GROUND-WATER RESOURCES DATA FOR WARREN COUNTY, PENNSYLVANIA

by Michael E. Moore, Pennsylvania Department of Conservation and Natural Resources, and Theodore F. Buckwalter, U.S. Geological Survey

U.S. Geological Survey
Open-File Report 94-87

Prepared in cooperation with the

PENNSYLVANIA DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES, BUREAU OF TOPOGRAPHIC AND GEOLOGIC SURVEY

and the

WARREN COUNTY COMMISSIONERS

Lemoyne, Pennsylvania
1996

U.S. DEPARTMENT OF THE INTERIOR

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CONVERSION FACTORS AND ABBREVIATIONS

Multiply	by	To obtain
	Length	
inch (in.)	25.4	millimeter
foot (ft)	0.3048	meter
mile (mi)	1.609	kilometer
	Area	
square mile (mi^2)	2.590	square kilometer
	Volume	
gallon (gal)	3.785	liter
	Flow	
gallon per minute (gal/min)	0.06308	liter per second
	Temperature	
degree Fahrenheit (°F)	°C=5/9 (°F-32)	degree Celsius
	Specific capacity	
gallon per minute per foot [(gal/min)/ft]	0.2070	liter per second per meter

Other Abbreviations

Abbreviated water-quality units used in report:
milligrams per liter (mg/L)
micrograms per liter (µg/L)

Sea level: In this report, "sea level" refers to the National Geodetic Vertical Datum of 1929--a geodetic datum derived from a general adjustment of the first-order level nets of the United States and Canada, formerly called Sea Level Datum of 1929.

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ABSTRACT

This report presents lithologic, hydrologic, and chemical data collected during a study of the ground-water resources of Warren County, Pa. The study was conducted during 1983-90 by the U.S. Geological Survey, in cooperation with the Pennsylvania Department of Conservation and Natural Resources, Bureau of Topographic and Geologic Survey, and the Warren County Commissioners. The data include information on aquifers, water levels, and yields for about 600 wells, and records for 57 springs. Descriptions of aquifer lithology and chemical analyses of water samples collected at well and spring sites are provided. Chemical analyses include major cations, anions, nutrients, and selected trace elements. Also included are data on concentrations of volatile organic compounds, dissolved methane, ethane, propane, and total organic carbon. The report presents a summary of the source and significance of selected chemical constituents in ground water, a listing of Federal drinking water standards, and information on selected methods of removing or reducing concentrations of undesirable chemical constituents from water. Daily ground-water levels for five observation wells are tabulated. Maps of Warren County show the location of townships, boroughs, and 7-1/2-minute quadrangles. Data-collection sites are shown on 18 figures. A glossary is provided for readers unfamiliar with ground-water terminology.

INTRODUCTION

The U.S. Geological Survey (USGS), in cooperation with the Pennsylvania Department of Conservation and Natural Resources, Bureau of Topographic and Geologic Survey and the Warren County Commissioners, conducted a water-resources investigation of Warren County during October 1983 to September 1990. The purpose of the investigation was to describe the ground-water resources of the County and determine the effect, if any, of oil and gas development on the ground-water resources.

Ground water is a major source of supply for residential, municipal, industrial, and commercial use in Warren County. The information in this report can be used by government officials, resource planners, and others concerned with the development and management of the ground-water resources.

Purpose and Scope

This report provides a compilation of data collected during the countywide investigation of ground-water resources. Data tables and illustrations present the ground-water and water-quality data at data-collection sites. Maps show population centers, major streams, townships, boroughs, and coverage by 7-1/2-minute quadrangle maps.

Study Area

Warren County, with an area of 885 mi^2, is located in northwestern Pennsylvania (fig. 1). The county includes 6 boroughs and 21 townships (fig. 2), and Warren is the county seat. In 1987, the population of Warren County was about 45,300 (Pennsylvania State Data Center, 1988). Land use in Warren County consists of 61.2 percent forest, 11.1 percent agriculture, 2.9 percent urban, and 24.8 percent miscellaneous (U.S. Department of Agriculture, 1974).

Warren County is drained by the Allegheny River and its tributaries. Tributary streams with large drainage areas in Warren County include Conewango, Brokenstraw, Caldwell, and West Branch Tionesta Creeks (fig. 1).

Figure 3 shows the coverage of Warren County by 7-1/2-minute quadrangle maps. In this report, locations of data-collection sites are shown on these 18 maps.

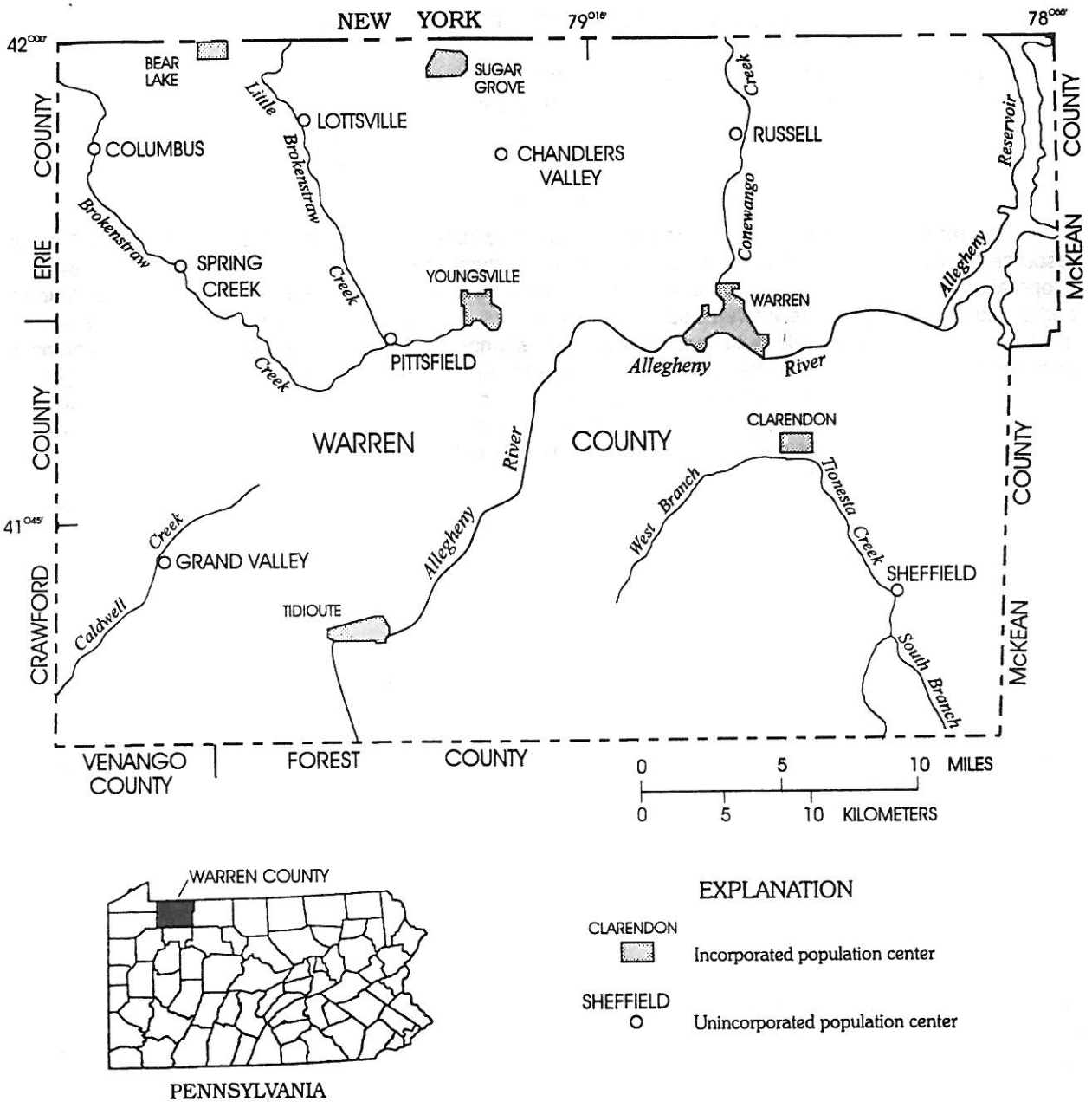

Figure 1. Population centers and major streams in Warren County.

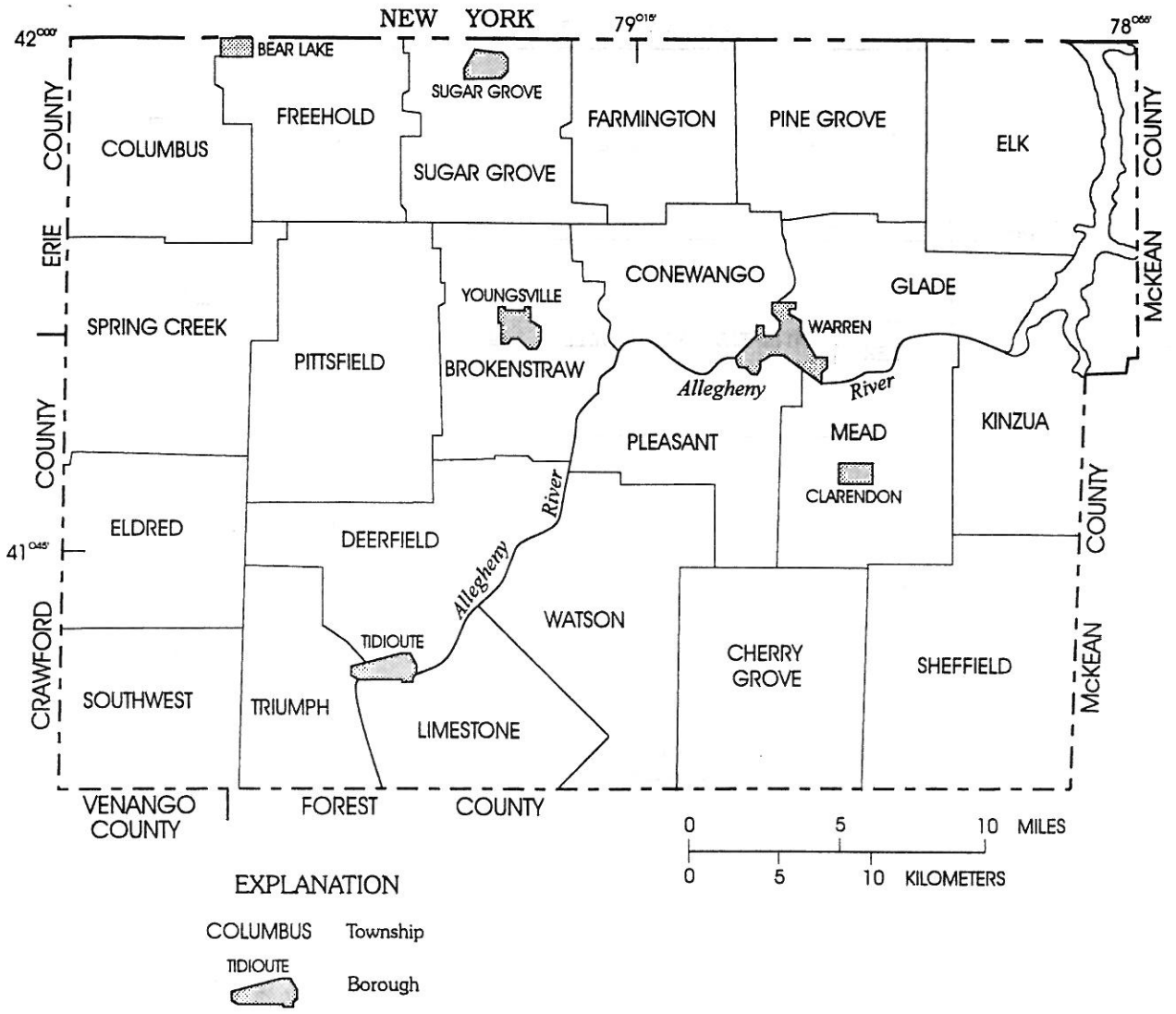

Figure 2. Townships and boroughs in Warren County.

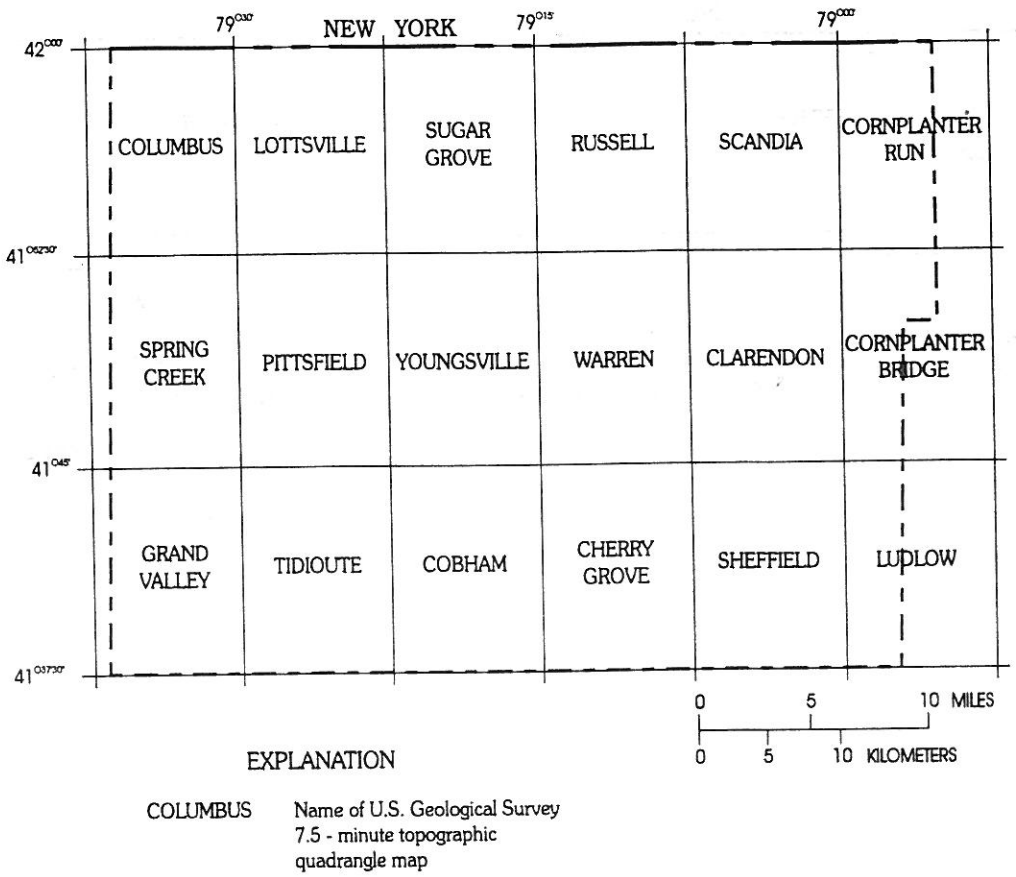

Figure 3. Coverage of Warren County by 7-1/2-minute quadrangle maps.

Geologic Setting

Warren County is underlain by sedimentary rocks of Pennsylvanian age or older. In many places, these bedrock units are covered with varying thicknesses of unconsolidated sediments, largely of glacial origin. All of the unconsolidated and bedrock geologic units yield water somewhere in Warren County; consequently, for the purpose of this report, the geologic units are assumed to represent hydrogeologic units. A description of lithology of major geologic units and a listing of aquifer codes associated with these units are presented in table 1.

The Mississippian-age and older bedrock units in Warren County form a homocline striking nearly east-west and dipping to the south at about 22 ft/mi. A period of erosion of this homocline preceded the deposition of the Pottsville Formation. As a result, from north to south, the Pottsville Formation lies unconformably on progressively younger geologic units.

Well- and Spring-Numbering System

Wells and springs listed in this report are identified by unique numbers assigned by the USGS. The prefix "Wr" in the well numbers indicates the wells are in Warren County. The prefix "Wr SP" in the spring numbers indicates the springs ("SP") are in Warren County. Well and spring numbers are assigned when the sites are initially inventoried and are not necessarily sequential.

Table 1. Major hydrogeologic units in Warren County

Hydrogeologic unit	Unit abbreviation	Age	Lithology
	Unconsolidated Surficial Units		
Glacial outwash sand and gravel	112OTSH	Pleistocene	Stratified and sorted sand, gravel with minor amounts of till and clay
Glacial drift	112DRFT	Pleistocene	Till and some stratified sand and gravel
Ice-contact stratified sand and gravel	112ICCC	Pleistocene	Variably stratified and sorted sand and gravel with minor amounts of till
Colluvium	112CLVM	Pleistocene	Unsorted to poorly sorted, crudely stratified clay, silt, sand and platy siltstone and sandstone fragments
Alluvium	112ALVM	Pleistocene	Stratified, poorly to moderately sorted, clay, silt, sand, gravel, and plate-shaped cobbles
Alluvium and glacial lacustrine, undifferentiated	112LAKE	Pleistocene	Thin, stratified, poorly to moderately sorted, clay, silt, sand, gravel, and plate-shaped cobbles over thick blue-gray silt and clay
	Bedrock Units		
Pottsville Group	324PSVL	Pennsylvanian	Coarse-grained sandstone, conglomerate, and minor amounts of siltstone and shale
Shenango Formation	337SNNG	Mississippian	Sandstone with siltstone and minor amounts of shale
Cuyahoga Formation	337CYHG	Mississippian	Silt and clay shales, siltstone, and minor amounts of sandstone
Knapp Formation	337KNPP	Upper Devonian	Sandstone, flat pebble conglomerate and minor amounts of siltstone and silt shale
Corry Sandstone through Riceville Shale, undivided	337CBCR	Upper Devonian	Siltstone, clay and silt shale, and sandstone
Riceville Formation	341RCVL	Upper Devonian	Fissile shale with minor, thin siltstone and minor, thin, very fine grained and locally calcareous sandstone
Oswayo Formation	341OSWY	Upper Devonian	Clay and silt shales, siltstone, minor amounts of sandstone and rarely argillaceous limestone
Catskill and Venango Formations, undifferentiated	341CRGS	Upper Devonian	Sandstone, siltstone, clay and silt shales, and minor amounts of conglomerate
Venango Formation	341VNNG	Upper Devonian	Interbeds of clay and silt shales, siltstone and sandstone with minor amounts of conglomerate
Chadakoin Formation	341CDKN	Upper Devonian	Interbeds of clay and silt shales, siltstone and minor amounts of sandstone
Upper Devonian, undifferentiated	341DVNNU	Upper Devonian	Unknown lithology. An assignment used when the water-yielding unit is unknown

Acknowledgments

The authors gratefully acknowledge the cooperation and assistance of the landowners, companies, municipalities, and local, state, and federal agencies who provided access to sites and information on water wells, springs, and abandoned oil wells. Special thanks are extended for the cooperation and assistance of the Warren County Commissioners and staff of the Warren County Courthouse.

DATA BASE

This report presents hydrologic data collected during the 1983-90 ground-water study. Some data are presented that predate this study; these supplemental data are included for historical purposes and to provide information where recent data were nonexistent or sparse for an area. Table 2 gives the source and significance of ground-water chemical constituents that were routinely analyzed in the laboratory. Table 3 gives federal mandatory and recommended limits for selected constituents in drinking water. This table allows the comparison of constituent concentrations in water samples to maximum contaminant levels (MCL's) and secondary maximum contaminant levels (SMCL's) established by the U.S. Environmental Protection Agency (USEPA). USEPA MCL's or SMCL's have not been established for several constituents in water samples analyzed in the laboratory including calcium, chloroform, magnesium, nickel, orthophosphorus, potassium, sodium, and strontium. Table 4 lists methods of removing or reducing concentrations of undesirable constituents from water.

Table 5 presents information on water wells inventoried during the study. This information includes location, construction details, yield, and field measurements of water quality. Because springs are an important water source to many residents in Warren County, table 6 presents data on their location, discharge, and field measurements of water quality.

Locations of wells and springs listed in tables 5 and 6 are shown on figures 4a-4r and on figure 5.

Many of the inventoried wells and springs were sampled for water-quality analyses. Analyses of the major constituents and organic compounds included field measurements of specific conductance and pH, and laboratory measurements of dissolved solids, hardness, calcium, magnesium, sodium, potassium, alkalinity, sulfate, chloride, fluoride, nitrate, orthophosphorus, total organic carbon, and total oil and grease (table 7). Selected ground-water samples also were analyzed in the laboratory for dissolved gases including methane, ethane, and propane (table 7). Concentrations of trace constituents in water samples are reported in table 8 for aluminum, arsenic, barium, cadmium, chromium, iron, lead, manganese, nickel, strontium, and zinc. Laboratory analyses of volatile organic compounds in water samples from wells, abandoned oil wells, and one spring are presented in table 9.

Continuous water-level data were collected at five observation wells. Daily maximum ground-water levels for wells Wr-50, Wr-283, Wr-505, Wr-520, and Wr-522 are given in tables 10-14.

Table 2. *Source and significance of selected constituents in ground water*

[Table compiled from Bates and Jackson, 1980; Buckwalter and others, 1981; Heath, 1983; Hem, 1985; Stoner and others, 1987; Thurman, 1985; U.S. Environmental Protection Agency, 1976; U.S. Environmental Protection Agency, 1986; American Public Health Association, American Water Works Association, and Water Pollution Control Federation, 1980; and Wagner and Lytle, 1968; mg/L, milligram per liter]

Constituent	Source or cause	Significance	Remarks
Alkalinity	Primarily caused by the presence of bicarbonate, carbonate, and hydroxide.	Ability to neutralize acids. Alkalinity may be undesirable for public supplies when present in excessive concentrations.	
Arsenic (As)	Compounds of arsenic are ubiquitous in nature and occur mostly as arsenides and arsenopyrites. Many industrial and agricultural uses.	Because small amounts of arsenic can be toxic to humans, it is considered a highly undesirable impurity in water supplies.	
Barium (Ba)	Occurs in nature chiefly as barite ($BaSO_4$) and witherite ($BaCO_3$). Common in brines that are associated with oil and gas production.	Because of the toxic effect on the heart and blood vessels, barium is considered an undesirable impurity in drinking water.	
Calcium (Ca) and magnesium (Mg)	Dissolved from almost all soils and rocks, especially limestone, dolomite, and gypsum. Calcium and magnesium are found in large quantities in some brines. Large quantities of magnesium are present in sea water.	In fresh water, calcium and magnesium are the major causes of water hardness.	
Chloride (Cl)	Dissolved from rocks and soils. Present in sewage. Found in large amounts in brines and sea water.	In large amounts, in combination with sodium, gives salty taste to drinking water. In large quantities, increases the corrosiveness of water. Above-average levels can indicate contamination by sewage, industrial waste, road-deicing chemicals, and brines.	
Fluoride (F)	Dissolved in small to minute quantities from most rocks and soils. Fluoride is often added to public water supplies.	Fluoride in drinking water reduces the incidence of tooth decay when water is consumed during the period of calcification. However, it may cause mottling of the teeth depending on the concentration of fluoride, age of the child, amount of drinking water consumed, and susceptibility of the individual.	
Hardness	Calcium and magnesium dissolved in the water.	Calcium and magnesium combine with soap to form an insoluble precipitate (curd) and thus hamper the formation of a lather. Hardness also affects the suitability of water for use in textile, paper, and certain other industries and in steam boilers and water heaters.	USGS classification of hardness (mg/L as $CaCO_3$): 0-60, soft; 61-120, moderately hard; 121-180, hard; greater than 180, very hard
Iron (Fe)	Dissolved from practically all rocks and soils. Also derived from iron pipes, pumps, and other equipment.	More than about 0.3 mg/L of iron can cause stains on laundry and plumbing fixtures. In higher concentrations, it gives water an unpleasant taste.	
Methane, ethane, and propane	Common components of natural gas. Methane is a product of decay of organic substances. Methane in ground water may be derived from natural gas migrating from deeper rocks, landfills, and septic systems.	Methane is a colorless, odorless, and flammable gas. It can explode if mixed with oxygen and exposed to an ignition source such as an electric spark. Proper venting of water wells and well houses can prevent explosions. Methane may enter buildings especially through foundations, when shallow ground water is oversaturated with respect to methane.	

Table 2. *Source and significance of selected constituents in ground water—Continued*

Constituent	Source or cause	Significance	Remarks
Manganese (Mn)	Dissolved from many rocks and soils.	More than 0.05 mg/L can cause stains on laundry and plumbing fixtures. Use of oxidizers such as chlorine bleach aggravate these problems. In higher concentrations, it gives water an unpleasant taste.	
Nitrate as nitrogen (N)	Decaying organic matter, sewage, and fertilizers principal sources.	More than 10 mg/L nitrate (as nitrogen) may cause methemoglobinemia, a disease often fatal in infants.	
pH (or hydrogen-ion activity)	Dissociation of water molecules and of acids and bases dissolved in water.	The pH of water is a measure of its reactive characteristics. Low values of pH, particularly below pH 4, indicate a corrosive water that will tend to dissolve metals and other substances that it contacts. High values of pH, particularly above pH 8.5, indicate an alkaline water that, on heating, will tend to form scale. The pH significantly affects the treatment and use of water.	pH values: less than 7, water is acidic; value of 7, water is neutral; more than 7, water is basic.
Phosphorus (P)	The chief sources are fertilizer and detergents. Phosphorus is also present in very small quantities from most rocks and soils.	Not a problem at concentrations generally encountered in water.	
Sodium (Na) and potassium (K)	Dissolved from almost all rocks and soils. Found in brines, sea water, and sewage.	Large amounts, in combination with chloride, give water a salty taste. Moderate quantities have little effect on the usefulness of water for most purposes.	
Specific electrical conductance	Substances that form ions when dissolved in water.	Most substances dissolved in water dissociate into ions that can conduct an electrical current. Consequently, specific electrical conductance is a valuable indicator of the amount of material dissolved in water. The greater the conductance, the more mineralized the water.	Conductance values indicate the electrical conductivity, in microsiemens, of 1 cubic centimeter of water at a temperature of 25 degrees Celsius.
Sulfate (SO_4)	Dissolved from rocks and soils containing gypsum, iron sulfide (pyrite), and other sulfur compounds. Generally present in mine waters, sewage, and some industrial wastes.	Sulfate may cause detectable tastes at concentrations of 300-400 mg/L. At concentrations above 600 mg/L, sulfate may have a laxative effect.	
Total dissolved solids	Mineral substances dissolved in water.	Total dissolved solids is a measure of the total amount of minerals dissolved in water and is useful in the evaluation of water quality. Water containing less than 500 mg/L dissolved solids is preferred for domestic use and for many industrial processes.	USGS classification of water based on total dissolved solids (mg/L): less than 1,000, fresh; 1,000-3,000, slightly saline; 3,000-10,000, moderately saline; 10,000-35,000, very saline; more than 35,000, briny.

Table 2. Source and significance of selected constituents in ground water—Continued

Constituent	Source or cause	Significance	Remarks
Total oil and grease	When shallow oil-bearing sandstones are present, for example, in Upper Devonian rocks that are part of the ground-water flow system, crude oil or its derivatives may be present in ground water as a result of natural processes. Natural oil seeps or "oil springs" also are evidence of crude oil occurrence or transport through the ground-water flow system. Other sources of oil and grease in ground water result from human activities such as spills, leaks, or oil and gas well drilling and development.	Federal water-quality criteria state that domestic water supplies should be virtually free from oil and grease, particularly from the tastes and odors caused by petroleum products.	The term "total oil and grease" is misleading; no known solvent will selectively dissolve only oil and grease. In the determination of oil and grease, an absolute quantity of a specific substance is not measured. Oils and greases are defined by the method used for their determination. Total oil and grease is any material recovered as a substance soluble in trichlorotrifluoroethane. It includes other material extracted by the solvent from an acidified sample (such as sulfur compounds, certain dyes, and chlorophyll) and not volatilized during the analysis.
Total organic carbon (TOC)	Surface organic matter and kerogen (fossilized organic matter present in the geologic material of the aquifer) are common sources of total organic carbon. Other sources include a wide variety of organic acids, bacteria, and natural gas.	Total organic carbon is the sum of dissolved organic carbon and suspended organic carbon. High concentrations of total organic carbon are common in ground water associated with petroleum and oil-field brines.	

Table 3. Federal mandatory and recommended limits for selected constituents in drinking water

[Limits are in micrograms per liter except as indicated; mg/L, milligram per liter; --, no limit established]

Constituent	Mandatory limit[1] (Maximum contaminant level)	Recommended limit[2] (Secondary maximum contaminant level)	Constituent	Mandatory limit[1] (Maximum contaminant level)	Recommended limit[2] (Secondary maximum contaminant level)
Aluminum	--	50 to 200	Manganese	--	50
Arsenic	50	--	Nitrate as nitrogen (mg/L)	10	--
Barium	2,000	--			
Benzene	5	--	pH (units)	--	6.5 to 8.5
Cadmium	5	--	Sulfate (mg/L)	--	250
Chloride (mg/L)	--	250	Toluene	1,000	--
Chromium	100	--	Total dissolved solids (mg/L)	--	500
Ethylbenzene	700	--			
Fluoride (mg/L)	4	2	Total xylenes	10,000	--
Iron	--	300	Zinc	--	5,000
Lead	[3]15	--			

[1] Maximum contaminant levels (MCL's) are levels of drinking-water contaminants that could cause health effects if exceeded, and are enforceable by law for public water supplies. The MCL's in this table are listed from U.S. Environmental Protection Agency (1991, p. 3,526-3,597).

[2] Secondary maximum contaminant levels (SMCL's) are levels of drinking-water contaminants that are not health related and are intended to protect public welfare by establishing unenforceable guidelines on the taste, odor, or color of drinking water. The SMCL's in this table are listed from U.S. Environmental Protection Agency (1991, p. 3,526-3,597).

[3] Action level, no more than 5 percent of the samples per month may be positive.

Table 4. *Selected methods of removing or reducing concentrations of chemical constituents in water*

[From Paulachok and Wood, 1988, table 11, p. 44]

Problem constituent	Symptoms	Treatment processes
Hardness, calcium (Ca) and magnesium (Mg)	Forms scale in cooking utensils, pipes and plumbing fixtures; consumes soap.	1. Lime-soda treatment—chemical reactions convert most Ca and Mg to insoluble calcium carbonate and magnesium hydroxide. The resulting precipitate can then be removed by sedimentation and filtration. 2. Ion exchange—zeolite minerals of synthetic resin beads exchange sodium (Na) ions in their structure for Ca and Mg ions in the water. When their exchange capacity has been exhausted, they are regenerated by backflushing with a strong sodium chloride solution. The resin beads have a greater exchange capacity than the zeolite minerals.
Iron (Fe) Manganese (Mn)	Forms reddish-brown stains on plumbing fixtures and laundry. May impart objectionable taste to food and beverages. A slimy deposit indicates the presence of iron bacteria. Same objectionable symptoms as iron, but generally forms brown or black stains. Removal is more difficult and commonly less complete than iron.	1. Oxidation and filtration—aeration of water or treatment with chloride or potassium permanganate convert most Fe and Mn to insoluble precipitates which can then be removed by sedimentation and filtration. Aeration is commonly used when the water contains little organic matter; the chemical agents are used when large amounts of organic material are present, as in ground water containing iron bacteria or in surface water. The pH of water to be treated should be alkaline before Fe or Mn removal is attempted. 2. Oxidation and filtration through manganese green sand—the green sand liberates oxygen, which in contact with the water produces insoluble iron hydroxide and manganese oxide. When the available oxygen supply has been exhausted, the green sand is regenerated by backflushing a potassium permanganate solution through it. 3. Ion exchange (see above).

Table 5. *Records of wells in Warren County*

USGS well number: The number assigned by the U.S. Geological Survey (USGS) to identify the well. The prefix Wr before the well number signifies the well is in Warren County.

Driller license numbers and driller names:

-314	Fred Rickerson	0709	John M. Streich	1159	Hubert Saxton
0053	C.T. Wilcox	0736	E.A. Hilliard	1212	Garold L. Williams
0061	Paul H. Shaffer	0761	Carl R. Johnson	1300	Lorenze Lee Hall
0067	Marshall Jennings	0796	Max E. Hickernell	1375	Clarence L. Burrows
0198	Eichelberger Well Drilling	0902	Harry Brothers	1378	Robert H. York
0224	McCray Brothers	0906	Karls Comp. Water Sys. Co.	1393	Frank McCandless
0269	Edward L. Dunlop	0975	Alfred L. Burch	1410	Curtin and Curtin
0410	Moody Drilling Co., Inc.	1025	Theodore Kocur, Jr.	1513	Lloyd-Smith Co., Inc.
0424	Layne-New York Co., Inc.	1044	Lawrence Carr	1545	Sheldon E. Baker
0649	Gillus Brothers	1085	Nathan L. Walters	1599	Ziegler Well Service
0674	Ralph C. Parmenter	1088	A.C. McConnell & Sons	1603	Roy D. Pittman
0705	W.K. Ansell	1094	George H. Ackerman	1708	Johnson's Drilling

Primary use of site: C, standby supply; O, observation; P, oil or gas; T, test; U, unused; W, withdrawal.

Primary use of water: C, commercial; H, domestic; N, industrial; P, public supply; R, recreation; S, stock; T, institution; U, unused; Z, other.

Topographic setting: H, hilltop; S, hillside; T, terrace; V, valley flat; W, upland draw.

Hydrogeologic unit: 112ALVM, alluvium; 112LAKE, alluvium and glacial lacustrine undifferentiated; 112CLVM, colluvium; 112ICCC, ice-contact stratified sand and gravel; 112DRFT, glacial drift; 112OTSH, glacial outwash sand and gravel; 324PSVL, Pottsville Group; 337SNNG, Shenango Formation; 337CYHG, Cuyahoga Formation; 337KNPP, Knapp Formation; 337CBCR, Corry Sandstone through Riceville Shale undivided; 341RCVL, Riceville Formation; 341OSWY, Oswayo Formation; 341CRGS, Catskill and Venango Formation undifferentiated; 341VNNG, Venango Formation; 341CDKN, Chadakoin Formation; 341DVNNU, Upper Devonian, undifferentiated.

Lithology: CLAY, clay; GRCL, gravel and clay; GRVL, gravel; SAND, sand; SDGL, sand and gravel; SDSL, sandstone and shale; SGVC, sand, gravel, and clay; SHLE, shale; SLSN, siltstone; SNDS, sandstone.

Water-bearing zone(s): Water-bearing zones in bedrock wells generally are fractures yielding water in sufficient quantities to be noted by well drillers. In wells in unconsolidated deposits, such as sand and gravel, water is transmitted in the pore space between mineral grains. Water-bearing zones identified in this table generally are either open to the well and contribute to the well yield or are sealed off with well casing and do not contribute to the well yield.

Reported yield: gal/min, gallons per minute.

Specific capacity: (gal/min)/ft, gallons per minute per foot of drawdown.

Measured yield discharge: gal/min, gallons per minute.

Specific conductance: µS/cm, microsiemens per centimeter at 25 degrees Celsius.

Other abbreviations: DDMMSS, degrees, minutes, and seconds; --, no data available; <, less than.

Table 5. *Record of wells in Warren County—Continued*

USGS well number	Latitude/ longitude (DDMMSS)	Quadrangle name	Owner	Driller license number	Year drilled	Primary Use of site	Primary Use of water	Altitude of land surface (feet)	Topo-graphic setting	Hydro-geologic unit
Wr-3	414913 0792652	Pittsfield	Penn Central Railroad	-314	1928	W	H	1,300	V	112OTSH
5	415102 0791902	Youngsville	Youngsville Borough	–	–	W	P	1,200	V	341CDKN
19	415629 0790802	Russell	Rickerson, Fred	-314	1908	W	H	1,250	V	112OTSH
21	415556 0790655	Scandia	Unknown	-314	–	W	H	1,280	W	112OTSH
35	414933 0790713	Clarendon	Warren Water Company	–	1923	W	P	1,190	V	112OTSH
37	414827 0790544	Clarendon	Unknown	–	–	W	H	1,350	V	341CDKN
50	414159 0792136	Cobham	U.S. Geological Survey	0906	1972	O	U	1,210	S	341VNNG
201	414246 0792716	Tidioute	Unknown	–	1985	W	H	1,310	S	341RCVL
202	414214 0792827	Tidioute	Gnall, P.	0269	1980	W	H	1,690	H	337SNNG
203	414133 0792848	Tidioute	Zedonis, Edward	0269	1975	W	H	1,610	W	337SNNG
204	414043 0792927	Tidioute	Schelkowsky, W.	0269	1979	W	H	1,620	S	337SNNG
205	414124 0792751	Tidioute	Shelkey, George M.	0269	1979	W	H	1,670	H	337SNNG
206	414133 0792627	Tidioute	Glass, G.	0269	1983	W	H	1,670	H	337CYHG
207	414130 0792619	Tidioute	Kazan, S.	0269	1981	W	H	1,710	H	337SNNG
208	414406 0792533	Tidioute	Sveda, George	–	1985	W	H	1,690	H	337CYHG
209	414410 0792535	Tidioute	Robertson, G.	0269	1982	W	H	1,710	H	337CYHG
210	414431 0792428	Tidioute	Ambrose, Phillip	1044	1967	W	H	1,750	H	337CYHG
211	414431 0792526	Tidioute	Gebhardt, Harold	0269	1977	W	H	1,710	H	337CYHG
212	414253 0792455	Tidioute	Bialosky, G.	0269	1978	W	H	1,640	H	337CYHG
213	414301 0792457	Tidioute	Dashner, Eugene	0269	1982	W	H	1,700	H	337CYHG
214	414454 0792501	Tidioute	Stocker, C.	0269	1981	W	H	1,660	H	337CYHG
215	414125 0792651	Tidioute	Schrecengost, C.	1378	1985	W	H	1,720	H	337CYHG
216	413924 0792619	Tidioute	Merriman Sr., Fred	–	1985	W	H	1,620	H	337CYHG
217	413927 0792618	Tidioute	Merriman Jr., Fred	0269	1978	W	U	1,650	H	337CYHG
218	413919 0792606	Tidioute	McKinnon, James	0269	1978	W	H	1,660	H	337CYHG
219	413924 0792608	Tidioute	Welsch, D.	0269	1978	W	H	1,650	H	337SNNG
220	413921 0792607	Tidioute	Setta, A.	0269	1978	W	H	1,650	H	337SNNG
221	413914 0792604	Tidioute	Yonosko, M.	1599	1984	W	H	1,660	H	337CYHG
222	414042 0792619	Tidioute	Tidioute Boy Scout Res.	1378	1975	W	R	1,620	H	337CYHG
223	414046 0792609	Tidioute	Tidioute Boy Scout Res.	1378	1975	W	R	1,620	H	337CYHG
224	414008 0792638	Tidioute	Tidioute Boy Scout Res.	–	1985	W	R	1,680	H	337CYHG
225	414018 0792646	Tidioute	Davis, Robert	–	1985	W	H	1,690	H	337CYHG
226	414051 0792721	Tidioute	McCarter, W.	0269	1981	W	H	1,710	H	337SNNG
227	414405 0791541	Cobham	Young, Jim	0269	1975	W	H	1,900	H	324PSVL
228	414041 0791522	Cobham	Waite, David J.	–	1971	W	H	1,660	S	337CYHG
229	414245 0792724	Tidioute	Merroth, Charles S.	1599	1982	W	H	1,360	S	341RCVL
230	414438 0792528	Tidioute	Deerfield Township	0269	1979	W	T	1,730	H	337CYHG
231	414213 0792435	Tidioute	Sutton, R.L.	0269	1980	W	H	1,680	H	337CYHG
232	414153 0792302	Tidioute	Brown, Lorence F.	0269	1980	W	H	1,590	H	337CYHG
233	414251 0792315	Tidioute	Bookman, Walter	0269	1980	W	H	1,730	H	337SNNG
234	414253 0792316	Tidioute	Munn, J.	0269	1979	W	H	1,730	H	337SNNG
235	414247 0792314	Tidioute	Munn, Jerry R.	–	1985	W	H	1,730	H	337SNNG
236	414256 0792320	Tidioute	Zelewaiks, Walter S.	1044	1966	W	H	1,700	H	337SNNG
237	414403 0792425	Tidioute	Higgins, T.B.	1044	1967	W	H	1,710	H	337CYHG
238	414336 0791954	Cobham	Scheck, Gertrude	0269	1985	W	H	1,200	V	341VNNG
239	414340 0791953	Cobham	Carlock, C.	1159	1982	W	H	1,220	S	341VNNG
240	414335 0791955	Cobham	McGrew, J.	1159	1982	W	H	1,200	V	341VNNG
241	414309 0792038	Cobham	Small, Edward	1378	1983	W	H	1,170	V	112ICCC
242	414308 0792039	Cobham	Egry, Sam	1378	1983	W	H	1,170	V	112ICCC
243	414307 0792037	Cobham	Egry, Sam	1378	1983	W	H	1,140	V	112OTSH

Table 5. *Record of wells in Warren County—Continued*

Lithology	Depth of well (feet)	Casing		Depth to water-bearing zone(s) (feet)	Water level (feet)	Date water level measured	Reported yield (gal/min)	Measured yield			Field water quality			USGS well number
		Depth (feet)	Diameter (inches)					Specific capacity [(gal/min)/ft]	Discharge (gal/min)	Pumping period (hours)	Date measured	Specific conductance (µS/cm)	pH (units)	
GRVL	86	86	--	--	12	01-01-28	--	--	--	--	--	--	--	Wr-3
SHLE	70	70	6	--	16	00-00-28	--	--	--	--	--	--	--	5
SDGL	51	51	4	--	4	01-01-08	--	--	--	--	--	--	--	19
--	41	--	--	--	--	--	--	--	--	--	--	--	--	21
GRVL	70	--	--	--	--	--	305	--	--	--	--	--	--	35
SNDS	78	--	--	--	--	--	--	--	--	--	--	--	--	37
SHLE	105	46	--	50/61	39.90	06-13-72	--	--	--	--	--	--	--	50
--	--	--	--	--	28.30	05-15-85	--	--	--	--	--	--	--	201
SDSL	74	51	6	66	49	07-00-80	16	--	--	--	--	--	--	202
SDSL	100	54	6	34/80	--	--	5	--	--	--	--	--	--	203
SNDS	85	28	6	68	61.60	05-15-85	--	0.53	10	0.5	--	--	--	204
SDSL	84	43	6	72	68.30	05-15-85	--	.23	3	.5	05-15-85	120	6.2	205
SHLE	108	38	6	85	79.40	05-15-85	--	.04	1	--	--	--	--	206
SNDS	100	38	6	93	87.90	05-15-85	16	--	--	--	--	--	--	207
--	85	--	--	--	45	05-15-85	--	--	--	--	05-15-85	80	6.3	208
SHLE	99	40	6	85	73	05-00-82	--	.24	5	--	--	--	--	209
SHLE	180	23	6	162	120	06-10-67	--	--	--	--	--	--	--	210
SHLE	131	51	6	102	80	06-28-77	2	--	--	--	--	--	--	211
SDSL	85	52	6	59	55	11-00-79	10	--	--	--	--	--	--	212
SDSL	133	24	6	120	73.80	05-16-85	--	.5	8	--	05-16-85	165	--	213
SDSL	75	28	6	60	45	04-00-81	--	.45	10	--	--	--	--	214
SHLE	180	80	6	170	135	05-16-85	5	--	--	--	--	--	--	215
--	129	--	--	--	79.90	05-29-85	--	--	--	--	05-29-85	165	6.5	216
SDSL	125	45	6	116	98.70	05-29-85	16	--	--	--	--	--	--	217
SDSL	--	26	6	125	115	08-00-78	14	--	--	--	05-29-85	100	6.6	218
SNDS	80	32	6	62	22	08-00-78	16	--	--	--	--	--	--	219
SDSL	87	31	6	65	63	08-00-78	3	--	--	--	--	--	--	220
SDSL	127	31	6	119	94	09-00-84	--	2.3	16	.5	--	--	--	221
SHLE	147	70	6	90/130	90	07-08-75	4	--	--	--	05-29-85	222	6.9	222
SHLE	173	45	6	90/100	90	07-09-75	4	--	--	--	05-29-85	163	7.0	223
--	--	--	--	--	102	05-29-85	--	--	--	--	05-29-85	257	6.5	224
--	260	--	--	--	--	--	--	--	--	--	05-29-85	218	7.0	225
SDSL	95	33	6	80	69	09-00-81	--	.48	10	--	--	--	--	226
SNDS	43	20	6	25	--	--	1	--	--	--	--	--	--	227
--	80	--	--	--	--	--	--	--	--	--	05-29-85	66	6.3	228
SDSL	94	31	6	85	73.50	05-30-85	15	--	--	--	05-30-85	193	6.9	229
--	83	35	6	65	54.60	05-30-85	--	.45	10	--	05-30-85	102	6.2	230
SHLE	130	69	6	109	100	09-00-80	--	.15	4	--	--	--	--	231
SHLE	84	39	6	60	44	08-00-80	--	.45	14	--	--	--	--	232
SDSL	74	37	6	62	57.30	05-30-85	16	--	--	--	05-30-85	55	6.1	233
SDSL	84	54	6	68	59	10-00-79	--	3.2	16	.5	05-30-85	69	6.1	234
--	85	--	--	--	--	--	--	--	--	--	05-30-85	73	6.0	235
--	47	23	6	43	21	08-13-66	--	--	--	--	--	--	--	236
SHLE	113	27	6	106	80	07-08-67	--	--	--	--	--	--	--	237
SDSL	77	16	6	40/60	57	06-26-85	--	3.2	16	--	--	--	--	238
SHLE	--	40	6	85	70	11-00-82	--	.09	3	.5	--	--	--	239
--	69	21	6	--	35	11-00-82	--	1.0	10	.5	--	--	--	240
SDGL	80	74	6	--	47.40	06-26-85	10	--	--	--	06-26-85	378	6.9	241
SDGL	84	80	6	--	45	06-26-85	6	--	--	--	--	--	--	242
SDGL	40	40	6	--	8.92	06-26-85	10	--	--	--	--	--	--	243

Table 5. *Record of wells in Warren County—Continued*

USGS well number	Latitude/ longitude (DDMMSS)	Quadrangle name	Owner	Driller license number	Year drilled	Primary		Altitude of land surface (feet)	Topo-graphic setting	Hydro-geologic unit
						Use of site	Use of water			
Wr-244	414309 0792033	Cobham	Pribanic, T.	0269	1979	W	H	1,140	V	112ICCC
245	414310 0792035	Cobham	Deiter, D.	0269	1981	W	H	1,160	V	112ICCC
246	414300 0792047	Cobham	Delaney, L.	0269	1979	W	H	1,140	V	112OTSH
247	414300 0792041	Cobham	Hough, B.	0269	1978	W	H	1,120	V	112OTSH
248	414157 0792131	Cobham	Mull, Gary	0269	1978	W	H	1,160	V	341VNNG
249	414156 0792130	Cobham	Fink, J.	0269	1981	W	H	1,150	V	112OTSH
250	414154 0792136	Cobham	Unknown	1378	1983	W	H	1,180	V	341VNNG
251	414153 0792137	Cobham	Della	0269	1977	W	H	1,180	V	341VNNG
252	414110 0792208	Cobham	Conte, P.C.	0761	1976	W	H	1,100	V	112OTSH
253	414111 0792207	Cobham	Canter, F.	0269	1979	W	H	1,110	V	112OTSH
254	414121 0792212	Cobham	Gerus, Timothy	0269	1979	W	H	1,180	W	341VNNG
255	413848 0792422	Tidioute	Spinnewebe, R.R.	1159	1980	W	H	1,090	V	341VNNG
256	414043 0792352	Tidioute	Pa. Dept. Transportation	–	1985	W	P	1,250	V	112OTSH
257	413925 0792431	Tidioute	Thome, A.	1599	1982	W	H	1,190	V	112OTSH
258	413949 0792443	Tidioute	Sealy, W.	0269	1982	W	H	1,130	V	341VNNG
259	414022 0792258	Tidioute	Redick, Kenneth	–	1984	W	H	1,680	H	337CYHG
260	414009 0792237	Tidioute	McMunn, J.	0269	1980	W	H	1,720	H	337SNNG
261	413815 0792229	Cobham	McQuaid, R.	1159	1979	W	H	1,630	H	337CYHG
262	413748 0792233	Tidioute	Imhof, Frank	1159	1978	W	H	1,640	H	337CYHG
263	413746 0792232	Tidioute	Stewart, R.	1159	1981	W	H	1,640	H	337KNPP
264	413745 0792233	Tidioute	McCoy, C.G.	1159	1978	W	H	1,640	H	337CYHG
265	413747 0792235	Tidioute	Stroschein, D.	1159	1983	W	H	1,640	H	337KNPP
266	414014 0792644	Tidioute	Davis, Robert	–	–	P	U	1,690	H	341DVNNU
270	414056 0792438	Tidioute	Tidioute Borough	0410	1984	T	U	1,110	V	112OTSH
271	414007 0792134	Cobham	Ressler, L.C.	0269	1978	W	H	1,670	W	337CYHG
272	414043 0792022	Cobham	Moore, G.	0269	1978	W	H	1,770	H	337CYHG
273	414055 0792005	Cobham	Fry, D.	0269	1979	W	H	1,680	S	337CYHG
274	414121 0791945	Cobham	Zawistowsk, Thaddeus	1212	1978	W	H	1,840	H	324PSVL
275	414132 0791951	Cobham	Whaling, John	1159	1977	W	H	1,790	H	337SNNG
276	414135 0791950	Cobham	Gregor, P.	1159	1979	W	H	1,790	H	337SNNG
277	414137 0791949	Cobham	Stewart, Albert	1159	1979	W	H	1,790	H	337SNNG
278	414144 0791948	Cobham	Warrick, C.	1159	1978	W	H	1,770	H	337SNNG
279	414206 0791908	Cobham	Mach	0269	1979	W	H	1,730	S	337CYHG
280	414206 0791905	Cobham	Hosik, B.	0269	1979	W	H	1,740	S	337CYHG
281	414111 0791514	Cobham	Muratori, Louis	0906	1976	W	H	1,870	H	337SNNG
282	414108 0791518	Cobham	Osheimer, Frank	0906	1976	W	H	1,840	S	337SNNG
283	414043 0791520	Cobham	Heyer, Alfred C.	0269	1978	W	H	1,680	S	337CYHG
284	414048 0791516	Cobham	Flick, K.	0269	1980	W	H	1,690	S	337CYHG
285	414106 0791510	Cobham	Pacona, John	0906	1976	W	H	1,840	S	337SNNG
286	414953 0790515	Clarendon	McBride, Eugene	1378	1978	W	H	1,260	S	341CDKN
287	414953 0790502	Clarendon	Rea, William F.	–	1938	W	H	1,240	S	341CDKN
288	414953 0790509	Clarendon	Slocum, Glenn	–	1940	W	H	1,250	S	341CDKN
289	414947 0790518	Clarendon	Coleman, Harold J.	0067	1982	W	H	1,210	V	112OTSH
290	414454 0791833	Cobham	Anderson, C.	0269	1979	W	H	1,140	V	112OTSH
291	414451 0791847	Cobham	MacMurdo, George	0269	1978	W	H	1,140	V	112OTSH
292	414451 0791837	Cobham	Page, Jim	0269	1979	W	H	1,160	V	112OTSH
293	414317 0791958	Cobham	Molle, Caroline B.	–	1977	W	H	1,120	V	112OTSH
294	414237 0792049	Cobham	Minahan, J.	1599	1985	W	H	1,160	V	112OTSH
295	414234 0792043	Cobham	Snavley, D.	1599	1983	W	H	1,200	S	341VNNG

