

UNITED STATES  
DEPARTMENT OF INTERIOR  
GEOLOGICAL SURVEY

**PRELIMINARY DATA REPORT FOR  
THE SAN JUAN BASIN-CROWNPOINT  
SURVEILLANCE STUDY**

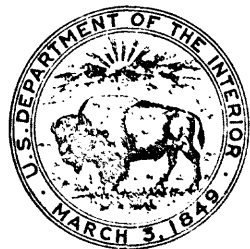
**BY PETER F. FRENZEL, STEVEN D. CRAIGG, AND  
ELIZABETH T. PADGETT**

**OPEN-FILE REPORT 81-484**

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U.S. Bureau of Indian Affairs*

*Albuquerque, New Mexico*

*March 1981*



UNITED STATES DEPARTMENT OF THE INTERIOR

JAMES G. WATT, Secretary

GEOLOGICAL SURVEY

Doyle G. Frederick, Acting Director

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## ILLUSTRATIONS

	Page
Figure 1. Map showing structural elements of the San Juan Basin and location of the study area -----	2
2. Well-numbering systems -----	4
3. Graph showing summary of water-level altitudes recorded in the Crownpoint Morrison observation well (17.12.17.3333) --	7
4. Map showing reported values of transmissivity and storage coefficient for the Westwater Canyon Member of the Morrison Formation in the vicinity of Crownpoint, New Mexico -----	8

## TABLES

Table 1. Records of wells in San Juan Basin observation network -----	10
2. Major chemical constituents of water from selected wells in the vicinity of Crownpoint, New Mexico -----	16
3. Minor chemical constituents of water from selected wells in the vicinity of Crownpoint, New Mexico -----	28

## INCH-POUND TO METRIC UNIT CONVERSION FACTORS

In this report measurements of distances and transmissivities are given in inch-pound units only. The following table contains factors for converting to metric units.

<u>Multiply inch-pound units</u>	<u>By</u>	<u>To obtain metric units</u>
foot (ft)	0.3048	meter (m)
foot squared per day (ft <sup>2</sup> /d)	0.0929	meter squared per day (m <sup>2</sup> /d)
mile (mi)	1.609	kilometer (km)

National Geodetic Vertical Datum of 1929 (NGVD of 1929): A geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called "Mean Sea Level." NGVD of 1929 is referred to as sea level in this report.

PRELIMINARY DATA REPORT FOR THE  
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By Peter F. Frenzel, Steven D. Craig, and Elizabeth T. Padgett

ABSTRACT

Geohydrologic data that may be used to predict the effects of mining on Navajo water resources in the San Juan structural basin are reported as well as the current availability of data from other government agencies. Emphasis is on the vicinity of Crownpoint, New Mexico. A denser network of observation wells and more data on water quality, transmissivity, storage-coefficient, and aquifer discharge would be useful for further studies in this area.

INTRODUCTION

Purpose and scope

Most of the communities in the southern and western parts of the San Juan structural basin (fig. 1) rely on ground water. Ground-water supplies may be adversely affected by uranium mining, especially at Crownpoint where the main aquifer (the Westwater Canyon Member of the Morrison Formation) contains uranium ore and might be partly dewatered by mines in the vicinity.

The Water Resources Division (WRD) of the U.S. Geological Survey has undertaken a 2-year project in cooperation with the Eastern Navajo Agency of the Bureau of Indian Affairs (BIA) to provide a hydrologic data base and observation-well network for the San Juan structural basin. An area within a 20-mile radius of Crownpoint is of immediate concern. The emphasis of this study is on the relatively extensive sandstone aquifers that contain water under artesian conditions.

This report is intended to present pertinent geohydrologic data that are currently available, to indicate which agencies are collecting such data, and to point out additional data needs. These data, although not complete, will be useful in estimating the hydrologic impact of impending mine development on the water supply of Crownpoint.

The geology and hydrology of the study area are beyond the scope of this report; they are discussed in general terms by Lyford (1979).

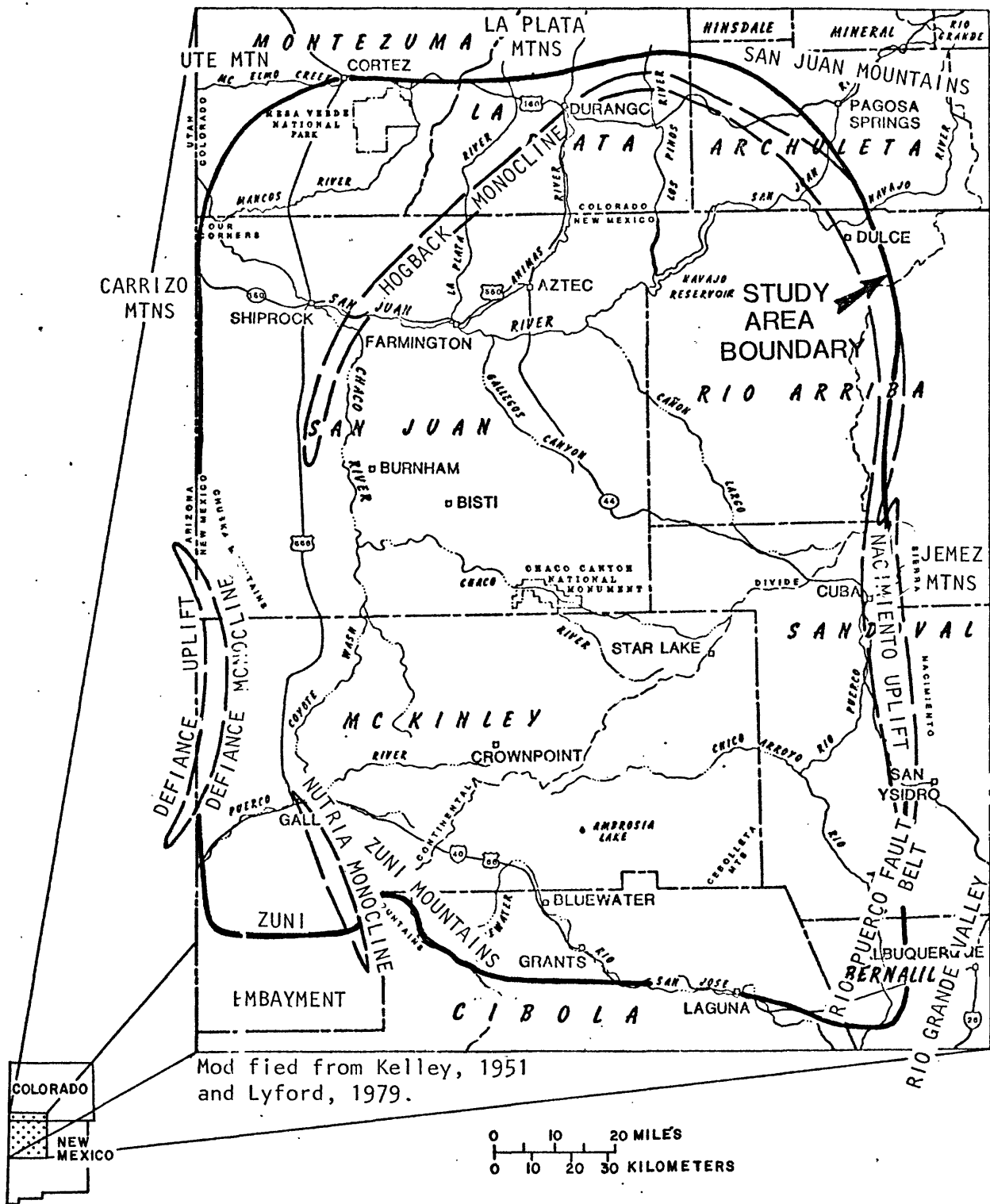


Figure 1. Structural elements of the San Juan Basin and location of the study area

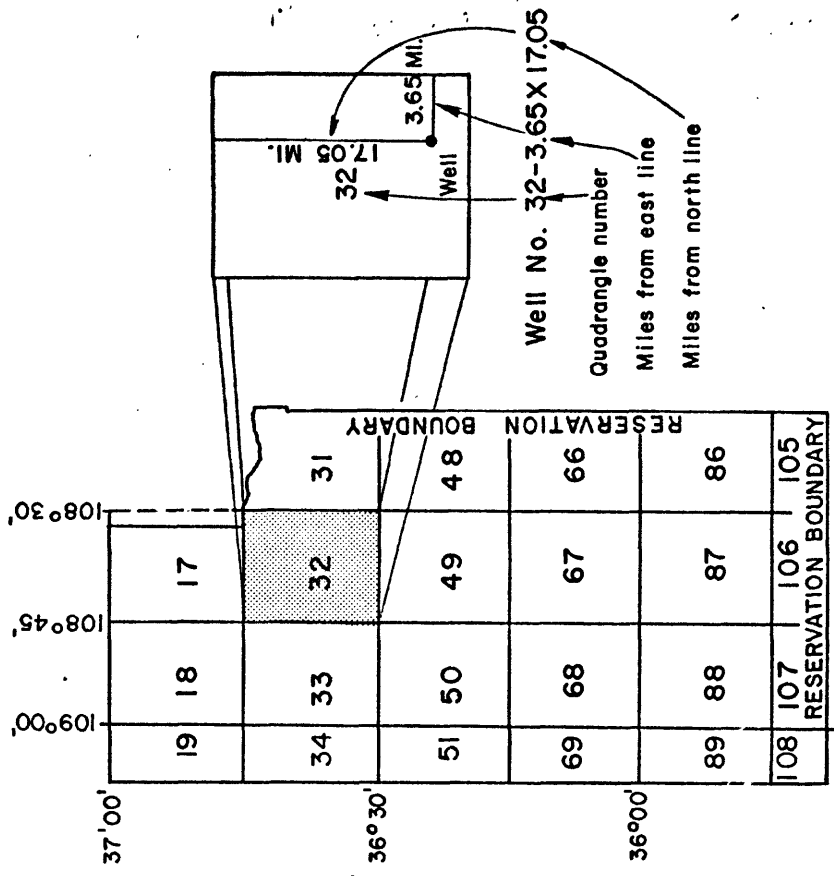
## Well-numbering systems

Two numbering systems are used in this report to locate a well. The first uses the common subdivision of lands into townships, ranges, and sections. In this system, the location number is divided into four segments separated by periods. The first segment indicates the township north of the New Mexico Base Line, and the second denotes the range west of the New Mexico Principal Meridian. The third segment indicates the section within the township; and the fourth segment indicates the tract within which the well is located. To determine the fourth segment of the location number, the section is divided into quarters numbered 1, 2, 3 and 4 for the NW $\frac{1}{4}$ , NE $\frac{1}{4}$ , SW $\frac{1}{4}$  and SE $\frac{1}{4}$  respectively. Each quarter section is further subdivided into as many as four subdivisions depending on how closely the well was located. As an example, a well with a location number 21.07.28.2134 is located in the southeast  $\frac{1}{4}$  of the southwest  $\frac{1}{4}$  of the northwest  $\frac{1}{4}$  of the northeast  $\frac{1}{4}$  of section 28, Township 21 North, Range 7 West.

