TEXAS WATER COMMISSION

Joe D. Carter, Chairman William E. Berger, Commissioner O. F. Dent, Commissioner

Larry S. Campbell Parks and Wildlife Dept. 4002 North Chadbourne St. San Angelo, Texas BULLETIN 6507

WATER-LEVEL DATA FROM OBSERVATION WELLS IN PECOS AND REEVES COUNTIES, TEXAS

By

W. Ralph Muse

and a second s

Published and distributed by the Texas Water Commission Post Office Box 12311 Austin, Texas 78711

Authorization for use or reproduction of any original material contained in this publication, i. e., not obtained from other sources, is freely granted without the necessity of securing permission therefor. The Commission would appreciate acknowledgement of the source of original material so utilized.

TABLE OF CONTENTS

Page

INTRODUCTION	1
WATER-LEVEL OBSERVATION PROGRAM OF THE TEXAS WATER COMMISSION	1
FLUCTUATIONS OF WATER LEVELS	2
METHODS FOR COLLECTION OF WATER-LEVEL DATA	3
PRESENTATION OF DATA	5
WELL-NUMBERING SYSTEM	5
WATER-LEVEL FLUCTUATIONS IN PECOS AND REEVES COUNTIES	7
REFERENCES	19

TABLES

1.	Pecos	County	Water-Level	Measurements,	in	Feet	Below	Land	Surface	21
2.	Reeves	Gounty	y Water-Leve	l Measurements,	, ir	n Feet	t Below	/ Lano	d Surface.	45

ILLUSTRATIONS

Figures

1.	Well-Numbering System	6
2.	Map of Texas Showing Location of Pecos and Reeves Counties	8
3.	Hydrographs of Selected Wells in the Fort Stockton and Belding Area, Pecos County	12
4.	Hydrographs of Selected Wells in the North Coyanosa Area, Pecos County	13
5.	Hydrographs of Selected Wells in North-Central Reeves County	14
6.	Hydrographs of Selected Wells in Central Reeves County	15
7.	Water-Level Decline Map (1958 to 1964), North Coyanosa Area, Pecos and Reeves Counties	16

Page

8. Water-Level Decline Map (1959 to 1964), Central Reeves County..... 17

Plates

Follows

1.	Location Map	of Water-Level	Observation Well	s, Pecos	County	42

Location Map of Water-Level Observation Wells, Reeves County..... 60

WATER-LEVEL DATA FROM OBSERVATION WELLS IN PECOS AND REEVES COUNTIES, TEXAS

INTRODUCTION

This report has been prepared to present selected water-level records for interested individuals and to supplement previous detailed ground-water studies in Pecos County (Armstrong and McMillion, 1961) and in Reeves County (Ogilbee and others, 1962). Water-level data contained in the report are principally from wells located in areas of large withdrawals of ground water for irrigation. The data are presented as tabulations of water-level measurements, well-location maps, water-level decline contour maps, and hydrographs of water levels in certain wells. Wells from which the water-level data were obtained are a part of the statewide network of water-level observation wells maintained by the Texas Water Commission.

Because water levels in an aquifer provide the key for all ground-water investigations, compilation of water-level data from selected wells on a longterm basis is essential. Water-level data are particularly important in determining the amount of ground water available for development. Since water levels fluctuate in response to pumping, water-level data are as essential to groundwater studies as stream-gaging data are to surface-water studies. Water-level declines, associated with the over development of a ground-water body, or aquifer, through excessive pumping is a principal cause of increase in pumping cost, decrease in well yields, abandonment of shallower wells, and in some areas an undesirable change in water quality owing to salt-water encroachment.

WATER-LEVEL OBSERVATION PROGRAM OF THE TEXAS WATER COMMISSION

Observation wells are maintained by the Commission in areas throughout the State for the purpose of observing changes in water levels in the principal aquifers. The Commission's Water Level Observation Program is directed toward the accomplishment of several objectives. These objectives are: (1) the selection in every major aquifer of a network of wells that are spaced to afford adequate data for preparation of piezometric maps or water-table contour maps referenced to sea-level datum, (2) annual or periodic measurement of water levels in each well in this network made at the time of year when water levels have recovered from the effects of pumping during the season of peak water demand, (3) the operation of continuous water-stage recorders in representative wells where a continuous record of water-level changes is needed, (4) preparation of maps and graphs that show the fluctuation of water levels as revealed by water-level measurement, and (5) publication of water-level information and the evaluation of the data.

Prior to September, 1960, the observation program for Texas was maintained by the U.S. Geological Survey in cooperation with the Texas Water Commission. After that date direction of this program was assumed by the Commission. Within the Texas Water Commission the water-level observation program is conducted by Engineering Services and by Ground Water Division personnel under the general supervision of John J. Vandertulip, Chief Engineer, and L. G. McMillion, Director of the Ground Water Division. This report was prepared under the supervision of J. Russell Mount, Coordinator, Ground Water Availability Program, and Robert L. Bluntzer, Head, Water Level Section. Tabulations of water-level data contained in this report were prepared by the Commission's Electronic Data Processing Division under the general supervision of Ivan M. Stout, Director.

The following personnel have participated in the collection of data in Pecos and Reeves Counties since 1960:

Curtis Andrews Robert L. Bluntzer Allan Cunningham Joe Dillard Don Draper Sam Gammon Robert McCullough W. Ralph Muse

Appreciation is expressed to the City of Fort Stockton Water Department and the many landowners in Pecos and Reeves Counties for their interest and cooperation in allowing their wells to be used in the Commission's observation program.

FLUCTUATIONS OF WATER LEVELS

Changes in water levels are due to many causes. Some are of regional significance whereas others are local. The more significant causes of water-level fluctuations are changes in recharge and discharge. When recharge is reduced, as in the case of drought, some of the water discharged from the aquifer must be withdrawn from storage, and water levels decline. When adequate rainfall resumes, however, the volume of water drained from storage in the aquifer during the drought may be replaced, and water levels will rise accordingly. When a water well is pumped, the water table or the piezometric surface in the vicinity of the well is drawn down in the shape of an inverted cone with its apex at the pumped well. The development or growth of this cone depends on the aquifer's physical and hydraulic characteristics, and on the rate of pumping. As pumping continues, the cone expands and continues to do so until it intercepts a source of replenishment capable of supplying sufficient water to satisfy the pumping demand. This source of replenishment can be either intercepted natural discharge of induced recharge. If the quantity of water received from these sources is sufficient to compensate for the water pumped, the growth of

the cone will cease, and new balances between recharge and discharge will be achieved. In areas where recharge or salvageable natural discharge is less than the amount of water pumped from wells, water is removed from storage in the aquifer to supply the deficiency, and water levels will continue to decline.

Where intensive development has taken place in aquifers, each well superimposes its own individual cone of depression on that of the neighboring well. This results in the development of a regional cone of depression. When the cone of one well overlaps the cone of another, interference occurs and an additional lowering of water levels occurs as the wells compete for water by expanding their cone of depression. The amount or extent of interference between cones of depression depends on the rate of pumping from each well, the spacing between wells, and the hydraulic characteristics of the aquifer in which the wells are completed.

Water levels in some wells, especially those completed in artesian aquifers, have been known to fluctuate in response to such phenomena as changes in barometric pressure, tidal force, and earthquakes; however, the magnitude of these fluctuations is usually very small.

METHODS FOR COLLECTION OF WATER-LEVEL DATA

Measurements of water levels in most of the observation wells maintained by the Commission are made on an annual basis; however, because water levels in the vicinity of a pumped well are drawn down appreciably as a result of pumping, it is important that the sequence of annual measurements be made under similar pumping conditions in order to reflect reliable comparisons of water-level fluctuations in an aquifer. If possible, wells selected for annual observation purposes should not be equipped with a pump and should be located reasonably distant from heavily pumped wells. In many areas, however, the only wells available for observation measurements are furnished with large-capacity turbine pumps. For these wells it is standard practice to measure water levels only after allowing sufficient time following cessation of pumping for water levels to rise to heights representative of the general area. For irrigated areas it is generally desirable to measure water levels during the winter months when pumping is at a minimum.

The depth to water in a well is obtained by measuring the distance from a reference point at the surface to the water level in the well. The measurement obtained is corrected to land-surface datum by adjusting for the vertical distance between the reference point and the land surface. Measurements are accomplished by one of the following methods.

(1) Wetted Tape Method

A calibrated steel tape is lowered into the well until a short length of the lower end of the tape is submerged in the water. The depth to water below the reference point is obtained by subtracting the tape reading at the water mark from the tape reading at the reference point.

Water levels measured with a steel tape are recorded in the Water Level Section's records to the nearest hundredth of a foot. The wetted tape method for obtaining water-level measurements is accepted as the most accurate, and is the one most commonly used by the Texas Water Commission.

(2) Electric-Line Method

An electric line operates on the principle that an electric circuit is completed when an electrode is lowered into the water surface in a well. A suitable device such as an electric-current meter indicates when the electrode has contacted the water surface. Graduation markings on the electric conductor line attached to the electrode provide for direct reading of the depth to water. The electric-line method is used when water-level measurements are unobtainable with a steel tape such as in wells having leaking casing.

Water-level measurements obtained by this method are recorded in the Water Level Section's records to the nearest tenth of a foot.

(3) Air-Line Method

An air line is a metal tube of known length extending from the top of a well to some known point below the water level. The pressure recorded when compressed air forces all of the water out of the bottom of the line indicates the depth of water to the bottom of the air line. Air lines are usually installed in industrial and municipal wells.

Water-level measurements obtained by the air-line method are recorded in the Water Level Section's records to the nearest foot. The chief advantage of using an air line for water-level measurements is convenience, because obstructions in a well equipped with a pump often preclude measurements by other methods.

(4) Automatic Recorder Method

An automatic water-level recorder generally consists of a float suspended by a metal tape or cable from a recording instrument installed over the well. As the float rises and falls with the water surface in the well the motion is transferred to a pen which graphs the fluctuations on a clock-driven chart. The continuous record of water levels affords the best means of observing rapid and irregular water-level fluctuations in areas of large pumpage.

Recorders are visited at frequent intervals for purposes of maintenance, accuracy checks, and collecting the used parts of the charts. Many water-level readings from the recorder charts are tabulated in the Water Level Section's records to the nearest hundredth of a foot. The charts are retained in the Section's files.

(5) Flowing Well Methods

In measuring the pressure head in wells whose water levels are above the ground surface (flowing wells) it is necessary that the top of the well be closed so that the shut-in pressure can be observed at some convenient reference point near the ground. Pressure is measured with a pressure gage, mercury U-tube manometer, or a water manometer.

The accuracy of determination of the shut-in pressure of flowing wells is considerably less than that of measurements of depths to the water levels in nonflowing wells since many pressure gages cannot be read accurately to less than 0.5 foot. Furthermore, unless the well is shut in for a sufficient period of time the measured pressure will be somewhat less than the true static pressure. Pressure measurements are recorded in the Water Level Section's records to the nearest tenth of a foot.

Records of water-level measurements in wells in Pecos and Reeves Counties date from 1927. Prior to 1960 most of the water-level measurements were made by personnel of the U.S. Geological Survey, but since then the measurements have been made by personnel of the Texas Water Commission. In general the measurements have been made on an annual basis, usually in winter months. Continuous records from automatic recorders are available for a few wells in Pecos County. Significant data from these records are included in this report.

PRESENTATION OF DATA

For each water-level observation well visited, the water-level measurement, date of observation, pertinent remarks, and initials of the person taking the measurement are recorded in the field on standard forms. The information recorded in the field is later transferred to punch cards for data processing. By application of electronic computers or data processors, water-level declines can be statistically analyzed and the results printed in a concise tabular form. In this report Tables 1 and 2, which list water levels and changes in water levels in wells in Pecos and Reeves Counties, were reproduced from direct print-outs of electronic data-processing equipment.

Although water-level information can be presented in an efficient and orderly manner with data-processing equipment, interpretation is considerably facilitated when the information is illustrated on graphs and maps.

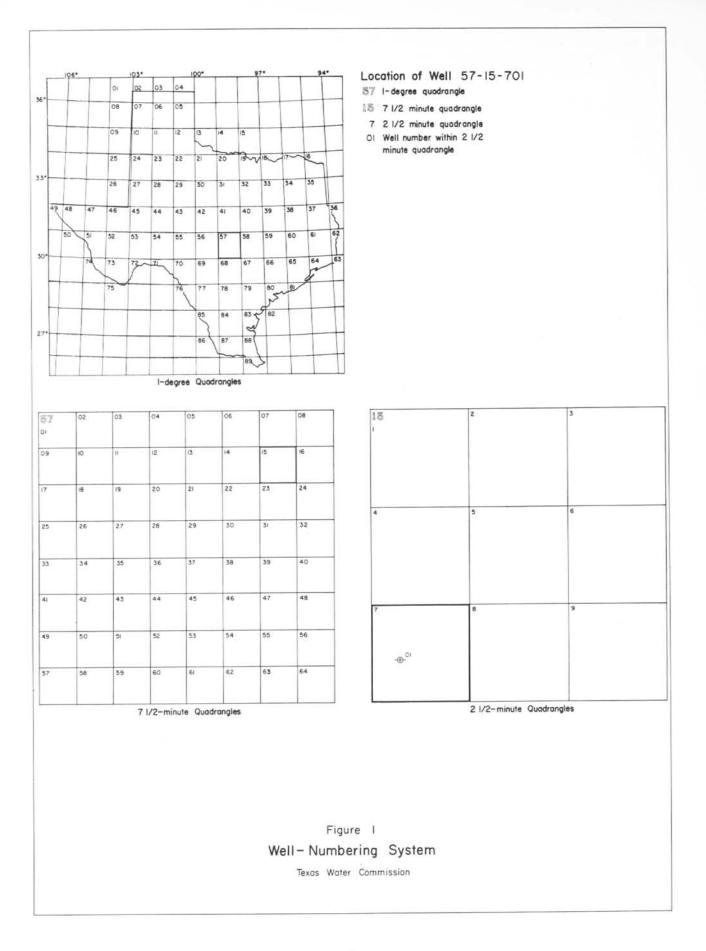
A <u>hydrograph</u> is a diagram showing the variation of water level with time for a particular well and affords a representation of a well's seasonal and long-term water-level fluctuations.