Table 5. *Record of wells in Warren County—Continued*

Lith-ology	Depth of well (feet)	Casing		Depth to water-bearing zone(s) (feet)	Water level (feet)	Date water level measured	Reported yield (gal/min)	Measured yield			Field water quality			USGS well number
		Depth (feet)	Diameter (inches)					Specific capacity [(gal/min)/ft]	Discharge (gal/min)	Pumping period (hours)	Date measured	Specific conduc-tance (µS/cm)	pH (units)	
SDGL	72	65	6	--	35.10	06-26-85	--	1.6	16	0.5	--	--	--	Wr-244
GRCL	75	66	6	--	51	06-00-81	--	1.1	16	--	--	--	--	245
SDGL	71	67	6	--	--	--	16	--	--	--	--	--	--	246
SDGL	69	60	6	--	--	--	16	--	--	--	--	--	--	247
SDSL	56	21	6	44	35	05-00-78	--	.4	6	--	06-26-85	266	7.1	248
SDGL	44	35	6	--	29	05-00-81	--	.80	8	--	--	--	--	249
--	100	43	6	--	43.20	06-26-85	1	--	--	--	--	--	--	250
SDSL	67	43	6	45	43	06-26-85	--	.03	1	.5	--	--	--	251
SDGL	38	--	--	--	13.40	06-26-85	--	--	--	--	06-26-85	212	7.4	252
SDGL	37	38	6	--	27	11-00-79	16	--	--	.5	--	--	--	253
SHLE	49	28	6	36	34.50	06-26-85	16	--	--	--	06-26-85	126	7.1	254
SNDS	48	29	6	40	16.70	06-26-85	--	2.0	10	.5	--	--	--	255
SDGL	60	--	--	--	--	--	--	--	--	--	06-27-85	640	6.8	256
SDGL	36	37	6	26	18	05-00-82	--	3.3	10	1	--	--	--	257
SDSL	50	28	6	35	30	10-00-82	--	1.0	10	--	06-27-85	165	6.6	258
--	162	35	--	--	55	00-00-84	--	--	--	--	--	--	--	259
SDSL	89	21	6	68	49	09-00-80	--	.06	2	--	--	--	--	260
SDSL	229	--	--	--	130	07-00-79	--	.06	5	.3	--	--	--	261
SHLE	218	20	6	125/180	140	08-00-78	--	.06	4	.5	06-27-85	205	7.1	262
SDSL	228	43	6	135/215	170	08-00-81	--	.16	7	.5	06-27-85	212	7.2	263
SHLE	196	39	6	80/125	100	08-00-78	--	.05	4	.5	06-27-85	104	7.3	264
--	227	20	6	196/215	196	08-00-83	--	.57	8	.5	--	--	--	265
--	352	--	--	--	131	08-25-87	--	--	--	--	08-26-87	260	6.9	266
SDGL	47	33	8	--	6.45	07-17-85	--	7.7	100	48	07-17-85	310	--	270
SHLE	160	123	6	138	130	06-00-78	5	--	--	--	07-17-85	167	--	271
SDSL	165	35	6	148	135	10-00-78	--	.32	8	--	--	--	--	272
SHLE	92	53	6	81	57	10-00-79	--	1.1	16	.5	--	--	--	273
--	157	34	6	94	93	09-06-78	--	.03	2	.3	--	--	--	274
SDSL	120	27	6	80	--	--	3	--	--	--	--	--	--	275
SDSL	99	30	6	75	55	10-00-79	--	.14	5	.5	--	--	--	276
SDSL	81	34	6	60	50	07-00-79	--	.40	8	.5	--	--	--	277
SDSL	138	53	6	123	103	06-00-78	--	.13	4	.5	--	--	--	278
SHLE	135	51	6	95	85	06-00-79	--	.01	<1	--	--	--	--	279
--	114	37	6	88	74	06-00-79	--	.01	<1	--	--	--	--	280
SDSL	178	22	6	--	--	--	5	--	--	--	--	--	--	281
SDSL	158	18	6	--	--	--	5	--	--	--	--	--	--	282
SHLE	90	59	6	70	46.10	07-17-85	--	.06	3	.5	07-25-85	220	6.5	283
--	--	--	--	--	--	--	--	.07	2	2	--	--	--	
SHLE	100	40	6	50	40	10-00-80	--	.02	1	--	--	--	--	284
SDSL	130	18	6	--	44.70	07-17-85	5	--	--	--	--	--	--	285
SHLE	120	61	6	100/110	--	--	6	--	--	--	07-18-85	319	--	286
SHLE	80	40	4	--	--	--	--	--	--	--	07-18-85	179	--	287
SHLE	90	--	--	--	--	--	--	--	--	--	07-18-85	159	--	288
SGVC	66	66	5	--	10.40	07-18-85	25	--	--	--	07-18-85	253	--	289
SDGL	50	43	6	--	12	05-00-79	--	.33	10	--	--	--	--	290
SDGL	60	60	6	--	30	06-00-78	16	--	--	--	--	--	--	291
SDGL	65	55	6	--	30	04-00-79	10	--	--	--	08-06-85	277	7.0	292
--	34	--	--	--	10.90	08-06-85	--	--	--	--	08-06-85	214	6.8	293
SDGL	48	49	6	--	35	05-00-85	12	--	--	--	--	--	--	294
SDSL	86	40	6	68	--	--	15	--	--	--	--	--	--	295

Table 5. *Record of wells in Warren County—Continued*

USGS well number	Latitude/ longitude (DDMMSS)	Quadrangle name	Owner	Driller license number	Year drilled	Primary Use of site	Primary Use of water	Altitude of land surface (feet)	Topo-graphic setting	Hydro-geologic unit
Wr-296	414139 0792118	Cobham	Hall, Eugene	0269	1977	W	H	1,120	V	112OTSH
297	414118 0792145	Cobham	Hlobcyz, N.	0269	1979	W	H	1,110	V	112OTSH
298	414016 0792509	Tidioute	Morrow, Grace	0269	1980	W	H	1,110	V	112OTSH
299	413951 0792451	Tidioute	Bilyou, Robert	1599	1984	W	H	1,090	V	112OTSH
300	413952 0792453	Tidioute	McCall, F.	1599	1984	W	H	1,090	V	112OTSH
301	413758 0792407	Tidioute	Gentor, Robert	1599	1984	W	H	1,100	V	112OTSH
302	414949 0790539	Clarendon	Undzius, Felix	--	1985	W	H	1,240	V	112OTSH
303	414949 0790528	Clarendon	Sterling, Kenneth W.	1603	1981	W	H	1,230	V	112OTSH
304	414945 0790533	Clarendon	Johnson, S.	1378	1981	W	H	1,210	V	112OTSH
305	415039 0790736	Warren	Lyle, Raymond	--	1985	W	H	1,400	S	341VNNG
306	415147 0790651	Clarendon	Ostergard, James	--	1969	W	H	1,680	S	341VNNG
307	415207 0790627	Clarendon	Hamm, Charles	0906	1973	W	H	1,810	S	341OSWY
308	415201 0790635	Clarendon	Tomica, David	1378	1982	W	H	1,810	S	341OSWY
309	415158 0790634	Clarendon	Pompilio, J.	0906	1979	W	H	1,810	S	341OSWY
310	415131 0790658	Clarendon	Caldwell, Terry	0067	1982	W	H	1,610	S	341VNNG
311	415121 0790701	Clarendon	Knopf, B.	1378	1979	W	H	1,550	S	341VNNG
312	415037 0790734	Warren	Stenstrom, Derwin	0053	1957	W	H	1,380	W	341VNNG
313	415039 0790724	Clarendon	Belz, Robert W.	0709	1962	W	H	1,370	S	341VNNG
314	415036 0790727	Clarendon	Johnson, Harris E.	0053	1969	W	H	1,390	H	341VNNG
315	414307 0792744	Tidioute	Bajorek, Karen	--	1985	W	H	1,460	S	341RCVL
316	415357 0790817	Russell	Phillips, Michael	--	1985	W	H	1,250	V	341CDKN
317	415042 0790727	Clarendon	Renton, Robert	1378	1985	W	H	1,400	S	341VNNG
318	415051 0790135	Clarendon	Matteson Sr., Calvin	1378	1985	W	H	1,210	V	112OTSH
319	415353 0790817	Russell	Bower, William	1378	1985	W	H	1,250	V	112OTSH
320	415353 0790815	Russell	Worth, Richard	0067	1978	W	H	1,250	V	112OTSH
321	415333 0790700	Scandia	Weirick, Fay	1393	1979	W	H	1,320	V	112OTSH
322	415237 0790510	Scandia	Craig, Forrest	0067	1979	W	H	1,930	H	337KNPP
323	415251 0790817	Russell	Schmeidel, R.	1378	1982	W	H	1,240	V	341CDKN
324	415315 0790818	Russell	Schumann, James	0067	1982	W	H	1,220	V	112OTSH
325	415329 0790657	Scandia	Harlan, T.	1378	1984	W	H	1,340	V	112OTSH
326	415205 0790747	Warren	Crowley, Robert	--	1985	W	H	1,640	S	341VNNG
327	415209 0790746	Warren	Wirlen, B.	1393	1984	W	H	1,680	S	341VNNG
328	415203 0790753	Warren	Sterne Jr., Robert H.	--	1982	W	H	1,620	S	341VNNG
329	415206 0790756	Warren	Hourigan, H.	1378	1981	W	H	1,640	S	341VNNG
330	415227 0790727	Clarendon	Mead, W.	0067	1980	W	H	1,800	S	341OSWY
331	415120 0790555	Clarendon	Murnaghan, J.	0067	1984	W	H	1,540	V	341VNNG
332	415318 0790330	Scandia	Valone, J.	0906	1984	W	H	1,990	S	341OSWY
333	415013 0790659	Clarendon	Walters, James	--	1958	W	H	1,240	V	112OTSH
334	415321 0790327	Scandia	Bargerstock, G.	0067	1985	W	H	1,990	W	341OSWY
335	414438 0790402	Sheffield	Tiona Forest Products	0705	1968	W	N	1,350	V	112LAKE
336	414326 0790306	Sheffield	Faul, Kelly	1410	1977	W	H	1,350	V	112LAKE
337	414329 0790301	Sheffield	Anthony, Ralph	0906	1977	W	H	1,350	V	112LAKE
338	414328 0790311	Sheffield	Mangione, Frank	1410	1980	W	H	1,350	V	112LAKE
339	414330 0790319	Sheffield	Bailey, Rick	0067	1982	W	H	1,340	V	112LAKE
340	414040 0790915	Cherry Grove	Cleo, Douglass	0906	1979	W	H	1,850	S	324PSVL
341	414153 0790819	Cherry Grove	Hornburg, Norman	--	1985	W	H	1,950	H	324PSVL
342	414154 0790816	Cherry Grove	Hornburg, Tim	1378	1981	W	H	1,950	H	324PSVL
343	414243 0790653	Sheffield	Burke, Clyde	0067	1979	W	H	1,970	H	324PSVL
344	414149 0790827	Cherry Grove	Bair, Floyd H.	1410	1977	W	H	1,950	H	324PSVL
345	414143 0790837	Cherry Grove	Anderson, Russell	0906	1974	W	H	1,940	H	325PSVL

Table 5. *Record of wells in Warren County—Continued*

Lith-ology	Depth of well (feet)	Casing		Depth to water-bearing zone(s) (feet)	Water level (feet)	Date water level measured	Reported yield (gal/min)	Measured yield			Field water quality			USGS well number
		Depth (feet)	Diameter (inches)					Specific capacity [(gal/min)/ft]	Discharge (gal/min)	Pumping period (hours)	Date measured	Specific conduc-tance (µS/cm)	pH (units)	
--	32	34	6	--	15	10-00-77	--	0.38	5	0.5	--	--	--	Wr-296
--	30	30	6	--	18	04-00-79	10	--	--	--	--	--	--	297
SDGL	40	41	6	--	20	09-00-80	16	--	--	--	--	--	--	298
SDGL	26	27	6	--	12.80	08-06-85	--	15	15	.3	08-06-85	245	7.5	299
SDGL	26	27	6	--	12	06-00-84	--	8.0	16	3	--	--	--	300
--	21	19	6	--	6.75	08-06-85	--	.86	6	.3	08-06-85	254	7.2	301
--	--	--	--	--	--	--	--	--	--	--	08-06-85	440	6.4	302
SDGL	72	70	6	--	35	07-00-81	--	2.1	15	--	08-06-85	206	6.9	303
GRVL	30	30	6	--	25	10-00-81	20	--	--	--	--	--	--	304
--	130	--	--	--	--	--	--	--	--	--	08-07-85	271	6.8	305
--	240	20	6	55/172/218	--	--	--	--	--	--	08-07-85	370	7.0	306
SDSL	105	68	6	70/85	--	--	8	--	--	--	--	--	--	307
SHLE	230	30	6	40/48/150	49.50	11-06-85	10	--	--	--	11-06-85	440	7.4	308
SDSL	317	20	6	120	115	11-01-79	--	.01	2	.5	--	--	--	309
SHLE	47	23	5	--	30	07-13-82	10	--	--	--	11-06-85	255	5.5	310
SHLE	160	26	6	50/80/125	40.90	11-06-85	7	--	--	--	--	--	--	311
--	130	108	6	112	60	11-21-57	--	--	--	--	08-07-85	295	7.2	312
--	126	--	--	--	76	08-07-85	--	--	--	--	08-07-85	400	7.3	313
--	160	60	6	--	--	--	10	--	--	--	08-07-85	277	--	314
--	190	--	--	--	105	08-14-85	--	--	--	--	08-14-85	470	7.1	315
SHLE	250	150	6	--	64	08-14-85	--	--	--	--	08-14-85	680	7.2	316
SDSL	140	85	6	89	94.80	08-14-85	3	--	--	--	08-14-85	430	--	317
GRVL	42	42	6	--	20	06-00-85	10	--	--	--	08-14-85	265	--	318
GRCL	114	110	6	--	49	00-00-85	--	--	--	--	--	--	--	319
SDGL	126	126	6	--	66	11-02-78	--	37	15	1	08-28-85	177	6.5	320
GRCL	105	84	6	43/67/73/95	40	06-19-79	--	.60	30	--	--	--	--	321
SHLE	73	40	6	--	30	11-21-79	6	--	--	--	08-28-85	165	6.6	322
SHLE	80	20	6	48	23.70	08-28-85	4	--	--	--	08-28-85	325	6.7	323
GRCL	67	67	5	--	30	07-17-82	10	--	--	--	--	--	--	324
GRCL	76	52	6	--	42	05-15-84	7	--	--	--	--	--	--	325
--	--	--	--	--	--	--	--	--	--	--	08-28-85	289	6.9	326
SDSL	130	54	8	110/115	98	09-00-84	--	1.8	22	--	--	--	--	327
--	60	40	8	--	48	08-28-85	10	--	--	--	08-28-85	283	6.9	328
SHLE	110	21	6	80	70	09-00-81	5	--	--	--	--	--	--	329
SDSL	167	18	5	52/167	30	08-11-80	8	--	--	--	--	--	--	330
SHLE	60	31	5	50/60	40	12-20-84	--	1.4	7	.5	--	--	--	331
SDSL	210	76	6	135/190	--	--	5	--	--	--	--	--	--	332
SDGL	90	--	--	--	--	--	--	--	--	--	08-28-85	255	6.7	333
SDSL	94	72	5	--	54	08-28-85	--	.60	12	1	--	--	--	334
SDGL	31	31	6	--	10	03-09-68	--	.37	6	2	09-18-85	205	6.6	335
GRVL	29	29	6	--	12	11-05-77	--	.62	8	.2	--	--	--	336
SDGL	30	31	6	--	10	08-15-77	10	--	--	--	--	--	--	337
GRVL	31	31	6	--	8.52	09-18-85	--	.47	8	1.0	09-18-85	168	7.4	338
SDGL	82	82	5	--	10	08-23-82	15	--	--	--	09-18-85	196	6.8	339
SNDS	158	42	5	--	59.80	09-18-85	--	.50	5	1	09-18-85	84	6.2	340
--	170	--	--	--	--	--	--	--	--	--	09-18-85	203	5.6	341
SNDS	100	21	6	22/41/68/73	30	09-18-85	4	--	--	--	09-18-85	258	5.4	342
SNDS	80	9	5	60/80	30	08-02-79	--	.50	10	1	--	--	--	343
SDSL	68	21	6	45	45	09-10-77	--	.27	4	1	--	--	--	344
SDSL	165	21	6	--	--	--	10	--	--	--	--	--	--	345

Table 5. *Record of wells in Warren County—Continued*

USGS well number	Latitude/ longitude (DDMMSS)	Quadrangle name	Owner	Driller license number	Year drilled	Primary Use of site	Primary Use of water	Altitude of land surface (feet)	Topo-graphic setting	Hydro-geologic unit
Wr-346	414222 0790114	Sheffield	Hanson, William E.	0053	1967	W	H	1,370	V	112LAKE
347	414212 0790015	Sheffield	Sevanick, John	--	1960	W	H	1,390	V	341CRGS
348	414204 0790003	Sheffield	Trappe, Richard	0067	1974	W	H	1,390	V	112LAKE
349	415204 0790631	Clarendon	Lloyd, Charles	0761	1985	W	H	1,840	H	341OSWY
350	415203 0790634	Clarendon	Tomica, Joseph	0053	1966	W	H	1,810	S	341OSWY
351	414027 0790119	Sheffield	Pittock, Gary	0067	1973	W	H	1,420	V	112CLVM
352	413935 0790141	Sheffield	Kunselman, J.	1410	1980	W	H	1,400	V	112CLVM
353	414950 0790537	Clarendon	Valentine, Glen	0067	1980	W	H	1,240	V	112OTSH
354	415005 0790801	Warren	GTE Sylvania	--	1986	W	N	1,190	V	112OTSH
355	415009 0790756	Warren	GTE Sylvania	--	1986	W	N	1,190	V	112OTSH
356	415007 0790802	Warren	GTE Sylvania	--	1986	W	U	1,190	V	112OTSH
357	414751 0790547	Clarendon	Arnold, Gary C.	--	1986	P	H	1,330	V	341DVNNU
358	414748 0790547	Clarendon	Unknown	--	--	P	H	1,350	S	341DVNNU
359	415034 0791619	Youngsville	National Forge Co.	--	1967	W	N	1,160	V	112OTSH
360	415026 0791622	Youngsville	National Forge Co.	0410	1984	W	N	1,160	V	112OTSH
361	414937 0790716	Clarendon	United Refining Co.	1513	1980	W	N	1,190	V	112OTSH
362	414935 0790714	Clarendon	United Refining Co.	1513	1981	W	N	1,190	V	112OTSH
363	414934 0790722	Clarendon	United Refining Co.	1513	1984	W	N	1,180	V	112OTSH
364	414935 0790718	Clarendon	United Refining Co.	1513	1981	W	N	1,190	V	112OTSH
365	414935 0790718	Clarendon	United Refining Co.	1513	1981	O	U	1,190	V	112OTSH
366	414935 0790718	Clarendon	United Refining Co.	1513	1981	O	U	1,190	V	112OTSH
367	414943 0790732	Warren	United Refining Co.	0705	1976	U	U	1,190	V	112OTSH
368	414939 0790719	Clarendon	United Refining Co.	1513	1976	T	U	1,190	V	112OTSH
369	414939 0790719	Clarendon	United Refining Co.	1513	1981	T	U	1,190	V	112OTSH
370	414952 0790755	Warren	United Refining Co.	1513	1984	T	U	1,180	V	112OTSH
371	415042 0793631	Spring Creek	Toplovick, Frank	1378	1981	W	H	1,880	H	337CYHG
372	415022 0793138	Spring Creek	Gibas, Donald	0975	1966	W	H	1,680	H	337CBCR
373	415045 0793631	Spring Creek	Deprospo, J.	1378	1981	W	H	1,860	W	337CYHG
374	414957 0793614	Spring Creek	Flowers, G.	1300	1983	W	H	1,770	H	337CBCR
375	415153 0793121	Spring Creek	Allison, A.	1378	1985	W	H	1,390	T	112ICCC
376	415231 0793127	Columbus	Spring Cr. Vol.Fire Dept.	0975	1967	W	P	1,410	V	341VNNG
377	415230 0793127	Spring Creek	Porter, Bernard	0975	1967	W	H	1,410	V	341VNNG
378	415134 0793302	Spring Creek	Kafferlin, William H.	1378	1984	W	H	1,450	V	112ICCC
379	414841 0793509	Grand Valley	Craig, Dallas F.	1378	1985	W	H	1,570	H	341RCVL
380	415159 0793118	Spring Creek	McClimans, Robert R.	1378	1984	W	H	1,360	V	112ICCC
381	415200 0793116	Spring Creek	Spaeder, W.C.	1378	1985	W	H	1,370	V	112ICCC
382	415240 0793153	Columbus	Hileman, James	0906	1976	W	H	1,420	H	112ICCC
383	415240 0793140	Columbus	Jackman, Bud	0906	1975	W	H	1,410	V	341VNNG
384	415127 0793031	Spring Creek	McChesney, W.	1378	1983	W	H	1,380	V	112OTSH
385	415056 0792845	Pittsfield	Brown, Robert	0975	1967	W	H	1,360	V	112OTSH
386	415053 0792851	Pittsfield	Wildes, James	0975	1967	W	H	1,350	V	112OTSH
387	415052 0792849	Pittsfield	Mack, Walter	0975	1967	W	H	1,350	V	112OTSH
388	414751 0793404	Spring Creek	Thomas, John	0796	1969	W	H	1,560	V	112OTSH
389	415705 0793015	Columbus	Bedjorski, C.	1378	1979	W	H	1,530	S	341VNNG
390	415744 0793303	Columbus	Bull, Michael	1094	1980	W	H	1,680	H	341VNNG
391	415637 0793411	Columbus	Reiff, William	1378	1985	W	H	1,450	V	341CDKN
392	414833 0792732	Pittsfield	Wojtowicz, J.	1378	1978	W	H	1,310	V	112OTSH
393	414852 0790942	Warren	Gustavson, Allen	0761	1978	W	H	1,870	H	341RCVL
394	414855 0790943	Warren	Harris, J.	0761	1983	W	H	1,860	H	337KNPP
395	415208 0791241	Warren	Emhart, Donald	1378	1982	W	H	1,660	W	341VNNG

Table 5. *Record of wells in Warren County—Continued*

Lith-ology	Depth of well (feet)	Casing		Depth to water-bearing zone(s) (feet)	Water level (feet)	Date water level measured	Reported yield (gal/min)	Measured yield			Field water quality			USGS well number
		Depth (feet)	Diameter (inches)					Specific capacity [(gal/min)/ft]	Discharge (gal/min)	Pumping period (hours)	Date measured	Specific conduc-tance (µS/cm)	pH (units)	
SDSL	84	--	--	--	17.40	10-10-85	--	--	--	--	10-10-85	120	6.4	Wr-346
SDSL	128	100	4	--	--	--	--	--	--	--	10-10-85	340	7.4	347
GRCL	124	105	5	--	50	04-01-74	--	0.28	15	0.5	--	--	--	348
SDSL	190	--	--	--	152	11-06-85	--	.18	6	.2	11-06-85	480	7.4	349
SDSL	165	--	--	--	--	--	8	--	--	--	11-06-85	520	7.6	350
GRCL	74	54	5	--	39	10-18-73	--	6.0	30	.5	11-07-85	290	7.7	351
GRVL	75	60	6	--	45	06-14-80	--	.67	10	2	--	--	--	352
--	57	57	5	--	32	04-11-80	--	.67	10	.8	--	--	--	353
--	--	--	--	--	--	--	1000	--	--	--	04-22-86	690	--	354
--	--	--	--	--	14.50	10-09-79	--	5,100	500	--	04-22-86	440	--	355
--	--	--	--	--	--	--	500	--	--	--	--	--	--	356
--	--	--	--	--	--	--	--	--	--	--	04-23-86	262	--	357
--	--	--	--	--	--	--	--	--	--	--	--	--	--	358
SDGL	50	35	16	35	19.70	05-07-86	--	120	750	--	05-07-86	330	7.6	359
GRVL	41	41	6	--	13	07-00-84	--	--	--	--	--	--	--	360
GRVL	72	72	18	--	16	09-01-80	--	6,300	900	9	--	--	--	361
SDGL	70	70	16	46	23.50	04-30-81	--	8,100	750	4	--	--	--	362
GRVL	69	69	18	48	24	05-22-84	--	8,300	1,200	--	--	--	--	363
SDGL	72	72	16	66	26.20	11-15-81	--	8,100	1,000	--	--	--	--	364
SDGL	72	72	6	--	26.40	05-07-86	--	46	60	--	--	--	--	365
SDGL	72	72	6	38	26.20	11-07-81	--	8,200	50	--	--	--	--	366
GRVL	68	48	18	48	17	03-04-76	--	460	950	2	--	--	--	367
SDGL	70	68	6	33/58	36	10-19-81	--	5.0	25	--	--	--	--	368
SDGL	72	72	6	--	36.20	10-15-81	--	21	25	4	--	--	--	369
SDGL	64	--	--	--	8	00-00-84	--	--	--	--	--	--	--	370
SHLE	160	27	6	--	--	--	3	--	--	.3	06-25-86	95	6.5	371
SHLE	55	22	8	--	--	--	--	.67	10	1	06-25-86	155	6.8	372
SHLE	160	58	6	--	--	--	3	--	--	.3	--	--	--	373
SNDS	142	110	6	--	--	--	--	20	20	3	--	--	--	374
GRVL	127	127	6	--	--	--	--	7	7	.3	--	--	--	375
SHLE	60	31	8	--	--	--	--	10	10	2	06-25-86	235	6.8	376
SHLE	--	53	8	--	--	--	--	10	10	2	06-25-86	240	6.5	377
GRVL	70	70	6	--	--	--	6	--	--	--	06-25-86	265	7.3	378
SHLE	110	29	6	--	--	--	--	7	7	.3	--	--	--	379
GRVL	60	60	6	--	--	--	--	10	10	.3	06-26-86	250	8.1	380
GRVL	40	40	6	--	--	--	--	10	10	.3	06-26-86	250	7.3	381
--	45	46	6	--	--	--	--	3	3	--	06-26-86	325	7.2	382
SHLE	75	31	6	--	--	--	--	--	--	--	--	--	--	383
GRVL	60	--	--	--	34.30	07-09-86	--	10	10	.3	07-09-86	225	6.7	384
GRVL	42	42	6	--	--	--	--	15	15	2	--	--	--	385
GRVL	45	45	6	--	--	--	--	30	30	2	--	--	--	386
GRVL	41	41	6	--	--	--	--	40	40	2	--	--	--	387
GRVL	47	47	6	--	--	--	10	--	--	--	07-09-86	335	6.6	388
SHLE	130	39	6	--	--	--	50	--	--	.3	07-09-86	1100	6.9	389
SHLE	65	12	6	--	--	--	--	.94	30	3	07-09-86	275	6.5	390
SHLE	60	37	6	--	9.70	07-09-86	10	--	--	.3	07-09-86	345	6.4	391
GRVL	42	--	--	--	--	--	10	--	--	.3	07-23-86	235	6.5	392
SHLE	260	--	--	135/165	--	--	--	.27	8	2	07-10-86	140	6.0	393
SHLE	200	21	6	40/150/175	--	--	--	.36	9	1	07-10-86	155	6.3	394
SHLE	140	22	6	--	--	--	8	--	--	.3	07-10-86	210	6.3	395

Table 5. *Record of wells in Warren County—Continued*

USGS well number	Latitude/ longitude (DDMMSS)	Quadrangle name	Owner	Driller license number	Year drilled	Primary		Altitude of land surface (feet)	Topo-graphic setting	Hydro-geologic unit
						Use of site	Use of water			
Wr-396	414648 0792630	Pittsfield	Eastman, Roy	1378	1982	W	H	1,810	W	337CYHG
397	415151 0793117	Spring Creek	Williams, Charles	0975	1984	T	U	1,370	T	112OTSH
398	414921 0793444	Spring Creek	Noyer, E.	1378	1984	W	H	1,690	H	337CBCR
399	414751 0793234	Spring Creek	Rasper, George	1375	1976	W	H	1,810	W	112CLVM
400	414952 0790923	Warren	Colvin, R.	--	1984	W	H	1,190	V	112OTSH
401	415146 0790930	Warren	Anthony, Robert	0067	1977	W	H	1,270	V	341CDKN
402	415040 0791336	Warren	Willow Court Trailer Pk.	1378	1982	W	H	1,160	V	341CDKN
403	415045 0791331	Warren	Darling, A.	1378	1979	W	H	1,190	V	341CDKN
404	415604 0793454	Columbus	Stocton, Charles	0224	1979	W	H	1,460	V	112DRFT
405	414831 0792721	Pittsfield	Eastman, Earl	1044	1966	W	H	1,310	V	112OTSH
406	414826 0792709	Pittsfield	Chase, Doug	1378	1979	W	H	1,350	S	341CDKN
407	414856 0792640	Pittsfield	Irwin Manufacturing	--	1986	W	N	1,290	V	112OTSH
408	414852 0792639	Pittsfield	Irwin Manufacturing	0761	1966	W	N	1,290	V	112OTSH
409	414907 0792541	Pittsfield	Weaver, Joseph	1378	1975	W	H	1,300	V	341VNNG
410	415002 0792251	Pittsfield	Wiler, Leroy	1378	1985	W	H	1,240	V	112OTSH
411	414617 0792637	Pittsfield	Eastman, Louis	0269	1978	W	H	1,790	S	337SNNG
412	414843 0792308	Pittsfield	Hansen, Allen	1378	1980	W	H	1,280	V	341CDKN
413	414856 0792305	Pittsfield	Morris, Charles	1378	1985	W	H	1,270	V	112OTSH
414	415021 0792306	Pittsfield	Gantz, Robert	1044	1967	W	H	1,260	V	112OTSH
415	414724 0792304	Pittsfield	Bosko, R.	1378	1978	W	H	1,800	H	337CBCR
416	415009 0792258	Pittsfield	Pittsfield Meth. Church	1378	1981	W	H	1,250	V	112OTSH
417	414816 0792729	Pittsfield	Haight Sr., Sidney	1044	1966	W	H	1,310	V	112OTSH
418	414715 0792620	Pittsfield	Wertz, H.	0269	1979	W	H	1,860	H	337SNNG
419	414625 0792605	Pittsfield	Cooney, Robert	1159	1985	W	H	1,890	H	324PSVL
420	415002 0792249	Pittsfield	Hultberg, D.	1545	1980	W	H	1,240	V	112OTSH
421	414908 0792608	Pittsfield	Moore, R.	1378	1980	W	U	1,310	V	112OTSH
422	415033 0792358	Pittsfield	Long, Rudolph	1378	1982	W	H	1,350	S	341CDKN
423	415356 0792503	Lottsville	Nelson, Martin	0761	1979	W	H	1,330	V	112ICCC
424	415226 0792406	Pittsfield	Sproveri, William	1378	1978	W	H	1,360	V	112OTSH
425	415422 0792554	Lottsville	Black, Doug	0906	1976	W	H	1,360	V	112DRFT
426	415459 0792512	Lottsville	Wolf, John	1044	1967	W	H	1,390	V	341VNNG
427	415537 0792544	Lottsville	Lauger, George	0761	1978	W	H	1,390	V	112ICCC
428	415637 0792816	Lottsville	Payne, John	1708	1985	W	H	1,850	H	341RCVL
429	415823 0792548	Lottsville	Knisley, B.	0761	1982	W	H	1,600	S	341VNNG
430	415546 0792417	Lottsville	Stewart, Dorothy	0761	1984	W	H	1,630	S	341VNNG
431	415650 0792602	Lottsville	Dalrymple, Brad	1378	1985	W	H	1,410	V	112ICCC
432	415611 0792546	Lottsville	Mallery, Harold	0761	1977	W	H	1,440	V	112ICCC
433	414859 0792309	Pittsfield	Granda, B.	1300	1981	W	H	1,280	V	341CDKN
434	415017 0792301	Pittsfield	Fehlman, Ron	1044	1967	W	U	1,260	V	112OTSH
435	414643 0792632	Pittsfield	Donahue, Mary	1044	1966	W	H	1,820	S	337SNNG
436	415200 0792355	Pittsfield	Ray's Disposal	1378	1982	W	N	1,320	V	112OTSH
437	415255 0792510	Lottsville	Cekala, W.	1378	1981	W	H	1,350	V	112OTSH
438	415242 0792508	Lottsville	Mason, C.	1378	1981	W	H	1,400	S	341VNNG
439	415232 0792408	Lottsville	Steel, Dave	1378	1978	W	H	1,370	V	341CDKN
440	415505 0792627	Lottsville	Monroe, R.	1378	1980	W	H	1,390	V	112OTSH
441	415454 0792526	Lottsville	Wrightsville VFD	1378	1981	W	H	1,370	V	112ICCC
442	414850 0790946	Warren	Calbert, D.	1378	1986	W	H	1,860	H	341RCVL
443	415227 0790930	Warren	Hammerbeck, Robert	1378	1986	W	H	1,260	V	112OTSH
444	415717 0792603	Lottsville	Briggs, Richard	0761	1978	W	H	1,440	V	341CDKN
445	415756 0792403	Lottsville	Baverle, George	0761	1974	W	H	1,750	S	341VNNG

Table 5. *Record of wells in Warren County—Continued*

Lith-ology	Depth of well (feet)	Casing		Depth to water-bearing zone(s) (feet)	Water level (feet)	Date water level measured	Reported yield (gal/min)	Measured yield			Field water quality			USGS well number
		Depth (feet)	Diameter (inches)					Specific capacity [(gal/min)/ft]	Discharge (gal/min)	Pumping period (hours)	Date measured	Specific conduc-tance (µS/cm)	pH (units)	
SHLE	100	20	6	--	--	--	5	--	--	--	07-23-86	130	6.5	Wr-396
GRVL	70	70	6	--	--	--	--	--	--	--	--	--	--	397
SHLE	220	26	6	--	--	--	7	--	--	0.3	--	--	--	398
GRVL	112	101	6	--	--	--	--	--	--	--	--	--	--	399
GRVL	50	50	6	--	--	--	10	--	--	--	--	--	--	400
SHLE	50	29	5	--	--	--	--	1.6	8	.5	--	--	--	401
SHLE	64	56	8	--	--	--	15	--	--	.3	--	--	--	402
SHLE	220	27	6	83/150	--	--	4	--	--	--	--	--	--	403
GRVL	42	42	8	--	--	--	--	.10	2	--	--	--	--	404
GRVL	28	28	6	--	--	--	--	--	--	--	07-23-86	205	6.3	405
SHLE	120	33	6	--	--	--	7	--	--	--	07-23-86	400	6.7	406
--	--	--	--	--	--	--	--	--	--	--	07-23-86	275	6.5	407
GRVL	38	38	6	12/35	--	--	--	10	40	2	07-23-86	285	6.7	408
SHLE	63	38	6	16/20/50	--	--	30	--	--	--	07-23-86	280	6.9	409
GRVL	49	49	6	--	--	--	10	--	--	.3	07-23-86	265	6.6	410
SLSN	70	26	6	55	--	--	4	--	--	--	07-24-86	240	6.3	411
SNDS	120	106	6	109	--	--	6	--	--	.3	07-24-86	395	6.3	412
GRVL	65	65	6	65	--	--	10	--	--	.3	07-24-86	225	6.5	413
GRVL	40	40	6	--	--	--	--	--	--	--	07-24-86	295	6.8	414
SHLE	220	21	6	80	--	--	6	--	--	.2	--	--	--	415
GRVL	40	40	6	--	--	--	10	--	--	.3	--	--	--	416
GRVL	40	40	6	37	--	--	--	--	--	--	--	--	--	417
SLSN	72	48	6	36	--	--	--	1.6	16	.5	--	--	--	418
SNDS	75	76	5	40	--	--	--	.68	15	.5	--	--	--	419
--	55	54	6	--	--	--	--	--	--	--	--	--	--	420
GRVL	42	43	6	43	--	--	10	--	--	.3	--	--	--	421
SHLE	140	43	6	93	66	09-00-82	3	--	--	.3	08-04-86	220	7.7	422
GRVL	130	130	6	125	35	10-27-79	--	.60	15	2	08-05-86	180	6.7	423
GRVL	104	102	6	--	50	07-26-78	--	.60	6	--	08-05-86	305	6.8	424
SGVC	148	148	6	--	--	--	5	--	--	--	08-06-86	600	7.5	425
SHLE	46	18	5	25/32	8	07-23-67	--	--	--	--	08-06-86	435	7.4	426
GRVL	59	59	6	54	35	10-27-78	--	2.0	10	1.5	08-06-86	300	6.9	427
SHLE	135	42	6	60/118	60	07-00-85	--	.20	15	.2	08-06-86	280	6.6	428
SHLE	60	41	6	50	20	04-00-82	10	--	--	1	08-06-86	390	7.1	429
SHLE	83	41	6	60/65	25	06-27-84	--	25	10	1	08-07-86	140	6.3	430
GRVL	67	67	6	67	32	09-00-85	8	--	--	.3	08-07-86	340	6.8	431
GRVL	55	55	--	53	20	05-14-77	20	--	--	1	08-07-86	230	6.7	432
SNDS	127	102	6	80/124	5	03-00-81	--	.06	7	2.3	--	--	--	433
GRVL	39	39	5	36	22	11-03-67	--	--	--	--	--	--	--	434
SHLE	87	--	--	--	--	--	--	--	--	--	--	--	--	435
GRVL	73	73	6	60	31	04-00-82	8	--	--	.3	--	--	--	436
GRVL	86	86	6	86	58	05-00-81	5	--	--	.3	--	--	--	437
SHLE	115	21	6	35/94	53	08-00-81	4	--	--	.3	--	--	--	438
SHLE	175	166	6	170	90	06-06-78	10	--	--	--	--	--	--	439
GRVL	56	56	6	--	15	04-00-80	15	--	--	.5	--	--	--	440
GRVL	50	50	6	25	20	10-00-81	10	--	--	--	--	--	--	441
SHLE	292	33	6	245/252/262	120	06-00-86	5	--	--	.3	--	--	--	442
GRVL	105	105	6	105	60	07-00-86	6	--	--	.3	08-07-86	230	--	443
SHLE	100	44	6	65	3	05-15-78	--	.03	3	1.5	--	--	--	444
--	50	23	6	45	23	05-14-74	--	.55	12	1	--	--	--	445

Table 5. *Record of wells in Warren County—Continued*

USGS well number	Latitude/ longitude (DDMMSS)	Quadrangle name	Owner	Driller license number	Year drilled	Primary		Altitude of land surface (feet)	Topo-graphic setting	Hydro-geologic unit
						Use of site	Use of water			
Wr-446	415856 0792622	Lottsville	Tucker, L.	0761	1985	W	H	1,770	H	341VNNG
447	415712 0792349	Lottsville	Johnson, Ivan	0761	1985	W	H	1,910	H	341RCVL
448	415710 0792500	Lottsville	Woodburn, F.	1378	1986	W	H	1,760	S	341VNNG
449	415646 0792359	Lottsville	Pratt, D.	0761	1984	W	H	1,950	H	337CBCR
450	415659 0792739	Lottsville	White, C.	1378	1978	W	H	1,610	S	341VNNG
451	415544 0792732	Lottsville	Lutey, H.	0761	1976	W	H	1,470	V	112ICCC
452	415738 0791741	Sugar Grove	Loomis, Ken	0761	1978	W	H	1,850	S	341VNNG
453	415812 0791707	Sugar Grove	Church, Charles	0761	1983	W	S	1,690	S	341VNNG
454	415814 0791710	Sugar Grove	Church, Charles	--	1900	W	H	1,680	S	341VNNG
455	415937 0791700	Sugar Grove	Lehman, C.E.	0761	1976	W	S	1,520	S	341CDKN
456	415908 0791753	Sugar Grove	Sugar Grove Legion	--	1983	W	H	1,530	S	341CDKN
457	415925 0791826	Sugar Grove	Coffaro, Frank	0761	1982	W	H	1,380	V	112DRFT
458	415927 0791823	Sugar Grove	Carr, Thomas	0761	1976	W	H	1,390	V	341CDKN
459	415903 0791806	Sugar Grove	Sanders' Egg Farm	0761	1983	W	S	1,480	S	341CDKN
460	415904 0791806	Sugar Grove	Sanders' Egg Farm	0761	1975	W	S	1,480	S	341CDKN
461	415904 0791823	Sugar Grove	Thach, Son	0761	1982	W	H	1,450	S	341CDKN
462	415905 0791839	Sugar Grove	Curtis, Howard	0761	1980	W	H	1,420	S	341CDKN
463	415644 0792128	Sugar Grove	Camp Stone	0761	1974	W	Z	1,720	S	341VNNG
464	415916 0791843	Sugar Grove	Sanders, Marvin	0761	1983	W	N	1,380	V	112OTSH
465	415934 0792158	Sugar Grove	Carlberg, Paul	0761	1983	W	H	1,740	H	341VNNG
466	415912 0792057	Sugar Grove	Concoby, Alan	0761	1900	W	H	1,460	S	341CDKN
467	415852 0792054	Sugar Grove	Allenson, Carl	0761	1979	W	H	1,430	V	112OTSH
468	415853 0792047	Sugar Grove	Sanden, H.	--	1983	W	H	1,420	V	112OTSH
469	415759 0792126	Sugar Grove	Becker, Michael	0761	1977	W	H	1,700	S	341VNNG
470	415716 0792253	Lottsville	Capton, Mark	0761	1986	W	H	1,830	H	341RCVL
471	415757 0792203	Sugar Grove	Wise, W.J.	1378	1978	W	H	1,700	S	341VNNG
472	415815 0792011	Sugar Grove	Briggs, Leonard	0761	1983	W	H	1,400	V	112ICCC
473	415751 0791826	Sugar Grove	Boyles, W.	0761	1983	W	H	1,690	S	341VNNG
474	415853 0792033	Sugar Grove	Stateline Speedway Inc.	0761	1983	W	C	1,400	V	112OTSH
475	415533 0792328	Lottsville	Zurkan	0761	1978	W	H	1,950	H	337CBCR
476	415605 0792257	Lottsville	Bimber, Charles	0761	1978	W	H	1,900	H	341RCVL
477	415939 0791743	Sugar Grove	Frangione, Joe	0761	1980	W	H	1,480	S	341CDKN
478	415737 0792116	Sugar Grove	Davis, Richard	0761	1978	W	H	1,870	H	341VNNG
479	415833 0792041	Sugar Grove	Luvison, Mike	0761	1980	W	H	1,520	S	341CDKN
480	414504 0790738	Warren	King, Jack	1378	1998	W	H	1,470	S	341CRGS
481	414838 0791650	Youngsville	Rossey, A.	1378	1983	W	H	1,140	V	112OTSH
482	414824 0791653	Youngsville	Grum, L.	1378	1984	W	H	1,140	V	112OTSH
483	414534 0791743	Youngsville	Barris, A.	0269	1977	W	H	1,170	V	341VNNG
484	414531 0791743	Youngsville	Barris, Robert	1044	1966	W	H	1,150	V	341VNNG
485	414532 0791748	Youngsville	Heasley, Harry	0269	1977	W	H	1,190	S	341VNNG
486	414519 0791755	Youngsville	Tepele, B.	0269	1985	W	H	1,130	V	341VNNG
487	414508 0791813	Youngsville	Kuntz, J.	1599	1982	W	H	1,120	V	112OTSH
488	414304 0792034	Cobham	Egry, Shirley	1378	1900	W	H	1,120	V	112OTSH
489	414307 0792041	Cobham	Egry, S.	1378	1983	W	H	1,170	S	341VNNG
491	414709 0791701	Youngsville	Ruffing, D.	--	1980	W	H	1,140	V	112OTSH
492	414723 0791659	Youngsville	Suppa, J.	1378	1985	W	H	1,140	V	341VNNG
493	414909 0790954	Warren	Scalise	0906	1979	W	H	1,730	H	341VNNG
494	414928 0791818	Youngsville	Dibernardi, Dominick	1378	1900	W	H	1,420	V	341VNNG
495	415000 0791921	Youngsville	Lloyd, W.	1378	1979	W	H	1,770	H	337CBCR
496	414952 0791918	Youngsville	Kuzminski, Ken	0067	1985	W	H	1,890	H	337CBCR

Table 5. *Record of wells in Warren County—Continued*

Lith-ology	Depth of well (feet)	Casing		Depth to water-bearing zone(s) (feet)	Water level (feet)	Date water level measured	Reported yield (gal/min)	Measured yield			Field water quality			USGS well number
		Depth (feet)	Diameter (inches)					Specific capacity [(gal/min)/ft]	Discharge (gal/min)	Pumping period (hours)	Date measured	Specific conduc-tance (µS/cm)	pH (units)	
SHLE	50	22	6	39	15	06-00-85	--	0.17	6	0.5	--	--	--	Wr-446
SHLE	50	22	6	37	23	10-08-85	20	--	--	1.2	--	--	--	447
SHLE	170	23	6	82/128/165	140	07-00-86	6	--	--	--	--	--	--	448
SHLE	50	29	6	40	25	06-25-84	20	--	--	1.3	--	--	--	449
SHLE	120	59	6	105	80	07-06-78	5	--	--	--	--	--	--	450
GRCL	50	50	6	45	25	06-29-76	--	.06	2	1	--	--	--	451
SHLE	125	21	6	100	100	07-06-78	--	.35	7	1	08-14-86	510	5.7	452
SHLE	55	40	6	50	10	10-10-83	--	1.0	20	1	08-14-86	320	6.8	453
--	--	--	--	--	--	--	--	--	--	--	08-14-86	345	7.1	454
SHLE	95	42	8	45/60	20	11-09-76	--	.27	15	1	08-14-86	675	6.9	455
SHLE	70	43	6	35/55	30	08-00-83	10	--	--	--	08-19-86	430	6.7	456
GRVL	50	50	6	50	20	05-00-82	6	--	--	--	--	--	--	457
SHLE	85	68	6	20/75	7	07-09-76	--	.08	6	1	--	--	--	458
SHLE	85	40	6	50/75	40	02-28-83	--	.27	8	1	08-19-86	510	7.0	459
SHLE	95	31	6	65/80	10	05-15-75	--	.31	25	1	08-19-86	540	7.2	460
SHLE	80	41	6	45/65	35	08-03-82	--	.20	7	1	08-19-86	575	6.7	461
SHLE	115	42	6	45/65	--	--	4	--	--	--	08-19-86	570	7.6	462
SHLE	50	30	6	40	20	05-20-74	--	4.0	20	1	08-19-86	235	6.6	463
GRVL	60	38	6	60	10	05-03-83	--	.20	8	1	08-19-86	450	6.9	464
SHLE	70	15	6	55/65	40	11-00-83	20	--	--	1	08-20-86	205	6.2	465
LMSN	110	--	--	90/100	40	--	--	1.0	20	--	--	--	--	466
GRCL	68	68	6	65	30	07-24-79	--	.45	9	1	--	--	--	467
GRVL	16	16	6	--	8	11-00-83	25	--	--	2	--	--	--	468
SHLE	75	52	6	55/70	30	06-22-77	--	.17	7	2	--	--	--	469
SHLE	65	55	6	55	--	--	10	--	--	1	--	--	--	470
SHLE	120	65	6	93/110	34	08-06-78	--	.48	10	6	08-22-86	455	6.6	471
GRVL	88	88	6	50/85	30	01-21-83	--	.25	10	1	--	--	--	472
SHLE	65	29	6	30/50	5	08-00-83	--	.15	8	.5	--	--	--	473
GRVL	45	45	6	40	20	04-28-83	20	--	--	1	--	--	--	474
SHLE	90	20	6	--	60	05-26-78	--	.24	6	2	--	--	--	475
SHLE	85	27	6	--	55	10-17-78	15	--	--	1	--	--	--	476
SHLE	65	17	6	20/60	10	06-17-80	--	1.3	20	.5	--	--	--	477
SHLE	95	32	6	85	30	05-24-78	--	1.5	15	1.5	--	--	--	478
SHLE	85	20	6	40/75	20	05-19-80	--	.08	5	1	--	--	--	479
SHLE	76	56	--	75	--	--	10	--	--	--	--	--	--	480
GRVL	40	40	6	40	30	04-00-83	9	--	--	--	--	--	--	481
GRVL	36	36	6	36	18	05-00-84	10	--	--	.3	--	--	--	482
SHLE	82	64	5	66	60	07-00-77	--	2.0	20	.5	--	--	--	483
SHLE	59	47	6	58	32	11-07-66	--	--	--	--	--	--	--	484
SHLE	75	55	5	56	50	10-00-77	16	--	--	.5	12-01-86	215	7.0	485
SHLE	60	46	6	48	20	09-00-85	16	--	--	--	--	--	--	486
GRVL	29	29	6	19	19	04-00-82	15	--	--	.5	--	--	--	487
GRVL	40	40	6	40	10	00-00-83	10	--	--	--	--	--	--	488
--	80	73	6	74	35	07-00-83	3	--	--	--	--	--	--	489
GRVL	34	34	6	20	20	05-00-80	--	4.0	8	.3	--	--	--	491
SHLE	40	26	6	29	15	06-00-85	5	--	--	--	--	--	--	492
SDSL	255	--	--	170/200	100	09-13-79	--	.03	4	1	--	--	--	493
SHLE	60	20	6	41	16	--	10	--	--	--	10-01-86	515	6.3	494
SHLE	100	20	6	60/72	55	05-00-79	5	--	--	.3	--	--	--	495
SHLE	52	15	5	50/52	22	07-25-85	16	--	--	.5	--	--	--	496

Table 5. *Record of wells in Warren County—Continued*

USGS well number	Latitude/ longitude (DDMMSS)	Quadrangle name	Owner	Driller license number	Year drilled	Primary Use of site	Primary Use of water	Altitude of land surface (feet)	Topo-graphic setting	Hydro-geologic unit
Wr-498	414550 0792224	Youngsville	Champagne, Robert	1599	1981	W	H	1,870	H	337CYHG
499	414553 0792239	Pittsfield	Rulander, L.	1603	1985	W	H	1,840	H	337CYHG
500	414825 0790536	Clarendon	Mineral Well Restaurant	–	–	P	U	1,290	V	341CDKN
501	414706 0791701	Youngsville	Zink, Joe	–	–	W	H	1,130	V	112OTSH
502	414757 0791411	Warren	Sibert, William	–	–	W	H	1,860	S	324PSVL
503	415711 0791742	Sugar Grove	Glotz, Cathy	0761	1977	W	H	1,860	S	341RCVL
504	415714 0791742	Sugar Grove	Stevenson, Richard	0761	1977	W	H	1,860	S	341RCVL
505	415546 0791806	Sugar Grove	White, Brian	1599	1982	U	U	1,490	V	112OTSH
506	415552 0791847	Sugar Grove	Eckert, Carl	–	–	W	H	1,560	V	112OTSH
507	415543 0791852	Sugar Grove	Eckert, Calvin	0761	1983	W	H	1,490	V	341CDKN
508	415641 0792010	Sugar Grove	Labowski, Howard	1378	1981	W	H	1,660	V	341VNNG
509	415641 0792010	Sugar Grove	Labowski, Howard	–	–	U	U	1,660	V	112DRFT
510	415830 0792041	Sugar Grove	Pudder, David	–	1973	W	H	1,540	S	341CDKN
511	415907 0791902	Sugar Grove	Allen, John	0761	1975	W	H	1,380	V	112DRFT
513	414234 0790112	Sheffield	Stahl, Elmer	–	–	W	H	1,390	V	341CRGS
514	413954 0790144	Sheffield	Simmons, Earl	1410	1976	W	H	1,370	V	341CRGS
515	415638 0791902	Sugar Grove	Unknown	–	–	W	H	1,500	V	112ICCC
516	415547 0791827	Sugar Grove	Pitner, Irwin	–	1985	W	H	1,520	V	112OTSH
517	415556 0791821	Sugar Grove	Peterson, Wally	–	1984	W	H	1,500	V	341CDKN
519	415555 0791832	Sugar Grove	Gardner, Greg	–	1984	W	H	1,550	V	341CDKN
520	414055 0792436	Tidioute	Tidioute Borough	1599	1985	O	U	1,100	V	112OTSH
522	415023 0791212	Warren	Bupp, Joshua C.	–	–	O	U	1,200	V	112OTSH
523	415026 0791213	Warren	U.S. Envt. Prot. Agency	–	1985	O	U	1,190	V	112OTSH
524	415026 0791213	Warren	U.S. Envt. Prot. Agency	–	1985	O	U	1,190	V	112OTSH
525	415025 0791237	Warren	U.S. Envt. Prot. Agency	–	1985	O	U	1,190	V	112OTSH
526	415025 0791237	Warren	U.S. Envt. Prot. Agency	–	1985	O	U	1,190	V	112OTSH
527	415023 0791220	Warren	U.S. Envt. Prot. Agency	–	1985	O	U	1,190	V	112OTSH
528	415023 0791220	Warren	U.S. Envt. Prot. Agency	–	1985	O	U	1,190	V	112OTSH
529	415030 0791303	Warren	U.S. Envt. Prot. Agency	–	1985	O	U	1,170	V	112OTSH
530	415023 0791250	Warren	U.S. Envt. Prot. Agency	–	1985	O	U	1,180	V	112OTSH
531	415032 0791253	Warren	U.S. Envt. Prot. Agency	–	1985	O	U	1,190	V	112OTSH
532	415032 0791253	Warren	U.S. Envt. Prot. Agency	–	1985	O	U	1,190	V	112OTSH
533	415754 0785636	Cornplanter Run	Allegheny Nat. Forest	–	1968	W	H	1,400	S	341CDKN
534	415445 0785552	Cornplanter Run	Allegheny Nat. Forest	–	1968	W	H	1,390	S	341CDKN
535	415226 0785642	Cornplanter Bridge	Allegheny Nat. Forest	–	1966	W	H	1,370	S	341CDKN
536	415201 0785715	Cornplanter Bridge	Allegheny Nat. Forest	–	1969	W	H	1,380	S	341CDKN
537	415116 0785643	Cornplanter Bridge	Allegheny Nat. Forest	–	1966	W	H	1,380	S	341CDKN
540	414251 0792749	Tidioute	Tidioute Borough	–	–	W	U	1,330	W	341RCVL
541	414248 0792754	Tidioute	Tidioute Borough	–	–	W	U	1,340	W	341RCVL
542	414248 0792758	Tidioute	Tidioute Borough	–	–	W	U	1,350	W	341RCVL
543	414057 0792414	Tidioute	Tidioute Borough	1599	–	W	U	1,100	V	112OTSH
544	413854 0792300	Tidioute	Allegheny Nat. Forest	–	–	P	U	1,340	W	341DVNNU
545	414454 0791524	Cobham	Zurman	–	–	W	H	1,900	H	324PSVL
546	414455 0791524	Cobham	Zurman	–	–	W	H	1,900	H	324PSVL
547	414428 0791858	Cobham	Mclaughlin, Jack	1599	1984	W	H	1,170	V	112OTSH
548	414427 0791859	Cobham	Mclaughlin, Jack	–	–	W	H	1,170	V	112OTSH
549	413907 0790010	Sheffield	Allegheny Nat. Forest	–	–	P	U	1,340	V	341DVNNU
550	414717 0791351	Warren	Ray, R.	1378	1980	W	H	1,880	H	324PSVL
552	414719 0791415	Warren	Vannort, D.	1159	1985	W	H	1,830	H	337CYHG
553	414721 0791411	Warren	Mackey, E.	1159	1985	W	H	1,840	H	337CYHG

