.6a2	Minnie Schaforth	1958	drl	234	6	--	--	.020	735	90	--	9	--	--	Sandstone, 218-234	Bolliger
26.8d	Vern H. Down	1955	drl	220	6	--	--	--	740	35-40	--	--	--	--	--	Wehling
27.4a1	Nielson Bros.	--	dug	70	60	--	--	--	740	--	--	--	--	--	--	--
27.4a2	Nielson Bros.	1954	drl	165	6	--	--	--	740	--	--	--	--	--	--	Senesac
28.3e	Cecil Cochran	1937	drl	280	4	--	--	--	745	--	--	--	--	--	Limestone, 180-280	Jensen
29.1d	Earl Taylor Est.	1931	drl	230	4	--	--	--	740	--	--	--	--	--	--	Jensen
29.1h1	Edward Ohrt	--	dug	52.5	54	--	--	--	735	26	--	--	--	--	--	--
29.1h2	Edward Ohrt	1967	drl	470	6	--	--	--	737	--	--	--	--	--	--	Bolliger
29.8h	J. & M. Donaghue	--	dug & bor	75.2	48-12	--	--	--	731	21.4	--	--	--	--	--	--
30	Eldon Sargeant	1953	drl	318	--	--	--	--	--	--	--	2	--	--	Sand at 152; rock, 152-170	Bolliger
30.1b	Dean Benson	1924	drl	206	4	--	--	--	725	38	--	--	--	--	Sand at 206	Jensen
31.1b1	Earl Taylor Est.	--	drl	240	4	--	--	--	740	40	--	4	--	--	Rock	--
31.1b2	Earl Taylor Est.	1942	drl	81	6	--	--	--	730	--	--	--	--	--	Sand & gravel, 80-81	Bolliger
31.1h1	James Malone	1899	drl	735	4-3-2	--	--	--	731	100	--	4.5	--	--	Lime rock, 220-260; rock, 260-735	Munger & Burns
31.1h2	James Malone	1954	drl	236	--	--	--	.020	730	90	--	8	--	--	Sand, 212-215, 230-236	Bolliger
31.1h3	James Malone	1960	drl	213	6	--	--	.020	730	80	--	5	--	--	Sand, 153-155, 210-215	Bolliger
31.5a(4)	Kempton (V)	1962	drl	238	8	6.7	8	.020	740	87.5	61.5	100	1.6	4	Dirty sand, 210-231; sand, 231-238	Bolliger
32.1h1	John Leonard, Jr.	--	drl	--	4	--	--	--	740	--	--	--	--	--	--	--
32.1h2	John Leonard, Jr.	--	bor	--	18	--	--	--	740	--	--	--	--	--	--	--
32.3a	Robert Wagner	--	drl	180	4	--	--	--	710	--	--	--	--	--	--	Hatfield
32.7d	Berenes Bros.	--	drl	--	4	--	--	--	745	--	--	--	--	--	--	--
33.1d1	Paul Weaver	--	drl	175	4	--	--	--	735	38	--	3	--	--	--	--
33.1d2	Paul Weaver	1960	drl	400	4	--	--	--	735	84	16	9	.6	12	Limestone at 400	Jensen
33.4g	Eula Farley	--	drl	209	4	--	--	--	749	50	--	--	--	--	--	--
34.2h	Richard Horn	--	drl	160	3	--	--	--	712	35-40	--	--	--	--	--	--
34.4e	Thomas Fenton	--	drl	200	4	--	--	--	707	45	--	4	--	--	Rock	--
34.5h1	O. H. Basham	--	bor	109	18	--	--	--	750	90	--	--	--	--	--	--
34.5h2	O. H. Basham**	--	dug	--	42	--	--	--	750	--	--	--	--	--	--	--
34.8d1	Fred Crane	~1932	drl	200	6	--	--	--	715	--	--	1	--	--	Sand & gravel, 135-136	Bolliger
34.8d2	Fred Crane	1932	drl	851	4	--	--	--	715	--	--	--	--	--	*Limestone, 226-660, 663-850	Berns
34.8d3	Fred Crane	1955	drl	240	6	--	--	--	715	50	--	30	--	--	Sand, 108-112, 142-165, 187-201; lime rock, 201-240	Bolliger
35.2h	Leroy Delchman	--	drl	--	4	--	--	--	714	--	--	--	--	--	--	--
35.7h	Luther Barrett	--	drl	170	4	--	--	--	702	30	--	--	--	--	Rock	--
35.8c	Carrol Anderson	--	drl	80+	2.5	--	--	--	697	--	--	--	--	--	--	--
36.1e	J. H. Bergen**	1925	drl	187	--	--	--	--	705	--	--	--	--	--	Sand & gravel at 187	Jensen
36.1f	J. H. Bergen	1926	drl	221	4-3	--	--	--	705	30	--	--	--	--	Lime rock, 183-221	Jensen
36.4h	J. H. Bergen**	--	drl	170	4	--	--	--	727	45	--	--	--	--	--	--
36.6h	Irwin Taylor	1957	drl	--	6	--	--	--	740	--	--	--	--	--	--	--

APPENDIX B - CHEMICAL QUALITY OF GROUNDWATER

Tabulated data of mineral content for groundwater supplies in Ford County follow.