A water-level decline map shows the lowering of water levels throughout a particular area for a given time interval. Various magnitudes of water-level decline are shown on the map by contours, each contour representing a certain amount of decline for the selected time interval. The accuracy represented by each contour depends mainly on the accuracy, distribution, and completeness of water-level observation data throughout the area. Water-level decline maps are particularly useful for showing areas of pronounced lowering of water levels.

WELL-NUMBERING SYSTEM

To facilitate the location of wells and to avoid duplication of well numbers in the present and future studies, the Texas Water Commission has adopted a statewide well-numbering system. This system is based on division of the State into grids formed by degrees of latitude and longitude and the repeated division of these grids into smaller ones, as shown in Figure 1.

The largest grid, a 1-degree grid, is divided into sixty-four $7\frac{1}{2}$ -minute grids, each of which is further divided into nine $2\frac{1}{2}$ -minute grids. Each 1-degree grid in the State has been assigned a number for identification. The sixty-four $7\frac{1}{2}$ -minute grids are numbered consecutively from left to right, beginning in the upper left-hand corner of the 1-degree grid, and the nine $2\frac{1}{2}$ -minute grids within the $7\frac{1}{2}$ -minute grid are similarly numbered. The first 2 digits of



- 6 -

a well number identify the 1-degree grid; the 3rd and 4th, the $7\frac{1}{2}$ -minute grid; the 5th digit identifies the $2\frac{1}{2}$ -minute grid; and the last 2 digits identify the well within the $2\frac{1}{2}$ -minute grid.

State well numbers have been assigned to the wells listed in Tables 1 and 2 of this report, but since the wells were numbered under different systems in previously published reports, Bulletins 6106 (Armstrong and McMillion, 1961) and 6214 (Ogilbee and others, 1962), the corresponding numbers used in these publications are also listed herein.

WATER-LEVEL FLUCTUATIONS IN PECOS AND REEVES COUNTIES

Pecos and Reeves Counties lie immediately west of the Pecos River in an area commonly referred to as Trans-Pecos Texas. Their location within the State and with respect to adjacent counties is shown on Figure 2.

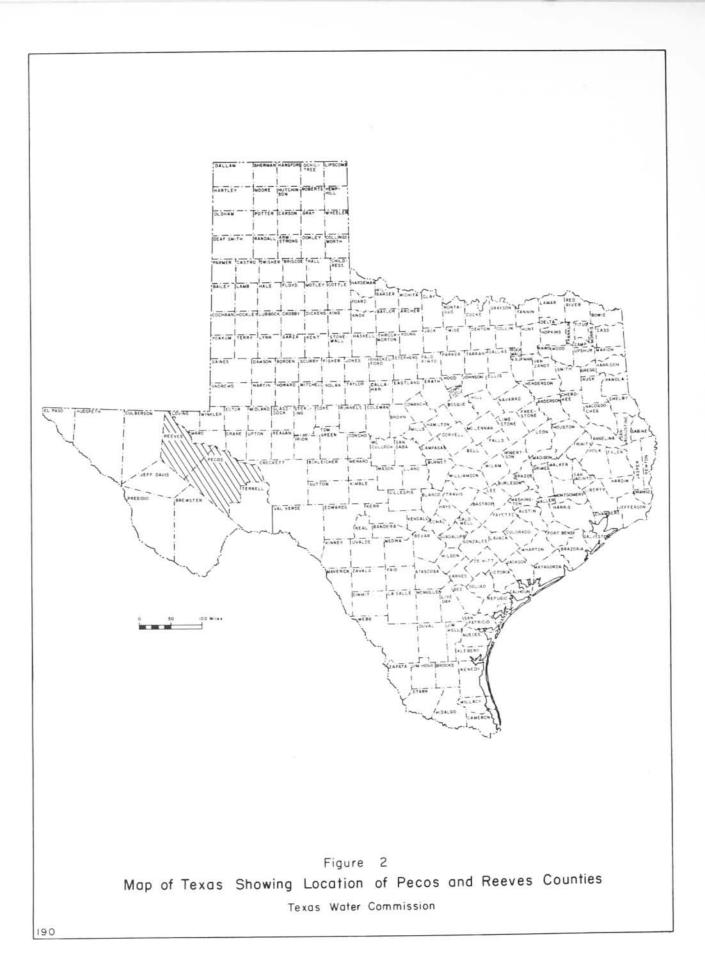
The climate of Pecos and Reeves Counties is semiarid, having hot summers, cool winters, scant precipitation, and a high rate of evaporation. The mean annual temperature at Fort Stockton, in Pecos County, is approximately 66°F. July, the hottest month, has a mean temperature of 82°F and January the coldest month has a mean temperature of 48°F. Fort Stockton's mean annual precipation is approximately 13 inches and its net annual lake-surface evaporation is over 100 inches. The mean annual temperature at Pecos, in Reeves County, is 64°F. Pecos' mean monthly temperature ranges from 46°F in January to 82°F in July. The mean annual precipitation in Reeves County ranges from 9.0 inches at Pecos to 12.5 inches at Balmorhea. Nearly all of the precipitation in both counties is rainfall, most of which is derived from local intermittant thunderstorms occurring from May through October.

Despite generally inadequate rainfall, crops are successfully harvested in large areas of Pecos and Reeves Counties by utilizing ground water for irrigation. The water-level data indicate that extensive pumpage in the irrigated areas is the basis for considerable lowering of water levels in the underlying aquifers. Of particular significance are water-level declines in the North Cayanosa area of Pecos and Reeves Counties and in the north-central Reeves County area. Annual fluctuations of water levels are known to exceed one hundred feet, owing to pumpage occurring principally during the normal growing season, the spring and summer months. However, since about 1961 the practice of irrigating winter grain crops has resulted in continuous withdrawals of ground water throughout the year.

Although by far the major portion of ground water pumped is for irrigation, significant amounts are used for public supply. A relatively small amount of ground water is produced for industrial purposes and for domestic and livestock use in rural areas. In the rural areas not characterized by heavy pumpage, water levels have not declined greatly.

Records of water levels in selected wells in Pecos County are presented in Table 1, and the records for the selected wells in Reeves County are listed in Table 2. These tabular listings provide the following information: (1) assigned state well numbers, (2) well numbers used in Armstrong and McMillion (1961) in Pecos County and Ogilbee and others (1962) in Reeves County, (3) dates

- 7 -



of measurement, (4) measurements of depth to water, in feet below land surface, and (5) changes (rise or decline) in water levels from previous measurements. The locations of the water-level observation wells in Pecos County, listed in Table 1, are shown on Plate 1, and the locations of the water-level observation wells in Reeves County, listed in Table 2, are shown on Plate 2.

Hydrographs of selected representative wells are included in this report and illustrate the following: (1) fluctuations and trends of water levels in wells equipped with automatic recorders, (2) declines of water levels in the North Coyanosa area, (3) declines of water levels in the north-central Reeves County area, and (4) anomalous rise of water levels in the central Reeves County area. These hydrographs include continuations of the hydrographs in Armstrong and McMillion (1961) and Ogilbee and others (1962) in instances where waterlevel measurements were continued after the completion of those detailed studies.

A hydrograph for Well 52-08-902 is shown on Figure 3. The well is located 8 miles west of Fort Stockton in the vicinity of Leon Springs in Pecos County. The hydrograph illustrates the annual water-level fluctuation of wells used for irrigation in that area. The plotted points at the top of the hydrograph indicate the water level at the highest recovery levels, whereas the points at the bottom of the graph reflect the water level at the conclusion of the periods of peak demand. This hydrograph clearly shows for each annual period a cyclic pattern of irrigation pumpage which starts in January and February when the water level in the well is at maximum recovery. Then follows a period of decline of the water level as a result of pre-growing season watering. The decline period lasts until the end of April or May and is followed by a leveling-off for 2 to 6 weeks, representing cessation of pumping during spring planting. A steep decline begins with heavy continuous pumping at the beginning of the growing season, the water level attaining its lowest position in late summer or early fall. A pronounced water-level recovery period begins in September or early October, continuing until January or February when the highest position is reached and a new irrigation cycle is started.

The period of time represented by the hydrograph of Well 52-08-902 is from April 1956 to July 1964. Only the more significant water-level data were obtained from recorder charts and plotted on the graph. It is noted that a hydrograph of this well was published in Armstrong and McMillion (1961) as Well P-79. Portions of the hydrograph that show no record, or show assumed water-level values by dashed lines, represent intervals of time when the recorder installed on this well was not functioning properly. The long-term trend of the peaks showing maximum recovery from 1957 to 1964 is downward, at approximately 5.5 feet per year; however, the trend of the minimum water level values since 1958 is apparently upward at an average of about 4 feet per year. Although the net result is that the extent of the annual fluctuation is progressively less each year, the significance or reason for this water-level behavior is not certain.

The hydrograph of Well 52-16-602 (Figure 3), located 9 miles southwest of Fort Stockton in the Belding area of Pecos County, shows similar water-level fluctuations in this irrigated area. However, the amount of water-level data available for this well precludes as clear a picture as the hydrograph for Well 52-08-902. The points of maximum recovery show a downward trend of 5.7 feet per year which is about the same as for Well 52-08-902. Similarly, there is also some indication of an upward trend in the minimum points, but, owing to the discontinuities in the record the trend cannot be definitely established.

- 9 -

A hydrograph of Well 53-01-902, located in Fort Stockton, is shown on Figure 3. The water-level data were obtained in part from air-line measurements, and in part from recorder charts. Of particular interest is that from 1955 to 1961 the points of maximum water-level recovery are about the same. Comparisons with the other hydrographs on Figure 3 indicate that since early 1961 the water levels in Well 53-01-902 have not exhibited periodic recovery as have water levels in other wells in the same general area. However, a slight rise in water level beginning in September 1963 can be the result of small amounts of recharge from very localized sources (Armstrong and McMillion, 1961, p. 56-61).

Hydrographs of Wells 46-48-902 and 46-56-802, presented on Figure 4, illustrate the downward trend of water levels in the North Coyanosa irrigated area of Pecos and Reeves Counties.

Well 46-48-902 is located about 3 miles east-northeast of Coyanosa, on the property of A. J. Hoelscher. The water-level decline in this well has averaged 11.21 feet annually for the 7-year period shown.

Well 46-56-802 is located 6 miles south of Coyanosa, on the property of J. Neal. The decline of the water level in this irrigation well has averaged 12.43 feet each year for the 7-year period shown. Data for Figure 4 are from the scheduled annual measurements. The dashed line from January 1959 to January 1961 indicates that measurements were not obtained in 1960.

Hydrographs of Wells 46-36-903, 46-44-501, and 46-35-801, on Figure 5, show typical water-level declines in the north-central irrigated area of Reeves County. Hydrographs of these three wells were published in Ogilbee and others (1962) for the period 1949-60. In this report the period of record has been extended to 1964. The water-level measurements used in the preparation of Figure 5 were obtained from annual measurements.

Well 46-36-903 is located $2\frac{1}{2}$ miles southwest of the city of Pecos, on the property of J. H. Newman. The decline of water level in this well has averaged 10.9 feet annually; the rate of decline has decreased somewhat since 1960.

Well 46-44-501 is located $6\frac{1}{2}$ miles south of the junction of U.S. Highway 80 and State Highway 17, on the property of Paul Davidson. The decline of water level in this well has been similar to that in Well 46-36-903.

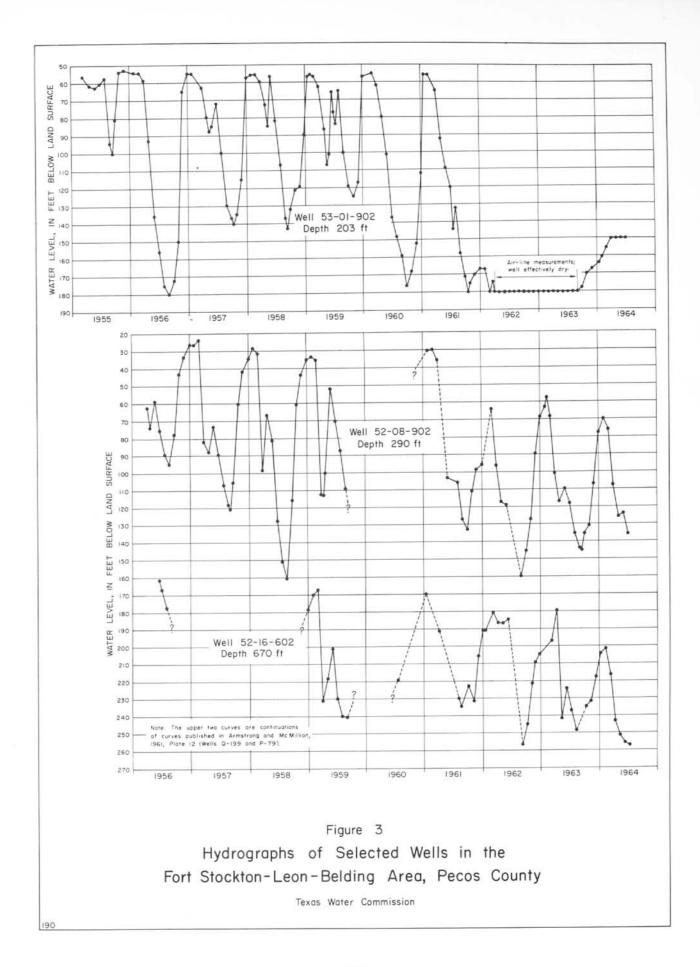
Well 46-35-801 is located $10\frac{1}{2}$ miles due west of Pecos, on the property of Tom Bell. The well's hydrograph shows that water levels have declined approximately 162.5 feet in the 15-year period represented (1949-63); the average annual rate of decline has been 10.8 feet, about the same rate as that for the other two wells represented on Figure 5.