Table 5. *Record of wells in Warren County—Continued*

Lith-ology	Depth of well (feet)	Casing		Depth to water-bearing zone(s) (feet)	Water level (feet)	Date water level measured	Reported yield (gal/min)	Measured yield			Field water quality			USGS well number
		Depth (feet)	Diameter (inches)					Specific capacity [(gal/min)/ft]	Discharge (gal/min)	Pumping period (hours)	Date measured	Specific conduc-tance (µS/cm)	pH (units)	
SHLE	120	70	6	90/110	100	10-00-81	--	3.0	15	2	10-01-86	135	5.8	Wr-498
SHLE	94	56	6	65/90	50	04-19-86	--	34	9	1.2	--	--	--	499
--	--	--	--	--	--	--	20	--	--	--	06-05-85	290	6.8	500
--	30	--	--	--	10.50	06-06-85	--	1.9	6	.8	06-06-85	180	7.0	501
--	83	--	--	--	34.94	06-24-85	--	--	--	--	06-24-85	80	4.2	502
--	110	21	6	60/105	93.80	06-26-85	--	2.5	12	1.5	06-26-85	215	6.9	503
--	120	33	6	65/110	87	06-26-85	--	1.7	12	1	--	--	--	504
GRVL	30	30	6	25	9.57	06-27-85	15	4.9	8	.8	06-27-85	455	7.6	505
--	70	--	--	--	--	--	--	--	--	--	06-26-85	550	7.4	506
--	90	70	6	90	25.90	06-26-85	--	10	10	.5	06-26-85	400	7.5	507
--	60	33	6	52	36.20	06-26-85	5	--	--	--	06-26-85	250	6.0	508
--	40	--	--	--	31.80	06-26-85	--	--	--	--	06-26-85	260	6.0	509
--	60	--	--	--	23.10	06-27-85	--	--	--	--	06-27-85	210	6.1	510
--	21	21	6	18	3.53	06-27-85	--	--	--	--	06-27-85	260	5.7	511
--	90	--	--	--	33	06-00-85	--	--	--	--	07-23-85	455	7.4	513
--	112	100	6	109	46.70	07-23-85	--	2.5	30	.8	07-23-85	550	7.2	514
--	--	--	--	--	5.70	09-05-85	--	--	--	--	09-05-85	230	8.2	515
--	31	31	2	--	24.90	09-05-85	--	--	--	--	09-05-85	520	7.1	516
--	70	--	--	--	17	09-05-85	--	--	--	--	09-05-85	520	7.5	517
--	76	72	6	--	44.10	09-05-85	40	--	--	--	09-05-85	610	7.1	519
SDGL	49	49	6	11/48	8.42	10-07-85	--	18	250	8.5	10-09-85	750	7.0	520
--	65	--	--	--	38.70	10-24-85	--	14	2	1.0	11-05-85	450	7.4	522
SDGL	36	36	2	--	30.30	05-08-85	--	--	--	--	03-14-85	640	--	523
SDGL	49	49	2	--	30.60	05-08-85	--	--	--	--	03-14-85	690	--	524
SDGL	37	37	2	--	29.70	05-08-85	--	--	--	--	--	--	--	525
SDGL	60	60	2	--	29.70	05-08-85	--	--	--	--	--	--	--	526
SDGL	44	44	2	--	35	05-08-85	--	--	--	--	--	--	--	527
SDGL	37	37	2	--	34.90	05-08-85	--	--	--	--	--	--	--	528
SDGL	47	47	2	--	13	05-08-85	--	--	--	--	03-14-85	540	--	529
SDGL	35	35	2	--	26.70	05-08-85	--	--	--	--	03-14-85	630	--	530
SDGL	34	34	2	--	--	--	--	--	--	--	03-14-85	690	--	531
SDGL	51	51	2	--	27.50	05-08-85	--	--	--	--	03-14-85	700	--	532
SNDS	99	87	6	90	--	--	30	--	--	--	07-16-86	150	6.8	533
--	155	--	--	103/145	--	--	5	--	--	--	07-16-86	140	6.8	534
SNDS	125	80	--	110/115	53	10-07-66	--	1.2	25	2	07-17-86	305	7.6	535
SHLE	150	56	6	30/90/142	--	--	7	--	--	--	07-17-86	--	6.7	536
SDSL	302	62	8	100	93	04-25-66	23	--	--	--	--	--	--	537
--	39	--	--	--	3.60	04-09-86	--	--	--	--	04-09-86	825	--	540
--	46	10	8	--	2.25	04-09-86	--	1.5	30	1.0	11-19-87	1450	6.8	541
--	47	--	--	--	6.15	04-09-86	--	--	--	--	04-09-86	650	--	542
--	39	39	8	--	7.05	05-21-86	--	5.1	62	1.0	08-18-86	115	6.4	543
--	--	--	--	--	0	06-02-86	--	--	--	--	06-02-86	480	7.2	544
--	45	--	--	--	7.30	06-04-86	--	--	--	--	06-04-86	<50	4.7	545
--	100	--	--	--	55	06-04-86	--	--	--	--	06-04-86	<50	4.5	546
GRVL	51	51	6	40	30	08-00-84	--	4.0	16	.5	06-04-86	540	6.6	547
--	50	--	--	--	--	--	--	--	--	--	--	--	--	548
--	--	--	--	--	--	--	<1	--	--	--	06-18-86	250	6.9	549
SHLE	100	25	6	94	68	09-00-86	10	--	--	.3	--	--	--	550
SHLE	78	21	6	42	50	11-00-85	--	.8	4	.5	--	--	--	552
SHLE	82	21	6	42	30	11-00-85	--	.08	4	.5	--	--	--	553

Table 5. *Record of wells in Warren County—Continued*

Lith-ology	Depth of well (feet)	Casing		Depth to water-bearing zone(s) (feet)	Water level (feet)	Date water level measured	Reported yield (gal/min)	Measured yield			Field water quality			USGS well number
		Depth (feet)	Diameter (inches)					Specific capacity [(gal/min)/ft]	Discharge (gal/min)	Pumping period (hours)	Date measured	Specific conduc-tance (µS/cm)	pH (units)	
GRVL	63	63	6	48	42	07-01-80	7	--	--	0.3	06-19-86	520	7.0	Wr-554
--	--	--	--	--	--	--	--	--	--	--	07-16-86	220	7.1	556
--	--	--	--	--	--	--	50	--	--	--	07-23-86	305	6.2	557
--	--	--	--	--	--	--	80	--	--	--	07-23-86	235	6.2	558
--	--	--	--	--	--	--	80	--	--	--	07-23-86	240	6.3	559
--	--	--	--	--	--	--	--	--	--	--	07-23-86	190	7.8	560
--	61	--	--	--	--	--	--	--	--	--	08-07-86	560	7.7	561
--	100	--	--	--	--	--	--	--	--	--	08-14-86	170	7.1	563
SHLE	137	134	6	137	-1.50	05-00-83	--	2.7	10	8	08-14-86	270	7.4	564
--	67	--	--	--	15.90	08-14-86	--	--	--	--	08-14-86	100	6.7	565
SNDS	68	21	6	15/47	40	05-00-86	12	--	--	--	08-20-86	170	7.2	566
SHLE	65	44	6	25/46	25	11-00-80	16	--	--	--	08-20-86	160	7.1	567
--	38	--	--	--	29.90	08-20-86	--	48	27	1.0	08-20-86	225	7.2	568
--	58	--	--	--	--	--	--	--	--	--	08-21-86	260	7.4	569
--	--	--	--	--	41	08-27-86	--	--	--	--	08-27-86	260	7.1	570
--	65	65	4	--	22.90	08-28-86	--	--	--	--	08-28-86	350	6.8	571
--	--	--	--	--	--	--	--	--	--	--	08-28-86	340	7.1	572
--	202	--	--	--	49.50	09-23-86	--	--	--	--	09-08-86	195	7.3	573
--	441	--	--	--	34.50	09-09-86	--	--	--	--	09-09-86	560	6.9	574
--	65	--	--	--	1.70	09-10-86	--	1.9	12	1.0	08-18-87	140	6.5	575
--	59	--	--	--	1.19	09-10-86	--	--	--	--	08-05-87	240	7.5	576
--	50	--	--	--	.40	09-10-86	--	27	12	1.0	08-27-87	220	7.3	577
--	156	--	--	--	3.31	09-10-86	--	5.9	36	1.0	06-17-87	395	6.7	578
--	80	--	--	--	6.47	09-10-86	--	30	12	1.0	07-30-87	270	7.4	579
--	328	--	--	--	101	09-11-86	--	--	--	--	09-11-86	320	6.4	580
--	255	52	--	--	168	05-22-87	--	--	--	--	09-24-86	300	6.7	581
SHLE	65	42	6	45/60	--	--	30	--	--	--	09-24-86	650	6.9	582
--	290	--	--	--	30.10	09-23-86	--	--	--	--	09-23-86	440	--	583
--	141	64	8	--	26.80	10-14-87	--	23	39	1.0	10-15-87	185	7.2	584
--	--	--	--	--	--	--	--	--	--	--	10-21-86	390	7.7	585
--	898	--	--	--	272	08-07-86	--	--	--	--	11-05-86	1,300	7.0	586
--	904	--	--	--	6.88	11-06-86	--	--	--	--	11-06-86	700	7.3	587
--	63	--	--	--	1.90	08-07-86	--	--	--	--	--	--	--	588
--	60	--	--	--	--	--	--	--	--	--	12-04-86	360	6.0	589
SHLE	80	67	6	77	60	10-00-84	10	--	--	--	12-04-86	490	6.1	590
SHLE	62	20	6	32/48/51	30	06-00-79	7	--	--	.3	--	--	--	591
--	192	--	--	--	113	05-22-87	--	--	--	--	--	--	--	592
--	38	--	--	--	--	--	--	--	--	--	05-28-87	1,550	6.5	593
--	172	--	--	--	104	05-22-87	--	4.3	29	1.0	06-04-87	285	7.0	594
--	109	--	--	--	25	00-00-67	--	--	--	--	08-14-87	260	--	595
--	--	--	--	--	--	--	--	--	--	--	08-14-87	360	--	596
--	--	--	--	--	--	--	--	--	--	--	08-14-87	290	--	597
--	155	--	--	--	--	--	--	--	--	--	08-14-87	190	--	598
--	--	--	--	--	--	--	--	--	--	--	08-14-87	220	--	599
SHLE	109	63	--	--	30	06-05-79	--	45	5	1	--	--	--	600
--	120	--	--	--	--	--	--	--	--	--	08-14-87	360	--	601
SHLE	72	28	--	60/72	17	11-00-86	10	--	--	.5	--	--	--	602
--	--	--	--	--	--	--	--	--	--	--	08-18-87	210	--	603
SHLE	200	26	--	45	--	--	3	--	--	--	--	--	--	604
--	77	--	--	--	38	11-00-73	--	--	--	--	08-18-87	130	--	605

Table 5. *Record of wells in Warren County—Continued*

USGS well number	Latitude/ longitude (DDMMSS)	Quadrangle name	Owner	Driller license number	Year drilled	Primary		Altitude of land surface (feet)	Topo-graphic setting	Hydro-geologic unit
						Use of site	Use of water			
Wr-606	415327 0790318	Scandia	Madigan, Michael D.	0906	1900	W	H	2,020	H	341OSWY
607	415229 0790930	Warren	Follett, Sylvia	--	--	W	H	1,260	S	112OTSH
608	415401 0790302	Scandia	Johnson, J.	1378	1980	W	H	2,060	H	341OSWY
609	415226 0790936	Warren	Winklebleck, Paul	--	1970	W	H	1,290	S	112OTSH
610	415423 0790239	Scandia	Whitmire, J.	1378	1987	W	H	2,090	H	337KNPP
611	415223 0790933	Warren	Culbertson, Glenn	--	1964	W	H	1,280	S	112OTSH
612	415424 0790013	Scandia	Smith, S.	1378	1984	W	H	2,060	H	341OSWY
613	415232 0790931	Russell	Simpson, Ann	--	1967	W	H	1,260	S	112OTSH
614	415422 0790058	Scandia	Schlosser, Blaine	0796	1974	W	H	1,870	S	341OSWY
615	415232 0790947	Russell	Watson, Donald	--	--	W	H	1,310	S	112OTSH
616	415604 0790143	Scandia	Riggle, Charles	0067	1980	W	H	1,890	V	112CLVM
617	415233 0790931	Russell	Dalrymple, Donald	--	1959	W	H	1,260	S	112OTSH
618	415558 0790257	Scandia	McGraw, Alan	0761	1980	W	H	1,760	V	341VNNG
619	415233 0790939	Russell	McGranahan, Bruce	--	1968	W	H	1,280	S	112OTSH
620	415553 0790241	Scandia	Agerter, George	1378	1980	C	S	1,840	V	341VNNG
621	415233 0790927	Russell	Dyke, William	--	1959	W	H	1,260	S	112OTSH
622	415533 0790056	Scandia	Ferrie, Kelly	1378	1978	W	H	2,080	H	341OSWY
623	415233 0790935	Russell	Betts, Richard	--	1962	W	H	1,270	S	112OTSH
624	415545 0790047	Scandia	Johnson, R.	1378	1978	W	H	2,100	-	341VNNG
625	415225 0790948	Warren	Weiss, Robert	--	1982	W	H	1,410	S	112OTSH
626	415821 0785903	Cornplanter Run	Dipenti, Mike	0906	1985	W	H	2,010	S	341VNNG
627	415226 0790944	Warren	Dham, Raj	--	1986	W	H	1,350	S	112OTSH
628	415820 0785859	Cornplanter Run	Hoover, R.	0906	1985	W	H	2,000	S	341VNNG
629	415230 0790929	Russell	Lopus, James	--	1967	W	H	1,260	S	112OTSH
630	415820 0785854	Cornplanter Run	Kindler, R.	0761	1983	S	H	2,000	S	341OSWY
631	415234 0790940	Russell	Huber, Richard	--	1970	W	H	1,280	S	112OTSH
632	415734 0790323	Scandia	Alcorn, Paul	1410	1977	W	H	2,020	S	341OSWY
633	415228 0790935	Warren	Henry, William	--	--	W	H	1,280	S	112OTSH
634	415951 0790315	Scandia	Stearns, Donald	--	1986	W	H	2,130	H	341OSWY
635	415230 0790938	Warren	Phillips, Robert	--	1965	W	H	1,280	S	112OTSH
636	415935 0790242	Scandia	Michael, Dan	0761	1985	W	H	2,160	H	341VNNG
637	415231 0790947	Russell	Henderson, Connie	--	1969	W	H	1,320	S	112OTSH
638	415941 0790552	Scandia	Rowley, G.	1378	1983	W	H	1,600	S	112DRFT
639	415236 0791000	Russel	Camp Kirkwood	--	--	W	H	1,250	V	112OTSH
640	415928 0790605	Scandia	Valone, R.	0761	1986	W	H	1,520	V	341CDKN
642	415859 0790723	Scandia	Ekey, K.	1378	1985	W	H	1,320	V	341CDKN
644	415846 0790551	Scandia	Cummings, S.	--	1979	W	H	1,800	V	341VNNG
646	415751 0790511	Scandia	Engstrom, T.	1378	1979	W	H	1,510	V	112OTSH
648	415600 0790522	Scandia	Passinger, Henry	1393	1986	W	H	1,390	V	341CDKN
650	415553 0790552	Scandia	Baxter, L.	1378	1985	W	H	1,360	V	112OTSH
652	415315 0790404	Scandia	Long, Sam	1378	1987	W	H	1,820	S	341VNNG
658	415816 0790202	Scandia	Elicker, Howard	1410	1977	W	H	2,200	H	337KNPP
662	415709 0790219	Scandia	Bolash, Joe	1025	1967	W	H	1,820	S	341VNNG
664	415524 0790521	Scandia	Hice, Harold	1393	1986	W	H	1,640	S	341VNNG
666	415547 0790536	Scandia	Stewart, Robert	1393	1986	W	H	1,440	S	341CDKN
668	415456 0790417	Scandia	Gerbec, D.	0906	1985	W	H	1,940	H	341VNNG
670	415556 0790715	Scandia	North, R.	0761	1981	W	H	1,280	V	112OTSH
672	415755 0790537	Scandia	Himes, C.	0761	1985	W	H	1,480	V	112OTSH
674	415750 0790634	Scandia	Bortz, John	0067	1977	W	H	1,440	V	112ICCC
676	415420 0790844	Russell	California, Carl	0761	1986	W	H	1,390	S	341CDKN

Table 5. *Record of wells in Warren County—Continued*

Lith-ology	Depth of well (feet)	Casing		Depth to water-bearing zone(s) (feet)	Water level (feet)	Date water level measured	Reported yield (gal/min)	Measured yield			Field water quality			USGS well number
		Depth (feet)	Diameter (inches)					Specific capacity [(gal/min)/ft]	Discharge (gal/min)	Pumping period (hours)	Date measured	Specific conduc-tance (µS/cm)	pH (units)	
SHLE	210	40	6	108/180	100	00-00-79	--	0.04	4	1	05-19-87	<50	5.3	Wr-606
--	--	--	--	--	--	--	--	--	--	--	08-18-87	260	--	607
SHLE	180	42	6	100	100	08-00-80	4	--	--	.3	--	--	--	608
--	165	--	--	--	85	00-00-70	--	--	--	--	08-18-87	400	--	609
SHLE	110	32	6	48/107	62	05-00-87	5	--	--	--	07-16-87	85	6.8	610
--	76	--	--	--	16	00-00-64	--	--	--	--	08-18-87	260	--	611
SHLE	300	40	6	--	219	07-00-84	1	--	--	.3	--	--	--	612
--	--	--	--	--	--	--	--	--	--	--	08-18-87	250	--	613
SHLE	90	40	6	87	60	11-00-74	15	--	--	--	05-19-87	400	7.7	614
--	--	--	--	--	--	--	--	--	--	--	08-18-87	360	--	615
SDGL	50	--	--	38/50	--	07-12-80	--	2.0	20	.5	05-19-87	190	7.0	616
--	99	--	--	--	50	00-00-59	--	--	--	--	08-19-87	220	--	617
SNDS	60	40	6	50	40	06-10-80	25	--	--	--	05-19-87	235	7.1	618
--	--	--	--	--	--	--	--	--	--	--	08-18-87	250	--	619
SHLE	120	75	6	110	43	09-00-80	5	--	--	--	05-19-87	150	6.6	620
--	106	--	--	--	--	--	--	--	--	--	08-19-87	260	--	621
SHLE	140	57	6	70/120	100	08-00-78	4	--	--	--	05-20-87	125	6.3	622
--	80	--	--	--	--	--	--	--	--	--	08-19-87	190	--	623
SHLE	220	29	6	165/195	160	09-28-78	10	--	--	--	07-16-87	190	6.6	624
--	115	--	--	--	10	00-00-82	--	--	--	--	08-25-87	310	--	625
SHLE	280	21	6	260	20	07-00-85	15	--	--	--	05-20-87	260	6.8	626
--	--	--	--	--	--	--	--	--	--	--	08-25-87	210	--	627
SHLE	198	54	6	178	20	07-00-85	8	--	--	--	--	--	--	628
--	75	--	--	--	--	--	--	--	--	--	08-25-87	210	--	629
SHLE	100	33	6	40	35	07-00-83	--	.08	5	1	--	--	--	630
--	57	--	--	--	--	--	--	--	--	--	08-25-87	210	--	631
SNDS	151	32	6	41	--	--	--	.05	5	1	--	--	--	632
--	--	--	--	--	--	--	--	--	--	--	08-25-87	320	--	633
SHLE	120	52	6	54/105	80	12-00-86	3	--	--	2	--	--	--	634
--	--	--	--	--	--	--	--	--	--	--	08-26-87	340	--	635
SHLE	200	38	6	195	103	06-00-85	--	.08	7	1	05-27-87	55	5.2	636
--	180	--	--	--	--	--	--	--	--	--	08-26-87	490	--	637
GRVL	108	108	6	100	--	--	5	--	--	--	--	--	--	638
--	--	--	--	--	--	--	--	--	--	--	11-18-87	400	8.1	639
SHLE	75	73	6	73	--	--	10	--	--	.5	05-21-87	435	7.1	640
SHLE	80	30	6	62	18	10-00-85	5	--	--	--	--	--	--	642
SHLE	120	36	6	40/97	48	09-00-79	8	--	--	--	--	--	--	644
GRVL	50	50	6	42	--	05-00-79	10	--	--	--	--	--	--	646
SHLE	53	30	6	43	23	04-23-86	--	.71	12	--	05-21-87	365	7.3	648
GRVL	50	50	6	50	22	06-00-85	8	--	--	--	--	--	--	650
SHLE	80	60	6	64	40	05-00-87	8	--	--	--	--	--	--	652
SHLE	66	44	6	45	39	07-13-77	--	2.5	10	1	--	--	--	658
SNDS	50	40	6	45	30	09-05-67	--	1.0	15	--	--	--	--	662
SHLE	98	--	--	81	60	05-00-86	--	2.0	30	--	05-27-87	240	6.4	664
SNDS	170	152	6	155	100	07-00-86	15	--	--	--	05-27-87	340	5.3	666
SNDS	255	43	6	138/200	--	--	4	--	--	--	05-27-87	290	6.3	668
GRVL	41	41	6	41	--	07-15-81	--	6.0	30	1	--	--	--	670
GRCL	79	79	6	77	10	10-00-85	--	.50	15	.5	--	--	--	672
GRCL	81	81	5	81	30	04-01-77	--	1.0	30	.5	05-27-87	320	6.2	674
SHLE	157	40	6	100/147	120	08-00-86	--	1.5	15	1.0	05-28-87	320	6.8	676

Table 5. *Record of wells in Warren County—Continued*

USGS well number	Latitude/ longitude (DDMMSS)	Quadrangle name	Owner	Driller license number	Year drilled	Primary		Altitude of land surface (feet)	Topo-graphic setting	Hydro-geologic unit
						Use of site	Use of water			
Wr-678	415415 0790852	Russell	Postlethwait, William	0067	1983	W	H	1,260	V	341CDKN
680	415521 0790635	Scandia	Bernard, E.	0067	1983	W	H	1,390	H	341CDKN
682	415337 0790802	Russell	Waltsrom, N.	0067	1984	W	H	1,240	V	112OTSH
684	415555 0790838	Russell	Bogniak, John	0067	1984	W	H	1,360	V	112OTSH
686	415604 0790835	Russell	Rohin, Terry	0067	1979	W	H	1,340	V	112OTSH
688	415706 0790950	Russell	Lindell, Rodney	0761	1979	W	H	1,420	V	112OTSH
690	415627 0791011	Russell	Fontaine, Jean	0067	1979	W	H	1,780	H	341VNNG
692	415708 0791148	Russell	Stanton, Mark	0761	1974	W	H	1,700	S	341VNNG
694	415750 0791351	Russell	Lindell, Jack	0649	1986	W	S	1,620	H	341VNNG
696	415754 0791403	Russell	Decker, J.	0761	1982	W	N	1,620	H	341VNNG
698	415800 0791426	Russell	Beck, T.	0761	1986	W	H	1,550	V	112DRFT
700	414526 0792613	Pittsfield	Henry, J.	–	1978	W	H	1,670	S	337CYHG
701	414545 0792638	Pittsfield	Frazier, J.	0269	1983	W	H	1,720	S	337CYHG
702	414652 0792758	Pittsfield	Torpedo Church	1159	1985	W	C	1,380	V	112CLVM
703	415317 0792025	Sugar Grove	Baumgardner, Philip	0761	1986	W	H	1,350	V	341VNNG
704	415358 0792211	Sugar Grove	Piotrowski, P.	1378	1983	W	H	1,810	H	337CBCR
705	415319 0792148	Sugar Grove	Lounsbury, Howard	1378	1979	W	H	1,770	S	337CBCR
706	415325 0792155	Sugar Grove	Mcintyre, Elaine	–	1900	W	H	1,820	H	112DRFT
707	415225 0792134	Youngsville	Sanford, P.	1378	1978	W	H	1,660	S	341VNNG
708	415409 0791331	Russell	Centauro, G.	0067	1983	W	H	1,400	S	341CDKN
709	415529 0791450	Russell	Fitch, D.	0761	1986	W	H	1,500	V	341VNNG
710	415555 0791457	Russell	Spicer, E.	1378	1986	W	H	1,550	V	341VNNG
711	415552 0791440	Russell	Spicer, E.	0067	1984	W	S	1,540	V	341VNNG
712	415610 0791148	Russell	Mangini, G.	0067	1985	W	H	1,750	H	341VNNG
713	415621 0791342	Russell	Laurie, John	1410	1977	W	H	1,920	H	337CBCR
714	415522 0791331	Russell	Lindell, H.	0761	1986	W	H	1,700	V	341VNNG
715	415732 0791318	Russell	Hill, Harlan	1393	1984	W	H	1,600	V	112DRFT
716	415635 0790847	Russell	Bakewell, Ken	0761	1977	W	H	1,380	V	112OTSH
717	415924 0791007	Russell	Wilkins, Ron	0067	1981	W	H	1,560	H	341CDKN
718	415923 0791257	Russell	Hitchcock, W.	0761	1984	W	S	1,620	H	341VNNG
719	415828 0791413	Russell	Hitchcock, Stan	1393	1986	W	S	1,540	V	341CDKN
720	415933 0791305	Russell	Wilson, R.	0761	1982	W	H	1,640	H	341VNNG
721	415944 0791304	Russell	Wilder, D.	–	1984	W	H	1,540	S	341CDKN
722	415336 0791240	Russell	Phillips, J.R.	1098	1969	W	H	1,360	V	341CDKN
723	415428 0791438	Russell	York, Emunit	0761	1978	W	H	1,400	V	341CDKN
724	415301 0791117	Russell	Ray, C.	1378	1983	W	H	1,330	V	341CDKN
725	415251 0791101	Russell	Rieder, B.	0761	1986	W	H	1,310	V	341CDKN
726	415520 0791450	Russell	Mader, Nelson	0761	1977	W	H	1,540	S	341VNNG
727	415654 0791500	Russell	Yoder, Joseph	0761	1976	U	U	1,830	S	341VNNG
728	415702 0791458	Russell	Byler, Samuel	0761	1976	U	U	1,860	H	341VNNG
729	415733 0791407	Russell	Hetrick, Robert	0761	1980	W	H	1,650	S	112DRFT
730	415150 0791033	Warren	Brown, V.	0761	1985	W	H	1,660	S	341VNNG
731	415214 0791411	Warren	Archbold, Edward	0906	1978	W	H	1,760	S	341VNNG
732	415058 0791158	Warren	Clifton, B.	1378	1985	W	H	1,520	V	341VNNG
733	415228 0790934	Warren	Hartweg, B.	0067	1983	W	H	1,280	F	112OTSH
734	415223 0790942	Warren	Morey, Stephen	1378	1984	W	H	1,360	S	341CDKN
735	415648 0790931	Russell	Brown, Richard	1378	1978	W	H	1,430	V	341CDKN
736	415700 0790944	Russell	Neidig, Bud	0761	1978	W	H	1,410	V	341CDKN
737	415143 0791613	Youngsville	Williams, Daniel	0067	1982	W	H	1,280	V	341CDKN
738	415358 0791538	Sugar Grove	Haskin, B.	0761	1986	W	H	1,780	H	341RCVL

Table 5. *Record of wells in Warren County—Continued*

Lithology	Depth of well (feet)	Casing		Depth to water-bearing zone(s) (feet)	Water level (feet)	Date water level measured	Reported yield (gal/min)	Measured yield			Field water quality			USGS well number
		Depth (feet)	Diameter (inches)					Specific capacity [(gal/min)/ft]	Discharge (gal/min)	Pumping period (hours)	Date measured	Specific conductance (µS/cm)	pH (units)	
SLSN	103	37	5	75/103	60	06-17-83	10	--	--	1	--	--	--	Wr-678
SLSN	120	84	5	116/120	40	07-05-83	10	--	--	1.5	--	--	--	680
GRVL	40	40	5	35	20	03-22-84	10	--	--	--	05-28-87	200	6.6	682
GRVL	55	55	--	--	20	09-05-84	10	--	--	--	--	--	--	684
GRVL	83	83	5	83	30	06-29-79	--	0.43	10	3	05-28-87	300	5.3	686
GRVL	41	41	6	34	20	07-25-79	20	--	--	1.5	06-01-87	360	5.4	688
SLSN	57	42	5	23	23	04-11-79	10	--	--	.5	--	--	--	690
SHLE	75	62	6	68	45	07-26-74	20	--	--	1.5	--	--	--	692
SHLE	110	90	8	98	50	11-00-86	--	.68	15	2.3	06-01-87	415	5.6	694
SHLE	80	40	6	45/75	25	05-26-82	--	1.0	10	1	06-02-87	410	6.3	696
SLSN	80	53	6	55	20	05-00-86	--	.24	12	1	--	--	--	698
SHLE	55	22	6	22	30	11-00-78	5	--	--	--	10-01-86	165	6.1	700
SHLE	85	44	6	68	20	08-00-83	10	--	--	--	--	--	--	701
SDGL	100	100	6	--	75	06-00-85	--	3.0	15	.5	--	--	--	702
SHLE	40	28	6	34	3	07-18-86	20	--	--	1.5	--	--	--	703
SHLE	78	21	6	38	38	09-00-83	4	--	--	--	--	--	--	704
SHLE	110	37	6	42/71/83/110	60	06-00-79	15	--	--	--	10-02-86	270	6.0	705
--	--	--	--	--	2	10-02-86	--	--	--	--	10-02-86	150	5.8	706
SHLE	160	32	6	82/150	60	05-28-78	6	--	--	--	--	--	--	707
SLSN	55	53	5	55	40	07-08-83	10	--	--	1	--	--	--	708
SHLE	--	45	6	50	25	05-00-86	15	--	--	1	--	--	--	709
SHLE	40	32	6	33	21	09-00-86	--	--	--	--	06-02-87	310	6.3	710
SLSN	65	25	5	30/60	20	03-10-84	10	--	--	.5	06-02-87	325	5.7	711
SNDS	71	39	5	60/71	17	08-08-85	--	1.5	12	.5	--	--	--	712
SNDS	100	--	--	43/69	26	08-03-77	--	2.5	15	1	06-02-87	200	5.4	713
SHLE	94	8	6	45/70	45	09-00-86	25	--	--	.5	06-02-87	290	5.8	714
GRVL	126	126	6	122	96	06-14-84	--	.21	6	--	06-02-87	580	5.8	715
SDGL	89	89	6	83	60	06-13-77	20	--	--	1.5	06-02-87	310	5.9	716
SLSN	43	26	6	43	20	08-06-81	8	--	--	--	--	--	--	717
SHLE	75	20	6	23/50	20	05-00-84	--	1.0	20	1	06-03-87	380	7.1	718
SNDS	145	64	10	91/131	--	07-18-86	50	--	--	--	06-03-87	830	7.3	719
SLSN	50	10	6	35	25	06-14-82	--	.47	7	1.0	06-09-87	310	6.7	720
SHLE	70	30	6	35/60	20	07-00-84	--	.37	15	1	--	--	--	721
SHLE	55	40	6	--	--	--	--	--	--	--	--	--	--	722
SHLE	58	44	6	50	20	05-10-78	--	.75	15	1.5	06-10-87	330	6.8	723
SHLE	100	55	6	55/80	90	06-00-83	5	--	--	--	--	--	--	724
SHLE	85	31	6	65/78	45	09-00-86	--	4.0	20	.5	06-10-87	440	6.3	725
SHLE	60	41	6	53	25	06-01-77	--	.20	6	2	06-10-87	380	6.4	726
SHLE	125	30	6	70/90	--	06-18-76	--	--	--	--	--	--	--	727
SHLE	225	32	6	75/225	--	06-18-76	--	--	--	--	--	--	--	728
GRVL	34	34	6	--	5	10-28-80	20	--	--	1	06-10-87	340	5.9	729
SHLE	110	32	6	70/85/100	40	06-00-85	--	.08	5	1	06-11-87	370	5.6	730
SHLE	198	23	6	140/170	--	07-26-78	15	--	--	--	06-11-87	340	5.6	731
SHLE	100	36	6	48/62	42	06-00-85	5	--	--	.3	--	--	--	732
CLAY	128	128	5	--	45	09-29-83	--	.17	7	.3	06-11-87	335	5.6	733
SHLE	180	20	6	--	120	10-00-84	5	--	--	.3	06-11-87	390	5.6	734
SHLE	80	41	6	52/70/74	35	07-25-78	7	--	--	--	06-11-87	400	5.6	735
SHLE	56	55	6	--	35	06-05-78	--	.53	8	1	--	--	--	736
SLSN	73	36	5	--	40	08-12-82	10	--	--	1	--	--	--	737
SHLE	143	21	6	60/80/125	100	09-15-86	--	1.4	14	.5	08-03-87	320	6.1	738

Table 5. *Record of wells in Warren County—Continued*

USGS well number	Latitude/ longitude (DDMMSS)	Quadrangle name	Owner	Driller license number	Year drilled	Primary		Altitude of land surface (feet)	Topo-graphic setting	Hydro-geologic unit
						Use of site	Use of water			
Wr-739	415208 0791526	Youngsville	Berg, O.	1378	1981	W	H	1,740	H	341RCVL
740	415419 0791102	Russell	Teats, Ken	1708	1985	W	H	1,840	H	341VNNG
741	415557 0791637	Sugar Grove	Rhodes, Paul	0674	1984	W	H	1,730	H	341VNNG
742	415528 0791704	Sugar Grove	Richards, Michael	0761	1977	W	H	1,480	V	341VNNG
743	415531 0791717	Sugar Grove	Courtney, T.	0761	1987	W	H	1,480	V	341CDKN
744	415344 0791856	Sugar Grove	Schrader, E.	0761	1983	W	H	1,860	H	337CBCR
745	415428 0793328	Columbus	Eastman, S.	1708	1986	W	H	1,420	V	341CDKN
746	415424 0793328	Columbus	Allen, Bruce C.	0975	1966	W	H	1,420	V	112DRFT
747	414539 0792842	Pittsfield	McClure, D.	1378	1978	W	H	1,470	F	112CLVM
748	414515 0792921	Pittsfield	Mecklin, J.	0269	1900	W	H	1,420	F	341RCVL
749	414426 0793053	Grand Valley	Morrison, A.	1159	1986	W	H	1,400	F	337CBCR
750	415027 0792102	Youngsville	Tayler, George	1044	1968	W	H	1,230	V	112OTSH
751	415023 0792112	Youngsville	Jackson, Roderic	1044	1966	W	H	1,220	V	112OTSH
752	415615 0790758	Russell	Martin, Roy	0067	1975	U	U	1,230	V	112OTSH
753	415611 0790808	Russell	Nelson, James	0067	1979	U	U	1,230	V	112OTSH
754	415644 0790743	Russell	Kane, F.	0067	1986	W	H	1,320	V	112ICCC
755	415659 0790737	Russell	Skiavo, James	0067	1986	W	H	1,330	V	112ICCC
756	415657 0790735	Russell	Briggs, G.	0067	1986	W	H	1,330	H	112ICCC
757	415656 0790738	Russell	Wickline, S.	0067	1986	W	H	1,330	V	112ICCC
758	415310 0790545	Scandia	Palmer, Jim	1393	1985	W	H	1,530	V	341VNNG
759	415311 0790403	Scandia	Wilkins, H.	1378	1986	W	H	1,940	S	341OSWY
760	415556 0791803	Sugar Grove	Pagett, Ted	0761	1986	W	H	1,530	S	341VNNG
761	415557 0791802	Sugar Grove	Bobelak, Lenna	1393	1986	W	H	1,540	S	341VNNG
762	415558 0791811	Sugar Grove	Spencer, P.	0761	1986	W	H	1,500	V	341CDKN
763	415557 0791810	Sugar Grove	Elder, K.	0761	1986	W	H	1,500	V	112OTSH
764	415556 0791805	Sugar Grove	Christensen, B.	1378	1985	W	H	1,510	F	341CDKN
765	415604 0791816	Sugar Grove	Lavigne, George L.	0761	1986	W	H	1,500	F	341CDKN
766	415600 0791813	Sugar Grove	Cochran, S.	0761	1986	W	H	1,500	F	112OTSH
767	415559 0791817	Sugar Grove	Wilmoth, J.	0761	1986	W	H	1,500	V	341CDKN
768	415449 0791858	Sugar Grove	Borland, S.	1378	1980	W	H	1,840	S	341RCVL
769	415450 0792137	Sugar Grove	Nodzak, P.	1378	1984	W	H	1,540	S	341VNNG
770	414317 0793536	Grand Valley	Prosdocima, P.	1375	1978	W	H	1,540	S	337CBCR
771	414111 0793454	Grand Valley	Smith, M.	0902	1978	W	H	1,280	V	112CLVM
773	413739 0793430	Grand Valley	Andes, William J.	0902	1974	W	H	1,270	S	112CLVM
774	413747 0793351	Grand Valley	Fensmaker, A.	0736	1981	W	H	1,300	S	112ALVM
775	413739 0793526	Grand Valley	Jones, Fred	1085	1967	W	H	1,250	S	112ALVM
776	415232 0790942	Russell	Cobb, William	–	1967	W	H	1,290	S	112OTSH
777	413741 0793528	Grand Valley	Viole Burleigh Estate	1085	–	W	H	1,270	S	337CBCR
778	415232 0790932	Russell	Shields, Lee	–	1965	W	H	1,270	S	112OTSH
779	415232 0790933	Russell	Olson, Ronald	–	1967	W	H	1,270	S	112OTSH
780	415234 0790942	Russell	Riley, David B.	–	1966	W	H	1,280	S	112OTSH
781	415234 0790946	Russell	Rickert, Ester	–	1986	W	H	1,280	S	112OTSH
782	415232 0790939	Russell	Binney, John	–	1965	W	H	1,290	S	112OTSH
783	415226 0790932	Warren	Redick, Gary	–	1962	W	H	1,280	S	112OTSH
784	415225 0790932	Warren	Juliano, Angelo	–	1968	W	H	1,280	S	112OTSH
785	415221 0790935	Warren	King, Melinda	–	1985	W	H	1,300	S	112OTSH
786	415232 0790944	Russell	Morris, Francis A.	–	1970	W	H	1,300	S	112OTSH
787	415224 0790936	Warren	Gabriel, Joseph	–	1965	W	H	1,290	S	112OTSH
788	415225 0790938	Warren	Widmer, Stephen	–	1965	W	H	1,320	S	112OTSH
789	415234 0790946	Russell	Randas, Andrew	–	1977	W	H	1,280	S	112OTSH

Table 5. *Record of wells in Warren County—Continued*

Lithology	Depth of well (feet)	Casing		Depth to water-bearing zone(s) (feet)	Water level (feet)	Date water level measured	Reported yield (gal/min)	Measured yield			Field water quality			USGS well number
		Depth (feet)	Diameter (inches)					Specific capacity [(gal/min)/ft]	Discharge (gal/min)	Pumping period (hours)	Date measured	Specific conductance (µS/cm)	pH (units)	
SHLE	181	20	6	42/106	91	04-00-81	5	--	--	0.3	--	--	--	WI-739
SNDS	190	--	--	70/180	70	10-00-85	--	0.05	6	.7	--	--	--	740
SLSN	80	27	5	45/80	21	10-06-84	--	12	12	.5	07-14-87	250	6.5	741
SHLE	50	40	6	42/48	15	10-10-77	--	2.0	20	1.5	--	--	--	742
GRVL	68	40	6	28/40	25	03-00-87	--	4	20	.7	--	--	--	743
SHLE	100	20	6	40	25	07-26-83	--	.06	5	2.5	07-14-87	240	6.8	744
SHLE	70	60	6	62/68	30	04-00-86	--	.29	12	.3	--	--	--	745
GRCL	58	--	--	54	12	05-00-66	--	2	12	2	07-15-87	390	6.3	746
GRVL	123	123	6	122	60	09-11-78	10	--	--	.3	--	--	--	747
SHLE	60	56	6	56	20	08-00-79	16	--	--	.5	--	--	--	748
SHLE	175	107	6	85/104	69	10-00-86	20	--	--	1	07-15-87	800	6.6	749
GRVL	32	32	6	14/32	14	05-24-68	--	--	--	--	07-15-87	300	6.2	750
GRVL	32	32	6	26/30	14	09-01-66	--	--	--	--	07-15-87	300	6.1	751
GRVL	67	67	6	67	20	01-27-75	30	--	--	--	--	--	--	752
SDGL	82	82	5	--	8	07-09-79	--	--	--	--	--	--	--	753
SDGL	129	129	5	--	--	05-00-86	20	--	--	--	--	--	--	754
SAND	120	120	5	--	30	09-08-86	25	--	--	--	07-16-87	400	6.7	755
SDGL	116	116	--	--	30	10-00-86	10	--	--	--	--	--	--	756
GRCL	120	120	5	--	30	09-00-86	--	2.0	20	.5	--	--	--	757
SNDS	65	52	6	55	--	11-18-85	45	--	--	--	--	--	--	758
SHLE	110	41	6	78/92	72	07-00-86	6	--	--	.3	--	--	--	759
SHLE	77	49	6	70	30	04-00-86	--	1.5	25	1	--	--	--	760
SLSN	77	58	6	60	26	04-25-86	30	--	--	--	--	--	--	761
SHLE	73	61	6	32/65	35	05-00-86	15	--	--	20	05- -86	420	6.5	762
GRVL	40	40	6	39	20	04-00-86	20	--	--	2	--	--	--	763
SHLE	70	21	6	29/68	42	07-00-85	7	--	--	.3	--	--	--	764
SHLE	70	--	--	40/63	30	04-00-86	--	1.0	15	1	04- -86	820	7.5	765
GRVL	40	40	6	40	20	09-00-86	15	--	--	.5	--	--	--	766
SHLE	80	63	6	65	10	04-00-86	--	5	50	1	--	--	--	767
SHLE	120	22	6	77/98	75	07-00-80	7	--	--	.3	08-04-87	350	6.6	768
SHLE	50	28	6	33	20	09-00-84	5	--	--	.3	--	--	--	769
--	156	78	6	126	121	08-06-87	--	--	--	--	--	--	--	770
GRVL	128	--	--	126	35	10-00-78	--	.38	15	1	08-06-87	460	7.6	771
GRVL	38	38	6	15	15	02-13-74	35	--	--	--	--	--	--	773
SHLE	74	66	6	67	38	06-00-81	--	4.3	30	2	--	--	--	774
--	60	--	--	15/47	30	04-29-67	--	--	--	--	08-06-87	490	6.7	775
--	60	--	--	--	--	--	--	--	--	--	08-13-87	185	--	776
SHLE	60	54	--	15/47	30	00-00-87	--	--	--	--	--	--	--	777
--	85	--	--	--	--	--	--	--	--	--	08-13-87	190	--	778
--	83	--	--	--	26	00-00-67	--	--	--	--	08-13-87	160	--	779
--	--	--	--	--	--	--	--	--	--	--	08-13-87	340	--	780
--	102	--	--	--	51	08-13-87	--	--	--	--	08-13-87	320	--	781
--	60	--	--	--	--	--	--	--	--	--	08-13-87	195	--	782
--	85	--	--	--	--	--	--	--	--	--	08-13-87	130	--	783
--	167	--	--	--	100	00-00-68	--	--	--	--	08-13-87	320	--	784
--	--	--	--	--	--	--	--	--	--	--	08-13-87	230	--	785
--	104	--	--	--	--	--	--	--	--	--	08-13-87	340	--	786
--	108	--	--	--	--	--	--	--	--	--	08-13-87	240	--	787
--	--	--	--	--	--	--	--	--	--	--	08-13-87	240	--	788
--	92	--	--	--	52	08-13-87	--	--	--	--	08-13-87	330	--	789

Table 5. *Record of wells in Warren County—Continued*

USGS well number	Latitude/ longitude (DDMMSS)	Quadrangle name	Owner	Driller license number	Year drilled	Primary		Altitude of land surface (feet)	Topo-graphic setting	Hydro-geologic unit
						Use of site	Use of water			
Wr-790	415225 0790930	Warren	Gray, James I.	–	–	W	H	1,270	S	112OTSH
791	415228 0790928	Warren	Heffner, Ken	–	–	W	H	1,260	S	112OTSH
792	415227 0790932	Warren	Kipple, Wayne	–	1966	W	H	1,270	S	112OTSH
793	415230 0790947	Warren	Loomis, Clyde	–	1970	W	H	1,330	S	112OTSH
794	415234 0790941	Russell	Putnam, H.	–	1967	W	H	1,280	S	112OTSH
795	415232 0790940	Russell	Mervine, William	–	1965	W	H	1,290	S	112OTSH
796	415228 0790929	Warren	Spadafore, Ron	–	1964	W	H	1,260	S	112OTSH
797	415224 0790933	Warren	Malissa, Mike	–	1965	W	H	1,280	S	112OTSH
798	415233 0790941	Russell	Brumagin, Alice	–	1968	W	H	1,290	S	112OTSH
799	415227 0790947	Warren	Scalise, Polly	–	1977	W	H	1,350	S	112OTSH
800	415224 0790939	Warren	Berenfield, Myer	–	1976	W	H	1,330	S	112OTSH
801	415221 0790933	Warren	Eames, Robert	–	1980	W	H	1,280	S	112OTSH
802	415223 0790930	Warren	Anderson, Raymond O.	–	1967	W	H	1,260	S	112OTSH
804	415229 0790931	Warren	White, Robert	–	1970	W	H	1,270	S	112OTSH
805	415228 0790947	Warren	Lincoln, Howard	–	1969	W	H	1,330	S	112OTSH
806	415228 0790944	Warren	Marquis, David	–	1971	W	H	1,330	S	112OTSH
807	415222 0790937	Warren	Zavinski, John	–	1968	W	H	1,220	S	112OTSH
808	415229 0790933	Warren	Moore, Alfred	–	1965	W	H	1,270	S	112OTSH
809	415231 0790945	Russell	Hill, James	–	1969	W	H	1,310	S	112OTSH
810	414612 0793209	Spring Creek	Stover, Lawrence	1044	1968	W	H	1,590	V	112CLVM
811	414658 0793223	Spring Creek	Morrison, A.	1378	1982	W	H	1,690	S	337CBCR
812	414545 0793009	Spring Creek	Pierce, Dale	1378	1978	W	H	1,770	H	337CYHG
813	414103 0793230	Grand Valley	Edwards, Kenneth	0796	1985	W	H	1,640	H	337SNNG
814	414044 0792516	Tidioute	Unknown	–	–	P	U	1,090	V	341VNNG
815	415606 0790144	Scandia	Riggle, Charles	0067	1980	W	H	1,890	V	112CLVM
816	415829 0791158	Russell	Saunders, S.	1378	1982	W	H	1,410	V	112DRFT
817	413808 0793019	Grand Valley	Smathers, Rod	1088	1977	W	H	1,600	H	337SNNG
818	415336 0790850	Russell	Warren Mall	0410	1978	W	C	1,200	V	112OTSH
819	415336 0790851	Russell	Warren Mall	0410	1978	W	C	1,200	V	112OTSH
820	415101 0791908	Youngsville	Youngsville Borough	–	1910	W	P	1,200	V	112OTSH
821	415101 0791908	Youngsville	Youngsville Borough	–	1937	W	P	1,200	V	112OTSH
822	415622 0790802	Russell	Pine Grove Township	0410	1980	W	P	1,240	V	112OTSH
823	415628 0790756	Russell	Pine Grove Township	–	1950	W	P	1,240	V	112OTSH
824	415611 0791825	Sugar Grove	Bosko Water Company	–	–	W	P	1,500	V	112OTSH
825	415259 0790837	Russell	Warren State Hospital	0424	1957	W	T	1,220	V	112OTSH
826	415257 0790841	Russell	Warren State Hospital	0424	1957	W	T	1,220	V	112OTSH
827	415240 0790842	Russell	Warren State Hospital	0424	1957	W	T	1,210	V	112OTSH
828	415241 0790857	Russell	Warren State Hospital	0424	1957	W	T	1,210	V	112OTSH
829	414648 0790544	Clarendon	Clarendon Water Company	–	1922	W	P	1,400	V	341CRGS
830	414650 0790547	Clarendon	Clarendon Water Company	–	1922	W	P	1,400	V	341CRGS
831	414932 0790704	Clarendon	Western Pa Water Company	–	1954	W	P	1,190	V	112OTSH
832	414932 0790657	Clarendon	Western Pa Water Company	–	1955	W	P	1,200	V	112CLVM
833	414935 0790704	Clarendon	Western Pa Water Company	–	1971	W	P	1,200	V	112CLVM
834	414934 0790715	Clarendon	Western Pa Water Company	1513	1983	W	P	1,190	V	112OTSH

Table 5. *Record of wells in Warren County—Continued*

Lith-ology	Depth of well (feet)	Casing		Depth to water-bearing zone(s) (feet)	Water level (feet)	Date water level measured	Reported yield (gal/min)	Measured yield			Field water quality			USGS well number
		Depth (feet)	Diameter (inches)					Specific capacity [(gal/min)/ft]	Discharge (gal/min)	Pumping period (hours)	Date measured	Specific conduc-tance (µS/cm)	pH (units)	
--	--	--	--	--	--	--	--	--	--	--	08-13-87	610	--	Wr-790
--	--	--	--	--	--	--	--	--	--	--	08-13-87	270	--	791
--	65	--	--	--	--	--	--	--	--	--	08-13-87	140	--	792
--	165	--	--	--	17.50	06-00-70	--	--	--	--	08-13-87	420	--	793
--	100	--	--	--	--	--	--	--	--	--	08-14-87	360	--	794
--	--	--	--	--	--	--	--	--	--	--	08-14-87	172	--	795
--	85	--	--	--	--	--	--	--	--	--	08-14-87	240	--	796
--	100	--	--	--	--	--	--	--	--	--	08-14-87	350	--	797
--	--	--	--	--	--	--	--	--	--	--	08-14-87	380	--	798
--	--	--	--	--	--	--	--	--	--	--	08-17-87	280	--	799
--	--	--	--	--	--	--	--	--	--	--	08-13-87	235	--	800
--	134	--	--	--	84	05-00-87	--	--	--	--	08-13-87	285	--	801
--	125	--	--	--	--	--	--	--	--	--	08-13-87	380	--	802
--	100	--	--	--	42	00-00-70	--	--	--	--	09-17-87	310	--	804
--	96	--	--	--	--	--	--	--	--	--	08-14-87	370	--	805
--	120	--	--	--	--	--	--	--	--	--	08-17-87	350	--	806
--	--	--	--	--	--	--	--	--	--	--	08-17-87	235	--	807
--	98	--	--	--	--	--	--	--	--	--	08-17-87	250	--	808
--	80	--	--	--	--	--	--	--	--	--	08-17-87	440	--	809
GRVL	37	35	6	36	0	06-27-68	--	--	--	--	08-18-87	310	7.6	810
SHLE	140	43	6	83	73	09-00-82	7	--	--	0.33	08-18-87	200	5.8	811
SHLE	205	21	6	110/155	80	09-25-78	4	--	--	.3	08-19-87	140	7.4	812
SHLE	86	55	6	73/78	68	04-00-85	--	3.7	15	1	08-18-87	155	7.4	813
--	134	62	4	--	25	08-25-87	--	--	--	--	08-25-87	2,000	--	814
GRVL	--	31	5	31	--	06-30-80	--	--	--	--	--	--	--	815
SHLE	176	175	6	176	30	11-00-82	10	--	--	.3	--	--	--	816
SHLE	128	52	6	--	--	04-21-77	12	--	--	--	--	--	--	817
GRVL	69	61	8	--	14.30	10-06-78	--	52	300	4	09-20-78	268	7.3	818
GRVL	57	50	8	--	12.70	10-05-78	--	150	300	3.5	09-27-78	229	7.9	819
SDGL	57	57	12	--	30	00-00-10	740	--	--	--	--	--	--	820
SDGL	51	51	10	--	30	00-00-37	250	--	--	--	--	--	--	821
GRVL	65	53	8	--	5	11-17-80	--	1.7	60	48	--	--	--	822
SDGL	142	--	--	--	15	00-00-83	43	--	--	--	--	--	--	823
--	52	--	--	--	--	--	5	--	--	--	--	--	--	824
SDGL	64	49	24	--	35	09-26-57	680	--	--	--	--	--	--	825
SDGL	64	49	24	--	33	10-08-57	650	--	--	--	--	--	--	826
SDGL	74	59	24	--	28	11-22-57	760	--	--	--	--	--	--	827
SDGL	61	46	24	--	30	11-01-57	460	--	--	--	--	--	--	828
--	159	115	8	--	--	--	105	--	--	--	--	--	--	829
--	159	115	8	--	--	--	130	--	--	--	--	--	--	830
--	86	58	10	--	24	00-00-54	1000	--	--	--	--	--	--	831
SDGL	87	71	12	--	20	00-00-55	700	--	--	--	--	--	--	832
GRVL	93	67	16	--	36	09-14-71	--	550	1370	24	--	--	--	833
GRVL	72	50	18	--	23	08-30-83	--	270	1600	72	--	--	--	834

Table 6. *Record of springs in Warren County*

USGS spring number: The number assigned by the U.S.Geological Survey (USGS) to identify the spring. The prefix Wr before the spring number signifies the spring is in Warren County.