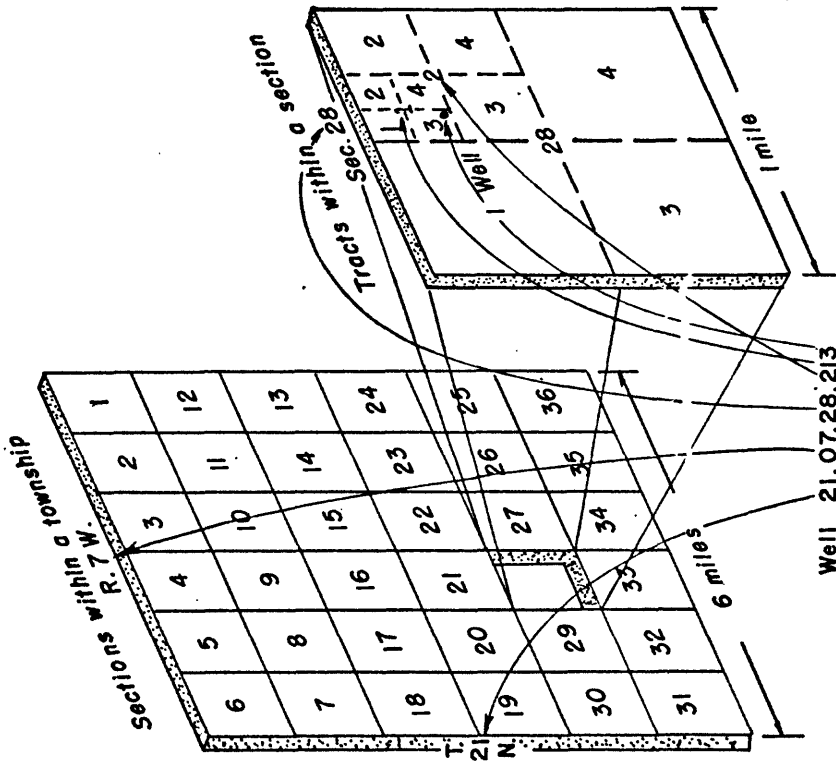
A different numbering system is used for the main part of the Navajo Reservation. This area is divided into 15-minute quadrangles, each of which is assigned a number. The well number consists of the quadrangle number followed by the distance in miles from the east line and the distance in miles from the north line, in that order. Thus, a well numbered 32 - 3.65 x 17.05 is in quadrangle number 32, 3.65 miles from the east line and 17.05 miles from the north line as shown in figure 2.

## Acknowledgments

The authors would like to thank the employees of other government and tribal agencies and mining companies for their kindly and informative discussions. A special word of appreciation is due the well owners who have allowed their wells to be used in the observation network and, in certain cases, have provided aquifer-test data.



System of numbering wells on the Navajo Indian Reservation



System of numbering wells in New Mexico

Figure 2. --- Well-numbering systems.

## CURRENT AVAILABILITY OF DATA

### Data collecting agencies

Currently at least 11 governmental and tribal agencies are collecting data that are pertinent to this study.

The New Mexico State Engineer Office (SEO) collects data relating to well construction, aquifer tests, and, in certain cases, the volume of discharges at mines and wells. However, SEO data for most mines and wells currently operating (1981) are sparse.

The New Mexico Environmental Improvement Division (EID) has published reported historical mine-water discharges, as well as water-quality data (New Mexico Health and Environment Department, 1980). EID has an ongoing program of monitoring ground-water seepage from uranium operations. It also keeps records of reported data on in situ uranium-leaching projects near Crownpoint and is studying shallow ground water and surface water in uranium producing areas. Data collected by these programs probably will be pertinent to long term water-quality considerations for the deep aquifers.

The New Mexico Energy and Minerals Department has published 1978 mine-water discharge rates (Perkins, 1979) and is presently revising that publication. The Mining and Minerals Division of the Energy and Minerals Department keeps records of water-quality and aquifer-test data for aquifers associated with strip mining. The aquifers most often involved are sandstones of the Mesaverde Group.

The U.S. Environmental Protection Agency (EPA) maintains files of data reported under National Pollutant Discharge Elimination System (NPDES) regulations. These data are on file in Dallas, Texas, and copies are on file with EID in Santa Fe. These data may be useful as a cross-check on discharge data for mines. However, the amount of liquid discharged from mining and milling operations is generally not directly related to the amount of ground-water inflow to the mines.

The BIA, U.S. Public Health Service, Navajo Water and Sanitation Department, Navajo Tribal Utility Authority (NTUA), and City of Gallup own and maintain wells and water systems in the area. They provided WRD with well records, well-discharge rates, water-level measurements, and aquifer-test records. The BIA Soil, Water, and Materials Testing Laboratory at Gallup provided many of the water-quality analyses presented in this report.

The Conservation Division of the U.S. Geological Survey is responsible for certain Federal and Indian interests. The Conservation Division, as part of its uranium-mine permitting operations, requires the collection of water-quality and aquifer test data, as well as programs to monitor water quality and hydraulic head.



## Presentation of data

Water-level altitudes measured in wells that are part of the observation-well network are shown in figure 3 and plates 1-5. This network consists of selected wells in which water levels are measured periodically, in most cases annually. Measurements will be made for the foreseeable future. Reported values of transmissivity and coefficient of storage for the Westwater Canyon Member of the Morrison Formation are shown in figure 4.

Records of wells in the observation-well network are shown in table 1. The major chemical constituents of water from selected wells in the vicinity of Crownpoint, New Mexico, are shown in table 2. Data for each well appear on facing pages. Minor chemical constituents are shown in table 3.

## NEEDS FOR ADDITIONAL DATA

The large open circles in plates 1-3 indicate the general areas where more wells would be useful in those aquifers that are presently of particular concern. A similar density of observation wells may be useful in the future for other aquifers (plates 4 and 5). Efforts to build these networks using existing wells will continue.

More baseline water-quality data are needed, especially with regard to minor constituents. The regional observation well network may be used to obtain water samples for chemical analyses. Sampling, however, will be selective because of the high cost of chemical analyses.

Additional transmissivity and storage-coefficient data are needed for all of the aquifers in the study area. The primary source of these costly data will be from other agencies and companies rather than actual testing by the Water Resources Division.

Certain aquifer discharge data are not presently being systematically recorded by any government agency. This is generally the case with schools, public supply systems, and certain large industrial establishments. An effort will be made to solicit these data.

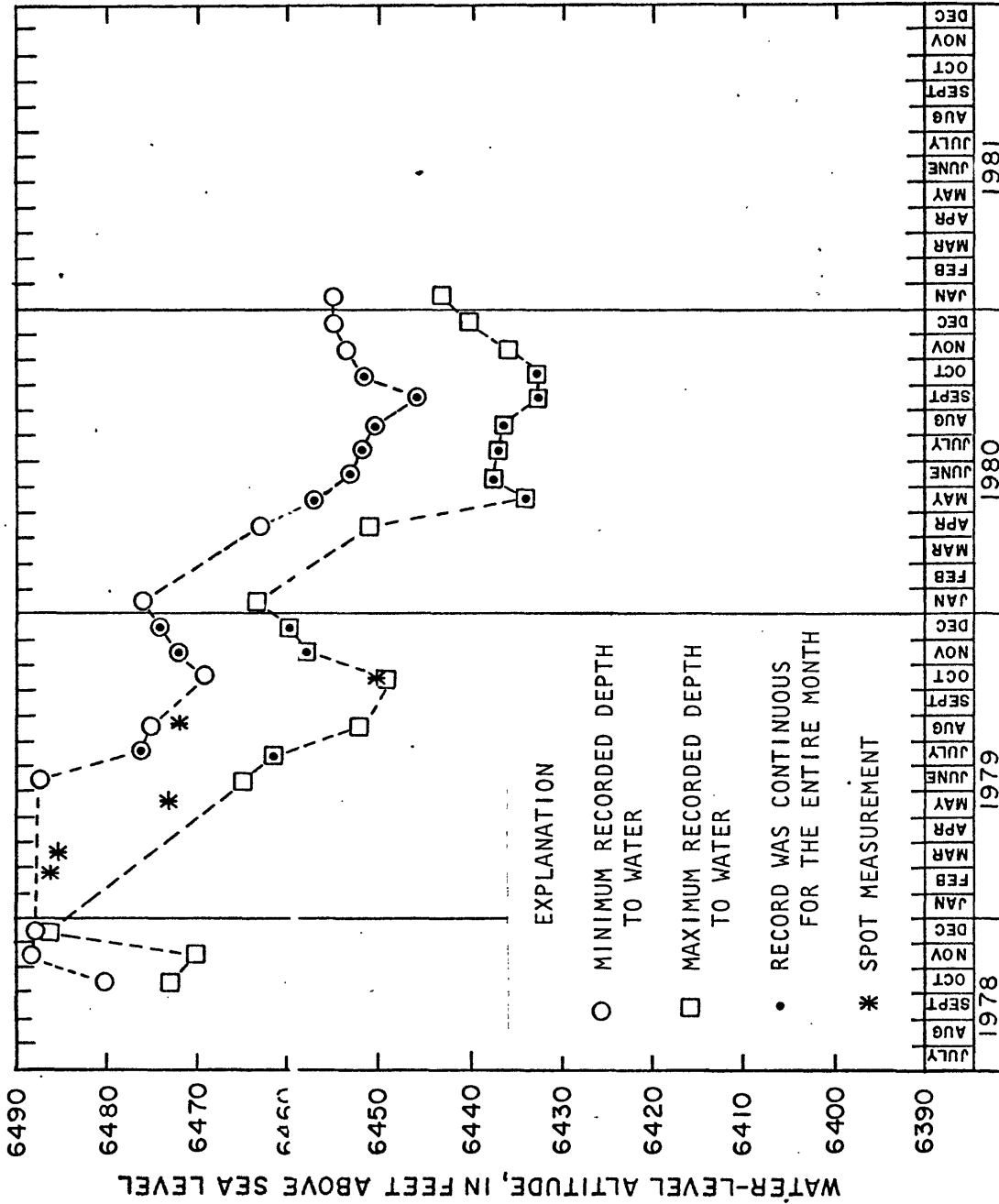


Figure 3. -- Summary of water-level altitudes recorded in the Crowpoint Morrison observation well (17.12.17.3333)



## REFERENCES

- Kelly, V. C., 1951, Tectonics of the San Juan Basin, in Guidebook of the south and west sides of the San Juan Basin, New Mexico and Arizona: New Mexico Geological Society, 2nd Field Conference, p. 124-130.
- Lyford, F. P., 1979, Ground water in the San Juan Basin, New Mexico and Colorado: U.S. Geological Survey Water Resources Investigations 79-73, 22 p., 11 figs.
- New Mexico Health and Environment Department, 1980, Water-quality data for discharges from uranium mines and mills in New Mexico: Environmental Improvement Division, Water Pollution Control Bureau, Santa Fe, 87 p., 13 figs.
- Perkins, B. L., 1979, An overview of the New Mexico uranium industry: New Mexico Energy and Minerals Department, Santa Fe, 144 p.

Table 1. Records of wells in San Juan Basin observation network

Location.--The location of a well or spring is described by using the system of quartering by sections or the Navajo system for the Navajo Reservation. The systems are explained in the text (fig. 2). All locations are defined as accurately as possible with the information available.

Number or name.--The number or name assigned to a well may be the owner's name or number, the BIA or Navajo name or number, a traditional name, or the name of a nearby landmark.

Depth.--Depth is the total depth of a well in feet below land surface as measured (M) by U.S. Geological Survey or reported by other sources.

Altitude.--Altitude of the land surface above sea level (in feet) at the well.

Depth to water.--Depth to static water level below the land surface (in feet). Values with decimal point accuracy were measured, others reported (R), or questionable (Q). A plus sign (+) signifies the water level is above the land surface. "F" indicates the well was flowing on the date given.

Water-level altitude.--Altitude of water surface above sea level (in feet), rounded to the nearest foot. Reported values are indicated by (R), and questionable values by (Q). A plus sign (+) indicates the water level was greater than the value given.

Date.--The date given is that of the water-level measurement noted on the same line.

Producing interval.--Producing interval is the portion(s) of the well that is open to the water-bearing unit, in feet below land surface.

