CIRCULAR 37

GROUNDWATER DATA FOR DWYER QUADRANGLE GRANT AND LUNA COUNTIES, NEW MEXICO

by

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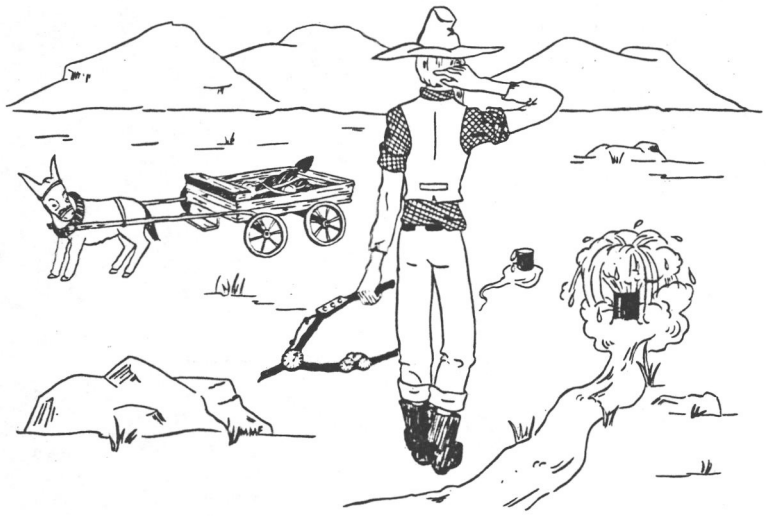

NEW MEXICO INSTITUTE OF MINING AND TECHNOLOGY

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STATE BUREAU OF MINES AND MINERAL RESOURCES

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GROUND-WATER DATA FOR DWYER QUADRANGLE

GRANT AND LUNA COUNTIES, NEW MEXICO

Introduction

The purpose of this report on the Dwyer quadrangle in Grant and Luna Counties in southwestern New Mexico is to present a brief discussion of ground-water resources and tabular data on wells and springs as well as a map showing locations. The greater part of the quadrangle is included in the drainage area of the Mimbres River where it is underlain by volcanic rocks, largely rhyolitic tuffs, welded tuffs, and minor flows with some water-laid sediments. The volcanic rocks dip prevailingly, but gently southwestward but are broken along faults, some of notable magnitude. The narrow alluviated flood plain of the Mimbres in this area is in marked contrast to the broad alluvial plain to the south and in the vicinity of Deming.

The geology of the Dwyer quadrangle has been mapped in detail by Elston whose report (ref.) is on file at this Bureau (1955) and is being prepared for publication as a bulletin. The writer worked with Elston in 1952, and secured the ground-water data presented in this report.

The Dwyer quadrangle, comprising an area of about 250 square miles lies between the parallels 32°30' and 32°45'N. latitude and between the meridians 107°45' and 108°00'W. longitude. All or parts of Townships 18, 19, 20, and 21 S., Ranges 9, 10, 11 W. are included. The Mimbres River flows in a southerly direction through the center of the area.

Not all wells within the area appear in the tables, though it is believed that very few have been omitted. A few wells located beyond the limits of the quadrangle have been included in the tabulations. Well owners and drillers supplied much of the information. Most well owners freely granted permission to measure water levels, depths, production rates, and to collect water samples for chemical analyses. Several wells in the western part of the area were not visited; the locations shown on the map were furnished by the owner or ranch foreman.

Map and Numbering of Veils and Springs

The map is a reduction of U. S. Soil Conservation Service planimetric map New Mexico-413 with wells and springs added. A topographic map of the area was not available, and elevations reported were obtained with an altimeter, or surveying aneroid barometer, using for control the U. S. Coast and Geodetic Survey level line along State Highway 27.

All wells and springs for which records are included are located on the map. The numbering system for wells is that used by the U. S. Geological Survey Ground Water Branch in New Mexico and is based on the common units of the township-range system. The well number serves to identify and locate the well in the nearest 10-acre plot. The number is divided by periods into 4 segments. The first segment indicates the township, the next indicates the range, the third segment indicates the section, and the fourth, or right-hand part, locates the well within the section.

Each section is divided into quarters numbered in reading order: the NW quarter number 1, the NE quarter number 2, the SW quarter number 3, and the SE quarter number 4. The quarter section is again divided into quarters and numbered in the same order. The quarter-quarters are also similarly subdivided and numbered. This locates a well to the nearest 10-acre tract. In the well number the first digit of the fourth segment locates the quarter section, the second digit the quarter-quarter, and the last digit the 10-acre tract. Where more than one well is located in any tract, the number is followed by a, b, c, etc. Where a location cannot be established to a 10-acre plot, the indefinite subdivisions are replaced with zeros in the well number, as for example, where a well is known to be in the NW quarter, but cannot be located with reference to smaller subdivisions, the number would end .100. As an illustration, well 19.9.34.212 is located in the NE quarter NW quarter Section 34, Township 19 S., Range 9 W.