Topographic setting: H, hilltop; S, hillside; V, valley flat; W, upland draw.

Hydrogeologic unit: 112OTSH, glacial outwash sand and gravel; 324PSVL, Pottsville Group; 337SNNG, Shenango Formation; 337CYHG, Cuyahoga Group; 337KNPP, Knapp Formation; 337CBCR, Corry Sandstone through Riceville Formation undivided; 341RCVL, Riceville Formation; 341OSWY, Oswayo Formation; 341CRGS, Catskill and Venango Formations, undifferentiated; 341VNNG, Venango Formation.

USGS spring number	Location		Quadrangle name	Township	Owner	Altitude of land surface (feet)	Topo-graphic setting
	Latitude (DDMMSS)	Longitude (DDMMSS)					
Wr-SP-50	414140	0792839	Tidioute	Triumph	Unknown	1,670	S
51	413935	0792911	Tidioute	Triumph	Edward Fox	1,600	W
52	414332	0791551	Cobham	Watson	Allegheny National Forest	1,810	S
53	414117	0791455	Cherry Grove	Watson	Unknown	1,800	W
54	414158	0791458	Cherry Grove	Watson	Allegheny National Forest	1,795	S
55	414301	0792053	Cobham	Deerfield	Unknown	1,155	S
56	413914	0792424	Tidioute	Limestone	Unknown	1,140	S
57	414108	0791543	Cobham	Watson	Allegheny National Forest	1,820	S
58	413752	0791435	Cherry Grove	Watson	Allegheny National Forest	1,780	S
59	415037	0790731	Warren	Glade	Everett Cooper	1,380	W
60	413849	0791011	Cherry Grove	Cherry Grove	Allegheny National Forest	1,480	S
61	414230	0785931	Ludlow	Sheffield	Allegheny National Forest	1,410	S
62	414129	0785931	Ludlow	Sheffield	Allegheny National Forest	1,780	W
63	413808	0785927	Ludlow	Sheffield	Allegheny National Forest	1,500	S
64	413741	0785944	Ludlow	Sheffield	Allegheny National Forest	1,420	S
65	413742	0785944	Ludlow	Sheffield	Allegheny National Forest	1,420	S
66	413954	0790153	Sheffield	Sheffield	Earl Simmons	1,560	S
67	413829	0790223	Sheffield	Sheffield	Allegheny National Forest	1,520	S
68	413800	0790237	Sheffield	Sheffield	Allegheny National Forest	1,350	S
69	414051	0790418	Sheffield	Sheffield	Allegheny National Forest	1,920	W
70	414255	0792722	Tidioute	Triumph	Albert Schultz	1,290	W
71	415557	0790656	Scandia	Pine Grove	Marvin Strickland	1,290	V
72	415559	0790237	Scandia	Elk	George Agerter	1,890	S
100	414203	0792135	Cobham	Deerfield	Pa. Game Commission	1,260	S
101	414618	0790811	Warren	Mead	Unknown	1,430	S
102	414524	0790312	Clarendon	Mead	Unknown	1,420	S
103	413959	0792021	Cobham	Limestone	Allegheny National Forest	1,620	S
104	414417	0790211	Sheffield	Mead	Unknown	1,400	V
105	414151	0790304	Sheffield	Sheffield	Tim Bean	1,815	S
106	414117	0790502	Sheffield	Sheffield	Allegheny National Forest	1,895	W
107	414029	0790548	Sheffield	Cherry Grove	Alleghney National Forest	1,980	W
108	414747	0791402	Warren	Pleasant	Unknown	1,850	S
109	414040	0790802	Cherry Grove	Cherry Grove	Allegheny National Forest	1,890	W
110	414101	0791117	Cherry Grove	Cherry Grove	Allegheny National Forest	1,790	V
111	414029	0791328	Cherry Grove	Cherry Grove	Allegheny National Forest	1,870	S
113	415525	0791844	Sugar Grove	Sugar Grove	David Engstrom	1,650	S
114	414251	0790937	Cherry Grove	Cherry Grove	McMillan Lumber Co.	1,600	S
115	413742	0790904	Cherry Grove	Cherry Grove	Allegheny National Forest	1,600	S
116	414053	0791041	Cherry Grove	Cherry Grove	Allegheny National Forest	1,870	S
117	414325	0790254	Sheffield	Sheffield	St. Paul's Church	1,370	V
118	414249	0790109	Sheffield	Sheffield	Allegheny National Forest	1,420	W
119	413942	0790131	Sheffield	Sheffield	Earl Simmons	1,460	S
120	415614	0791819	Sugar Grove	Sugar Grove	Chandlers Valley	1,610	S
121	413905	0792425	Tidioute	Limestone	Robert Bupp	1,120	S
123	414415	0791904	Cobham	Watson	Jack McLaughlin	1,210	S
124	414611	0791143	Warren	Watson	Allegheny National Forest	1,545	S
125	414719	0791421	Warren	Pleasant	Paul E. Baseler	1,800	S
126	414024	0792716	Tidioute	Triumph	Peter Rassavage	1,675	H
127	415144	0790927	Warren	Conewango	Robert Anthony	1,340	S
128	413757	0790309	Sheffield	Sheffield	Allegheny National Forest	1,500	S
129	414934	0791812	Youngsville	Brokenstraw	Unknown	1,430	W
130	414934	0791435	Warren	Pleasant	Charles Novak	1,500	S
131	414046	0792413	Tidioute	Limestone	Allegheny National Forest	1,195	S
132	414040	0790841	Cherry Grove	Cherry Grove	Alleghney National Forest	1,815	S
133	414546	0791028	Warren	Pleasant	Unknown	1,480	S
134	414838	0790420	Clarendon	Mead	Unknown	1,780	S
135	414321	0793221	Grand Valley	Eldred	S. Durkac	1,370	S

Table 6. *Record of springs in Warren County—Continued*

Lithology: CGLM, conglomerate; SDSL, sandstone and shale; SNDS, sandstone.
Primary use of water: H, domestic; P, public supply; R, recreation; T, institution; U, unused.
Discharge: gal/min, gallon per minute; EF, estimated flow measurement; VF, volumetric flow measurement.
Specific conductance: µS/cm, microsiemen per centimeter at 25 degrees Celsius.
Temperature: °C, degree Celsius.
Other abbreviations: DDMMSS, degrees, minutes, and seconds; --, no data available; <, less than.

Hydro-geologic unit	Lithology	Primary use of water	Measurements of discharge: Discharge (gal/min)		Measurements of discharge: Date measured	Field water-quality measurements: Date of sample	Specific conduc-tance	pH (units)	Temper-ature (°C)	USGS spring number
324PSVL	--	H	15	EF	05-15-85	05-15-85	<50	5.6	8.5	Wr-SP-50
337SNNG	--	H	--	--	--	05-16-85	70	--	14.0	51
324PSVL	SNDS	U	56	VF	07-27-87	05-29-85	<50	6.8	8.0	52
324PSVL	--	U	50	EF	05-29-85	05-29-85	<50	6.8	8.0	53
324PSVL	--	R	50	EF	05-29-85	05-29-85	<50	6.8	8.0	54
341VNNG	--	H	25	EF	06-26-85	06-26-85	104	7.0	10.0	55
341VNNG	--	U	--	--	--	06-26-85	230	6.5	10.0	56
324PSVL	--	U	20	EF	07-17-85	07-17-85	<50	--	9.0	57
324PSVL	--	U	5	EF	07-17-85	07-17-85	<50	--	10.0	58
112OTSH	--	H	--	--	--	08-07-85	229	6.3	16.0	59
337KNPP	SNDS	R	40	EF	10-09-85	10-09-85	60	6.4	8.5	60
341OSWY	SDSL	U	10	EF	10-10-85	10-10-85	112	6.2	9.0	61
337CYHG	SNDS	R	15	EF	10-10-85	10-10-85	<50	5.4	9.0	62
337KNPP	SNDS	H	5.0	VF	10-10-85	10-10-85	140	7.5	11.0	63
337KNPP	SDSL	H	5	EF	10-10-85	10-10-85	305	7.5	10.0	64
337KNPP	SDSL	H	5	EF	10-10-85	10-10-85	280	7.5	10.0	65
337KNPP	--	H	30	EF	11-07-85	11-07-85	82	6.1	9.5	66
337CYHG	CGLM	U	20	EF	11-07-85	11-07-85	<50	6.0	9.0	67
341OSWY	--	H	5	EF	11-07-85	11-07-85	170	7.0	9.5	68
324PSVL	SNDS	U	40	EF	11-07-85	11-07-85	<50	5.0	9.5	69
112OTSH	--	H	--	--	--	04-09-86	<50	6.2	7.5	70
112OTSH	--	H	4.4	VF	05-28-87	05-28-87	240	5.9	12.0	71
341OSWY	--	H	--	--	--	05-19-87	55	5.8	11.0	72
341VNNG	--	H	2.4	VF	06-05-85	06-05-85	110	6.9	10.5	100
341VNNG	--	H	4.0	VF	06-05-85	06-05-85	130	7.3	9.5	101
341OSWY	--	H	11.1	VF	06-05-85	06-05-85	135	7.0	9.0	102
337SNNG	--	H	1.7	VF	06-05-85	06-05-85	<50	6.1	10.0	103
341CRGS	--	H	2.6	VF	06-06-85	06-06-85	120	7.3	8.0	104
337SNNG	--	H	1.0	VF	06-06-85	06-06-85	220	4.2	11.0	105
324PSVL	--	H	40	EF	06-06-85	06-06-85	70	4.4	8.0	106
324PSVL	--	U	.7	VF	06-06-85	06-06-85	<50	4.2	9.0	107
324PSVL	--	H	2.0	VF	06-24-85	06-24-85	66	5.5	12.0	108
324PSVL	--	U	20.0	VF	06-25-85	06-25-85	75	4.4	9.0	109
324PSVL	--	H	60	EF	06-25-85	06-25-85	<50	5.0	8.5	110
324PSVL	--	H	17.0	VF	06-25-85	06-25-85	<50	4.4	9.0	111
341VNNG	--	H	5.5	VF	06-26-85	06-26-85	105	6.5	6.0	113
337KNPP	--	T	30	VF	06-26-85	06-26-85	65	5.6	8.5	114
337CYHG	--	H	.3	VF	06-26-85	06-26-85	<50	5.7	--	115
324PSVL	--	H	5.0	VF	06-26-85	06-26-85	<50	4.6	8.5	116
341CRGS	--	H	10	EF	06-06-85	06-06-85	90	7.2	9.0	117
341OSWY	--	H	--	--	--	07-23-85	155	6.8	10.0	118
341CRGS	--	H	4.1	VF	07-23-85	07-23-85	80	7.5	11.0	119
341VNNG	--	P	--	--	--	08-28-85	1,500	7.4	15.0	120
341VNNG	--	H	3.6	VF	09-04-85	09-04-85	300	7.4	14.0	121
112OTSH	--	H	.01	EF	04-09-86	04-09-86	1,100	--	5.5	123
341RCVL	--	U	.2	EF	06-19-86	06-19-86	265	6.8	10.0	124
324PSVL	--	H	5	EF	06-19-86	06-19-86	<50	4.3	11.0	125
324PSVL	--	H	--	--	--	08-06-86	<50	4.1	--	126
341CDKN	--	H	--	--	--	08-13-86	185	6.2	--	127
337KNPP	--	H	15	EF	09-09-86	09-09-86	190	7.7	10.0	128
341VNNG	--	H	--	--	--	10-21-86	425	--	9.5	129
341VNNG	--	H	2.7	VF	07-10-86	07-10-86	175	6.8	11.0	130
341RCVL	--	H	1.1	VF	05-21-87	05-21-87	180	6.4	9.5	131
324PSVL	--	H	25	EF	07-27-87	07-27-87	<50	4.8	8.5	132
337CBCR	--	H	45	EF	08-27-87	08-27-87	120	7.3	9.0	133
337KNPP	--	H	20	EF	09-09-87	09-09-87	70	6.9	9.0	134
341RCVL	--	H	40	EF	09-30-64	09-30-64	175	--	15.0	135

Table 7. *Major constituents and organic compounds in water from wells and springs in Warren County*

[Concentrations are in milligrams per liter except where otherwise indicated; changes in detection limits for the same constituent represented by less than symbols result from different laboratory instrumentation or variation in instrument calibration; µS/cm, microsiemens per centimeter at 25 degrees Celsius; *, laboratory measurement of specific conductance and pH; °C, degrees Celsius; <, less than; --, no data; see table 1 for hydrogeologic unit abbreviations]

USGS well or spring number	Date of sample	Hydro-geologic unit	Field specific conduc-tance (µS/cm)	Dissolved solids (residue at 105 °C)	Field pH (units)	Total hard-ness ($CaCO_3$)	Dissolved calcium (Ca)	Dissolved magnesium (Mg)	Dissolved sodium (Na)	Dissolved potassium (K)
Wr-3	9/26/28	112OTSH	--	--	--	110	33	6.1	2.3	6
5	9/26/28	341CDKN	--	--	--	110	33	5.9	5.7	1
19	9/26/28	112OTSH	--	--	--	110	33	7.1	1.7	.5
21	9/26/28	112OTSH	--	--	--	110	30	8.3	3.5	.7
35	7/20/29	112OTSH	--	--	--	130	39	7.0	6.9	2
	10/18/66	112OTSH	506	--	7.9	160	50	7.8	38	2
37	9/26/28	341CDKN	--	--	--	110	28	10	12	2
50	8/29/85	341VNNG	270	202	7.4	140	36	9.4	9.8	1
	7/28/87	341VNNG	310	194	6.9	130	34	9.2	11	2
205	5/15/85	337SNNG	120	110	6.2	44	5.3	6.1	1.7	.8
208	5/15/85	337CYHG	80	82	6.3	30	5.5	3.3	1.7	.6
213	5/16/85	337CYHG	165	560	*6.2	59	17	3.3	1.3	.9
216	5/29/85	337CYHG	165	274	6.5	85	22	5.1	3.9	1
218	5/29/85	337CYHG	100	150	6.6	67	16	6.1	3.5	1
222	5/29/85	337CYHG	222	180	6.9	130	31	6.0	7.1	1
223	5/29/85	337CYHG	163	124	7.0	80	22	4.1	3.6	.8
224	5/29/85	337CYHG	257	430	6.5	190	48	12	17	2
	5/29/85	337CYHG	257	430	6.5	190	51	12	18	2
225	5/29/85	337CYHG	218	220	7.0	100	25	6.2	14	2
	8/14/85	337CYHG	189	218	6.5	110	34	8.8	24	2
	8/26/87	337CYHG	380	222	6.3	110	28	7.6	22	2
228	5/29/85	337CYHG	66	76	6.3	19	3.6	2.4	2.3	.9
229	5/30/85	341RCVL	193	194	6.9	120	23	9.1	3.7	1
	5/30/85	341RCVL	193	200	6.9	120	25	9.4	3.5	.9
	8/14/85	341RCVL	205	354	6.9	130	35	14	5.5	.9
230	5/30/85	337CYHG	102	108	6.2	41	5.9	5.1	4	.8
233	5/30/85	337SNNG	55	64	6.1	18	2.1	2.3	.6	.6
234	5/30/85	337SNNG	69	72	6.1	25	3.3	2.9	1.1	.8
235	5/30/85	337SNNG	73	84	6.0	27	3.5	4.1	1.2	.9
241	6/26/85	112ICCC	378	302	6.9	130	36	13	72	2
248	6/26/85	341VNNG	266	252	7.1	200	54	14	8.8	1
252	6/26/85	112OTSH	212	188	7.4	160	53	7.5	2.6	.8
254	6/26/85	341VNNG	126	198	7.1	72	15	7.1	3.2	1
255	12/02/86	341VNNG	550	264	6.1	170	37	19	31	3
256	6/27/85	112OTSH	640	--	6.8	200	37	15	150	.9
	8/06/86	112OTSH	1,000	750	5.1	200	50	19	200	4
	8/12/87	112OTSH	1,150	696	6.8	200	46	19	200	4
258	6/27/85	341VNNG	165	292	6.6	90	19	8.9	17	2
262	6/27/85	337CYHG	205	236	7.1	98	31	8.3	34	2
263	6/27/85	337KNPP	212	180	7.2	83	23	6.5	17	2
264	6/27/85	337CYHG	104	102	7.3	36	5.2	5.8	3.3	1
266	9/26/85	341DVNNU	3,500	1,790	7.6	60	17	5.0	490	2
	9/27/85	341DVNNU	400	292	6.9	120	36	8.2	14	1
	8/26/87	341DVNNU	260	142	6.9	68	19	3.6	11	6
	8/26/87	341DVNNU	3,600	1,850	6.9	58	14	4.1	750	5

Table 7. *Major constituents and organic compounds in water from wells and springs in Warren County—Continued*

Alkalinity ($CaCO_3$)	Dissolved sulfate (SO_4)	Dissolved chloride (Cl)	Total fluoride (F)	Total nitrate (NO_3 as N)	Total ortho-phosphorus (P)	Total organic carbon	Total oil and grease	Dissolved gasses			USGS well or spring number
								Methane	Ethane	Propane	
--	8.0	2.0	--	--	--	--	--	--	--	--	Wr-3
--	13	5.0	--	--	--	--	--	--	--	--	5
--	11	2.0	--	--	--	--	--	--	--	--	19
--	8.0	1.0	--	--	--	--	--	--	--	--	21
--	19	14	--	--	--	--	--	--	--	--	35
--	18	110	--	--	--	--	--	--	--	--	
--	23	2.0	--	--	--	--	--	--	--	--	37
148	11	<1	0.2	<0.04	0.01	3.0	--	--	--	--	50
142	15	2.0	.2	<.04	.15	1.4	--	1.5	0.3	<0.5	
22	<10	10	.2	.12	.01	--	--	--	--	--	205
30	<10	4.0	.2	.14	.03	--	--	--	--	--	208
46	21	5.0	.1	1.11	.03	--	--	--	--	--	213
72	20	14	.2	.33	.01	--	--	--	--	--	216
58	20	3.0	.2	.05	<.005	--	--	--	--	--	218
108	20	22	.1	<.04	<.002	1.4	--	--	--	--	222
78	17	2.0	.3	<.04	<.005	--	--	--	--	--	223
84	21	120	.2	.05	<.005	2.7	--	--	--	--	224
84	21	120	.2	.05	.01	<1.0	--	--	--	--	
86	22	37	.2	<.04	<.005	2.3	--	--	--	--	225
92	20	44	.2	<.04	.03	2.8	--	<.5	<.5	<.5	
96	22	62	.2	<.04	.03	--	<2	.3	<.5	<.5	
18	<10	3.0	<.1	.42	<.005	--	--	--	--	--	228
124	22	2.0	.1	<.04	.01	--	--	--	--	--	229
122	23	2.0	.2	<.04	.01	--	--	--	--	--	
120	25	<1	.1	<.04	.01	3.9	--	--	--	--	
18	16	10	.2	.33	<.005	--	--	--	--	--	230
18	<10	1.0	.1	.17	<.005	--	--	--	--	--	233
24	<10	3.0	.1	<.04	<.005	--	--	--	--	--	234
20	<10	5.0	.2	.27	<.005	--	--	--	--	--	235
212	24	48	.3	<.04	.01	--	--	--	--	--	241
198	39	4.0	.2	<.04	.01	--	--	--	--	--	248
130	40	5.0	<.1	2.4	.01	--	--	--	--	--	252
54	30	1.0	<.1	.78	.01	--	--	--	--	--	254
158	<10	82	.4	<.04	.01	9.1	7	5.5	<.5	<.5	255
290	18	250	.6	<.04	.01	--	--	--	--	--	256
302	12	270	.4	<.04	.01	24	<2	26.0	<.5	<.5	
310	<10	280	.7	<.04	.01	3.6	9	33.5	<.5	<.5	
74	24	30	<.1	1.2	.01	--	--	--	--	--	258
136	43	8.0	.3	.08	.01	--	--	--	--	--	262
80	32	6.0	.3	.12	.02	--	--	--	--	--	263
28	25	4.0	.3	.22	.02	--	--	--	--	--	264
248	<10	1,000	.4	<.04	.01	22	--	44.5	1.5	.6	266
94	19	42	.3	<.04	.01	7.2	--	.8	<.5	<.5	
54	<10	53	<.1	<.04	.02	--	3	.6	<.5	<.5	
244	<10	1,100	.3	<.04	.04	--	4	10.0	.3	<.5	

Table 7. *Major constituents and organic compounds in water from wells and springs in Warren County—Continued*

USGS well or spring number	Date of sample	Hydro-geologic unit	Field specific conduc-tance (µS/cm)	Dissolved solids (residue at 105 °C)	Field pH (units)	Total hard-ness ($CaCO_3$)	Dissolved calcium (Ca)	Dissolved magnesium (Mg)	Dissolved sodium (Na)	Dissolved potassium (K)
Wr-266	8/26/87	341DVNNU	385	212	6.7	120	32	7.6	17	3
270	7/17/85	112OTSH	310	370	*7.2	170	44	14	28	2
	9/26/85	112OTSH	--	--	--	--	--	--	--	--
271	7/17/85	337CYHG	167	150	*6.9	66	22	5.0	11	1
275	12/02/86	337SNNG	70	8	6.5	19	3.0	2.3	2.1	2
283	7/17/85	337CYHG	70	74	*6.3	16	3.2	2.9	3.6	.1
	7/23/87	337CYHG	230	158	6.6	94	17	9.7	10	1
286	7/18/85	341CDKN	319	262	*7.2	110	30	8.9	34	1
287	7/18/85	341CDKN	179	158	*6.8	96	27	7.1	4.2	.4
288	7/18/85	341CDKN	159	130	*6.6	82	20	7.0	3.1	.3
289	7/18/85	112OTSH	253	198	*8.0	120	38	8.1	3.6	.4
292	8/06/85	112OTSH	277	258	7.0	150	40	6.5	31	.4
293	8/06/85	112OTSH	214	250	6.8	190	41	14	16	.6
299	8/06/85	112OTSH	245	204	7.5	130	40	5.0	8.1	.4
301	8/06/85	112OTSH	254	186	7.2	67	16	7.4	24	2
302	8/06/85	112OTSH	440	374	6.4	210	56	12	14	.6
303	8/06/85	112OTSH	206	238	6.9	140	44	7.9	5.1	.6
305	8/07/85	341VNNG	271	254	6.8	160	41	15	8.1	1
	8/07/85	341VNNG	271	240	6.8	160	40	15	7.7	1
306	8/07/85	341VNNG	370	278	7.0	120	27	11	31	.9
308	11/06/85	341OSWY	440	288	7.4	170	43	13	18	2
310	11/06/85	341VNNG	255	184	5.5	45	9.9	4.5	17	.5
311	11/06/85	341VNNG	290	224	6.3	110	27	11	5.1	.7
312	8/07/85	341VNNG	295	266	7.2	150	36	13	26	1
	8/07/85	341VNNG	295	306	7.2	150	37	14	27	1
313	8/07/85	341VNNG	400	334	7.3	170	43	15	28	1
314	8/07/85	341VNNG	277	232	7.2	150	35	13	9.9	1
315	8/14/85	341RCVL	470	302	7.1	140	43	13	68	2
316	8/14/85	341CDKN	680	--	7.2	54	21	4.5	140	.8
317	8/14/85	341VNNG	430	226	*7.7	<10	.2	.1	74	.1
318	8/14/85	112OTSH	289	182	*7.5	140	43	7.4	2.3	.6
320	8/28/85	112OTSH	170	172	6.5	130	31	8.9	6.5	.6
322	8/28/85	337KNPP	160	124	6.6	44	7.9	5.2	13	1
323	8/29/85	341CDKN	325	276	6.7	190	48	16	15	1
326	8/28/85	341VNNG	289	284	6.9	150	34	15	14	1
328	8/28/85	341VNNG	283	210	6.9	150	37	16	10	1
331	11/26/85	341VNNG	360	288	*6.9	100	28	9.0	41	3
333	8/28/85	112OTSH	277	204	6.7	72	18	7.3	36	.8
335	9/18/85	112LAKE	205	150	6.6	65	17	6.2	11	.1
339	9/18/85	112LAKE	196	140	6.8	57	15	5.3	10	.2
340	9/18/85	324PSVL	84	90	6.2	26	6.3	3.0	1.9	.8
	11/26/85	324PSVL	74	60	*6.0	15	4.0	1.8	3.5	2
	3/11/86	324PSVL	*60	80	*6.0	--	--	--	--	--
341	9/18/85	324PSVL	203	130	5.6	30	.03	.01	.2	.5
	11/26/85	324PSVL	198	150	*5.5	27	6.3	4.1	16	6
	3/11/86	324PSVL	*160	128	*5.9	--	--	--	--	--
342	9/18/85	324PSVL	258	234	5.4	25	6.7	1.5	18	5
	11/26/85	324PSVL	244	--	*5.3	19	6.1	1.0	29	8
	3/11/86	324PSVL	*180	128	*5.6	34	--	--	--	--
346	10/09/85	112LAKE	120	108	6.4	39	10	3.5	5.2	.5

Table 7. Major constituents and organic compounds in water from wells and springs in Warren County—Continued

Alkalinity ($CaCO_3$)	Dissolved sulfate (SO_4)	Dissolved chloride (Cl)	Total fluoride (F)	Total nitrate (NO_3 as N)	Total ortho-phosphorus (P)	Total organic carbon	Total oil and grease	Dissolved gasses			USGS well or spring number
								Methane	Ethane	Propane	
96	<10	66	0.1	<0.04	0.03	–	7	0.4	<0.5	<0.5	Wr-266
160	23	90	<.1	<.04	.01	14	–	10.0	–	–	270
–	–	–	–	–	–	–	–	14.5	<.5	<.5	
100	25	<1	.1	.04	.01	–	–	–	–	–	271
10	<10	6.0	.2	.64	.04	3.5	2	<.5	<.5	<.5	275
32	<10	<1	.2	<.04	.01	2.9	–	–	–	–	283
98	21	<1	.4	<.04	.03	<1.0	5	<.5	<.5	<.5	
184	15	10	.2	<.04	.01	8.5	–	3.5	.5	–	286
108	13	3.0	.1	<.04	.01	5.8	–	16.5	3.5	1.0	287
86	13	4.0	<.1	<.04	.01	2.8	–	6.5	1.5	.2	288
114	27	6.0	<.1	.54	<.005	5.1	–	<.5	–	–	289
112	29	50	<.1	.82	<.005	3.1	–	–	–	–	292
184	18	13	<.1	.14	<.005	18	–	.4	–	–	293
116	14	18	<.1	.14	<.005	5.2	–	<.5	–	–	299
60	22	41	<.1	<.04	.01	2.3	–	–	–	–	301
162	47	27	<.1	2.3	<.005	6.0	–	–	–	–	302
114	24	15	<.1	.63	<.005	4.6	–	<.5	–	–	303
156	26	7.0	.2	.19	.01	2.9	–	<.5	<.5	<.5	305
156	25	7.0	.2	.19	.01	4.7	–	–	–	–	
200	12	6.0	.3	<.04	<.005	2.3	–	.2	–	–	306
178	31	14	.2	<.04	.01	4.6	–	3.0	2.0	1.5	308
22	19	40	<.1	1.9	<.005	2.0	–	<.5	<.5	<.5	310
90	26	13	.1	<.04	<.005	4.9	–	<.5	–	–	311
190	22	11	.3	<.04	.01	8.5	–	1.0	<.5	<.5	312
190	23	11	.3	<.04	.01	3.5	–	–	–	–	
214	10	23	.3	.59	.01	4.0	–	3.5	.8	<.5	313
168	18	2.0	.3	.06	.01	2.2	–	<.5	<.5	<.5	314
184	22	88	.2	.19	.01	6.0	–	–	–	–	315
198	17	140	.6	<.04	.02	5.1	–	–	–	–	316
162	18	6.0	.1	<.04	.02	5.4	–	<.5	–	–	317
136	14	2.0	<.1	.46	<.005	2.4	–	–	–	–	318
132	12	2.0	.1	<.04	.01	2.7	–	–	–	–	320
26	<10	33	.3	.86	.01	<1.0	–	–	–	–	322
184	35	15	.2	<.04	<.005	4.4	–	–	–	–	323
170	22	5.0	.2	<.04	.01	<1.0	–	–	–	–	326
160	24	4.0	.2	<.04	.01	4.6	–	–	–	–	328
172	20	15	.2	<.04	.01	8.1	–	–	–	–	331
158	<10	7.0	.3	.10	.21	2.2	–	<.5	–	–	333
92	11	13	.2	<.04	.02	2.1	–	–	–	–	335
92	10	6.0	.2	<.04	.02	1.6	–	–	–	–	339
22	<10	3.0	<.1	.24	<.005	<1.0	–	–	–	–	340
12	30	6.0	<.1	.60	<.005	–	–	–	–	–	
14	–	–	–	–	–	–	–	–	–	–	
6	15	33	<.1	2.5	<.005	1.1	–	–	–	–	341
6	24	36	<.1	2.0	<.005	–	–	–	–	–	
14	–	–	–	–	–	–	–	–	–	–	
4	14	44	<.1	6.1	<.005	2.4	–	–	–	–	342
6	22	42	<.1	4.4	<.005	–	–	–	–	–	
8	–	–	–	–	–	–	–	–	–	–	
48	<10	5.0	<.1	.14	<.005	1.4	–	–	–	–	346

Table 7. Major constituents and organic compounds in water from wells and springs in Warren County—Continued

USGS well or spring number	Date of sample	Hydro-geologic unit	Field specific conduc-tance (µS/cm)	Dissolved solids (residue at 105 °C)	Field pH (units)	Total hard-ness ($CaCO_3$)	Dissolved calcium (Ca)	Dissolved magnesium (Mg)	Dissolved sodium (Na)	Dissolved potassium (K)
Wr-347	10/10/85	341CRGS	340	224	7.4	74	22	7.6	23	0.8
349	11/06/85	341OSWY	480	306	7.4	310	65	15	8.3	2
350	11/06/85	341OSWY	520	624	7.6	170	45	13	31	2
351	11/07/85	112CLVM	290	202	7.7	100	32	8.5	7.5	.5
354	4/22/86	112OTSH	690	346	*7.5	230	80	13	38	3
355	4/22/86	112OTSH	440	244	*7.5	150	56	8.5	16	2
357	4/22/86	341DVNNU	262	162	*6.3	80	20	6.8	18	2
359	5/07/86	112OTSH	330	218	7.6	120	43	6.4	7.9	2
371	6/25/86	337CYHG	95	128	6.5	33	9.1	2.4	1.6	.7
372	6/25/86	337CBCR	155	114	6.8	52	9.1	4.4	2.6	1
376	6/25/86	341VNNG	235	170	6.8	88	23	7.5	8.1	2
377	6/25/86	341VNNG	240	148	6.5	90	23	7.3	7.7	1
378	6/25/86	112ICCC	265	154	7.3	110	30	6.1	4.2	.5
380	6/26/86	112ICCC	250	152	8.1	98	29	5.5	7.4	.6
381	6/26/86	112ICCC	250	148	7.3	100	29	5.7	2.6	.5
382	6/26/86	112ICCC	325	178	7.2	120	33	8.1	10	1
384	7/09/86	112OTSH	225	154	6.7	96	36	5.6	2.1	.8
388	7/09/86	112OTSH	335	200	6.6	98	32	7.9	26	1
389	7/09/86	341VNNG	1,100	604	6.9	57	21	4.7	230	3
	7/30/87	341VNNG	1,100	700	7.4	67	18	4.0	220	3
390	7/09/86	341VNNG	275	196	6.5	120	34	12	5.0	2
391	7/09/86	341CDKN	345	232	6.4	140	43	12	4.4	2
392	7/23/86	112OTSH	235	156	6.5	78	24	4.8	16	1
393	7/10/86	341RCVL	140	154	6.0	50	11	5.3	2.8	3
394	7/10/86	337KNPP	155	136	6.4	49	14	5.0	3.2	2
395	7/10/86	341VNNG	210	150	6.3	74	19	9.6	5.4	2
396	7/23/86	337CYHG	130	128	6.5	33	7.8	.4	4.5	3
401	8/13/86	341CDKN	720	378	6.4	100	29	9.2	99	2
405	7/23/86	112OTSH	205	128	6.3	58	17	.3	5.9	1
406	7/23/86	341CDKN	400	252	6.7	51	15	.08	65	2
407	7/23/86	112OTSH	275	158	6.5	110	37	1	3.4	.8
408	7/23/86	112OTSH	285	158	6.7	110	36	.02	3.9	.8
409	7/23/86	341VNNG	280	176	6.9	110	32	8.4	8.5	2
410	7/23/86	112OTSH	265	170	6.6	98	32	5.9	4.2	.7
411	7/24/86	337SNNG	240	152	6.3	95	31	1	3.8	2
412	7/24/86	341CDKN	395	200	6.3	110	35	7.0	19	3
413	7/24/86	112OTSH	225	140	6.9	65	21	5.3	13	1
414	7/24/86	112OTSH	295	158	6.8	110	36	6.2	5.2	.9
422	8/05/86	341CDKN	220	172	7.7	<10	.1	.03	53	.1
423	8/05/86	112ICCC	180	124	6.7	66	21	4.2	3.1	.5
424	8/05/86	112OTSH	305	184	6.8	59	18	4.7	35	1
425	8/06/86	112DRFT	600	396	7.5	44	13	4.0	120	2
426	8/06/86	341VNNG	435	294	7.4	19	5.6	1.7	87	2
427	8/06/86	112ICCC	300	188	6.9	130	39	8.5	4.7	.7
428	8/06/86	341RCVL	280	180	6.6	120	36	6.4	3.3	2
429	8/06/86	341VNNG	390	258	7.1	79	23	7.1	46	3
430	8/07/86	341VNNG	140	106	6.3	52	14	4.4	2.2	.8
431	8/07/86	112ICCC	340	206	6.8	89	26	7.3	28	2
432	8/07/86	112ICCC	230	146	6.7	88	28	5.4	2.3	.8
445	8/13/86	341VNNG	430	292	6.3	130	34	10	18	2

Table 7. Major constituents and organic compounds in water from wells and springs in Warren County—Continued

Alkalinity ($CaCO_3$)	Dissolved sulfate (SO_4)	Dissolved chloride (Cl)	Total fluoride (F)	Total nitrate (NO_3 as N)	Total ortho-phosphorus (P)	Total organic carbon	Total oil and grease	Dissolved gasses			USGS well or spring number
								Methane	Ethane	Propane	
118	<10	29	0.1	<0.04	0.02	3.0	--	--	--	--	Wr-347
196	48	23	.2	.12	.01	4.4	--	0.4	<0.5	<0.5	349
216	24	18	.2	<.04	<.005	5.6	--	.6	<.5	<.5	350
122	20	4.0	.3	<.04	.01	4.5	--	<.5	--	--	351
254	22	50	.4	<.04	.01	10	--	--	--	--	354
126	26	37	.6	.80	.01	4.6	--	--	--	--	355
106	10	6.0	.2	<.04	.01	5.5	--	--	--	--	357
122	19	37	<.1	.87	<.005	3.3	--	--	--	--	359
24	13	3.0	<.1	.64	.03	--	--	--	--	--	371
60	11	3.0	<.1	.70	.01	--	--	--	--	--	372
90	18	6.0	.1	.50	<.005	--	--	--	--	--	376
90	17	5.0	.1	.58	<.005	--	--	--	--	--	377
104	16	6.0	<.1	.58	<.005	3.5	--	--	--	--	378
108	10	6.0	.1	<.04	<.005	--	--	--	--	--	380
86	14	9.0	.1	1.4	<.005	--	--	--	--	--	381
136	13	4.0	.2	<.04	.01	--	--	--	--	--	382
94	17	4.0	<.1	1.2	<.005	--	--	--	--	--	384
164	<10	3.0	.2	<.04	.01	--	--	--	--	--	388
470	13	92	1.0	<.04	<.005	25	--	27.5	<.5	<.5	389
462	13	71	1.0	<.04	.01	--	<2	56.8	<.5	<.5	
116	12	10	.2	.22	<.005	3.9	--	<.5	<.5	<.5	390
116	19	23	.2	<.04	.01	3.5	--	<.5	<.5	<.5	391
80	15	22	<.1	.82	<.002	5.6	--	<.5	<.5	<.5	392
26	15	11	<.1	1.2	.01	1.5	--	<.5	<.5	<.5	393
32	13	<10	<.1	1.1	.01	1.3	--	<.5	<.5	<.5	394
82	12	4.0	.4	.04	<.005	4.1	--	<.5	<.5	<.5	395
12	14	14	.2	4.0	.01	2.7	--	--	--	--	396
224	24	88	.3	<.04	.01	8.8	6	.2	<.5	<.5	401
52	12	17	<.1	.73	<.002	5.7	--	<.5	<.5	<.5	405
144	16	32	.4	<.04	<.002	7.1	--	--	--	--	406
104	19	6.0	<.1	.98	<.002	5.8	--	--	--	--	407
102	20	6.0	<.1	.74	<.002	6.8	--	--	--	--	408
128	16	3.0	<.1	.04	<.002	7.1	--	<.5	<.5	<.5	409
90	22	6.0	<.1	1.3	<.002	6.3	--	--	--	--	410
106	18	2.0	.4	<.04	<.005	6.6	--	--	--	--	411
122	22	18	.2	.66	.01	11	--	--	--	--	412
98	11	6.0	<.1	<.04	.02	5.6	--	--	--	--	413
94	22	9.0	<.1	1.8	.01	5.7	--	--	--	--	414
106	12	3.0	.4	.14	.05	--	--	--	--	--	422
66	14	2.0	.2	<.04	.01	--	--	--	--	--	423
116	12	20	.3	<.04	.04	--	--	--	--	--	424
268	15	28	.6	<.04	.05	--	--	--	--	--	425
186	16	10	.8	<.04	.02	11	9	3	<.5	<.5	426
128	21	2.0	.3	<.04	<.005	7.8	4	<.5	<.5	<.5	427
108	25	3.0	.2	<.04	.01	--	--	--	--	--	428
168	20	6.0	.3	<.04	.01	9.3	2	<.5	<.5	<.5	429
48	17	2.0	.2	.28	<.005	3.6	--	<.5	<.5	<.5	430
136	23	6.0	.4	.04	<.005	6.3	--	<.5	<.5	<.5	431
72	22	6.0	.2	1.2	<.005	3.2	--	<.5	<.5	<.5	432
66	14	62	.2	4.0	.01	4.5	3	<.5	<.5	<.5	445

Table 7. Major constituents and organic compounds in water from wells and springs in Warren County—Continued

USGS well or spring number	Date of sample	Hydro-geologic unit	Field specific conduc-tance (µS/cm)	Dissolved solids (residue at 105 °C)	Field pH (units)	Total hard-ness ($CaCO_3$)	Dissolved calcium (Ca)	Dissolved magnesium (Mg)	Dissolved sodium (Na)	Dissolved potassium (K)
Wr-452	8/14/86	341VNNG	510	402	5.7	210	59	15	11	2
453	8/14/86	341VNNG	320	192	6.8	89	25	8.7	25	2
454	8/14/86	341VNNG	345	210	7.1	110	30	10	21	3
455	8/14/86	341CDKN	675	388	6.9	130	34	12	90	3
456	8/19/86	341CDKN	430	246	6.7	140	40	14	23	3
459	8/19/86	341CDKN	510	300	7.0	220	56	23	8.7	5
460	8/19/86	341CDKN	*500	338	*7.0	230	63	23	8.6	3
461	8/19/86	341CDKN	575	320	6.7	160	50	14	39	2
462	8/19/86	341CDKN	570	332	7.6	25	9.9	3.3	110	1
463	8/19/86	341VNNG	235	154	6.6	94	25	8.5	4.1	2
464	8/19/86	112OTSH	450	280	6.9	140	39	14	39	2
465	8/20/86	341VNNG	205	144	6.2	83	24	6.7	3.9	2
471	8/20/86	341VNNG	455	256	6.6	160	49	15	19	4
485	12/01/86	341VNNG	215	94	7.0	82	17	8.9	7.3	2
492	8/18/87	341VNNG	390	212	5.9	83	23	6.4	35	2
494	10/01/86	341VNNG	515	278	6.3	100	31	9.8	58	5
	12/04/86	341VNNG	480	366	6.1	110	30	9.6	58	4
498	10/01/86	337CYHG	135	84	5.8	45	4.0	4.3	2.2	2
500	6/05/85	341CDKN	290	164	6.8	110	25	9.4	9.8	3
501	6/06/85	112OTSH	180	100	7.0	62	17	4.1	4.9	2
502	6/24/85	324PSVL	80	42	4.2	12	2.3	1.1	2.3	1
	6/18/86	324PSVL	95	48	3.8	23	3.1	1.5	3.0	2
503	6/26/85	341RCVL	215	138	6.9	110	24	10	3.0	1
505	6/27/85	112OTSH	455	266	7.6	150	42	9.4	19	1
	7/24/85	112OTSH	455	332	7.6	160	48	10	22	1
506	6/26/85	112OTSH	550	358	7.4	200	68	18	46	2
	8/29/85	112OTSH	270	354	7.5	220	58	16	41	1
507	6/26/85	341CDKN	400	226	7.5	160	45	15	16	2
508	6/26/85	341VNNG	250	170	6.0	120	30	9.5	15	2
509	6/26/85	112DRFT	260	194	6.0	140	37	8.6	4.6	1
510	6/27/85	341CDKN	210	130	6.1	89	25	5.0	2.2	1
511	6/27/85	112DRFT	260	192	5.7	85	60	14	11	1
513	7/23/85	341CRGS	455	310	7.4	120	29	10	54	2
514	7/23/85	341CRGS	550	308	7.2	110	30	9.3	60	1
515	9/05/85	112ICCC	230	83	8.2	83	76	16	220	.1
516	9/05/85	112OTSH	520	376	7.1	190	44	9.4	18	.1
517	9/05/85	341CDKN	520	278	7.5	140	29	8.1	37	.1
519	9/05/85	341CDKN	610	430	7.1	240	51	13	10	.1
520	10/09/85	112OTSH	750	388	7.0	180	65	13	39	2
	10/09/85	112OTSH	750	376	7.0	180	61	13	37	2
	7/29/87	112OTSH	440	--	6.9	170	43	9.1	30	2
	8/25/88	112OTSH	520	376	6.2	160	58	13	39	2
522	11/05/85	112OTSH	450	270	7.4	140	31	9.4	24	1
533	7/16/86	341CDKN	150	100	6.8	50	13	4.8	6.6	.8
534	7/16/86	341CDKN	140	92	6.8	27	6.4	2.3	17	.7
535	7/17/86	341CDKN	305	178	7.6	66	20	5.3	26	2
536	7/17/86	341CDKN	*629	396	6.7	230	58	27	40	3
	9/09/87	341CDKN	630	386	7.2	240	49	26	41	3
541	11/19/87	341RCVL	1,450	1,030	6.8	80	23	6.8	380	5
543	5/21/86	112OTSH	360	224	6.4	120	39	6.8	17	3

Table 7. *Major constituents and organic compounds in water from wells and springs in Warren County—Continued*

Alkalinity ($CaCO_3$)	Dissolved sulfate (SO_4)	Dissolved chloride (Cl)	Total fluoride (F)	Total nitrate (NO_3 as N)	Total ortho-phosphorus (P)	Total organic carbon	Total oil and grease	Dissolved gasses			USGS well or spring number
								Methane	Ethane	Propane	
98	42	45	0.3	11	0.01	9.3	<2	<0.5	<0.5	<0.5	Wr-452
144	13	2.0	.3	<.04	.02	8.6	<2	<.5	<.5	<.5	453
158	14	3.0	.4	<.04	.02	9.7	<2	<.5	<.5	<.5	454
246	12	51	.3	<.04	.02	12	4	3.5	<.5	<.5	455
192	12	8.0	.3	<.04	.02	4.2	<2	.9	<.5	<.5	456
194	22	26	.3	.04	.01	4.9	<2	<.5	<.5	<.5	459
208	37	18	.2	.04	.01	4.2	5	<.5	<.5	<.5	460
140	26	82	.3	.16	.01	4.3	4	<.5	<.5	<.5	461
226	47	3.0	.4	<.04	.01	3.0	3	<.5	<.5	<.5	462
96	15	3.0	.2	<.04	.01	3.0	3	<.5	<.5	<.5	463
192	23	15	.4	<.04	.06	5.6	4	<.5	<.5	<.5	464
84	16	2.0	.2	.04	.01	1.7	--	<.5	<.5	<.5	465
208	21	2.0	.3	<.04	.03	4.6	--	<.5	<.5	<.5	471
100	11	2.0	.3	.08	.01	6.3	2	<.5	<.5	<.5	485
132	<10	34	.2	<.04	.01	<1.0	<2	1.0	<.5	<.5	492
250	<10	6.0	.4	<.04	.01	9.4	<2	6.5	<.5	<.5	494
248	10	6.0	.3	<.04	.01	4.6	4	7.5	<.5	<.5	
18	<10	19	<.1	<.04	.01	3.0	<2	<.5	<.5	<.5	498
106	33	3.0	.2	<.04	<.005	--	--	--	--	--	500
60	<10	10	<.1	.29	<.005	--	--	--	--	--	501
2	300	12	<.1	.20	<.005	--	--	--	--	--	502
2	<10	17	<.1	.48	<.005	3.6	--	--	--	--	
66	36	7.0	.1	1.7	.01	--	--	--	--	--	503
114	30	60	.1	<.04	<.005	3.4	--	--	--	--	505
112	15	78	.1	.94	.01	2.6	--	--	--	--	
224	33	66	7.	<.04	.01	8.4	--	--	--	--	506
226	11	88	.2	<.04	.04	5.2	--	--	--	--	
7	38	5.0	.2	<.04	.01	6.1	--	--	--	--	507
130	30	6.0	.3	<.04	.02	1.9	--	--	--	--	508
88	43	6.0	<.1	4.2	.01	--	--	--	--	--	509
84	25	<1	.1	.52	.01	--	--	--	--	--	510
40	29	22	.2	6.6	.01	2.9	--	--	--	--	511
204	14	13	.3	<.04	<.005	--	--	--	--	--	513
200	<10	29	.4	<.04	.01	6.2	--	--	--	--	514
110	<10	2.0	<.1	<.04	.02	2.8	--	--	--	--	515
110	20	63	<.1	3.8	.03	--	--	--	--	--	516
128	21	60	.1	.67	.01	5.5	--	--	--	--	517
102	24	120	<.1	<.04	<.005	3.9	--	--	--	--	519
124	25	150	.1	<.40	.03	5.1	--	.3	--	--	520
122	10	150	<.1	<.04	.02	4.9	--	.3	<.5	<.5	
136	<10	110	<.1	7.6	.01	--	2	.3	<.5	<.5	
136	28	98	<.1	<.04	.08	<1.0	--	--	--	--	
148	38	27	.2	<.04	<.005	3.9	--	<.5	--	--	522
64	<10	3.0	.2	.04	.03	4.0	<2	--	--	--	533
48	<10	7.0	.2	1.5	.01	--	<2	--	--	--	534
126	<10	4.0	.2	<.04	.03	7.0	<2	--	--	--	535
256	80	14	.2	2.0	.01	10	2	--	--	--	536
264	86	4.0	.4	<.04	<.005	<1.0	<2	<.5	<.5	<.5	
412	15	370	.8	<.04	.01	<1.0	--	21.5	<.5	<.5	541
88	30	27	.1	3.6	.04	11	5	--	--	--	543

Table 7. *Major constituents and organic compounds in water from wells and springs in Warren County—Continued*

USGS well or spring number	Date of sample	Hydro-geologic unit	Field specific conduc-tance (µS/cm)	Dissolved solids (residue at 105 °C)	Field pH (units)	Total hard-ness ($CaCO_3$)	Dissolved calcium (Ca)	Dissolved magnesium (Mg)	Dissolved sodium (Na)	Dissolved potassium (K)
Wr-543	8/18/86	112OTSH	115	232	6.4	100	30	7.1	19	2
544	5/21/86	341DVNNU	355	220	6.5	110	38	6.3	17	2
	6/02/86	341DVNNU	480	272	7.2	39	13	3.6	77	4
545	6/04/86	324PSVL	*48	40	4.7	16	4.6	1.1	1.0	.6
546	6/04/86	324PSVL	*31	42	4.5	<10	1.6	1.1	4	1
547	6/04/86	112OTSH	540	342	6.6	230	73	15	14	1
549	6/18/86	341DVNNU	250	156	6.9	58	17	4.3	31	1
554	6/19/86	112OTSH	540	366	7.1	230	68	17	13	1
556	7/16/86	341CDKN	220	146	7.1	81	26	6.5	8.9	1
557	7/23/86	341DVNNU	305	218	6.2	56	16	4.6	45	2
558	7/23/86	341DVNNU	235	154	6.2	63	18	.7	22	2
559	7/23/86	341DVNNU	240	170	6.3	83	22	7.5	13	23
560	7/23/86	341DVNNU	190	150	7.8	<10	2.3	.5	42	2
561	8/07/86	341VNNG	560	454	7.7	20	6.3	1.6	160	2
	11/04/86	341VNNG	760	418	8.2	21	7.9	2.2	170	2
	7/23/87	341VNNG	760	402	8.2	20	6.5	1.8	150	2
563	8/14/86	341VNNG	170	166	7.1	82	22	7.1	19	2
564	8/14/86	341VNNG	270	284	7.4	56	17	5.1	80	2
565	8/14/86	112ALVM	100	112	6.7	67	18	6.3	5.2	1
566	8/20/86	341VNNG	170	264	7.2	160	44	18	17	5
567	8/20/86	341VNNG	160	200	7.1	130	33	14	11	3
568	8/20/86	112OTSH	225	202	7.2	140	48	7.5	10	.9
	7/29/87	112OTSH	390	466	5.0	160	46	7.7	14	1
568	7/29/87	112OTSH	390	248	6.5	160	46	7.7	14	1
569	8/21/86	112ALVM	260	308	7.4	110	33	9.2	62	2
570	8/27/86	341DVNNU	260	230	7.1	89	23	8.2	15	4
571	8/28/86	112ALVM	350	174	6.8	94	26	6.4	5.4	3
572	8/28/86	112CLVM	340	310	7.1	100	26	9.7	37	2
573	9/08/86	341DVNNU	*215	130	*6.8	44	13	8.4	37	15
	7/22/87	341DVNNU	270	186	8.2	80	19	6.6	18	2
574	9/09/86	341DVNNU	560	612	6.9	170	78	6.8	16	3
	9/09/86	341DVNNU	*7,500	3,980	7.3	150	46	7.7	1,600	5
575	8/18/87	112ALVM	140	126	6.5	40	8.0	3.9	4.6	1
576	8/05/87	112ALVM	--	--	--	--	--	--	--	--
577	8/27/87	112ALVM	--	--	--	--	--	--	--	--
578	6/17/87	341VNNG	395	250	6.7	110	26	8.3	51	2
579	7/30/87	341VNNG	270	396	7.4	86	21	6.6	22	2
580	9/11/86	341DVNNU	320	192	6.4	130	27	18	6.8	4
	9/11/86	341DVNNU	370	234	5.9	120	26	17	23	3
581	9/24/86	341VNNG	300	158	6.7	42	12	4.1	37	1
582	9/24/86	341CDKN	650	350	6.9	130	36	10	86	4
	8/12/87	341CDKN	630	354	7.3	130	35	9.8	87	4
584	10/15/87	341VNNG	185	134	7.2	71	16	5.9	10	1
585	10/21/86	341VNNG	390	256	7.7	120	32	10	50	4
586	11/05/86	341DVNNU	1,300	1,800	7.0	240	72	14	530	5
	11/05/86	341DVNNU	3,400	10,870	6.9	1,800	650	120	3,200	17
	11/05/86	341DVNNU	7,000	91,180	5.7	--	7,200	1,400	--	170
	7/23/87	341DVNNU	--	--	*5.7	--	6,900	1,300	--	87
587	11/06/86	341DVNNU	700	556	7.3	130	8.2	2.1	200	4
	11/06/86	341DVNNU	780	532	8.4	28	5.4	1.5	210	2

Table 7. *Major constituents and organic compounds in water from wells and springs in Warren County—Continued*