Symbols used in the tabulations are:

D = glacial drift
L = limestone
S = sandstone
* = State Bureau of Public Water Supply chemical analyses

The sources and significance of the major dissolved elements and substances in groundwater in waters of Ford County and U. S. Public Health Service drinking water limits (1962) are included in table 1.

Appendix B. Chemical Quality of Groundwater

Well number	Owner	Depth ft	Source	Laboratory number	Iron Fe	Manganese Mn	Ammonium NH_4	Sodium Na	Calcium Ca	Magnesium Mg	Silica SiO_2	Fluoride F	Nitrate NO_3	Chloride Cl	Sulfate SO_4	Alkalinity (as $CaCO_3$)	Hardness (as $CaCO_3$)	Total dissolved minerals	Temperature °F
T23N, R7E																			
1.2a	Lillie Ogg	75	D	146776	3.0	--	--	--	--	--	--	--	--	3	--	320	232	351	--
2.4b2	Gibson City	58	D	118909	1.1	--	--	--	--	--	--	.0	.2	6	--	300	317	337	--
2.4b5(3)	Gibson City	58	D	119440	1.0	.0	.1	6	64.7	33.9	18	.2	3.5	2	27	280	301	341	54
2.4b5(3)	Gibson City	58	D	119441	1.0	--	--	--	--	--	--	--	--	2	--	288	313	329	53
2.4b5(3)	Gibson City	58	D	119442	.7	--	--	--	--	--	--	--	--	3	--	284	313	331	54
2.4b5(3)	Gibson City	58	D	142972	.9	--	Tr	--	--	--	--	--	3.2	3	--	296	316	350	--
2.4b5(3)	Gibson City	58	D	160510	1.3	--	--	--	--	--	--	--	--	5	--	300	340	382	55
3.4f	Helen F. Kelly	65	D	171548	2.5	--	--	--	--	--	--	--	--	3	--	296	348	399	58
4.5e1	Rutkowski Bros.	42	D	80205	1.5	0	.1	18	79.5	24.5	7	--	.8	4	70	262	300	376	--
4.5e2	Rutkowski Bros.	65	D	177313	1.8	--	--	--	--	--	--	.2	.4	3	--	292	370	439	--
5.5e	Harvey Tjardes	90	D	171553	1.4	--	--	--	--	--	--	--	--	1	--	296	334	364	54
9.3d	A. Gerling, et al	25	D	171549	1.9	--	--	--	--	--	--	--	--	0	--	322	290	341	54
11	Stokely Van Camp Canning Co.	25	D	73660	1.2	0	.6	21	76.0	37.1	15	--	.6	9	62	288	343	398	--
11.3h2	Gibson City	55	D	38909	1.0	.0	.5	34	49.4	11.6	14	--	.7	3	17	232	171	260	--
11.3h2	Gibson City	55	D	80150	1.0	0	.5	27	64.9	28.9	12	--	.4	3	15	320	281	313	--
11.4h1(1)	Gibson City	58	D	84155	.8	.0	.3	5	65.0	38.9	15	--	2.0	2	23	306	323	324	--
11.4h1(1)	Gibson City	58	D	91851	4.0	--	--	--	--	--	--	--	--	3	--	294	303	370	54
11.4h1(1)	Gibson City	58	D	96133	1.1	--	--	--	--	--	--	--	--	2	--	312	294	348	54
11.4h1(1)	Gibson City	58	D	98010	.1	--	--	--	71.5	29.5	--	--	--	3	--	308	302	352	54
11.4h1(1)	Gibson City	58	D	105168	2.0	--	--	7	68.1	33.7	--	--	--	3	46	272	311	343	--
11.4h1(1)	Gibson City	58	D	162512	8.6	.18	.5	--	--	--	--	.3	.7	85	--	316	432	583	55
11.4h1(1)	Gibson City	58	D	165451	2.0	--	--	--	--	--	--	--	.3	13	--	324	304	355	55
11.4h2	Gibson City	61	D	86117	14.8	.0	.8	38	35.3	33.2	11	--	1.2	5	42	258	225	346	--
11.5h(2)	Gibson City	56	D	87026	.8	.0	.8	7	73.8	36.8	15	--	.9	5	57	286	336	370	--
11.5h(2)	Gibson City	56	D	88793	1.2	--	--	--	--	--	--	--	--	3	--	294	319	367	--
11.5h(2)	Gibson City	56	D	96134	1.3	--	--	--	--	--	--	--	--	4	--	294	316	361	53
11.5h(2)	Gibson City	56	D	105169	1.4	--	--	4	77.0	35.5	--	--	--	3	65	276	340	360	--
11.5h(2)	Gibson City	56	D	118253	1.7	.0	Tr	5	81.8	33.3	25	.2	1.8	5	70	272	342	398	54
11.5h(2)	Gibson City	56	D	142971	1.5	--	Tr	--	--	--	--	--	2.7	5	--	308	360	388	--
11.6g1	Stokely Van Camp Canning Co.	45	D	80151	1.2	0	.3	22	85.6	34.7	13	--	1.2	16	89	290	357	432	--