Discussion

Principal source of ground water in the quadrangle is the alluvium, both in the Mimbres Valley and in the contributing drainage areas. Table 1 shows records of 112 wells and 12 springs. Nine of the eleven irrigation wells are shallow, less than 30 feet in depth. Two irrigation wells, 18.10.26.233a and b, were drilled to 400 feet in 1951 for W. B. Hinton. Though these wells are less than one-fourth mile east of the Mimbres River, according to the drillers report, sands at depths of 280 to 284 feet, 330 to 335 feet in one well, and 289 to 293 feet in the other well furnished most of the water. Production or test rates were not available for the deep wells, but it was reported that the shallow irrigation wells yielded between 100 and 350 gallons a minute from the alluvium in the Mimbres flood plain. Possibilities for higher sustained yields are poor unless an unusually and unexpectedly thick and permeable zone is found in the alluvium.

It is probable that small quantities of water, adequate for stock and domestic purposes, should be available to wells in all parts of the area. The nature of the volcanics is such that the prediction of a permeable water-bearing zone at a given depth is difficult, but it is believed that some ground water occurs throughout the area, though in the higher altitudes it may be necessary to drill to considerable depth.

Springs occur in many of the canyons in the quadrangle, at contacts between permeable and impermeable beds, in fault zones, and in canyon floors where the alluvium is very thin and the underflow is forced to the surface. Yields of most of the springs are less than 10 gallons a minute. Exceptions to the relatively small flows are the yields of Mimbres Hot Springs (18.10.13.111) in the northeast part of the quadrangle and Faywood Hot Springs (20.11.20.144) in the southwest part of the quadrangle. Though Faywood it apparently a single spring yielding an estimated 10 gallons a minute of water having a temperature of 129° F., Mimbres is a group of 25 hot and 5 cold springs yielding more than 100 gallons a minute of water having a temperature of 137° F. and 79° F., respectively. The cold springs issue from the canyon wall less than 100 yards above the hot springs. According to Elston, these 30 springs are "in the Mimbres Hot Springs fault zone." The quality of the water from both the hot and cold springs (Table 2, 18.10.13.111a and 18.10.13.111b) indicate that both waters are derived from the same source, with one being warmed (or cooled to a greater degree) enroute to the surface. Spring waters from both Mimbres and Faywood and from a spring in Carisa Canyon (Carisa Tubs, 18.9.31.340) and from a shallow well below Mimbres in Hot Springs Canyon (18.10.23.112) all exhibit an unusually high concentration of fluorides: 16, 7.0, 5.2, and 10 parts per million, respectively. Though the high fluorides and other characteristics of these waters indicate a different source than most of the ground water of the quadrangle, it is not reasonable to assume that they are magmatic in origin, as magmatic waters should contain concentrations of solids much in excess of that found locally. Though magmatic sources may make a contribution to the mineral content of the waters, it is more probable that solution of pre-existing minerals in the paths of the moving waters constitute the main source.

Quality of Water

In the course of the investigation, 30 water samples were collected for chemical analysis (Table 2). Twenty-five of the samples were taken from wells and five from springs. The laboratory work was performed by the Quality of Water Branch of the U. S. Geological Survey at Albuquerque, New Mexico. The concentrations of the mineral constituents of ground water, obtained by solution from the rock through which the water passes, are dependent upon the solubility of the soil and minerals and the time the water was in contact with them. Mineral ions present in high concentration may effect its value for certain uses.

The mineral materials in solution will be discussed in the order in which they appear in Table 2. Silica, present in all ground waters, is usually in concentrations below 70 ppm. and under such conditions does not affect its use for stock, irrigation, or domestic purposes.

The alkalis, sodium and potassium, are reported together. In concentrations above 300 ppm., sodium imparts a taste to water. L. V. Wilcox in Circular 784, U. S. Dept. of Agriculture, 1948, states that "the percentage of sodium...is important, because waters of high sodium percentage so react with the soil that it becomes difficult to till and is hard when dry, sticky when wet, and 'takes water' very slowly." Circular 784 also contains a graph showing the relationship of percent sodium and specific conductivity (an indicator of dissolved solids) to suitability for irrigation. Carbonates and bicarbonates, present in these waters, may affect domestic use, such as formation of scale in kitchen utensils. Sulfate has no effect on use of the water at the low concentrations reported for these waters. High sulfate waters have a noticeable taste and may have a laxative effect on persons having a low sulfate tolerance.

Chlorides such as found in sodium chloride, or common table salt, are in low concentrations also and not sufficiently high to have any effect. Fluorides are present in nearly all the waters in this area. According to publications of the American Water Works Association and the U. S. Public Health Service, in concentrations above 1.5 ppm. fluorides will result in mottling of enamel in teeth of growing children, and below 1.0 ppm. should result in the formation of durable enamel. Water having concentrations greater than 44 ppm. nitrate has been reported in publications of the American Water Works Association to have been excessive for human consumption, especially for very young children.