Alkalinity ($CaCO_3$)	Dissolved sulfate (SO_4)	Dissolved chloride (Cl)	Total fluoride (F)	Total nitrate (NO_3 as N)	Total ortho-phosphorus (P)	Total organic carbon	Total oil and grease	Dissolved gasses			USGS well or spring number
								Methane	Ethane	Propane	
88	35	8.0	0.2	0.84	0.06	3.2	<2	<0.5	<0.5	<0.5	Wr-543
84	30	27	<.1	3.6	.02	3.7	--	--	--	--	544
174	<10	19	.5	.32	.04	--	--	--	--	--	
8	<10	2.0	<.1	1.1	.02	--	<2	--	--	--	545
8	<10	1.0	<.1	.16	<.005	--	<2	--	--	--	546
210	22	38	<.1	1.1	.01	--	<2	--	--	--	547
118	<10	9.0	.3	<.04	.06	5.6	<2	--	--	--	549
168	58	29	.1	.96	.01	7.2	--	--	--	--	554
100	<10	2.0	.2	<.04	.18	5.1	3	--	--	--	556
130	13	24	.2	<.04	.02	11	<2	6.5	<.5	<.5	557
116	13	7.0	.2	<.04	.01	9.5	<2	1.5	1.5	1.0	558
98	23	10	.7	<.04	.01	8.3	2	1.5	<.5	<.5	559
86	14	8.0	<.1	<.04	.25	7.8	<2	21.0	12.5	4.5	560
272	18	57	.8	<.04	.01	15	5	<.5	<.5	<.5	561
292	23	78	.8	<.04	.02	7.1	<2	2.0	<.5	<.5	
288	12	46	.9	<.04	.02	1.6	7	1.5	<.5	<.5	
116	10	6.0	.3	14	.05	6.7	<2	.6	<.5	<.5	563
148	10	48	.3	<.04	.10	8.1	2	13.0	.8	.2	564
86	11	3.0	.2	<.04	.11	5.4	<2	.1	<.5	<.5	565
152	27	8.0	.3	<.04	<.005	3.1	2	<.5	<.5	<.5	566
148	25	5.0	.3	.04	<.005	2.6	3	<.5	<.5	<.5	567
138	25	18	.2	.42	<.005	2.0	3	<.5	<.5	<.5	568
140	28	26	<.1	.78	.01	--	<2	<.5	<.5	<.5	
140	29	26	<.1	.76	.01	--	<2	<.5	<.5	<.5	568
204	22	33	.3	.04	.07	3.0	3	17.0	.6	<.5	569
140	15	4.0	.3	<.04	.02	90	2,000	--	--	--	570
108	<10	4.0	.2	<.04	.04	22	10	28.0	14.5	6.5	571
166	<10	18	.3	<.04	.06	8.4	2	40.5	13.0	4.5	572
94	31	13	<.1	<.04	.51	29	91	49.5	20.5	8.5	573
126	<10	5.0	.1	<.04	.02	11	--	19.0	9.0	4.0	
12	20	220	<.1	<.04	.02	11	5	35.0	<.5	<.5	574
68	18	2,500	.3	<.04	.11	8.6	14	63.0	1.5	.5	
58	<10	2.0	<.1	<.04	.07	<1.0	<2	<.5	<.5	<.5	575
--	--	--	--	--	--	--	--	3.5	<.5	<.5	576
--	--	--	--	--	--	--	--	6.0	<.5	<.5	577
180	12	23	.3	.04	.01	<1.0	<2	18.5	<.5	<.5	578
128	<10	11	.3	<.04	.02	--	2	11.0	<.5	<.5	579
80	25	92	.1	<.04	.01	81	120	5.5	<.5	<.5	580
98	20	88	<.1	<.04	.01	58	88	10.5	<.5	<.5	
106	46	9.0	.4	.06	.06	7.7	2	<.5	<.5	<.5	581
170	41	130	.2	<.02	.01	9.9	2	11.5	<.5	<.5	582
176	<10	140	.4	<.04	.02	14	4	13.5	<.5	<.5	
98	<10	3.0	.3	<.04	.09	<1.0	3	6.5	.2	<.5	584
236	27	10	.4	<.04	.01	11	<2	4.0	<.5	<.5	585
--	<10	1,000	1.2	<.24	.08	82	1,500	27.0	7.0	4.5	586
78	<10	6,600	7.4	<.04	.02	220	800	41.5	8.5	3.5	
16	210	64,600	62	<.24	.23	260	740	52.0	12.5	2.0	
20	190	53,000	<.1	<.04	.06	150	530	8.0	3.0	.6	
332	16	120	.7	<.04	.01	32	32	19.5	<.5	.1	587
354	10	130	.9	<.04	.01	14	23	8.5	<.5	<.5	

Table 7. Major constituents and organic compounds in water from wells and springs in Warren County—Continued

USGS well or spring number	Date of sample	Hydro-geologic unit	Field specific conduc-tance (µS/cm)	Dissolved solids (residue at 105 °C)	Field pH (units)	Total hard-ness ($CaCO_3$)	Dissolved calcium (Ca)	Dissolved magnesium (Mg)	Dissolved sodium (Na)	Dissolved potassium (K)
Wr-587	11/06/86	341DVNNU	950	800	8.3	20	4.3	1.2	220	2
	11/06/86	341DVNNU	27,500	39,980	6.3	5,900	2,700	530	–	69
589	12/04/86	341VNNG	360	262	6.0	120	29	12	24	3
590	12/04/86	341VNNG	490	376	6.1	87	24	7.2	71	4
591	6/04/87	341VNNG	285	178	7.0	88	22	7.6	24	2
593	5/28/87	341VNNG	1,550	1,440	6.5	480	140	28	130	3
594	6/04/87	341VNNG	285	170	7.0	87	23	7.9	25	2
	7/22/87	341VNNG	280	182	7.4	92	21	7.7	24	2
606	5/19/87	341OSWY	*22	46	5.3	11	1.4	.7	.7	1
610	7/16/87	337KNPP	85	94	6.8	30	4.8	3.5	1.7	.8
614	5/19/87	341OSWY	400	222	7.7	30	8.6	3.3	74	2
616	5/19/87	112CLVM	190	124	7.0	71	20	5.2	4.8	2
618	5/19/87	341VNNG	235	154	7.1	<10	.3	.1	50	.5
620	5/19/87	341VNNG	150	94	6.6	51	12	4.9	6.2	1
622	5/20/87	341OSWY	125	94	6.3	41	9.7	4.6	4.1	1
624	7/16/87	341VNNG	190	118	6.6	29	8.0	1.4	21	1
626	5/20/87	341VNNG	260	164	6.8	110	29	6.8	4.8	2
636	5/27/87	341VNNG	55	54	5.2	20	4.5	1.6	1.0	.5
639	11/18/87	112DRFT	400	266	8.1	69	19	5.2	71	1
640	5/21/87	341CDKN	435	240	7.1	180	43	15	15	2
648	5/21/87	341CDKN	365	218	7.3	130	31	11	23	2
664	5/27/87	341VNNG	240	146	6.4	98	25	9.7	4.6	2
666	5/27/87	341CDKN	340	202	5.3	110	27	10	27	2
668	5/27/87	341VNNG	290	180	6.3	130	33	14	6.6	2
674	5/27/87	112ICCC	320	234	6.2	130	39	9.8	7.8	1
676	5/28/87	341CDKN	320	208	6.8	140	36	11	9.4	1
682	5/28/87	112OTSH	200	130	6.6	76	22	4.7	3.1	.9
686	5/28/87	112OTSH	300	180	5.3	120	36	7.7	3.9	.9
688	6/01/87	112OTSH	360	216	5.4	160	44	13	7.1	1
694	6/01/87	341VNNG	415	256	5.6	180	46	18	9.6	3
696	6/02/87	341VNNG	410	326	6.3	190	46	17	4.8	3
700	10/01/86	337CYHG	165	112	6.1	68	12	6.9	5.7	2
705	10/02/86	337CBCR	270	146	6.0	110	29	9.3	6.9	2
706	10/02/86	112DRFT	150	80	5.8	35	4.8	3.1	11	3
710	6/02/87	341VNNG	310	–	6.3	98	25	8.9	20	2
711	6/02/87	341VNNG	325	226	5.7	66	19	6.0	34	2
713	6/02/87	337CBCR	200	120	5.4	81	21	6.9	2.0	.8
714	6/02/87	341VNNG	290	198	5.8	120	31	9.8	6.3	1
715	6/02/87	112DRFT	580	350	5.8	200	52	19	34	2
716	6/02/87	112OTSH	310	268	5.9	130	34	7.8	6.8	1
718	6/03/87	341VNNG	380	314	7.1	140	34	12	16	3
719	6/03/87	341CDKN	830	464	7.3	38	11	2.9	170	2
720	6/09/87	341VNNG	310	194	6.7	140	37	12	4.4	2
723	6/10/87	341CDKN	330	132	6.8	78	21	6.9	38	2
725	6/10/87	341CDKN	440	160	6.3	170	42	16	16	2
726	6/10/87	341VNNG	380	270	6.4	170	35	21	12	3
729	6/10/87	112DRFT	340	218	5.9	160	45	12	5.3	1
730	6/11/87	341VNNG	370	248	5.6	170	42	20	9.0	2
731	6/11/87	341VNNG	340	244	5.6	140	34	18	7.2	2
733	6/11/87	112OTSH	335	206	5.6	88	26	8.5	35	1

Table 7. *Major constituents and organic compounds in water from wells and springs in Warren County—Continued*

Alkalinity ($CaCO_3$)	Dissolved sulfate (SO_4)	Dissolved chloride (Cl)	Total fluoride (F)	Total nitrate (NO_3 as N)	Total ortho-phosphorus (P)	Total organic carbon	Total oil and grease	Dissolved gasses			USGS well or spring number
								Methane	Ethane	Propane	
340	10	140	0.9	<0.04	0.01	15	19	6.5	<0.5	<0.5	Wr-587
42	30	25,800	31	<.04	.09	46	71	41.5	11.5	4.5	
180	<10	5.0	.4	<.04	.01	4.2	<2	5.5	<.5	<.5	589
246	<10	10	.4	<.04	.01	5.1	5	9.5	<.5	<.5	590
146	10	6.0	.4	<.04	.01	<1.0	--	--	--	--	591
108	18	470	.6	.08	.01	<1.0	<2	<.5	<.5	<.5	593
148	11	6.0	.2	<.04	.01	<1.0	2	5.5	<.5	<.5	594
142	<10	6.0	.3	<.04	.02	2.3	8	5.5	<.5	<.5	
6	<10	1.0	<.1	.24	<.02	<1.0	2	<.5	<.5	<.5	606
20	18	6.0	.1	.76	.01	1.2	5	<.5	<.5	<.5	610
178	12	7.0	.6	<.04	<.02	<1.0	2	<.5	<.5	<.5	614
86	<10	<1	.1	<.04	<.02	1.0	2	<.5	<.5	<.5	616
100	<10	6.0	.2	<.04	.10	<1.0	2	11.0	1.3	<.5	618
68	12	6.0	<.1	<.04	.98	<1.0	<2	1.3	<.5	<.5	620
54	11	<1	.2	<.04	.03	<1.0	<2	<.5	<.5	<.5	622
10	17	34	<.1	.48	<.005	1.1	2	<.5	<.5	<.5	624
122	17	1.0	.2	.08	<.02	<1.0	<2	<.5	<.5	<.5	626
16	10	<1	<.1	.36	<.005	<1.0	<2	<.5	<.5	<.5	636
192	24	20	.6	<.04	.10	<1.0	--	<.5	<.5	<.5	639
208	26	3.0	.2	<.04	<.02	<1.0	3	<.5	<.5	<.5	640
160	32	3.0	.3	<.04	<.02	<1.0	<2	<.5	<.5	<.5	648
114	11	2.0	.2	<.04	.01	<1.0	<2	<.5	<.5	<.5	664
142	20	9.0	.3	<.04	.01	<1.0	3	<.5	<.5	<.5	666
132	18	2.0	.2	.14	<.005	<1.0	<2	<.5	<.5	<.5	668
142	23	3.0	.2	<.04	<.005	<1.0	<2	<.5	<.5	<.5	674
142	30	1.0	.2	<.04	<.005	1.4	<2	<.5	<.5	<.5	676
60	19	5.0	<.1	1.7	<.005	<1.0	<2	<.5	<.5	<.5	682
104	22	10	<.1	1.3	<.005	<1.0	<2	<.5	<.5	<.5	686
150	29	11	.2	.28	.01	<1.0	<2	<.5	<.5	<.5	688
202	17	<1	.2	<.04	.01	<1.0	<2	<.5	<.5	<.5	694
184	15	10	.2	<.04	.01	<1.0	<2	<.5	<.5	<.5	696
70	<10	<1	.4	.06	.01	5.3	<2	<.5	<.5	<.5	700
118	<10	1.0	.3	.06	.01	6.1	2	<.5	<.5	<.5	705
8	<10	27	.1	.52	.01	2.4	3	--	--	--	706
146	<10	<1	.4	<.04	.01	<1.0	2	<.5	<.5	<.5	710
154	11	10	.4	<.04	.01	<1.0	<2	<.5	<.5	<.5	711
70	15	3.0	.1	1.6	.01	<1.0	<2	<.5	<.5	<.5	713
128	<10	4.0	.2	<.04	.01	<1.0	<2	<.5	<.5	<.5	714
266	29	4.0	.4	<.04	.01	<1.0	<2	<.5	<.5	<.5	715
122	19	9.0	.2	.14	.01	<1.0	<2	<.5	<.5	<.5	716
152	23	6.0	.3	.33	.01	<1.0	<2	<.5	<.5	<.5	718
262	26	81	.6	<.04	.01	<1.0	--	<.5	<.5	<.5	719
132	25	4.0	.3	.04	.01	<1.0	<2	<.5	<.5	<.5	720
156	15	4.0	.3	<.04	.01	1.3	<2	.8	<.5	<.5	723
136	28	38	.2	.07	<.005	<1.0	<2	<.5	<.5	<.5	725
188	15	2.0	.3	<.04	<.005	<1.0	<2	.2	<.5	<.5	726
152	22	3.0	.2	<.04	.01	<1.0	<2	<.5	<.5	<.5	729
176	21	<1	.3	<.04	<.005	<1.0	2	<.5	<.5	<.5	730
106	31	17	.3	<.04	.01	<1.0	3	<.5	<.5	<.5	731
148	11	3.0	.3	<.04	.65	<1.0	<2	<.5	<.5	<.5	733

Table 7. Major constituents and organic compounds in water from wells and springs in Warren County—Continued

USGS well or spring number	Date of sample	Hydro-geologic unit	Field specific conduc-tance (µS/cm)	Dissolved solids (residue at 105 °C)	Field pH (units)	Total hard-ness ($CaCO_3$)	Dissolved calcium (Ca)	Dissolved magnesium (Mg)	Dissolved sodium (Na)	Dissolved potassium (K)
Wr-733	7/21/87	112OTSH	290	182	7.3	92	23	7.6	30	1
	7/21/87	112OTSH	310	324	7.6	<10	.1	.04	84	.5
734	6/11/87	341CDKN	390	254	5.6	98	28	8.4	46	2
735	6/11/87	341CDKN	400	268	5.6	160	43	11	15	1
738	8/03/87	341RCVL	320	180	6.1	150	33	13	6.1	2
741	7/14/87	341VNNG	250	182	6.5	110	32	14	5.1	2
744	7/14/87	337CBCR	240	166	6.8	72	12	7.2	2.5	1
746	7/15/87	112DRFT	390	246	6.3	170	50	13	12	2
749	7/15/87	337CBCR	800	510	6.6	240	56	16	41	2
	7/30/87	337CBCR	800	662	7.1	250	19	4.3	230	3
750	7/15/87	112OTSH	300	210	6.2	120	33	5.8	4.2	.8
751	7/15/87	112OTSH	300	202	6.1	120	38	5.8	5.0	.9
755	7/16/87	112ICCC	400	246	6.7	160	44	13	9.7	1
755	7/16/87	112ICCC	400	254	6.7	160	44	13	10	1
762	8/04/87	341CDKN	420	162	6.5	140	34	9.6	25	1
765	8/04/87	341CDKN	820	--	7.5	93	22	6.4	120	2
768	8/04/87	341RCVL	350	376	6.6	160	31	14	6.0	2
771	8/06/87	112CLVM	460	262	7.6	150	41	11	26	2
775	8/06/87	112ALVM	490	296	6.7	21	7.9	2.1	84	2
804	10/13/87	112OTSH	220	158	7.2	92	27	5.5	8.8	.6
809	11/17/87	112OTSH	410	274	7.0	86	24	6.4	62	1
810	8/18/87	112CLVM	310	194	7.6	110	28	5.8	6.1	2
811	8/18/87	337CBCR	200	118	5.8	77	22	2.6	2.5	.8
812	8/19/87	337CYHG	140	88	7.4	51	12	2.9	1.9	2
813	8/18/87	337SNNG	155	100	7.4	51	10	4.1	3.8	1
814	8/25/87	341VNNG	2,000	1,730	*6.7	540	140	38	570	5
Wr-SP-050	5/15/85	324PSVL	*30	38	5.6	<10	1.5	.9	.5	.4
SP-051	5/16/85	337SNNG	70	54	*6.1	12	3.4	1.3	3.2	.6
SP-052	5/29/85	324PSVL	*35	44	6.8	10	1.4	.9	1.3	.6
	5/29/85	324PSVL	*35	22	6.8	<10	1.3	.8	1.8	.7
	7/27/87	324PSVL	*30	30	4.1	12	1.5	1.0	1.4	.9
SP-053	5/29/85	324PSVL	*40	50	6.8	11	1.7	1.1	1.3	1
SP-054	5/29/85	324PSVL	<50	38	6.8	<10	1.3	.9	1.2	.8
	6/25/85	324PSVL	<50	36	4.7	<10	1.5	1.1	.7	.5
SP-055	6/26/85	341VNNG	104	78	7.0	41	7.9	3.3	7.5	.8
SP-056	6/26/85	341VNNG	248	156	6.5	86	20	7.2	11	1
SP-057	7/17/85	324PSVL	*35	--	*5.5	14	1.0	1.5	.7	.3
SP-058	7/17/85	324PSVL	*30	--	*5.4	<10	1.0	1.3	.3	.1
SP-059	8/07/85	112OTSH	229	224	6.3	91	22	4.5	13	.6
SP-060	10/09/85	337KNPP	60	72	6.4	18	4.3	1.8	2.0	.6
SP-061	10/10/85	341OSWY	112	102	6.2	36	9.6	3.7	2.5	.5
SP-062	10/10/85	337CYHG	*30	--	5.4	10	1.6	1.1	1.0	.6
SP-063	10/10/85	337KNPP	140	120	7.5	46	16	3.9	2.0	1
SP-064	10/10/85	337CBCR	305	192	7.5	80	25	5.9	16	1
SP-065	10/10/85	337KNPP	280	164	7.5	99	32	6.7	7.4	1
SP-066	11/07/85	337KNPP	82	154	6.1	23	5.4	2.5	1.3	.3
SP-067	11/07/85	337CYHG	*40	--	6.0	13	3.2	1.6	.7	.3
SP-068	11/07/85	341OSWY	170	120	7.0	52	15	5.0	4.9	.3
SP-069	11/07/85	324PSVL	*35	--	5.0	16	2.3	.9	.5	.3
SP-070	4/09/87	112OTSH	*33	2	*6.0	10	5.0	2.2	9.2	19

Table 7. *Major constituents and organic compounds in water from wells and springs in Warren County—Continued*

Alkalinity ($CaCO_3$)	Dissolved sulfate (SO_4)	Dissolved chloride (Cl)	Total fluoride (F)	Total nitrate (NO_3 as N)	Total ortho-phosphorus (P)	Total organic carbon	Total oil and grease	Dissolved gasses			USGS well or spring number
								Methane	Ethane	Propane	
146	33	6.0	0.3	<0.04	0.09	2.4	--	--	--	--	Wr-733
152	43	6.0	.3	<.04	1.1	<1.0	--	--	--	--	
178	22	6.0	.3	<.04	<.005	<1.0	<2	0.9	<0.5	<0.5	734
126	27	24	.2	1.7	<.005	<1.0	<2	<.5	<.5	<.5	735
140	44	5.0	.2	.15	.01	<1.0	3	<.5	<.5	<.5	738
114	19	4.0	.2	.46	.01	1.2	<2	<.5	<.5	<.5	741
64	16	21	.2	<.04	.01	2.5	<2	.1	<.5	<.5	744
200	23	2.0	.2	<.04	.01	1.1	5	<.5	<.5	<.5	746
136	16	170	.2	<.04	.01	1.4	4	2.5	<.5	<.5	749
132	13	170	.2	<.04	.01	--	<2	3.5	<.5	<.5	
110	28	8.0	<.1	1.9	.01	<1.0	4	<.5	<.5	<.5	750
110	24	7.0	<.1	1.6	.01	1.3	5	<.5	<.5	<.5	751
150	39	10	.2	.42	.01	3.1	3	<.5	<.5	<.5	755
150	33	10	.1	.42	<.005	1.6	2	--	--	--	755
102	42	62	.2	.34	.01	<1.0	4	<.5	<.5	<.5	762
190	33	130	.6	<.04	.01	2.2	--	2.5	<.5	<.5	765
136	48	4.0	.1	<.04	.01	<1.0	5	<.5	<.5	<.5	768
182	<10	27	.3	<.04	.01	1.1	2	.2	<.5	<.5	771
162	12	31	.4	<.04	.02	1.1	3	1.5	<.5	<.5	775
94	<10	14	.2	<.04	.16	<1.0	3	<.5	<.5	<.5	804
186	21	30	.4	.26	.04	<1.0	--	--	--	--	809
114	<10	19	.3	<.04	.02	<1.0	<2	1.0	<.5	<.5	810
72	17	3.0	<.1	.20	.01	<1.0	3	<.5	<.5	<.5	811
36	11	2.0	<.1	.38	<.005	1.7	3	<.5	<.5	<.5	812
28	<10	15	<.1	.36	.01	<1.0	3	<.5	<.5	<.5	813
248	<10	880	<.1	<.04	.02	51	170	14.0	<.5	<.5	814
4	<10	3.0	<.1	.74	<.005	--	--	--	--	--	Wr-SP-050
10	<10	11	<.1	.30	<.005	--	--	--	--	--	SP-051
4	<10	4.0	<.1	.12	<.002	--	--	--	--	--	SP-052
4	<10	4.0	<.1	.12	<.002	--	--	--	--	--	
4	12	4.0	<.1	.14	<.005	1.2	13	<.5	<.5	<.5	
4	<10	4.0	<.1	.68	<.002	--	--	--	--	--	SP-053
4	<10	3.0	<.1	.22	<.002	--	--	--	--	--	SP-054
2	35	2.0	<.1	.14	<.005	--	--	--	--	--	
36	26	5.0	.1	.22	.01	--	--	--	--	--	SP-055
40	31	31	<.1	.28	.02	--	--	--	--	--	SP-056
4	12	2.0	<.1	.28	<.005	--	--	--	--	--	SP-057
2	16	<1	<.1	.42	<.005	--	--	--	--	--	SP-058
28	42	35	<.1	.97	.01	--	--	--	--	--	SP-059
14	<10	2.0	<.1	.30	<.005	--	--	--	--	--	SP-060
30	<10	4.0	<.1	.44	.01	2.2	--	--	--	--	SP-061
2	<10	2.0	<.1	.24	<.002	--	--	--	--	--	SP-062
42	<10	2.0	<.1	1.2	.01	--	--	--	--	--	SP-063
118	<10	8.0	.1	.08	.01	--	--	--	--	--	SP-064
124	<10	2.0	.2	.06	<.002	--	--	--	--	--	SP-065
4	<10	8.0	<.1	.66	<.005	--	--	--	--	--	SP-066
6	<10	1.0	<.1	.16	<.005	--	--	--	--	--	SP-067
56	20	2.0	.2	.30	<.005	1.5	--	--	--	--	SP-068
2	10	1.0	<.1	.64	<.001	--	--	--	--	--	SP-069
6	<10	2.0	<.1	.10	<.005	--	--	--	--	--	SP-070

Table 7. *Major constituents and organic compounds in water from wells and springs in Warren County—Continued*

USGS well or spring number	Date of sample	Hydro-geologic unit	Field specific conduc-tance (μS/cm)	Dissolved solids (residue at 105 °C)	Field pH (units)	Total hard-ness ($CaCO_3$)	Dissolved calcium (Ca)	Dissolved magnesium (Mg)	Dissolved sodium (Na)	Dissolved potassium (K)
Wr-SP-071	5/28/87	112OTSH	240	150	5.9	99	30	7.4	5.0	0.8
	9/08/87	112OTSH	220	146	7.2	97	27	6.7	3.9	.9
SP-072	5/19/87	341OSWY	55	50	5.8	16	2.5	1.9	1.2	.9
SP-100	6/05/85	341VNNG	110	–	6.9	100	25	6.2	14	2
SP-101	6/05/85	341VNNG	127	80	7.3	45	9.8	4.8	4.4	.5
SP-102	6/05/85	341OSWY	135	82	7.0	47	10	4.0	5.2	.2
SP-103	6/05/85	337SNNG	<50	50	6.1	16	3.2	1.5	.4	.5
SP-104	6/06/85	341CRGS	120	82	7.3	36	7.6	3.6	5.9	.8
SP-105	6/06/85	337SNNG	220	118	4.2	20	3.1	2.1	21	.8
SP-106	6/06/85	324PSVL	70	46	4.4	13	2.3	1.4	3.5	.6
SP-107	6/06/85	324PSVL	<50	32	4.2	<10	1.8	.5	.2	.4
	11/07/85	324PSVL	62	66	5.0	13	1.6	.4	.4	.2
SP-108	6/24/85	324PSVL	63	32	5.5	<10	1.5	1.6	.3	.6
SP-109	6/25/85	324PSVL	75	52	4.4	<10	2.7	1.3	5.7	.4
SP-110	6/25/85	324PSVL	<50	40	5.0	<10	2.4	1.2	.9	.6
SP-111	6/25/85	324PSVL	<50	28	4.4	<10	2.1	1.1	.3	.6
SP-113	6/26/85	341VNNG	105	74	6.5	45	11	3.7	2.7	.9
SP-114	6/26/85	337KNPP	65	98	5.6	19	3.6	1.4	.9	.5
SP-115	6/26/85	337CYHG	*45	52	5.7	10	2.3	1.1	1.1	.5
SP-116	6/26/85	324PSVL	*40	32	4.6	<10	1.8	.9	.4	.7
SP-117	6/06/85	341CRGS	90	72	7.2	29	6.4	2.8	2.2	.7
SP-118	7/23/85	341OSWY	155	116	6.8	33	8.3	3.3	11	.7
SP-119	7/23/85	341CRGS	80	100	7.5	35	7.5	2.9	2.7	.5
SP-120	8/28/86	341VNNG	1,500	1,230	7.4	420	110	42	68	2
SP-121	9/04/85	341VNNG	300	164	7.4	89	16	6.4	13	.1
SP-123	4/09/86	112OTSH	1,100	678	*6.0	93	26	4.4	140	3
SP-124	6/19/86	341RCVL	265	174	6.8	83	21	6.8	22	3
	11/07/86	341RCVL	270	200	7.2	94	23	6.9	25	2
SP-125	6/19/86	324PSVL	*47	32	4.3	14	2.2	1.6	1.7	.9
SP-126	8/06/86	324PSVL	*49	54	4.1	10	2.2	1.0	3.0	1
SP-127	8/13/86	341CDKN	185	116	6.2	59	14	6.4	7.4	1
SP-128	9/09/86	337KNPP	190	128	7.7	79	21	6.8	8.2	2
SP-129	10/21/86	341VNNG	425	254	*7.8	110	28	11	58	3
	9/09/87	341VNNG	480	270	7.3	110	27	11	58	4
SP-130	7/10/86	341VNNG	175	150	6.8	53	13	5.9	13	2
SP-131	5/21/87	341RCVL	180	162	6.4	55	12	5.0	23	1
SP-132	7/27/87	324PSVL	*40	52	4.8	21	2.2	1.3	1.7	2
SP-133	8/27/87	337CBCR	120	–	7.3	51	8.6	4.2	2.4	2
SP-134	9/09/87	337KNPP	70	46	6.9	17	2.6	2.1	1.1	3

Table 7. *Major constituents and organic compounds in water from wells and springs in Warren County—Continued*

Alkalinity ($CaCO_3$)	Dissolved sulfate (SO_4)	Dissolved chloride (Cl)	Total fluoride (F)	Total nitrate (NO_3 as N)	Total ortho-phosphorus (P)	Total organic carbon	Total oil and grease	Dissolved gasses			USGS well or spring number
								Methane	Ethane	Propane	
102	20	3.0	<0.1	0.22	0.01	1.2	<2	<0.5	<0.5	<0.5	Wr-SP-071
98	24	2.0	<.1	.18	<.005	<1.0	<2	<.5	<.5	<.5	
10	<10	<1	<.1	.15	<.02	<1.0	<2	--	--	--	SP-072
86	22	37	.2	<.04	<.005	2.3	--	--	--	--	SP-100
42	<10	2.0	<.1	.29	.01	--	--	--	--	--	SP-101
50	10	2.0	.1	.09	.01	--	--	--	--	--	SP-102
12	<10	2.0	<.1	.09	<.005	--	--	--	--	--	SP-103
40	11	3.0	<.1	.55	<.005	--	--	--	--	--	SP-104
2	14	47	<.1	.49	<.002	--	--	--	--	--	SP-105
4	<10	11	<.1	.39	<.002	--	--	--	--	--	SP-106
2	<10	2.0	<.1	.39	<.002	--	--	--	--	--	SP-107
2	13	<1	.1	.36	<.001	--	--	--	--	--	
2	32	2.0	<.1	.06	<.005	--	--	--	--	--	SP-108
2	35	11	<.1	.22	<.005	--	--	--	--	--	SP-109
2	33	2.0	<.1	.43	<.005	--	--	--	--	--	SP-110
2	33	<1	<.1	.28	<.005	--	--	--	--	--	SP-111
28	30	4.0	<.1	.56	.01	--	--	--	--	--	SP-113
12	21	<1	<.1	1.2	.01	--	--	--	--	--	SP-114
2	24	3.0	<.1	.42	<.005	--	--	--	--	--	SP-115
2	22	<1	<.1	.36	<.005	--	--	--	--	--	SP-116
24	12	2.0	<.1	.57	<.005	--	--	--	--	--	SP-117
48	<10	4.0	.1	.46	<.005	1.2	--	--	--	--	SP-118
28	<10	6.0	.2	.30	<.005	35	--	--	--	--	SP-119
86	22	430	.1	.12	<.005	1.5	--	--	--	--	SP-120
50	15	40	<.1	.34	.02	--	--	--	--	--	SP-121
12	27	300	<.1	<.04	.07	--	--	--	--	--	SP-123
130	<10	8.0	.3	<.04	.01	9.5	60	--	--	--	SP-124
142	110	7.0	.3	<.04	.02	14	19	.6	<.5	<.5	
4	<10	6.0	<.1	.06	<.005	2.2	<2	--	--	--	SP-125
4	12	4.0	.2	.54	<.005	<1.0	<2	<.5	<.5	<.5	SP-126
60	20	5.0	.2	.42	.01	4.6	4	--	--	--	SP-127
88	25	3.0	.1	.04	.01	4.3	<2	--	--	--	SP-128
244	24	8.0	.4	<.04	.01	8.7	<2	7.5	<.5	<.5	SP-129
232	17	8.0	.4	<.04	<.005	<1.0	<2	7.5	<.5	<.5	
66	15	2.0	<.1	.60	<.005	--	--	--	--	--	SP-130
28	16	57	<.1	.74	<.02	<1.0	3	<.5	<.5	<.5	SP-131
4	13	4.0	<.1	.96	<.005	2.4	5	<.5	<.5	<.5	SP-132
42	13	2.0	<.1	.50	.02	7.8	2	3.5	.5	<.5	SP-133
6	21	1.0	<.1	1.4	<.005	<1.0	<2	<.5	<.5	<.5	SP-134

EXPLANATION FOR FIGURES 4a-4r

Road

60 Location of spring and county number

62 Location of spring sampled for water-quality analysis and county number

215 Location of water or oil/gas well and county number

205 Location of water or oil/gas well sampled for water-quality analysis and county number

127 Pennsylvania road-identification number

82 U.S. road-identification number

All wells and springs described in this report are in Warren County. For convenience, the prefix "Wr-" indicating Warren County has been omitted from well and spring numbers.

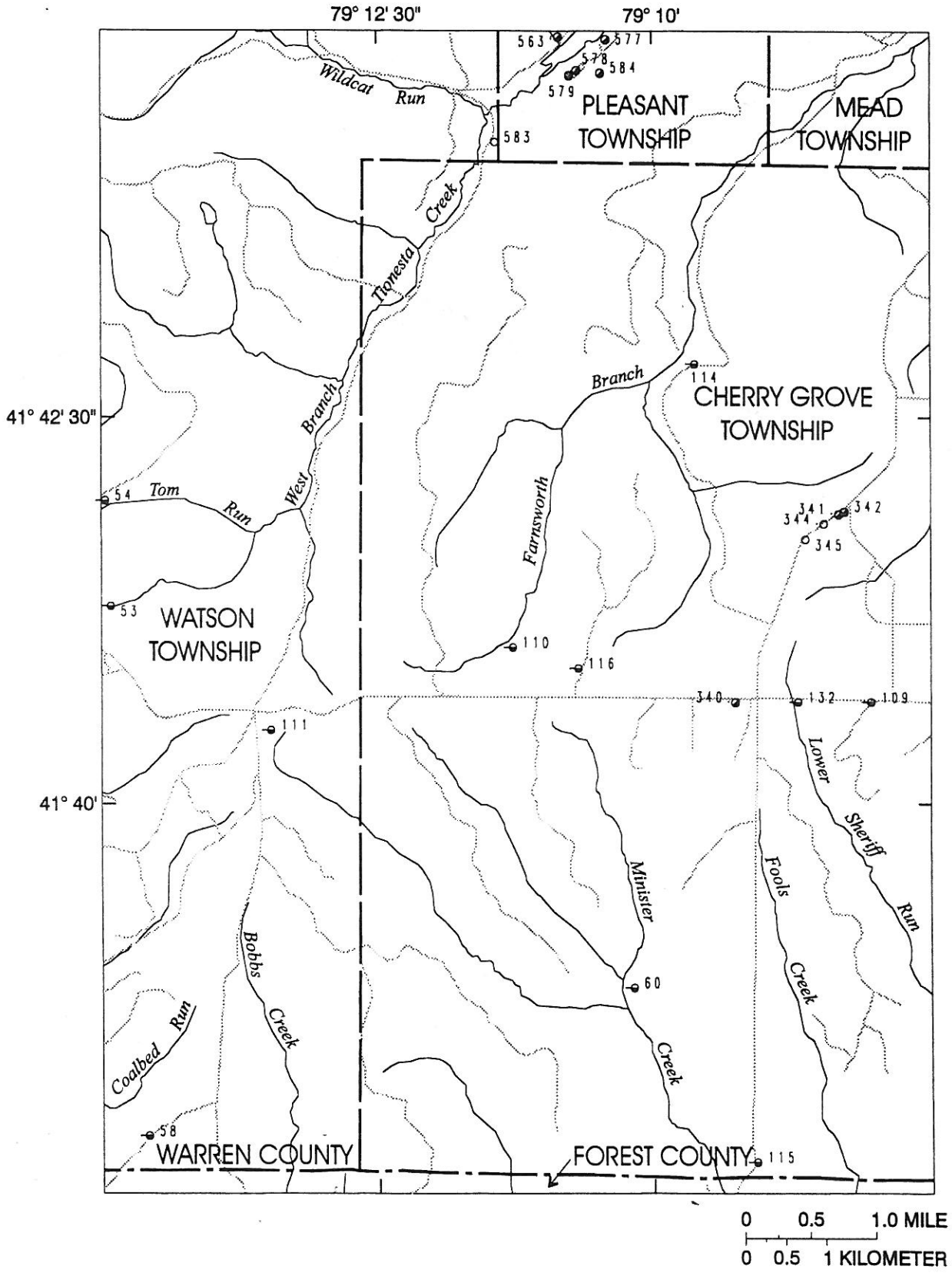

Figure 4a. Location of data-collection sites on Cherry Grove quadrangle.

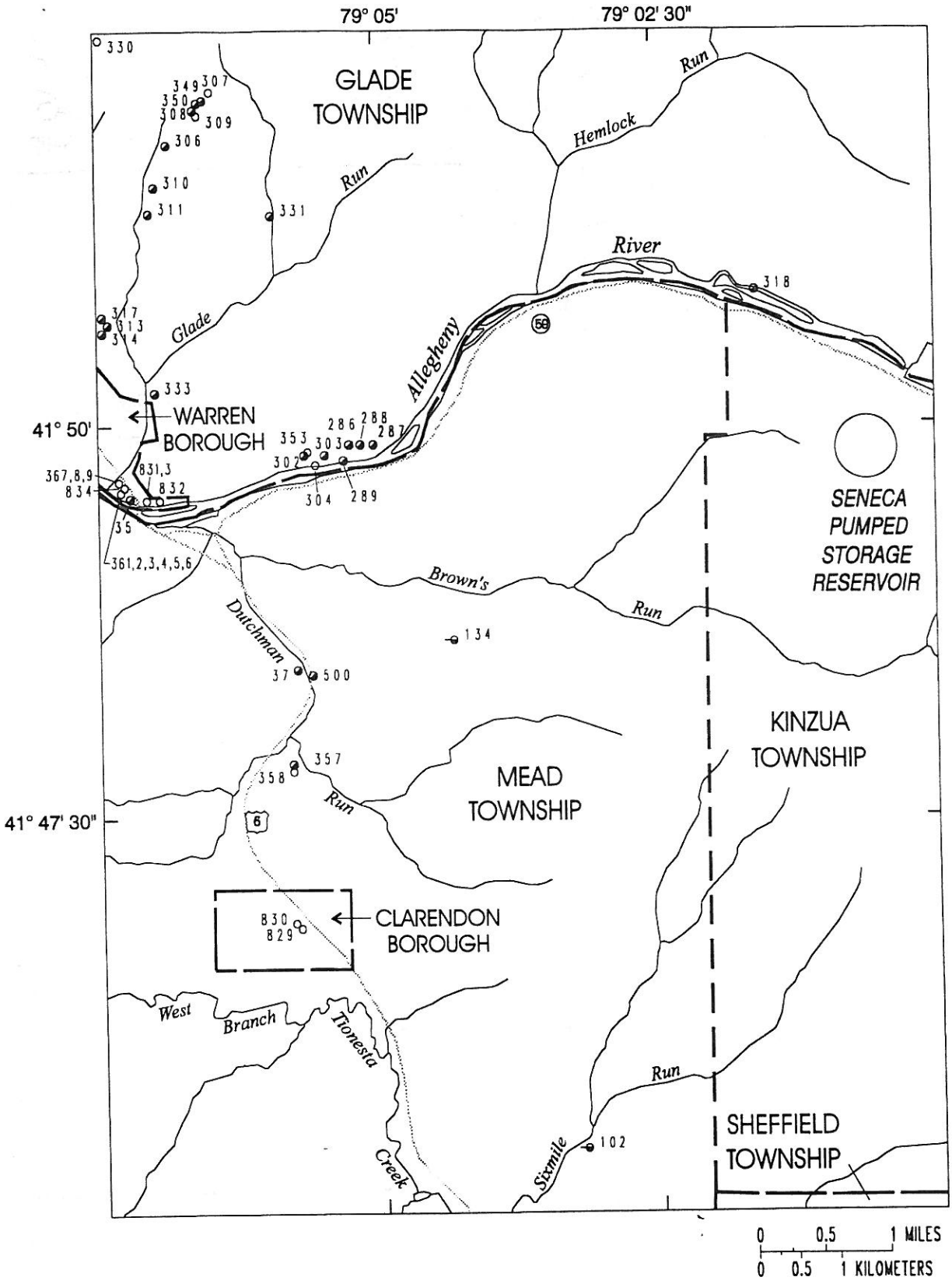

Figure 4b. Location of data-collection sites on Clarendon quadrangle.

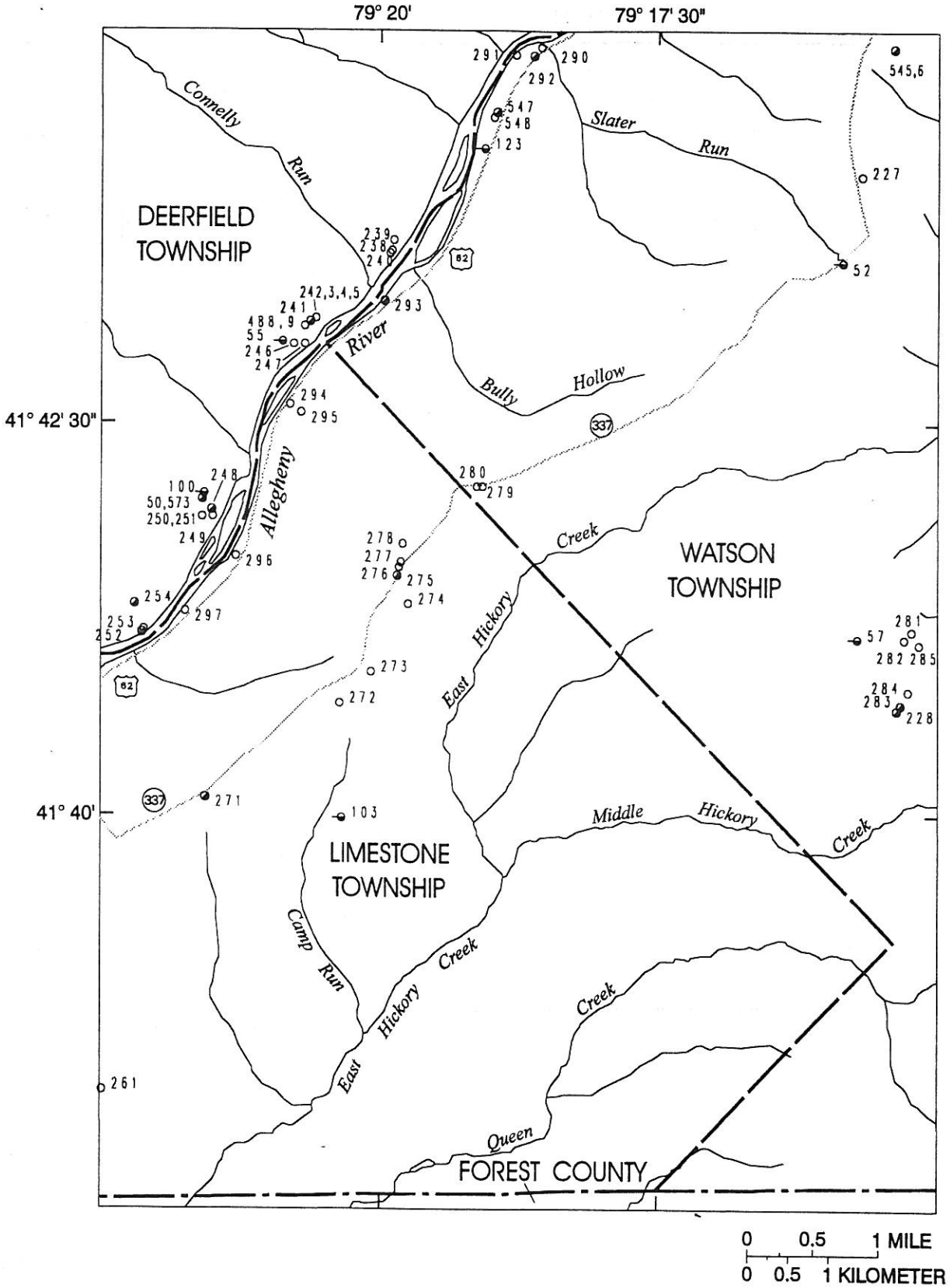

Figure 4c. Location of data-collection sites on Cobham quadrangle.

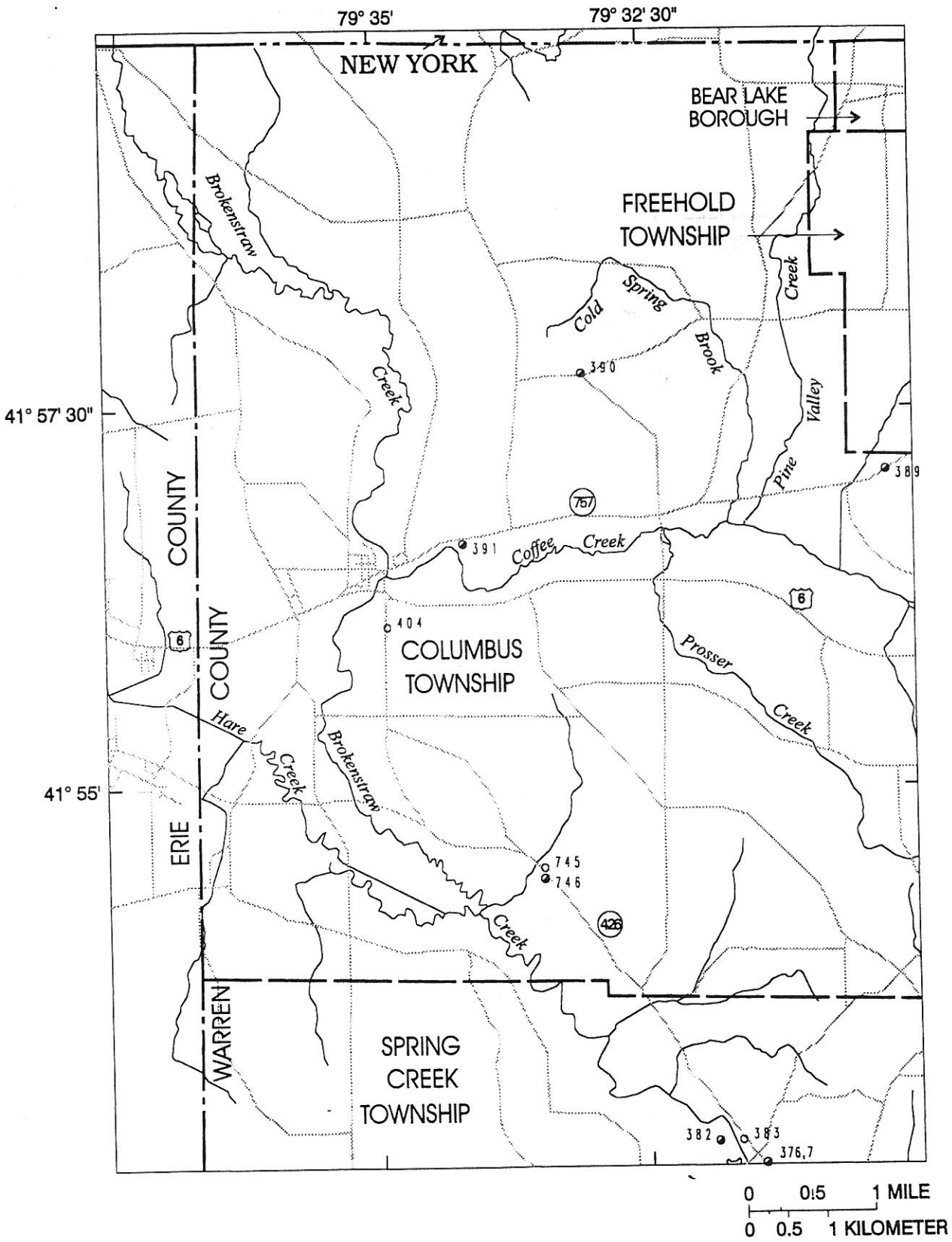

Figure 4d. Location of data-collection sites on Columbus quadrangle.

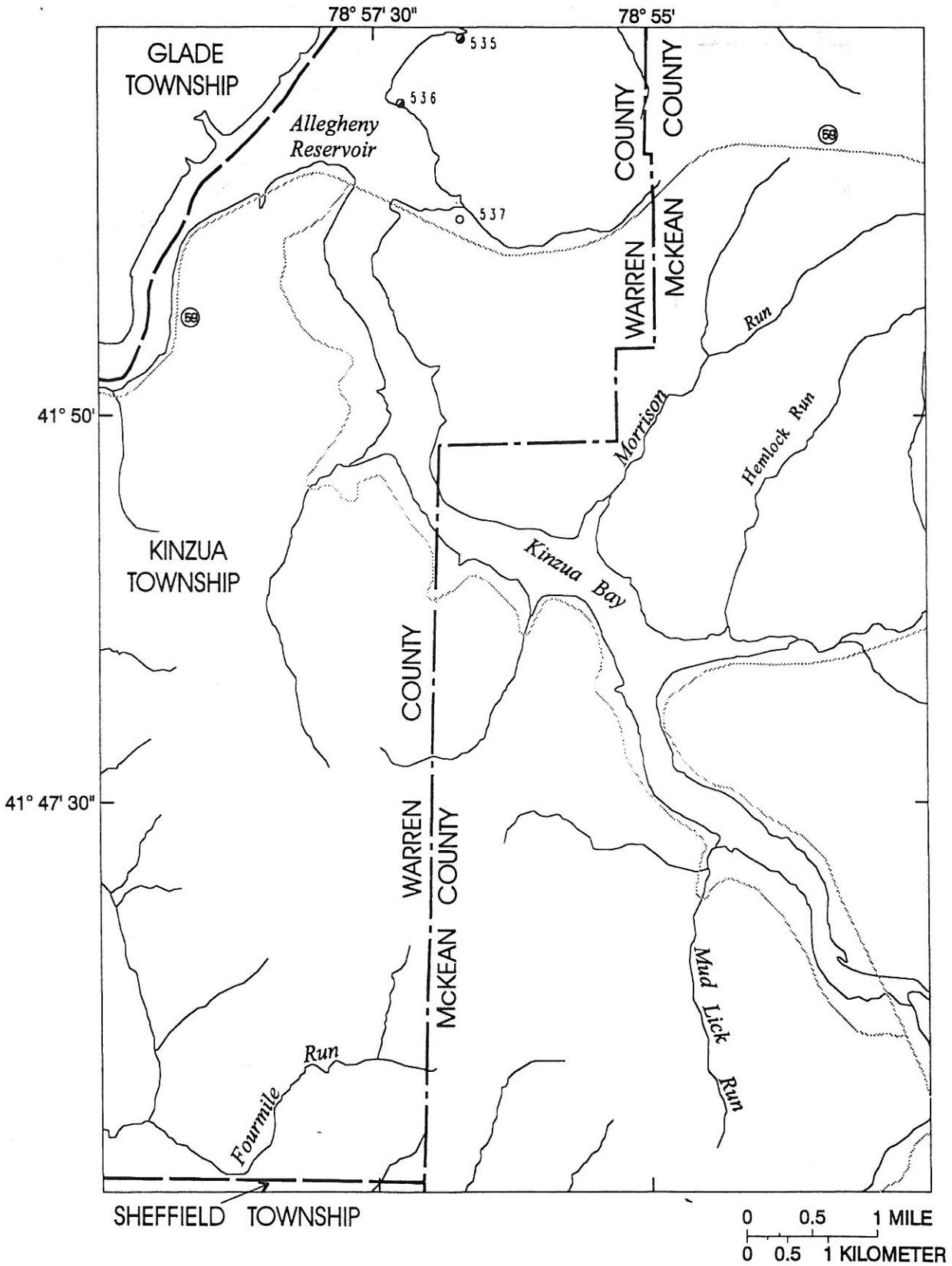

Figure 4e. Location of data-collection sites on Cornplanter Bridge quadrangle.