Principle water-bearing unit(s).--The geologic unit or units from which the well obtains water, recorded in order of importance. Questionable units are followed by (?). The abbreviations used for water-bearing units are as follows:

Tertiary:

Tsj - San Jose Formation  
Tsj1 - Llaves Member  
Tn - Nacimiento Formation

Tertiary-Cretaceous:

TKoa - Ojo Alamo Sandstone

*Table 1. Records of wells in San Juan Basin observation network - Continued*

**Cretaceous:**

Kpc - Pictured Cliffs Sandstone  
Kch - Cliff House Sandstone  
Kmf - Menefee Formation  
Kpl - Point Lookout Sandstone  
Kg - Gallup Sandstone  
Kd - Dakota Sandstone

**Jurassic:**

Jm - Morrison Formation  
Jmw - Westwater Canyon Member  
Jmr - Recapture Member  
Jcs - Cow Springs Sandstone  
Je - Entrada Sandstone

**Triassic:**

TRc - Chinle Formation  
TRcs - Shinarump Conglomerate

**Permian:**

Psa - San Andres Limestone  
Pg - Glorieta Sandstone

Table 1. Records of wells in San Juan Basin observation network - Continued

Location	Number or name	Depth (feet)	Altitude (feet)	Depth to water (feet)	Water-level altitude (feet)	Date	Producing interval (feet)	Principal water-bearing unit (s)
10.10.26.331	M. Mirabal	216	6,455	22.18	6,433	02-21-52	-	Psa Pg
				27.40	6,428	02-08-60		
				28.75	6,426	02-16-70		
				32.58	6,422	02-14-80		
11.10.27.241	City of Grants	158	6,840	19.86	6,820	02-20-53	-	Psa
				31.79	6,808	02-08-60		
				27.84	6,812	02-16-70		
				30.32	6,810	07-15-80		
12.10.29.434	A.R. Card	398	6,552	65.46	6,487	10-14-44	93-130	Psa
				76.72	6,475	02-07-50		
				98.78	6,453	02-09-60		
				95.95	6,456	02-16-70		
				101.81	6,450	02-14-80		
13.09.21.4123	Nabor Marquez	155 M	6,785	144.8	6,640	12-08-55	-	Jmw
				141.7	6,643	10-30-57		
				67.1	6,713	06-30-77		
				58.3	6,727	02-22-78		
				65.7	6,719	05-27-80		
				67.5	6,713	01-14-81		
13.09.22.112	Ingersoll-Rand	297	6,830	204.8	6,625	12-15-58	277-297	Jmw
				101.7	6,728	06-30-77		
				58.8	6,771	02-22-78		
				98.1	6,732	08-26-80		
				93.5	6,737	01-14-81		
13.14.25.2143	USFS 1980	163	7,585	91.5	7,488	01-09-80	-	Psa
14.10.35.221	G.P. Remudy 760	760	7,010	461.4	6,549	12-17-57	-	Jm
				519.8	6,490	05-29-80		
				520.2	6,490	01-14-81		
14.15.04.1134	Ciniza Rest Area	608	6,960	+152.9	7,113	01-18-79	583-608	Pg TRcs (?)
				+152.9	7,113	01-10-80		
				+160.0	7,120	01-15-81		
14.15.28.1434	Prewitt #4	370	7,620	13.2	7,507	10-17-41	-	Psa Pg
				21.8	7,558	06-21-50		
				27.8	7,552	03-19-56		
				44.0	7,576	11- -60		
				40.0	7,580	03- -61		
				45.0	7,575	04- -68		
				59.0	7,561	01-23-79		
				64.0	7,556	01-10-80		
14.16.05.2441	BIA School #5	347	6,905	F	6,905+	04- 68	150-347	Psa Pg
				38.5	6,866	01-18-79		
				31.4	6,874	01-09-80		
				24.1	6,881	01-16-81		

Table 1. Records of wells in San Juan Basin observation network - Continued

Location	Number or name	Depth (feet)	Altitude (feet)	Depth to water (feet)	Water-level altitude (feet)	Date	Producing interval (feet)	Principal water-bearing unit (s)
15.14.09.233	16T-587	1,334	7,520	448R 442.2 380.1	7,072R 7,078 7,140	02-09-76 06-11-80 01-14-81	162-243 466-507 1,201-1334	Je
15.17.24.4121	Ft. Wingate 69	1,350	6,680	+29.0 +35.5 +40.2	6,709 6,715 6,720	01-18-79 01-09-80 01-10-81	1,000-1,125	Psa
15.18.16.1113	Gallup 14	-	6,515	304.5 299.0 286.4	6,210 6,216 6,229	01-19-79 01-10-80 01-15-81	-	Kg
16.04.06.331	NMBMMR R23	250	6,235	93.2 93.6 92.9 93.2	6,142 6,141 6,142 6,142	08-31-78 07-17-79 06-18-80 01-18-81	128-245	Kp1
16.04.18.4444	NMBMMR R-21	244	6,395	102.2 98.8 102.5 101.9 101.2	6,293 6,296 6,293 6,293 6,294	07-27-78 08-29-78 07-17-79 06-18-80 01-18-81	84-241	Kp1
16.04.36.2321	BLM-Homestake	602	6,165	+214.3 +178.5 +135.8 +155.4 +160.0 +168.1	6,379 6,343 6,301 6,320 6,325 6,333	10-04-74 04-13-78 07-22-80 08-06-80 10-19-80 01-18-81	410-420 468-469	Kg
16.05.02.444	NMBMMR R2'	250	6,310	123.0 120.7 118.9 117.3 120.3	6,167 6,181 6,191 6,193 6,190	10-13-78 05-23-79 07-17-79 06-18-80 01-18-81	200-240	Kp1
16.11.17.4322	15T-505	570	7,070	265.1 295.6 280.9 308.7	6,805 6,774 6,789 6,761	07-10-59 02-23-78 05-28-80 01-15-81	470-570	Kg
16.11.33.332	Borr. Pass	2,023	7,350	752R 756R 600R,Q	6,598R 6,594R 6,750R,Q	09-08-72 06-10-77 05-28-80	1,801-2,023	Jmw
16.16.15.4322	16T-513	318 M	6,850	182.0 213.0 160Q 302.0 308.0 312.3	6,693 6,662 6,715Q 6,573 6,567 6,563	07-27-59 10-05-76 06-21-77 02-24-78 06-10-80 01-15-81	206-318	Jmw Kd(?)



Table 1. Records of wells in San Juan Basin observation network - Continued

Location	Number or name	Depth (feet)	Altitude (feet)	Depth to water (feet)	Water-level altitude (feet)	Date	Producing interval (feet)	Principal water-bearing unit (s)
16.16.25.2344	16T-535	1,052M	7,115	140Q 159.5 133.1	6,975Q 6,956 6,982	10-28-65 06-10-80 01-16-81	628-896 974-1,033	Je
16.17.21.3442	16T-534	410	6,825	250Q 188.6 194.4	6,575Q 6,635 6,631	07-29-65 02-24-78 01-16-81	-	Jmw
16.18.17.122a	Gallup-Munoz 1A	-	6,640	453.2 470R	6,187 6,170R	01-19-79 06-18-80		Kg
17.12.17.3333	Conoco	2,450	6,875	349.6	6,525	12-13-75	2,110-2,410	Jmw
19.01.14.3332	LaVentana Well #1 (UNC)	2,780	6,978	445.5 446.7 446.5	6,533 6,531 6,532	11-27-78 11-23-80 01-18-81	1,912-1,950	Jm
20.10.16.4413	CC 15	4,450	6,330	F +173.0 +178.6	6,330+ 6,503 6,506	08-20-79 01-17-80 01-21-81	3,957-3,988Q	Jmw
21.09.07.3334	CCR 9	505	6,327	100R 87.6 85.8	6,227R 6,239 6,241	10-10-60 08-07-80 01-21-81	175-185,440- 445, 490-500	Kch
21.10.21.3444	CC Nat'l Mon (NPS) "Fields" well	3,100	6,195	+407Q +370.2 +340.1	6,602Q 6,565 6,535	10-17-72 01-11-80 01-21-81	3,000-3,020 3,050-3,090	Kg
22.09.29.3443	19R-309 (Willie Well)	961	6,447	324 369.7 605.8	6,123 6,077 5,841	09-07-68 08-07-80 01-21-81	270-355,500- 760-800-810 895-945	Kc1 Kmf
25.01.17.131	U.S. Forest Service (Tanque Canyon)	250	7,480	119.4 118.1	7,361 7,363	09-27-59 07-24-81	-	Ts j1
25.09.19.1111	Dzilth School, # 1	1,146M	6,775	442R 589R	6,33R 6,18R	06-30-66 03-14-79	300-320,360 378-480-540, 555-610,905- 970,1,000-1,040, 1,090-1,146	TKoa Tn
26.10.13.423	EPNG Huerfano Water Well #1	1,350	6,585	437.5	6,148	09-12-80	940-950	TKoa
26.11.33.2142	Huerfano Dorm PM2	496	6,185	102.5 131.5 150.6	6,083 6,054 6,034	01-30-68 03-08-77 06-23-80	300-435	TKoa Tn

Table 1. Records of wells in San Juan Basin observation network - Concluded

Location	Number or name	Depth (feet)	Altitude (feet)	Depth to water (feet)	Water-level altitude (feet)	Date	Producing interval (feet)	Principal water-bearing unit (s)
27-13.26.3411	IT-501	-	6,045	166.3 196.3 187.8	5,879 5,849 5,857	05-06-75 06-24-80 01-22-81	-	TKoa
18-5.5x14.0	Exxon Test	2,035	5,100	+77.0 +74.0 +48.2Q	5,177 5,174 5,148Q	07-20-78 07-09-80 01-22-81	1,330-1,594	Jmw
18-6.7x10.5	12T-637	2,000	5,120	+159.0 +120.7	5,279 5,241	07-19-78 01-23-78	1,173-1,495	Jmw
19-2.00x8.00	12K-335	604M	5,546	370.0 131.2 128.5	5,176 5,415 5,418	08-00-57 07-09-80 01-22-81	160-180 220-240 308-604	Jm
32-7.55x2.47	12T-630	2,300	5,060	+439.6 +438.8	5,500 5,499	07-19-78 01-22-89	1,512-2,300	Jmw Jmr
48-2.35x11.35	13K-207	1,120	6,070	429.0 473.4	5,641 5,597	10-17-52 01-22-81	1,070-1,120	Kpc
48-4.0x16.9	EPNG Burnham 1	5,200	5,746	+703.0R +144.6Q	6,449R 5,891Q	08-18-73 01-22-81	5,000-5,200	Jmw
48-4.29x13.19	13K-208	800 M	5,820	280.0 266.2	5,540 5,554	08-31-54 01-21-81	660-740	Kch
49-7.75x5.80	12R-242	362	5,490	60R 87.0 103.9 98.9	5,459R 5,412 5,318 5,400	01-02-35 05-30-52 07-07-80 01-22-81	205-235 270-360	Kch
49-12.85x3.35	Exxon Test	2,034	5,595	+272.1 +354.5	5,867+ 5,950	07-18-78 01-22-81	1,200-2,034	Jm
86-3.95x17.20	15T-529	1,292	6,743	84R 119.0 133.5 137.8	6,659R 6,624 6,610 6,605	12-10-69 09-26-76 06-23-77 01-15-81	1,099-1,292	Kg
86-5.52x15.48	Standing Rock Water- well 1	2,657	6,490	87.R	6,403R	06-07-80	2,315-2,584	Jmw
86-12.95x15.30	14A-81	395	6,281	135R 42.1	6,146R 6,239	05-25-37 01-15-81	115-135	Kpl
105-12.86x5.47	15T-303	614	7,038	302.4 312.5 313.6 324.0 326.6	6,736 6,726 6,724 6,714 6,711	01-11-52 06-23-77 02-24-78 02-13-79 01-16-81	480-614	Kg

Table 2. Major chemical constituents of water from selected wells in the vicinity of Crownpoint, New Mexico