11.7d(4)	Central Soya Co., Inc. (before deepening)	402	L	110075	Tr	--	--	--	--	--	--	--	--	3	--	376	239	386	54
11.7d(4)	Central Soya Co., Inc. (before deepening)	427	L	110209	.2	--	2.3	--	--	--	--	--	--	Tr	0	376	246	389	54
11.7d(4)	Central Soya Co., Inc. (before deepening)	427	L	110210	.2	--	2.2	--	--	--	--	--	--	Tr	0	372	246	385	54
11.7d(4)	Central Soya Co., Inc. (after deepening)	552	L	110827	21.4	--	--	--	--	--	--	--	--	4	--	332	258	363	--
.11.7d(4)	Central Soya Co., Inc. (after deepening)	552	L	110829	.6	--	--	--	--	--	--	--	--	3	--	324	236	346	55
11.7d(4)	Central Soya Co., Inc. (after deepening)	552	L	110830	1.8	--	--	--	--	--	--	--	--	25	--	368	315	439	55
11.8c2(1)	Central Soya Co., Inc.	33	D	110190	1.0	--	--	--	--	--	--	--	--	10	120	300	395	512	54
11.8d1(2)	Central Soya Co., Inc.	385	L	103778	.2	--	4.3	--	--	--	--	--	1.7	0	--	404	270	406	55
11.8d1(2)	Central Soya Co., Inc.	385	L	110212	.1	--	3.8	--	--	--	--	--	--	Tr	0	384	261	403	54
11.8d1(2)	Central Soya Co., Inc.	385	L	121821	2.3	--	.1	--	--	--	--	--	--	2	5	396	327	421	55
11.8d1(2)	Central Soya Co., Inc.	385	L	122473	13.2	--	--	--	--	--	--	--	--	76	--	340	380	554	57
11.8d2(3)	Central Soya Co., Inc.	400	L	109960	.9	.0	5.6	50	58.8	33.5	21	.4	.6	1	3	404	285	406	52
11.8d2(3)	Central Soya Co., Inc.	400	L	109962	--	--	--	--	--	--	--	--	--	310	--	416	709	1026	--
11.8d2(3)	Central Soya Co., Inc.	400	L	109963	--	--	--	--	--	--	--	--	--	27	--	412	328	488	53
13.5c	Clarence Goodrich	47	D	172650	1.3	--	--	--	--	--	--	--	--	8	--	276	372	451	--
15.2g	G. W. Schroeder	33	D	170855	4.7	--	--	--	--	--	--	--	.6	62	--	304	468	590	--
15.5a	William Holland	20	D	164158	.3	--	--	--	--	--	--	--	41.2	94	--	316	810	1112	--
16.8f1	Wallace Dillman	30	D	80179	1.0	.2	.1	4	71.4	31.0	11	--	1.3	4	49	258	307	328	--
21.1d	Elmer Nelson	28	D	172647	1.6	--	--	--	--	--	--	--	--	0	--	396	350	401	--
23.1h1	James Thompson	16	D	80206	.4	0	Tr	15	73.7	30.1	6	--	.5	11	120	200	309	392	--
23.1h2	James Thompson	16	D	165249	.6	--	--	--	--	--	--	--	.9	4	--	292	452	502	--
29.3b2	Leonard Cross	40	D	172968	.2	--	--	--	--	--	--	--	--	24	--	264	376	619	--
32.5h	George Tjardes	20	D	80178	.1	0	Tr	14	84.9	33.0	9	--	12.0	30	82	240	348	414	--
T23N, R8E																			
2.5a	Stokely Van Camp Canning Co.	90	D	158677	2.2	--	--	--	--	--	--	--	--	2	--	300	250	390	--
4.1f	Granville Brewer	110	D	172708	2.6	--	--	--	--	--	--	--	--	0	--	364	338	378	60
11.6h	Roy Forman	180	D	158676	1.6	--	--	--	--	--	--	--	--	2	--	284	224	359	--
11.8d1(1)	Elliott (V)	120	D	113025	.7	--	--	--	--	--	--	.7	--	1	--	308	257	367	--
11.8d2(2)	Elliott (V)	126	D	121725	.9	--	--	--	--	--	--	--	--	1	--	296	238	368	54
11.8d2(2)	Elliott (V)	126	D	121726	1.1	.0	.8	51	60.0	24.8	19	.7	.1	1	61	300	252	408	58
11.8d2(2)	Elliott (V)	126	D	144933	2.1	--	--	--	--	--	--	.8	--	3	--	302	244	363	54
11.8d2(2)	Elliott (V)	126	D	*5062	--	--	--	--	--	--	--	.8	.0	3	67	256	290	400	--
15.1g	Isabelle Renolds	126	D	172783	1.4	--	--	--	--	--	--	--	--	0	--	288	230	403	59
27.1h	Florence P. Johnson	115	D	172782	1.2	--	--	--	--	--	--	--	--	0	--	292	202	325	58
29.4a	C. W. Christie	180	D	80255	3.0	0	1.2	50	81.5	32.1	12	--	.2	2	139	300	336	532	--
32.4h1	S. E. Leonard	75	D	80256	1.0	.15	.7	35	61.4	27.7	12	--	.2	1	17	328	268	349	--