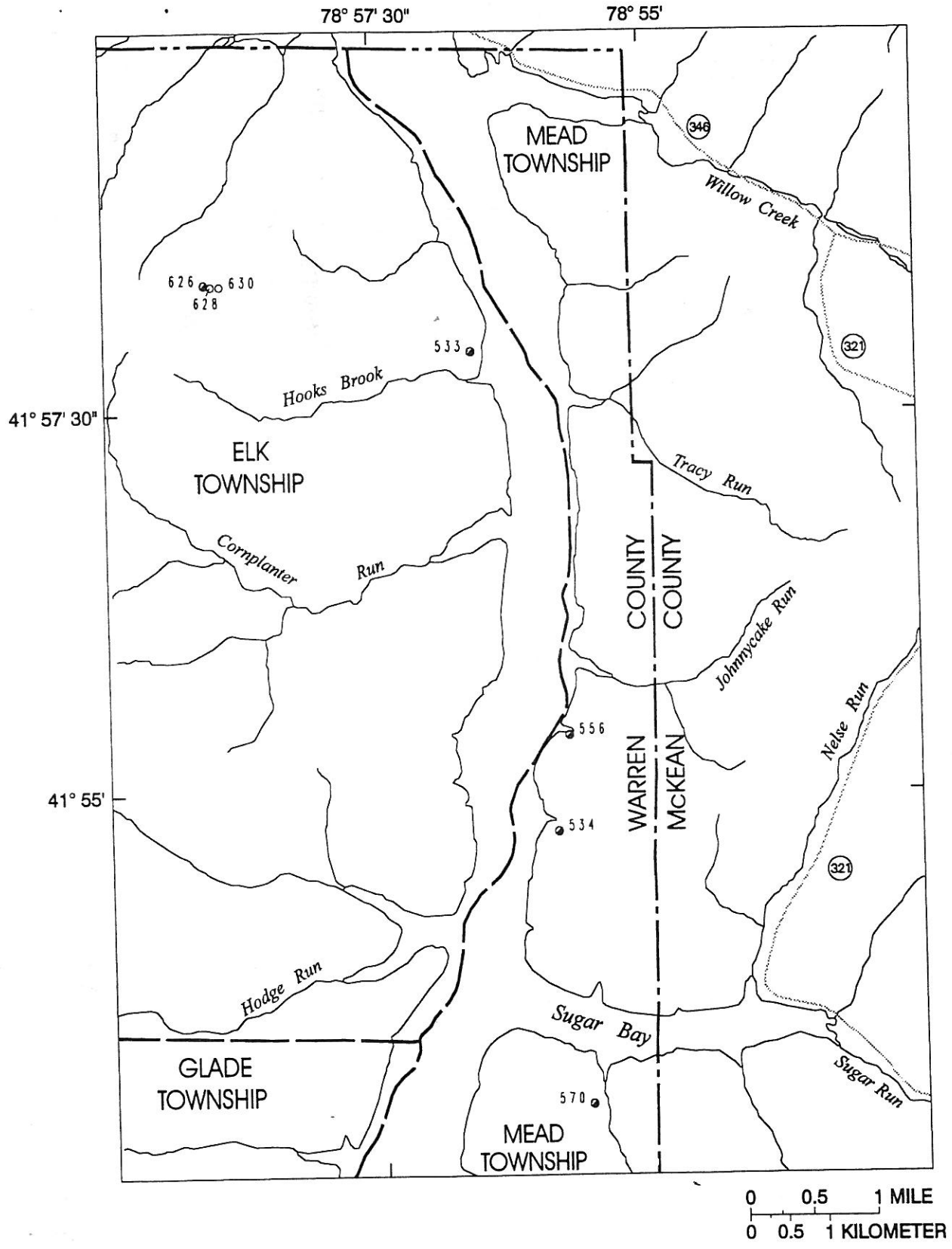

Figure 4f. Location of data-collection sites on Cornplanter Run quadrangle.

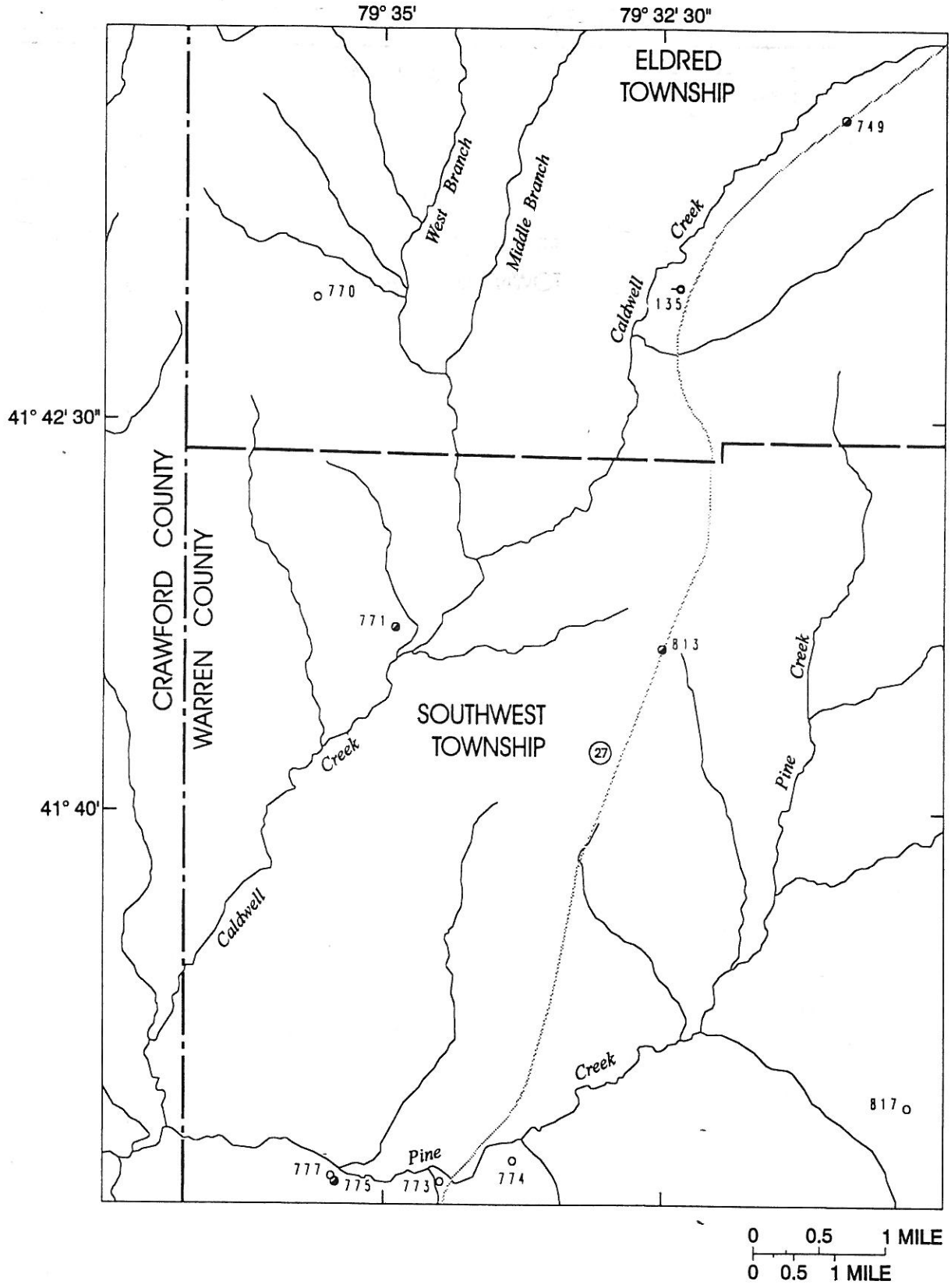

Figure 4g. Location of data-collection sites on Grand Valley quadrangle.

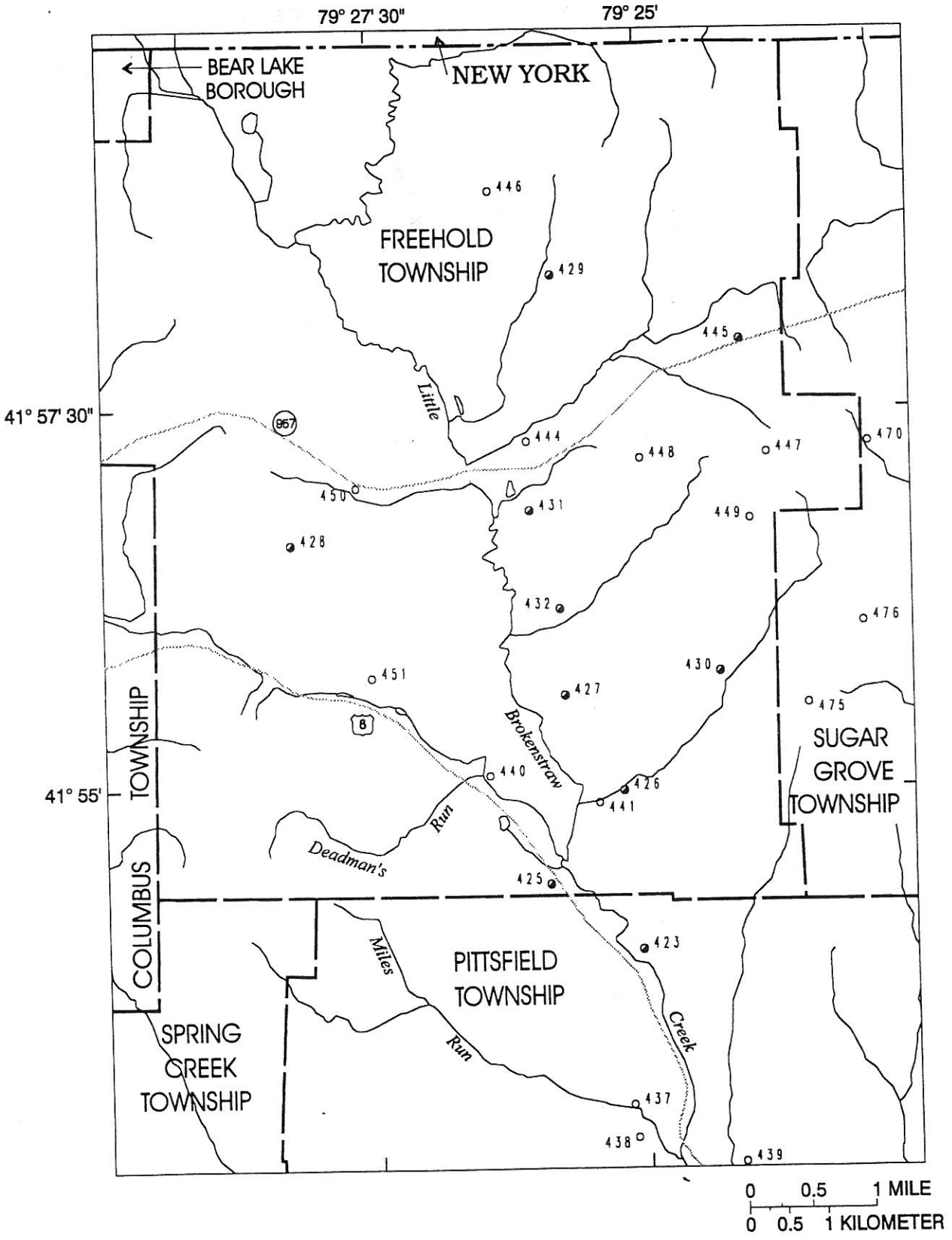

Figure 4h. Location of data-collection sites on Lottsville quadrangle.

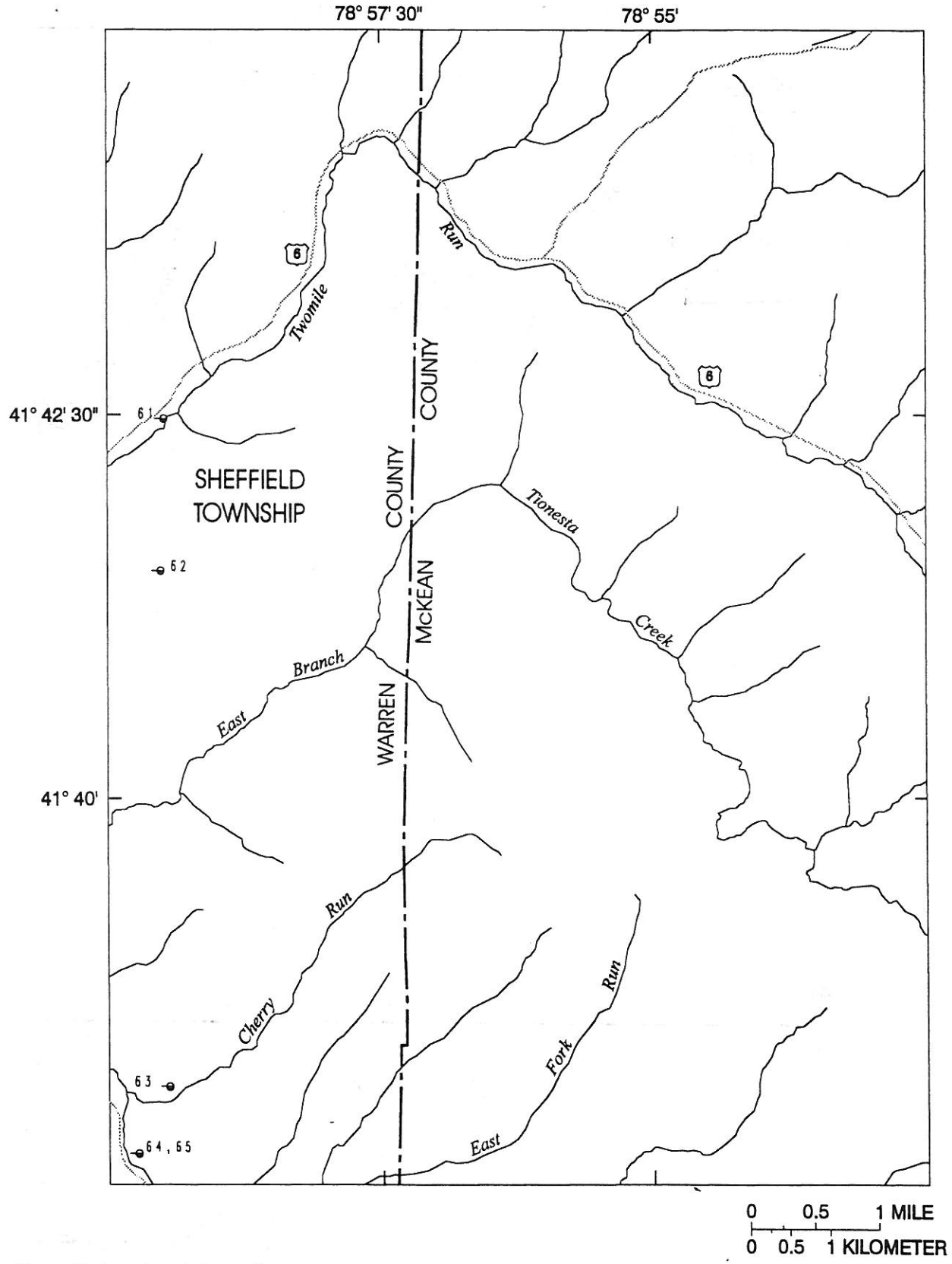

Figure 4i. Location of data-collection sites on Ludlow quadrangle.

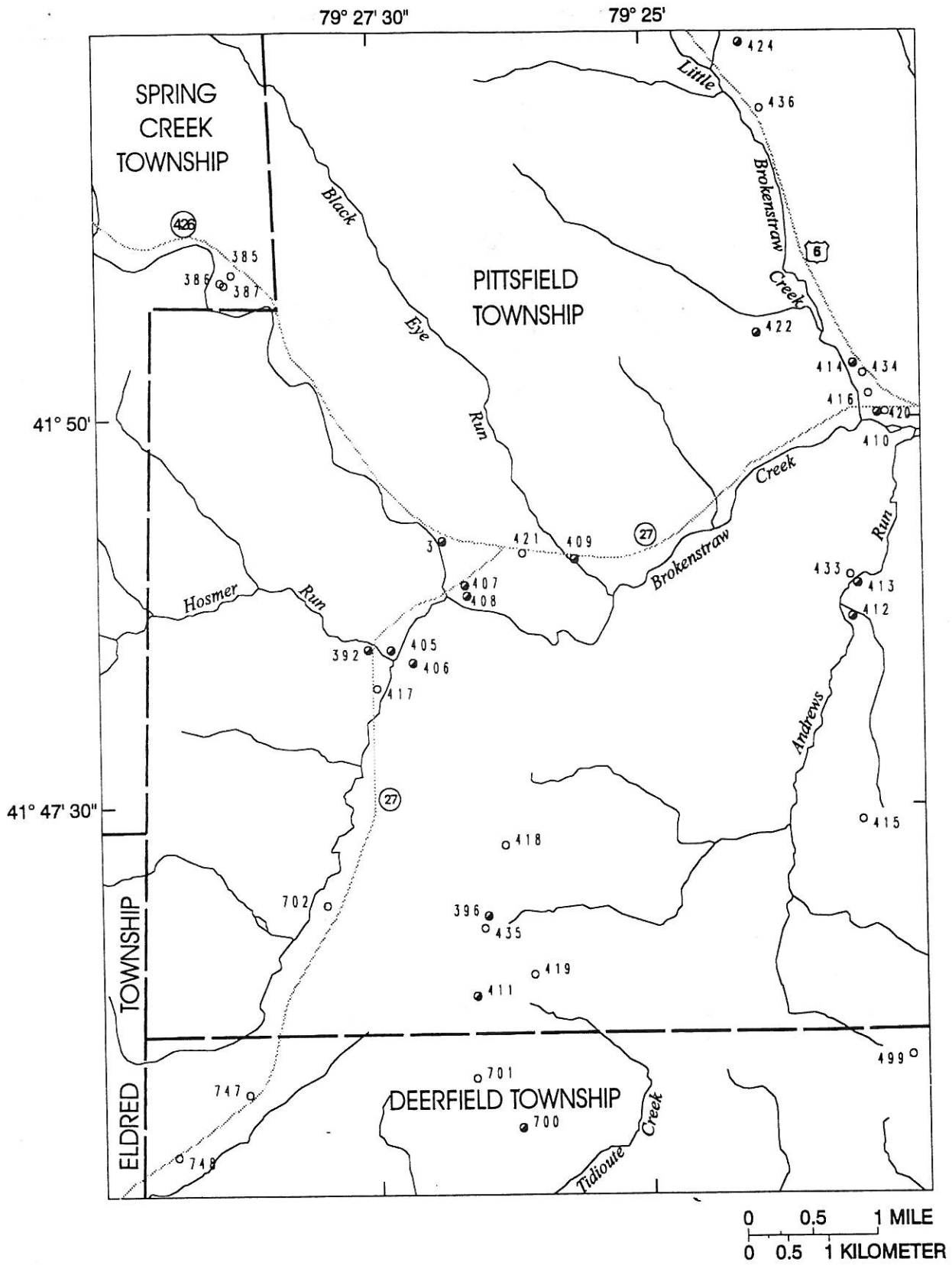

Figure 4j. Location of data-collection sites on Pittsfield quadrangle.

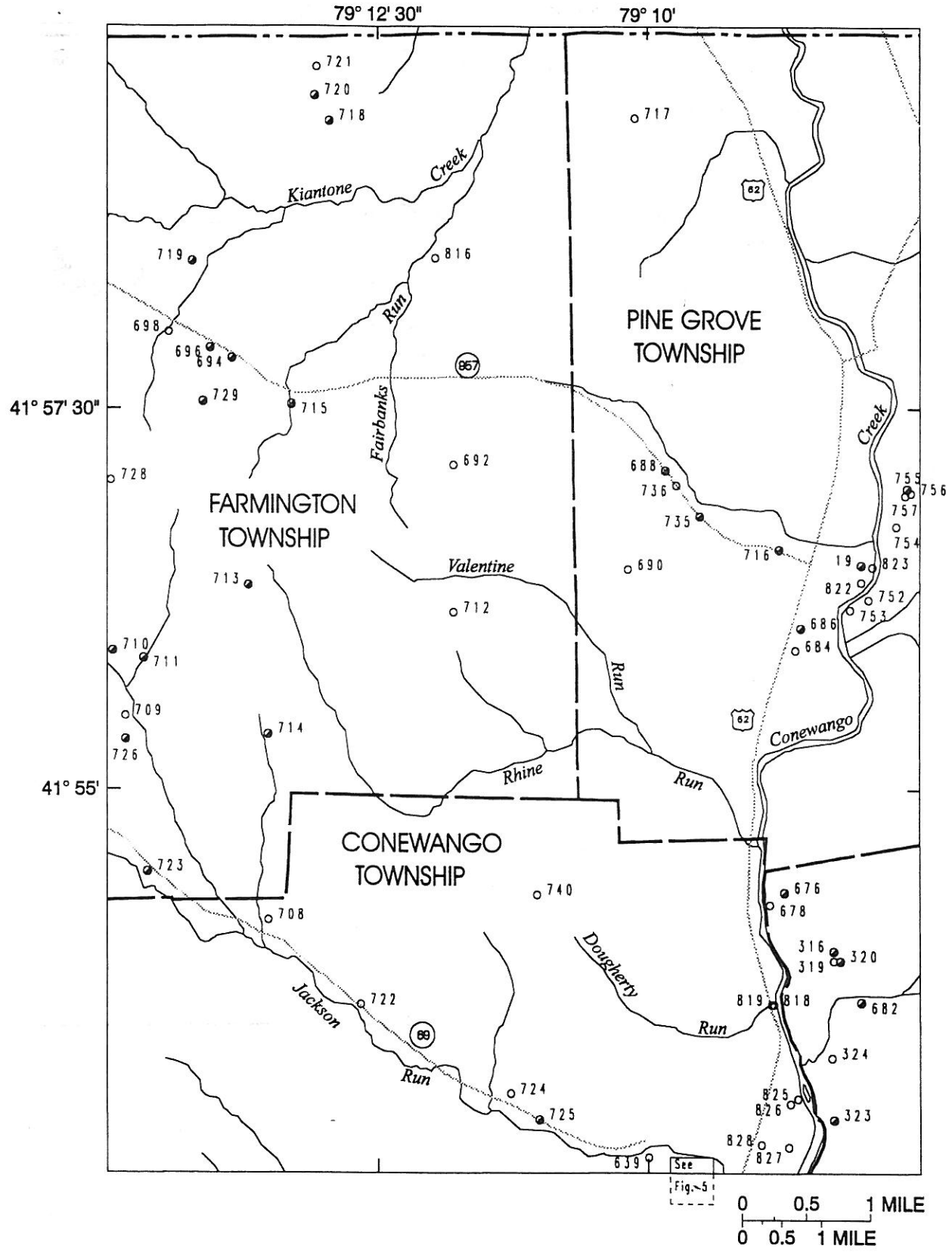

Figure 4k. Location of data-collection sites on Russel quadrangle.

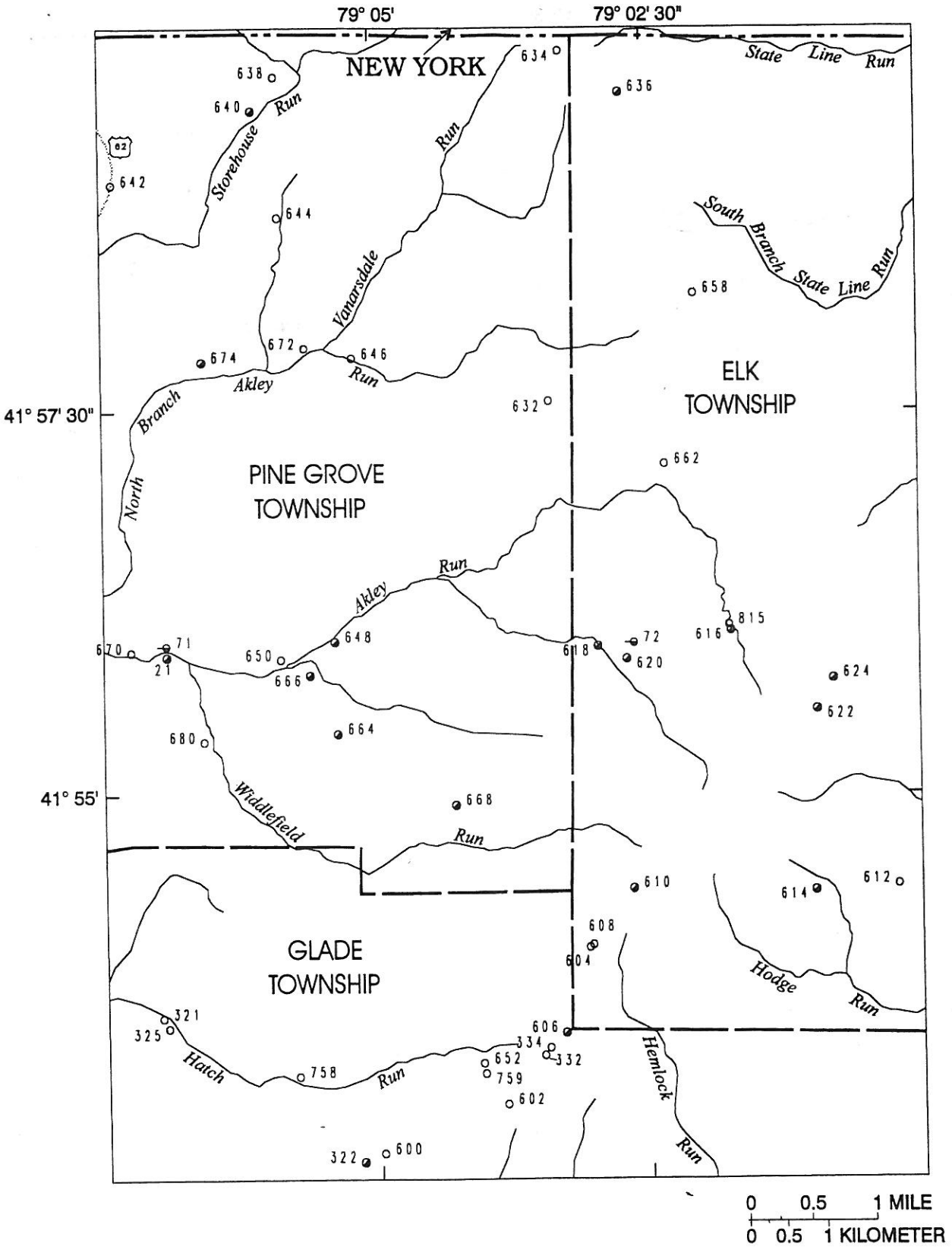

Figure 4l. Location of data-collection sites on Scandia quadrangle.

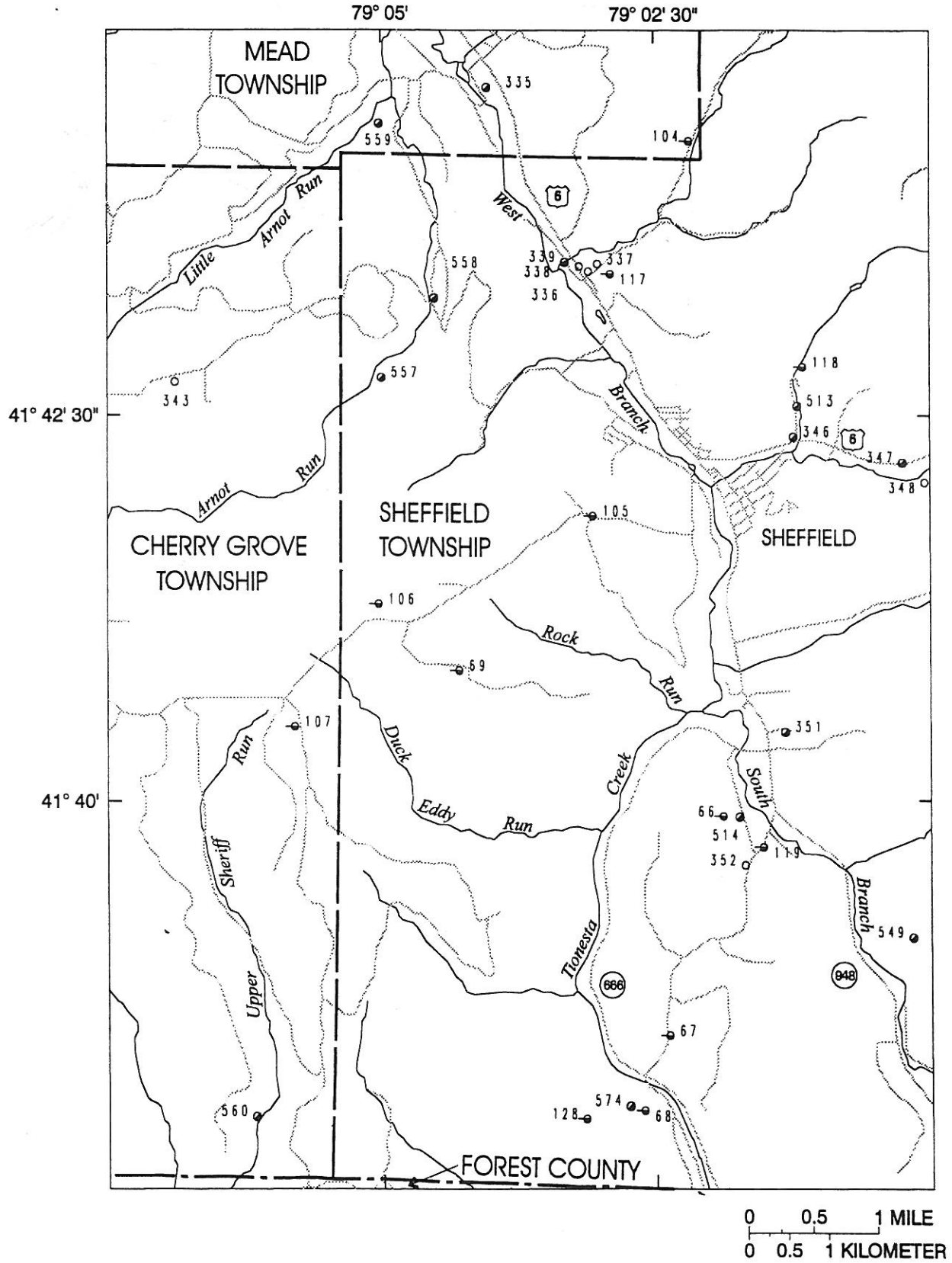

Figure 4m. Location of data-collection sites on Sheffield quadrangle.

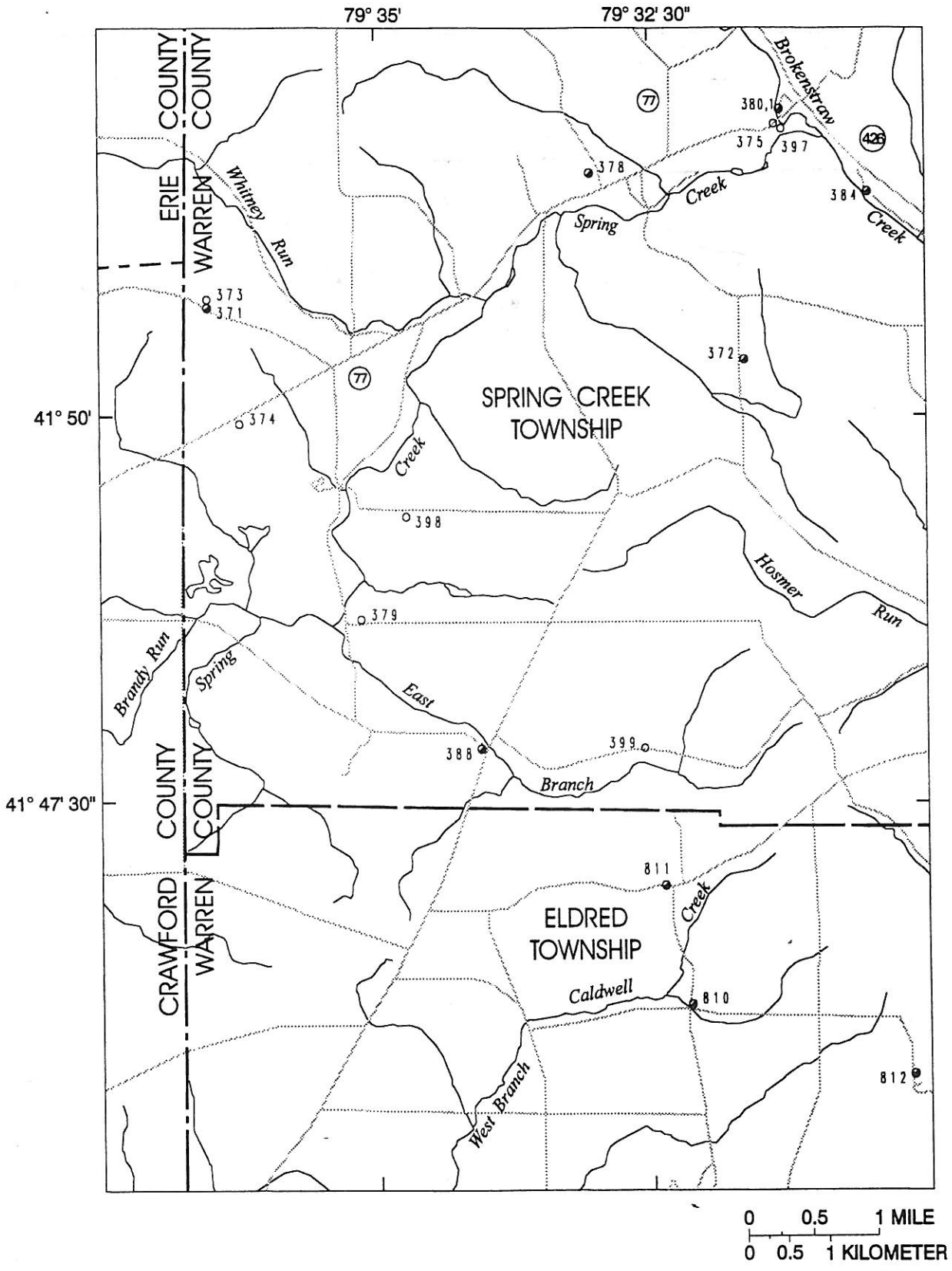

Figure 4n. Location of data-collection sites on Spring Creek quadrangle.

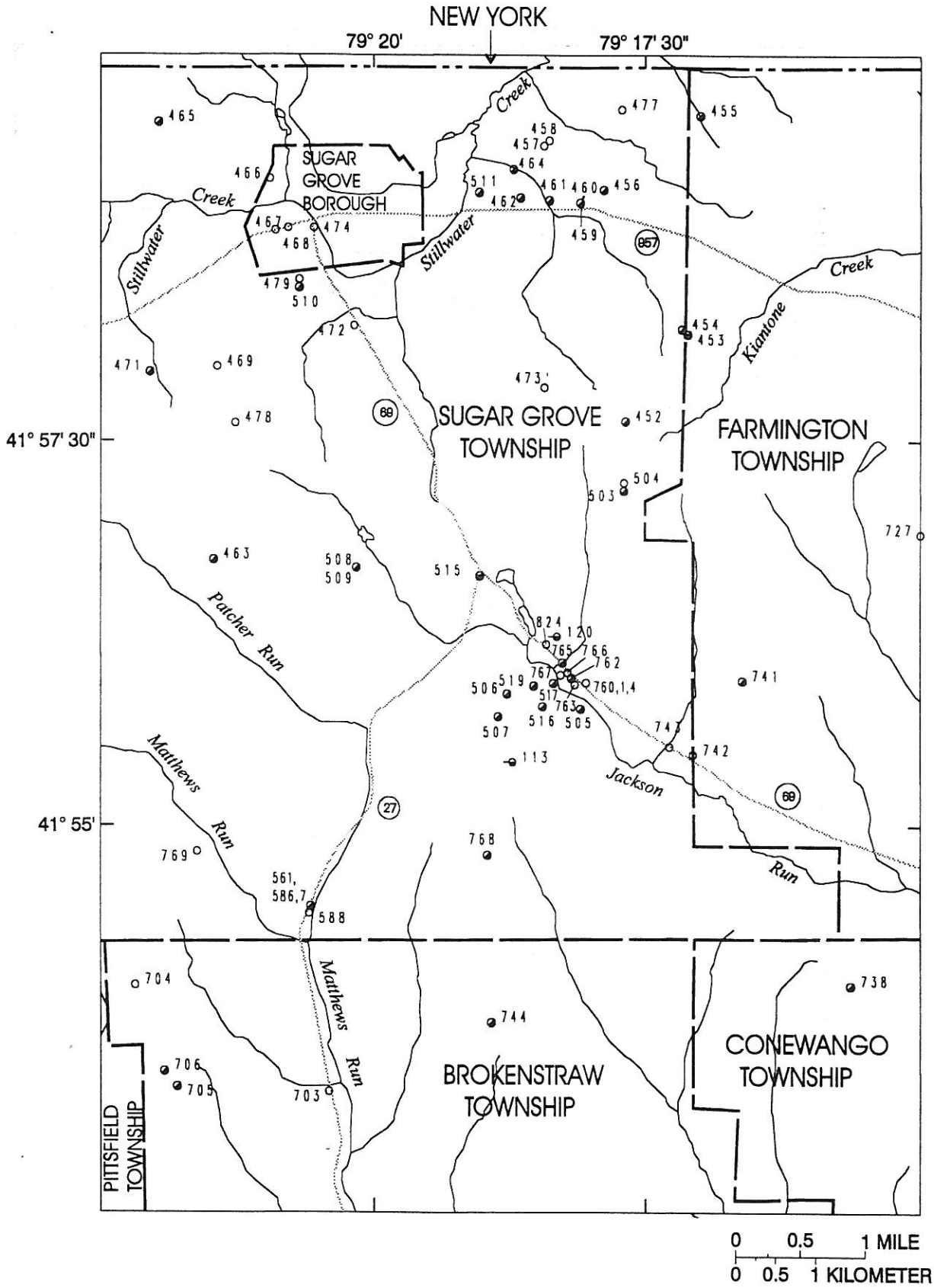

Figure 4o. Location of data-collection sites on Sugar Grove quadrangle.

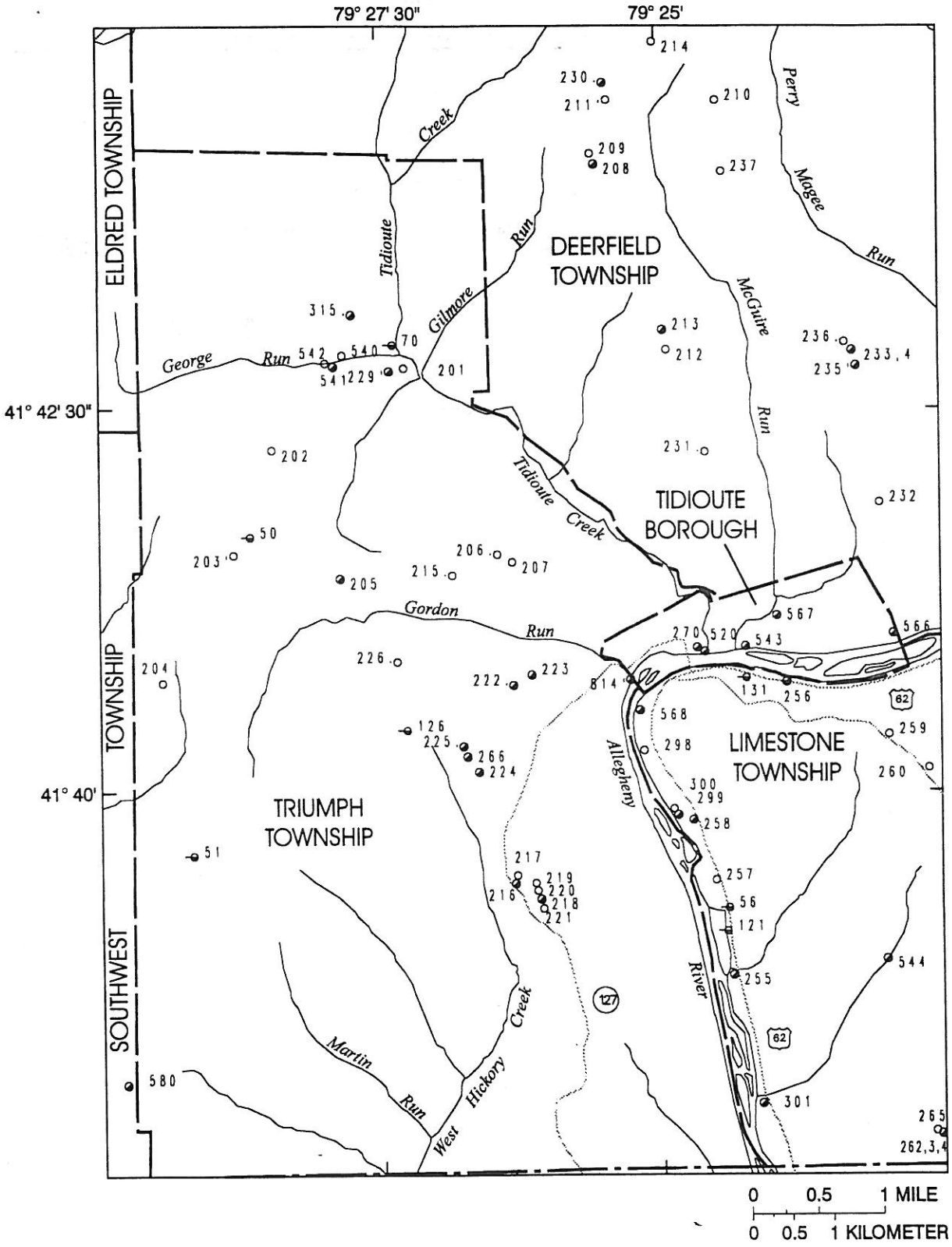

Figure 4p. Location of data-collection sites on Tidioute quadrangle.

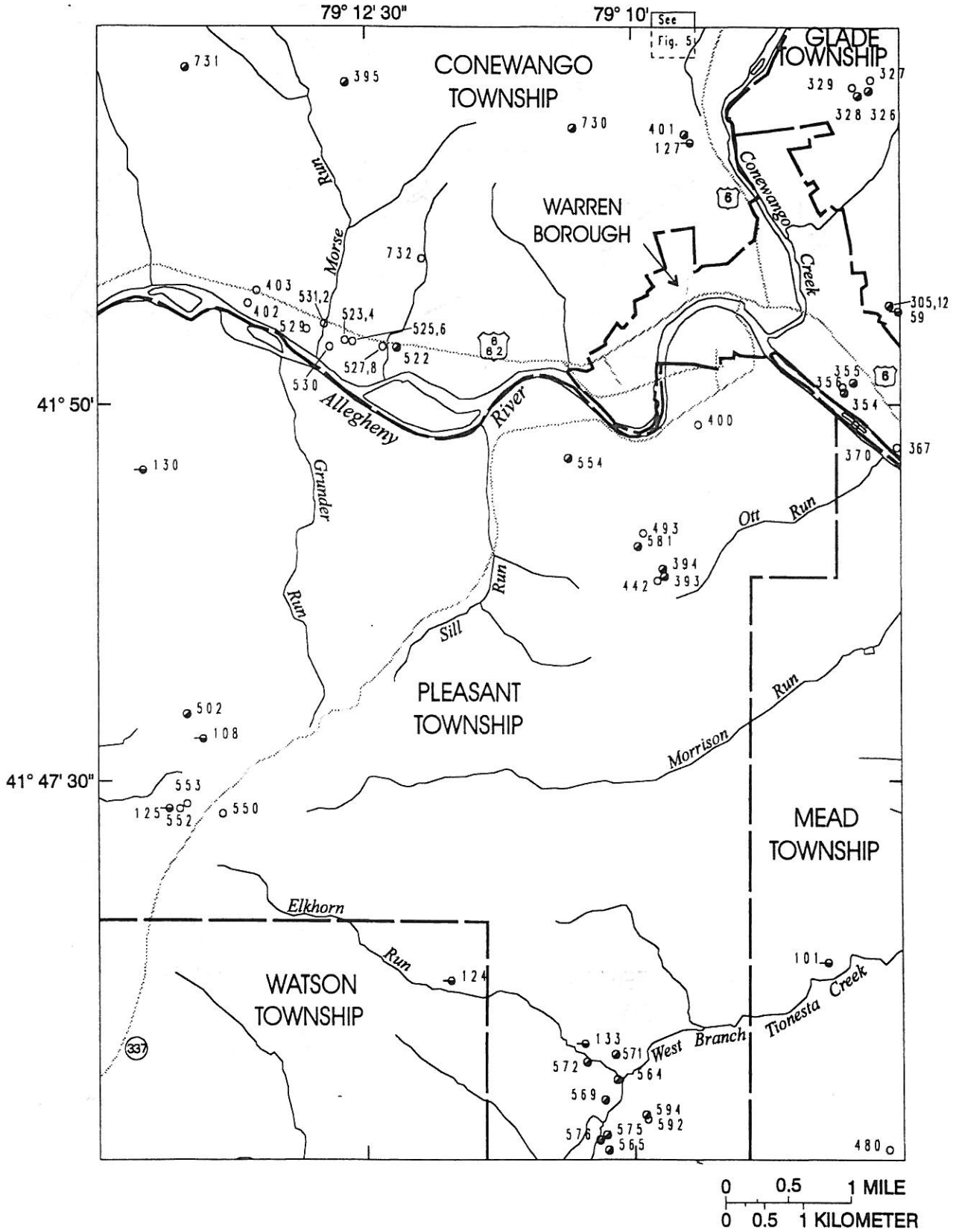

Figure 4q. Location of data-collection sites on Warren quadrangle.

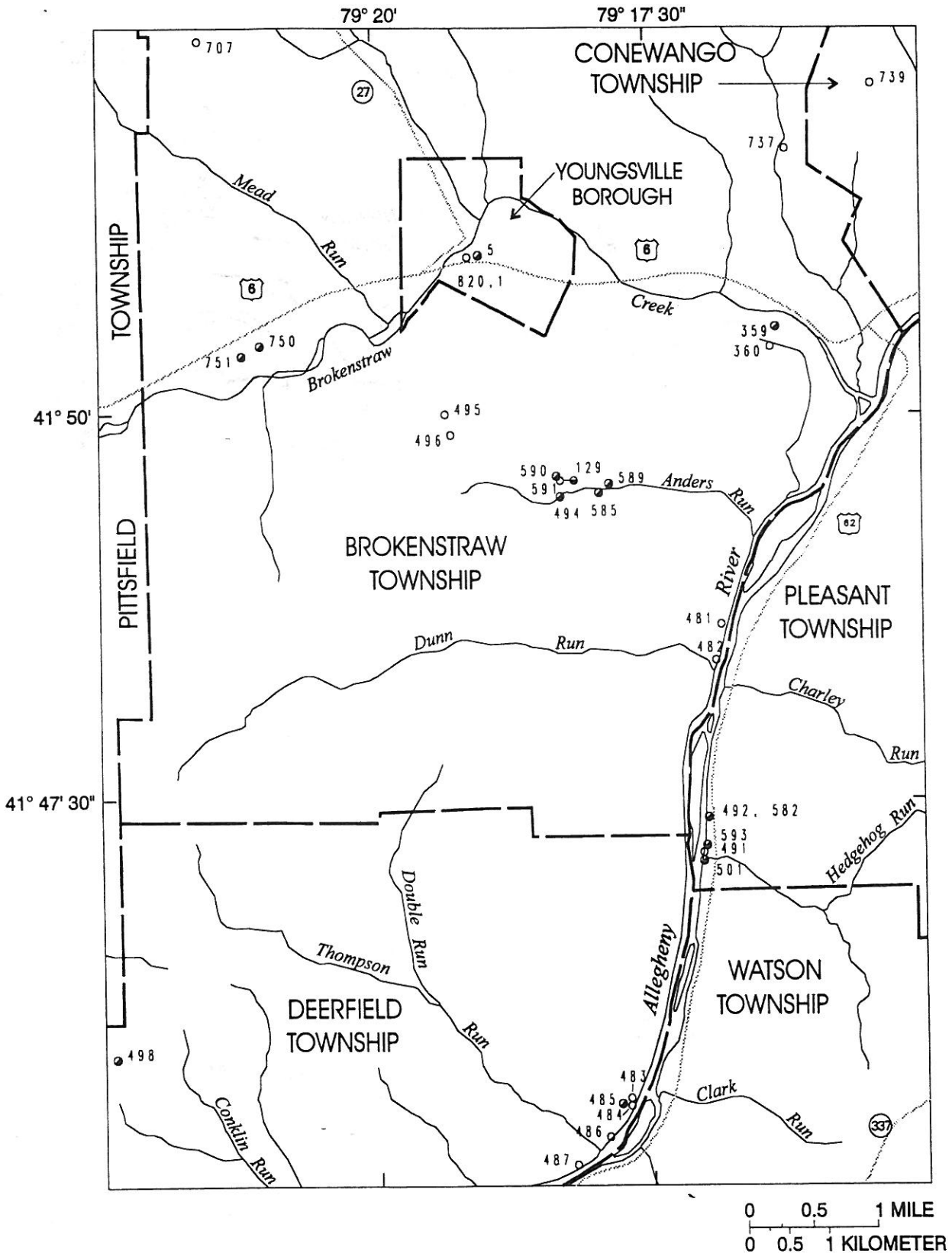

Figure 4r. Location of data-collection sites on Youngsville quadrangle.

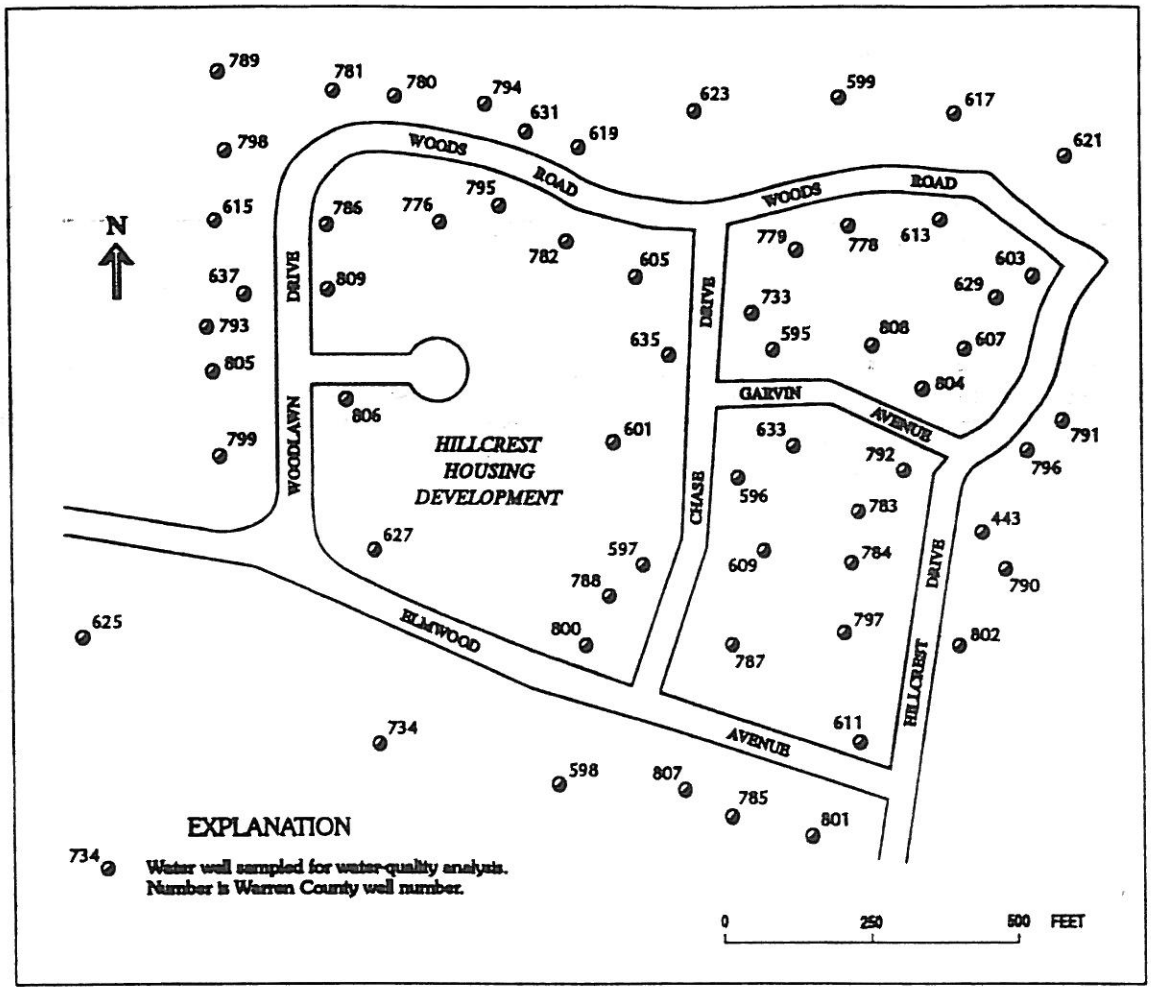

Figure 5. Location of water wells at Hillcrest Housing Development, Warren County (see figures 4k and 4q for location).