LOCAL IDENTIFIER	DATE OF SAMPLE	* GED-LOGIC UNIT	* AGENCY ANA-LYZING SAMPLE NUMBER (00028)	SPE-CIFIC CON-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS, NONCAR-BONATE (MG/L CACO3) (00902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
NR086.0132X0153	74-01-24	211MEMF	1008	1820	8.9	10	0	4.0	>.0	450
NR086.0205X1335	53-06-26	211MEMF	3650	3650	---	30	0	7.0	3.2	---
NR086.0380X0709	49-08-03	211MEMF	2510	2510	---	18	0	4.8	1.6	---
NR086.0395X1720	53-03-26	211MEMF	2550	2550	---	16	0	3.5	1.9	---
NR086.0620X1350	76-09-16	211GLLP	---	1230	8.0	---	---	---	7.6	240
	48-12-08	211PNLK	---	1470	---	9	0	2.5	.7	---
	53-03-26	211PNLK	---	1900	---	---	---	---	---	---
	71-11-02	211PNLK	1008	2010	8.8	10	0	4.0	>.0	470
	73-01-15	211PNLK	1008	1910	8.8	10	0	4.0	>.0	460
NR086.0665X0250	55-02-10	211MEMF	---	2780	---	10	0	2.4	1.0	---
NR086.0775X0950	49-07-07	211MEMF	---	3640	---	33	0	8.8	2.7	---
NR046.1110X1240	49-08-06	211PNLK	---	3260	---	340	0	63	44	---
NR086.1295X1530	50-05-11	211PNLK	---	1310	---	660	370	130	82	---
NR105.018 X0169	55-05-18	211PNLK	---	1310	7.7	710	420	130	96	---
NR105.0190X0168	72-01-28	211GLLP	1008	660	8.2	50	0	12	4.8	120
NR105.0225X0301	76-09-16	211GLLP	---	1290	8.3	97	0	19	12	230
	76-07-08	211GLLP	1008	1000	8.3	93	---	15	6.1	210
NR105.0265X0142	72-11-28	211GLLP	1008	850	8.8	65	0	24	1.2	160
NR105.034 X015	77-01-08	---	---	1350	8.2	66	0	17	5.7	270
NR105.1236X0547	55-08-09	211GLLP	---	3120	8.1	760	510	160	89	---
NR106.0385X0476	55-08-10	211GLLP	---	1780	7.7	950	730	220	99	---
NR106.0445X0665	55-05-12	211DLTN	---	436	7.0	220	120	57	20	---
14N.11W.03.334	57-03-13	221WSRC	---	2870	7.4	960	710	---	---	---
14N.11W.19.124	61-08-04	231WNGT	---	1590	7.7	460	190	120	43	210
14N.12W.09.221	62-09-05	231WNGT	---	1040	9.0	9	0	2.6	.6	250
14N.12W.14.143	62-09-05	231WNGT	---	825	8.9	21	0	6.6	1.1	200
14N.12W.20.111	50-05-11	231PEDF	---	4130	---	84	0	12	.13	---
14N.13W.19.1	64-03-20	310GLRT	---	687	8.2	35	0	10	2.4	---
	70-07-14	310GLRT	1008	1000	8.5	130	0	31	14	170
14N.13W.20.4321	75-03-13	310GLRT	---	661	---	4	0	1.6	.1	150
14N.13W.20.4322	75-03-13	310GLRT	---	480	---	130	0	44	5.1	43
14N.13W.20.4323	61-07-12	231CHNL	---	701	9.1	3	0	.4	.5	160
14N.13W.25.1334	66-03-01	231CHNL	1008	560	---	8	0	3.0	>.0	140
	71-09-30	231CHNL	1008	580	9.0	5	0	2.0	>.0	140
14N.13W.27.342A	67-12-06	313SADY	1008	1000	7.4	580	370	180	29	10
	72-04-07	313SADY	1008	1030	7.5	560	360	180	28	6.9
	75-03-13	313SADY	---	1020	7.3	490	350	150	28	11

Table 2. Major chemical constituents of water from selected wells in the vicinity of Croumpoint, New Mexico - Continued

DATE OF SAMPLE	POTAS- SIUM DIS- SOLVED (MG/L AS NA) (00933)	POTAS- SIUM DIS- SOLVED (MG/L AS K) (00935)	BICAR- BONATE (MG/L AS HCO3) (00440)	CAR- BONATE (MG/L AS CO3) (00445)	SULFATE DIS- SOLVED (MG/L AS SU4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, SUM OF CONSI- TUENTS, DIS- SOLVED (MG/L) (70301)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS NO3) (71851)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04) (00660)
74-01-24	--	>.0	500	43	340	67	3.8	--	1200	3.7	--
53-06-24	880	--	800	16	760	320	7.9	10	2390	.30	--
49-04-03	420	--	370	--	480	80	6.7	--	1180	.30	--
53-03-26	630	--	880	18	470	82	7.0	10	1660	.30	--
76-09-16	--	2.6	210	0	440	4.6	.5	13	--	--	.03
48-12-08	460	--	610	--	420	42	3.4	--	1220	.70	--
53-03-26	--	--	610	--	--	45	3.6	11	--	--	--
71-11-02	--	.8	530	43	430	54	4.6	--	1240	.25	>.00
73-01-15	--	>.0	520	39	390	53	3.6	--	1250	.62	--
55-02-10	750	--	1580	34	6.2	180	10	12	1770	.20	--
49-07-07	880	--	820	--	770	320	8.6	--	2400	.20	--
49-08-06	670	--	490	--	1200	100	.6	12	2330	.20	--
50-05-11	64	--	360	--	480	7.0	.5	12	951	.60	--
55-05-18	39	--	340	0	480	6.0	.7	14	933	.50	--
72-01-28	--	2.0	190	>0	140	4.6	.6	--	427	.00	--
76-09-16	--	2.4	236	0	400	7.3	.6	22	811	.06	--
76-07-08	--	3.0	--	--	420	3.0	.8	15	780	--	--
72-11-28	--	2.0	200	19	220	5.3	.9	--	576	.12	--
77-01-08	--	2.8	228	0	450	7.9	.8	10	877	--	--
55-08-09	500	--	300	0	1500	16	2.1	15	2450	.60	--
55-05-12	72	--	270	0	400	11	.8	17	1390	.00	--
55-05-12	.9	--	130	0	100	9.0	.4	18	271	.00	--
57-03-13	--	--	300	0	140	12	.5	--	--	4.0	--
61-08-04	--	3.0	330	0	580	22	.3	15	1150	4.8	--
62-09-05	--	2.0	400	29	120	34	7.0	10	656	5.7	--
62-09-05	--	3.0	320	31	54	37	.9	19	527	20	--
50-05-11	900	--	410	45	510	770	2.3	5.6	2460	1.1	--
64-03-20	150	--	240	0	92	44	.8	7.1	419	.00	--
70-07-14	--	>.0	220	8	72	150	.3	--	467	1.2	.07
75-03-13	--	2.0	326	--	58	15	.2	9.0	399	--	.18
75-03-13	--	2.5	266	--	40	3.8	.3	9.5	279	--	.03
61-07-12	--	2.0	260	32	50	31	.4	14	425	1.1	--
66-03-01	--	>.0	230	36	24	26	.4	--	334	1.9	--
71-09-30	--	>.0	240	32	30	20	.5	--	337	.12	.04
67-12-06	--	>.0	250	>0	360	17	.3	--	770	>.00	--
72-04-07	--	>.0	250	>0	360	10	.3	--	724	.12	2.0
75-03-13	--	1.8	177	0	350	4.8	.4	16	652	--	2.0

Table 2. Major chemical constituents of water from selected wells in the vicinity of Crowpoint, New Mexico - Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	* GEO-LOGIC UNIT	* * AGENCY	SPE-CIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	HARDNESS AS CALCIUM (MG/L)	HARDNESS AS CALCIUM (MG/L)	HARDNESS AS CALCIUM (MG/L)	CALCIUM DIS-SOLVED (MG/L)	MAGNESIUM DIS-SOLVED (MG/L)	SODIUM DIS-SOLVED (MG/L)
14N.13W.28.1234	48-12-03	231SNSL	--	576	--	5	0	1.2	--	.5	--
	54-02-05	231SNSL	--	581	--	--	--	--	--	--	--
14N.13W.33.124	48-08-18	231SNCJ	--	3700	--	--	--	--	--	--	--
	48-08-18	231SNSL	--	3590	--	110	0	26	--	10	--
	48-08-19	231SNSL	--	3630	--	60	0	18	--	3.8	--
	51-09-08	231SNSL	--	3810	--	--	--	--	--	--	--
	51-09-08	231SNSL	--	3540	--	--	--	--	--	--	--
	51-09-08	231SNSL	--	3810	--	--	--	--	--	--	--
14N.13W.33.124	51-09-08	231SNSL	--	3710	--	--	--	--	--	--	--
	52-06-30	231SNSL	1008	836	--	460	240	140	--	29	--
	53-04-03	231SNSL	--	1350	--	22	0	7.0	--	1.2	--
	61-07-18	231SNSL	--	842	7.2	410	200	120	--	25	29
	64-09-30	231SNSL	--	879	7.3	400	180	120	--	22	39
14N.13W.33.124A	52-06-20	313SADG	--	9220	12.0	--	--	--	--	--	--
	52-06-30	313SADG	--	836	--	460	240	140	--	29	--
14N.13W.33.141	48-12-06	231CHNL	--	1090	--	94	0	26	--	7.0	--
14N.13W.33.211	51-01-13	110AVMB	--	1910	--	26	0	--	--	--	--
14N.13W.33.211	51-01-16	231CHNL	--	1040	--	30	0	--	--	--	--
14N.13W.33.211	51-01-23	231CHNL	--	908	--	52	0	--	--	--	--
	51-01-24	231CHNL	--	837	--	18	0	5.0	--	1.2	--
	51-01-24	231CHNL	--	853	--	--	--	--	--	--	--
	51-01-27	231CHNL	--	688	--	--	--	--	--	--	--
	51-01-27	231CHNL	--	882	--	--	--	--	--	--	--
	51-01-27	231CHNL	--	935	--	44	0	13	--	2.8	--
	48-12-06	231PFDF	--	679	--	170	0	52	--	11	--
14N.13W.33.314	61-07-19	313SADG	--	563	7.4	290	56	90	--	15	10
14N.13W.33.3341	75-03-13	313SADG	--	581	--	290	64	91	--	16	10
14N.15W.01.3134	50-01-20	313SADG	--	853	--	490	270	130	--	38	--
14N.15W.04.1134	69-05-14	231SRMP	1008	1080	7.9	550	350	160	--	33	35
14N.15W.12.110	50-01-20	--	--	853	--	490	270	130	--	38	--
14N.15W.14.3423	50-01-20	313SADG	--	881	--	520	290	140	--	41	--
14N.15W.28.1434	50-01-20	313SADG	--	801	--	470	240	130	--	36	--
15N.09W.06.2234	62-09-12	211DLTN	--	4400	6.8	2400	2200	590	--	220	330
15N.09W.06.2234	62-10-04	211DLTN	--	2390	--	1600	1100	340	--	180	--
15N.10W.04.1311	64-10-22	211GLLP	--	1550	7.8	360	190	90	--	32	--
	73-07-18	211GLLP	--	1510	8.1	410	240	100	--	36	180
15N.10W.06.2421	54-02-05	211DLCO	--	2130	--	930	700	220	--	96	--

Table 2. Major chemical constituents of water from selected wells in the vicinity of Crowspoint, New Mexico - Continued