Hardness is the property of water which most affects its use for cleansing purposes, being a direct measure of the soap requirements. Hardness is reported in terms of ppm. of calcium carbonate (CaC00, and may be computed from the calcium and magnesium concentrations. waters in this area range from soft (less than 60 ppm.) to very hard (more than 500 ppm.).

The specific conductance is a measure of the ability of a water to conduct an electric current, dependent upon the concentrations and solubilities of the various minerals, and is, therefore, a relative indicator of the total dissolved solids in the water.

Reference:

Elston, Wolfgang E., Geology and Mineral Resources of the Dwyer Quadrangle, Grant and Luna Counties, New Mexico, unpublished manuscript in files of N. M. Bureau of Mines & Mineral Resources.

TABLE 1; RECORD OF WELLS AND SPRINGS IN DWYER QUADRANGLE, NEW MEXICO

Location number	Owner	Date completed	Topographic situation	Altitude above sea level (feet)	Type of well	Depth of well (feet)	Diameter of well (inches)	Water level: Below ground surface (feet)	Water level: Date of measurement	Meth. of lift	Pumping rate: GPM	Pumping rate: Date of measurement	Use	Remark:
*17.10.36.300	W. T. Graham (Dry Corner Well)	1935			Dr.	320				W	15 R		S	Driller:R.A. Boone first water at 250'
*18. 9. 8.411	Graham				Dr.	165								
*18. 9.13.120	W. B. Hinton (Gavilan Water)													Spring
18. 9.16.442	Hinton (Carisa Mill)			6114 A	Dr.	350	6		6-10-52	W			S	
18. 9.17.313	R. A. Gunter		Donahue Canyon		Dr.	120				W			S	
18. 9.17.442	Watson (Gunter Place)			6156 A	Dr.	400	7	287		W			S	
18. 9.21.343	Gunter		Carisa Canyon					85.0	6-10-52	W			S	
18. 9.23.343	Hinton (Hollis Well)	1930			Dr.	300				W			S	
18. 9.30.111	Gunter (Donahue Tubs)		Canyon				8							Spring
18. 9.30.344	Gunter (Juniper Canyon Well)		Juniper Canyon	5708	Dr.		8	155.5	6-10-52	W			S	
18. 9.31.340	Hinton (Carisa Tubbs)			5499 A							5 E		S	Spring
18. 9.33.100	Hinton (Raspberry Water)	1934			Dr.	250				W			S	
18. 9.33.343	Hinton (Middle Water)												S	Spring (Dry except in wet season)
18. 9.34.124	Hinton (Goats Water)												S	Spring (Good)

Explanation at end of table

TABLE 1, RECORD OF WELLS AND SPRINGS IN DWYER QUADRANGLE QUADRANGLE, NEW MEXICO (Continued)

Location number	Owner	Date completed	Topographic situation	Altitude above sea level (feet)	Type of well	Depth of well (feet)	Diameter of well (inches)	Water level: Below ground surface (feet)	Water level: Date of measurement	Meth. of lift	Pumping rate: GPM	Pumping rate: Date of measurement	Use	Remarks
*18. 9.35.210	Hinton (Boone Well)	1934			Dr.	300				W			S	
18.10. 8.443	A. O. Perrault	1936		5579 A	Dr.	150		70.1	6-11-52	W			D	
18.10. 8.444	Perrault			5529 A	Du.	35-40		17.4	6-11-52	H			D	
18.10.13.111a	Mrs. E. Wheaton-Smith (Mimbres Hot Springs)		hill slope & canyon floor								100 E		I	25+ hot springs heating & irrigation
18.10.13.111b	Mrs. E. Wheaton-Smith (Mimbres Hot Springs, cold Spring)		canyon wall								20 E		D	5± cold springs
18.10.13.122	Graham	1948			Dr.	169		137.4	6-5-52	W			D	Driller: Boone
18.10.13.124	Graham				Dr.								D	Went Dry
18.10.13.211	Graham	1952	on flat		Dr.	250	2 1/2	40.9	6-5-52	W			D	
18.10.15.111	Juan Delao	1936-7	Gallina Canyon	5483 A	Dr.	150				W				
18.10.15.300	Graham		Gallina Canyon											Springs (12)
18.10.16.113a	Perrault			5533 A	Du.	50		16.0	6-11-52	H	4	6-11-52	D	
18.10.16.113b	A. G. McCown			5541 A	Du.	36		33.7	6-11-52	W			D	
18.10.16.113c	W. A. McCown				Du.	36							D	
18.10.16.131	A. G. McCown			5535 A	Du.	36		28.1	6-11-52	W			D	Very hard bottom
18.10.16.321b	Perrault			5529 A	Du.	30		18.0	6-11-52	W			S	
18.10.16.322	Perrault			5516 A	Du.	25		8.2	6-11-52					
18.10.17.332	Perrault (Ranch Well)		Nogal Canyon	5659 A	Du.	40		7.5	6-11-52	W			S	