T23N, R9E																			
2.5a	Rhoda Holtzman	98	D	172643	5.5	--	--	--	--	--	--	--	--	1	--	386	340	437	57
4.3a	R. & K. Humphrey	102	D	80248	9.0	0	.5	34	58.7	32.1	9	--	.3	1	51	300	279	365	--
9.2h2	Ada M. Burwash	100	D	172641	4.0	--	--	--	--	--	--	--	--	0	--	324	286	431	60

Well number	Owner	Depth ft	Source	Laboratory number	Iron Fe	Manganese Mn	Ammonium NH_4	Sodium Na	Calcium Ca	Magnesium Mg	Silica SiO_2	Fluoride F	Nitrate NO_3	Chloride Cl	Sulfate SO_4	Alkalinity (as $CaCO_3$)	Hardness (as $CaCO_3$)	Total dissolved minerals	Temperature °F
T23N, R9E (Continued)																			
9.3d	Carson Farm Account	92	D	167577	.7	--	--	--	--	--	--	--	.0	0	--	372	280	388	--
14.1g(8)	Paxton (C)	340	D	*32335	2.0	.1	2.6	4	85	37	18	.4	.0	3	0	368	364	340	--
14.1g(8)	Paxton (C)	340	D	152590	1.7	Tr	Tr	16	86.6	32.5	18	.2	3.6	0	21	360	350	418	55
14.2g2	Paxton (C)	125	D	141907	2.0	.2	--	--	--	--	--	.3	.2	4	--	340	284	343	--
14.2g3(7)	Paxton (C)	340	D	141850	1.0	.0	--	--	--	--	--	.3	.0	7	--	356	312	366	54
14.2g3(7)	Paxton (C)	340	D	150859	2.2	.0	.4	20	85.9	25.5	17	.3	3.8	0	15	356	320	387	--
14.2g3(7)	Paxton (C)	340	D	154244	1.6	--	--	--	--	--	--	--	--	0	--	348	332	368	--
21.8g	Milo Hansen	84	D	80249	3.0	.1	2.3	43	53.5	26.1	13	--	.4	1	2	338	241	341	--
26.7a	Lewis Thompson	100	D	172645	.1	--	--	--	--	--	--	--	--	1	--	378	318	410	62
27.1h	Marvin Gritton	140	D	80182	1.7	Tr	1.1	6	83.6	35.8	13	--	.7	2	6	362	356	357	--
34.8h	Lawrence Seim	95	D	172644	1.7	--	--	--	--	--	--	--	--	0	--	360	270	416	60
36.4h2	Arthur Stevenson	104.2	D	172646	1.1	--	--	--	--	--	--	--	--	0	--	380	396	456	60
T23N, R10E																			
4.7f	C. C. Brocksmith	157	D	90730	.7	--	--	--	--	--	--	--	--	4	--	278	502	686	--
5.1e2	Edward Brocksmith	147	D	172465	1.4	--	--	--	--	--	--	--	--	2	--	248	648	1019	58
7.1b4(3)	Paxton (C)	151	D	50983	1.2	0	8.2	43	68.5	32.8	31	--	1.2	2	38	396	296	471	--
7.1c(4)	Paxton (C)	150	D	84158	.4	.0	.4	50	50.6	29.8	15	--	2.1	1	12	344	250	361	--
7.1c(4)	Paxton (C)	150	D	116219	1.0	.0	6.0	49	72.2	34.3	24	.3	.2	1	57	384	322	482	55
7.1d2(5)	Paxton (C)	149.7	D	104473	1.4	.0	3.2	48	39.4	23.3	15	--	2.3	1	0	304	194	311	54
7.3d(6)	Paxton (C)	153	D	122482	1.3	Tr	.3	56	60.5	34.9	26	.4	10.6	3	66	336	295	451	54
9.4a	Melvin Coulter	158	D	162353	1.4	--	--	--	--	--	--	--	.9	1	--	328	304	468	--
10.3h	Elmer Zimmerman	177	D	80131	.6	0	1.1	74	89.7	34.6	12	--	1.8	2	196	302	367	603	--
11.1f	Marvin Goold	120	D	80121	.3	0	.5	30	68.8	36.5	12	--	.7	2	42	322	322	388	--
11.4h	Horace Fredrick	134	D	172464	1.2	--	--	--	--	--	--	--	--	0	--	346	348	524	60
12.1c	Russell Larimer	95	D	172467	.1	--	--	--	--	--	--	--	--	1	--	296	304	312	57
18.8a1	Richard Leider	80	D	176131	.3	--	--	--	--	--	--	--	.0	0	--	396	356	407	--
19.8g	Milton Schofield	96	D	80184	.2	0	2.6	30	65.0	45.2	12	--	2.2	3	2	412	349	395	--
19.8g	Milton Schofield	96	D	172648	.2	--	--	--	--	--	--	--	--	4	--	276	292	346	59
22.8a	Cecil Maycraft	134	D	172642	2.2	--	--	--	--	--	--	--	--	0	--	352	334	388	61
23.4c	W. W. Atkins	65	D	80183	.1	0	Tr	14	60.4	23.0	10	--	4.9	2	6	262	246	265	--
24.1d	Leo R. Carlson, Sr.	115	D	172472	Tr	--	--	--	--	--	--	--	--	1	--	282	327	337	56