DATE OF SAMPLE	SODIUM+ POTAS- SIUM SOLVED (MG/L AS NA) (00933)	BICAR- BONATE (MG/L AS HCO3) (00440)	CAR- BONATE (MG/L AS CO3) (00445)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUD- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, SUM OF TUENIS, DIS- SOLVED (MG/L AS NO3) (70301)	NIRO- GEN, NITRATE DIS- SOLVED (MG/L AS NO3) (71851)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4) (00660)
48-12-03	140	240	16	54	19	.4	--	353	.90	--
54-02-05	--	220	26	--	16	--	--	--	--	--
48-08-18	--	260	0	--	720	--	--	--	--	--
48-08-18	760	250	9	520	700	1.0	--	2160	4.5	--
48-08-19	870	250	7	530	700	1.0	--	2260	2.4	--
51-04-08	--	--	--	--	--	--	--	--	--	--
51-09-08	--	230	18	--	680	--	--	--	--	--
51-09-08	--	230	14	--	760	--	--	--	--	--
51-09-08	--	250	8	--	740	--	--	--	--	--
52-06-30	10	260	0	240	5.0	.4	11	568	.00	--
53-04-03	300	320	13	170	150	.4	9.1	808	1.4	--
61-07-18	--	260	0	230	14	.2	12	567	.00	--
64-09-30	--	270	0	220	28	.2	12	574	.10	--
52-06-20	--	--	64	--	310	--	--	--	--	--
52-06-30	10	260	0	240	5.0	.4	11	568	.00	--
48-12-06	220	330	13	180	50	.5	--	672	10	--
51-01-13	--	200	32	--	96	2.7	--	--	--	--
51-01-16	--	300	0	--	.42	--	--	--	--	--
51-01-23	--	340	31	--	18	.4	--	--	--	--
51-01-24	200	360	12	100	16	.6	8.1	518	.60	--
51-01-24	--	370	5	--	26	--	--	--	--	--
51-01-27	--	390	5	--	18	--	--	--	--	--
51-01-27	--	400	0	--	19	--	--	--	--	--
51-01-27	210	390	6	130	19	.4	8.7	579	.70	--
48-12-06	85	260	14	64	34	.2	--	398	9.3	--
61-07-19	--	280	0	72	4.8	.2	13	344	.00	--
75-03-13	--	279	--	85	4.7	.1	9.7	356	--	.03
50-01-20	7.0	260	0	270	6.0	.2	--	--	.50	--
69-05-14	--	250	>0	380	10	.4	--	796	.62	--
50-01-20	7.0	260	0	270	6.0	.2	--	585	.50	--
50-01-20	3.0	280	--	230	6.0	.0	--	603	.30	--
50-01-20	3.0	280	--	230	6.0	.1	--	540	.50	--
62-09-12	--	230	0	2400	47	.9	8.7	4130	380	--
62-10-04	39	560	0	1200	7.0	.5	15	--	.10	--
64-10-22	220	210	0	620	11	.8	10	--	.10	--
73-07-18	--	210	10	580	7.1	.6	--	1110	.06	--
54-02-05	183	290	0	1030	14	.7	8.0	--	.10	--

Table 2. Major chemical constituents of water from selected wells in the vicinity of Crownpoint, New Mexico - Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	* GEO-LOGIC UNIT	* * AGENCY ANALYZING SAMPLE (CODE NUMBER)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHDS)	PH (UNITS)	HARD-NESS (MG/L AS CaCO3)	HARD-NESS (MG/L CaCO3)	HARD-NESS (MG/L CaCO3)	CALCIUM DIS-SOLVED (MG/L AS Ca)	MAGNE-SIUM DIS-SOLVED (MG/L AS Mg)	SODIUM, DIS-SOLVED (MG/L AS Na)
15N.104.06.2421	54-02-17	211DLCC	--	1830	--	630	380	380	140	67	--
	61-08-01	211DLCC	--	1960	7.5	450	230	230	110	44	290
	70-01-15	211DLCC	1008	2490	7.9	1000	880	880	120	170	280
	73-07-18	211DLCC	--	2410	8.4	510	353	353	100	62	370
15N.114.17.1111	52-10-23	211DKOT	--	1060	--	28	0	0	7.0	2.7	--
	61-07-31	211DKOT	--	678	8.4	22	0	0	6.0	1.7	147
15N.114.29.1132	76-09-30	2214PSN	1008	1230	--	180	0	0	44	16	210
15N.124.17.1111	75-01-26	313SADG	1008	960	7.7	210	62	62	54	18	130
	77-02-08	313SADG	1008	1310	9.3	18	0	0	6.0	>.0	270
15N.124.17.123	52-05-00	211DKOT	--	7620	--	340	160	160	--	--	--
	52-05-00	211DKOT	--	2160	--	48	0	0	--	--	--
15N.124.17.123A	52-05-00	211DKOT	--	7360	--	3700	3300	3300	--	--	--
15N.124.19.22	53-04-08	211DKOT	--	1330	--	740	460	460	180	70	--
	56-05-21	211DKOT	--	1330	7.6	730	460	460	--	--	--
	63-05-04	221WSRC	--	395	8.3	97	0	0	29	5.8	52
15N.124.19.22	56-05-21	211DKOT	--	1330	7.6	730	460	460	--	--	--
15N.124.19.223	49-09-02	211DKOT	--	468	--	110	0	0	29	9.0	66
15N.134.07.33	48-11-19	211DKOT	--	688	--	340	130	130	89	29	--
15N.134.12.144	61-07-11	221CSPG	--	829	7.9	110	0	0	36	5.8	140
15N.134.22.1111	63-11-27	221CSPG	--	638	7.8	280	89	89	82	17	--
	64-04-08	221CSPG	--	690	8.6	11	0	0	3.6	.5	--
	70-04-24	241CSPG	1008	930	--	--	--	--	3.0	>.0	200
	74-03-20	221CSPG	--	940	9.5	10	0	0	2.0	1.2	200
15N.144.13.413	70-06-10	221ENRD	1008	760	9.4	8	0	0	2.0	.6	170
15N.154.07.23	53-04-07	110AVMB	--	567	--	120	0	0	32	9.0	--
15N.154.18.314	51-03-31	313SADG	--	3780	--	49	0	0	--	--	--
	52-02-27	313SADG	--	1170	--	540	360	360	--	--	--
	54-12-14	313SADG	--	1350	--	130	0	0	--	--	--
15N.154.18.3313	55-06-22	313SADG	--	1190	7.3	680	480	480	180	55	--
15N.154.18.3344	66-06-15	313SADG	--	--	--	580	440	440	170	35	34
	68-08-01	313SADG	1008	1180	7.5	620	440	440	190	35	24
	69-11-06	313SADG	1008	1190	7.7	630	440	440	190	35	22
	70-07-01	313SADG	1008	1190	7.2	620	430	430	190	38	27

Table 2. Major chemical constituents of water from selected wells in the vicinity of Crownpoint, New Mexico - Continued

DATE OF SAMPLE	POTASSIUM+ SOLVED (MG/L) (00933)	POTASSIUM DIS- SOLVED (MG/L) AS K) (00935)	BICARBONATE (MG/L) AS HCO3) (00440)	CARBONATE (MG/L) AS CO3) (00445)	SULFATE DIS- SOLVED (MG/L) AS SO4) (00945)	CHLORIDE, DIS- SOLVED (MG/L) AS CL) (00940)	FLUORIDE, DIS- SOLVED (MG/L) AS F) (00950)	SILICA, DIS- SOLVED (MG/L) AS SiO2) (00955)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	NITROGEN, DIS- SOLVED (MG/L) AS NO3) (71851)	PHOSPHATE, ORTHOPHOSPHATE, DIS- SOLVED (MG/L) AS PO4) (00660)
54-02-17	200	--	310	0	770	14	7.0	8.6	--	.10	--
61-08-01	--	7.0	270	0	940	10	.4	15	1450	.20	--
70-01-15	--	7.0	180	>0	1300	75	.7	--	2320	.62	--
73-07-18	--	9.0	140	1	1000	18	.5	--	1790	3.1	.02
52-10-23	--	240	300	12	200	44	1.8	13	--	.20	--
61-07-31	--	2.8	247	2	124	9.6	.6	16	431	.40	--
76-09-30	--	7.0	220	14	420	8.9	.5	--	801	.03	--
75-01-26	--	>0	180	8	300	1.8	.5	17	628	--	--
77-02-08	--	3.0	220	24	220	130	2.7	--	775	.14	.02
52-05-00	1800	--	230	0	3800	130	1.8	--	--	--	--
52-05-00	490	--	330	0	780	29	.8	--	--	--	--
52-05-00	880	--	490	8	4900	46	.0	--	--	--	--
53-04-08	43	--	340	0	510	9.0	.1	20	996	.20	--
56-05-21	44	--	330	0	520	8.0	--	--	--	.40	--
63-05-04	--	3.0	220	3	.22	4.6	.4	17	247	.70	.06
56-05-21	44	--	330	0	520	8.0	--	--	--	.40	--
49-09-02	--	--	240	0	44	7.0	.6	15	291	2.3	--
48-11-19	16	--	250	0	150	7.0	.5	--	413	.30	--
61-07-11	--	5.0	230	0	160	47	.5	16	528	1.0	--
63-11-27	47	--	230	0	170	6.6	.5	13	452	.00	--
64-05-08	160	--	290	2	68	25	1.4	12	430	1.2	--
70-09-24	--	.4	220	60	110	37	1.9	--	549	.62	.01
74-03-20	--	>0	210	8	120	35	1.6	12	545	5.0	>.00
70-06-10	--	3.0	180	69	63	34	.3	--	243	5.0	--
53-04-07	83	--	270	0	23	23	.6	15	340	20	--
51-03-31	--	--	440	30	--	440	2.2	--	--	--	--
52-02-27	--	--	220	0	--	6.0	.4	--	--	--	--
54-12-14	--	--	190	14	--	7.0	--	--	--	--	--
55-06-22	14	--	240	0	490	6.0	.2	13	876	.00	--
66-08-15	--	--	170	6	460	3.5	.3	--	896	.87	--
68-08-01	--	>0	210	>0	480	10	.3	--	874	>.00	--
69-11-06	--	2.0	240	>0	460	9.9	.3	--	936	.25	--
70-07-01	--	>0	230	>0	410	7.0	.2	--	893	.12	--



Table 2. Major chemical constituents of water from selected wells in the vicinity of Crownpoint, New Mexico - Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	GFO-LOGIC UNIT	* AGENCY ANALYZING SAMPLE NUMBER (00028)	SPE-CIFIC CON-DUCTANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	HARDNESS AS CALCO3 (00900)	HARDNESS AS MGD (00925)	CALCIUM DIS-SOLVED AS CA (00915)	MAGNE-SIUM DIS-SOLVED AS MG (00925)	SODIUM, DIS-SOLVED AS NA (00930)
15N.15W.18.3344	70-12-08 313SADG		1008	1140	7.7	640	38	190	38	27
	72-03-16 313SADG		1008	1170	7.9	620	37	190	37	25
15N.15W.20.313	58-03-01 231SNSL		--	1150	--	430	37	190	37	34
	66-08-15 231SNSL		1008	1180	--	620	39	180	39	29
	67-10-24 231SNSL		1008	1000	7.5	620	36	190	36	21
	72-03-28 231SNSL		1008	1180	8.2	640	38	190	38	35
16N.10W.02.23	75-05-23 221WSRC		--	1450	--	150	17	31	17	250
16N.10W.08.321	61-08-01 --		--	1830	7.5	560	67	110	67	230
16N.10W.22.212	62-09-19 211HOST		--	2110	7.4	460	200	96	53	340
16N.11W.05.1113	49-08-02 211CRVC		--	1300	--	--	--	--	--	--
16N.11W.05.1113	61-07-31 211CRVC		--	1230	7.8	270	49	66	26	180
16N.11W.17.4322	59-07-10 211GLLP		--	1350	7.5	460	240	140	27	--
	73-02-12 211GLLP		1008	1250	7.9	330	180	78	34	160
16N.11W.33.313	61-08-06 211AVRO		--	--	7.6	1290	--	430	210	67
16N.11W.33.332	72-09-08 221WSRC		1008	1160	8.5	95	0	30	4.9	210
16N.13W.11.3413	54-03-18 211CRVC		--	3400	--	2300	1800	550	230	--
16N.14W.15.1342	61-07-11 211CRVC		--	3590	7.0	2500	1900	620	230	110
	51-04-29 211DKOT		--	1450	--	28	0	4.0	4.4	--
	51-10-18 211DKOT		--	3050	--	110	0	--	--	--
	51-11-02 211DKOT		--	388	--	50	0	--	--	--
	53-04-29 211DKOT		--	1450	--	28	0	4.0	4.4	--
	74-03-20 211DKOT		1008	1470	9.0	0	0	9.0	>0	340
16N.14W.21.3334	74-03-20 211DKOT		--	1050	9.1	10	0	4.0	>0	250
16N.14W.22.4	78-08-00 221WSRC		1008	620	8.5	100	0	36	3.7	94
16N.14W.33.22	73-03-06 221WSRC		1008	840	8.9	20	0	6.0	1.2	200
16N.14W.33.223	52-02-22 221WSRN		--	403	--	84	0	26	4.6	63
	53-05-14 221WSRN		--	1040	--	63	0	18	4.4	--
	73-03-06 221WSRN		--	840	8.9	20	0	6.0	1.2	200
16N.14W.33.234	73-11-05 221CSPG		1008	420	8.2	75	0	26	2.4	69
16N.15W.11.3323	74-02-13 211DKOT		1008	550	8.3	130	0	38	8.5	73
16N.15W.16.300	56-07-23 221WSRN		--	1020	7.7	70	0	--	--	--
	56-08-15 221WSRN		--	1020	7.8	55	0	--	--	--
16N.15W.17.1431	70-02-23 211DKOT		1008	1010	9.3	5	0	2.0	>0	220
	70-07-29 211DKOT		1008	1040	9.3	5	0	2.0	>0	230
	70-11-23 211DKOT		1008	1050	9.3	5	0	2.0	>0	240
	72-05-00 211DKOT		1008	1000	9.2	5	0	2.0	>0	230
	74-02-13 211DKOT		1008	1030	9.3	5	0	2.0	>0	240
16N.15W.20.1314	71-11-18 210KNCS		1008	1310	8.7	28	0	7.0	2.4	300