Explanation at end of table

TABLE 1, RECORD OF WELLS AND SPRINGS IN DWYER QUADRANGLE, NEW MEXICO (Continued)

Location number	Owner	Date completed	Topographic situation	Altitude above sea level (feet)	Type of well	Depth of well (feet)	Diameter of well (inches)	Water level: Below ground surface (feet)	Water level: Date of measurement	Meth. of lift	Pumping rate: GPM	Pumping rate: Date of measurement	Use	Remarks
18.10.20.313	Perrault (Willow Springs Well)	1922		5835 A	Dr.	100		34.2					S	Pumping slowly when W.L. measured
18.10.21.223	Graham		Indio Canyon		Dr.	100								Very little water
18.10.22.122	Graham		Mouth of Gallinas Canyon	5474 A	Du.	20		8.5	6-11-52		200-300 R		I	
18.10.22.222	Struthers	1949			Dr.	155		80		E			S-D	
18.10.23.112	Struthers		Canyon floor		Du.			17.2	6-5-52					
18.10.26.233a	Hinton	1951	Edge of terrace	5441 A	Dr.	400		38.9	6-5-52	T			I	Log, south well
18.10.26.233b	Hinton	1951		5448 A	Dr.	400		40.4	6-5-52	N			I	Log, north well
18.10.29.133	Perrault				Dr.	240		175.8	6-11-52					Abandoned
18.10.29.233	Graham	1925			Dr.	80		49.5	8-12-52	W			S	
18.10.34.143	Joe Dominguez	1937	Canyon		Dr.	125	10	17.8	8-12-52	W			S	
18.10.34.424	R. Carrillo	1929	Tom Brown Canyon		Du.			23.6		W			S	
18.10.35.324	V. Dominguez		Mouth of Canyon		Dr.	100				W			S	
18.10.35.343	J. Dominguez	Old			Du.	20							D	
18.10.35.430	Carrillo Bros. (Headquarters Well)					25		22		W			D	
18.11.14.130	Harrington													No data, not visited
18.11.16.344	Harrington		Tea Box Canyon											No data, not visited
18.11.34.133	Tovrea	Old	Seneca Canyon		Du.	12				W			S	
*19. 9. 2.412	Hinton (Skyline		Cordwood Canyon (Simon Canyon)		Dr.	451				W			S	

Explanation at end of table

TABLE 1, RECORD OF WELLS AND SPRINGS IN DWYER QUADRANGLE, NEW MEXICO (Continued)

Location number	Owner	Date completed	Topographic situation	Altitude above sea level (feet)	Type of well	Depth of well (feet)	Diameter of well (inches)	Water level: Below ground surface (feet)	Water level: Date of measurement	Meth. of lift	Pumping rate: GPM	Pumping rate: Date of measurement	Use	Remarks
19. 9. 3.140	Hinton (Mitchell Well)	1951			Dr.	225							S	
19. 9. 8.100	Hinton (Watson Well)	1951			Dr.	350							S	Log
19. 9. 9.134	Hinton (Eby Place)				Dr.	150							S	
*19. 9.14.230	Hinton (Jacobs Well)	1948			Dr.	250				W			S	
19. 9.15.223	Hinton (Simon Eby Well)	1929			Dr.	175				W			S	
19. 9.22.000	Hinton (Lucero Well)												S	Abandoned
*19. 9.26.423	Hinton (Saddle Well)	1951			Dr.	300		110+	6-4-52	W				Pumping slowly
19. 9.27.221	Hinton				Dr.		8	32.1	6-4-52	W			S	2 wells
19. 9.27.444	Hinton (Holstein)					25	6	No water						Partly filled
19. 9.30.334	Hinton (Torres)	1936			Dr.	125		97.3	6-4-52	W				
19. 9.34.212	Hinton (Pruitt)				Du.	30		19.0	6-4-52	W	2½	6-4-52	S	Pumping slowly
19.10. 3.443	Carillo Bros.		Canyon		Dr.	85		45						
19.10. 4.343	Eby (Rattlesnake Canyon Well)	1948	East of Mimbres Peak		Dr.	18	6	15.4	8-12-52	W	1	8-12-52		Driller: Mibres Valley Drilling Company

Explanation at end of table

TABLE 1, RECORD OF WELLS AND SPRINGS IN DWYER QUADRANGLE, NEW MEXICO (Continued)