Table 8. *Dissolved trace constituents in water from wells and springs in Warren County*

[Concentrations are in micrograms per liter; changes in detection limits for the same constituent represented by less than symbols result from different laboratory instrumentation or variation in instrument calibration; <, less than; --, no data; see table 1 for hydrogeologic unit abbreviations]

USGS well or spring number	Date of sample	Hydro-geologic unit	Aluminum (Al)	Arsenic (As)	Barium (Ba)	Cadmium (Cd)	Chromium (Cr)	Iron (Fe)	Lead (Pb)	Manganese (Mn)	Nickel (Ni)	Strontium (Sr)	Zinc (Zn)
3	9/26/28	112OTSH	--	--	--	--	--	430	--	--	--	--	--
5	9/26/28	341CDKN	--	--	--	--	--	20	--	--	--	--	--
19	9/26/28	112OTSH	--	--	--	--	--	760	--	--	--	--	--
21	9/26/28	112OTSH	--	--	--	--	--	20	--	--	--	--	--
35	7/20/29	112OTSH	--	--	--	--	--	80	--	--	--	--	--
	10/18/66	112OTSH	--	--	--	--	--	--	--	--	--	--	--
37	9/26/28	341CDKN	--	--	--	--	--	840	--	--	--	--	--
50	8/29/85	341VNNG	<35	<1,000	620	<10	<50	1,200	54	280	<25	<10	20
	7/28/87	341VNNG	200	<4	670	2	<4	1,600	8	340	<25	180	10
205	5/15/85	337SNNG	60	<4	31	2	<4	<10	<4	<10	<25	--	50
208	5/15/85	337CYHG	--	--	--	--	--	<10	--	<10	--	--	--
213	5/16/85	337CYHG	100	<4	49	<.2	<4	30	6	<10	<25	<10	30
216	5/29/85	337CYHG	600	--	130	<10	<50	110	<45	<10	<25	90	1,300
218	5/29/85	337CYHG	400	--	93	<10	<50	1,300	<45	100	<25	30	70
222	5/29/85	337CYHG	100	--	120	<10	<50	370	<45	47	<25	290	1,800
223	5/29/85	337CYHG	100	--	67	<10	<50	<10	<45	26	<25	50	5,400
224	5/29/85	337CYHG	200	--	140	<10	<50	6,300	<45	260	<25	280	710
	5/29/85	337CYHG	100	--	150	<.2	<50	6,700	<45	270	<25	300	740
225	5/29/85	337CYHG	<35	<500	240	<10	<50	7,200	<45	240	<25	210	120
	8/14/85	337CYHG	<35	<1,000	370	<10	<50	5,200	<45	210	<25	<10	190
	8/26/87	337CYHG	<150	<4	<500	<.2	<4	4,700	<4	240	<25	280	50
228	5/29/85	337CYHG	70	<500	27	<10	<50	140	<45	<10	<25	<10	50
229	5/30/85	341RCVL	300	--	510	<10	<50	<10	--	390	<25	20	30
	5/30/85	341RCVL	<35	<500	170	<10	<50	<10	<45	400	<25	20	20
	8/14/85	341RCVL	<35	<1,000	270	<10	<50	20	<45	310	<25	<10	90
230	5/30/85	337CYHG	<35	<500	35	<10	<50	20	<45	<10	<25	<10	220
233	5/30/85	337SNNG	40	<500	39	<10	<50	<10	<45	53	<25	<10	130
234	5/30/85	337SNNG	<35	<500	56	<10	<50	20	<45	150	<25	<10	--
235	5/30/85	337SNNG	<35	<500	49	<10	<50	530	<45	410	<25	<10	120
241	6/26/85	112CCC	<35	<500	700	<10	<50	660	<45	68	<25	<10	10
248	6/26/85	341VNNG	<35	<500	290	<10	<50	<10	<45	590	<25	<10	<10
252	6/26/85	112OTSH	<35	<500	130	<10	<50	<10	--	<10	<25	<10	20
254	6/26/85	341VNNG	--	--	--	--	--	<10	--	<10	--	--	--
255	12/02/86	341VNNG	<150	<4	740	.5	<4	2,400	<4	310	<25	330	30
256	6/27/85	112OTSH	<35	<500	1,900	<10	<50	2,600	<45	150	<25	90	360
	8/06/86	112OTSH	<150	<4	2,300	.2	<4	1,200	<4	190	<25	450	290
	8/12/87	112OTSH	<150	<4	2,400	.3	4	1,300	6	210	<25	440	220
258	6/27/85	341VNNG	<35	<500	140	<10	<50	30	<45	13	<25	<10	--
262	6/27/85	337CYHG	<35	<500	98	<10	<50	<10	<45	<10	<25	190	40
263	6/27/85	337KNPP	<35	<500	57	<10	<50	<10	<45	<10	<25	100	40
264	6/27/85	337CYHG	<35	<500	32	<10	<50	<10	<45	<10	<25	<10	90
266	9/26/85	341DVNNU	<35	<1,000	350	<10	<50	970	<45	97	<25	510	20
	9/27/85	341DVNNU	70	<1,000	210	<10	<50	10,700	<45	240	<25	210	20
	8/26/87	341DVNNU	<150	<4	<500	<.2	<4	5,300	<4	180	<25	180	<10
	8/26/87	341DVNNU	<150	<4	<500	.4	5	570	<4	120	<25	480	<10
	8/26/87	341DVNNU	<150	<4	<500	<.2	<4	15,300	<4	310	<25	210	10
270	7/17/85	112OTSH	<35	<500	140	<10	<50	25,300	<45	740	<25	<10	<10
	9/26/85	112OTSH	--	--	--	--	--	--	--	--	--	--	--
271	7/17/85	337CYHG	--	--	--	--	--	<10	--	13	--	--	--
275	12/02/86	337SNNG	<150	<4	<500	<.2	<4	<100	6	50	<25	<100	20
283	7/17/85	337CYHG	<35	<500	<10	<10	<50	<10	<45	180	<25	<10	<10
	7/23/87	337CYHG	300	<4	<500	<.2	<4	430	<4	670	<25	<100	10
286	7/18/85	341CDKN	<35	<500	660	<10	<50	<10	<45	76	<25	340	<10
287	7/18/85	341CDKN	<35	<500	440	<10	<50	<10	<45	230	<25	<10	<10
288	7/18/85	341CDKN	<35	<500	320	<10	<50	<10	<45	1,200	<25	<10	<10

Table 8. *Dissolved trace constituents in water from wells and springs in Warren County—Continued*

USGS well or spring number	Date of sample	Hydro-geologic unit	Aluminum (Al)	Arsenic (As)	Barium (Ba)	Cadmium (Cd)	Chromium (Cr)	Iron (Fe)	Lead (Pb)	Manganese (Mn)	Nickel (Ni)	Strontium (Sr)	Zinc (Zn)
289	7/18/85	112OTSH	<35	<500	120	<10	<50	<10	<45	<10	<25	<10	<10
292	8/06/85	112OTSH	<35	<1,000	86	<10	<50	<10	<45	<10	<25	<10	230
293	8/06/85	112OTSH	<35	<1,000	270	<10	<50	2,100	<45	2,800	<25	<10	20
299	8/06/85	112OTSH	<35	<1,000	190	<10	<50	80	<45	610	<25	<10	<10
301	8/06/85	112OTSH	<35	<1,000	55	<10	<50	1,700	<45	150	<25	<10	<10
302	8/06/85	112OTSH	<35	<1,000	200	<10	<50	230	<45	<10	<25	<10	120
303	8/06/85	112OTSH	50	<1,000	150	<10	<50	<10	<45	<10	<25	<10	<10
305	8/07/85	341VNNG	<35	<1,000	90	<10	<50	<10	<45	<10	<25	<10	20
	8/07/85	341VNNG	<35	<1,000	85	<10	<50	<10	<45	<10	<25	<10	10
306	8/07/85	341VNNG	<35	<1,000	240	<10	<50	90	<45	46	<25	<10	<10
308	11/06/85	341OSWY	<35	<1,000	100	<.2	<4	20	<4	240	<25	840	10
310	11/06/85	341VNNG	40	<1,000	50	<10	<50	390	<45	79	<25	20	<10
311	11/06/85	341VNNG	<35	<1,000	140	<10	<50	<10	<45	<10	<25	120	<10
312	8/07/85	341VNNG	<35	<1,000	280	<10	<50	350	<45	110	<25	20	<10
	8/07/85	341VNNG	<35	<1,000	290	<10	<50	340	<45	120	<25	20	<10
313	8/07/85	341VNNG	<35	<1,000	1,300	<10	<50	140	<45	66	<25	20	<10
314	8/07/85	341VNNG	<35	<1,000	120	<10	<50	20	<45	86	<25	<10	90
315	8/14/85	341RCVL	<35	<1,000	220	<10	<50	40	<45	11	<25	<10	30
316	8/14/85	341CDKN	<35	<1,000	1,500	<10	<50	50	<45	24	<25	<10	20
317	8/14/85	341VNNG	<35	<1,000	22	<10	<50	<10	<45	<10	<25	<10	<10
318	8/14/85	112OTSH	<35	<1,000	120	<10	<50	<10	<45	<10	<25	<10	<10
320	8/28/85	112OTSH	<35	<1,000	180	<10	<50	710	--	80	<25	<10	<10
322	8/28/85	337KNPP	60	<1,000	110	<10	<50	320	<45	210	38	<10	<10
323	8/29/85	341CDKN	<35	<1,000	100	<10	<50	<10	<45	250	<25	<10	<10
326	8/28/85	341VNNG	50	<1,000	160	18	<50	20	--	210	33	<10	<10
328	8/28/85	341VNNG	<35	<1,000	93	<10	<50	40	--	99	<25	<10	<10
331	11/26/85	341VNNG	<35	<1,000	290	<10	<50	420	--	41	32	330	<10
333	8/28/85	112OTSH	<35	<1,000	110	<10	<50	100	<45	37	<25	<10	30
335	9/18/85	112LAKE	<35	<1,000	60	<10	<50	4,000	<45	510	<25	<10	20
339	9/18/85	112LAKE	<35	<1,000	81	<10	<50	2,400	<45	450	<25	<10	240
340	9/18/85	324PSVL	300	<1,000	100	<10	160	710	<45	250	100	<10	50
	11/26/85	324PSVL	<35	<1,000	57	<10	<50	310	--	110	32	40	50
	3/11/86	324PSVL	<150	--	--	<.2	<4	410	4	190	--	--	100
341	9/18/85	324PSVL	<35	<1,000	14	<10	<50	<10	83	<10	28	<10	<10
341	11/26/85	324PSVL	<35	<1,000	83	<10	<50	210	--	190	48	50	110
	3/11/86	324PSVL	<150	--	--	<.2	<4	580	19	160	--	--	90
342	9/18/85	324PSVL	700	<1,000	160	<10	170	640	<45	230	110	<10	50
	11/26/85	324PSVL	100	<1,000	100	<10	<50	40	--	180	29	40	30
	3/11/86	324PSVL	200	--	--	<.4	<4	200	7	210	--	--	70
346	10/09/85	112LAKE	100	<1,000	68	<10	<50	80	<45	<10	<25	60	<10
347	10/10/85	341CRGS	100	<1,000	240	<10	<50	1,200	<45	160	<25	200	<10
349	11/06/85	341OSWY	<35	<1,000	59	<.2	<4	60	<4	76	<25	--	10
350	11/06/85	341OSWY	<35	<1,000	170	15	4	40	<4	200	<25	760	80
351	11/07/85	112CLVM	<35	<1,000	73	<10	<50	<10	<45	130	<25	100	40
354	4/22/86	112OTSH	<150	<4	600	<.2	<4	2,000	<4	1,500	<25	170	70
355	4/22/86	112OTSH	<150	<4	<500	.2	<4	<100	<4	360	<25	<100	20
357	4/22/86	341DVNNU	<150	<4	<500	.2	<4	580	<4	90	<25	300	20
358	4/23/86	341DVNNU	200	<4	<500	.9	<4	200	<4	200	<25	<100	50
359	5/07/86	112OTSH	--	<4	<500	<.2	10	300	<4	<50	<25	<100	<10
371	6/25/86	337CYHG	<150	<4	<500	.8	<4	130	5	<50	<25	<100	50
372	6/25/86	337CBCR	<150	<4	<500	4	<4	2,100	<4	830	<25	<100	8,900
376	6/25/86	341VNNG	<150	<4	<500	.4	<4	130	<4	<50	<25	110	110
377	6/25/86	341VNNG	<150	<4	<500	.3	<4	110	<4	<50	<25	100	20
378	6/25/86	112ICCC	<150	<4	<500	.3	<4	100	<4	<50	<25	<100	<10
380	6/26/86	112ICCC	<150	<4	<500	.3	<4	100	<4	130	<25	100	10
381	6/26/86	112ICCC	<150	<4	<500	.8	<4	120	<4	<50	<25	<100	<10
382	6/26/86	112ICCC	<150	15	<500	<.2	<4	330	<4	100	<25	170	<10
384	7/09/86	112OTSH	<150	<4	<500	.6	<4	100	<4	<50	<25	<100	30
388	7/09/86	112OTSH	<150	<4	<500	.3	<4	240	<4	210	<25	100	60
389	7/09/86	341VNNG	<150	<4	1,900	0.5	<4	1,800	<4	80	<25	340	10

Table 8. *Dissolved trace constituents in water from wells and springs in Warren County—Continued*

USGS well or spring number	Date of sample	Hydro-geologic unit	Aluminum (Al)	Arsenic (As)	Barium (Ba)	Cadmium (Cd)	Chromium (Cr)	Iron (Fe)	Lead (Pb)	Manganese (Mn)	Nickel (Ni)	Strontium (Sr)	Zinc (Zn)
	7/30/87	341VNNG	400	<4	1,900	<.2	<4	1,800	<4	120	<25	450	<10
390	7/09/86	341VNNG	<150	<4	<500	.3	<4	110	<4	50	<25	<100	<10
391	7/09/86	341CDKN	<150	7	<500	<.2	<4	450	<4	100	<25	100	10
392	7/23/86	112OTSH	<150	<4	<500	.4	<4	<100	6	<50	<25	110	40
393	7/10/86	341RCVL	200	<4	<500	.2	<4	140	<4	<50	34	<100	60
394	7/10/86	337KNPP	<150	4	<500	.4	<4	140	8	<50	<25	<100	60
395	7/10/86	341VNNG	200	<4	<500	.2	<4	100	<4	50	<25	<100	20
396	7/23/86	337CYHG	200	<4	<500	.3	<4	380	2	60	28	<100	40
401	8/13/86	341CDKN	<150	<5	<500	.8	<4	720	<4	390	<25	290	<10
405	7/23/86	112OTSH	<150	<4	<500	.3	<4	180	<4	<50	28	140	70
406	7/23/86	341CDKN	<150	<4	<500	.6	<4	<100	<4	50	<25	190	30
407	7/23/86	112OTSH	<150	<4	<500	.2	<4	<100	<4	<50	<25	<100	20
408	7/23/86	112OTSH	<150	<4	<500	.2	<4	<100	<4	<50	<25	<100	20
409	7/23/86	341VNNG	<150	<10	<500	.2	<4	210	<4	60	<25	210	20
410	7/23/86	112OTSH	<150	<4	<500	.2	<4	<100	<4	<50	<25	100	30
411	7/24/86	337SNNG	<150	<4	<500	<.2	<4	160	<4	150	<25	<100	150
412	7/24/86	341CDKN	<150	<4	<500	<.2	<4	10,400	<4	250	<25	180	40
413	7/24/86	112OTSH	<150	<4	<500	<.2	<4	210	<4	70	<25	110	<10
414	7/24/86	112OTSH	<150	<4	<500	<.2	<4	<100	<4	<50	<25	<100	20
422	8/05/86	341CDKN	<150	10	<500	.2	<4	100	<4	<50	<25	<100	<10
423	8/05/86	112ICCC	<150	23	<500	<.2	<4	180	<4	100	<25	<100	<10
424	8/05/86	112OTSH	<150	10	<500	.3	<4	340	<4	50	<25	250	<10
425	8/06/86	112DRFT	<150	11	660	.3	<4	210	<4	<50	<25	250	<10
426	8/06/86	341VNNG	<150	<4	<500	<.2	<4	130	<4	<50	<25	130	<10
427	8/06/86	112ICCC	<150	<5	<500	<.2	<4	190	<4	90	<25	140	20
428	8/06/86	341RCVL	<150	<4	<500	<.2	<4	130	<4	110	<25	<100	<10
429	8/06/86	341VNNG	<150	<4	<500	<.2	<4	250	<4	<50	<25	440	10
430	8/07/86	341VNNG	<150	<5	<500	.3	<4	100	<4	<50	<25	<100	10
431	8/07/86	112ICCC	<150	<4	<500	<.2	<4	240	<4	<50	<25	180	<10
432	8/07/86	112ICCC	<150	<4	<500	<.2	<4	100	<4	<50	<25	<100	<10
443	8/13/87	112OTSH	--	100	540	--	--	--	--	--	--	--	--
	11/17/87	112OTSH	--	130	560	--	--	--	--	--	--	--	--
445	8/13/86	341VNNG	<150	<4	<500	1	<4	150	16	70	<25	200	110
452	8/14/86	341VNNG	<150	<4	<500	<.2	<4	180	6	<50	<25	100	20
453	8/14/86	341VNNG	<150	<4	<500	<.2	<4	350	<4	70	<25	260	10
454	8/14/86	341VNNG	200	<4	<500	<.2	<4	260	<4	80	<25	260	60
455	8/14/86	341CDKN	<150	<4	1000	<.2	<4	420	<4	70	<25	500	40
456	8/19/86	341CDKN	<150	<4	<500	.3	<4	710	<4	100	<25	440	30
459	8/19/86	341CDKN	<150	<4	<500	<.2	<4	280	<4	280	33	260	20
460	8/19/86	341CDKN	<150	<4	<500	<.2	<4	200	<4	<50	<25	210	90
461	8/19/86	341CDKN	<150	<4	<500	<.2	<4	260	<4	50	<25	250	20
462	8/19/86	341CDKN	<150	<4	<500	<.2	<4	310	<4	50	<25	130	10
463	8/19/86	341VNNG	<150	<4	<500	<.2	<4	790	<4	440	<25	<100	50
464	8/19/86	112OTSH	<150	<4	<500	.4	<4	300	<4	510	29	280	20
465	8/20/86	341VNNG	<150	<4	<500	<.2	<4	270	<4	430	<25	<100	10
471	8/20/86	341VNNG	<150	7	<500	<.2	<4	970	<4	70	<25	440	40
485	12/01/86	341VNNG	<150	<4	<500	.6	<4	160	<4	550	<25	<100	640
492	8/18/87	341VNNG	<150	<4	610	<.2	<4	240	<4	220	100	230	30
494	10/01/86	341VNNG	<150	<4	1,600	<.2	<4	250	<4	70	34	640	20
	12/04/86	341VNNG	<150	<4	1,600	.2	<4	170	<4	50	<25	520	20
498	10/01/86	337CYHG	<150	<4	<500	.8	<4	12,400	<4	920	46	<100	190
500	6/05/85	341CDKN	1,200	<500	110	<10	<50	760	<45	210	<25	<10	<10
501	6/06/85	112OTSH	100	<500	41	12	<50	<10	<45	15	<25	<10	20
502	6/24/85	324PSVL	<35	<500	96	13	<50	<10	--	150	55	<10	40
	6/18/86	324PSVL	<150	<4	<500	.5	<4	160	11	230	<25	<100	80
503	6/26/85	341RCVL	<35	<500	30	<10	<50	<10	--	<10	<25	<10	<10
505	6/27/85	112OTSH	<35	<500	200	<10	<50	<10	<45	120	<25	20	<10
	7/24/85	112OTSH	<35	<1,000	250	<10	<50	60	<45	<10	<25	<10	<10
506	6/26/85	112OTSH	--	<500	250	--	<50	450	--	250	<35	<10	230
	8/29/85	112OTSH	<35	<1,000	260	<10	<50	470	46	150	27	30	40

Table 8. *Dissolved trace constituents in water from wells and springs in Warren County—Continued*

USGS well or spring number	Date of sample	Hydro-geologic unit	Aluminum (Al)	Arsenic (As)	Barium (Ba)	Cadmium (Cd)	Chromium (Cr)	Iron (Fe)	Lead (Pb)	Manganese (Mn)	Nickel (Ni)	Strontium (Sr)	Zinc (Zn)
507	6/26/85	341CDKN	<35	<500	94	<10	<50	180	--	24	<25	<10	10
508	6/26/85	341VNNG	--	<500	230	--	<50	190	--	170	<25	<10	60
509	6/26/85	112DRFT	<35	<500	110	<10	<50	<10	<45	13	<25	<10	<10
510	6/27/85	341CDKN	<35	<500	74	<10	<50	<10	<45	<10	<25	<10	20
511	6/27/85	112DRFT	200	--	230	--	--	<10	--	58	--	<10	240
513	7/23/85	341CRGS	<35	<1,000	82	<10	<50	<10	<45	<10	<25	<10	90
514	7/23/85	341CRGS	<35	<1,000	430	<10	<50	1,100	<45	76	<25	<10	<10
515	9/05/85	112ICCC	<35	<1,000	<10	<10	<50	<10	<50	140	<25	80	<10
516	9/05/85	112OTSH	<35	<1,000	<10	<10	<50	140	<45	<10	<25	<10	210
517	9/05/85	341CDKN	<35	<1,000	<10	<10	<50	<10	<45	<10	<25	<10	<10
519	9/05/85	341CDKN	<35	<1,000	<10	<10	<50	<10	<45	170	<25	<10	<10
520	10/09/85	112OTSH	600	<1,000	1,400	<10	<50	15,800	<45	2,400	<25	160	50
	10/09/85	112OTSH	500	<1,000	1,300	<10	<50	15,100	<45	2,300	<25	160	30
	7/29/87	112OTSH	1,000	26	980	<.2	<4	10,600	<4	2,200	<25	160	<10
520	8/25/88	112OTSH	<150	46	1,100	<.2	<4	16,400	<4	2,000	<25	180	<10
522	11/05/85	112OTSH	<35	<1,000	110	<10	<50	60	--	210	27	360	40
533	7/16/86	341CDKN	300	<4	<500	.4	<4	160	<4	<50	<25	<100	460
534	7/16/86	341CDKN	300	<4	<500	1	<4	100	5	50	<25	<100	--
535	7/17/86	341CDKN	300	<4	<500	.4	<4	210	5	90	<25	250	450
536	7/17/86	341CDKN	200	<4	<500	.6	<4	420	11	<50	<25	500	650
	9/09/87	341CDKN	<150	<4	<500	.4	<4	<100	<4	<50	<25	480	500
541	11/19/87	341RCVL	<150	<4	810	<.2	5	880	<4	200	<25	220	10
543	5/21/86	112OTSH	1,800	<4	<500	<.2	<4	4,600	<4	670	<25	<100	10
	8/18/86	112OTSH	<150	10	<500	.3	<4	7,200	<4	510	<25	100	<10
544	5/21/86	341DVNNU	<150	<4	<500	<.2	<4	2,700	<4	510	<25	<100	10
	6/02/86	341DVNNU	300	<4	660	.2	<4	810	<4	<50	<25	190	10
545	6/04/86	324PSVL	<150	<4	<500	.5	<4	260	<4	<50	<25	<100	120
546	6/04/86	324PSVL	<150	<4	<500	<.2	<4	340	<4	50	<25	<100	80
547	6/04/86	112OTSH	<150	<4	<500	.8	<4	130	<4	<50	<25	<100	30
549	6/18/86	341DVNNU	<150	<4	<500	.3	<4	470	<4	80	<25	210	20
554	6/19/86	112OTSH	<150	<4	<500	1	<4	140	<4	<50	<25	<100	120
556	7/16/86	341CDKN	200	8	<500	.3	<4	630	<4	110	<25	260	290
557	7/23/86	341DVNNU	<150	<4	740	.2	<4	260	4	260	<25	360	<10
558	7/23/86	341DVNNU	<150	<5	<500	.3	<4	700	<4	140	<25	280	10
559	7/23/86	341DVNNU	<150	<4	<500	<.2	<4	600	5	250	<25	230	20
560	7/23/86	341DVNNU	<150	<4	<500	.9	<4	450	13	<50	<25	<100	30
561	8/07/86	341VNNG	<150	<4	<500	<.2	<4	150	<4	<50	<25	200	<10
	11/04/86	341VNNG	<150	<4	<500	<.2	<4	290	<4	<50	<25	240	20
	7/23/87	341VNNG	200	<4	<500	<.2	<4	100	<4	<50	<25	260	<10
563	8/14/86	341VNNG	<150	31	<500	.3	<4	560	5	1,500	<25	220	420
564	8/14/86	341VNNG	<150	31	<500	<.2	<4	370	<4	60	<25	220	30
565	8/14/86	112ALVM	<150	<4	<500	.3	<4	760	6	150	<25	140	260
566	8/20/86	341VNNG	<150	4	690	1	<4	210	<4	510	<25	250	40
567	8/20/86	341VNNG	<150	<4	<500	.4	<4	320	<4	80	<25	250	<10
568	8/20/86	112OTSH	<150	<4	<500	.4	<4	160	<4	<50	<25	<100	<10
	7/29/87	112OTSH	300	<4	<500	<.2	<4	240	<4	<50	<25	<100	20
568	7/29/87	112OTSH	400	<4	<500	<.2	<4	3,500	7	60	<25	<100	10
569	8/21/86	112ALVM	<150	6	1,200	.5	<4	2,000	<4	90	<25	480	30
570	8/27/86	341DVNNU	200	<4	<500	<.2	<4	550	<4	110	28	170	30
571	8/28/86	112ALVM	400	<5	<500	.9	<4	54,400	<4	190	33	220	170
572	8/28/86	112CLVM	300	34	<500	6	<4	520	<4	3,400	29	330	860
573	9/08/86	341DVNNU	1,200	6	<500	.5	<4	5,400	<4	220	64	1,100	150
	7/22/87	341DVNNU	200	4	<500	<.2	4	310	4	260	<25	170	<10
574	9/09/86	341DVNNU	<150	<4	2,200	.2	<4	340	<4	170	<25	810	10
	9/09/86	341DVNNU	<150	10	<500	.5	<4	220	<4	180	<25	320	<10
575	8/18/87	112ALVM	<150	32	<500	<.2	<4	13,900	<4	140	120	140	180
576	8/05/87	112ALVM	200	68	<500	1	<4	3,000	<4	70	42	270	40
577	8/27/87	112ALVM	<150	<4	720	.3	5	1,100	<4	170	<25	290	14
578	6/17/87	341VNNG	300	6	790	<0.2	<4	170	<4	<50	<25	380	<10
579	7/30/87	341VNNG	400	<4	860	<.2	<4	740	<4	180	<25	370	20

Table 8. *Dissolved trace constituents in water from wells and springs in Warren County—Continued*

USGS well or spring number	Date of sample	Hydro-geologic unit	Aluminum (Al)	Arsenic (As)	Barium (Ba)	Cadmium (Cd)	Chromium (Cr)	Iron (Fe)	Lead (Pb)	Manganese (Mn)	Nickel (Ni)	Strontium (Sr)	Zinc (Zn)
580	9/11/86	341DVNNU	<150	<4	<500	.5	<4	18,900	<4	1,400	33	730	50
	9/11/86	341DVNNU	<150	<4	<500	.3	<4	17,700	<4	1,400	<25	520	20
581	9/24/86	341VNNG	<150	<4	<500	<.2	<4	<100	<4	<50	<25	<100	40
582	9/24/86	341CDKN	<150	<4	1,300	<.2	<4	700	<4	80	<25	910	30
	8/12/87	341CDKN	<150	<4	1,200	.4	<4	880	<4	90	68	980	30
584	10/15/87	341VNNG	<150	<4	520	.2	5	3,000	<4	280	<25	200	30
585	10/21/86	341VNNG	<150	<4	1,100	.5	<4	270	4	50	<25	990	40
586	11/05/86	341DVNNU	300	22	<500	5	<4	990	<4	430	<25	1,800	420
	11/05/86	341DVNNU	<150	39	6,100	<.2	<4	1,200	<4	1,100	62	14,800	220
	11/05/86	341DVNNU	300	53	2,600	<.2	<4	84,000	26	7,600	490	--	450
	7/23/87	341DVNNU	600	<40	2,100	22	<4	72,000	<30	7,000	<25	--	<10
587	11/06/86	341DVNNU	<150	<20	<500	<.2	<4	630	<4	70	56	280	130
	11/06/86	341DVNNU	<150	<20	<500	<.2	<4	350	<4	<50	37	170	40
	11/06/86	341DVNNU	<150	<20	<500	<.2	<4	480	<4	<50	27	120	40
	11/06/86	341DVNNU	<150	<20	4,900	<.2	<4	27,700	<4	1,200	<25	37,000	<10
589	12/04/86	341VNNG	<150	<4	950	.6	<4	300	<4	80	<25	410	60
590	12/04/86	341VNNG	<150	<4	970	<.2	<4	200	--	70	<25	670	30
591	6/04/87	341VNNG	<150	<4	860	<.2	<4	290	<5	670	<25	290	<10
593	5/28/87	341VNNG	<150	<4	<500	.3	<20	1,000	4	2,200	<25	670	<10
594	6/04/87	341VNNG	<150	<4	860	<.2	<4	290	<5	180	<25	310	<10
	7/22/87	341VNNG	400	<4	750	1	<4	560	6	270	<25	260	<10
595	11/17/87	112OTSH	--	66	520	--	--	--	--	--	--	--	--
596	11/18/87	112OTSH	--	62	1,000	--	--	--	--	--	--	--	--
597	8/14/87	112OTSH	--	<4	118	--	--	--	--	--	--	--	--
598	8/14/87	112OTSH	--	<4	75	--	--	--	--	--	--	--	--
599	11/17/87	112OTSH	--	59	470	--	--	--	--	--	--	--	--
601	11/17/87	112OTSH	--	81	1,000	--	--	--	--	--	--	--	--
603	8/18/87	112OTSH	--	<4	<500	--	--	--	--	--	--	--	--
605	8/18/87	112OTSH	--	<4	<500	--	--	--	--	--	--	--	--
606	5/19/87	341OSWY	1,400	<4	<500	--	<4	<100	9	<50	<25	<100	40
607	8/18/87	112OTSH	--	19	810	--	--	--	--	--	--	--	--
609	8/18/87	112OTSH	--	7	580	--	--	--	--	--	--	--	--
610	7/16/87	377KNPP	<150	<4	<500	.5	<4	680	<4	110	<25	<100	<10
611	8/18/87	112OTSH	--	<4	<500	--	--	--	--	--	--	--	--
613	8/18/87	112OTSH	--	30	<500	--	--	--	--	--	--	--	--
614	5/19/87	341OSWY	<150	<4	<500	.9	<4	120	<4	<50	<25	180	190
615	8/18/87	112OTSH	--	<4	<500	--	--	--	--	--	--	--	--
616	5/19/87	112CLVM	<150	15	<500	.3	<4	800	<4	340	<25	180	20
617	8/19/87	112OTSH	--	<4	<500	--	--	--	--	--	--	--	--
618	5/19/87	341VNNG	<150	6	<500	.4	<4	<100	<4	<50	<25	<100	10
619	8/19/87	112OTSH	--	<4	<500	--	--	--	--	--	--	--	--
620	5/19/87	341VNNG	<150	9	<500	<.2	<4	970	<4	540	<25	130	40
621	8/19/87	112OTSH	--	<4	<500	--	--	--	--	--	--	--	--
622	5/20/87	341OSWY	<150	<4	<500	.4	<4	2,700	<4	450	<25	<100	20
623	8/19/87	112OTSH	--	<4	<500	--	--	--	--	--	--	--	--
624	7/16/87	341VNNG	200	<4	<500	.4	<4	150	7	70	<25	<100	50
625	8/25/87	112OTSH	--	<4	<500	--	--	--	--	--	--	--	--
626	5/20/87	341VNNG	<150	<4	<500	.5	<4	<100	<4	<50	<25	300	20
627	8/25/87	112OTSH	--	<4	<500	--	--	--	--	--	--	--	--
629	8/25/87	112OTSH	--	<4	<500	--	--	--	--	--	--	--	--
631	8/25/87	112OTSH	--	<4	<500	--	--	--	--	--	--	--	--
633	11/17/87	112OTSH	--	120	1,700	--	--	--	--	--	--	--	--
635	11/18/87	112OTSH	--	100	1,400	--	--	--	--	--	--	--	--
636	5/27/87	341VNNG	<150	<4	<500	.7	<4	<100	<4	<50	<25	<100	20
637	8/26/87	112OTSH	--	17	810	--	--	--	--	--	--	--	--
639	11/18/87	112DRFT	300	11	<500	<.2	<4	520	<4	60	42	310	20
640	5/21/87	341CDKN	<150	<4	<500	.4	<4	530	<4	560	<25	340	40
648	5/21/87	341CDKN	<150	5	<500	.5	<4	610	<4	160	<25	420	<10
664	5/27/87	341VNNG	<150	<4	<500	0.8	<4	110	<5	90	<25	200	<10
666	5/27/87	341CDKN	<150	<4	<500	<.5	<4	<100	<10	160	<25	460	60

Table 8. *Dissolved trace constituents in water from wells and springs in Warren County—Continued*

USGS well or spring number	Date of sample	Hydro-geologic unit	Aluminum (Al)	Arsenic (As)	Barium (Ba)	Cadmium (Cd)	Chromium (Cr)	Iron (Fe)	Lead (Pb)	Manganese (Mn)	Nickel (Ni)	Strontium (Sr)	Zinc (Zn)
668	5/27/87	341VNNG	<150	<4	<500	.9	<4	<100	<10	<50	<25	210	10
674	5/27/87	112ICCC	<150	<4	<500	1	<5	150	<10	310	<25	150	<10
676	5/28/87	341CDKN	<150	<4	<500	.4	<4	<100	<4	<50	<25	120	<10
682	5/28/87	112OTSH	<150	<4	<500	.4	<4	<100	<4	<50	<25	<100	<10
686	5/28/87	112OTSH	<150	<4	<500	.6	<4	<100	<4	<50	<25	<100	<10
688	6/01/87	112OTSH	<150	<4	<500	.8	<5	190	<4	60	<25	170	30
694	6/01/87	341VNNG	<150	<4	<500	.5	<5	690	<5	80	<25	460	<10
696	6/02/87	341VNNG	<150	6	<500	.5	<5	900	<4	110	<25	190	10
700	10/01/86	337CYHG	<150	<4	<500	1	<4	110	6	590	28	<100	50
705	10/02/86	337CBCR	<150	<4	<500	.3	<4	<100	4	120	25	100	20
706	10/02/86	112DRFT	<150	<4	<500	1	<4	<100	5	250	33	<100	20
710	6/02/87	341VNNG	<150	<4	<500	.9	<4	130	4	250	<25	400	10
711	6/02/87	341VNNG	<150	<4	<500	.5	<4	290	<4	670	<25	190	20
713	6/02/87	337CBCR	<150	<4	<500	.5	<4	<100	<4	<50	<25	<100	20
714	6/02/87	341VNNG	<150	<4	<500	.5	<4	180	5	300	<25	<100	20
715	6/02/87	112DRFT	<150	<4	<500	.5	<4	500	<4	460	<25	610	<10
716	6/02/87	112OTSH	<150	<4	<500	1	<4	<100	<4	100	<25	160	<10
718	6/03/87	341VNNG	<150	<4	<500	<.2	<4	<100	<4	<50	<25	360	<10
719	6/03/87	341CDKN	<150	<4	<500	.4	<4	230	<4	<50	<25	340	<10
720	6/09/87	341VNNG	<150	<4	<500	.5	<4	<100	<4	<50	<25	140	20
723	6/10/87	341CDKN	<150	<4	<500	2	<4	1,100	<4	100	<25	450	<10
725	6/10/87	341CDKN	<150	<4	<500	1	<4	120	7	460	<25	210	50
726	6/10/87	341VNNG	<150	<4	<500	.3	<4	470	<4	320	<25	290	<10
729	6/10/87	112DRFT	<150	11	<500	<.2	<4	420	<4	280	<25	160	<10
730	6/11/87	341VNNG	<150	<4	<500	.2	<4	<100	<4	540	<25	220	<10
731	6/11/87	341VNNG	<150	<4	<500	<.2	<4	110	<4	70	<25	100	<10
733	6/11/87	112OTSH	<150	110	1,300	<.2	<4	3,800	<4	170	<25	280	<10
	7/21/87	112OTSH	<150	120	1,300	.2	<4	3,400	<4	120	<25	260	<10
	7/21/87	112OTSH	400	110	<500	<.2	4	220	<4	<50	<25	<100	<10
	11/17/87	112OTSH	--	100	1,100	--	--	--	--	--	--	--	--
734	6/11/87	341CDKN	200	<4	<500	<.2	<4	160	6	240	<25	400	<10
735	6/11/87	341CDKN	<150	<4	<500	<.2	<4	<100	<4	<50	<25	130	<10
738	8/03/87	341RCVL	<150	<4	<500	.2	<4	<100	<4	<50	<25	160	<10
741	7/14/87	341VNNG	<150	<4	<500	.3	<4	<100	<4	<50	34	130	70
744	7/14/87	337CBCR	<150	<4	<500	.3	<4	22,400	<4	1,500	<25	<100	10
746	7/15/87	112DRFT	<150	<4	<500	.3	<4	390	<4	350	<25	320	<10
749	7/15/87	337CBCR	200	<4	1,200	<.2	<4	460	<4	400	<25	460	<10
	7/30/87	337CBCR	500	<4	1,100	<.2	<4	420	<4	400	<25	480	<10
750	7/15/87	112OTSH	<150	<4	<500	.3	<4	<100	<4	<50	<25	<100	<10
751	7/15/87	112OTSH	400	<4	<500	.3	<4	<100	<4	<50	<25	<100	90
755	7/16/87	112ICCC	300	<4	<500	.3	<4	100	<4	100	<25	160	<10
	7/16/87	112ICCC	<150	<4	<500	<.2	<4	<100	<4	110	<25	170	<10
762	8/04/87	341CDKN	<150	<4	<500	.3	<4	<100	<4	<50	<25	240	80
765	8/04/87	341CDKN	<150	<4	950	<.2	6	330	<4	230	<25	220	<10
768	8/04/87	341RCVL	300	<4	<500	.2	4	220	<4	150	<25	120	<10
771	8/06/87	112CLVM	300	5	<500	<.2	<4	850	<4	500	<25	290	<10
775	8/06/87	112ALVM	300	<4	<500	<.2	<4	100	<4	<50	<25	120	<10
776	8/13/87	112OTSH	--	<4	34	--	--	--	--	--	--	--	--
777	8/13/87	337CBCR	--	<4	100	--	--	--	--	--	--	--	--
778	8/13/87	112OTSH	--	<4	35	--	--	--	--	--	--	--	--
779	8/13/87	112OTSH	--	<4	48	--	--	--	--	--	--	--	--
780	8/13/87	112OTSH	--	120	330	--	--	--	--	--	--	--	--
	11/17/87	112OTSH	--	130	520	--	--	--	--	--	--	--	--
781	8/13/87	112OTSH	--	76	470	--	--	--	--	--	--	--	--
	11/17/87	112OTSH	--	96	490	--	--	--	--	--	--	--	--
782	8/13/87	112OTSH	--	<4	<500	--	--	--	--	--	--	--	--
783	8/13/87	112OTSH	--	<4	<500	--	--	--	--	--	--	--	--
784	8/13/87	112OTSH	--	83	850	--	--	--	--	--	--	--	--
	11/17/87	112OTSH	--	110	840	--	--	--	--	--	--	--	--
785	8/13/87	112OTSH	--	<4	<500	--	--	--	--	--	--	--	--

Table 8. *Dissolved trace constituents in water from wells and springs in Warren County—Continued*

USGS well or spring number	Date of sample	Hydro-geologic unit	Aluminum (Al)	Arsenic (As)	Barium (Ba)	Cadmium (Cd)	Chromium (Cr)	Iron (Fe)	Lead (Pb)	Manganese (Mn)	Nickel (Ni)	Strontium (Sr)	Zinc (Zn)
786	8/13/87	112OTSH	--	140	760	--	--	--	--	--	--	--	--
	11/17/87	112OTSH	--	140	630	--	--	--	--	--	--	--	--
787	8/13/87	112OTSH	--	<4	<500	--	--	--	--	--	--	--	--
788	8/13/87	112OTSH	--	<4	<500	--	--	--	--	--	--	--	--
789	8/13/87	112OTSH	--	110	530	--	--	--	--	--	--	--	--
	11/17/87	112OTSH	--	99	530	--	--	--	--	--	--	--	--
790	8/13/87	112OTSH	--	18	440	--	--	--	--	--	--	--	--
791	8/13/87	112OTSH	--	<4	170	--	--	--	--	--	--	--	--
792	8/13/87	112OTSH	--	<4	38	--	--	--	--	--	--	--	--
793	8/13/87	112OTSH	--	13	150	--	--	--	--	--	--	--	--
794	9/17/87	112OTSH	--	150	540	--	--	--	--	--	--	--	--
	11/17/87	112OTSH	--	130	530	--	--	--	--	--	--	--	--
795	8/14/87	112OTSH	--	<4	12	--	--	--	--	--	--	--	--
796	8/14/87	112OTSH	--	<4	160	--	--	--	--	--	--	--	--
797	8/14/87	112OTSH	--	<4	110	--	--	--	--	--	--	--	--
798	8/14/87	112OTSH	--	150	540	--	--	--	--	--	--	--	--
	11/17/87	112OTSH	--	150	550	--	--	--	--	--	--	--	--
799	8/17/87	112OTSH	--	<4	<500	--	--	--	--	--	--	--	--
800	8/13/87	112OTSH	--	<4	<500	--	--	--	--	--	--	--	--
801	8/13/87	112OTSH	--	<4	<500	--	--	--	--	--	--	--	--
802	8/13/87	112OTSH	--	<4	<500	--	--	--	--	--	--	--	--
804	10/13/87	112OTSH	200	92	<500	<0.2	5	3,000	<4	110	<25	<100	20
	11/17/87	112OTSH	--	100	390	--	--	--	--	--	--	--	--
805	8/17/87	112OTSH	--	<4	<500	--	--	--	--	--	--	--	--
806	8/17/87	112OTSH	--	<4	<500	--	--	--	--	--	--	--	--
807	8/17/87	112OTSH	--	<4	<500	--	--	--	--	--	--	--	--
808	8/14/87	112OTSH	--	77	<500	--	--	--	--	--	--	--	--
	11/16/87	112OTSH	--	90	410	--	--	--	--	--	--	--	--
809	8/17/87	112OTSH	--	26	1,100	--	--	--	--	--	--	--	--
	11/17/87	112OTSH	--	27	980	--	--	--	--	--	--	--	--
	11/17/87	112OTSH	300	28	1,200	<.2	<4	<100	<4	90	42	430	200
810	8/18/87	112CLVM	<150	<4	<500	<.2	<4	740	<4	240	120	130	40
811	8/18/87	337CBCR	<150	<4	<500	<.2	<4	<100	<4	<50	140	<100	390
812	8/19/87	337CYHG	<150	<4	<500	.2	4	100	5	<50	<25	<100	20
813	8/18/87	337SNNG	<150	<4	<500	<.2	<4	130	8	<50	120	<100	220
814	8/25/87	341VNNG	<150	<4	17,800	<.2	10	34,100	<4	2,200	<25	2,000	<10
SP-050	5/15/85	324PSVL	90	<4	33	.9	<4	<10	<4	<10	<25	0	20
SP-051	5/16/85	337SNNG	40	<4	14	.9	<4	<10	<4	<10	<25	<10	50
SP-052	5/29/85	324PSVL	--	--	--	--	--	--	23	--	--	--	
	5/29/85	324PSVL	--	--	--	--	--	<10	--	<10	--	--	--
	7/27/87	324PSVL	200	<4	<500	.3	<4	<100	6	50	<25	<100	<25
SP-053	5/29/85	324PSVL	--	--	--	--	--	<10	--	<10	--	--	--
SP-054	5/29/85	324PSVL	--	--	--	--	--	<10	--	<10	--	--	--
	6/25/85	324PSVL	--	--	--	--	--	<10	--	<10	--	--	--
SP-055	6/26/85	341VNNG	--	--	--	--	--	<10	--	<10	--	--	--
SP-056	6/26/85	341VNNG	<35	<500	47	<10	<50	<10	99	<10	36	<10	10
SP-057	7/17/85	324PSVL	--	--	--	--	--	<10	--	<10	--	--	--
SP-058	7/17/85	324PSVL	<35	<500	24	<10	<50	<10	<45	<10	<25	<10	<10
SP-059	8/07/85	112OTSH	--	--	--	--	--	490	--	160	--	--	--
SP-060	10/09/85	337KNPP	--	--	--	--	--	<10	--	<10	--	--	--
SP-061	10/10/85	341OSWY	<35	<1,000	39	<10	<50	<10	<45	<10	<25	40	<10
SP-062	10/10/85	337CYHG	--	--	--	--	--	<10	--	12	--	--	--
SP-063	10/10/85	337KNPP	300	<1,000	43	<10	<50	<10	<45	<10	<25	40	20
SP-064	10/10/85	337CBCR	200	<1,000	69	<10	<50	<10	<45	<10	<25	260	<10
SP-065	10/10/85	337KNPP	200	<1,000	37	<10	<50	<10	<45	<10	<25	370	<10
SP-066	11/07/85	337KNPP	--	--	--	--	--	<10	--	<10	--	--	--
SP-067	11/07/85	337CYHG	--	--	--	--	--	20	--	<10	--	--	--
SP-068	11/07/85	341OSWY	<35	<1,000	32	<10	<50	<10	<45	<10	<25	70	<10
SP-069	11/07/85	324PSVL	--	--	--	--	--	<10	--	87	--	--	--
SP-070	4/09/86	112OTSH	300	<4	<500	0.5	<4	370	<4	<50	2,000	<100	1,000

Table 8. *Dissolved trace constituents in water from wells and springs in Warren County—Continued*

USGS well or spring number	Date of sample	Hydro-geologic unit	Aluminum (Al)	Arsenic (As)	Barium (Ba)	Cadmium (Cd)	Chromium (Cr)	Iron (Fe)	Lead (Pb)	Manganese (Mn)	Nickel (Ni)	Strontium (Sr)	Zinc (Zn)
SP-071	5/28/87	112OTSH	<150	<4	<500	.3	<4	<100	<4	<50	<25	<100	<10
	9/08/87	112OTSH	<150	<4	<500	.2	<4	<100	<4	<50	<25	<100	<10
SP-072	5/19/87	341OSWY	<150	<4	<500	.4	<4	<100	4	<50	<25	<100	110
SP-100	6/05/85	341VNNG	<35	--	240	<10	<50	7,200	<45	240	<25	210	120
SP-101	6/05/85	341VNNG	600	<500	34	<10	<50	40	<45	<10	<25	<10	<10
SP-102	6/05/85	341OSWY	500	<500	53	<10	<50	40	<45	25	<25	<10	<10
SP-103	6/05/85	337SNNG	--	--	--	--	--	<10	--	<10	--	--	--
SP-104	6/06/85	341CRGS	--	--	--	--	--	<10	--	<10	--	--	--
SP-105	6/06/85	337SNNG	200	<500	74	<10	<50	<10	<45	140	<25	<10	50
SP-106	6/06/85	324PSVL	100	<500	48	<10	<50	<10	<45	<10	<25	<10	20
SP-107	6/06/85	324PSVL	800	<500	75	<10	<50	<10	<45	130	<25	10	20
	11/07/85	324PSVL	--	--	--	--	--	<10	--	170	--	--	--
SP-108	6/24/85	324PSVL	<35	<500	58	<10	<50	<10	<45	<10	<25	<10	<10
SP-109	6/25/85	324PSVL	--	--	--	--	--	<10	--	79	--	--	--
SP-110	6/25/85	324PSVL	--	--	--	--	--	<10	--	<10	--	--	--
SP-111	6/25/85	324PSVL	--	--	--	--	--	<10	--	15	--	--	--
SP-113	6/26/85	341VNNG	<35	<500	28	<10	<50	<10	85	<10	46	<10	20
SP-114	6/26/85	337KNPP	--	--	--	--	--	<10	--	<10	--	--	--
SP-115	6/26/85	337CYHG	--	--	--	--	--	<10	--	10	--	--	--
SP-116	6/26/85	324PSVL	--	--	--	--	--	<10	--	13	--	--	--
SP-117	6/06/85	341CRGS	--	--	--	--	--	<10	--	<10	--	--	--
SP-118	7/23/85	341OSWY	<35	<1,000	31	<10	<50	<10	<45	<10	52	<10	<10
SP-119	7/23/85	341CRGS	<35	<1,000	31	<10	<50	<10	<45	<10	50	<10	<10
SP-120	8/28/86	341VNNG	<35	<1,000	150	<10	<50	70	66	<17	<25	<10	60
SP-121	9/04/85	341VNNG	<35	<1,000	<10	<10	<50	<10	<45	<10	<25	<10	<10
SP-123	4/09/86	112OTSH	1,400	<4	<500	1	<4	1,100	<4	6,900	<25	100	<10
SP-124	6/19/86	341RCVL	<150	10	<500	<.2	<4	760	<4	4,500	<25	260	20
	11/07/86	341RCVL	<150	6	--	.7	<4	1,200	<4	4,800	<25	300	30
SP-125	6/19/86	324PSVL	<150	<4	<500	.2	<4	120	<4	50	<25	<100	40
SP-126	8/06/86	324PSVL	<150	<5	<500	.3	<4	140	5	<50	<25	<100	60
SP-127	8/13/86	341CDKN	<150	<10	<500	.7	<4	120	<4	<50	<25	<100	20
SP-128	9/09/86	337KNPP	<150	<4	<500	.2	<4	120	5	<50	<25	1,100	20
SP-129	10/21/86	341VNNG	<150	<4	<500	.4	<4	<100	<4	380	<25	600	20
	9/09/87	341VNNG	<150	<4	<500	.2	<4	<100	<4	450	<25	470	<10
SP-130	7/10/86	341VNNG	<150	<4	<500	.3	<4	150	<4	<50	<25	<100	10
SP-131	5/21/87	341RCVL	<150	<4	<500	<.2	<4	<100	<4	<50	<25	<100	<10
SP-132	7/27/87	324PSVL	200	<4	<500	.3	4	<100	<4	50	<25	<100	20
SP-133	8/27/87	337CBCR	<150	<4	<500	.7	4	170	<4	2,000	<25	<100	<10
SP-134	9/09/87	337KNPP	<150	<5	<500	.5	<4	<100	<4	<50	<25	<100	20
SP-135	9/30/69	337CBCR	200	--	17	--	<2	110	2	2	3	100	80

Table 9. *Volatile organic compounds in water from wells, abandoned oil wells, and one spring in Warren County*

[Detection limit and concentrations are in micrograms per liter; --, no data; see table 1 for hydrogeologic unit abbreviations]

USGS well or spring number	Hydro-geologic unit	Date of sample	Detection of volatile organic compounds	Detection limit	Benzene	Chloroform	Ethyl-benzene	Toluene	Xylenes	Other volatile organic compounds detected but not quantified	Remarks
						Water wells					
Wr 50	341VNNG	7-28-87	No	1.0	--	--	--	--	--	--	Observation well
283	337CYHG	7-23-87	No	1.0	--	--	--	--	--	--	Observation well
389	341VNNG	7-30-87	No	1.0	--	--	--	--	--	--	Domestic well
520	112OTSH	7-29-87	No	1.0	--	--	--	--	--	--	Observation well
522	112OTSH	11-5-85	No	.5	--	--	--	--	--	--	Observation well
561	341VNNG	11-4-86	Yes	.5	1.0	--	--	--	--	--	Domestic well
		7-23-87	No	1.0	--	--	--	--	--	--	Domestic well
568	112OTSH	7-29-87	Yes	1.0	--	1.6	--	--	--	--	Observation well
579	341VNNG	7-30-87	No	1.0	--	--	--	--	--	--	Observation well
594	341VNNG	7-22-87	No	1.0	--	--	--	--	--	--	Observation well
733	112OTSH	7-21-87	No	1.0	--	--	--	--	--	--	Domestic well
749	337CBCR	7-30-87	No	1.0	--	--	--	--	--	--	Domestic well
						Abandoned oil wells					
573	341DVNNU	7-22-87	Yes	100	170	--	--	--	200	Several alkanes and an isomer of cumene	Sampling depth 190 feet
586	341DVNNU	11-5-86	Yes	50	1,000	--	1,200	2,000	400	--	Sampling depth 400 feet
		11-5-86	Yes	50	1,100	--	2,100	1,600	700	Various alkanes trimethylbenzene, and a few cyclic hydrocarbons	Sampling depth 700 feet
		11-5-86	Yes	50	650	--	750	550	280	Various alkanes	Sampling depth 800 feet
		7-23-87	Yes	100	1,200	--	--	160	1,100	Isomer of cumene	Sampling depth 880 feet
587	341DVNNU	11-6-86	Yes	25	--	--	150	--	50	--	Sampling depth 160 feet
		11-6-86	No	25	--	--	--	--	--	--	Sampling depth 292 feet
		11-6-86	No	25	--	--	--	--	--	--	Sampling depth 500 feet
		11-6-86	Yes	50	1,650	--	250	--	50	Ethyl sulfide	Sampling depth 860 feet
						Spring					
SP124	341RCVL	11-7-86	Yes	1.0	--	--	--	--	--	Various alkanes and cyclic hydrocarbons	Spring not used for water supply

Table 10. *Daily maximum ground-water levels in well Wr-50, water years 1984-88*

[Daily maximum ground-water level is the deepest ground-water level measured in feet below land surface during one day; construction information for the well is given in table 5; the location of the well is shown in figure 4c; ---, no record]