Table 2. Major chemical constituents of water from selected wells in the vicinity of  
Crownpoint, New Mexico - Continued

DATE OF SAMPLE	SODIUM+ POTAS- SIUM, DIS- SOLVED (MG/L AS NA) (00933)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00933)	BICAR- BONATE (MG/L AS HCO3) (00440)	CAR- BONATE (MG/L AS CO3) (00445)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, SUM OF CONSI- TUENTS, DIS- SOLVED (MG/L AS NO3) (70301)	NIRO- GEN, NITRATE DIS- SOLVED (MG/L AS NO3) (71851)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04) (00660)
70-12-08	--	.1	42	>0	450	140	.2	--	895	.62	--
72-03-16	--	>.0	240	>0	460	9.9	.4	--	906	.62	--
58-03-01	--	10	240	1	470	10	.3	12	872	.30	--
66-08-15	--	.8	240	>0	460	12	.2	--	824	.62	--
67-10-24	--	--	240	0	460	13	.2	--	826	.50	--
72-03-28	--	>.0	200	19	21	6.4	.2	--	904	.62	.03
75-05-23	--	4.3	271	--	450	12	.4	15	915	--	.03
61-08-01	--	6.0	390	0	700	16	.5	15	1340	.50	--
62-09-19	--	6.0	310	0	880	15	.5	15	1550	.60	--
49-08-02	--	--	260	0	--	10	--	--	--	--	--
61-07-31	--	4.0	270	0	420	7.2	.5	24	856	1.4	--
59-07-10	220	--	260	0	680	11	.4	13	1220	.00	--
73-02-12	--	1.0	190	16	490	5.3	.5	--	882	.62	--
61-08-06	--	--	230	0	1100	16	1.3	--	1970	--	--
72-09-08	--	3.0	160	15	370	11	.3	--	790	.12	.02
54-03-18	91	--	640	0	1900	23	.4	17	3120	.20	--
61-07-11	--	11	710	0	2000	23	.3	18	3410	1.1	--
51-04-29	330	--	310	30	400	12	1.1	12	954	.00	--
51-10-18	--	--	360	20	--	26	2.2	--	--	--	--
51-11-02	72	--	140	0	68	14	.8	7.4	--	.60	--
53-04-29	330	--	310	30	400	12	1.1	12	954	.00	--
74-03-20	--	>.0	310	33	400	14	1.3	8.3	977	4.3	>.00
74-03-20	--	>.0	210	31	210	17	1.4	8.5	709	4.9	>.00
78-06-00	--	3.0	210	12	84	27	.4	--	408	.07	880
73-03-06	--	1.0	220	23	170	25	4.6	--	481	.62	--
52-02-22	--	--	230	0	24	6.0	.4	10	246	.50	--
53-05-14	210	--	230	0	260	42	2.2	11	668	.10	--
73-03-06	--	1.0	220	23	170	26	4.6	--	608	.60	--
73-11-05	--	1.6	200	6	47	9.0	.5	--	361	1.2	--
74-02-13	--	3.0	280	>0	48	5.3	.4	15	324	.19	--
56-07-23	--	--	430	0	--	5.0	--	--	--	--	--
56-08-15	--	--	440	0	--	5.0	--	--	--	--	--
70-02-23	--	.7	370	26	140	7.0	.2	--	592	.62	>.00
70-07-29	--	>.0	340	50	150	1.6	.2	--	644	.62	>.00
70-11-23	--	>.0	330	51	150	8.1	.3	--	508	.62	>.00
72-05-00	--	>.0	290	62	150	3.5	.3	--	639	.62	.02
74-02-13	--	>.0	310	63	140	5.3	.3	9.0	619	.19	.02
71-11-18	--	.8	510	35	160	22	2.2	--	799	.12	--

Table 2. Major chemical constituents of water from selected wells in the vicinity of Crownpoint, New Mexico - Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	GED-LOGIC UNIT	* AGENCY ANALYZING SAMPLE NUMBER (00028)	SPE-CIFIC CONDUCTANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	HARDNESS AS CaCO3 (00900)	HARDNESS NONCALCAREONATE (MG/L CaCO3) (00902)	CALCIUM DIS-SOLVED (MG/L AS Ca) (00915)	MAGNESIUM DIS-SOLVED (MG/L AS Mg) (00925)	SODIUM DIS-SOLVED (MG/L AS Na) (00930)
16N.15W.21.	56-07-02	211DKOT	--	2630	7.8	1700	1500	--	--	--
16N.16W.01.2344	55-06-09	211DKOT	--	1060	8.9	12	0	1.6	1.9	--
16N.16W.15.4372	74-02-07	221WSRC	1008	820	8.7	290	110	80	22	33
16N.16W.17.2114	74-02-07	221WSRC	1008	820	8.7	25	0	8.0	1.2	170
16N.16W.25.2344	74-02-13	221EMRD	1008	540	8.5	65	0	20	1.6	100
17N.11W.15.	67-05-10	211MFNF	--	2540	--	--	--	--	--	--
17N.11W.16.2113	73-06-13	--	1008	1640	8.1	240	22	56	23	280
17N.11W.16.3431	49-08-02	211PMLK	--	2560	--	--	--	--	--	--
17N.11W.24.413	67-02-20	211PMLK	1008	2460	8.7	30	0	8.0	2.4	580
17N.11W.29.300	67-05-10	--	--	2820	--	--	--	--	--	--
17N.11W.30.431	73-07-18	211PMLK	--	1020	8.2	10	0	4.0	>.0	230
17N.11W.35.223	59-06-18	211DLTN	--	2750	7.6	500	220	120	49	--
17N.12W.03.41	49-08-03	211DLTN	--	2860	--	43	0	13	2.6	--
17N.12W.20.1111	74-00-00	221WSRC	--	--	8.3	16	0	3.0	2.0	130
17N.12W.28.2241	49-08-02	211DLTN	--	1240	--	--	--	--	--	--
17N.12W.30.142	48-12-12	211DKOT	--	580	--	57	0	13	5.9	--
17N.12W.30.142	64-10-13	211DKOT	--	586	8.1	48	0	12	4.4	--
17N.12W.30.3243	58-09-16	211DKOT	--	716	8.0	72	0	--	--	--
17N.12W.30.3243	74-10-29	211DKOT	--	601	8.3	47	0	12	4.1	120
17N.12W.33.244	70-03-10	211GLLP	1008	940	7.8	300	84	80	26	87
17N.13W.10.42	49-01-12	211CRVC	--	1720	--	570	180	130	58	--
17N.13W.10.44	49-01-12	211GLLP	--	1650	--	640	240	150	65	--
17N.13W.11.33	51-12-03	211CRVC	--	1230	--	450	130	110	42	--
17N.13W.21.111	76-09-17	211GLLP	--	1320	8.1	410	210	100	38	160
17N.16W.35.413	71-03-23	221WSRC	--	499	8.8	16	0	2.0	2.6	110
17N.16W.35.413	73-11-13	221WSRC	--	508	9.1	5	0	2.1	.0	120
18N.10W.18.310	67-05-10	--	--	4590	--	--	--	--	--	--
18N.10W.18.4222	69-06-03	211MFNF	--	4520	--	--	--	--	--	--
18N.10W.19.122	69-06-03	--	--	2780	--	--	--	--	--	--
18N.10W.20.1114	69-06-03	--	--	7400	--	--	--	--	--	--
18N.11W.29.3111	53-04-06	211HJST	--	3190	--	46	0	12	3.8	--
18N.12W.32.1311	51-03-20	211DLTN	--	1930	--	30	0	--	--	--
18N.13W.01.4	49-08-03	211CRVC	1008	3130	--	23	0	6.5	1.7	--
	71-11-02	211CRVC	--	3270	8.5	20	0	6.0	1.2	720
18N.13W.18.1444	49-08-03	211PMLK	--	1460	--	--	--	--	--	--
18N.13W.23.3212	71-11-02	211CRVC	1008	2150	8.5	15	0	4.0	1.2	480

Table 2. Major chemical constituents of water from selected wells in the vicinity of Crownpoint, New Mexico - Continued