29.5c	Leon Foster	28	D	170755	.2	--	--	--	--	--	--	--	18.8	26	--	312	460	535	--
29.8b	Chuck Condit	160	D	172649	.1	--	--	--	--	--	--	--	--	0	--	266	314	364	60
33.8a	Arlin Roy	98	D	172466	2.6	--	--	--	--	--	--	--	--	0	--	304	296	323	59
34.3a	J. & E. Speck	81	D	158036	.3	--	--	--	--	--	--	.3	--	0	--	304	297	333	--
35.5a	Mrs. W. B. Collins	90±	D	177350	.4	--	--	--	--	--	--	--	1.5	10	--	252	310	362	--
36.3a	Welby Adkins	40	D	172463	.2	--	--	--	--	--	--	--	--	7	--	360	396	429	62
T23N, R11E																			
25.5b	Mary Sandquist	73	D	172469	.8	--	--	--	--	--	--	.1	--	1	--	268	364	397	58
36.1b	E. E. Evans	60	D	131349	4.2	--	--	--	--	--	--	--	--	7	--	352	508	510	--
T23N, R14W																			
7.2d	Walter Congram	106	D	80030	.3	.3	.2	22	67.6	32.4	12	--	3.8	3	22	300	302	326	--
9.8g	Elmer Kief	135	D	80031	.6	0	8.3	34	82.9	41.5	12	--	1.7	2	9	440	378	449	--
16.8a	K. Gordon Murray	80	D	172471	1.6	--	--	--	--	--	--	--	--	2	--	340	432	529	61
18.7a	Edward W. Carlson	120+	D	172470	.4	--	--	--	--	--	--	--	--	0	--	268	288	284	59
21.2g	Dr. W. L. Hamm	111	D	157362	.8	--	--	--	--	--	--	.2	.5	4	--	320	356	401	--
29.8g	Marvin Lewis	110	D	90731	.7	--	--	--	--	--	--	--	--	2	--	280	311	331	--
31.4c	Joseph Van Ham	88	D	172468	2.4	--	--	--	--	--	--	--	--	2	--	328	424	433	59
T24N, R7E																			
4.1g	Oscar A. Yentes	18	D	172965	Tr	--	--	--	--	--	--	--	--	12	--	254	386	474	--
13.1f	Milton R. Bell	147	D	172967	1.1	--	--	--	--	--	--	--	--	0	--	340	284	337	--
14.2d	Ralph Borchers	120	D	179252	.5	--	--	--	--	--	--	--	.8	0	--	356	320	368	--
19.1a	Mrs. John Erp	110	D	172966	1.1	--	--	--	--	--	--	--	--	0	--	318	256	307	54
T24N, R8E																			
1.7e1(2)	Melvin (V) (before deepening)	231	D	30591	2.4	.0	2.9	28	71.3	38.2	17	--	1.4	1	6	--	335	416	--
1.7e2(3)	Melvin (V) (before deepening)	258	D	67456	.8	0	1.8	41	69.2	36.8	22	--	1.2	2	10	404	324	444	--
1.7e2(3)	Melvin (V) (after deepening)	265	D	116241	.6	.0	2.0	33	77.6	34.3	24	.6	.4	2	21	388	335	427	55
1.7e3(4)	Melvin (V)	260	D	135015	.7	--	--	--	--	--	--	.4	.1	4	--	428	316	426	55
1.7e3(4)	Melvin (V)	260	D	*21838	.6	.0	1.8	49	69	38	15	.6	.0	4	25	404	330	440	--
7.8g2	Louise Smith Corp.	125	D	172779	3.7	--	--	--	--	--	--	--	--	0	--	322	280	387	59
12.7h2	John W. Pool	112	D	170301	4.7	--	--	--	--	--	--	--	.0	1	--	176	1340	2267	--
12.7h2	John W. Pool	112	D	170947	4.4	--	--	--	272	151	--	--	--	0	--	176	1300	2125	--
13.1g1	Roy W. Otto	125	D	144991	9.1	--	--	--	--	--	--	--	1.1	3	--	260	304	375	--
13.1g1	Roy W. Otto	125	D	144992	.8	--	--	--	--	--	--	--	1.2	2	--	308	358	462	--
35.8g	Florence Stephens	85	D	172781	1.1	--	--	--	--	--	--	--	--	0	--	300	248	365	57

Well number	Owner	Depth	Source	Laboratory number	Iron	Manganese	Ammonium	Sodium	Calcium	Magnesium	Silica	Fluoride	Nitrate	Chloride	Sulfate	Alkalinity	Hardness	Total dissolved minerals	Temperature
		ft			Fe	Mn	NH_4	Na	Ca	Mg	SiO_2	F	NO_3	Cl	SO_4	(as $CaCO_3$)			°F
T24N, R9E																			
16.1a	Eva Spellmeyer	120	D	172701	2.4	--	--	--	--	--	--	--	--	1	--	208	530	940	62
22.1d2	E. & J. Lind	220	D	173692	1.9	--	--	--	--	--	--	--	1.2	0	--	316	450	694	--
27.1a	Florence Wright	245	D	154200	7.2	--	--	--	--	--	--	--	--	0	--	284	372	500	--
T25N, R7E																			