Location number	Owner	Date completed	Topographic situation	Altitude above sea level (feet)	Type of well	Depth of well (feet)	Diameter of well (inches)	Water level: Below ground surface (feet)	Water level: Date of measurement	Meth. of lift	Pumping rate: GPM	Pumping rate: Date of measurement	Use	Remarks
19.10. 7.241	Eby (Box Canyon Well)	1946			Dr	601		560						
19.10. 9.132	Eby		Canyon bottom											Spring
19.10. 9.332	Eby (Ranch Well)	Old			Dr	85	6	14	8-12-52	W	1			Pumping slowly
19.10. 9.343	Eby (Spring Well)		San Jose Canyon		Du	18		2.0	8-12-52					
19.10.11.224	V. Dominguez	1937			Dr	150								
19.10.11.414														No data, owner not located
19.10.14.122	M. R. Carillo				Dr	200	7	105.3	8-12-52					Abandoned
19.10.14.321	Hinton (Headquarters Well)	1930		5272 A	Dr	200		28.3					S	Driller: Boone
19.10.16.432	Eby (Middle Well)				Dr	125	6	31.2	8-12-52				S	Driller: Boone
19.10.20.121	Eby (Watt-Boone Well)				Dr	220								Driller: Kimbell
19.10.21.422	Eby (Lucero Well)	Old			Dr	75	6	33.8	8-12-52	W	2	8-12-52		Driller: Boone
19.10.22.424	F. Roth			5203 A	Du	30		16.0	6-12-52	W			D	
19.10.22.443	Roth			5211 A	Dr	30	11	10.8	6-12-52	T	150 E		I	(2 wells)
19.10.24.221	Hinton (Headquarter Spring)												D	Spring (Good) Never dry

Explanation at end of table

TABLE 1, RECORD OF WELLS AND SPRINGS IN DWYER QUADRANGLE, NEW MEXICO (Continued)

Location number	Owner	Date completed	Topographic situation	Altitude above sea level (feet)	Type of well	Depth of well (feet)	Diameter of well (inches)	Water level: Below ground surface (feet)	Water level: Date of measurement	Meth. of lift	Pumping rate: GPM	Pumping rate: Date of measurement	Use	Remarks
19.10.26.113	Hinton	Old		5124 A	Dr	150		34.1	6-12-52	W			S	
19.10.27.122	O. C. McSherry	1938			Dr	162.5					3.5		D	
19.10.27.141a	Eby (Home Well)	1938			Dr	86							D	Hard water Driller: Boone
19.10.27.141b	Eby (Dwyer Schoolhouse)	1941			Dr	198							D	
19.10.27.142	Eby (#1)			5188 A	Du	24		8.7	6-4-52	T	240 R		I	Driller: Watson
19.10.27.143	Eby	1926			Dr	45							S	Near River Driller: Rominger
19.10.27.212	McSherry	1937		5187 A			12	7.7	6-12-52	N				Old Oil Test Driller: Payne
19.10.27.214	McSherry	1948		5184 A		21		6.3	6-12-52	T	200		I	
19.10.27.221a	McSherry	1933		5193 A			10	10.6	6-12-52	T	340 R		I	Driller: Sidee
19.10.27.221b	McSherry (Morrison #1)	1948		5189 A		23	10	7.6	6-12-52	T	340 R		I	Bedrock at 22' Driller: Morrison
19.10.27.221c	McSherry	1948		5189 A		25	14	7.0	6-12-52	T	340 R		I	Best well of four
19.10.27.222	McSherry (Morrison #3)	1948		5189 A		21	14	7.4	6-12-52	N	200 R		I	No pump in well
19.10.27.234	Eby (#3)				Dr	100	12	17.3	6-4-52					
19.10.27.241	Eby (#2)				Dr			7.7	6-4-52		350 R			Driller: Morrison Bros.
19.10.27.243	Eby (East Pasture Well)				Dr	55								

Explanation at end of table

TABLE 1, RECORD OF WELLS AND SPRINGS IN DWYER QUADRANGLE, NEW MEXICO (Continued)

Location number	Owner	Date completed	Topographic situation	Altitude above sea level (feet)	Type of well	Depth of well (feet)	Diameter of well (inches)	Water level: Below ground surface (feet)	Water level: Date of measurement	Water level: Meth. of lift	Pumping rate: GPM	Pumping rate: Date of measurement	Use	Remarks
19.10.28.413	Parra							33.3			1			
19.10.28.432			Arroyo		Du	20		Dry	8-14-52					Dry
19.10.29.213	McSherry (Jimmy Place)	1939	Box Canyon		Dr	100	6	49.3					S	
19.10.31.434	McSherry (Gardner)				Du	30		13.7					S	
19.11. 3.114	Tovrea		Nigger Canyon		Du	24								Abandoned
19.11.13.143	Eby (West)		J. Alvina Canyon		Dr	620		508						Driller: Kimbell
19.11.17.224	Tovrea		Rhea-Boone		Dr	545							S	
19.11.22.234	Tovrea	1952	Ridge		Dr	1060		Less than 1 gpm at 640'						Abandoned, filled
19.11.25.213	McSherry (North Mill)	1937			Dr	130	12	10.0	8-13-52				S	Driller: Payne
*19.11.31.000	Tovrea				Dr	380±							S	Driller: Childress
*20. 9. 2.140	Hinton (Kane Springs)													Spring (Dry)
20. 9. 3.324	Hinton (Bryant)	1935			Dr	450	6	371.0	6-4-52				D,S	Mine Supply
20. 9. 6.343a	Hinton (Double Wells, N)				Du	45		25.8	6-4-52	W			S	
20. 9. 6.343b	Hinton (Double Wells, S)				Dr	200		23.3	6-4-52	W			S	
20. 9. 8.113	Hinton (New Well)				Dr	250		168.6	6-4-52	W			S	