DATE OF SAMPLE	SODIUM+ POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00933)		POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)		BICAR- BONATE (MG/L AS HCO3) (00440)		CAR- BONATE (MG/L AS CO3) (00445)		SULFATE DIS- SOLVED (MG/L AS SO4) (00945)		CHLU- RIDE, DIS- SOLVED (MG/L AS CL) (00940)		FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)		SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)		SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L AS PO4) (70301)		NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS NO3) (71851)		PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4) (00660)	
56-07-02	--	--	220	0	--	41	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
55-06-09	262	--	518	39	74	8.0	74	39	74	8.0	8.0	1.4	14	14	658	1.5	658	1.5	658	1.5	--	--
74-02-07	--	3.0	220	17	74	23	74	17	74	23	23	.4	12	12	440	52	440	52	440	52	.02	.02
74-02-07	--	2.0	210	15	160	11	160	15	160	11	11	.2	10	10	487	2.4	487	2.4	487	2.4	.03	.03
74-02-13	--	2.0	250	14	29	14	29	14	29	14	14	.5	14	14	303	5.5	303	5.5	303	5.5	.03	.03
67-05-10	--	--	--	--	--	30	--	--	--	30	30	--	--	--	--	--	--	--	--	--	--	--
73-06-13	--	>.0	260	>0	610	21	610	>0	610	21	21	.3	--	--	1120	3.7	1120	3.7	1120	3.7	--	--
49-08-02	--	--	310	0	--	31	--	0	--	31	31	--	--	--	--	--	--	--	--	--	--	--
67-02-20	--	>.0	270	14	1000	26	1000	14	1000	26	26	.8	--	--	1710	1.1	1710	1.1	1710	1.1	--	--
67-05-10	--	--	--	--	--	63	--	--	--	63	63	--	--	--	--	--	--	--	--	--	--	--
73-07-18	--	>.0	250	26	210	5.3	210	26	210	5.3	5.3	.6	--	--	618	.60	618	.60	618	.60	.02	.02
59-06-18	490	--	340	0	1200	22	1200	0	1200	22	22	.4	11	11	2070	.20	2070	.20	2070	.20	--	--
49-06-03	660	--	250	0	1100	66	1100	0	1100	66	66	.0	--	--	2000	1.8	2000	1.8	2000	1.8	--	--
74-00-00	--	--	180	--	64	8.0	64	--	64	8.0	8.0	--	--	--	426	--	426	--	426	--	--	--
49-08-02	--	--	280	0	--	8.0	--	0	--	8.0	8.0	--	--	--	--	--	--	--	--	--	--	--
48-12-12	120	--	260	0	90	3.0	90	0	90	3.0	3.0	.2	--	--	362	.50	362	.50	362	.50	--	--
66-10-13	120	--	250	0	90	3.2	90	0	90	3.2	3.2	.3	18	18	371	.10	371	.10	371	.10	--	--
58-09-16	--	--	280	0	140	5.5	140	0	140	5.5	5.5	--	--	--	--	--	--	--	--	--	--	--
74-10-29	--	2.3	252	0	93	3.4	93	0	93	3.4	3.4	.4	19	19	379	--	379	--	379	--	--	.00
70-03-10	--	5.0	270	>0	260	8.9	260	>0	260	8.9	8.9	.4	--	--	654	.25	654	.25	654	.25	--	--
49-01-12	150	--	470	0	490	3.0	490	0	490	3.0	3.0	.0	--	--	1070	.00	1070	.00	1070	.00	--	--
49-01-12	160	--	500	0	560	4.0	560	0	560	4.0	4.0	.0	--	--	1180	.00	1180	.00	1180	.00	--	--
51-12-03	130	--	390	0	380	4.0	380	0	380	4.0	4.0	.3	23	23	883	1.4	883	1.4	883	1.4	--	--
76-09-17	--	4.4	238	0	520	4.6	520	0	520	4.6	4.6	.3	21	21	967	--	967	--	967	--	.06	.06
71-03-23	--	.7	216	37	32	3.5	32	37	32	3.5	3.5	.6	15	15	348	--	348	--	348	--	.06	.06
73-11-13	--	1.1	223	25	33	4.8	33	25	33	4.8	4.8	.2	15	15	312	--	312	--	312	--	.09	.09
67-05-10	--	--	--	--	--	440	--	--	--	440	440	--	--	--	--	--	--	--	--	--	--	--
69-06-03	--	--	--	--	--	400	--	--	--	400	400	--	--	--	--	--	--	--	--	--	--	--
69-06-03	--	--	--	--	--	24	--	--	--	24	24	--	--	--	--	--	--	--	--	--	--	--
69-06-03	--	--	--	--	--	1400	--	--	--	1400	1400	--	--	--	--	--	--	--	--	--	--	--
53-04-06	740	--	240	8	1400	35	1400	8	1400	35	35	.7	10	10	2280	.20	2280	.20	2280	.20	--	--
51-03-20	450	--	350	0	580	94	580	0	580	94	94	1.1	--	--	--	--	--	--	--	--	--	--
49-08-03	760	--	600	0	700	300	700	0	700	300	300	4.5	--	--	2070	2.8	2070	2.8	2070	2.8	--	--
71-11-02	--	2.0	510	35	650	300	650	35	650	300	300	6.0	--	--	2000	.12	2000	.12	2000	.12	--	--
49-08-03	--	--	160	0	670	24	670	0	670	24	24	--	--	--	--	--	--	--	--	--	--	--
71-11-02	--	5.0	270	20	670	77	670	20	670	77	77	1.2	--	--	1400	.25	1400	.25	1400	.25	--	--

Table 2. Major chemical constituents of water from selected wells in the vicinity of Crownpoint, New Mexico - Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	* GEO-LOGIC UNIT	* AGENCY ANALYZING SAMPLE NUMBER (00028)	SPF-CIFIC CONDUCTANCE (MICRO-MHDS) (00095)	PH (UNITS) (00400)	HARDNESS (MG/L AS CaCO3) (00900)	HARDNESS, NONCARBONATE (MG/L CaCO3) (00902)	CALCIUM DIS-SOLVED (MG/L AS Ca) (00915)	MAGNESIUM, DIS-SOLVED (MG/L AS Mg) (00925)	SODIUM, DIS-SOLVED (MG/L AS Na) (00930)
19N.12W.05.	71-11-02	211PNLK	1008	2930	8.6	15	0	4.0	1.2	670
19N.12W.27.14	71-11-02	211PNLK	--	3100	8.7	20	0	6.0	1.2	700
19N.12W.34.	71-11-03	--	1008	210	7.0	45	0	16	1.2	14
19N.13W.13.444	52-01-04	211PNLK	--	3370	--	85	0	21	7.9	--
	71-11-02	211PNLK	1008	3510	8.5	25	0	8.0	1.2	790
19N.13W.28.1	50-01-05	211MENF	--	2480	--	15	0	2.8	2.0	--
20N.11W.26.31	67-05-10	--	--	951	8.6	--	--	--	--	--
20N.12W.26.444	67-05-02	211MENF	1008	1600	9.0	12	0	4.0	.6	370

Table 2. Major chemical constituents of water from selected wells in the vicinity of Crownpoint, New Mexico - Concluded

DATE OF SAMPLE	POTAS- SUM DIS- SOLVED (MG/L AS NA) (00933)	POTAS- SUM, DIS- SOLVED (MG/L AS K) (00935)	BICAR- BORATE (MG/L AS HCO3) (00440)	CAR- BONATE (MG/L AS CO3) (00445)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L AS NO3) (70301)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS NO3) (71851)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4) (00660)
71-11-02	--	3.0	470	38	940	47	3.4	--	1920	1.9	--
71-11-02	--	3.0	420	35	1000	60	2.4	--	2060	.12	>.00
71-11-03	--	79	79	>0	20	4.6	.2	--	154	4.3	--
52-01-04	780	--	460	0	1300	50	1.8	11	2380	2.7	--
71-11-02	--	7.0	390	29	1200	51	2.4	--	2370	.25	--
50-01-05	--	--	1120	59	85	200	5.2	9.3	1560	1.2	--
67-05-10	--	--	330	14	240	5.7	--	--	--	--	--
67-05-02	--	--	--	--	--	--	--	--	--	--	--

\* GEOLOGIC UNITS

QUATERNARY

110 AVNB - ALLUVIUM, BOLSON DEPOSITS AND OTHER SURFACE DEPOSITS

CRETACEOUS

210 MNCS - MANCOS SHALE  
 211 CRVC - CREVASSE CANYON FORMATION  
 211 DKOT - DAKOTA SANDSTONE OR FORMATION  
 211 DLCOG - DILCO COAL MEMBER OF CREVASSE CANYON FORMATION  
 211 DLTN - DALTON SANDSTONE MEMBER OF CREVASSE CANYON FORMATION  
 211 GLLP - GALLUP SANDSTONE  
 211 HOST - HOGTA TONGUE OF POINT LOOKOUT SANDSTONE  
 211 MENE - MENESEE FORMATION  
 211 MVRD - MESAVERT GROUP  
 211 PNLK - POINT LOOKOUT SANDSTONE

JURASSIC

221 CSPG - COW SPRINGS SANDSTONE OF MORRISON FORMATION  
 221 ENRD - ENTRADA SANDSTONE  
 221 MRSN - MORRISON FORMATION  
 221 WSRG - WESTWATER CANYON MEMBER OF MORRISON FORMATION

TRIASSIC

231 CHNL - CHINLE FORMATION  
 231 PPDF - PETRIED FOREST MEMBER OF CHINLE FORMATION  
 231 SNLS - SONSELA SANDSTONE BED OF PETRIED FOREST MEMBER  
 231 SRMP - SHINARUMP MEMBER OF CHINLE FORMATION  
 321 WNGT - WINGATE SANDSTONE

PERMIAN

310 GLRT - GLORIETA SANDSTONE MEMBER OF SAN ANDRES FORMATION  
 313 SADG - SAN ANDRES LIMESTONE AND GLORIETA SANDSTONE  
 313 SADY - SAN ANDRES LIMESTONE AND YESO FORMATION

\*\* AGENCY

1008 - ANALYSIS MADE BY U.S. BUREAU OF INDIAN AFFAIRS, ALL OTHERS BY U.S. GEOLOGICAL SURVEY

Table 3. Minor chemical constituents of water from selected wells in the vicinity of Crownpoint, New Mexico

LOCAL IDENTIFIER	DATE OF SAMPLE	* GEO-LOGIC UNIT	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01045)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)
NR086.0132X0153	74-01-24	211MNF	--	--	300	--	--	--	20	--
NR086.0395X1720	76-09-16	211GLLP	--	--	120	--	--	--	--	--
NR086.0620X1350	71-11-02	211PNLK	--	--	520	--	--	--	>0	--
NR105.018 X0168	73-01-15	211PNL	--	--	950	--	--	--	200	--
NR105.0180X0168	72-01-28	211GLLP	--	--	40	--	--	--	390	--
NR105.0265X0142	76-09-16	211GLLP	--	--	120	--	--	--	80	--
NR105.034 X015	72-11-28	211GLLP	--	--	>0	--	--	--	50	--
14N.11W.19.124	77-01-08	--	--	--	160	--	--	--	30	--
14N.12W.09.221	61-08-04	231WNGT	--	--	180	--	--	--	10	--
14N.12W.14.143	62-09-05	231WNGT	--	--	1600	--	--	--	30	--
14N.13W.19.1	62-09-05	231WNGT	--	--	310	--	--	--	100	--
14N.13W.20.410	70-07-14	310GLTK	--	--	300	--	--	--	>0	--
14N.13W.20.4321	61-07-12	--	--	--	210	--	--	--	80	--
14N.13W.20.4322	75-03-13	310GLTK	--	--	--	--	--	--	50	--
14N.13W.20.4323	75-03-13	310GLTK	--	--	--	--	--	--	10	--
14N.13W.25.1334	61-07-12	231CHNL	--	--	210	--	--	--	80	--
14N.13W.27.3424	66-03-01	231CHNL	--	--	30	--	--	--	230	--
14N.13W.33.124	71-09-30	231CHNL	--	--	450	--	--	--	150	--
14N.13W.33.3341	67-12-06	313SADY	--	--	>0	--	--	--	140	--
14N.13W.33.3341	72-04-07	313SADY	--	--	120	--	--	--	>0	--
14N.15W.04.1134	75-03-13	313SADY	--	--	--	--	--	--	10	--
15N.09W.06.2234	52-06-30	231SLSL	--	--	120	--	--	--	590	--
15N.10W.04.1311	61-07-18	231SLSL	--	--	--	--	--	--	10	--
15N.10W.06.2421	64-09-30	231SLSL	--	--	--	--	--	--	0	--
15N.11W.17.1111	61-07-19	313SADG	--	--	110	--	--	--	10	--
15N.11W.29.1132	75-03-13	313SADG	--	--	--	--	--	--	20	--
15N.12W.17.1111	69-05-14	231SRMP	--	--	>0	--	--	--	220	--
15N.12W.17.123	62-09-12	211DLTN	--	--	150	--	--	--	20	--
15N.12W.17.123A	73-07-18	211GLLP	--	--	180	--	--	--	>0	--
	61-08-01	211DLCC	--	--	220	--	--	--	20	--
	70-01-15	211DLCC	--	--	150	--	--	--	70	--
	73-07-18	211DLCC	--	--	260	--	--	--	20	--
	61-07-31	211DKQT	--	--	100	--	--	--	20	--
	76-09-30	221MRSN	30	>0	50	>0	>0	--	>0	>0
	75-01-26	313SADG	--	>0	--	>0	>0	410	1900	>0
	77-02-08	313SADG	--	1400	--	--	--	--	360	--
	56-05-21	211DKQT	--	--	--	--	--	--	0	--
	63-05-04	221MSRC	400	--	--	--	--	--	260	--

Table 3. Minor chemical constituents of water from selected wells in the vicinity of  
Crownpoint, New Mexico - Continued