20.1a2	James W. Liddle	189	D	176670	8.2	--	3.6	--	--	--	--	--	--	31	--	552	244	724	53
22.5e	Louise Smith Corp.	210	D	172964	1.1	--	--	--	--	--	--	--	--	0	--	360	294	396	56
23.8a3	Elsie Walters	108	D	172001	1.3	--	--	--	--	--	--	--	--	0	--	356	296	386	--
31.1a	James Watson, Jr.	118	D	169494	.2	--	--	--	--	--	--	--	5.7	3	--	348	232	363	--
35.7g1(1)	Sibley (V)	117	D	47620	.1	0	.9	26	52.6	23.8	12	--	.9	1	5	286	229	330	--
35.7g1(1)	Sibley (V)	117	D	116216	.8	.0	.7	12	62.2	28.5	20	.4	.5	2	9	288	273	310	54
35.7g1(1)	Sibley (V)	117	D	*33971	1.3	.06	--	28	77	17	--	.4	.0	4	14	302	260	320	--
T25N, R9E																			
1.6a	Patrick Cleary	136	D	172376	1.8	--	--	--	--	--	--	--	--	0	--	342	484	690	62
3.8i	R. E. Bradbury	165	D	172375	2.0	--	--	--	--	--	--	--	--	0	--	308	428	628	63
6.1h2	Margaret Stahmer	120	D	172379	2.2	--	--	--	--	--	--	--	--	0	--	286	368	574	60
11.3c	Merle Flessner	85	D	172374	3.8	--	--	--	--	--	--	--	--	0	--	360	404	553	60
16.2b2	Thomas Talbot	206	D	172378	1.6	--	--	--	--	--	--	--	--	2	--	320	416	608	57
20.1e	Joe Rock	111	D	172371	2.3	--	--	--	--	--	--	--	--	1	--	344	322	459	57
21(1)	Roberts (V)	216	D	30576	2.4	.04	1.7	54	109.0	37.2	15	--	.4	1	229	--	425	653	--
21.3e2(3)	Roberts (V)	225	D	67458	3.0	0	2.0	58	101.9	39.9	21	--	1.2	2	210	328	418	667	--
21.3e2(3)	Roberts (V)	225	D	75975	1.4	.0	1.3	48	112.6	41.0	14	--	1.8	2	230	314	450	672	--
21.3e3(4)	Roberts (V)	232	D	95278	2.0	.1	.1	64	101.4	37.9	22	--	7.8	1	225	308	409	658	53
21.5g1(5)	Roberts (V)	226	D	123034	1.7	--	--	--	--	--	--	--	--	2	--	304	435	599	55
21.5g1(5)	Roberts (V)	226	D	123035	1.6	.0	.0	60	114.3	38.9	24	.2	11.3	2	249	304	446	685	55
21.5g2(6)	Roberts (V)	228	D	153647	1.2	Tr	--	--	--	--	--	.5	.7	1	--	288	426	681	57
23.6h	Mathew Rock	80	D	172373	2.6	--	--	--	--	--	--	--	--	1	--	172	1580	2549	60
25.2h	G. B. & M. Furby	108	D	172372	6.4	--	--	--	--	--	--	--	--	6	--	236	1170	1988	58
31.1a	R. M. Morgan	101	D	172369	3.5	--	--	--	--	--	--	--	--	0	--	260	290	488	60
33.1g	Katherine Stamm	112	D	141231	1.0	--	--	--	--	--	--	--	--	4	--	264	376	563	--
33.7h	Seward Arnold	190	D	172368	2.7	--	--	--	--	--	--	--	--	0	--	312	406	604	62
35.8c	Dick Pelle	235	D	172370	5.9	--	--	--	--	--	--	--	--	2	--	240	796	1400	56
T26N, R9E																			
2.1f2	Dora Johnson Est.	78+	D	172111	.8	--	--	--	--	--	--	--	--	11	--	370	328	402	60
4	Piper City (V)	80	D	38926	.6	.0	3.2	28	93.3	35.8	23	--	.7	1	1	416	380	440	--
4.2f1(3)	Piper City (V)	78.5	D	100209	2.8	--	--	--	--	--	--	--	--	1	--	446	354	477	53
4.2f1(3)	Piper City (V)	78.5	D	100210	1.5	.0	5.4	28	82.0	39.4	21	--	1.4	1	0	440	367	446	53
4.2f1(3)	Piper City (V)	78.5	D	100211	2.4	--	--	--	--	--	--	--	--	1	--	446	354	476	53
4.2f1(3)	Piper City (V)	78.5	D	116250	1.3	.1	4.9	13	93.0	39.4	27	.3	.3	2	1	432	395	450	54
4.2f2(6)	Piper City (V)	90	D	*6343	1.2	.3	2.1	35	93	17	2	.4	.0	1	5	372	304	380	--
4.5b	Producers Seed Co.	96	D	118574	28.0	--	--	--	--	--	--	--	--	1	--	432	396	455	--
4.5f(7)	Piper City (V)	127	D	133029	6.0	--	--	--	--	--	--	.3	.2	5	--	420	332	412	54
4.5f(7)	Piper City (V)	127	D	133030	2.8	--	--	--	--	--	--	.3	.9	5	--	412	328	406	54
4.5f(7)	Piper City (V)	127	D	133031	1.6	--	--	--	--	--	--	.3	.2	6	--	408	316	398	54