Explanation at end of table

TABLE 1, RECORD OF WELLS AND SPRINGS IN DWYER QUADRANGLE, NEW MEXICO (Continued)

Location number	Owner	Date completed	Topographic situation	Altitude above sea level (feet)	Type of well	Depth of well (feet)	Diameter of well (inches)	Water level: Below ground surface (feet)	Water level: Date of measurement	Meth. of lift	Pumping rate: GPM	Pumping rate: Date of measurement	Use	Remarks
20. 9.15.431	W. C. Simpson (North Well)				Dr	365							S	Driller: Boone
*20. 9.23.000	Simpson				Du	60				W			S	
20. 9.34.114	Simpson					30				W			D,S	
20. 9.34.132	Simpson				Dr	40				W			D,S	
*20. 9.35.000	Simpson	1928			Du	22				W			S	
20.10. 4.121	Hinton (Martin Well)	1916			Dr	75				W				
20.10.10.211	Hinton (Old Boone)	1951			Dr	256		79.4	6-4-52	W	1½	6-4-52	S	Driller: Watson
20.10.11.212	Hinton (Surprise)	1950			Dr	100		71.9	6-4-52					
20.10.25.311	Hyatt				Dr	137	8	81.3	6-3-52	W			S	West well
20.10.25.312	Hyatt				Du		36	58.0	6-3-52	W			S	
20.10.26.442a	Hyatt				Dr			80.4	6-3-52	W			S	West well
20.10.26.442b	Hyatt				Dr			96.0	6-3-52	W	2-3		S	
20.10.28.441	Hyatt				Dr		8	176.6	6-3-52		1-2		S	
20.10.35.133	Hyatt													Home well
20.11.20.144	Lindauer (Faywood Hot Springs)		On hill								5-10 E			Spring
20.11.20.434	McDermott				Dr								S	No data

Explanation at end of table

TABLE 1, RECORD OF WELLS AND SPRINGS IN DWYER QUADRANGLE, NEW MEXICO (Continued)

Location number	Owner	Date completed	Topographic situation	Altitude above sea level (feet)	Type of well	Depth of well (feet)	Diameter of well (inches)	Water level: Below ground surface (feet)	Water level: Date of measurement	Meth. of lift	Pumping rate: GPM	Pumping rate: Date of measurement	Use	Remarks
20.11.22.124														No data
20.11.26.133														No data

Explanation:

* Well located outside Dwyer quadrangle
Type of Well: Dr, drilled; Du, dug
Method of Lift: W, Windmill; G, gasoline engine and pump jack; H, hand pump; N, no pump; T, deep well turbine pump; E, electric motor
Use: S, stock; D, domestic; I, irrigation; N, none
Altitude above sea level: A, altimeter-determined elevation
Depth of well and water level: When shown to nearest foot are reported figures, when given to nearest 0.1 foot were measured.

TABLE 2, RECORD OF WATER ANALYSES

	Well number	Analysis number	Date of collection	Silica (SiO_2) ppm	Sodium(Na) +Potassium (K) ppm	Carbonate (CO_3) ppm	Bicarbonate (HCO_3) ppm	Sulfate (SO_4) ppm	Chloride (Cl) ppm	Fluoride (F) ppm	Nitrate (NO_3) ppm	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ Non-carbonate ppm	Specific conductance (Micromhos at 25° C)	Percent sodium
	18. 9.17.313	20618	8-14-52	39	15	0	214	21	8	0.6	34	205	30	468	14
	18. 9.21.343	19653	6-10-52	52	11		160	23	12		4.0	152	20	341	14
	18. 9.30.344	19654	6-10-52	55	36		184	26	13		14	130	0	389	37
S	18. 9.31.340	19655	6-10-52				160		9.0	5.2		66		347	
	18.10. 8.443	19643	6-11-52	39	20		246	9.5	6	1.0	.8	180		392	19
	18.10. 8.444	19644	6-11-52	41	16		261	33	9	0.3	8.8	234	20	475	13
S	18.10.13.111a (Mimbres Hot Springs, T = 135.5° F.)	19645	6- 5-52				115		16	16		9			
S	18.10.13.111a (Mimbres Hot Springs, T = 137.0° F.)	19646	6- 5-52	53	86		113	65	17	16	0	40	0	452	137
S	18.10.13.111b (Mimbres Hot Springs, T = 79.0° F.)	19647	6- 5-52				111		17	16		11		451	
	18.10.15.111	19648	6-11-52	35	17		161	9.1	3	1.0	0.5	112	0	268	
	18.10.16.113a	19649	6-11-52	40	26		329	9.1	70	.4	225	588	318	1,210	9
	18.10.16.113b	19650	6-11-52	54	32		150	29	15	.3	43	141	18	402	33
	18.10.16.131	19651	6-11-52	45	10		183	15	9		13	190	40	343	
	18.10.20.313	19829	6-11-52		37		230	41	24	0.4	14	198	10	527	29
	18.10.23.112	19830	6- 5-52		80		238	59	18	10	.1	135	0	579	56
	18.10.29.233	20619	8-12-52	62	38	0	376	12	7	0.4	4.4	205	30	468	14
	18.10.34.100	20620	8-12-52	49	38	0	212	37	7	0.2	17	154	0	434	35