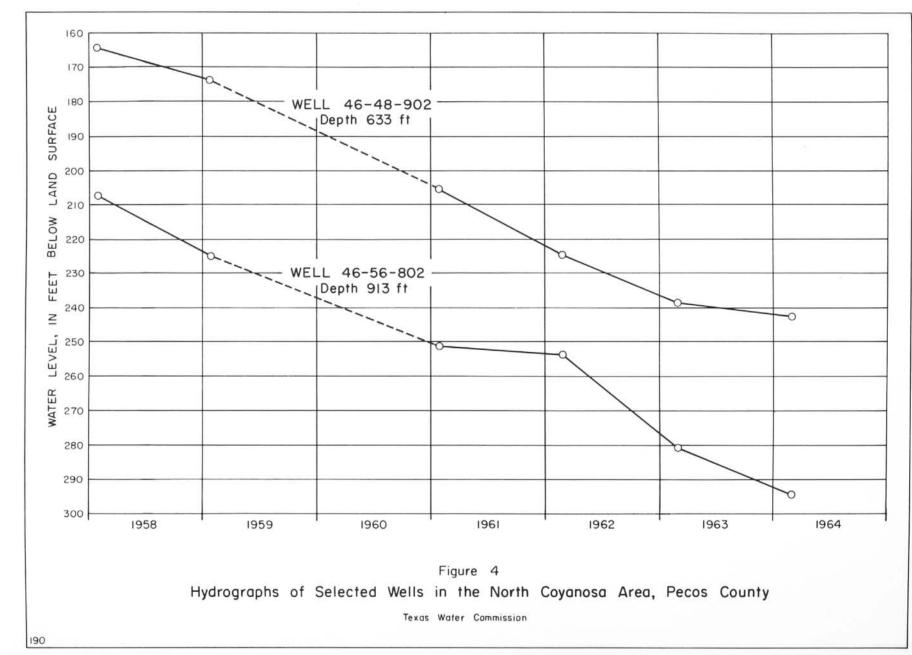
Hydrographs of Wells 46-52-204, 46-44-803, and 52-03-301 are presented on Figure 6 to illustrate the rise in water levels resulting from the formation of a temporary perched water body in the central Reeves County area, probably the result of infiltration of water applied to crops. Hydrographs of Wells 46-52-204 and 46-44-803 are continuations of those published in Ogilbee and others (1962). The hydrograph for Well 52-03-301 is included to show the rise in water levels throughout a fairly extensive area. A discussion of waterlevel fluctuations and the cause of this rise in shallow wells is contained in Ogilbee and others (1962, p. 32-33 and 39-46). Rises in water levels have occurred during 1959 and 1960 in wells up to 600 feet deep as shown by the hydrographs of Wells 46-36-903 and 46-44-501 (Figure 5) and the hydrograph of Well 52-03-301 (Figure 6). However, since the graphs reveal a slight downward trend developing after 1961-62, the perched-water condition may be vanishing, perhaps owing to continuing water-level decline of the main reservoir. The water-level measurements used in preparation of Figure 6 were obtained from annual measurements. Wells 46-52-204 and 46-44-803 are both located south of the city of Pecos, and Well 52-03-301 is located about 6 miles east of Balmorhea.

The water-level decline contour map shown on Figure 7 was prepared by utilizing 1959 to 1964 annual measurement data from observation wells in the North Coyanosa irrigated area of Pecos and Reeves Counties. The net change in the water level in each control well was determined by computing the differences in water-level measurements obtained at the beginning and end of the period 1959-64. Declines average approximately 3.6 feet per year near the margins of the area, and about 24.3 feet per year in areas of heavy irrigation development. The problem inherent in declining water levels must be given serious consideration before proceeding with any further development in the North Coyanosa area. The reader is referred to Armstrong and McMillion (1961, p. 48-55) for a comprehensive discussion of ground-water conditions in the North Coyanosa area. Figure 9 of that report presents a map showing the approximate decline of water levels in the North Coyanosa irrigation area from prior to the development of irrigation to 1958.

The water-level decline contour map of Figure 8 was prepared utilizing 1959 to 1964 annual measurement data from selected observation wells in the central Reeves County area. The net change in water level of each control well was determined by computing differences in water-level measurements obtained at the beginning and end of the period 1959-64. Yearly declines average 3.3 feet in wells near the outer margins and about 18.3 feet in wells in the heavily developed area west of Pecos. It is to be noted that in two other areas declines averaged almost 15 feet per year, one southwest of Pecos and the other just north of Balmorhea. Ogilbee and others (1962, Pl. 11) presents a waterlevel decline contour map for the period 1951-59.

Figure 8 shows by shading an area in which the water levels have risen during the period 1959-64, perhaps as a result of the formation of a temporary perched water body. The reader is referred to Ogilbee and others (1962, p. 32-33) for a discussion relating to this perched ground-water body.





- 13 -

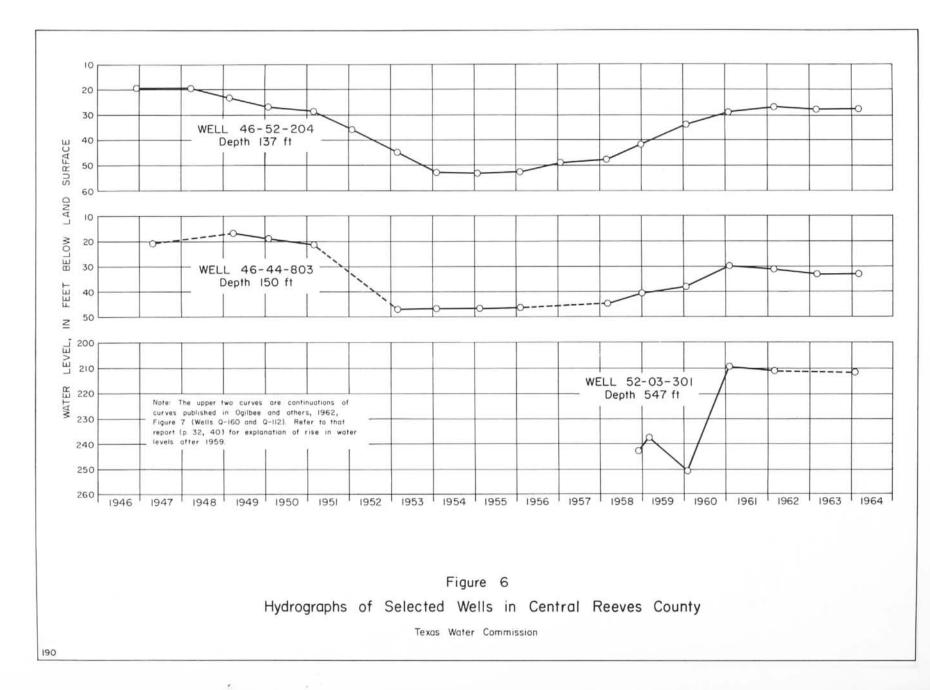
÷.

10.5

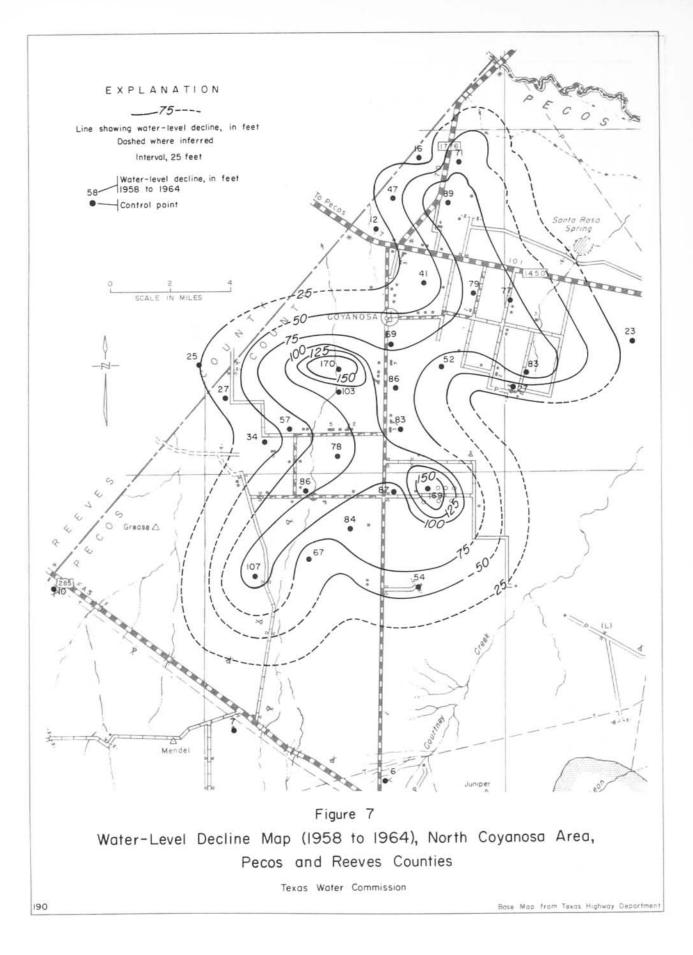
30 40 50 60 70 80 90 100 WELL 46-36-903 Depth 520 ft 110 120 SURFACE 130 WELL 46-44-501 Depth 627 ft 140 UND 150 M0138 180 180 ≥ ¹⁹⁰ LEVEL, 'n WELL 46-35-801 . Depth 900 ft H 220 TAW 530 240 250 260 270 280 Note These curves are continuations of curves published in Oglibee and others, 1962, Figure 8 (Wells J-128, 0-39, and H-16) Refer to that report (p. 32, 40) for explanation of inse in water levels after 1959 in wells 46-36-903 and 46-44-501 290 300 310 320 1949 1950 1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 Figure 5 Hydrographs of Selected Wells in North-Central Reeves County Texas Water Commission

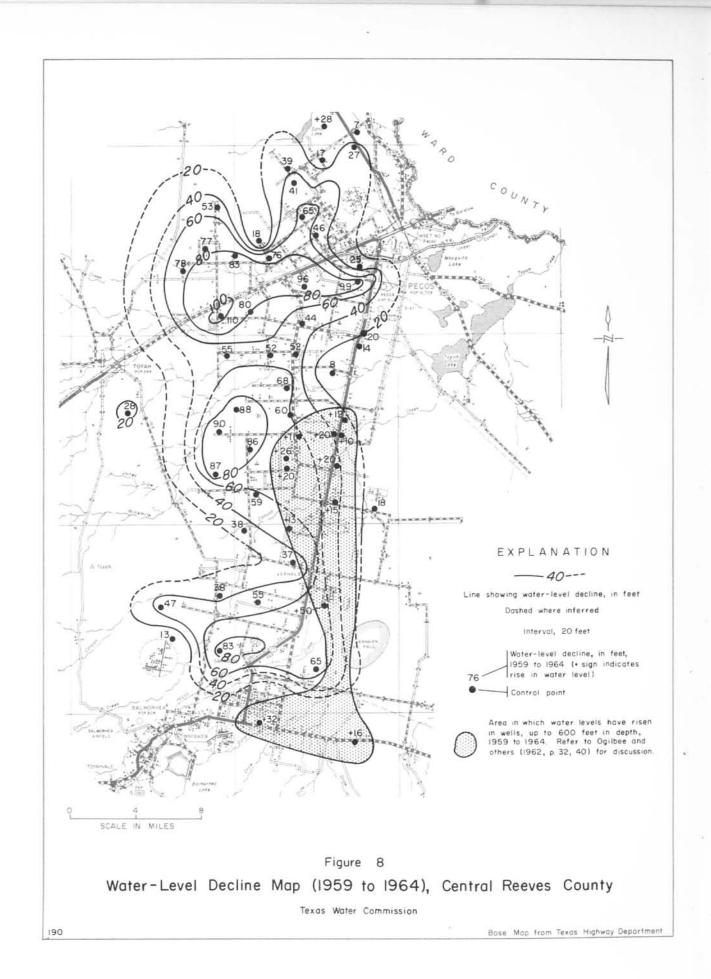
- 14 -

190



- 15 -







REFERENCES

- Adkins, W. S., 1927, The geology and mineral resources of the Fort Stockton quadrangle: Univ. Texas Bull. 2738, 166 p.
- Armstrong, C. A., and McMillion, L. G., 1961, Geology and ground-water resources of Pecos County, Texas: Texas Board Water Engineers Bull. 6106, 546 p.
- Audsley, G. L., 1956, Reconnaissance of ground-water development in the Fort Stockton area, Pecos County, Texas: U.S. Geol. Survey open-file rept., 105 p.
- Broadhurst, W. L., Sundstrom, R. W., and Weaver, D. E., 1951, Public water supplies in western Texas: U.S. Geol. Survey Water-Supply Paper 1106, p. 141-144.
- Dante, J. H., 1947, Records of wells and springs in northern Pecos County, Texas: Texas Board Water Engineers duplicated rept., 87 p.
- Dennis, P. E., and Lang, J. W., 1941, Pecos River Basin; v. 2, Records of wells and springs and analyses of water in Loving, Ward, Reeves, and northern Pecos Counties, Texas: Texas Board Water Engineers duplicated rept. [Also in U.S. Natural Resources Planning Board, Pecos River Joint Investigation, Reports of the participating agencies: Washington, U.S. Govt. Printing Office, p. 76-101.]
- Follett, C. R., 1954, Records of water-level measurements in Reeves County, Texas: Texas Board Water Engineers Bull. 5414, 30 p.
- Hood, J. W., 1950, Phenomenal increase in irrigation with ground water near Pecos, Texas: U.S. Geol. Survey open-file rept., 4 p.
- Hood, J. W., and Knowles, D. B., 1952, Summary of ground-water development in the Pecos area, Reeves and Ward Counties, Texas, 1947-51: Texas Board Water Engineers Bull. 5202, 11 p.
- Knowles, D. B., and Lang, J. W., 1947, Preliminary report on the geology and ground-water resources of Reeves County, Texas: Texas Board Water Engineers duplicated rept., 88 p.
- Lang, J. W., 1942, Ground water available for emergency landing fields near flying school at Pecos, Texas: U.S. Geol. Survey open-file rept., 5 p.

1943, Ground-water resources of the Toyah area, Reeves County, Texas: U.S. Geol. Survey open-file rept., 20 p.