DATE OF SAMPLE	LITHIUM		MANGA-		SELE-		VANA-		ZINC,		GROSS		GROSS		GROSS		GROSS			
	DIS-	SOLVED	NESE-	DIS-	NIUM,	DIS-	DIUM,	DIS-	DIS-	SOLVED	ALPHA,	ALPHA,	ALPHA,	ALPHA,	BETA,	BETA,	BETA,	BETA,	URANIUM	
	(UG/L)	(UG/L)	AS MN)	(UG/L)	AS SE)	(UG/L)	AS V)	(UG/L)	AS ZN)	(UG/L)	U-NAT)	U-NAT)	U-NAT)	U-NAT)	CS-137)	CS-137)	CS-137)	CS-137)	NATURAL	
	(01130)	(01056)	(01145)	(01085)	(01090)	(01515)	(01515)	(01515)	(01515)	(01515)	(03515)	(03515)	(03515)	(03515)	(03515)	(03515)	(03515)	(03515)	(22703)	
74-01-24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
76-09-16	--	--	--	--	--	--	--	--	--	--	--	--	--	3.5	--	--	--	--	--	--
71-11-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
73-01-15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
72-01-28	--	--	--	--	--	--	--	--	--	--	--	--	--	3.3	--	--	--	--	--	--
76-09-16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
72-11-28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
77-01-08	60	--	--	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<.4
61-08-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
62-09-05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
62-09-05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
70-07-14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
61-07-12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
75-03-13	--	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
75-03-13	--	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
61-07-12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
66-03-01	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
71-09-30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
67-12-06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
72-04-07	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
75-03-13	--	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
52-09-30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
61-07-14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
64-09-30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
61-07-19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
75-03-13	--	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
69-05-14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
62-09-12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
73-07-18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
61-08-01	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
70-01-15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
73-07-18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
61-07-31	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
76-09-30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
75-01-26	--	180	--	--	--	--	--	--	220	--	--	--	--	--	--	--	--	--	--	--
77-02-08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
56-05-21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
63-05-04	10	--	--	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--



Table 3. Minor chemical constituents of water from selected wells in the vicinity of  
Crownpoint, New Mexico - Continued

LOCAL IDENT- IFIER	DATE OF SAMPLE	* GEO- LOGIC UNIT	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	BARIIUM, DIS- SOLVED (UG/L AS BA) (01005)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)
15N.13W.12.144	61-07-11	221CSPG	--	--	150	--	--	--	210	--
15N.13W.22.1111	70-09-24	221CRV	--	--	890	--	--	--	150	--
15N.14W.13.413	74-03-20	221CSPG	--	>0	1030	>0	>0	>0	340	--
15N.15W.18.3344	70-06-10	221ENRD	--	--	>0	--	--	--	260	--
	66-06-15	313SADG	--	--	>0	--	--	--	70	--
	68-08-01	313SADG	--	--	50	--	--	--	80	--
	69-11-06	313SADG	--	--	50	--	--	--	110	--
	70-07-01	313SADG	--	--	220	--	--	--	70	--
	70-12-08	313SADG	--	--	>0	--	--	--	70	--
	72-03-16	313SADG	--	--	160	--	--	--	>0	--
15N.15W.20.313	58-03-01	231SNSL	--	--	--	--	--	--	0	--
	66-06-15	231SNSL	--	--	>0	--	--	--	40	--
	67-10-24	231SNSL	--	--	200	--	--	--	70	--
16N.10W.02.23	75-05-23	221WSRC	--	--	--	--	--	1300	--	--
16N.10W.08.321	61-08-01	--	--	--	270	--	--	0	--	--
16N.10W.22.212	62-09-19	211HDS	--	--	140	--	--	0	--	--
16N.11W.05.1113	61-07-31	211CRVC	--	--	220	--	--	10	--	--
16N.11W.17.4322	73-02-12	211GLLP	--	--	120	--	--	10	--	--
16N.11W.33.313	61-06-06	211MVRD	--	--	--	--	--	140	--	--
16N.11W.33.332	72-09-08	221WSRC	--	--	>0	--	--	20	--	--
16N.13W.11.3413	61-07-11	211CRVC	--	--	350	--	--	10	--	--
16N.14W.15.1342	74-03-20	211DKOT	--	--	320	--	--	2000	--	--
16N.14W.21.3334	74-03-20	211DKOT	--	--	40	--	--	500	--	--
16N.14W.22.4	78-06-00	221WSRC	--	--	210	--	--	>0	--	--
16N.14W.33.22	73-03-06	221WSRC	--	--	1700	--	--	>0	--	--
16N.15W.11.3323	74-02-13	211DKOT	--	--	120	--	--	>0	--	--
16N.15W.17.1431	70-02-23	211DKOT	--	--	20	--	--	390	--	--
	70-07-29	211DKOT	--	--	50	--	--	110	--	--
	70-11-23	211DKOT	--	--	120	--	--	40	--	--
	72-05-00	211DKOT	--	--	>0	--	--	--	--	--
	74-02-13	211DKOT	--	--	60	--	--	100	--	--
16N.15W.20.1314	71-11-18	210MCS	--	--	600	--	--	20	--	--
16N.16W.17.2114	74-02-07	221WSRC	--	--	60	--	--	30	--	--
16N.16W.25.2344	74-02-13	221ENRD	--	--	500	--	--	220	--	--
17N.11W.16.2113	73-06-13	--	--	--	280	--	--	50	--	--
17N.11W.24.413	67-02-20	211PNLK	--	--	>0	--	--	150	--	--
17N.11W.30.431	73-07-18	211PNLK	--	--	180	--	--	50	--	--
17N.12W.30.142	64-10-13	211DKOT	--	--	--	--	--	30	--	--

Table 3. Minor chemical constituents of water from selected wells in the vicinity of Crownpoint, New Mexico - Continued

DATE OF SAMPLE	LITHIUM		MANGA-		SELE-		VANA-		ZINC,		GROSS		GROSS		GROSS		GROSS			
	DIS-	SOLVED	NESE,	DIS-	NIUM,	DIUM,	DIS-	DIUM,	DIS-	SOLVED	ALPHA,	ALPHA,	ALPHA,	ALPHA,	ALPHA,	ALPHA,	ALPHA,	ALPHA,	ALPHA,	
	(UG/L AS LI)	(UG/L AS MN)	(UG/L AS MN)	(UG/L AS SE)	(UG/L AS SE)	(UG/L AS V)	(UG/L AS V)	(UG/L AS V)	(UG/L AS ZN)	(UG/L AS ZN)	DIS-	DIS-	DIS-	DIS-	DIS-	DIS-	DIS-	DIS-	DIS-	
	(01130)	(01056)	(01145)	(01085)	(01090)	(01515)	(01516)	(01516)	(01515)	(01515)	SUSP.	SUSP.	SUSP.	SUSP.	SUSP.	SUSP.	SUSP.	SUSP.	SUSP.	
61-07-11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
70-09-24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
74-03-20	--	0	>0	--	--	--	--	170	--	--	--	--	--	--	--	--	--	--	--	--
70-06-10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
66-06-15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
68-08-01	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
69-11-06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
70-07-01	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
70-12-08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
72-03-16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
58-03-01	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
66-06-15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
67-10-24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
75-05-23	--	60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
61-08-01	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
62-09-19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
61-07-31	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
73-02-12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
61-06-06	--	>0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
72-04-08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
61-07-11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
74-03-20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
74-03-20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
78-06-00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
73-03-06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
74-02-13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
70-02-23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
70-07-29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
70-11-23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
72-05-00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
74-02-13	--	--	--	--	--	--	--	30	--	--	--	--	--	--	--	--	--	--	--	--
71-11-18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
74-02-07	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
74-02-13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
73-06-13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
67-02-20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
73-07-18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
64-10-13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 3. Minor chemical constituents of water from selected wells in the vicinity of Crownpoint, New Mexico - Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	* GEO-LOGIC UNIT	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)
17N.12*.33.244	70-03-10	211GLUP	--	--	>0	--	--	--	320	--
17N.13*.21.111	76-09-17	211GLUP	--	--	120	--	--	--	10	--
17N.16*.35.413	71-03-23	221WSKC	--	--	--	--	--	--	500	--
	73-11-13	221WSKC	--	--	--	--	--	--	10	--
18N.13*.01.4	71-11-02	211CRVC	--	--	1300	--	--	--	80	--
18N.13*.23.3212	71-11-02	211CRVC	--	--	750	--	--	--	40	--
19N.12*.05.	71-11-02	211PNLK	--	--	750	--	--	--	30	--
19N.12*.27.14	71-11-02	211PNLK	--	--	750	--	--	--	50	--
19N.12*.34.	71-11-03	--	--	--	380	--	--	--	30	--
19N.13*.13.444	71-11-02	211PNLK	--	--	750	--	--	--	270	--
20N.12*.26.444	67-05-02	211MENF	--	--	20	--	--	--	190	--

Table 3. Minor chemical constituents of water from selected wells in the vicinity of Crownpoint, New Mexico - Concluded

DATE OF SAMPLE	LITHIUM		MANGA-NESE,		SELE-NIUM,		VANA-DIUM,		ZINC,		GROSS ALPHA, DIS-SOLVED (PCI/L) AS U-NAT) (01515)		GROSS BETA, DIS-SOLVED (PCI/L) AS CS-137) (03515)		GROSS BETA, SUSP. TOTAL (PCI/L) AS CS-137) (03516)		URANIUM NATURAL DIS-SOLVED (UG/L) (22703)	
	DIS-SOLVED (UG/L) AS LI) (01130)	SOLVED (UG/L) AS MN) (01056)	DIS-SOLVED (UG/L) AS SE) (01145)	SOLVED (UG/L) AS V) (01085)	DIS-SOLVED (UG/L) AS ZN) (01090)	DIS-SOLVED (UG/L) AS U) (01515)	DIS-SOLVED (UG/L) AS CS-137) (03515)	DIS-SOLVED (UG/L) AS CS-137) (03516)	DIS-SOLVED (UG/L) AS U) (01515)	DIS-SOLVED (UG/L) AS CS-137) (03515)	DIS-SOLVED (UG/L) AS CS-137) (03516)	DIS-SOLVED (UG/L) AS U) (01515)	DIS-SOLVED (UG/L) AS CS-137) (03515)	DIS-SOLVED (UG/L) AS CS-137) (03516)	DIS-SOLVED (UG/L) AS U) (01515)	DIS-SOLVED (UG/L) AS CS-137) (03516)	DIS-SOLVED (UG/L) AS U) (01515)	DIS-SOLVED (UG/L) AS CS-137) (03516)
70-03-10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
76-09-17	--	--	--	--	--	--	--	--	--	--	3.4	4.9	--	--	--	--	--	--
71-03-23	--	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
73-11-13	--	0	--	--	--	--	--	--	--	--	57	4.4	264	--	--	--	--	--
71-11-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
71-11-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
71-11-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
71-11-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
71-11-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
67-05-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

\* GEOLOGIC UNITS

QUATERNARY	JURASSIC
110 AVNB - ALLUVIUM, BOLSON DEPOSITS AND OTHER SURFACE DEPOSITS	221 CSFG - COW SPRINGS SANDSTONE OF MORRISON FORMATION
	221 ENRD - ENTRADA SANDSTONE
	221 MRSN - MORRISON FORMATION
	221 WSRC - WESTWATER CANYON MEMBER OF MORRISON FORMATION
	TRIASSIC
210 MNCB - MANCOS SHALE	231 CHNL - CHINLE FORMATION
211 CRVC - CREVASSE CANYON FORMATION	231 PFDf - PETRIFIED FOREST MEMBER OF CHINLE FORMATION
211 DKGT - DAKOTA SANDSTONE OR FORMATION	231 SNL - SONSELA SANDSTONE BED OF PETRIFIED FOREST MEMBER
211 DLCC - DILCO COAL MEMBER OF CREVASSE CANYON FORMATION	231 SRMP - SHINARUMP MEMBER OF CHINLE FORMATION
211 DLTN - DALTON SANDSTONE MEMBER OF CREVASSE CANYON FORMATION	321 WNGT - WINGATE SANDSTONE
211 GLLP - GALLUP SANDSTONE	
211 HOST - HOSTA TONGUE OF POINT LOOKOUT SANDSTONE	PERMIAN
211 MEF - MENEFE FORMATION	
211 MYRD - MESAVERDE GROUP	
211 PNLK - POINT LOOKOUT SANDSTONE	310 GLRT - GLORIETA SANDSTONE MEMBER OF SAN ANDRES FORMATION
	313 SADG - SAN ANDRES LIMESTONE AND GLORIETA SANDSTONE
	313 SADY - SAN ANDRES LIMESTONE AND YESO FORMATION