Analyses by United States Geological Survey Quality of Water Laboratory, Albuquerque.
ppm - parts per million
S - spring

TABLE 2, RECORD OF WATER ANALYSES (Continued)

Well number	Analysis number	Date of collection	Silica (SiO_2) ppm	Sodium(Na) Potassium (K) ppm	Carbonate (CO_3) ppm	Bicarbonate (HCO_3) ppm	Sulfate (SO_4) ppm	Chloride (Cl) ppm	Fluoride (F) ppm	Nitrate (NO_3) ppm	Hardness as $CaCO_3$ Total ppm	Hardness as $CaCO_3$ Non-carbonate ppm	Specific conductance (Micromhos at 25° C)	Percent sodium
19. 9.34.212	19831	6- 4-52		25		269	18	8	0.4	9.3	205	0	480	21
19.10. 4.343	20621	8-12-52	67	50	0	334	22	8	0.8	5.4	205	0	557	35
19.10. 9.332	20622	8-12-52	57	53	0	276	51	16	0.4	17	200	0	580	37
19.10.21.422	20623	8-12-52	58	50	0	276	25	9	0.6	4.6	160	0	485	41
19.10.22.424	19832	6-12-52		46		288	67	39	0.8	103	346	110	872	22
19.10.31.434	20624	8-13-52	47	65	0	226	33	3	0.6	10	92	0	426	61
20. 9. 3.324	19825	6- 4-52		34		222	26	13	1.2	1.5	157	0	439	32
20. 9. 8.113	19826	6- 4-52		40		152	46	27	0.8	12	135	10	440	39
20.10.10.211	19827	6- 4-52		36		265	19	10	0.4	11	182	0	487	30
20.10.25.312	19828	6- 3-52		43		180	37	16	1.6	6.0	124	0	410	43
20.10.26.442b	19822	6- 3-52		42		202	43	18	1.2	6.5	153	0	468	37
20.10.28.441	19823	6- 3-52		108		258	23	21	2.0	15	47	0	528	83
S 20.11.20.144 (Faywood Hot Springs, T = 129.2° F.)	19824	6- 5-52		91		282	50	18	7.0	0.1	129	0	606	61

Analyses by United States Geological Survey Quality of Water Laboratory, Albuquerque.
ppm - parts per million
S - spring

TABLE 3, DRILLERS' WELL LOGS

Well: 18.10.26.233a (south)
Owner: W. B. Hinton
Driller: L. Watson
Completed: 1951
Casing: 16" to 80'

Formation	Thickness	Depth
boulders and soil	35'	35'
clay, red	11	46
clay and gravel, first water at 49'	20	66
lime, blue	28	94
clay and gravel, flint rock at 123' reduced to 14" at 150'	101	195
lime, white	85	280
sand, water	4	284
lime, brown	46	330
rock, porous and sand, water	5	335
lime, brown	65	400
Total Depth		400

Well: 18.10.26.233b (north)
Owner: W. B. Hinton
Driller: L. Watson
Completed: 1951
Casing: 16" to 62'

Formation	Thickness	Depth
sand and gravel, boulders	40'	40'
clay and gravel, first water at 50' flint rock at 54'	57	97
rock, conglomerate, reduced hole to 13" at 100'	63	160
clay and gravel, water formation at 186'	49	209
rock conglomerate	19	228
clay, joint	9	249
lime, hard, flint rock at 256'	40	289
sand, water	4	293
no log	107	400
Total Depth		400

TABLE 3, DRILLERS' WELL LOGS (CONTINUED)

Well: 19. 9. 8.100
Owner: W. B. Hinton
Driller: L. Watson
Completed: 1951
Casing: to 325'

Formation	Thickness	Depth
caliche and boulders	55'	55'
gravel and sand	45	100
sand	20	120
caliche	30	150
clay	5	155
shellrock		190
caliche		280
shellrock		305
sand and gravel, water	10	315
Total Depth		350