- Meinzer, O. E., Wenzel, L. K., and others, 1943, Water levels and artesian pressure in observation wells in the United States in 1941: U.S. Geol. Survey Water-Supply Paper 939, p. 142-154.
- Ogilbee, William, Wesselman, J. B., and Irelan, Burdge, 1962, Geology and ground-water resources of Reeves County, Texas: Texas Water Comm. Bull. 6214, 438 p.
- Sayre, A. N., 1942, Memorandum regarding the sites for additional wells for municipal supply at Pecos, Texas: U.S. Geol. Survey open-file rept., 7 P.

- Sayre, A. N., and Lang, J. W., 1942, Memorandum regarding water supplies at Pecos, Texas, for a proposed Basic Training School of the U.S. Army Air corps: U.S. Geol. Survey open-file rept., 4 p.
- Stevens, J. C., 1957, Ground-water geology of the Hovey area, Brewster and Pecos Counties, Texas: Thesis, Univ. Texas.
- U.S. Bureau of Reclamation, 1956, Reconnaissance report on the Fort Stockton Project, Texas: U.S. Bur. Reclamation [Region 5, Amarillo, Texas] duplicated rept.
- White, W. N., 1933, The new city well at Pecos, Texas: U.S. Geol. Survey openfile rept., 4 p.
- White, W. N., Gale, H. S., and Nye, S. S., 1941, Geology and ground-water resources of the Balmorhea area, western Texas: U.S. Geol. Survey Water-Supply Paper 849-c, p. 83-146.

$\begin{array}{c c c c c c c c c c c c c c c c c c c $	STATE WELL NUMBER	WELL NUMBER IN BULLETIN 6106	DATE	MEASUREMENT	CHANGE IN LEVEL FROM MEASURE DECLINE	PREVIOUS
$\begin{array}{cccccccccccccccccccccccccccccccccccc$					DECEINE	NISE
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	45-49-101	B-77	1-27-58	47.73		
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$					39.05	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$			2-06-62	96.39		
$\begin{array}{cccccccccccccccccccccccccccccccccccc$			2-07-63			
$\begin{array}{cccccccccccccccccccccccccccccccccccc$			2-04-64	130.40	15.17	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$						
$\begin{array}{cccccccccccccccccccccccccccccccccccc$			1 1/ 50	1/2 /0		
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	45-49-102	8-44			44 94	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$						
$\begin{array}{cccccccccccccccccccccccccccccccccccc$						
$\begin{array}{cccccccccccccccccccccccccccccccccccc$			2-01-05	240820	22.00	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$						
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	45-49-201	B-64				
$\begin{array}{cccccccccccccccccccccccccccccccccccc$						
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$						
$\begin{array}{cccccccccccccccccccccccccccccccccccc$						
$\begin{array}{cccccccccccccccccccccccccccccccccccc$			2-04-64	103.62	0.01	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$						
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	45-49-301	B-66	1-19-55	23.33		
$\begin{array}{cccccccccccccccccccccccccccccccccccc$			12-06-55	.24.55		
$\begin{array}{cccccccccccccccccccccccccccccccccccc$			11-26-56	25.91	1.36	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$			12-12-56			0.26
$\begin{array}{cccccccccccccccccccccccccccccccccccc$			8-19-57			
$\begin{array}{cccccccccccccccccccccccccccccccccccc$					0.45	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$					0.00	0.78
$\begin{array}{cccccccccccccccccccccccccccccccccccc$					0.93	0 20
$\begin{array}{cccccccccccccccccccccccccccccccccccc$						
$\begin{array}{cccccccccccccccccccccccccccccccccccc$					1 57	2.021
$\begin{array}{cccccccccccccccccccccccccccccccccccc$		5			1.51	0 27
$\begin{array}{cccccccccccccccccccccccccccccccccccc$					0.06	0.21
$\begin{array}{cccccccccccccccccccccccccccccccccccc$						
$\begin{array}{cccccccccccccccccccccccccccccccccccc$						
$\begin{array}{cccccccccccccccccccccccccccccccccccc$						0.62
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$					2.43	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$						1.06
$\begin{array}{cccccccccccccccccccccccccccccccccccc$						
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	(E-(0-(0)	B_ 87	6-06-57	115-50		
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	43-49-401	0-01			4-20	
9-20-57 150.70 7.30 10-16-57 138.33 12.37 11-18-57 127.82 10.51 12-16-57 115.64 12.18 1-17-58 120.76 5.12						
10-16-57138.3312.3711-18-57127.8210.5112-16-57115.6412.181-17-58120.765.12						
11-18-57 127.82 10.51 12-16-57 115.64 12.18 1-17-58 120.76 5.12						12.37
12-16-57 115.64 12.18 1-17-58 120.76 5.12						10.51
						12.18
2-28-58 120.31 0.45			1-17-58	120.76	5.12	
			2-28-58	120.31		0.45

STATE WELL NUMBER	WELL NUMBER IN BULLETIN 6106	DATE	MEASUREMENT	CHANGE II LEVEL FROM MEASURI DECLINE	PREVIOUS
45-49-401	B-87	3-17-58 4-17-58 5-19-58 6-25-58 7-26-58 8-26-58 9-20-58 1-20-59 1-12-61 2-06-62 2-07-63 2-04-64	120.34 128.66 130.42 136.02 147.66 154.34 163.55 127.62 138.40 139.79 145.49 148.18	0.03 8.32 1.76 5.60 11.64 6.68 9.21 10.78 1.39 5.70 2.69	35.93
45-57-601	G-16	9-20-58 1-26-59 1-13-61 2-07-62 2-07-63 2-04-64	75.54 75.20 75.39 76.44 84.09 92.80	0.19 1.05 7.65 8.71	0.34
45-60-902	J-59	2-05-58 2-04-63	115.7 114.39		1.3
45-61-401	K-10	7-26-57 8-18-57 2-05-58 2-04-63 2-06-64	49.7 43.2 32.0 34.01 27.75	2.0	6.5 11.2 6.26
45-61-601	K-30	12-18-46 5-29-57 1-04-61 2-07-62 2-04-63	116.80 118.65 116.30 123.34 129.27	1.85 7.04 5.93	2.35
45-ó1-602	K-16	4-17-57 12-19-57 1-21-58 1-04-61 2-07-62 2-04-63 2-06-64	29.31 28.03 28.80 21.62 22.34 25.06 24.22	0.77 0.72 2.72	1.28 7.18 0.84

STATE WELL NUMBER	WELL NUMBER IN BULLETIN 6106	DATE	MEASUREMENT	CHANGE IN LEVEL FROM MEASURE	PREVIOUS
				DECLINE	RISE
45-61-701	K-55	7-25-57	88.65		
		2-05-58	73.50		15.15
		1-19-61	74.84	1.34	
		2-07-62	72.70		2.14
		2-04-63	79.50	6.80	
		2-06-64	82.26	2.76	
45-62-901	L-33	1-19-61	78.55		
		2-06-64	81.09	2.54	
45-63-701	L-57	12-09-46	53.58		
		3-06-48	53.97	0.39	
		12-23-48	56.06	2.09	
		2-29-50	59.07	3.01	
		3-21-57	69.1	10.0	
		2-14-58	84.88	15.8	
		1-04-61 2-05-62	87.18 87.61	2.30	
		2-03-62	85.24	0.43	2.37
		2-06-64	90.10	4.86	2.031
46-48-502	A-21	1-17-61	160.38		
		2-07-63	186.64	26.26	
		2-04-64	207.60	20.96	
46-48-503	A-2	1-17-61	131.40		
		2-07-63	147.05	15.65	
46-48-602	A-8	1-15-57	41.57		
		1-20-59	54.87	13.30	
		1-12-61	71.25	16.38	
		2-07-63	79.90	8.65	
		2-04-64	118.32	38.42	
46-48-604	A-17	1-15-58	132.68		
		1-12-61	184.00	51.32	
		2-07-63	210.54	26.54	
		2-04-64	221.99	11.45	
46-48-801	A-60	1-28-58	189.25		
40 40 004	A 00	1-23-59	197.92	8.67	
		1-12-61	216.76	18.84	
			 Antonio de Service e la construite de la 1972 (1972) e 1 		

- 23 -

STATE WELL NUMBER	WELL NUMBER IN BULLETIN 6106	DATE	MEASUREMENT	CHANGE IN LEVEL FROM MEASURE DECLINE	PREVIOUS
46-48-801	A-60	2-06-62 2-07-63 2-04-64	216.06 224.38 230.71	8.32 6.33	0.70
46-48-802	A-26	1-12-61 2-06-62 2-07-63 2-04-64	77.90 80.43 88.55 89.52	2.53 8.12 0.97	
46-48-902	A-50	1-28-58 1-23-59 1-12-61 2-06-62 2-07-63 2-04-64	164.08 173.96 205.41 224.40 238.96 242.58	9.88 31.45 18.99 14.56 3.62	
46-55-602	A-198	1-31-58 1-12-61 2-06-62 2-07-63 2-05-64	126.08 142.44 147.25 145.30 152.58	16.36 4.81 7.28	1.95
46-55-603	A-202	2-06-58 1-12-61 2-06-62 2-06-63 2-05-64	152.47 181.90 188.20 185.58 186.65	29.43 6.30 1.07	2.62
46-56-102	A-78	1-29-58 1-17-61 2-07-63 2-04-64	232.99 277.51	105.64 44.52 19.87	
46-56-201	A-86	1-30-58 1-24-59 1-13-61 2-06-62 2-07-63 2-04-64	254.01 252.88 276.02	19.63 21.92 23.14 5.11	1.13
46-56-301	A-117	1-13-61 2-06-62	243.18 253.01	9.83	

STATE WELL NUMBER	WELL NUMBER IN BULLETIN 6106	DATE	MEASUREMENT	CHANGE IN LEVEL FROM MEASURI DECLINE	PREVIOUS
46-56-301	A-117	2-07-63 2-04-64	270.85 294.70	17.84 23.85	
46-56-401	A-185	2-04-58 2-12-61 2-06-62 2-06-63 2-05-64	169.64 215.42 216.12 212.83 226.20	45.78 0.70 13.37	3.29
46-56 - 403	A-217	2-04-58 1-12-61 2-06-62 2-06-63 2-05-64	261.40 300.12 307.20 331.71 339.70	38.72 7.08 24.51 7.99	
46-56-404	A-170	1-31-58 2-07-63 2-04-64	249.6 317.75 352.82	68.2 35.07	
46-56-502	A-154	1-20-58 1-13-61 2-06-62 2-07-63 2-04-64	216.04 253.84 259.55 294.33 299.00	37.80 5.71 34.78 4.67	
46-56-503	A-149	1-30-58 1-24-59 2-07-63 2-04-64	214.1 201.9 287.83 300.46	85.9 12.63	12.2
46-56-702	F-31	2-15-58 1-12-61 2-06-62 2-06-63	218.3 261.20 298.18 302.11	42.9 36.98 3.93	
46-56-703	F-19	2-05-58 1-26-59 2-06-63 2-05-64	199.9 217.4 253.38 286.03	17.5 36.0 32.65	
46-56-704	F-69	2-06-58	213.01		

- 25 -

STATE WELL NUMBER	WELL NUMBER IN BULLETIN 6106	DATE	MEASUREMENT	CHANGE IN LEVEL FROM MEASURE DECLINE	PREVIOUS
46-56-704	F-69	1-12-61 2-06-62 2-06-63 2-05-64	238.28 248.56 252.45 279.80	25.27 10.28 3.89 27.35	
46-56-802	F-41	1-30-58 1-24-59 1-12-61 2-06-62 2-07-63 2-04-64	207.10 224.50 251.00 253.60 280.48 294.12	17.40 26.50 2.60 26.88 13.64	
46-56-901	F-43	1-30-58 1-24-59 1-12-61 2-07-63 2-04-64	166.54 202.7 195.85 259.15 335.80	36.2 63.30 76.65	6.8
46-62-901	E-21	9-06-40 4-15-58 1-11-61 2-07-62	139.65 144.80	1.45 5.15 0.05	
46-63-101	E-6	5-22-57 3-29-58 1-10-61 2-07-62 2-06-63 2-05-64	102.58 105.75 105.34 105.64	1.15 3.17 0.30 6.76	0.41
46-63-302	F-76	11-20-57 2-06-58 1-12-61 2-05-64	177.43 210.60	33.17 73.90	3.24
46-63-601	F-93	3-08-40 11-27-46 1-19-55 12-06-55 2-28-58 3-17-58 4-19-58	162. 161.22 161.10 161.45 165.98 162.87	0.35 4.53	7. 1. 0.12 3.11 0.50
		5-22-58	162.37		0.00

STATE WELL NUMBER	WELL NUMBER IN BULLETIN 6106	DATE	MEASUREMENT	CHANGE I LEVEL FROM MEASUR DECLINE	PREVIOUS
46-63-601	F-93	6-25-58 8-20-58 9-20-58 1-22-59 1-10-61 2-07-62 2-06-63 2-05-64	162.47 161.15 162.60 164.88 164.15 172.79 167.63 168.78	0.10 1.45 2.28 8.64 1.15	1.32 0.73 5.16
46-63-901	F-94	8-15-57 11-24-57 12-16-57 1-15-58 3-17-58 4-19-58 6-05-58 6-25-58 1-10-61 2-07-62 2-06-63 2-05-64	202.15 145.53 133.13 111.26 85.27 188.52 211.77 208.10 207.02 159.70 210.02 214.01	103.25 23.25 50.32 3.99	56.62 12.40 21.87 25.99 3.67 1.08 47.32
46-64→201	F-50	8-06-57 2-06-58 1-24-59 1-13-61 2-06-62 2-07-63 2-04-64	181.30 141.38 153.13 165.60 168.60 181.66 195.30	11.75 12.47 3.00 13.06 13.64	39.92
46-64-801	F-89	12-04-467-05-572-28-583-17-584-19-589-20-581-25-591-10-612-06-622-06-632-04-64	159.40 152. 153.80 151.65 153.95 163.81 164.83 152.60 157.10 161.25 159.56	2. 2.30 9.86 1.02 4.50 4.15	7. 2.15 12.23 1.69
52-06-302	N-11	4-17-58 1-10-61 2-07-62	160.85 168.00 173.43	7.15 5.43	