4.5f(7)	Piper City (V)	127	D	133032	2.1	1.0	4.4	37	73.9	32.7	19	.3	.1	6	0	404	319	405	54
5.1d2	Ray Keefe	73	D	172108	3.7	--	--	--	--	--	--	--	--	0	--	592	428	589	60
6.5d2	Flessner Est.	22	D	172107	.4	--	--	--	--	--	--	--	--	0	--	752	354	774	60
9.1f	Edmund Johnson	34	D	172109	2.5	--	--	--	--	--	--	--	--	0	--	354	380	439	59
11.7d	Catherine Woolsey	90	D	172104	1.4	--	--	--	--	--	--	--	--	0	--	376	356	407	61
13.2a	Diercuff & Hanna	102	D	172239	1.3	--	--	--	--	--	--	--	--	0	--	330	352	429	58
18.8g	Duane Wagner	75	D	172105	4.5	--	--	--	--	--	--	--	--	0	--	362	388	523	59
22.3h	D. & T. Reinagle	98	D	172238	5.5	--	--	--	--	--	--	--	--	0	--	386	362	387	59
26.1b1	Edward Fuoss, Sr.	125	D	172241	.7	--	--	--	--	--	--	--	.8	0	--	528	388	527	60
28.1a	Clifford Boma	78	D	172245	2.9	--	--	--	--	--	--	--	--	0	--	314	404	595	59
28.6g	Clarence Grosenbach	158	D	172237	.7	--	--	--	--	--	--	--	--	0	--	342	336	401	62
29.7h	Henry Kurtenbach	89	D	172244	8.4	--	--	--	--	--	--	--	--	0	--	414	374	401	56
31.3a	James Phipps	100	D	172242	1.5	--	--	--	--	--	--	--	--	0	--	334	314	438	56
T27N, R9E																			
4.3a1	Mrs. W. R. Crandall	50+	D	171962	.6	--	--	--	--	--	--	--	--	49	--	236	166	378	67
7.8f	Yates Est.	12.7	D	172007	1.8	--	--	--	--	--	--	--	--	0	--	378	304	389	65
9.1a	Sara C. Andrews	40	D	172005	2.0	--	--	--	--	--	--	--	--	23	--	370	276	441	65
11.4h	Elmo Read	56	D	171964	.8	--	--	--	--	--	--	--	--	39	--	236	360	710	59
15.1a2	Durell White	38	D	172010	13.0	--	--	--	--	--	--	--	--	19	--	416	368	550	57
19.7h	Nellie Dehm	14	D	172002	Tr	--	--	--	--	--	--	--	--	32	--	334	542	674	62
23.1f	John P. Gallahue	103	D	172006	.9	--	--	--	--	--	--	--	--	136	--	404	278	644	59
24.3h1	John P. Gallahue	60	D	81757	2.2	.0	1.5	63	109.2	44.9	12	--	1.3	39	199	336	458	726	--
24.6a	George Ficklin	60	D	172003	3.4	--	--	--	--	--	--	--	--	14	--	424	368	540	60
27.1f	Watson McKee	58	D	172106	.6	--	--	--	--	--	--	--	--	0	--	416	368	447	59
29.1f	Paul Perkinson	85	D	172011	2.4	--	--	--	--	--	--	--	--	1	--	376	320	405	58
29.8a	Bob Sterrenberg	90	D	172112	10.0	--	--	--	--	--	--	--	--	0	--	652	374	646	62
33.5d2	John Wilson	90	D	172110	14.0	--	--	--	--	--	--	--	--	0	--	608	440	613	62
36.5h2	John P. Gallahue	67	D	81756	2.0	.0	1.7	48	82.9	38.5	14	--	.8	10	26	434	366	493	--
36.5h2	John P. Gallahue	67	D	172009	1.1	--	--	--	--	--	--	--	--	7	--	452	354	485	58

Well number	Owner	Depth	Source	Laboratory number	Iron	Manganese	Ammonium	Sodium	Calcium	Magnesium	Silica	Fluoride	Nitrate	Chloride	Sulfate	Alkalinity	Hardness	Total dissolved minerals	Temperature
		ft			Fe	Mn	NH_4	Na	Ca	Mg	SiO_2	F	NO_3	Cl	SO_4	(as $CaCO_3$)	(as $CaCO_3$)		°F
T28N, R9E																			
2.1d	Florence Schaub	100.6	D	171665	1.8	--	--	--	--	--	--	--	33.2	32	--	172	850	1586	63
6.5h1(1)	Kempton (V)	404	L	35950	.3	--	.5	351	5.7	1.5	15	--	.8	43	--	--	20	821	--
6.5h1(1)	Kempton (V)	404	L	50541	.2	.0	.4	309	6.6	2.3	14	--	.0	43	1	678	26	825	--
6.5h1(1)	Kempton (V)	404	L	72733	.0	.0	.3	321	2.0	.8	7	3.7	.5	47	0	640	8	801	--
6.5h2(2)	Kempton (V)	238	D	83928	2.8	.0	1.5	257	165.9	90.2	11	--	.9	25	1140	128	785	1809	--
6.5h2(2)	Kempton (V)	238	D	116251	2.1	.1	1.6	241	162.4	79.6	12	.9	.5	21	1049	140	734	1688	55