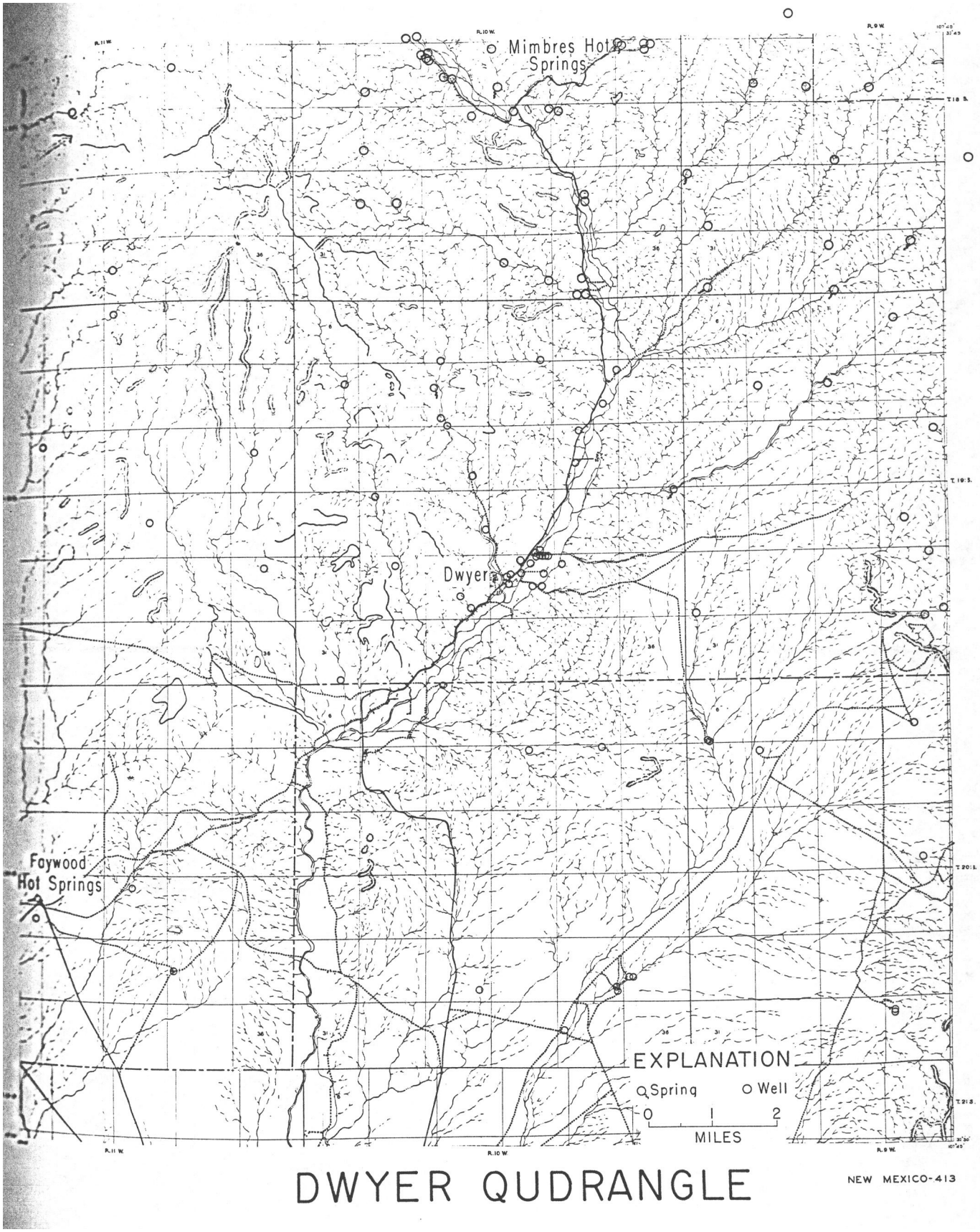
Well: 19. 9.26.423
Owner: W. B. Hinton
Driller: L. Watson
Completed: 1950-1
Casing:

Formation	Thickness	Depth
top soil	18'	18'
sand and clay	50	68
clay	21	89
sandstone, water seep 89-91	27	116
sand and gravel, water	4	120
sandstone	25	145
clay and gravel	70	215
lime, brown	30	245
rock, porous, sand pockets	4	249
clay, red	51	300
Total Depth		300

TABLE 3, DRILLERS' WELL LOGS (CONTINUED)

Well: 20.10.10.211
Owner: W. B. Hinton
Driller: Boone, 1942; Watson, 1950-1
Competed: drilled to 256' in 1942, deepened to 403' in 1950-1
Casing:

Formation	Thickness	Depth
no log		250
lime, blue	15	265
shale, yellow	10	275
lime, brown	128	403
casing pulled, water at 70; estimated 40-50 gpm.		



DWYER QUDRANGLE

NEW MEXICO-413