- 27 -

STATE WELL NUMBER	WELL NUMBER IN BULLETIN 6106	DATE	MEASUREMENT	CHANGE IN LEVEL FROM MEASURI DECLINE	PREVIOUS EMENT
52-06-302	N-11	2-06-63 2-04-64	178.10 178.39	4.67 0.29	
52-06-501	N-16	2-20-56 10-30-62 2-04-64	176.7 177.25 178.55	0.6 1.30	
52-07-302	P-3	1-15-58 1-21-59 10-30-62 2-06-63 2-04-64	126.7 150.4 283.61 230.01 266.24	23.7 133.2 36.23	53.60
52-07-601	P-38	1-17-58 1-21-59 1-09-61 2-07-62 2-06-63 2-04-64	135.34 140.55 141.30 182.18 208.08 208.27	5.21 0.75 40.88 25.90 0.19	
52-07-701	N-30	9-06-57 2-06-62 2-08-63 2-04-64	160.49 164.53 163.19 162.21	4.04	1.34 0.98
52-07-901	P-43	1-12-58 1-17-59 1-09-61 2-06-62 2-06-63 2-04-64	136.04 143.10 169.59 177.31	7.06 26.49 7.72 10.74	1.92
52-08-402	P-29	1-07-56 1-17-58 1-21-59 1-09-61 2-07-62 2-06-63	126.18 150.67 166.90 176.88	76.72 24.49 16.23 9.98 20.61	
52-08-701	P-56	2-06-58 2-06-63 2-04-64	172.06	70.9	2.58

STATE WELL NUMBER	WELL NUMBER IN BULLETIN 6106	DATE	MEASUREMENT	CHANGE IN WATER LEVEL FROM PREVIOUS MEASUREMENT DECLINE RISE	
52-08-801	P-62	6-16-47 12-03-54 1-20-55 1-07-56 4-12-56 12-18-56 2-14-57 1-30-58 1-22-59 1-09-61 2-07-62 2-08-63 2-03-64	84.20 99.65 99.40 105.50 100.30 116.09 117.23 121.08 116.10 85.72 109.71 110.57 119.28	15.45 6.10 15.79 1.14 3.85 23.99 0.86 8.71	0.25 5.20 4.98 30.38
52-08-905	P-74	2-13-58 10-29-62 2-04-63	24.1 88.2 53.77	64.1	34.4
52-08-908	P-70	10-29-62 2-04-63 2-05-64	129.55 59.08 66.25	7.17	70.47
52-16-101	P-135	6-16-47 6-25-50 12-03-54 1-07-56 9-09-57 3-03-58 1-22-59 1-09-61 2-07-62 2-08-63	168.80 170.90 173.60 175.78 181.20 181.41 197.30 195.80 223.99 194.58	2.10 2.70 2.18 5.42 0.21 15.89 28.19	1.50 29.41
52-16-301	P-131	1-29-58 1-11-61 2-06-62 2-07-63	97.29 99.21 115.79 114.90	1.92 16.58	0.89
52-16-302	P-118	1-04-61 2-04-64	87.26 96.98	9.72	
52-16-303		11-24-57 11-28-57	117.35 115.52		1.83

STATE WELL NUMBER	WELL NUMBER IN BULLETIN 6106	DATE	MEASUREMENT	CHANGE IN WATER LEVEL FROM PREVIOUS MEASUREMENT DECLINE RISE	
52-16-303	P-114	12-12-57 $1-22-58$ $1-29-58$ $2-17-58$ $3-20-58$ $4-28-58$ $5-23-58$ $6-27-58$ $1-04-61$ $2-06-62$ $2-07-63$	110.42 99.37 98.20 99.17 129.59 146.28 131.54 158.86 100.86 122.23 125.65	0.97 30.42 16.69 27.32 21.37 3.42	5.10 11.05 1.17 14.74 58.00
52-16-601	Z-14	2-04-64 1-10-61 2-06-62 2-07-63 2-03-64	107.28 131.87 147.98 149.56 163.67	16.11 1.58 14.11	18.37
52-16-603	P-124	1-31-58 10-30-62 2-07-63	162.27	47.2	33.47
52-1 6- 604	Z-17	1-29-58 2-07-63 2-03-64	139.90	28.2 14.21	
52-16-607	Z-41	2-06-58 2-08-63 2-09-63	163.31	10.6 14.64	
52-16-801	Z-57	2-04-58 1-11-61 2-06-62 2-07-63	219.67 228.64	9.22 8.97 117.20	
52-16-901	Z-12	1-03-57 2-04-58 1-23-59 1-09-61 2-06-62 2-07-63 2-03-64	163.89 168.95 168.58 182.12 185.83	5.06 13.54 3.71 11.41	5.99 0.37

STATE WELL NUMBER	WELL NUMBER IN BULLETIN 6106	DATE	MEASUREMENT	CHANGE IN WATER LEVEL FROM PREVIOUS MEASUREMENT DECLINE RISE	
52-16-902	Z-51	3-31-56 4-10-56 1-30-58 1-11-61 2-06-62 2-07-63 2-03-64	225. 228.5 214.73 229.82 266.54	5. 4. 15.09 36.72	13.8 67.36
52-22-801	HH-4	12-15-55 10-30-62 2-03-64	289. 343.25 321.57	54.	21.68
52-22-802	HH-15	3-05-56 5-05-58 10-30-62 2-07-63 2-03-64	120.0 130.8 143.92 139.46 150.32	10.8 13.1 10.86	4.46
52-24-301	Z-77	1-28-58 1-24-59 1-11-61 2-06-62 2-07-63 2-03-64	320.85 325.94 330.51 340.34	4.38 5.09 4.57 9.83 28.95	
52-30-101	HH-16	6-06-56 5-05-58 3-02-61 2-07-62 2-07-63 2-03-64	178.90 182.15 185.08 186.68 189.20 191.98	3.25 2.93 1.60 2.52 2.78	
53-01-401	Q-143	1-03-58 1-11-61 2-06-63 2-04-64	30.96 32.65	0.38 1.69 0.36	
53-01-402	Q-130	6-06-47 7-08-48 11-30-51 12-06-52 12-05-53	14.20 16.50 16.56 16.78 20.10	2.30 0.06 0.22 3.32	0.86
		12-02-54	19.24		0.00

STATE WELL NUMBER	WELL NUMBER IN BULLETIN 6106	DATE	MEASUREMENT	CHANGE IN WATER LEVEL FROM PREVIOUS MEASUREMENT	
				DECLINE	RISE
		1 10 55	14 21		5.03
53+01-402	Q-130	1-19-55	14-21		1.56
		12-06-55	12.65	11.02	1.00
		1-09-57	23.67 21.57	11.02	2.10
		2-13-57	23.58	2.01	2.010
		3-12-57 4-15-57	30.05	6.47	
		5-16-57	32.49	2.44	
		6-24-57	30.33	2	2.16
		7-16-57	34.75	4.42	
		8-19-57	38.72	3.97	
		9-20-57	44.32	5.60	
		10-16-57	44.17		0.15
		11-18-57	40.07		4.10
		12-16-57	34.70		5.37
		1-17-58	26.17		8.53
		2-28-58	23.70		2.47
		3-17-58	25.13	1.43	
		4-17-58	31.17	6.04	
		5-19-58	37.24	6.07	
		6-25-58	43.46	6.22	
		7-26-58	52.55	9.09	
		8-20-58	58.35	5.80	
		9-20-58	57.38		0.97
		1-22-59	32.73		24.65
		1-10-61	33.93	1.20	
		1-07-62	49.98	16.05	
		2-06-63	61.03	11.05	
		2-04-64	62.18	1.15	
53-01-502	Q-133	2-15-58	28.70		
		1-11-61	28.00		0.70
		1-07-62	30.42	2.42	
		2-06-63	39.07	8.65	
		2-04-64	41.74	2.67	
53-01-601	Q-122	1-28-58			
		1-24-59		3.22	
		1-13-61	71.80	15.01	
		2-07-62		15.64	
		2-06-63		29.16	
		2-04-64	118.48	1.88	
53-01-701	Q-153	11-30-51	25.55		
1999 - 1998 - 1997 (B)		1-25-52	64.99	39.44	2021 Sens
		12-08-52		25 98	23.51
		12-03-54	62.84	21.36	

STATE WELL NUMBER	WELL NUMBER IN BULLETIN 6106	DATE	MEASUREMENT	CHANGE IN LEVEL FROM MEASURE DECLINE	PREVIOUS
53-01-701	Q-153	12-06-55 1-08-57 12-26-57	24.97 35.48 45.36	10.51 9.88	37.87
		1-29-58	36.41	7.00	8.95
		10-10-58	35.36		1.05
		1-22-59	36.53	1.17	
		1-11-61	29.47		7.06
		2-06-62	22.18		7.29
		2-07-63	30.35	8.17	
		2-04-64	31.46	1.11	
53-01-703	Q-163	12-14-57	58.91		
JJ 01 10J	4 100	1-27-58	54.32		4.59
		2-17-58	53.40		0.92
		3-20-58	57.09	3.69	
		4-28-58	64.60	7.51	
		5-31-58	65.42	0.82	
		6-27-58	67.57	2.15	
		7-29-58	71.20	3.63	
		8-28-58	85.76 72.88	14.56	12.88
		10-10-58 11-13-58	71.94		0.94
		1-22-59	52.74		19.20
		1-04-61	43.81		8.93
		2-06-62	43.98	0.17	
		2-07-63	47.07	3.09	
		2-04-64	51.23	4.16	
53-01-803	Q-174	9-15-56	225.		
JJ 01 00	2 114	2-05-64	242.38	17.	
	0.100	10 01 //	51.0		
53-01-902	Q-199	10-21-46 5-15-59	51.8 105.	53.	
		3-03-61	55.84		49.
		4-01-61	65.75	9.91	
MEASUREMENT		5-01-61	93.86	28.11	
DISCONTINUED		6-06-61	109.42	15.56	
		7-01-61	121.65	12.23	
		8-01-61	132.71	11.06	
		2-13-62	164.4	31.7	
		9-30-63	178.	14.	0
		10-30-63	170.		8. 6.
		1-15-64 3-15-64	164. 150.		14.
		5-15-04	100.		

STATE WELL NUMBER	WELL NUMBER IN BULLETIN 6106	DATE	MEASUREMENT	CHANGE IN LEVEL FROM MEASURE DECLINE	PREVIOUS
53-01-903	Q-236	3-15-50 5-30-50 11-28-51 1-25-52 12-06-52 12-05-53 12-02-54	41.4 43.2 56.46 53.73 55.11 56.91 55.62	1.8 13.3 1.38 1.80	2.73
		12-07-55 1-09-57 12-16-57 1-17-58 1-26-59	55.25 66.88 79.22 62.57 67.25	11.63 12.34 4.68	0.37
		1-09-61 2-06-62 2-06-63 2-04-64	71.48 118.93 170.82 138.70	4.23 47.45 51.89	32.12
53-02-102	Q-40	4-14-47 3-14-50 1-25-52 12-06-52 12-05-53	38.5 39.9 51.36 54.57 62.19 57.82	1.4 11.5 3.21 7.62	4.37
		12-02-54 12-07-55 1-09-57 11-13-57 1-28-58 1-24-59	63.26 72.00 73.64 74.67	5.44 8.74 1.64 1.03 6.84	
		1-09-61 2-06-62 2-06-63 2-04-64	74.72	4.43 4.60	6.82 4.40
53-02-403	Q-72	10-30-62 2-06-63 2-04-64	93.33	16.10	7.95
53-02-404	Q-61	6-15-48 4-15-56 10-30-62 2-06-63 2-04-64	45. 99.41 96.43	25. 54. 5.75	2.98
53-02-502	R-46	4-21-49 4-15-56		26.	

STATE WELL NUMBER	WELL NUMBER IN BULLETIN 6106	DATE	MEASUREMENT	CHANGE I LEVEL FROM MEASUR DECLINE	PREVIOUS
53-02-502	R-46	2-06-63	73.75	32.	
JJ-02-J02	K-10	2-05-64	77.42	3.67	
		2 07 0.			
53-02-503	R-5	4-25-58	34.56		
<i>yy</i> 02 <i>y</i> 02		1-10-61	50.25	15.69	
		2-06-63	70.70	20.45	
53-02-703	Q-286	1-25-52	61.95		
		12-06-52	67.73	5.78	
		1-19-57	71.12	3.39	
		2-15-57	72.03	0.91	
		3-13-57	67.55	1 00	4.48
		4-15-57	69.35	1.80	
		5-15-57	89.95	20.60	21 (1
		6-03-57	68.54		21.41
		7-16-57	68.05	1 10	0.49
		8-20-57	69.23	1.18	
		9-16-57	71.25	2.02	
		10-16-57	69.82		1.43
		11-18-57	69.71		0.11 0.53
		1-17-58	69.18		0.09
		2-28-58	69.09		0.24
		3-17-58	68.85		0.23
		4-16-58	68.62		0.38
		5-20-58	68.24	0.06	0.50
		6-26-58	68.30 68.96	0.66	
		7-28-58	71.54	2.58	
		8-21-58	68.34	2.00	3.20
		1-04-61	66.55		1.79
		2-04-63	71.19	4.64	1
		2-04-05	69.61	4.04	1.58
53-02-705	Q-222	10-05-49	54.32		
		10-06-49	56.25	1.93	
		10-08-49	58.91	2.66	
		10-10-49	55.61		3.30
		10-14-49	49.09		6.52
		10-15-49	48.22		0.87
		1-04-50	42.04		6.18
		1-05-50	41.86		0.18
		1-06-50	41.94	0.08	
		11-27-51	60.90	18.96	1 00
		1-25-52	58.92		1.98
		12-08-52	68.93	10.01	
		12-07-53	70-14	1.21	