6.5h2(2)	Kempton (V)	238	D	*31539	1.5	--	--	--	--	--	--	.6	.0	54	1100	132	700	1260	--
6.5h3(3)	Kempton (V)	386	L	117100	--	--	--	--	--	--	--	1.0	--	30	--	288	579	1324	54
6.5h3(3)	Kempton (V)	386	L	117231	2.4	--	--	--	--	--	--	3.5	--	45	166	652	141	998	--
6.5h3(3)	Kempton (V)	386	L	*31540	4.0	--	--	--	--	--	--	1.1	.0	36	1025	280	460	1220	--
7.1f	Dora Brown	200+	D	171851	2.6	--	--	--	--	--	--	--	--	20	--	128	562	1117	59
10.1b2	Harold Kelly	72.3	D	171844	.9	--	--	--	--	--	--	--	--	12	--	130	820	1334	61
11.3h	Louis Gualandi	97	D	171667	1.2	--	--	--	--	--	--	--	--	10	--	152	400	854	59
17.5a	Oswald Keller, Sr.	61.3	D	171854	.1	--	--	--	--	--	--	--	206.0	295	--	234	1660	2538	59
20.8a2	Howard Ferry	200	L	171853	4.4	--	--	--	--	--	--	--	--	20	--	156	708	1181	61
21.4a	Ford County Farm Service, Inc.	190	L	171966	8.6	--	--	--	--	--	--	--	--	167	--	248	96	560	65
22.8d2	John Riebe	206	S	171852	3.7	--	--	--	--	--	--	--	--	194	--	258	128	605	56
23.8d	W. & E. Halpin	40	D	171967	.3	--	--	--	--	--	--	--	45.8	19	--	254	374	514	59
24.4h	Donald Read	62	D	171959	.6	--	--	--	--	--	--	--	9.3	13	--	120	716	1506	59
29.8f	James McDermott	--	D	171856	Tr	--	--	--	--	--	--	--	95.6	65	--	260	650	1034	65
32.8e	H. & L. Flessner	56.7	D	171965	1.6	--	--	--	--	--	--	--	--	7	--	280	340	556	57
35.1h	J. Montelius Est.	180	S	171960	1.5	--	--	--	--	--	--	--	--	63	--	180	62	300	59
35.8b	Clara Switzer	40	D	171963	.8	--	--	--	--	--	--	--	--	64	--	238	364	752	58
T29N, R9E																			
13.1g	Emery DuBois	117.7	D	171632	.7	--	--	--	--	--	--	--	1.4	11	--	120	890	1571	--
16.1g2	Mrs. M. J. Smicker	275	L	171635	.2	--	--	--	--	--	--	1.8	--	22	--	358	43	675	59
16.6g	--	230	L	87831	1.5	--	--	--	56.4	26.2	--	--	--	21	535	248	249	1090	--
16.6h	Ernst Reising	230	L	87833	7.8	--	--	--	41.6	31.6	--	--	--	20	531	144	234	949	--
16.8g(3)	Cabery (V)	357	L	141967	.5	.0	--	--	--	--	--	1.0	.1	20	--	268	544	1260	54
16.8g(3)	Cabery (V)	357	L	152585	.2	.0	Tr	254	150.8	64.0	10	1.0	9.0	21	923	196	640	1619	54
16.8g(3)	Cabery (V)	357	L	*1945	.3	.03	4.9	11	148	62	12	.9	.0	22	900	212	600	1636	--
16.8h(2)	Cabery (V)	233	L	92606	.8	--	--	--	--	--	--	--	--	21	--	172	820	1630	53
16.8h(2)	Cabery (V)	233	L	116366	1.4	Tr	1.4	279	171.5	67.5	14	1.0	5.4	21	1060	180	707	1744	55
16.8h(2)	Cabery (V)	233	L	140893	1.6	--	--	--	--	--	--	--	--	20	--	196	684	1406	--
18.1h1	F. & L. Paradies	40	D	171633	.4	--	--	--	--	--	--	--	397.0	315	--	224	2020	3147	52
19.4h	W. A. Hockett	122	D	171638	.1	--	--	--	--	--	--	--	118.0	51	--	234	890	1302	60
20.3h	Mrs. J. Jensen	100+	D	171634	2.6	--	--	--	--	--	--	--	--	13	--	92	1280	2435	--
22.8h	J. Ogilvie Est.	185	D	171637	.8	--	--	--	--	--	--	--	4.0	18	--	98	905	1919	60
24.3h	K. M. Hughes	84.4	D	171636	2.7	--	--	--	--	--	--	--	54.4	64	--	252	608	829	54
26.8d	Vern H. Down	220	D	171666	2.2	--	--	--	--	--	--	--	--	19	--	108	482	2519	58
29.1h1	Edward Ohrt	52.5	D	171671	Tr	--	--	--	--	--	--	--	10.7	34	--	264	534	720	61
31.1b2	Earl Taylor Est.	81	D	171669	15.0	--	--	--	--	--	--	--	--	5	--	152	162	384	57
31.5a(4)	Kempton (V)	238	D	158802	2.2	.1	--	--	--	--	--	.5	.2	20	--	130	730	1776	54
34.5h1	O. H. Basham	109	D	171668	1.4	--	--	--	--	--	--	--	--	19	--	100	760	2027	61

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