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT
					1984 Water Year: October 1, 1983 to September 30, 1984							
1	---	---	44.32	43.94	44.38	43.19	42.43	42.21	41.19	41.93	43.36	44.28
2	---	45.42	44.32	43.92	44.40	43.31	42.43	42.27	41.19	42.03	43.37	44.28
3	---	45.32	44.31	43.80	44.35	43.45	42.42	42.27	41.20	42.10	43.40	44.22
4	---	45.20	44.31	43.75	44.24	43.50	42.37	42.13	41.27	42.10	43.44	44.26
5	---	45.13	44.14	43.82	44.14	43.48	42.14	42.23	41.34	42.09	43.50	44.37
6	---	45.10	44.12	43.90	44.18	43.28	41.84	42.34	41.37	41.99	43.50	44.44
7	---	45.12	43.91	43.99	44.33	43.27	41.90	42.38	41.41	41.92	43.50	44.50
8	---	45.16	44.00	43.99	44.38	43.27	42.05	42.37	41.41	41.98	43.57	44.53
9	---	45.16	44.03	44.09	44.35	43.31	42.11	42.27	41.47	42.04	43.65	44.54
10	---	45.14	44.12	44.21	44.34	43.33	42.11	42.31	41.53	42.01	43.68	44.47
11	---	44.96	44.15	44.21	44.28	43.26	42.06	42.32	41.66	41.92	43.72	44.43
12	---	44.85	44.11	44.22	44.26	43.37	42.02	42.24	41.78	41.87	43.72	44.51
13	---	44.90	43.87	44.23	44.19	43.37	41.97	42.19	41.83	41.97	43.73	44.51
14	---	44.90	43.69	44.23	44.01	43.38	41.98	42.13	41.86	42.09	43.70	44.47
15	---	44.90	43.49	44.24	43.85	43.39	41.96	42.12	42.04	42.13	43.75	44.53
16	---	44.76	43.61	44.21	43.79	43.36	41.89	42.14	42.13	42.13	43.79	44.62
17	---	44.68	43.75	44.21	43.70	43.31	41.78	42.18	41.95	42.17	43.81	44.70
18	---	44.72	43.75	44.20	43.59	43.29	41.87	42.17	41.82	42.22	43.81	44.73
19	45.35	44.71	43.78	44.30	43.53	43.16	42.02	42.03	41.85	42.41	43.88	44.70
20	45.37	44.68	43.86	44.35	43.36	43.07	42.14	41.82	41.89	42.51	43.99	---
21	45.40	44.54	43.87	44.42	43.30	42.90	42.23	41.69	41.87	42.63	44.02	---
22	45.40	44.56	43.58	44.43	43.29	42.59	42.24	41.87	41.87	42.74	44.02	40.72
23	45.35	44.56	43.59	44.46	43.27	42.66	42.15	41.83	41.85	42.77	44.04	40.56
24	45.22	44.46	43.57	44.38	43.18	42.73	41.96	41.48	41.75	42.88	44.09	40.52
25	---	44.42	43.63	44.23	43.12	42.71	42.02	41.44	41.75	42.98	44.15	40.49
26	---	44.46	43.70	44.22	43.31	42.63	42.13	41.33	41.80	43.01	---	40.68
27	---	44.50	43.73	44.21	43.35	42.60	42.17	41.43	41.82	43.05	---	40.71
28	45.23	44.51	43.89	44.21	43.25	42.52	42.25	41.41	41.81	43.18	---	40.71
29	---	44.32	43.94	44.15	43.05	42.28	42.32	41.28	41.85	43.25	---	40.72
30	---	44.25	43.95	44.15	---	42.33	42.29	41.25	41.88	43.29	44.13	40.73
31	---	---	43.94	44.29	---	42.41	---	41.21	---	43.25	44.18	---
					1985 Water Year: October 1, 1984 to September 30, 1985							
1	40.75	42.00	41.78	41.00	41.96	41.68	40.24	41.32	42.70	42.98	42.49	42.00
2	40.78	42.01	41.91	40.96	42.02	41.59	40.12	41.40	42.76	42.96	42.59	42.05
3	40.74	42.07	41.91	41.00	42.20	41.71	40.09	41.50	42.85	42.90	42.67	42.06
4	40.91	41.97	41.97	40.93	42.24	41.69	39.99	41.60	42.94	42.89	42.70	42.05
5	41.06	41.74	41.99	40.68	42.24	41.45	39.93	41.59	42.89	42.89	42.73	42.08
6	41.14	41.82	41.85	40.74	42.00	41.65	39.79	41.59	42.96	42.81	42.73	42.17
7	41.15	41.96	41.75	40.73	42.11	41.65	40.03	41.67	43.01	42.83	42.72	42.26
8	41.11	42.00	41.78	40.83	42.19	41.47	40.10	41.83	42.95	42.84	42.50	42.28
9	41.20	41.96	41.88	41.07	42.27	41.24	40.20	41.93	42.92	42.71	42.53	42.29
10	41.28	41.83	41.89	41.10	42.31	41.18	40.29	41.95	43.00	42.59	42.58	42.34
11	41.29	41.60	41.83	41.05	42.30	41.11	40.29	41.96	43.03	42.58	42.58	42.50
12	41.30	41.53	41.83	41.01	42.15	40.76	40.40	41.96	42.97	42.59	42.59	42.64
13	41.26	41.65	41.75	41.01	41.87	40.68	40.41	42.04	42.95	42.62	42.58	42.78
14	41.21	41.70	41.82	40.89	42.01	40.65	40.40	42.14	43.06	42.61	42.61	42.84
15	41.25	41.72	41.82	41.11	42.12	40.73	40.32	42.17	43.09	42.50	42.60	42.85
16	41.39	41.52	41.82	41.28	42.15	40.73	40.28	42.17	43.05	42.32	42.63	42.84
17	41.44	41.64	41.65	41.22	42.25	40.59	40.48	42.12	43.01	42.33	42.68	42.82
18	41.50	41.64	41.63	41.00	42.35	40.63	40.50	42.12	42.95	42.33	42.69	42.91
19	41.51	41.64	41.62	41.06	42.35	40.66	40.48	42.25	42.92	42.29	42.71	42.94
20	41.57	41.83	41.55	41.27	42.36	40.72	40.57	42.36	42.95	42.23	42.74	42.94
21	41.58	41.97	41.54	41.32	42.38	40.83	40.65	42.50	42.98	42.19	42.80	42.93
22	41.70	41.97	41.39	41.40	42.34	40.86	40.71	42.56	42.99	42.14	42.83	42.98
23	41.78	41.92	41.42	41.43	42.28	40.81	40.76	42.57	42.92	42.20	42.86	42.98
24	41.83	41.79	41.42	41.43	42.09	40.67	40.76	42.61	42.90	42.24	42.87	43.05
25	41.89	41.79	41.52	41.42	41.91	40.76	40.79	42.64	42.90	42.26	42.79	43.10
26	41.82	41.86	41.64	41.72	41.89	40.84	40.86	42.64	42.89	42.25	42.87	43.10
27	41.79	41.86	41.64	41.72	41.75	40.80	40.97	42.64	42.91	42.28	42.98	43.09
28	41.76	41.71	41.49	41.76	41.74	40.59	41.10	42.67	42.89	42.34	43.03	43.30
29	41.82	41.70	41.22	41.90	---	40.43	41.27	42.77	42.87	42.39	---	43.35
30	41.85	41.71	41.13	41.96	---	40.49	41.29	42.79	42.92	42.42	---	43.35
31	42.00	---	41.13	41.93	---	40.49	---	42.77	---	42.43	41.94	---

Table 10. *Daily maximum ground-water levels in well Wr-50, water years 1984-88—Continued*

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT
						1986 Water Year: October 1, 1985 to September 30, 1986						
1	43.36	43.90	41.79	42.01	42.47	41.72	41.90	41.39	42.19	41.56	41.92	43.33
2	43.46	43.87	41.57	42.04	42.32	41.73	41.95	41.45	42.35	41.53	41.99	43.34
3	43.46	43.88	41.69	42.02	42.33	41.76	41.99	41.58	42.45	41.62	42.09	43.36
4	43.43	43.85	41.76	42.08	42.28	41.81	42.03	41.61	42.45	41.73	42.20	43.35
5	43.31	43.66	41.78	41.97	42.06	41.84	42.05	41.57	42.42	41.81	42.25	43.28
6	43.45	43.54	41.62	42.15	42.04	41.82	42.03	41.53	42.27	41.91	42.26	43.34
7	43.61	43.54	41.65	42.39	42.02	41.98	41.92	41.59	42.14	41.96	42.25	43.43
8	43.70	43.61	---	42.52	41.96	42.16	41.79	41.69	41.94	41.99	42.23	43.50
9	43.72	43.61	---	42.50	42.01	42.14	41.68	41.81	41.94	41.94	42.30	42.66
10	43.71	43.57	---	42.32	42.02	42.07	41.63	41.88	41.99	41.96	42.37	42.35
11	43.72	43.46	---	42.32	42.00	42.07	41.61	41.84	41.90	41.98	42.42	42.19
12	43.77	43.43	---	42.25	42.00	42.14	41.74	41.81	41.72	41.97	42.58	42.16
13	43.71	43.25	---	42.29	42.08	42.11	41.83	41.87	41.59	41.92	42.64	42.34
14	43.68	43.06	---	42.40	42.09	41.94	41.86	41.96	41.62	41.95	42.66	42.45
15	43.67	42.91	---	42.56	42.01	41.76	41.80	42.04	41.60	42.04	42.65	42.48
16	43.88	42.91	---	42.60	42.06	41.84	41.71	42.04	41.55	42.05	42.65	42.54
17	43.97	42.64	---	42.59	42.01	41.89	41.69	42.07	41.44	42.03	42.68	42.61
18	43.97	42.57	---	42.56	41.95	41.90	41.77	42.06	41.47	41.98	42.76	42.58
19	43.93	42.51	---	42.44	41.91	41.72	41.76	42.08	41.45	41.95	42.85	42.55
20	43.93	42.36	---	42.21	41.94	41.83	41.66	42.07	41.35	41.78	42.92	42.55
21	43.95	42.39	---	42.30	41.88	41.98	41.40	42.11	41.41	41.71	42.97	42.64
22	43.95	42.37	---	42.33	41.88	42.00	41.36	42.14	41.38	41.78	43.03	---
23	43.96	42.21	41.39	42.48	41.71	41.89	41.47	42.12	41.27	41.83	43.04	---
24	43.95	42.23	41.41	42.51	41.71	42.03	41.52	42.18	41.42	41.83	43.01	42.08
25	43.90	42.26	41.56	42.49	41.65	42.03	41.47	42.23	41.47	41.79	43.02	42.15
26	43.91	42.24	41.60	42.30	41.64	41.96	41.41	42.26	41.47	41.74	43.04	42.19
27	43.90	41.95	41.61	42.06	41.49	41.88	41.39	42.24	41.41	41.75	42.99	42.15
28	44.01	41.92	41.76	42.07	41.64	41.94	41.37	42.22	41.40	41.74	43.09	42.20
29	44.01	41.83	41.77	42.16	---	41.89	41.33	42.22	41.51	41.75	43.22	42.22
30	43.98	41.84	41.86	42.39	---	41.83	41.41	42.21	41.58	41.80	43.29	42.19
31	43.92	---	41.83	42.45	---	41.90	---	42.16	---	41.86	43.31	---
						1987 Water Year: October 1, 1986 to September 30, 1987						
1	42.11	---	41.66	40.84	41.52	42.10	41.17	40.43	41.04	41.99	39.52	40.99
2	42.02	---	41.61	40.70	41.45	41.80	41.05	40.45	41.06	41.92	39.49	41.09
3	41.99	---	41.26	40.70	41.60	41.97	41.07	40.55	41.05	41.74	39.50	41.22
4	41.74	---	41.20	40.89	41.86	42.10	40.96	40.66	41.12	41.71	39.53	41.27
5	41.57	---	41.33	41.08	41.92	42.13	40.71	40.69	41.18	41.74	39.66	41.30
6	41.59	---	41.31	41.07	41.90	42.13	40.64	40.68	41.26	41.75	39.77	41.30
7	41.60	---	41.29	40.93	41.76	42.03	40.50	40.59	41.27	41.67	39.83	41.28
8	41.59	---	41.17	41.01	41.61	41.83	40.39	40.62	41.25	41.60	39.86	41.24
9	41.62	---	41.04	41.04	41.81	41.67	40.35	40.65	41.32	41.58	39.84	41.13
10	41.66	---	40.85	40.96	41.86	41.83	40.32	40.67	41.45	41.54	39.96	41.19
11	41.65	---	40.83	40.89	41.88	41.85	40.25	40.72	41.51	41.52	40.04	41.19
12	41.62	---	40.75	41.02	41.82	41.83	40.24	40.81	41.45	41.50	40.11	41.15
13	41.49	---	41.02	41.19	41.88	41.81	40.39	40.92	41.39	41.44	40.20	41.00
14	41.35	---	41.00	41.18	41.93	41.77	40.40	40.96	41.46	41.41	40.25	41.00
15	41.43	---	40.93	41.22	42.07	41.72	40.33	40.91	41.52	41.48	40.26	41.03
16	41.45	---	40.91	41.34	42.07	41.77	40.25	40.94	41.61	41.57	40.27	---
17	41.56	---	40.91	41.33	42.02	41.77	40.19	40.91	41.74	41.63	40.26	---
18	41.69	---	40.79	41.27	42.07	41.75	40.32	40.88	41.80	41.64	40.41	---
19	41.67	---	40.78	41.10	42.19	41.68	40.42	40.89	41.81	41.66	40.50	---
20	41.65	---	40.89	41.14	42.24	41.62	40.45	40.97	41.81	41.68	40.63	---
21	41.54	---	41.04	41.23	42.12	41.61	40.46	41.01	41.76	41.76	40.68	---
22	41.55	41.89	41.05	41.24	42.13	41.69	40.48	41.01	41.74	41.78	40.75	---
23	41.55	41.87	40.97	41.08	42.12	41.73	40.47	41.02	41.79	41.73	40.69	---
24	41.64	41.76	40.94	41.35	42.25	41.71	40.56	41.04	41.87	41.75	40.98	---
25	41.67	41.78	40.74	41.43	42.35	41.70	40.62	41.06	41.91	41.78	41.04	---
26	41.63	41.69	40.85	41.46	42.40	41.58	40.66	41.07	41.87	41.77	41.06	---
27	41.55	41.57	40.89	41.46	42.37	41.58	40.64	41.07	41.94	41.82	40.88	---
28	41.67	41.56	40.89	41.52	42.32	41.57	40.47	41.06	42.06	---	40.83	---
29	41.71	41.55	40.84	41.55	---	41.60	40.45	41.05	42.11	---	40.95	---
30	41.86	41.65	40.74	41.41	---	41.59	40.38	41.05	42.03	---	40.98	---
31	41.95	---	40.85	41.52	---	41.46	---	41.02	---	---	40.98	---

Table 10. *Daily maximum ground-water levels in well Wr-50, water years 1984-88—Continued*

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT
					1988 Water Year: October 1, 1987 to September 30, 1988							
1	---	---	---	40.64	41.75	41.34	40.72	40.96	41.07	42.56	43.40	43.56
2	---	---	---	40.77	41.61	41.33	40.66	41.02	41.09	42.62	43.45	43.87
3	---	---	40.29	40.77	41.57	41.24	40.63	41.04	41.15	42.67	43.46	43.84
4	---	---	40.23	40.74	41.40	41.22	40.23	41.03	41.26	42.76	43.50	43.73
5	---	---	40.36	40.81	41.30	41.37	39.89	41.01	41.31	42.83	43.53	43.55
6	---	---	40.55	40.97	41.40	41.38	39.83	40.98	41.33	42.87	43.45	43.69
7	---	---	40.61	41.05	41.44	41.34	39.64	41.04	41.33	42.89	43.47	43.81
8	---	---	40.61	41.05	41.43	41.38	39.77	41.06	41.39	42.89	43.53	43.85
9	---	---	40.53	40.97	41.44	41.31	39.87	41.04	41.53	42.89	43.55	43.84
10	---	---	40.31	41.13	41.51	41.05	39.89	41.01	41.67	42.88	43.58	43.89
11	---	---	40.26	41.16	41.52	41.07	39.89	41.13	41.78	42.89	43.62	43.96
12	---	---	40.08	41.16	41.44	41.06	39.90	41.20	41.83	42.95	43.66	43.99
13	---	---	40.33	41.23	41.32	40.87	39.94	41.19	41.94	43.02	43.71	43.93
14	---	---	40.46	41.46	41.44	40.77	39.96	41.17	42.01	43.01	43.67	43.68
15	---	---	40.46	41.46	41.43	40.76	40.08	41.16	42.03	43.08	43.63	43.59
16	---	---	40.11	41.44	41.27	40.86	40.16	41.03	41.95	43.12	43.61	---
17	---	---	40.37	41.44	41.35	40.94	40.19	40.99	42.00	43.16	43.60	---
18	---	---	40.47	41.47	41.41	40.94	40.09	41.02	42.09	43.21	43.61	---
19	---	---	40.47	41.53	41.41	40.82	40.23	40.99	42.16	43.20	43.64	---
20	---	---	40.45	41.50	41.16	40.79	40.32	40.92	42.18	43.25	43.64	43.87
21	---	---	40.30	41.31	41.21	41.01	40.38	40.85	42.18	43.23	43.74	43.87
22	---	---	40.30	41.36	41.22	41.12	40.52	40.83	42.16	43.22	43.81	43.87
23	---	---	40.37	41.36	41.11	41.12	40.53	40.79	42.28	43.27	43.81	43.82
24	---	---	40.39	41.33	41.20	41.00	40.57	40.69	42.37	43.30	43.69	43.84
25	---	---	40.29	41.36	41.24	40.97	40.69	40.75	42.40	43.34	43.66	43.92
26	---	---	40.36	41.42	41.24	40.82	40.71	40.84	42.35	43.37	43.71	44.02
27	---	---	40.42	41.67	41.16	40.66	40.71	40.91	42.43	43.43	43.77	44.05
28	---	---	40.42	41.84	41.24	40.76	40.72	40.94	42.48	43.38	43.76	44.12
29	---	---	40.42	41.86	41.28	40.76	40.75	40.96	42.51	43.37	43.76	44.16
30	---	---	40.60	41.83	---	40.68	40.90	41.01	42.52	43.38	43.76	44.16
31	---	---	40.60	41.76	---	40.73	---	41.07	---	43.31	43.81	---

Table 11. *Daily maximum ground-water levels in well Wr-283, water years 1986-88*

[Daily maximum ground-water level is the deepest ground-water level measured in feet below land surface during one day; construction information for the well is given in table 5; the location of the well is shown in figure 4c; ---, no record

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT
				1986 Water Year: October 1, 1985 to September 30, 1986								
1	---	45.89	---	45.67	45.88	45.82	45.95	46.08	46.76	46.46	46.57	46.92
2	---	45.89	---	45.74	45.81	45.88	45.99	46.13	46.75	46.48	46.60	46.94
3	---	45.89	---	45.74	45.78	45.89	46.01	46.15	46.75	46.49	46.63	46.96
4	---	45.83	---	45.80	45.73	45.95	46.02	46.18	46.75	46.51	46.68	46.99
5	---	45.80	---	45.80	45.60	45.97	46.04	46.18	46.67	46.53	46.69	46.99
6	---	45.49	45.39	45.82	45.50	45.96	46.07	46.21	46.60	46.55	46.70	47.01
7	---	45.45	45.39	45.85	45.40	46.05	46.03	46.19	46.52	46.56	46.71	47.03
8	45.88	45.50	45.40	45.88	45.45	46.07	45.94	46.21	46.45	46.57	46.75	47.05
9	45.91	45.49	45.45	45.90	45.50	46.07	45.89	46.30	46.45	46.58	46.80	47.08
10	45.91	45.44	45.46	45.92	45.53	46.06	45.88	46.34	46.42	46.60	46.80	47.10
11	45.93	45.34	45.41	45.95	45.58	46.19	45.88	46.35	46.36	46.61	46.84	47.09
12	45.94	45.25	45.35	45.98	45.68	46.18	45.92	46.37	46.28	46.63	46.84	47.09
13	46.01	45.22	45.29	45.99	45.69	46.12	45.95	46.39	46.24	46.64	46.85	47.12
14	46.04	45.20	---	46.02	45.69	46.06	45.95	46.39	46.30	46.66	46.87	47.13
15	45.97	45.22	---	46.03	45.68	46.00	45.94	46.41	46.29	46.67	46.86	47.15
16	45.98	---	45.50	46.01	45.77	---	45.92	46.42	46.26	46.68	46.82	47.16
17	45.98	---	45.47	46.00	45.76	---	45.90	46.44	46.25	46.68	46.84	47.20
18	45.97	---	45.46	46.00	45.77	45.95	45.88	46.44	46.15	46.59	46.78	47.19
19	45.96	---	45.45	45.97	45.76	45.79	45.87	46.47	46.15	46.46	46.78	47.20
20	45.93	---	45.45	45.85	45.71	45.81	45.85	46.49	46.16	46.26	46.80	47.20
21	45.94	---	45.45	45.70	45.59	45.80	45.78	46.50	46.22	46.21	46.81	47.21
22	45.93	45.41	45.46	45.65	45.56	45.78	45.79	46.52	46.23	46.20	46.83	47.21
23	45.92	45.39	45.43	45.67	45.59	45.77	45.79	46.53	46.26	46.22	46.83	47.18
24	45.93	45.39	45.47	45.72	45.59	45.80	45.80	46.55	46.29	46.25	46.80	47.15
25	45.79	45.40	45.50	45.72	45.59	45.80	45.85	46.56	46.34	46.39	46.82	47.15
26	45.79	45.26	45.52	45.70	45.66	45.79	45.89	46.75	46.37	46.42	46.82	47.16
27	45.79	45.18	45.55	45.74	45.72	45.80	46.00	46.77	46.41	46.45	46.80	47.13
28	45.87	45.08	45.58	45.74	45.76	45.87	46.01	46.76	46.41	46.47	46.85	47.13
29	45.88	45.02	45.60	45.85	---	45.88	46.06	46.76	46.43	46.49	46.87	47.13
30	45.88	---	45.63	45.89	---	45.90	46.08	46.76	46.44	46.52	46.88	47.13
31	45.89	---	45.65	45.90	---	45.95	---	46.75	---	46.55	46.91	---
				1987 Water Year: October 1, 1986 to September 30, 1987								
1	47.12	46.67	46.07	46.08	46.58	47.00	46.30	46.69	46.86	46.94	45.74	45.95
2	47.09	46.64	45.96	46.13	46.60	46.99	46.27	46.71	46.87	46.81	45.71	45.95
3	47.03	46.62	45.85	46.18	46.66	46.82	46.33	46.72	46.87	46.57	45.65	45.99
4	46.80	46.60	45.80	46.24	46.72	46.77	46.31	46.75	46.90	46.61	45.66	46.01
5	46.67	46.60	45.82	46.25	46.75	46.75	46.24	46.65	46.92	46.65	45.66	46.04
6	46.69	46.59	45.84	46.17	46.75	46.74	46.24	46.65	46.95	46.68	45.71	46.04
7	46.70	46.61	45.86	46.21	46.76	46.72	46.20	46.66	46.96	46.60	45.77	46.04
8	46.72	46.51	45.88	46.25	46.78	46.72	46.13	46.68	46.97	46.54	45.82	45.96
9	46.76	---	45.88	46.28	46.83	46.56	46.08	46.72	47.00	46.55	45.81	45.85
10	46.80	---	45.80	46.26	46.87	46.54	46.13	46.80	47.04	46.64	45.81	45.80
11	46.82	---	45.73	46.28	46.86	46.53	46.18	46.82	47.04	46.83	45.85	45.80
12	46.84	46.56	45.76	46.34	46.89	46.57	46.24	46.85	47.00	46.82	45.87	45.63
13	46.84	46.52	45.86	46.37	46.92	46.60	46.29	46.85	46.98	46.81	45.88	45.48
14	46.85	46.47	45.90	46.39	46.93	46.62	46.36	46.85	46.99	46.71	45.94	45.46
15	46.89	46.41	45.94	46.40	46.96	46.66	46.37	46.80	47.01	46.63	46.18	45.48
16	46.88	46.37	45.94	46.40	46.96	46.70	46.38	46.70	47.04	46.55	46.18	45.49
17	46.89	46.36	45.94	46.40	46.96	46.72	46.39	46.70	47.08	46.58	46.12	45.54
18	46.88	46.35	45.95	46.37	46.96	46.73	46.45	46.71	47.09	46.61	46.11	45.39
19	46.89	46.31	45.95	46.33	46.96	46.75	46.47	46.73	47.09	46.65	46.12	45.33
20	46.89	46.27	45.96	46.30	46.97	46.77	46.49	46.73	47.11	46.70	46.15	45.29
21	46.83	46.22	45.96	46.35	46.97	46.80	46.51	46.75	47.10	46.75	46.22	45.28
22	46.76	46.23	45.96	46.34	46.98	46.83	46.52	46.77	47.06	46.81	46.21	45.28
23	46.71	46.22	45.96	46.35	46.98	46.84	46.55	46.82	47.04	46.80	46.21	45.29
24	46.68	46.20	45.97	46.41	46.98	46.84	46.56	46.85	47.07	---	46.19	45.34
25	46.68	46.15	45.97	46.42	46.99	46.82	46.58	46.85	47.07	---	46.18	45.37
26	46.64	46.04	45.97	46.46	46.98	46.71	46.60	46.85	47.11	---	46.17	45.41
27	46.61	45.99	45.96	46.46	46.98	46.64	46.63	46.85	47.18	46.01	46.01	45.43
28	46.63	45.94	45.98	46.49	46.99	46.61	46.63	46.85	47.24	45.90	45.94	45.45
29	46.70	45.96	45.97	46.51	---	46.61	46.66	46.85	47.24	45.82	45.93	45.46
30	46.73	46.05	45.98	46.55	---	46.58	46.67	46.85	47.13	45.78	45.93	45.48
31	46.70	---	46.03	46.56	---	46.45	---	46.85	---	45.76	45.93	---

Table 11. *Daily maximum ground-water levels in well Wr-283, water years 1986-88—Continued*

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT
					1988 Water Year: October 1, 1987 to September 30, 1988							
1	45.49	45.87	45.47	45.83	46.30	46.40	46.31	---	46.30	46.95	47.15	47.90
2	45.50	45.86	45.52	45.88	46.26	46.41	46.34	46.45	46.33	46.96	47.18	47.86
3	45.53	45.86	45.49	45.89	46.09	46.40	46.36	46.39	46.32	46.98	47.20	47.80
4	45.54	45.85	45.49	45.93	46.00	46.40	46.21	46.30	46.35	46.96	47.21	47.72
5	45.56	45.85	45.49	45.96	46.04	46.40	46.12	46.25	46.37	46.98	47.22	47.63
6	45.56	45.85	45.49	45.99	46.10	46.41	46.08	46.23	46.39	47.00	47.24	47.70
7	45.58	45.85	45.52	46.02	46.11	46.40	46.13	46.22	46.40	47.00	47.25	47.71
8	45.60	45.85	45.55	46.05	46.17	46.40	46.20	46.21	46.42	47.00	47.29	47.71
9	45.62	45.85	45.55	46.09	46.20	46.40	46.26	46.20	46.45	47.01	47.30	47.67
10	45.63	45.86	45.58	46.12	46.25	46.40	46.29	46.18	46.48	47.02	47.33	47.79
11	45.65	45.76	45.61	46.15	46.27	46.33	46.30	46.19	46.50	47.04	47.35	47.81
12	45.68	45.64	45.61	46.18	46.22	46.27	46.33	46.20	46.52	47.05	47.37	47.80
13	45.68	45.58	45.64	46.20	46.29	46.19	46.37	46.19	46.55	47.07	47.39	47.74
14	45.70	45.59	45.64	46.21	46.30	46.11	46.40	46.20	46.58	47.09	47.40	47.71
15	45.69	45.60	45.67	46.22	46.30	46.10	46.45	46.20	46.60	47.10	47.40	47.75
16	45.71	45.67	45.68	46.24	46.33	46.14	46.48	46.15	46.62	47.12	47.41	47.81
17	45.72	45.65	45.70	46.25	46.35	46.19	---	46.10	46.65	47.14	47.43	47.90
18	45.76	45.67	45.62	46.28	46.35	46.19	46.47	46.08	46.68	47.15	47.47	47.95
19	45.79	45.66	45.64	46.25	46.33	46.21	46.50	46.02	46.70	47.16	47.49	---
20	45.82	45.62	45.62	46.14	46.31	46.25	46.54	45.96	46.72	47.17	47.50	---
21	45.86	45.65	45.55	46.08	46.34	46.33	46.57	45.95	46.73	47.10	47.52	---
22	45.87	45.67	45.50	46.05	46.32	46.38	46.60	45.96	46.73	46.92	47.55	---
23	45.86	45.69	45.53	46.03	46.32	46.38	46.64	45.97	46.80	46.95	47.54	---
24	45.86	45.72	45.52	46.05	46.31	46.40	---	45.99	46.83	46.96	47.52	---
25	45.86	45.71	45.56	46.07	46.31	46.34	---	46.04	46.83	47.00	47.53	---
26	45.87	45.74	45.62	46.13	46.29	46.23	46.55	46.08	46.85	47.01	47.59	---
27	45.86	45.74	45.66	46.20	46.35	46.20	46.50	46.10	46.89	47.04	47.85	---
28	45.86	45.74	45.66	46.27	46.36	46.21	46.47	46.14	46.90	47.08	47.92	---
29	45.85	45.68	45.71	46.27	46.42	46.21	46.45	46.20	46.92	47.10	47.92	---
30	45.86	45.52	45.75	46.30	---	46.27	---	46.25	46.94	47.11	47.83	---
31	45.86	---	45.75	46.34	---	46.28	---	46.30	---	47.12	47.89	---

Table 12. *Daily maximum ground-water levels in well Wr-505, water year 1986*

[Daily maximum ground-water level is the deepest ground-water level measured in feet below land surface during one day; construction information for the well is given in table 5; the location of the well is shown in figure 4o; ---, no record]

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT
					1986 Water Year: October 1, 1985 to September 30, 1986							
1	---	---	7.08	9.07	8.63	8.25	8.80	8.61	9.99	8.62	8.48	9.60
2	---	---	7.40	9.07	8.50	8.36	8.88	8.90	10.01	8.56	8.60	9.68
3	---	---	7.49	9.17	8.40	8.45	8.89	8.97	9.97	8.73	8.74	9.70
4	---	10.40	7.44	9.15	8.31	8.56	8.96	9.01	10.01	8.80	8.82	9.71
5	---	10.22	7.48	9.10	8.00	8.57	8.96	9.06	9.99	8.94	8.91	9.75
6	---	9.54	7.72	9.25	7.21	8.63	8.98	9.10	9.55	8.98	9.00	9.80
7	---	9.12	7.75	9.30	7.30	8.90	8.95	9.11	9.18	9.10	9.02	9.85
8	---	9.05	7.89	9.31	7.50	8.92	9.02	9.20	8.84	9.11	9.08	9.90
9	---	9.01	8.00	9.20	7.65	8.83	9.01	9.28	8.40	9.08	9.13	9.91
10	---	8.85	8.00	9.30	7.75	8.84	9.00	9.29	8.38	9.16	9.12	9.95
11	---	8.41	7.91	9.29	7.90	8.40	9.05	9.36	8.31	9.18	8.65	9.91
12	---	8.05	7.67	9.25	8.08	8.24	9.10	9.43	7.60	9.11	8.55	10.02
13	---	7.72	7.49	9.40	8.20	8.05	9.08	9.49	6.73	9.01	8.50	10.04
14	---	7.50	7.70	9.49	8.21	7.65	9.02	9.52	6.91	8.91	8.50	10.05
15	---	7.35	7.79	9.50	8.42	7.48	8.99	9.55	7.14	8.94	8.61	10.10
16	---	7.24	7.90	9.47	8.44	7.60	8.93	9.55	7.12	8.95	8.61	10.11
17	---	6.83	7.90	9.41	8.50	7.69	8.72	9.60	6.75	8.98	8.59	10.11
18	---	6.97	8.10	9.39	8.48	7.70	8.60	9.68	6.81	9.12	8.70	10.11
19	---	7.16	8.20	8.94	8.31	7.88	8.49	9.65	6.95	7.93	8.78	10.13
20	---	7.51	8.19	8.25	7.81	8.03	8.39	9.55	7.27	6.28	8.85	10.12
21	---	7.61	8.30	7.55	7.41	8.08	8.31	9.54	7.41	6.12	8.93	10.15
22	---	7.71	8.28	7.57	7.38	8.11	8.40	9.58	7.49	6.57	9.00	10.15
23	---	7.80	8.35	7.60	7.50	8.25	8.40	9.63	7.71	6.88	9.09	10.05
24	---	8.03	8.52	7.68	7.61	8.35	8.40	9.68	7.95	7.12	9.20	9.75
25	---	8.10	8.60	7.65	7.72	8.30	8.40	9.70	8.09	7.37	9.23	9.73
26	---	8.02	8.65	7.74	7.80	8.35	8.48	9.75	8.20	7.53	9.25	9.70
27	---	7.25	8.70	8.01	8.08	8.45	8.50	9.78	8.22	7.74	9.31	9.22
28	---	7.00	8.80	8.20	8.20	8.46	8.59	9.80	8.32	7.88	9.42	8.91
29	---	7.05	8.88	8.36	---	8.51	8.71	9.81	8.48	8.09	9.45	8.80
30	---	7.08	8.92	8.51	---	8.68	8.73	9.85	8.60	8.24	9.51	8.74
31	---	---	9.00	8.60	---	8.71	---	9.90	---	8.36	9.52	---

Table 13. *Daily maximum ground-water levels in well Wr-520, water years 1986-88*

[Daily maximum ground-water level is the deepest ground-water level measured in feet below land surface during one day; construction information for the well is given in table 5; the location of the well is shown in figure 4p; ---, no record]

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT
						1986 Water Year: October 1, 1985 to September 30, 1986						
1	---	---	---	---	---	---	---	---	9.58	9.40	8.71	9.49
2	---	---	---	---	---	---	---	---	9.60	9.38	8.69	9.51
3	---	---	---	---	---	---	---	---	9.81	9.35	---	9.50
4	---	---	---	---	---	---	---	---	9.82	9.26	---	9.29
5	---	---	---	---	---	---	---	---	9.81	9.18	---	9.26
6	---	---	---	---	---	---	---	---	---	9.24	---	9.26
7	---	---	---	---	---	---	---	---	---	9.31	8.78	9.30
8	---	---	---	---	---	---	---	---	---	9.45	8.83	9.31
9	---	---	---	---	---	---	---	---	---	9.43	8.81	9.22
10	---	---	---	---	---	---	---	---	---	9.20	---	9.20
11	---	---	---	---	---	---	---	---	---	9.25	---	9.38
12	---	---	---	---	---	---	---	---	---	9.10	---	9.36
13	---	---	---	---	---	---	---	---	---	8.55	---	9.31
14	---	---	---	---	---	---	---	---	---	8.25	8.85	9.14
15	---	---	---	---	---	---	---	---	---	8.41	9.12	9.39
16	---	---	---	---	---	---	---	---	---	8.58	9.10	9.39
17	---	---	---	---	---	---	---	---	4.50	8.61	8.96	9.41
18	---	---	---	---	---	---	---	---	4.63	8.38	9.05	9.42
19	---	---	---	---	---	---	---	---	4.91	---	8.95	9.40
20	---	---	---	---	---	---	---	---	5.61	---	9.23	9.30
21	---	---	---	---	---	---	---	8.71	6.20	---	9.33	9.19
22	---	---	---	---	---	---	---	8.83	7.33	---	9.39	9.31
23	---	---	---	---	---	---	---	8.84	8.23	---	9.50	9.21
24	---	---	---	---	---	---	---	8.96	8.46	---	9.48	8.85
25	---	---	---	---	---	---	---	9.18	8.54	---	9.49	9.20
26	---	---	---	---	---	---	---	9.38	8.70	---	9.51	9.29
27	---	---	---	---	---	---	---	9.40	8.79	---	9.50	8.61
28	---	---	---	---	---	---	---	9.43	8.80	8.51	9.51	8.31
29	---	---	---	---	---	---	---	9.66	8.79	8.66	9.57	8.43
30	---	---	---	---	---	---	---	9.63	8.88	8.65	9.50	8.50
31	---	---	---	---	---	---	---	9.60	---	8.69	9.47	---
						1987 Water Year: October 1, 1986 to September 30, 1987						
1	8.11	---	8.42	7.84	7.93	9.75	---	---	9.50	8.50	9.43	9.06
2	8.10	---	8.41	8.08	8.99	7.81	---	---	9.51	8.03	9.45	9.30
3	8.03	---	6.94	8.10	9.06	7.89	6.05	---	9.34	5.90	9.20	9.60
4	6.46	---	6.55	---	9.15	7.85	6.11	7.71	8.95	6.09	9.40	9.62
5	6.60	---	6.13	8.61	9.19	7.95	6.90	8.74	8.92	5.83	9.55	9.67
6	6.68	8.50	5.78	8.82	9.21	8.10	6.90	9.54	8.96	6.04	9.65	9.69
7	6.36	8.31	5.85	8.83	9.20	8.02	5.43	9.56	8.99	5.67	9.70	9.70
8	6.21	8.31	5.84	8.84	9.19	7.23	5.14	8.72	9.20	6.06	9.70	9.65
9	6.35	8.89	5.73	8.86	9.22	6.90	5.30	8.44	9.24	7.01	9.70	8.61
10	6.45	8.91	5.25	8.88	9.26	---	4.66	8.67	9.27	7.44	9.67	8.48
11	6.56	8.74	5.50	8.90	9.25	---	---	8.92	9.55	7.91	9.70	8.72
12	6.79	8.63	5.68	8.90	9.24	---	---	8.98	9.59	8.40	9.72	8.47
13	6.88	8.52	5.91	8.92	9.28	---	---	9.21	9.59	8.45	9.75	8.50
14	6.89	8.53	6.10	8.97	9.30	---	---	9.27	9.66	8.50	9.77	8.59
15	7.10	8.53	6.29	8.92	9.33	---	---	9.26	9.31	8.41	9.79	7.84
16	7.00	8.51	6.44	8.38	9.32	---	---	9.21	8.99	8.25	9.80	6.83
17	6.98	8.50	6.53	8.41	9.36	---	---	9.30	9.00	8.42	9.80	---
18	7.50	8.40	6.50	8.53	9.36	---	---	9.32	9.01	8.73	9.77	---
19	7.98	8.28	6.33	8.65	9.45	---	---	9.29	9.41	9.26	9.79	---
20	8.43	8.31	6.42	8.78	9.62	---	---	9.23	9.55	9.40	9.81	---
21	8.53	8.35	6.56	9.05	9.64	---	---	9.14	9.57	9.50	9.80	---
22	8.69	8.39	7.00	9.28	9.61	---	---	9.17	9.52	9.51	9.63	---
23	---	8.40	7.61	9.26	9.73	---	---	9.20	9.00	9.60	9.45	---
24	---	8.22	7.79	9.30	9.81	---	---	9.27	8.82	9.66	9.50	---
25	---	7.93	7.04	9.24	9.85	---	---	9.37	8.81	9.67	9.52	---
26	---	7.98	6.75	9.14	9.87	---	---	9.50	9.13	9.65	9.65	---
27	---	7.09	6.93	8.95	9.87	---	---	9.28	9.17	9.68	9.64	---
28	---	7.27	7.19	7.15	9.86	---	---	9.17	9.19	9.69	8.50	---
29	---	7.93	7.39	6.94	---	---	---	9.35	9.20	9.60	8.82	---
30	---	8.20	7.51	7.00	---	---	---	9.42	8.87	9.51	8.83	---
31	---	---	7.60	7.24	---	---	---	9.46	---	9.42	8.97	---

Table 13. *Daily maximum ground-water levels in well Wr-520, water years 1986-88—Continued*

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT
					1988 Water Year: October 1, 1987 to September 30, 1988							
1	---	8.48	7.91	7.79	8.22	9.14	8.38	8.63	9.23	9.67	9.67	---
2	---	8.49	8.02	8.18	7.30	9.22	8.57	8.12	9.36	9.55	9.68	---
3	---	8.31	7.05	8.31	7.30	9.25	8.90	8.29	9.38	9.54	9.84	---
4	---	8.33	8.47	8.52	7.52	9.20	8.81	8.47	9.22	9.55	9.86	---
5	---	8.33	8.53	9.24	8.81	9.18	8.00	8.55	9.33	9.45	9.85	---
6	---	8.31	6.60	9.26	7.30	9.23	6.50	8.40	9.37	9.73	9.82	---
7	---	8.32	6.61	9.20	7.50	9.30	6.60	8.40	9.30	9.73	9.85	---
8	---	8.20	6.63	9.17	8.60	9.25	6.70	8.50	9.52	9.55	9.86	---
9	---	8.10	6.57	9.18	9.11	9.24	6.24	8.70	9.58	9.55	9.77	---
10	---	7.83	6.10	9.25	9.25	9.00	6.41	8.70	9.60	9.56	9.64	---
11	---	7.74	6.17	9.24	9.27	8.10	7.72	8.64	9.62	9.60	9.63	---
12	---	7.85	6.28	7.52	9.27	8.33	8.69	8.85	9.63	9.65	9.60	---
13	---	7.90	6.42	7.69	8.76	8.44	8.80	8.75	9.73	9.67	9.60	---
14	---	7.97	6.50	7.85	8.79	8.40	8.85	8.84	9.76	9.66	9.60	---
15	8.03	8.04	6.50	7.59	8.76	8.50	9.02	8.87	9.85	9.66	9.63	---
16	8.24	8.04	6.27	7.30	8.40	8.30	9.19	8.82	9.89	9.64	9.65	---
17	8.30	8.05	7.00	7.20	7.11	7.58	9.20	8.31	9.88	9.63	9.65	---
18	8.36	7.81	7.93	7.20	6.73	7.76	9.43	7.98	9.90	9.62	---	---
19	8.37	7.75	8.13	7.89	6.80	7.85	9.51	7.90	9.90	9.60	---	---
20	8.43	7.80	8.12	7.81	6.72	7.92	9.55	7.81	9.92	9.58	---	---
21	8.82	7.93	7.20	7.41	6.80	8.31	9.55	7.70	9.85	9.55	---	---
22	9.37	7.98	7.30	7.37	7.46	8.42	9.55	7.16	9.77	9.69	---	---
23	9.37	8.01	6.68	7.40	7.47	8.69	9.56	6.97	9.75	9.78	---	---
24	9.37	7.99	6.59	7.61	8.22	8.61	9.31	7.04	9.75	9.69	---	---
25	9.03	7.90	6.64	7.74	8.50	7.95	9.00	7.00	9.76	9.68	---	---
26	9.01	7.84	6.67	8.61	8.70	7.41	9.20	7.01	9.77	9.71	---	---
27	9.00	7.83	6.80	9.30	8.91	6.88	9.37	8.30	9.77	9.79	---	---
28	8.90	7.88	6.90	9.31	9.03	6.33	9.42	8.57	9.78	9.81	---	---
29	8.68	7.79	7.26	9.40	9.14	6.20	9.42	8.64	9.66	9.85	---	---
30	8.50	7.68	7.60	9.02	---	6.02	9.37	8.68	9.67	9.85	---	---
31	8.47	---	7.85	8.80	---	6.20	---	9.01	---	9.77	---	---

Table 14. *Daily maximum ground-water levels in well Wr-522, water years 1986-87*

[Daily maximum ground-water level is the deepest ground-water level measured in feet below land surface during one day; construction information for the well is given in table 5; the location of the well is shown in figure 4q; ---, no record]

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT
						1986 Water Year: October 1, 1985 to September 30, 1986						
1	---	38.94	---	36.88	35.02	35.73	37.00	36.88	38.55	37.40	37.23	38.32
2	---	38.96	---	36.88	---	35.79	37.38	37.06	38.61	37.51	37.11	38.45
3	---	38.94	---	36.84	---	35.92	38.08	37.22	38.89	37.66	36.98	38.50
4	---	38.77	---	36.82	---	36.04	37.74	37.38	38.87	37.57	37.11	38.44
5	---	38.58	---	36.83	---	36.18	37.73	37.54	38.72	37.66	37.06	38.26
6	---	37.63	---	36.90	---	36.31	37.73	37.70	38.24	37.69	37.16	38.20
7	---	37.39	---	36.92	---	36.43	37.77	37.86	37.90	37.97	37.36	38.23
8	---	37.32	---	36.97	---	36.55	37.71	38.07	37.51	37.95	37.47	38.53
9	---	37.23	---	36.87	---	36.70	37.69	38.13	37.17	38.10	37.52	38.24
10	---	37.12	---	36.91	---	36.82	37.73	38.22	36.80	38.05	37.66	38.16
11	---	37.01	---	36.91	35.01	36.93	37.67	38.28	36.41	38.02	37.65	38.20
12	---	36.91	---	36.91	35.26	36.83	37.69	38.52	36.05	37.83	37.22	38.24
13	---	36.79	---	37.04	35.36	36.69	37.64	38.66	35.68	37.73	37.40	38.12
14	---	36.72	---	37.22	35.35	36.52	37.99	38.54	35.29	37.61	37.63	38.07
15	---	36.60	---	37.22	35.73	36.39	37.49	38.70	34.91	37.49	37.55	38.15
16	---	36.50	---	37.28	---	36.24	37.34	38.54	34.53	37.49	37.64	38.23
17	---	36.38	---	37.08	---	35.95	37.15	38.55	34.15	37.47	37.69	38.34
18	---	36.32	35.64	36.99	---	35.67	37.05	38.55	33.88	37.24	37.79	38.32
19	---	36.12	36.10	36.83	---	35.74	37.14	38.62	33.68	36.89	37.76	38.46
20	---	35.91	36.09	36.64	---	35.66	36.59	38.55	33.76	36.42	37.89	38.06
21	---	35.69	36.27	36.48	---	35.48	36.31	38.25	34.12	36.01	38.00	38.08
22	---	35.47	36.26	36.30	---	35.09	36.25	38.06	34.49	35.57	38.15	38.13
23	---	35.25	36.41	36.13	---	34.92	35.72	37.88	34.86	35.08	38.14	38.21
24	---	35.03	36.85	35.95	35.74	35.14	35.72	37.89	35.20	34.51	38.24	37.96
25	38.75	34.86	37.10	35.77	35.35	35.07	35.92	37.90	35.58	34.70	38.40	38.10
26	38.63	34.56	37.23	35.61	34.99	35.11	36.09	38.09	35.91	35.22	38.39	38.22
27	38.62	34.97	37.39	35.42	34.94	35.38	36.25	38.23	36.29	35.92	38.39	37.83
28	38.80	35.36	37.50	35.25	35.20	35.72	36.42	38.25	36.63	36.43	38.46	37.64
29	38.94	35.57	37.47	35.08	---	36.02	36.58	38.26	36.99	37.20	38.56	37.68
30	38.88	---	37.18	34.91	---	36.32	36.73	38.37	37.36	37.00	38.33	37.67
31	38.88	---	36.96	34.83	---	36.54	---	38.45	---	37.15	38.30	---
						1987 Water Year: October 1, 1986 to September 30, 1987						
1	37.48	37.49	36.90	35.82	37.69	38.54	35.48	36.13	38.14	---	---	---
2	37.40	37.47	36.91	36.01	37.60	37.94	35.40	35.74	38.16	---	---	---
3	37.14	37.50	36.40	36.40	37.72	37.59	35.37	35.78	38.13	---	---	---
4	36.40	37.79	36.24	36.45	37.78	37.29	34.86	35.99	37.88	---	---	---
5	36.38	37.61	35.74	36.56	37.78	37.04	35.22	36.50	37.72	---	---	---
6	36.63	37.35	35.21	36.64	37.74	36.97	35.63	37.10	37.66	---	---	---
7	35.92	37.19	34.92	36.92	37.71	36.91	35.00	37.30	37.58	---	---	---
8	35.46	36.90	34.82	37.03	37.79	36.64	34.50	36.79	37.77	---	---	---
9	35.40	37.33	34.66	37.07	37.86	36.44	34.35	36.74	37.85	---	---	---
10	35.46	37.55	34.66	37.01	37.84	36.17	33.86	36.72	37.96	---	---	---
11	35.22	37.27	34.52	37.13	37.85	35.70	33.39	36.96	38.06	---	---	---
12	35.28	37.19	34.46	37.24	37.81	35.58	33.26	37.13	38.22	---	---	---
13	35.36	37.24	34.61	37.30	37.87	35.67	33.31	37.34	38.29	---	---	---
14	35.43	37.21	34.49	37.27	37.89	36.00	33.68	37.48	38.29	---	---	---
15	35.51	37.11	34.70	37.23	37.97	36.30	34.05	37.56	38.22	---	---	---
16	35.62	37.12	34.73	37.12	37.95	36.45	34.55	37.65	38.16	---	---	---
17	35.55	37.11	34.76	36.93	37.96	36.35	34.82	37.63	38.12	---	---	---
18	35.68	37.10	34.74	36.94	38.00	36.41	35.01	37.72	38.08	---	---	---
19	36.03	37.14	34.94	37.03	38.08	36.36	35.20	37.74	38.05	---	---	---
20	36.31	36.97	34.89	37.22	38.18	36.29	35.71	37.73	38.02	---	---	---
21	36.59	37.09	34.90	37.39	38.18	36.16	36.04	37.75	37.98	---	---	---
22	36.80	37.14	35.01	37.47	38.23	36.10	36.21	37.71	37.94	---	---	---
23	36.97	37.02	35.47	37.80	38.39	36.03	36.87	37.75	37.91	---	---	---
24	37.14	37.02	35.65	37.90	38.53	35.97	36.72	37.76	37.87	---	---	---
25	37.12	36.86	35.50	37.93	38.60	35.90	36.78	37.77	37.84	---	---	---
26	37.14	36.71	35.56	37.91	38.63	35.84	36.70	38.16	37.80	---	---	---
27	37.56	36.53	35.45	37.93	38.65	35.79	36.57	37.95	---	---	---	---
28	37.96	36.43	35.46	37.81	38.65	35.72	36.53	37.93	---	---	---	---
29	37.86	36.57	35.57	37.80	---	35.66	36.37	38.13	---	---	---	---
30	37.81	36.79	35.74	37.61	---	35.60	36.26	38.07	---	---	---	---
31	37.60	---	35.85	37.69	---	35.54	---	38.05	---	---	---	---

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GLOSSARY

Alkalinity.—The capacity of a water to neutralize an acidic solution. Alkalinity in natural water is caused primarily by the presence of carbonate and bicarbonate.

Alluvium.—Sand, gravel, or other similar granular material deposited by running water.

Anion.—A negatively charged ion; for example, Cl^-(chloride).

Aquifer.—A geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.

Cation.—A positively charged ion; for example, Na^+ (sodium).

Colluvium.—Loose and incoherent deposits of rock debris generally found atthe foot of a slope and transported chiefly by gravity.

Dissolved.—Refers to the material in a representative water sample that passes through a 0.45 micrometer membrane filter. Determinations of "dissolved" constituents are made on subsamples of the filtrate.

Dissolved solids.—The dissolved mineral constituents in water; they form the residue after evaporation and drying at a temperature of 105°C; they may also be calculated by summing concentrations of anions and cations.

Formation.—A formally recognized body of rock identified by lithologic characteristics or stratigraphic position, or both.

Ground water.—That part of subsurface water in the zone of saturation.

Group.—A formally recognized body of rock next in rank above "formation," consisting partly or entirely of named formations.

Hardness.—A physical-chemical characteristic that is commonly recognized by the increased quantity of soap required to produce lather. It is attributable to the presence of alkaline-earth elements (principally calcium and magnesium) and is expressed as equivalent calcium carbonate ($CaCO_3$).

Homocline.—A general term for a rock unit in which the strata have the same dip.

Isomer.—One of two or more chemical substances having the same elementary percentage composition and molecular weight but differing in structure, and therefore in properties.

Lacustrine.—Having to do with lakes or their deposits.

Lithology.—The physical characteristics of a rock, generally as determined by examination with the naked eye or with the aid of a low-power magnifier.

Micrograms per liter (µg/L).—A unit expressing the concentration of chemical constituents in solution as mass (micrograms) of solute per unit volume (liter) of water. One thousand micrograms per liter is equivalent to 1 milligram per liter.

Milligrams per liter (mg/L).—A unit for expressing the concentration of chemical constituents in solution. Milligrams per liter represents the mass (milligrams) of solute per unit volume (liter) of water.

pH.—A measure of the acidity or alkalinity of water.

Specific capacity.—The well yield divided by the drawdown (difference between pumping water level and static water level) of water level in the well. It is usually expressed in units of gallons per minute per foot [(gal/min)/ft].

Specific conductance.—A measure of the ability of a water to conduct an electrical current. It is expressed in microsiemens per centimeter at 25°C. Specific conductance is related to the type and concentration of ions in the solution and can be used for approximating the dissolved-solids content of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is about 65 percent of the specific conductance. This relation is not constant from water to water, and it may vary in the same source with changes in the composition of the water.

Trace element.—Any constituent, other than organic, that generally occurs in water at concentrations of less than 1 milligram per liter.

Unconformity.—A substantial break or gap in the geologic record where a rock unit is overlain by another that is not next in stratigraphic succession.

Volatile.—Readily vaporizable at a relatively low temperature.

Water-bearing zone(s).—Water-bearing zones in bedrock wells generally are fractures yielding water in sufficient quantities to be noted by well drillers. In wells in unconsolidated deposits, such as sand and gravel, water is transmitted in the pore space between mineral grains. Water-bearing zones either are generally open to the well and contribute to the well yield or are sealed off with well casing and do not contribute to the well yield.