STATE WELL NUMBER	WELL NUMBER IN BULLETIN 6106	DATE	MEASUREMENT	LEVEL FROM MEASURE	PREVIOUS
				DECLINE	RISE
53-02-705	Q-222	12-02-54	60.02 47.81		10.12
		2-10-55	51.03 51.89	3.22	
		1-09-57	67.94	16.05	
		3-13-57	59.22		8.72
		4-15-57	71.20	11.98	
		5-15-57	75.45	4.25	
		6-03-57	64.21	2 50	11.24
		6-24-57	67.80	3.59	
		7-16-57	83.47 101.40	15.67 17.93	
		8-20-57 9-16-57	102.11	0.71	
		10-15-57	100.78		1.33
		11-18-57	89.15		11.63
		12-18-57	86.35		2.80
		1-17-58	65.31		21.04
		2-28-58	66.92	1.61	
		3-17-58	56.98		9.94
		4-16-58	68.59	11.61	
		5-20-58	73.58	4.99 6.17	
		6-26-58	79.75 97.92	18.17	
		7-28-58	98.18	0.26	
		1-13-61	80.10	0.20	18.08
		2-06-62	107.50	27.40	
		2-04-63	123.1	15.6	
		2-05-64	122.10		1.0
53-02-802	R-39	11-01-57	75.8		
		1-31-58	77.5	1.7	
		10-30-62		82 - 8	20.07
		2-04-63			29.97 28.50
		2-05-64	101.78		20.00
53-02-901	R-32	6-11-50		4 47	
		1-26-52		6.67	
		12-08-52		2.80	
		12-01-54		2.00	2.49
		12-05-55		2.87	
		1-09-57		7.09	
	4	4-15-57	105.50	4.16	
		5-15-57		0.55	
		6-24-57		2 70	0.96
		7-16-57		3.70	1.08
		8-20-57	107.71		1.00

STATE WELL NUMBER	WELL NUMBER IN BULLETIN 6106	DATE	MEASUREMENT	CHANGE I LEVEL FROM MEASUR DECLINE	PREVIOUS
53-02-901	R-32	9-16-57 10-16-57 11-18-57 1-17-58 2-28-58 3-16-58 4-16-58 5-20-58 6-26-58 7-28-58 8-21-58 1-23-59 1-13-61 2-06-62 2-04-63 2-05-64	115.20 109.60 107.33 108.29 103.11 103.78 106.52 108.99 109.34 114.25 114.48 112.89 112.94 120.55 122.40 126.41	7.49 0.96 0.67 2.74 2.47 0.35 4.91 0.23 0.05 7.61 1.85 4.01	5.60 2.27 5.18
53-03-901	S-36	1-26-52 12-07-52 12-06-53 12-01-54 12-05-55 12-17-56 4-16-57 6-19-57 7-15-57 10-15-57 12-18-57 1-17-58 1-27-59 1-04-61 2-07-62 2-04-63	132.10 135.68 138.16 137.74 133.35 150.35 138.34 139.03 136.26 136.48 136.81 136.25 149.37 136.97 187.66 141.60	3.58 2.48 17.00 0.69 0.22 0.33 13.12 50.69	0.42 4.39 12.01 2.77 0.56 12.40 46.06
53-04-301	J-63	11-18-57 1-21-58 1-04-61 2-07-62 2-04-63 2-06-64	122.43 123.42 123.82 124.34 124.93 127.80	0.99 0.40 0.52 0.59 2.87	
53-06-501	U-50	4-23-48 12-06-53 12-11-54 12-08-55 12-17-56	78.10 88.69 88.67 86.19 91.11	10.59 4.92	0.02 2.48

STATE WELL NUMBER	WELL NUMBER IN BULLETIN 6106	DATE	MEASUREMENT	CHANGE IN LEVEL FROM MEASURE	PREVIOUS MENT
				DECLIŅE	RISE
	11.50	0 07 57	00 80	8.69	
53-06-501	U-50	9-27-57	99.80 96.73	0.07	3.07
		10-16-57 11-15-57	87.29		9.44
		12-19-57	84.16		3.13
		1-21-58	83.51		0.65
		1-04-61	93.40	9.89	0.07
		2-07-62	104.52	11.12	
		2-04-63	95.61		8.91
		2-06-64	95.75	0.14	
		2 00 01			
53-07-104	L-78	8-02-48	39.11		2.56
		12-30-48	36.55	2 15	2.50
		2-09-50	38.70	2.15	
		1-26-52	47.50	8.80 8.13	
		12-07-52	55.63	4.14	
		12-06-53	59.77	2.64	
		12-01-54	62.41 63.36	0.95	
		12-08-55	64.37	1.01	
		2-10-58	62.67	1.01	1.70
		1-04-61	63.16	0.49	
		2-05-62	61.51	0.17	1.65
		2-05-62		0.49	1.05
		2-06-64			2.27
52 07 201	1 0 2	8-02-48	37.43		
53-07-201	L-83	12-30-48			0.76
		2-09-50		0.85	
		1-26-52		5.08	
		12-07-52	47.94	5.34	
		12-06-53		3.78	
		12-08-55	55.25	3.53	
		2-07-58	54.60		0.65
		2-06-64		0.10	
53-09-105	Q-322	1-03-57	106.5		
55-09-105	9-522	1-15-58		3.9	
		10-29-62		89.1	
		2-07-63			63.8
		2-04-64		15.61	
53-09-301	Q-306	2-17-58	77.70		
JJ-07-JUI	¥ 500	3-20-58		2.47	
		4-28-58		5.81	
		5-23-58			6.71

STATE WELL NUMBER	WELL NUMBER IN BULLETIN 6106	DATE	MEASUREMENT	CHANGE I LEVEL FROM MEASUR DECLINE	PREVIOUS
53-09-301	Q-306	6-30-58	79-10	12.10	0.17
		7-15-58	92.29	13.19	
		9-03-58 10-10-58	100.98 96.82	8.69	1.11
		11-13-58	95.85		4.16
		1-23-59	80.79		15.06
		1-11-61	90.65	9.86	13.00
		2-06-62	107.78	17.13	
		2-06-63	81.61	11015	26.17
		2-05-64	112.41	30.80	20.11
52-00-202	0.201	2 21 42	(1.20		
53-09-302	Q-301	3-21-49 1-01-51	41.20	1 40	
		3-19-51	42.60	1.40	0 4 0
		11-28-51	45.85	3.65	0.40
		1-25-52	43.61	2.02	2.24
		12-08-52	45.60	1.99	2.24
		12-05-53	45.14	1	0.46
		12-03-54	45.24	0.10	0.40
		1-19-55	40.76	0.10	4.48
		12-06-55	43.62	2.86	
		1-10-57	53.21	9.59	
		4-15-57	58.36	5.15	
		5-15-57	66.20	7.84	
		6-03-57	66.40	0.20	
		6-24-57	55.25		11.15
		7-16-57	73.31	18.06	
		8-20-57	99.41	26.10	
		9-16-57	80.45		18.96
		10-16-57	84.65	4.20	
		11-18-57	81.21		3.44
		1-17-58	56.51		24.70
		2-28-58	53.60	1	2.91
		3-18-58	55.42	1.82	4 03
		5-20-58	50.50 64.33	12 03	4.92
		6-27-58 7-28-58	76.93	13.83	
		9-21-58	79.87	2.94	
		1-23-59	58.00	2.074	21.87
		1-11-61	72.97	14.97	21.01
		2-07-62	96.01	23.04	
		2-06-63	100.24	4.23	
	2172 0				
53-09-402	AA-4	1-30-58	172.55		
		1-24-59	178.03	5.48	
		1-20-61	175.79		2.24
		2-06-62	199.77	23.98	

- 39 -

STATE WELL NUMBER	WELL NUMBER IN BULLETIN 6106	DATE	MEASUREMENT	CHANGE IN LEVEL FROM MEASURE	PREVIOUS MENT
				DECLINE	RISE
	2002 - 1 4		10/ 20		3.47
53-09-402	AA-4	2-07-63	196.30 218.84	22.54	3.41
		2-03-64	210.04	22034	
F2-00-702	Z-49	2-07-58	226.39		
53-09-702	2-47	1-24-59	232.70	6.31	
		1-11-61	230.53		2.17
		2-06-62	250.20	19.67	
		2-07-63	251.04	0.84	
		2-03-64	261.02	9.98	
53-10-101	Q-293	1-17-50	117.		
		11-28-51	127.33	10.	1 01
		1-25-52	122.49	2.04	4.84
		12-06-52	126.33	3.84	
		12-05-53	129.03	2.70	2.87
		12-03-54	126.16	1.65	2.01
		12-07-55	127.81	19.54	
		1-11-57	147.35 137.35	19.94	10.00
		3-14-57 5-16-57	146.25	8.90	10.00
		6-03-57		0.,0	2.90
		6-24-57			3.95
		7-18-57		7.89	
		8-20-57		6.65	
		9-21-57		6.54	
		10-17-57		4.09	
		11-18-57			13.07
		2-28-58			8.05
		3-18-58			4.39
		5-20-58		6.07	
		7-29-58		7.33	
		1-11-61		19.81	1.80
		2-07-62		4.87	1.80
		2-06-63		4.61	
		2-05-64	179.95	4.01	
12 202	c 35	1-04-61	24.16		
53-12-203	S-25	2-05-62		3.68	
		2-05-64			0.65
		2 05 04			
54-10-701	GG-17	1-26-54	50.32		
	STREE (51.3)	12-01-54			1.27
		1-18-55		0.13	
		12-09-55		0.49	
		12-10-56	50.48	0.81	

STATE WELL NUMBER	WELL NUMBER IN BULLETIN 6106	DATE	MEASUREMENT	CHANGE II LEVEL FROM MEASURI DECLINE	PREVIOUS
54-10-701	GG-17	3-26-57	49.67		0.81
		4-16-57	49.59		0.08
		5-15-57	48.44		1.15
		6-20-57	46.84		1.60
		7-15-57	47.35	0.51	
		8-15-57	47.93	0.58	
		9-19-57	48.43	0.50	
		10-15-57	48.67	0.24	
		11-15-57	48.38		0.29
		12-18-57	48.56	0.18	
		1-17-58	48.68	0.12	
		1-28-59	47.29		1.39
		1-19-61	50.30	3.01	
		2-05-62	41.79		8.51
		2-04-63	42.30	0.51	
		2-05-64	41.31		D.99
54-18-401	GG-84	1-25-54	99.13		(72
		12-01-54	92.40	1 10	6.73
		1-26-55	93.50	1.10	
		12-10-56	102.62	9.12	
		4-16-57	105.10	2.48	1/ /1
		10-16-57	90.69		14.41
		11-15-57	90.29	17.04	0.40
		1-29-59	108.25	17.96	11 52
		1-19-61	96.73		11.52
		1-05-62	82.04	14 52	14.69
		2-04-63	98.56	16.52	
		2-05-64	100.94	2.38	



STATE WELL NUMBER	WELL NUMBER IN BULLETIN 6214	DATE	MEASUREMENT	CHANGE I LEVEL FROM MEASUR DECLINE	PREVIOUS
46-28-801	F-29	2-08-59 5-18-59 11-03-59 1-06-60 1-17-61 2-08-62 2-08-63 2-02-64	112.9 159.4 128.10 122.7 90.4 92.2 95.4 85.2	46.5 1.8 3.2	31.3 5.4 32.3
46- 28-802	F-40	11-03-58 2-09-59 5-18-59 1-06-60 1-17-61 2-08-62 2-02-64	39.82 40.18 46.80 38.97 38.21 38.67 47.27	0.36 6.62 0.46 8.60	7.83 0.76
46-35-501	H-5	11-21-58 2-10-59 5-18-59 1-17-61 2-07-63	228.6 230.2 245.8 250.48 277.30	1.6 15.6 4.7 26.82	
46-35-702	H-25	5-18-59 1-07-60 1-17-61 2-08-62 2-09-63 2-02-64	211.20 215.46 218.92 261.50	1.6 4.26 3.46 42.58 26.43	
46-35-801	H-16	2-05-49 1-14-50 2-28-50 2-09-51 1-29-52 2-05-53 1-22-54 1-28-57 2-05-58 2-10-59 5-18-59 1-07-60 1-17-61 2-08-62 2-08-63	160.93 168.36 177.90 184.83 194.03 235.78 242.7 254.2 266.1 267.79 283.4 301.5	6.07 7.43 9.54 6.93 9.20 41.75 6.9 11.5 11.9 1.7 15.6 18.1 16.4	0.53

- 45 -

STATE WELL NUMBER	WELL NUMBER IN BULLETIN 6214	DATE	MEASUREMENT	CHANGE II LEVEL FROM MEASURI DECLINE	PREVIOUS
46-35-901	J-79	11-26-58 1-17-61 2-08-63 2-02-64	303.3 345.20	22.2 41.9 18.8	
46-35-902	J-67	11-14-58 2-10-59 5-18-59 1-07-60 1-17-61 2-08-62	270.8 248.9 278.3 269.2 281.50 308.0	29.4 12.3 26.5	21.9 9.1
46-35-903	J-72	4-30-47 3-08-48 2-09-49 1-14-50 2-27-50 2-07-51 1-29-52 2-05-53 1-22-54 1-09-56 1-28-57 2-05-58 11-17-58 5-18-59 1-07-60 1-17-61 2-08-62 2-02-64	118.02 127.01 135.52 131.56 147.15 164.78 182.16 174.26 174.26 176.84 180.82 171.38 177.60 184.1 179.3 174.4 180.7	8.58 8.99 8.51 15.59 17.63 17.38 2.58 3.98 6.22 6.5 6.3 0.0 8.4	3.96 7.90 9.44 4.8 4.9
46-36-101	J-3	11-06-58 2-09-59 5-18-59 1-06-60 1-17-61 2-08-62 2-02-64	139.05 136.88 142.2 138.42 141.73 151.01 173.67	5.3 3.31 9.28 22.66	2.17 3.8
46-36-102	J-27	2-18-49 6-24-49 7-06-49	66°73 78°73 78°83	12.00 0.10	

STATE WELL NUMBER	WELL NUMBER IN BULLETIN 6214	DATE	MEASUREMENT	CHANGE I LEVEL FROM MEASUR DECLINE	PREVIOUS
46-36-102	J-27	8-10-49 9-24-49 10-26-49 11-01-49 12-31-49 1-23-50	82.16 78.75 76.13 75.96 74.39 73.62	3.33	3.41 2.62 0.17 1.57
		2-28-50 3-02-50 4-03-50 5-29-50 6-01-50	74.00 73.85 80.87 82.33 82.97	0.38 7.02 1.46 0.64	0.77
		7-31-50 8-14-50 9-26-50 10-30-50 11-20-50	89.30 87.40 85.26 81.57 81.33	6.33	1.90 2.14 3.69 0.24
		12-03-50 2-15-51 1-29-52 2-05-53 1-22-54 1-14-55	81.75 77.88 90.95 103.09 109.38 117.10	0.42 13.07 12.14 6.29 7.72	3.87
		1-14-55 1-08-56 1-28-57 2-05-58 11-06-58 2-09-59	124.30 132.08 140.94 153.70 135.00	7.20 7.78 8.86 12.76	18.70
	:#5	5-18-59 1-06-60 1-17-61 2-02-64	157.60 154.46 158.20 181.67	22.60 3.74 23.47	3.14
46-36-201	J-10	11-04-58 2-09-59 5-18-59 1-06-60 1-17-61 2-08-62	123.51 115.39 127.10 122.07 124.00 127.98	11.71 1.93 3.98	8.12 5.03
		2-08-63 2-02-64	133.94 140.23	5.98 5.96 6.29	
46-36-202	J-14	11-03-58 2-09-59 5-18-59 1-06-60	132.17 129.25 132.20 123.72	2.95	2.92 8.48
		1-17-61 2-08-62	128.10	4.38	0.68

STATE WELL NUMBER	WELL NUMBER IN BULLETIN 6214	DATE	MEASUREMENT	CHANGE I LEVEL FROM MEASUR	PREVIOUS EMENT
				DECLINE	RISE
46-36-202	J-14	2-08-63 2-02-64	135.62 152.95	8.20 17.33	
46-36-401	J-38	$\begin{array}{c} 2-05-53\\ 1-22-54\\ 1-25-55\\ 1-11-56\\ 1-28-57\\ 2-05-58\\ 11-11-58\\ 1-06-60\\ 1-17-61\\ 2-08-62\\ 2-08-63\end{array}$	148.56 147.86 156.24 167.15 182.12 189.33 204.65 206.58 220.50 227.1 239.2	8.38 10.91 14.97 7.21 15.32 1.93 13.92 6.6 12.1	0.70
46-36-402	J-110	4-11-47 3-03-48 2-05-49 10-17-49 1-13-50 2-27-50 3-13-50 10-03-50 2-08-51 1-28-52 2-05-53 1-22-54 1-13-55 1-08-56 1-25-57 2-05-58 11-18-58 2-09-59 1-17-61 2-08-62 2-02-63 2-02-64	53.99 65.95 90.00 80.69 78.85 80.75 96.80 87.01 127.25 155.57 80.80 70.5 70.7 183.25 201.80 233.04 211.74 227.88 229.05 234.42	9.09 11.96 24.05 1.90 16.05 40.24 28.32 0.2 112.6 18.55 31.24 16.14 1.17 5.37 18.43	9.31 1.84 9.79 74.77 10.3
46-36-701 MEASUREMENT DISCONTINUED	J-168	12-17-58 11-19-59 1-08-60 1-17-61 2-08-62		4.0 75.5	7.3 15.7
46-36-901	J-195	3-03-48	22.80		

2

STATE WELL NUMBER	WELL NUMBER IN BULLETIN- 6214	DATE	MEASUREMENT	CHANGE I LEVEL FROM MEASUR DECLINE	PREVIOUS
46-36-901	J-195	2-05-49 1-24-50 2-28-50 2-13-51 1-30-52 1-23-54 1-14-55 1-09-56 1-27-57 2-05-58 12-12-58 1-08-60 1-18-61 2-08-62 2-09-63	30.35 42.72 43.02 53.38 83.77 98.3 97.63 97.63 97.35 98.06 97.40 210.39 183.55 181.25 179.3 189.1	7.55 1'2.37 0.30 10.36 30.39 14.5 0.71 112.99 9.8	0.7 0.28 0.66 26.84 2.30 2.0
46-36-903	J-128	2-18-49 10-21-49 2-28-50 3-09-50 2-12-51 2-04-53 1-23-54 1-14-55 1-09-56 1-27-57 2-05-58 12-10-58 1-08-60 1-18-61 2-08-63 2-02-64	33.87 61.65 45.62 49.20 56.23 111.14 138.51 154.91 166.38 176.12 182.18 194.09 196.79 188.31 199.60 207.60	27.78 3.58 7.03 54.91 27.37 16.40 11.47 9.74 6.06 11.91 2.70 11.29 8.00	8.48
46-42-901	P-29	11-22-63	91.30		
46-42-902	P-18	7-09-59 11-22-63	104.00 131.65	27.65	
46-43-201 MEASUREMENT DISCONTINUED	H-36	2-05-58 12-01-58 1-08-60 1-17-61 2-08-62 2-08-63	274•79 303•52 316•59 327•26 376•35 384•72	28.73 13.07 10.67 49.09 8.37	

STATE WELL NUMBER	WELL NUMBER IN BULLETIN 6214	DATE	MEASUREMENT	CHANGE IN LEVEL FROM MEASURE	PREVIOUS
				DECLINE	RISE
46-43-301 MEASUREMENT DISCONTINUED	J-243	1-09-56 1-27-57 12-01-58 1-08-60 1-17-61	218.32 265.65 288.02 293.15 305.3	47.33 22.37 5.13 12.1	
46-43-501	P-12	1-02-59 5-20-59 1-11-60 1-17-61 2-08-62 2-09-63 1-29-64	255.88 277.6 268.80 281.02 279.48 298.78 311.16	21.7 12.22 19.30 12.38	8.8 1.54
46-43-601	Q-10	2-23-49 1-20-50 2-28-50 2-10-51 1-30-52 2-05-53 1-23-54 1-24-55 1-11-56 1-02-59 5-19-59 1-11-60 1-17-61 2-08-62 1-29-64	103.86 118.70 116.63 130.22 145.10 167.19 199.25 214.30 230.42 289.2 302.1 304.9 316.90 356.00 340.75	14.84 13.59 14.88 22.09 32.06 15.05 16.12 58.8 12.9 2.8 12.0 39.10	2.07
46-43-901 MEASUREMENT DISCONTINUED	Q-134	1-08-59 5-20-59 1-11-60 1-17-61 1-08-62 2-09-63	240.7 283.9 279.49 297.89 321.30 328.60	43.2 18.40 23.41 7.30	4.4
46-44-101	J-260	12-30-58 2-11-59 5-20-59 1-08-60 1-17-61 1-08-62 2-09-63 1-29-64	254.3 245.6 261.9 259.80 255.2 243.67 276.60 284.11	16.3 32.93 7.51	8.7 2.1 4.6 11.5

STATE WELL NUMBER	WELL NUMBER IN BULLETIN 6214	DATE	MEASUREMENT	CHANGE IN LEVEL FROM MEASURE	PREVIOUS EMENT
46-44-203	J-266	2-21-49 2-28-50 2-12-51 12-30-58 5-20-59 1-08-60 1-17-61 2-08-62 2-09-63 1-29-64	64.74 76.82 89.68 223.0 217.4 218.1 135.1 132.98 181.30 132.79	DECLINE 12.08 12.86 133.3 0.7 48.32	RISE 5.6 83.0 2.1 48.51
46-44-401	Q-20	2-05-53 1-23-54 1-25-55 1-10-56 1-28-57 1-02-59 1-11-60 1-16-61	156.40 196.63 209.97 223.82 237.13 255.91 267.81 265.57	40.23 13.34 13.85 13.31 18.78 11.90	2.24
46-44-501	Q-39	1-30-52 2-05-53 1-23-54 1-24-55 1-10-56 12-08-58 2-11-59 5-21-59 1-11-60 1-18-61 2-08-63 1-29-64	92.09 121.29 148.07 160.12 175.1 192.98 178.9 185.7 183.9 175.90 180.30 182.89	29.20 26.78 12.05 15.0 17.9 6.8 4.40 2.59	14.1 1.8 8.0
46-44-502	Q-46	12-09-58 12-21-58 1-18-61 2-08-62 2-09-63	136.84 132.80 120.3 123.23 128.64	2.9 5.41	4.04 12.5
46-44-602	J-275	2-11-59 5-21-59 1-09-60 1-19-61 2-08-62 2-09-63	162.4 166.7 164.38 164.00 165.03 174.53	4.3 1.03 9.50	2.3 0.38

STATE WELL NUMBER	WELL NUMBER IN BULLETIN 6214	DATE	MEASUREMENT	CHANGE IN WATER LEVEL FROM PREVIOU MEASUREMENT DECLINE RISE	
46-44-602	J-275	1-29-64	182.50	7.97	
46-44-701	Q-126	1-08-59 1-17-61	227.99 249.26	21.27	2.36
		2-08-62 2-09-63 1-29-64	246.90 262.17 288.01	15.27 25.84	2.50
46-44-704	Q-88	1-07-59 5-20-59	242.93 277.80	34.87	20.75
		1-11-60 1-17-61 1-29-64	257.05 280.0 310.45	22.9 30.5	20.75
46-44-803	Q-112	4-25-47	20.92 17.40		3.52
		3-01-49 1-22-50 2-27-50	16.38 18.92 22.10	2.54 3.18	1.02
		2-13-51 2-05-53 1-23-54	21.51 46.95 46.60	25.44	0.59
		1-24-55 1-10-56 2-06-58	46.18 44.50		0.02 0.40 1.68 3.99
		12-10-58 5-21-59 1-15-60 1-18-61	37.59	4.39	7.31 7.66
		2-09-62 2-09-63 2-03-64	30.95 32.81	1.02 1.86 0.01	
46-45-801	R-19	9-19-40 1-24-47	30.25		1.15
		3-21-50 1-29-52 2-07-53	38.77 42.72	3.53 4.99 3.95 8.13	
		1-21-54 1-13-55 1-08-56 2-06-58	60.20 54.90	9.35	5.30
		5-19-59 1-23-60 1-19-61	.64.38 70.10	4.37 5.72	2.15

STATE WELL NUMBER	WELL NUMBER IN BULLETIN 6214	DATE	MEASUREMENT	CHANGE IN LEVEL FROM P MEASUREM DECLINE	REVIOUS
46-45-801	R-19	2-09-62 2-03-64	66°74 64°59		1.21 2.15
46-46-101	K-29	1-22-58 2-17-59 1-23-60 1-19-61 2-09-62 2-09-63 1-29-64		1.83 1.48 5.63	3.93 3.22 3.81
46-47-601	S-15	8-12-58 2-18-59 1-19-61 2-09-62 2-09-63 1-29-64	51.13 50.12 50.60 50.90 51.23 51.47	0.48 0.30 0.33 0.24	1.01
46-51-201 MEASUREMENT DISCONTINUED	P-36	1-12-59 5-20-59 1-13-60 1-18-61 2-08-62	280.90 291.30 302.20 325.0 353.5	10.40 10.90 22.8 28.5	
46-51-202 MEASUREMENT DISCONTINUED	P-59	1-15-59 1-14-60 1-18-61 2-09-62	330.00 331.5 362.13 403.20	1.5 30.6 41.07	
46-51-301 MEASUREMENT DISCONTINUED	Q-193	1-12-59 5-20-59 1-13-60 1-17-61 2-08-62	280.3 282.6	15.7 2.3 14.5 47.9	
46-51-601	Q-256	2-05-58 1-05-59 5-20-60 1-18-61 2-09-62 2-09-63 2-03-64	213.62 216.58 230.4 231.82 245.66 253.81 272.12	2.96 13.8 1.4 13.84 8.15 18.31	

STATE WELL NUMBER	WELL NUMBER IN BULLETIN 6214	DATE	MEASUREMENT	CHÂNGE II LEVEL FROM MEASURI	PREVICUS EMENT
				DECLINE	RISE
46-51-903	U-3	1-17-61 2-09-62 2-09-63 2-03-64	207.98 221.16 233.25 245.86	13.18 12.09 12.61	
46-52 - 101	Q-184	1-07-59 5-20-59 1-14-60 1-17-61 2-08-62 2-09-63 2-03-64	160.70 163.90 154.60 147.06 150.27 138.83 134.25	3.20 3.21	9.30 7.54 11.44 4.58
46-52-102	Q-181	1-30-52 2-06-53 1-23-54 1-24-55 1-10-56 1-27-57 2-04-58 1-09-59 1-13-60 1-17-61 2-08-62 2-09-63 2-03-64	54.20 59.56 62.22 56.51 50.95 44.88 41.18 36.8 30.2 29.85 28.63 24.54 29.98	5.36 2.66 5.44	5.71 5.56 6.07 3.70 4.4 6.6 0.3 1.22 4.09
46-52-104	Q-205	2-07-49 1-17-50 3-01-50 2-10-51 1-30-52 2-06-53 1-23-54 1-24-55 1-07-59 1-14-60 1-18-61 2-03-64	32.71 46.90 51.23 63.66 82.86 108.72 145.80 150.16 201.9 206.2 196.4 182.20	14.19 4.33 12.43 19.20 25.86 37.08 4.36 51.7 4.3	9.8 14.2
46-52-201	Q-213	12-17-58 1-15-60 1-18-61 2-09-62 2-10-63	108.28 98.62 84.90 82.19 84.41	2.22	9.66 13.72 2.71

STATE WELL NUMBER	WELL NUMBER IN BULLETIN 6214	DATE	MEASUREMENT	CHANGE IN LEVEL FROM MEASURE DECLINE	PREVIOUS
46-52-201	Q-213	2-03-64	88.07	3.66	
46-52-203	Q-164	12-18-30 3-04-31	16.58		0.36
		5-06-31	15.55		0.67
		8-05-31	18.83	3.28	
		11-27-31	17.61		1.22
		12-05-31	16.88		0.73
		12-31-31	16.62		0.26
		2-02-32	16.48		0.14
		3-01-32	17.15	0.67	
		3-11-40	15.80		1.35
		4-15-40	15.87	0.07	
		8-19-40	17.54	1.67	2 05
		11-15-40	15.49	1 (0	2.05
		11-12-46	17.09	1.60	
		1-27-47	16.1.8	1.51	2.28
		3-08-48	18.32	2.14	2.020
MEASUREMENT		12-15-48	18.45	0.13	
DISCONTINUED		2-07-49	.20.41	1.96	
01000000000000		1-13-50	22.69	2.28	
		2-27-50		0.51	
		2-13-51	24.93	1.73	
		1-30-52	33.79	8.86	
		2-05-53	44.92	11.13	
		1-22-54	49.47	4.55	
		1-24-55	50.16	0.69	
	2	1-10-56	47.47		2.69
		1-27-57	44.70	0.10	2.77
		2-04-58	44.83	0.13	5.11
		12-09-58 5-21-59	39.72 39.54		0.18
		1-15-60	35.56		3.98
		1-18-61	29.98		5.58
		1 10 01	27.70		2020
46-52-204	Q-160	9-12-40	23.36		
		2-12-41	17.25		6.11
		11-08-46	19.62	2.37	
		3-03-48	19.11		0.51
		2-07-49	23.42	4.31	
		1-17-50	26.49	3.07	
		2-27-50	25.75	1.2200 - 40.000	0.74
		2-13-51	28.11	2.36	
		1-30-52	35.56	7.45	
		2-06-53	44.22	8.66	
		1-23-54	52.55	8.33	

STATE WELL NUMBER	WELL NUMBER IN BULLETIN 6214	DATE	MEASUREMENT	CHANGE IN LEVEL FROM MEASURE DECLINE	PREVIOUS
46-52-204	Q-160	1-24-55 $1-10-56$ $1-27-57$ $2-04-58$ $12-11-58$ $1-15-60$ $1-18-61$ $2-09-62$ $2-09-63$	52.77 52.02 48.68 47.55 41.14 33.97 28.34 26.24 27.95	0.22	0.75 3.34 1.13 6.41 7.17 5.63 2.10
46-52-501	Q-286	2-03-64 2-04-58 1-09-59	27.12 88.69 86.80	12.35	0.83
		5-18-59 1-15-60 2-09-62 2-10-63 2-03-64	99.15 80.45 72.56 75.20 73.74	2.64	18.70 7.89 1.46
46-52-601	Q-297	11-13-46 12-09-48 2-07-49 2-22-50 2-17-51 1-28-52 2-07-53	16.90 28.60 26.75 27.14 28.58 41.12 54.53	11.70 0.39 1.44 12.54 13.41	1.85
MEASUREMENT DISCONTINUED		$1-21-54 \\ 1-12-55 \\ 1-07-56 \\ 1-24-57 \\ 2-04-58 \\ 1-15-59 \\ 5-18-59 \\ 1-15-60 \\ 1-18-61 \\ 1-18$	71.97 100.08 103.41 108.32 107.50 110.32 109.90 107.06 105.36	17.44 28.11 3.33 4.91 2.82 22.80	0.82 0.42 2.84 1.70
46-52-701 MEASUREMENT DISCONTINUED	v-47	2-09-62 2-06-53 1-21-54 1-12-55 1-07-56 1-24-57 2-04-58 1-14-59 5-21-59 1-16-60	65.92 94.04 121.54 135.68 144.28 152.44 163.53 194.2	28.12 27.50 14.14 8.60 8.16 11.09 30.7	35.1

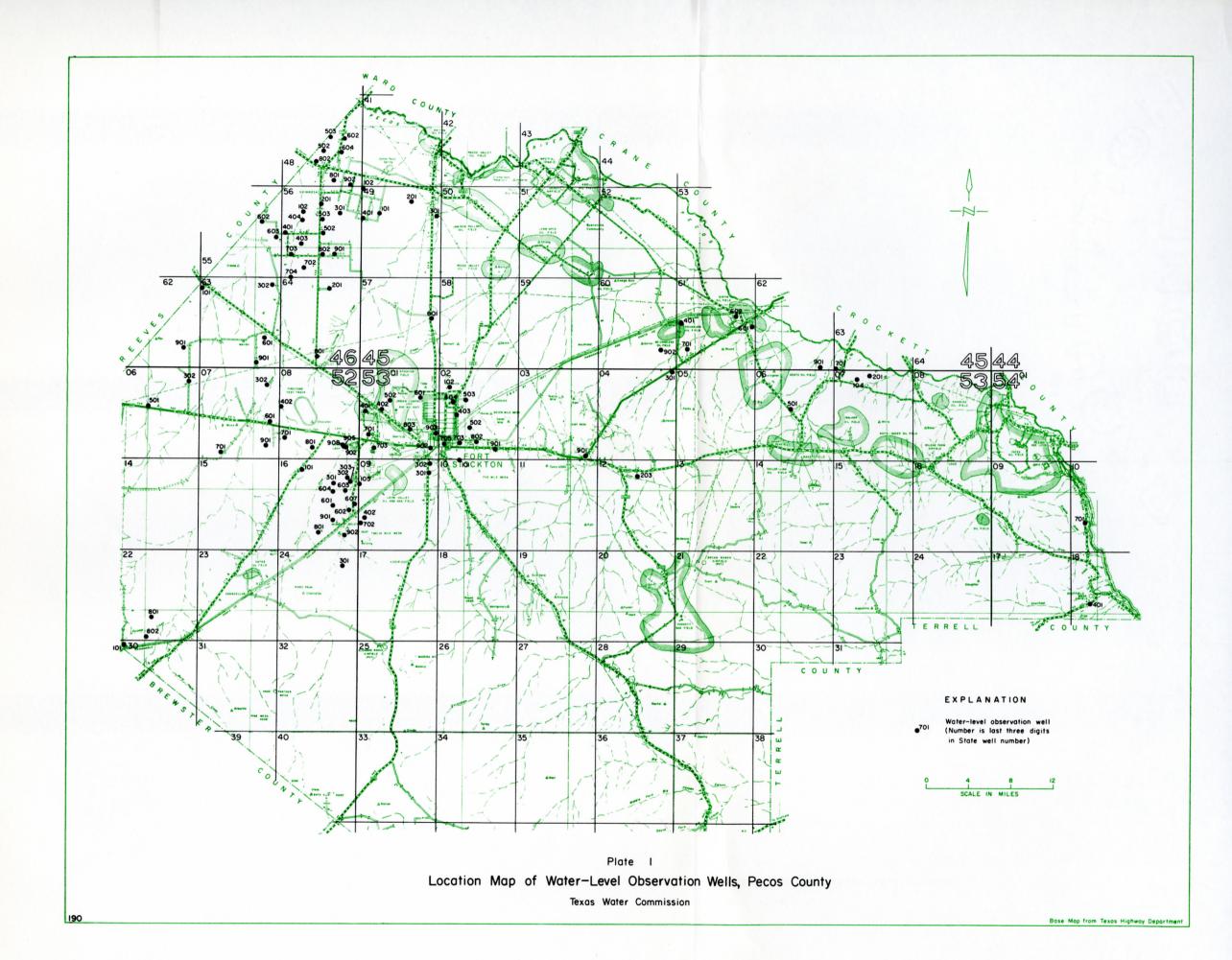
STATE WELL NUMBER	WELL NUMBER IN BULLETIN 6214	DATE	MEASUREMENT	CHANGE I LEVEL FROM MEASUR DECLINE	PREVIOUS
46-52-701	V-47	1-17-61 1-09-62 2-09-63	183.39 192.85 202.90	24.30 9.46 10.05	
46-52-703	Q-333	1-12-59 5-21-59 1-16-60 1-18-61 2-08-62 2-03-64	140.82 171.2 140.8 132.2 123.71 128.29	30.4 4.58	30.4 8.6 8.5
46-54-701	W-18	1-29-59 1-22-60 1-19-61 2-09-62 2-10-63 2-03-64	101.30 127.45 127.90 129.03 132.20 129.61	26.15 0.45 1.13 3.17	2.59
46-55-201	S-42	1-30-59 5-22-59 1-19-61 2-09-63 2-05-64	94.02 108.70 104.44 107.77 118.52	14.68 3.33 10.75	4.26
46-59-101	U-22	1-20-59 2-09-59 1-19-61 2-08-62 2-08-63 1-29-64	123.90 127.50 148.24 183.45 173.96 171.22	3.60 20.74 35.21	9.49 2.74
46-59-201	U-25	1-17-61 2-08-62 2-08-63 1-29-64	280.84 294.31 306.45 319.12	13.47 12.14 12.67	
46-59-301	V-67	1-15-59 2-09-59 3-19-59 1-19-60 1-19-61 2-08-62 2-08-63	214.96 213.52 243.22 225.26 235.34 247.60 259.83	29.70 10.08 12.26 12.23	1.44 17.96

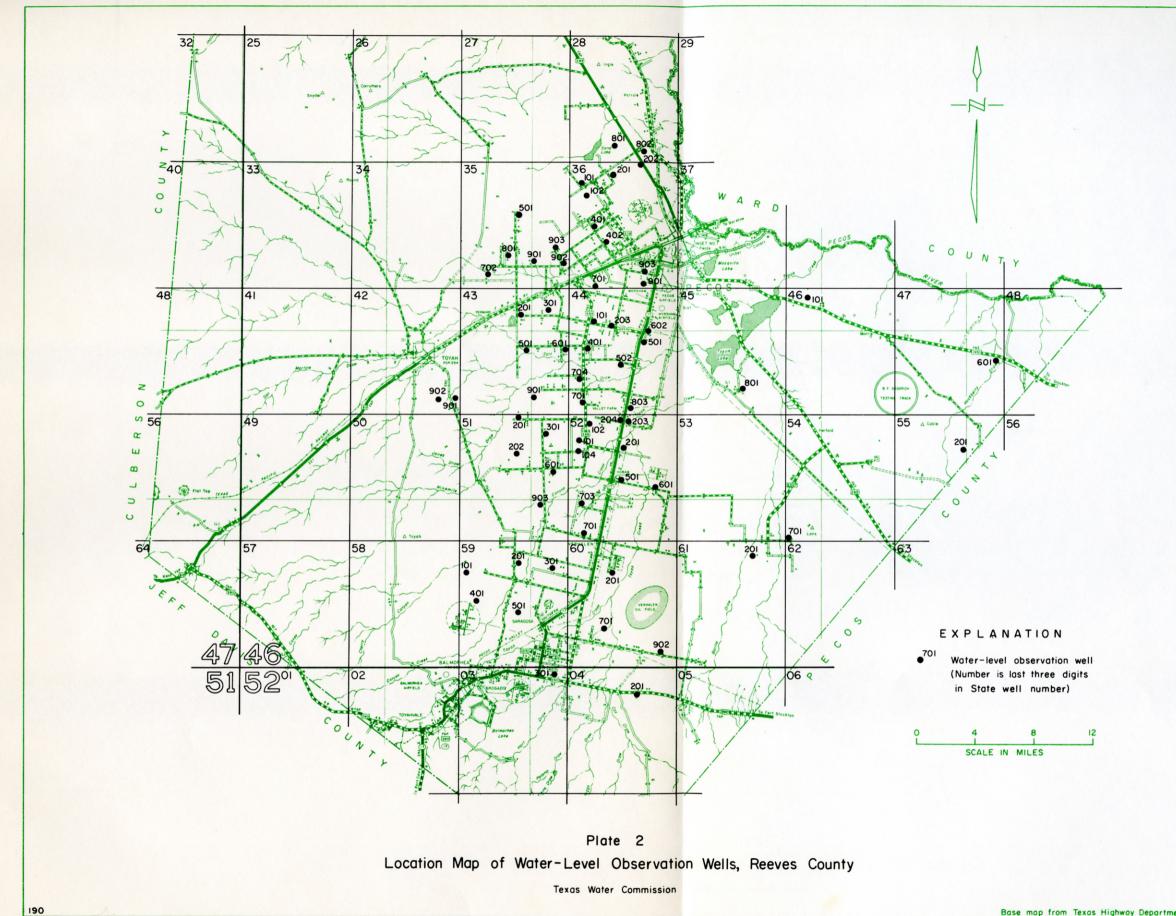
- 57 -

STATE WELL NUMBER	WELL NUMBER IN BULLETIN 6214	DATE	MEASUREMENT	CHANGE I LEVEL FROM MEASUR DECLINE	PREVIOUS EMENT
46-59-301	V-67	1-29-64	268.17	8.34	
46-59-401	U-45	1-21-59 2-09-59 1-19-61	257.58 265.60	8.02	4.41
		2-08-62 2-08-63 1-29-64	276.90 282.64 275.19	11.30 5.74	7.45
46-59-501	U-38	1-19-59 2-09-59 1-19-61 1-29-64		24.06 61.85	2.64
46-60-201	V-89	1-19-59 2-09-59 5-19-59 1-19-61 1-29-64	186.45 264.80 192.6	15.28 78.35	72.2 71.0
46-60-701	V-131	1-19-61 2-08-62 1-29-64	182.0 152.70 246.58	93.88	29.3
46-60-902	V-147	8-06-59 1-29-64			63.9
46-61-201	W-80	1-28-59 2-12-59 5-21-59 1-19-61 2-08-62		99.1	7.1 102.1 18.10
52-03-301	Y-2	11-12-58 2-12-59 1-21-60 1-18-61 2-08-62 1-29-64	251.0 209.26 211.16	13.3 1.90 0.43	5.46 41.7
52-04-201	Y-27	11-06-48	89.02		

- 58 -

STATE WELL NUMBER	WELL NUMBER IN BULLETIN 6214	DATE	MEASUREMENT	MENT CHANGE IN WA LEVEL FROM PRE MEASUREMEN		
				DECLINE	RISE	
52-04-201	Y-27	2-11-49	90.01	0.99		
		1-10-50	88.25		1.76	
		2-06-53	79.14		9.11	
		1-21-54	90.83	11.69		
		1-25-55	76.73		14.10	
		1-07-56	88.58	11.85		
		1-28-57	92.20	3.62		
		2-06-58	90.74		1.46	
		2-11-59	86.31		4.43	
		1-21-60	88.2	1.9		
		1-18-61	83.95		4.2	
		2-08-62	84.26	0.31		
		2-08-63	79.02		5.24	
		1-29-64	74.63		4.39	





Base map from Texas Highway Department